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**World Programme for the Census of Agriculture 2030: Programme,
concepts and definitions**

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World Programme for the Census of Agriculture 2030

Programme, concepts and definitions

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ABBREVIATIONS

AC	Agricultural census
AFCAS	African Commission on Agricultural Statistics
AFF	Agriculture Forestry and Fisheries
AGRISurvey	Agricultural integrated survey programme
AI	Artificial intelligence
APCAS	Asia and Pacific Commission on Agricultural Statistics
CAADP	Comprehensive African Agricultural Development Programme
CAPI	Computer-assisted personal interviewing
CATI	Computer-assisted telephone interviewing
CAWI	Computer-assisted web interviewing
CPC	Central Products Classification
CTGAP	Cape Town Global Action Plan for Sustainable Development Data
DCMI	Dublin Core Metadata Initiative
DDI	Data Documentation Initiative
EA	Enumeration area
EO	Earth observation
EDGE	Evidence and Data for Gender Equality
EEZ	Exclusive economic zones
FAO	Food and Agriculture Organization of the United Nations
FIES	Food Insecurity Experience Scale
GDP	Gross Domestic Product
GHG	Greenhouse gas
GIS	Geographical Information Systems
GLEAM	Global Livestock Environmental Assessment Model
GM	Genetically modified
GMCCs	Green manure/cover crops
GPS	Global Positioning System
GSGF	Global Statistical Geospatial Framework
HS	Harmonized Commodity Description and Coding System
ICC	Indicative Crop Classification
ICLS	International Conference of Labour Statisticians
ICSE	International Classification of Status in Employment
ICT	Information and communications technology
IFAD	International Fund for Agricultural Development
IFOAM	International Federation of Organic Agricultural Movements
IHSN	International Household Survey Network
IIA	International Institute of Agriculture
ILO	International Labour Organization
ISCED	International Standard Classification of Education
ISIC	International Standard Industrial Classification of all Economic Activities

ISSCFG	International Standard Statistical Classification of Fishing Gear
LACCAS	Latin America and the Caribbean Commission on Agricultural Statistics
LC	Land cover
LPS	Livestock production system
LSMS	Living Standards Measurement Study
LSU	Livestock unit
LU	Land use
MAPS	Marrakech Action Plan for Statistics
ML	Machine learning
MSF	Master sampling frame
N.e.c	Not elsewhere classified
NSDS	National Strategies for the Development of Statistics
PAPI	Pen and paper interview
PES	Post-enumeration survey
PGS	Participatory Guarantee Systems
PHC	Population and housing census
PUF	Public use files
RAF	Remote access facilities
RS	Remote sensing
SAE	Small area estimation
SDC	Statistical Disclosure Control
SDGs	Sustainable Development Goals
SDMX	Statistical Data and Metadata eXchange
SDS	Statistical Development Series
SEEA	System of Environmental-Economic Accounting
SEEA AFF	System of Environmental-Economic Accounting for Agriculture, Forestry and Fisheries
SM	Supplementary module
SMS	Short message service
SNA	System of National Accounts
SPARS	Strategic Plan for the Development of Agricultural and Rural Statistics
UN	United Nations
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nations Population Fund
UNSC	United Nations Statistical Commission
WCA	World Programme for the Census of Agriculture
WHO	World Health Organization

FOREWORD

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PREFACE

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EXECUTIVE SUMMARY

FAO is the leading United Nations agency providing guidelines for the conduct of agricultural censuses worldwide. The WCA 2030 provides updated guidelines for countries to conduct agricultural censuses during the 2030 census round, covering the period 2026–2035. This is the eleventh round of the decennial agricultural census programme, which began in 1930.

The WCA 2030 recommends that countries conduct a census by complete enumeration at least once every ten years, focusing on structural items only. It further advises that the census be complemented by regular inter-censal surveys, which use the census as an input to develop the frame and concentrate on non-structural, fast-changing items.

It is recognized that countries apply different methodological approaches to the census, adapted to their specific contexts, levels of development and needs. A review of experiences and lessons from the 2020 census round confirmed that agricultural censuses can be conducted through a variety of approaches. This publication outlines three approaches for conducting an agricultural census: *the classical (one-off) approach*, which remains widely applied; *the modular approach*, introduced in WCA 2010; and *the combined census approach*, which integrates administrative data and is increasingly adopted.

The WCA 2030 upholds the distinction between “essential” and “additional” items. All countries are recommended to collect the essential items, regardless of the census modality. The additional items are intended mainly for inclusion in a sample-based long questionnaire (short-long form concept under the classical approach) or in sample-based modules (under the modular approach). They are provided for countries that wish to gather more detailed data on specific themes where information at the smallest administrative level is not required.

The new WCA 2030 programme retains key features introduced in the previous programme, namely the close relationship between the population and housing census and the agricultural census (mainly for creating frames), the possibility of collecting community-level data on the infrastructure and services available to agricultural holdings, and the collection of sex-disaggregated data in the agricultural census. For the latter, the WCA 2030 has modified the approach for assessing gender roles within the holding. The new programme also provides a revised list of themes and data items to better address emerging data needs and lessons learned from the WCA 2020.

There is an increased use of information technology in data collection, processing and dissemination. This publication emphasizes the increasing use of technology and data collection modes in census operations such as georeferencing, computer-assisted personal interviewing (CAPI) and computer-assisted web interviewing (CAWI), Earth observation (EO), artificial intelligence, and their potential to lead to improvements in data quality and reduce the time lag between data collection and its analysis and dissemination. Similarly, the use of interactive outputs and web-based data (tables, graphs and maps), along with access to anonymized micro-data, has opened new avenues for census dissemination. User-friendly dissemination tools not only support informed decision-making but also unleash the analytical creativity of users, thereby enhancing the value of census data for agricultural policy, research and business, beyond the traditional statistical uses. WCA 2030 focuses on concepts, definitions and methodologies. When operational aspects such as planning, implementation, use of resources and quality assurance are mentioned, the reader will be referred to the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* ([FAO, 2018a](#)) for further information.

Member Countries are expected to adopt the WCA 2030 guidelines for conducting their national census of agriculture. Adherence to the proposed standards, concepts and definitions will ensure the international comparability of the collected data, enabling countries to benchmark their performance against others. Furthermore, adopting the guidelines will assist Member Countries in developing an integrated census and survey programme, employing innovative and cost-effective methodologies, and expanding the dissemination of census data to support informed strategic decision-making.

PART ONE
The census of agriculture in context

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CHAPTER 1 INTRODUCTION

This chapter provides historical background on the WCA 2030, summarizing the main features and changes in earlier agricultural census programmes. It then presents the objectives of the agricultural census and underscores the critical importance of integrating the census of agriculture into the overall system of agricultural statistics. The chapter concludes by highlighting the main features and innovations of the WCA 2030.

What is a census of agriculture?

1.1 A census of agriculture is a statistical operation for collecting, processing and disseminating data on the structure of agriculture, covering the entire country or a significant part of it.¹ Typical structural data collected in a census of agriculture are size of holding, land tenure, land use, crop area, irrigation, livestock numbers, labour and other agricultural inputs. In an agricultural census, data are collected at the holding level, but some community-level data may also be collected. A census of agriculture typically involves the complete enumeration of all agricultural holdings to collect key structural data, sometimes complemented by the collection of more detailed information through sampling methods (e.g. census modules under the modular approach). Complete enumeration ensures the preparation of adequate frames for inter-censal surveys, including rare crops and livestock species, generates data for small administrative units, and establishes benchmarks to improve current crop and livestock statistics.

Background to the World Programme for the Census of Agriculture

1.2 This publication presents guidelines for the WCA 2030, covering agricultural censuses to be carried out by countries between 2026 and 2035. It is the eleventh round in the decennial programme of agricultural censuses, which started in 1930. The 1930 and 1940 rounds were sponsored by the IIA. The eight subsequent rounds – in 1950, 1960, 1970, 1980, 1990, 2000, 2010 and 2020 – were promoted by FAO, which assumed the responsibilities of IIA following its dissolution in 1946.

1.3 The first two rounds of the agricultural census sought to provide comprehensive agricultural statistics, including on production. For the 1930 round, countries were asked to carry out a national agricultural census during 1929 in the northern hemisphere and during 1930 in the southern hemisphere ([IIA, 1939](#)). The objective was to obtain global data referring to the same time period. A similar request was made for the 1940 round. These first two rounds were undertaken at a time when there was a large gap in agricultural information. Data sources for agricultural statistics were not well organized, even in developed countries. The agricultural censuses were expected to help fill this gap. Many countries, however, faced significant challenges in conducting the census. Securing adequate resources to maintain a large field staff was difficult, and recruitment and training posed major obstacles where professional staff were limited. Long questionnaires placed heavy burdens on both enumerators and respondents, data quality was hard to guarantee, and data processing in the pre-computer era was extremely time consuming. For these and other reasons, the first two census rounds proved beyond the capacity of many countries. In addition, the Second World War disrupted the full implementation of the WCA 1940.

1.4 The 1950 round provided for more restricted content, concentrating on the structural aspects of agriculture such as farm size, land use, crop areas and numbers of livestock ([FAO, 1948](#)). Later rounds retained this focus on structural data, but gradually expanded the census content to reflect current areas of concern. The 1950 programme also gave increased attention to the definitions of census items and introduced a minimum set of tabulations of internationally comparable results.

1.5 The WCA 1960 introduced the use of sampling methods in census, which increased the number

¹ Sometimes countries omit certain areas from the census, such as urban areas, remote zones with marginal agriculture or areas affected by security concerns (see census coverage in paragraphs 4.29–4.32). However, excluding remote desert regions, for example, may lead to underestimating important livestock resources, particularly in nomadic areas.

of countries participating in the census round ([FAO, 1957](#)). Census items were organized into ten sections by subject matter, and the relationship between the agricultural and population censuses was addressed for the first time. The programme also expanded the tabulations of internationally comparable results to more items.

1.6 The WCA 1970 addressed the role of the agricultural census within the broader system of agricultural statistics, highlighting its function as a frame for sample surveys and as a benchmark for current statistics ([FAO, 1965](#)). The programme also considered pilot censuses and pre-testing surveys. In addition, the WCA 1970 introduced a new section on the association of agricultural holdings with other industries.

1.7 The WCA 1980 recommended that the census of agriculture should be the basis for the collection of current agricultural data through improved methods. It also called for concepts, definitions and methods to be harmonized with other related statistical systems and operations ([FAO, 1976](#)). The WCA 1980 was the first to indicate explicitly that it referred to national censuses conducted within the decade (1976–1985) centred on the round's reference year, 1980. A supplementary publication *Taking agricultural censuses* ([FAO, 1978](#)) provided practical guidelines on the preparation and organization of a census of agriculture.

1.8 The WCA 1990 made further efforts to harmonize concepts, definitions and classifications with those used in other data sources ([FAO, 1986](#)). It did not recommend the inclusion of production and input quantities in the census scope. The programme encouraged a complementary relationship between the census of agriculture and intermediate sample surveys.

1.9 The WCA 2000 recommended that the scope of the agricultural census be aligned with the International Standard Industrial Classification of all Economic Activities (ISIC), third edition, covering groups 011 (crops), 012 (animals) and 013 (crops and animals) ([FAO, 1995](#)). The programme also introduced the issues of census results disaggregated by sex, aquaculture holdings and some items on the environment. The requirement to undertake censuses in all countries in the same year was also relaxed. The WCA 2000 included a supplementary publication *Conducting agricultural censuses and surveys* ([FAO, 1996a](#)) on the steps involved in actually implementing a census of agriculture. It was an updated edition of a similar publication launched in the WCA 1980 (see paragraph 1.7 above).

1.10 The WCA 2010 introduced the modular approach to help countries meet the need for a wider range of data from the agricultural census, while minimizing the cost of census-taking ([FAO, 2005a](#)). This approach consisted of a core module carried out on a complete enumeration basis to provide key structural data, in conjunction with sample-based census supplementary modules to provide more detailed structural data or data not required at lower administrative levels. Census items were designated as core module items, complemented by items in the supplementary modules. The WCA 2010 introduced the concept of the aquacultural unit for countries wishing to include a supplementary aquaculture module, as well as the option of conducting an aquacultural census alongside the agricultural census. It also introduced two new concepts – the subholding and the subholder – to better capture the role of women. In addition, the programme included a community survey to collect information on common infrastructure issues affecting farmers, and it reemphasized the importance of integrating and coordinating the agricultural and population censuses.

1.11 The WCA 2020 programme discussed four methodological modalities for conducting a census of agriculture: the classical (one-off) approach; the modular approach, which was introduced in the WCA 2010; the integrated census/survey modality, involving rotating survey modules over the inter-census years; and the combined census modality, which uses administrative data ([FAO, 2015a](#)). The programme made a clear distinction between “essential” items and “frame” items. Other items, referred to as “additional” items, were deemed as optional. The WCA 2020 improved the approach for assessing the distribution of managerial decisions in the holding, which was useful for sex-disaggregated data, replacing the concepts of subholding and subholder. The programme included two new optional themes: “Fisheries” (capture fishing activities conducted at household level) and “Environment/greenhouse gases (GHG)” (basic agroenvironmental data on GHG and ammonia emissions). The WCA 2020 introduced two additional features. First, it placed greater emphasis on the use of information technology in data collection, processing and dissemination (e.g. CAPI, CAWI, interactive online outputs and access to anonymized microdata). Second, it included recommendations to enhance the cost-effectiveness of the

agricultural census. The WCA 2020 was complemented by *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* (FAO, 2018a), which provided practical guidance on the main stages involved in the preparation and implementation of the census of agriculture. It was an updated version of a similar publication launched in the WCA 2000 (see paragraph 1.9 above). The *Operational guidelines* were made user-friendly with the provision of country practices and additional resources through hyperlinks.

Objectives of the census of agriculture

1.12 Historically, the census of agriculture has aimed at providing data on the structure of agricultural holdings, with attention given to providing data for small administrative units. Agricultural censuses have also been used to provide benchmarks to improve current crop and livestock statistics and to provide sampling frames for the programme of agricultural sample surveys. Previous agricultural censuses have focused on the activities of agricultural production units – that is, holdings or other units operating land or keeping livestock. They have not been seen as censuses of rural households.

1.13 Since agricultural censuses are usually undertaken only every ten years, it is natural to associate them with those aspects of agriculture that change relatively slowly over time. Some national censuses of agriculture, however, are conducted at five-year intervals,² which can provide more up-to-date structural data for agricultural policy purposes. Thus, agricultural censuses are mainly concerned with data on the basic organizational structure of agricultural holdings (see paragraph 1.1). Agricultural censuses have not normally included data that change from year to year, such as agricultural production or agricultural prices.

1.14 The basic objectives of the census of agriculture have remained relevant over the past few agricultural census rounds. For WCA 2030, the objectives of the agricultural census are:

- a) To provide data on the structure of agriculture, especially for small administrative units, rare events³ and to enable detailed cross-tabulations.
- b) To provide data to use as benchmarks for and reconciliation of current agricultural statistics.
- c) To provide frames for agricultural sample surveys.

The census and the programme of agricultural surveys

1.15 A national agricultural statistical system encompasses several elements, including the census of agriculture and the programme of agricultural surveys with the census at the core, supported by the census of population (e.g. frame of households involved in agriculture), and relevant administrative records, geospatial data and other types of data (see Figure 1.1). Efforts continue to be made towards achieving better coordination and integration of these statistical activities. Integration, in a statistical sense, means that the census and the programme of agricultural surveys are carefully planned and not carried out in isolation. The Strategic Plan for the Development of Agricultural and Rural Statistics (SPARS) seeks for the integration of agricultural census and surveys in the agricultural statistical system (see paragraph 2.57).

² In the 2020 census round, Australia, Canada, India, Japan, the Kingdom of the Netherlands (annually), New Zealand, the Republic of Korea, and the United States of America (and territories) conducted censuses every five years.

³ Examples of rare events include emerging or uncommon crops and livestock species that may be of significant or growing economic importance and should therefore be captured.

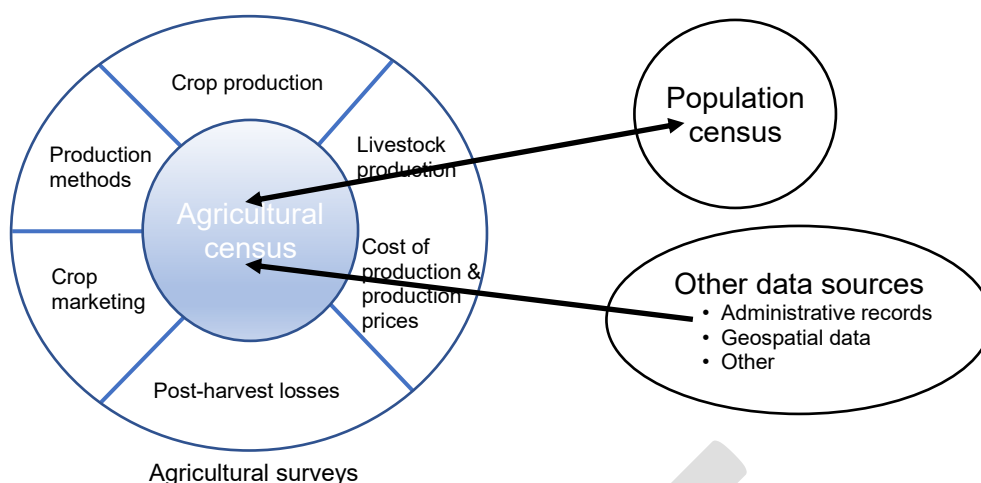


Figure 1.1 The census and the programme of agricultural surveys

Source: Authors' own elaboration.

1.16 The implementation plan involves a multiyear programme of statistical activities, in which the census is undertaken at least once every ten years, and the programme of agricultural surveys is implemented in the inter-censal period. Each statistical activity plays a specific role and serves a distinct objective of the national agricultural statistical system. Countries should plan the programme of agricultural surveys prior to the agricultural census, to ensure that the census meets the frame needs of the programme. The data requirements for food and agriculture statistics are extensive and include information on the structure of agricultural holdings (such as land use, crop and holding areas or number of livestock), agricultural production, farm management, agricultural inputs, food consumption, household income and expenditure, labour force and agricultural prices. Slow-changing structural data could come from agricultural censuses, administrative records and geospatial data, while fast-changing non-structural data could come from agricultural sample surveys, reporting systems or other sources.

1.17 The census should therefore be conducted at least once every decennial by complete enumeration, focusing only on structural items, while regular inter-censal sample surveys should use the census frame to complement the structural data from the census by collecting current and more detailed operational and performance holding-level data (e.g. crop and livestock production, production prices, food consumption, crop losses and farm labour data).

1.18 Integration between the agricultural census and the programme of agricultural surveys is achieved when the multiyear programme of statistical activities is well coordinated and each component is designed to provide the most appropriate data while avoiding duplication in data collection.

1.19 The main advantages of an integrated programme are:

- ◆ It enables the planning and development of a comprehensive programme of statistical activities without duplication or the release of conflicting statistics, while ensuring the efficient and balanced use of available resources.
- ◆ It ensures compatibility of concepts, definitions and classifications across different statistical activities, facilitating the interpretation and analysis of related data from multiple sources. Any statistical collection, such as the agricultural census, can then be limited to a coherent and manageable set of items, with the assurance that other related data are available in a comparable form from other sources.

1.20 Planning and implementing a coordinated and integrated census and survey programme requires an efficient organizational structure, trained personnel at various levels and secured budgetary allocations over a period of years. An efficient setup implies strong cooperation between producers and users of agricultural statistics. However, statistical activities are not always under the jurisdiction of a single government institution – for example, the national statistics office may be responsible for the agricultural

census, while ongoing agricultural surveys may be carried out by the relevant ministry. In such cases, coordination between the various agencies is essential, though sometimes difficult, as each agency may have a different mandate regarding the purpose, scope and timing of its work.

1.21 Many countries experience a shortage of trained statistical personnel and/or insufficient funds for statistical development and will require time to achieve an integrated census and survey programme. Nevertheless, it is recommended that all statistical development efforts support the long-term goal of providing a continuous flow of timely and accurate data covering all aspects of food, agriculture and rural development.

Main features of WCA 2030

1.22 The *WCA 2030 Programme, concepts and definitions* presents the methodological and conceptual aspects for implementation of agricultural censuses between 2026 and 2035.

1.23 The programme emphasizes the integration of the agricultural census within the overall framework of the system of integrated agricultural censuses and surveys. It is recognized that countries use a range of methodological approaches to the census according to their circumstances, development levels and needs. In this light, the WCA 2030 features discussion of three modalities for conducting a census, including the two most common census methodological approaches – namely, the classical approach, which is still widely used, and the modular approach introduced for the first time in the 2010 programme as a cost-effective approach to collecting a wider set of data. The third modality, introduced in the WCA 2020, is the combination of any of the above approaches with the use of administrative data. The “integrated census/survey modality” has been excluded from the present programme to clearly distinguish the census from an **agriculture structure survey** (see paragraph 5.5).

1.24 The WCA 2030 maintains the notions of essential and additional items introduced by the previous programme. Essential items are the minimum set of structural items that all countries should collect through complete enumeration, regardless of their approach to the agricultural census. These items are needed for national purposes and international comparison. Additional items are available for countries that wish to collect more in-depth census data on specific themes, preferably on a sample basis (e.g. through supplementary modules under the modular approach or a long questionnaire), where detailed estimates at the smallest administrative level are not essential.

1.25 Even though it is recommended that census additional items be collected on a sample basis through census modules or a long questionnaire, some flexibility could be exercised with their collection by complete enumeration. It is important to note that, by definition, all essential items are structural, but the reciprocal is not true. In fact, some countries may find that in their context some additional items can be considered structural items because they are important for national comparison purposes (see Figure 6.1 in Chapter 6). For non-structural items, countries could refer to the Agricultural integrated survey programme (AGRISurvey) ([FAO, 2025a](#)) concerning definitions and possible implementation approaches (see paragraphs 2.56–2.59). It is important to limit the number of additional items in the census questionnaire to avoid overburdening respondents and overloading the questionnaire. Beyond respondent burden, the inclusion of additional items can have significant budgetary and logistical implications for training, fieldwork and data processing. Each additional item should therefore be included only after careful consideration of its utility (particularly for creating sampling frames for supplementary modules or follow-up surveys), the impossibility of obtaining it through other mechanisms, and the additional costs involved. The programme nonetheless introduces some new items and revisions to address the data needs expressed by countries and users (see paragraph 1.34).

1.26 Unlike the WCA 2020 that suggested a list of possible “frame” items, the WCA 2030 acknowledges that, depending on country’s needs, some essential and additional items could also be used for creating frames for sample-based census supplementary modules, the continuous programme of surveys, or ad hoc and specific surveys. They should be collected through complete enumeration. In particular, in the modular approach, the core module should contain all essential items and also the additional items needed for building sampling frames for the supplementary modules. For example, a precondition for a supplementary module on forestry, the additional item 1101 (Presence of woodland on

the holding) should be included in the core module on a complete enumeration basis to build a sampling frame for the supplementary module. The essential and additional items that could be useful for building frames are highlighted in the description of items in Chapter 7 for essential items and Annex 4 for additional items.

1.27 The WCA 2030 also places continued emphasis on leveraging information technology throughout the data collection, processing, and dissemination processes. The increasing integration of technology into census and survey operations brings about significant operational efficiencies and reduces the time lag between data collection and analysis. This technological integration encompasses various data collection modes and modern technologies such as CAPI, CAWI, internet-based data collection techniques, georeferencing, geospatial data (e.g. Earth observation), and artificial intelligence. Furthermore, it entails utilizing interactive outputs and web-based data presentation tools, including tables, graphs and maps, as well as providing access to anonymized micro-data. These advancements have expanded avenues for disseminating census data. The introduction of novel and user-friendly dissemination tools not only supports informed decision-making but also encourages users to explore and analyse the data creatively, contributing to the sustained integration of agricultural statistics into the broader national statistical system.

1.28 The programme has retained three key features introduced in previous rounds. First, the relationship between the population and housing census and the agricultural census. The integration of these two operations is further elaborated in a joint publication by FAO and the United Nations Population Fund (UNFPA) *Guidelines for linking population and housing censuses with agricultural censuses* (FAO & UNFPA, 2012). Second, the possibility to collect community-level data remains in the programme due to the strong demand for, and increased use of, this kind of data vis-a-vis the marginal field cost. Community-level data is collected with a view to building an information base on the infrastructure and services available to agricultural holdings. Third, the recommendation to collect sex-disaggregated data in the census is retained with some changes. In light of limited implementation, the theme on “Intrahousehold distribution of managerial decisions and ownership on the holding” (Theme 10 in WCA 2020) has been discontinued as a stand-alone theme, with the relevant information now incorporated into other themes.

1.29 The WCA 2030 is complemented by the census *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* (FAO, 2018a). Since the focus of the WCA 2030 is on concepts, definitions and methodology, when operational aspects such as planning, implementation, use of resources and quality assurance are mentioned, the reader will be referred to the *Operational guidelines* for further information.

1.30 WCA 2030 has been developed after a review of country experiences with the 2020 programme and an assessment of changing data needs in light of developments in agricultural practices and through extensive consultations with countries as well as global and regional experts. As in the past, it is expected that countries will adapt the guidelines given in this publication to meet national and international data needs.

Statistical unit, concepts, content, and classifications in WCA 2030

1.31 The main methodological differences between the 2020 and 2030 programmes are highlighted in the previous section (see paragraphs 1.23–1.28). Specific descriptions of statistical units, concepts and definitions, data content and classifications are summarized below:

1.32 **Statistical unit**

- The statistical unit for the agricultural census, the agricultural holding, remains the same as used in previous programmes (see paragraphs 4.2–4.3).
- The concept of an aquacultural holding remains the same as used in the previous programme (see paragraph 3.33).

1.33 **Concepts and definitions**

- The definition of an agricultural holder remains the same as in the previous programmes (see paragraphs 4.21–4.24).
- Forest and other wooded land remain into line with the System of Environmental-Economic Accounting (SEEA) Central Framework adopted by the UNSC in 2012 ([UN et al., 2014](#)) (see Chapter 7, Theme 2 – Land).
- Work concepts have been updated to be consistent with the resolution adopted by the International Labour Organization (ILO) in 2023 ([ILO, 2023a](#)) (see Chapter 7, Theme 9 – Work on the holding).
- An agriculture structure survey (deemed as sample-based census in previous programmes) is no longer considered a “census”. A census is a complete enumeration operation.

1.34 **Data content**

- The present programme maintains two categories of census items introduced in the WCA 2020: essential and additional (see paragraph 1.24 above). Following an assessment of country practices during the 2020 census round, the present programme incorporates several changes in the list of census items. Some of the items are new, some are deleted, some are transferred to other themes and others have changed their type (see Chapter 6 for more details):

New items. Seven items are introduced in the present round:

- In Theme 2 (Land), Number of parcels (additional Item 0202);
- In Theme 4 (Crops), Area of temporary crops planted (essential Item 0402);
- In Theme 4 (Crops), Presence of hydroponic/vertical farming (additional Item 0406).
- In Theme 5 (Livestock), Number of animals per breed category (additional Item 0505)
- In Theme 6 (Agricultural practices and equipment), Use of technology on the holding (additional Item 0613).
- In Theme 7 (Services), Type of insurance coverage (additional Item 0708)
- In Theme 11 (Forestry), Whether forestry activities are practised (additional Item 1104).

Items changing theme

The table below shows the items that have changed theme.

Table 1.1 List of items that changed themes in WCA 2030

WCA 2020		WCA 2030		Description
Theme	Item number	Theme	Item number	
Demographic and social characteristics	0801	Identification and general characteristics	0106*	Household size by sex and age groups*
	0806		0107*	Educational attainment of holder, spouse and manager*
	0807		0108	Agricultural training/education of the holder
Intra-household distribution of managerial	1002 1004	Land	0207	Sex of the household member managing the parcel
	1003	Livestock	0504	Number of animals by sex of the household member managing them

decisions and ownership on the holding				
Environment/GHG emissions	1501	Agricultural practices	0614	Type of animal grazing practices
	1502		0615	Manure application
	1503		0616	Manure management system

Note:* Essential items.

Source: Authors' own elaboration.

Themes and items omitted

- The theme “Intra-household distribution of managerial decisions and ownership on the holding”, which consisted of additional items to capture the role of gender in the holding’s decision-making process, was hardly covered by national censuses. For this reason, the theme was omitted from WCA 2030 and, instead, some items were moved to the Land and Livestock themes to cover gender aspects (see Table 1.1). The role of gender is now captured in two rosters. In the first roster in the Land theme, for each parcel, besides parcel area (Item 0206) and tenure (Item 0209), the sex of the household member managing the parcel (Item 0207) could be asked. In the second roster in the Livestock theme, for each livestock species, the number of animals by sex of the household member managing them (Item 0504) could be requested.
- Theme 11 (Household food security) was omitted from the WCA 2030 because it is relevant to all households and not just households operating agricultural holdings. Another reason is that it is covered by household surveys to measure the Sustainable Development Goal (SDG) indicator 2.1.2 ([FAO, 2017a](#)).
- The theme “Environment/GHG emissions” was covered less frequently by national censuses. Only items 1501–1503 were covered by a limited number of countries. This is due perhaps to the fact that the surveys are the main source to collect this type of data, mainly for relevant SDG indicators. Therefore, this theme was omitted in WCA 2030, and the three items 1501–1503 were moved to the theme “Agricultural practices” (see Table 1.1). These three items continue to be relevant for the estimation of greenhouse gas emissions. These items also contribute to the calculation of sustainability metrics such as nitrogen use efficiency (NUE), a key component of SDG indicator 2.4.1.
- The additional item “Presence of soil degradation: type and degree” was omitted as it was hardly covered by national censuses.
- The additional items “Labour force status” and “Status in employment of main job” of the theme “Work on the holding” were omitted as they were deemed more relevant for the census of population and labour surveys. For the census of agriculture, items 0901 “Whether working on the holding is the main activity” and 0902 “Working time on the holding” are more relevant as they relate to agricultural activities. Table 1.2 depicts the omitted items and/or themes.

Table 1.2. List of themes and additional items omitted in WCA 2030

Theme in WCA 2020	Item number	Description
Land	0211	Presence of soil degradation: type and degree
Work on holding	0904	Labour force status
	0905	Status in employment of main job
Intra-household distribution of managerial decisions and ownership	1001	Sex of household members making managerial decisions
	1005	Number of livestock owned by sex of the owner
Household food	1101 (a) to 1101 (h)	Food Insecurity Experience Scale

security		(FIES)
	1102	Effects of natural disasters
	1103	Extent of loss of agricultural output due to natural disasters
Environment/GHG emissions	1504	Final use of the treated manure
	1505	Length of the growing period of rice cultivation
	1506	Rice cultivation – irrigation and water regimes
	1507	Organic amendments to soils used for rice cultivation
	1508	Crop residues
	1509	Permanent crops – age of plantations

Source: Authors' own elaboration.

Items that changed category

- In the “Identification and general characteristics” theme, the item “Educational attainment of holder, spouse, and manager” (0107 in WCA 2030) changed category from additional to essential item. In the “Agriculture practices” theme, the item “Selected machinery and equipment used on the holding by source” (0604) changed category from additional to essential item. Likewise, in the “Work on holding” theme, the item “Use of contractors for work on the holding according to type of service” (0905) changed category from additional to essential item.

Other changes

- The concept of “hired manager” in Item 0114 “Presence of manager other than the holder” changed to “manager” to account for cases in which the manager is a non-paid family member or another type of individual.
- The item “educational attainment” for each member of the household in the “Demographic and social characteristics” theme was divided in two items: “educational attainment of holder (including joint holders), spouse, and manager” (essential Item 0107 in the “Identification and general characteristics” theme), and “educational attainment for each household member excluding holder and spouse” (additional Item 0805 in the “Demographic and social characteristics” theme).
- Item 0413 “Use of each type of fertilizer” was relabelled as “Use of different types of fertilizing products” to encompass diverse types of plant nutrition inputs such as biostimulants.

1.35 Classifications

- The WCA 2030 adopts the internationally accepted FAO land use classification, which forms the basis of the current land use classes in the System of Environmental-Economic Accounting (SEEA) Central Framework and the SEEA Agriculture, Forestry and Fisheries (AFF) (see paragraphs 7.2.9 – 7.2.37). The land use class “land under farm buildings and farmyards” now includes greenhouses and therefore covers land used for growing temporary or permanent crops under protective cover, which in WCA 2020 fell under the classes “land under temporary crops” and “land under permanent crops”, respectively.
- The areas of economic activity have been updated to be consistent with ISIC Rev. 5 ([UN, 2025a](#)) (see paragraphs 7.1.24– 7.1.26).
- The Indicative Crop Classification (ICC) and Classification of Livestock have been updated to be consistent with the Central Product Classification (CPC) Version 3.0 ([UN, 2025b](#)) (see Chapter 7, Themes 4 and 5).

- The classification of machinery and equipment has been updated based on the Harmonized Commodity Description and Coding System (HS) Edition 2022 ([WCO, 2022](#)) (see Chapter 7, Theme 6).

DRAFT

CHAPTER 2 IMPORTANCE OF THE CENSUS OF AGRICULTURE AND ITS INTERNATIONAL CONTEXT

This chapter discusses the importance of the census of agriculture for both stakeholders and data producers at national level. It then situates the census of agriculture within the international context, referencing key development agendas – the 2030 Agenda, the Global Strategy to Improve Agricultural and Rural Statistics, and the 50x2030 Initiative).

Introduction

2.1. The census of agriculture is the principal means of collecting basic agricultural statistics in a country as part of an integrated programme of data collection and compilation aimed at providing a comprehensive source of statistical information for agricultural policy purposes, as well as for research, business and other uses, in addition to the usual statistical uses.

2.2. The census of agriculture provides a snapshot of agriculture in a country and an opportunity to identify trends or structural breaks in the sector as well as possible areas of intervention. Census data are used as a basis or benchmark for current statistics, but the value of these data is increased when the results are combined with the results of other investigations and used for planning and policy purposes, including areas of investment and informed business decisions. Often, stakeholders see the need for more in-depth studies of specific domains of the agriculture sector and rely on the census as the frame for focused sample surveys. The importance of the census of agriculture in satisfying the needs of both stakeholders and data producers is discussed in the first part of the chapter.

2.3. WCA 2030 was developed at a crucial time for the international statistical agenda, amid the implementation of the 2030 Agenda for Sustainable Development. This context underscored new and emerging needs for statistics, including the interaction between agriculture and the environment – often referred to as green growth – sustainable agricultural development, increased volatility in agricultural markets, and growing demands from the international community and national governments to measure the impacts of development policies and programmes. Structural data on agriculture remain essential, with emerging needs highlighting the importance of data on climate change, the environment, land and water use, as well as rural poverty, particularly where the rural population is predominantly engaged in agriculture.

2.4. In this context of an increased need for reliable and timely statistical data, concerns about the general decline in the overall quality and availability of agricultural statistics meant that this issue needed to be addressed in a comprehensive manner. The main stakeholders developed a *Global Strategy to Improve Agricultural and Rural Statistics* (FAO, 2010) as a blueprint for a coordinated, long-term initiative to address the decline in national agricultural statistical systems. WCA 2030 plays an important role in supporting these systems.

Stakeholders' needs

Agricultural planning, policymaking and policy monitoring

2.5. The agricultural planning and policymaking process, and assessment and monitoring of results are evidence-based processes that are heavily dependent on the statistical system. The agricultural census contributes to these processes in several key areas, including food supply and gender issues, statistical information on the structure of agriculture in small administrative units, and the presence and extent of rare events, which are discussed later in this chapter. Other examples of planning and policy issues for which the agricultural census can contribute directly to this evidence-based process are:

- Promoting agricultural production and investment to stimulate economic growth requires relevant census data. Key indicators include land tenure, labour inputs, the area of unutilized land suitable for agricultural production, average crop area per holding, average number of livestock per holding, access to credit and insurance, and the use of machinery and equipment.

- Rural development. In countries where most of the rural population is engaged in agriculture, agricultural census data at low administrative levels and/or by agroecological zone – including the number of holdings, land tenure, holder’s age and sex, holder’s education, average agricultural area per holding, average number of livestock by type, type of farm labour inputs, on use of machinery and equipment, and community level data – are commonly used to inform rural development programmes. These data are particularly relevant for supporting the market orientation of agricultural producers and for planning infrastructure development initiatives.
- Access to land and land distribution. The agricultural census collects various items needed for analyses on how agricultural holders get access to land and, on the structure or distribution of the agricultural land in a country. For these analyses, census information on the size of holdings, land use and land tenure types is paramount. Analyses may be conducted from different perspectives – for example, age and sex of agricultural holders; main purpose of production; legal status of the holder; types of land use; crops grown; average total and agricultural area of the holding; and agricultural practices used in the holding. This information enables the formulation and monitoring of policy measures and programmes that address the needs of specific target groups – such as young farmers, subsistence producers and land consolidation initiatives.
- Type of farming system. The agricultural census is the main data source for classifying holdings by type of farming system. For example, holdings can be grouped according to whether they are subsistence- or market-oriented, crop production-oriented, livestock production-oriented or mixed. The essential items recommended in WCA 2030 are an important data source for these groupings. Different policies and programmes can be developed to address the needs of targeted groups.
- Family farms. The analysis of characteristics and importance of family agriculture developed mainly at the household level is greatly facilitated with the data provided by the census of agriculture, using data on total area of holding, size of the household and type of farm labour inputs.
- Crop diversification. The agricultural census provides information on types and area of crops cultivated by region, thus helping to promote diversification and the cultivation of new crops.
- Support schemes. The agricultural census provides data for a better understanding of the agricultural inputs used and their geographical distribution. When combined with other economic data, this information supports the design of subsidy schemes aimed at providing economic support and enhancing equity between agriculture and other economic sectors. Monitoring the impacts of such policies requires a significant amount of intertemporal information. Comparisons between censuses, across different areas within the same country and between countries – with and without such policies – are valuable for assessing their impact.

Research, investment and business decisions

2.6. In addition to serving specific governmental policy objectives, the agricultural census provides indispensable data for research and for assessing the composition, distribution, and past and prospective growth of the agricultural sector. Changes in cropping patterns; the emergence of new agricultural activities; the geographical distribution of the agricultural population; changes in the sex and age structure of holders; the availability of labour; and trends in the agricultural labour force are all relevant topics for research and for addressing practical challenges in industrial and commercial development and management. In-depth agricultural research can support evidence-based planning and policymaking through the use of specialized statistical methods. These methods make it possible to quantify relationships among various characteristics, improve understanding of why farmers make certain decisions, and predict their likely responses to specific policy measures. Agricultural censuses are often the only available source for such analysis, owing to their provision of individual holding-level data. Research based on census data can also help identify business opportunities. For example, the data may highlight the comparative advantage of specific crops or livestock for export purposes,

indicating the potential need for government or private investment to promote export-oriented production.

2.7. An agricultural census is also a valuable data source for the private sector and the agricultural industry. The primary interest of the private sector lies in data that inform commercial decision-making. For example, a food processing company may use agricultural census data on the number of growers and the area of specific crops in each district to identify suitable locations for processing plants. An input supplier may analyse census data on input use to better understand market opportunities. Similarly, suppliers of farm machinery can use data on the area of each crop and the number of growers to assess the potential demand for their products.

Food security

2.8. Assessing food security through the census of agriculture presents certain challenges. As explained in paragraph 1.34, the theme of “food security” was omitted from this programme because it is relevant to all households – not only those operating agricultural holdings – and is addressed through household surveys measuring SDG indicator 2.1.2. On the food availability side, however, data from the agricultural census support an understanding of the structure of the food production sector and the constraints faced by farmers in increasing production, as well as informing strategies to enhance agricultural productivity. Cropping patterns can be analysed alongside information on irrigation use, farm machinery and improved seed varieties to help develop programmes aimed at increasing food production.

2.9. The collection of community-level data (see Chapter 8) can also be especially useful in this area. For example, data on the presence of agricultural produce markets and other infrastructure in the community can help assess the effectiveness of the food distribution system. Issues related to the stability of food supplies, such as weather conditions and exposure to natural disasters, can also be studied through the community survey of the agricultural census.

2.10. The agricultural census also provides broad economic, social and environmental indicators to show the background against which the food economy operates. As discussed below, the agricultural census can help in studies of environmental issues that may affect agricultural output. Household data from the agricultural census may also highlight social issues affecting food security, such as changes in demographic patterns and household structures.

Work in agriculture

2.11. The agricultural census is essential to obtain relevant data on work inputs and main work activities, as well as on the labour force in the agriculture sector, broken down by different characteristics (see Theme 9). Unlike conventional labour force surveys that provide work data using a short reference period (usually one week), the agricultural census uses a long reference period (usually one year) in order to better capture the seasonal character of agricultural activities. From this point of view, the agricultural census data complement the work data collected in some household-based surveys (labour force surveys, income and expenditure surveys, poverty monitoring surveys and living condition surveys) carried out by countries on a regular or ad hoc basis. In the absence of such surveys, the agricultural census fills important gaps in the national statistics on work.

2.12. The agricultural census is an important data source for evaluating levels of participation and time worked on agricultural holdings, including those that produce agricultural goods primarily for own final use. The latter are particularly relevant in developing countries. Collecting data on main activity and time worked – in conjunction with demographic and social characteristics – adds value to the census by enabling comprehensive analysis of work-related data, including dimensions such as gender and education.

2.13. Census data on forms of payment of employment, types of agricultural holdings or the main purpose of production of the holding, are a valuable data source to support labour and other social policies related to the quality of employment, as well as for macroeconomic purposes.

2.14. The use of an annual reference period in census data collection is especially important for national

accounts estimates and to assess the relationship of work statistics with other economic and social statistics that also use a long reference period, such as statistics on household income, poverty, social exclusion and education.

2.15. The concepts and definitions for work statistics applied in the WCA 2030 are in line with the Resolution concerning statistics of work, employment and labour underutilization ([ILO, 2013](#)) amended by the 21st International Conference of Labour Statisticians (ICLS) in 2023 ([ILO, 2023a](#)). See Chapter 7, Theme 9, paragraph 7.9.2.

Agriculture and the environment

2.16. Agriculture has an impact on the environment, but on the other hand, it is also a source of environmental services. As the *Global Strategy to Improve Agricultural and Rural Statistics* ([FAO, 2010](#)) points out, “The establishment of policies and programmes for mitigating the environmental impacts or to capitalize [on agriculture’s] potential as a source of environmental services requires extensive information.” Agricultural censuses are sources of structural information that, through comparison at different points in time, contribute to the monitoring of environmental changes. In addition, data on the use of environmentally friendly practices and inputs, collected through the census of agriculture, help decision-makers and planners when adopting measures to mitigate adverse effects.

2.17. Environmental impacts due to agricultural practices, such as methods of ploughing, crop rotation or sources of high GHG emissions can be analysed, thus helping countries to improve their ability to plan effective climate change responses and access international funding (see Annex 4, Theme 6 “Agricultural practices and equipment” items 0610 (Types of tillage practices), 0614 (Type of animal grazing practices), 0615 (Manure application), 0616 (Manure management system) and also see Chapter 7, Theme 4, Item 0413 (Use of different types of fertilizing products).

2.18. Information on land use from the census of agriculture is crucial to analyse agricultural sustainability and productivity. The use of land can also have environmental consequences that range from pollution of waterways to global warming, and the census of agriculture is the main data source on the actual land use in a country.

2.19. The Paris Climate Agreement (Paris, 2015) operationalized the objective of the United Framework Convention on Climate Change ([UNFCCC, 2015](#)) to stabilize greenhouse gas concentrations in the atmosphere “at a level that would prevent dangerous anthropogenic interference climate system” (Art. 2). Under this framework, participating states should regularly report their GHG emissions from all sectors, including agriculture. Countries can use data on farm production methods and land use, to estimate GHG emissions and monitor the achievement of their targets. Considering the need for significant increases in capacity development to improve the data collection and analysis related to climate change the WCA 2030 highlights the variables that can be collected to enhance UNFCCC reporting, while introducing the possibility for countries to establish the baseline for such reports and can provide frame information for designing and conducting periodic sample surveys to collect data necessary for estimation of GHG emissions from the agricultural sector and calculation of other agroenvironmental indicators.

2.20. Another important use of census information in assessing environmental impact relates to land and water management. Agricultural land use and changes in land use, methods of irrigation, sources of water and the final disposal of irrigation water are key elements for analysing environmental threats and risks. The theme of irrigation included in this programme also contributes to such analysis.

The role of gender in agriculture

2.21. It is widely acknowledged that promoting gender equality and the empowerment of women are key to advancing social and economic progress. Women are often disadvantaged by discriminatory social norms and legal institutions, which may result in disparities in literacy, access to education, participation in the labour market and the allocation of work on family farms. The agricultural census plays an important role in providing gender-disaggregated data related to agriculture, supporting the monitoring of progress towards gender equality goals.

2.22. The contribution of women to agricultural development is often not well understood owing to a lack of data and the challenges in accurately measuring their involvement in agricultural production

activities. The agricultural census can serve as an important tool for studying the social and cultural dimensions of agricultural and rural development as they relate to women, the distribution of agricultural work within households, and the interactions among household members in the management and operation of agricultural holdings.

2.23. Identifying the agricultural holder provides the basis for comparing the characteristics of holdings operated by men and women. Analysing factors such as the area of the holding, cropping patterns and the use of different agricultural practices can help to highlight the challenges faced by women in operating agricultural holdings. The World Programme for the Census of Agriculture 2020 (WCA 2020) introduced a new theme – Theme 10: “Intrahousehold distribution of managerial decisions and ownership on the holding” – to better capture gender-based differences in decision-making and ownership of key agricultural assets, such as land and livestock. However, most countries did not implement this theme. Given that the role of gender in agriculture remains a key area of interest, in the present Programme, Theme 10 has been removed, and gender-related items have been integrated into the themes Land and Livestock. As explained in Chapter 1 (paragraph 1.34), the role of gender can now be captured through a roster under the theme Land (for each parcel) and another under the theme Livestock (for each livestock species). Overall, the gender⁴ related items include: sex of the agricultural holder (essential Item 0104); household size by sex and age group (essential Item 0106); sex of manager other than the holder (additional Item 0115); sex of the household member managing the parcel (additional Item 0207); number of animals by sex of the household member managing them (additional Item 0504); work on the holding for each household member of working age, including sex (items 0901 and 0902); and number of employees on the holding by working time and sex (Item 0903). This information is essential for supporting more targeted policies and programmes.

2.24. Data on work inputs and employment characteristics collected in Theme 9 for each household member can be used to study the responsibilities of women for work on and off the holding.

Baseline data for monitoring and evaluation

2.25. Typically, an agricultural development project aims to achieve certain outcomes in a defined project area. Baseline data are needed to help assess whether the project has been successful. An agricultural census provides detailed structural data for small geographic areas, making it an ideal source of baseline data.

2.26. Agricultural census data can be tabulated for any defined administrative or geographic area or for any particular type of holdings, which means that data can be provided for specific target groups required by a particular project. For example, if a project is designed to improve coffee growing in a particular area, census tables can be prepared showing data for coffee growers in that specific area.

Statistical needs

Source of structural data, including data for economic agricultural accounts and national accounts

2.27. The census of agriculture has an important role in compiling national accounts, together with other current economic data. It refers basically to the following aspects:

- It provides information to define the structural components of the national accounts and the economic accounts for agriculture. Data on infrastructure and investment in agriculture provide parameters for estimating the gross capital formation account. Data on agricultural employment contribute to measuring the value added by agriculture in total gross domestic product (GDP). Land use data, together with data on livestock, crop area and aquaculture, support adjustments in production estimates.
- Census information is one of the main inputs for developing the *System of Environmental Economic Accounting 2012-Central Framework* (SEEA 2012) ([UN et al., 2014](#)).

⁴ [UN \(2025d\)](#) emphasizes that sex and gender are different concepts, although the two are often used interchangeably. Sex is a demographic item that is a biological attribute whereby persons are traditionally classified as either male or female, while gender is a social construct that refers to the roles, behaviours, activities, and attributes that a particular society associates with being a man or a woman. See paragraph 7.1.11 in Chapter 7.

- Proper coordination between the census of agriculture and the economic census allows the establishment of the base year for national accounts. It is one of the important inputs for developing the input–output matrix and for compiling the supply-use sheets.
- In some countries, the agricultural census may be the only data source on the contribution of subsistence agriculture to the national accounts and the estimation of the non-observed economy in the agricultural sector.

Holding-level data

2.28. The census of agriculture involves the collection of data at the individual holding level. It provides fundamental data on the organizational structure of agricultural holdings, such as the number of farms and farm size, land use, land tenure, livestock numbers and the use of machinery, as well as the number of holdings with each crop and livestock species. Structural information provided by the census has a wide range of uses, which are examined in this chapter.

2.29. Holding-level census data collected for every holding in the target population allow statistics at the smallest administrative level. Further to the total area of crops planted, an agricultural census would show, for example, the number of holdings with each crop or the distribution of crop area and the average crop area planted, as well as cross-tabulations with other items, such as planted areas classified by type of land tenure or use of irrigation. An agricultural census can also provide data for any specific geographic area, even non-standard groupings. These aspects greatly enhance the usefulness of holding-level data from the agricultural census.

Advantage over the reporting system

2.30. The census of agriculture has a key role in providing quality data for the statistical needs of the agricultural sector. Some countries do not regularly implement neither censuses of agriculture nor a programme of agricultural surveys as part of a multiyear programme of statistical activities, and instead, these countries compile agricultural statistics based only on reports from field officials (reporting system). This system of data collection is cheap and easy, but data quality often suffers because of poor reporting and the lack of sound and standard statistical concepts and procedures. Furthermore, measurement errors cannot be easily quantified. In these circumstances, a census of agriculture can be invaluable for providing a statistically sound benchmark source of agricultural statistics and a sample frame for agricultural surveys.

2.31. Another limitation of a reporting system based on field officials, when not supported by agricultural censuses and regular sample surveys, is that aggregated data are typically forwarded through successive administrative levels. As a result, the only available data – for example, on crop area – may be limited to provincial or district totals. This often means that data are not available at the desired administrative levels across the country. Holding-level data from the agricultural census support proper planning and implementation of sample surveys of agricultural holdings, thereby addressing the limitations of relying solely on a reporting system.

Benchmarking data for agricultural statistics

2.32. A decennial agricultural census cannot be used as a source of current agricultural statistics because it does not provide data frequently enough. However, the agricultural census can provide a reliable benchmark for improving current crop and livestock statistics.

2.33. For crops, the agricultural census usually provides the most reliable data available on the area of each crop at each administrative level for the census reference year. This is especially the case for minor crops, for which the current statistics are often lacking. The census data could provide a base for estimating crop area and production in the following years. For example, the current crop area could be obtained by estimating the change in the crop area since the census reference year. Census data can provide benchmark figures for current statistics on permanent crops, especially for trees not grown in compact plantations. Data on the number of productive and non-productive trees can be used to project future production trends.

2.34. Current livestock statistics are often weak because of the lack of data on herd structures. The agricultural census can help in this regard. Census data on livestock numbers by age, sex and purpose,

together with data from other sources on the population dynamics of livestock herds, such as take-off and reproductive rates, can provide a base for projecting livestock numbers in future years for use in estimating milk and meat production.

2.35. Often, countries find it difficult to reconcile the current agricultural statistics obtained from sample surveys or administrative collections with crop or livestock data from the agricultural census. Sometimes, there are good methodological reasons for differences in the statistics. The geographic area covered by either collection may be different, for example, when urban areas are being excluded. Certain types of holdings, such as small holdings, may be omitted from one or the other collection. Concepts and definitions may be different – for example, in the treatment of mixed cropping. There could be inconsistencies in the reference periods or in the definition of crop seasons. If sampling is involved, the sample results are subject to sampling errors in addition to the non-sampling errors that are also present in a complete enumeration. Countries should seek to quantify these and any other statistical factors to explain the reasons for discrepancies in the data.

2.36. In the end, discrepancies between data from the agricultural census and the current statistics may come down to differences in the data collection methodologies and the quality of data associated with each data source. This especially applies in places where the current agricultural statistics are based on administrative reports. Often, an agricultural census provides the only source of statistically sound data, and countries should take advantage of the opportunity provided by the census to improve the current agricultural statistics. In such cases, discrepancies should be resolved by prioritizing census data.

Frames for agricultural statistics surveys

2.37. One of the important aims of the census of agriculture is to provide sampling frames. A sampling frame is a list of units to be sampled. The census can serve this purpose in two ways:

- Providing frames for each of the surveys in the agricultural survey programme.
- Providing information for building the master sampling frame (MSF).

2.38. The most common sampling frames used in agricultural surveys are lists of holdings (which may be household-based), often supplemented by lists of land areas – such as enumeration areas (EAs) – and additional materials, including maps or satellite imagery. These frames should include auxiliary information, such as area of holding, number of livestock and type of land tenure, as well as information at other levels – for example, the number of holdings or livestock within an enumeration area – to support improved sampling design. Auxiliary information is essential for stratification and calibration at the estimation stage. Target populations for agricultural surveys are determined by applying stratification criteria to the agricultural census frame. In addition, the census, through complete enumeration, provides a frame for rare crops or livestock species.

2.39. Existing sampling frames need to be updated, and censuses like the population and the agricultural census are crucial in bringing them up to date at the point in time of the agricultural census.

2.40. The *Global Strategy to Improve Agricultural and Rural Statistics* advocates for the building of an MSF ([FAO, 2015b](#)), which is a general-purpose sampling frame created from a population and housing census and/or an agricultural census, for use in selecting samples for different surveys or different rounds of a periodic survey. The frame is usually maintained by the national statistical office and is updated on an ongoing basis so that it is available for any survey carried out at any time.

2.41. An MSF is “a frame that enables selection of different samples (including from different sampling designs) for specific purposes: agricultural surveys, household surveys and farm management surveys. The MSF’s distinguishing feature is that it enables samples to be drawn for several different surveys or different rounds of the same survey, which makes it possible to avoid building an ad hoc frame for each survey. In the context of the *Global Strategy to Improve Agricultural and Rural Statistics*, MSF is a frame – or a combination of frames – that covers the population of interest in its entirety, and that enables the linkage of the farm (holding) as an economic unit to the household as a social unit, and both of these to the land as an environmental unit. MSFs are designed to enable the integration of agriculture into the national statistical system by establishing a closer link between results from different statistical processes and units ([FAO, 2015b](#))

The statistical farm register

2.42. Another important aim of the agricultural census is being a first step for establishing a statistical farm register. A statistical farm register allows the dissemination of information on the basic structure of agricultural holdings, the selection of stratified or simple samples of agricultural holdings to be included in structural or sectoral surveys. When updated regularly, it enables the analysis of historical trends in the structure of farms. It could also constitute the basis for agricultural censuses if the censuses are based on registers in the future. Farm registers can also be used as an element of an MSF (see 2.37–2.41 and [FAO, 2015b](#)).

2.43. Special consideration must be given to ensuring data confidentiality. Statistical data are protected by law, whereas data from other sources may not be. Data contained in the statistical farm register must be treated as statistical data, as they originate from the agricultural census; therefore, specific measures must be in place to safeguard confidentiality. The confidential nature of the statistical farm register may limit its sharing with other government entities – for example, between the national statistical office (NSO) and the ministry of agriculture.

2.44. Maintaining and updating statistical farm registers is a major concern, as they can quickly become outdated. The updating process must account for changes such as the creation or dissolution of holdings; the development of new agricultural land; land abandonment; urban expansion; and changes in the holder – for instance, if land is sold or rented (fully or partially) or if the holder dies and the property is divided among heirs.

2.45. Statistical farm registers generally contain information such as the name and address of the holder and the holding, sex of the holder, total area of the holding, main land uses and types of livestock kept. Accordingly, the updating process should provide for the regular revision of all such information, as established by the census. Maintaining the register requires input from several administrative and statistical sources – including tax records, cadastral data, farmers' association directories, population census records, economic census data and regular agricultural production surveys – each of which has its own identification key. Ideally, all sources would use the same identification key, but in practice it is necessary to establish a link between the various identification systems. A decision on establishing a statistical farm register from the census – and on the updating procedure – must be taken early in the census planning process. If the census is to serve this purpose, the census forms must include fields for relevant identification keys, such as cadastral parcel numbers or tax codes.

Data on structure of agriculture in the small administrative units

2.46. The complete enumeration provided by the census enables the collection of structural information for small administrative units like districts, municipalities, villages, etc. The census is usually the unique opportunity to reach such a small level of disaggregation of structural data. Such data cannot be provided from sample surveys because of high sampling errors or because no sample is selected in these small administrative units. Furthermore, data from the census of agriculture can be used to apply small area estimation techniques to agricultural sample surveys to obtain better estimates at subnational levels (see paragraph 2.54).

2.47. On the other hand, special care must be taken to avoid disclosure of personal information in such units. For example, a large farm or a holding raising a special species of animal or a specific crop could be easily identified in a small administrative unit. Each country must put special care into the selection of items to be presented at this level of disaggregation. As discussed in Chapter 9, special attention is given to data confidentiality and disclosure control in the tabulation of agricultural census results.

2.48. The borders of each small administrative unit must be clearly identified and compatible with administrative subdivisions from other sources. All land in each small administrative unit needs to be unambiguously geo-referenced.

Data on rare events

2.49. An important strength of a full-coverage census of agriculture is that it allows detailed tabulations in line with high user requirements, including data for small administrative units and information on rare events, such as emerging crops, rare crops and species of livestock. This may be of significant or

increasing economic importance, especially for some regions or subpopulations of agricultural holdings. Rare events are those for which reliable data cannot be obtained through sample surveys due to their infrequent occurrence.

2.50. In Chapter 1 of the present programme, the provision of data on rare events is incorporated as a basic census objective. Rare events, as defined, are increasingly gaining economic and research importance thanks to new technologies and globalization that increase the cultivation of new varieties and the breeding of non-traditional animals in the country.

2.51. Rare events should not be confused with non-significant items, which are also rare, but are of no significance and are not to be collected either by sample surveys or by the censuses.

Integrating census data with geospatial data

2.52. When holdings are georeferenced, census data can be linked to geospatial data and available Geographic Information System (GIS) databases – a feature that is extremely valuable and often in high demand by policymakers and other users. This linkage allows for the analysis of spatial patterns related to the implementation of policies and supports the identification of areas where government interventions or agribusiness opportunities may be planned. It also enables innovative analyses. For example, linking census data to a water resources database could allow users to examine the environmental implications of farmers' use of irrigation and fertilizers. Granular census data support cross-comparisons at the lowest geographical levels (see paragraphs 5.55–5.60). The linkage also makes it possible to map the distribution of holding types and other holding characteristics across agroecological regions.

2.53. Another advantage of integrating census and spatial data is the ability to establish a system for producing national, wall-to-wall crop type maps. Timely, accurate and granular crop type maps support a range of applications that increase the utility of the census and enhance its overall impact on the quality of national agricultural statistics. Using census data as a baseline, these maps can be applied in subsequent years during the inter-censal period – for example, to produce crop area indicators (see paragraph 5.67).

Using census data for Small Area Estimation

2.54. Information collected from national agricultural surveys often allows for estimation only at higher administrative levels, while direct estimates of agricultural statistics at subnational or local levels may lack adequate precision. When policymakers require estimates for local areas, small area estimation (SAE) techniques can be applied to produce more precise estimators. SAE involves identifying “common variables” related to a target indicator – for example, crop areas – that are available in both survey and census data, and applying a probabilistic model using those variables as predictors. This approach addresses the limitations of sample surveys by “borrowing strength” from census data to improve the precision of estimates for small areas.

2.55. [FAO \(2022a\)](#) illustrates the use of SAE to produce disaggregated estimates of SDG indicator 5.a.1 by sex and at the granular subnational level, using a model-based technique to integrate a household or agricultural survey measuring the indicator with census microdata to generate estimates of higher quality.

Relevant international initiatives

Global Strategy to Improve Agricultural and Rural Statistics

2.56. The WCA 2020 reported that the *Global Strategy to Improve Agricultural and Rural Statistics* ([FAO, 2015b](#)) began implementation in 2012 to support countries in adequately integrating agricultural statistics into their National Strategies for the Development of Statistics (NSDS). Endorsed by the UNSC in 2010 for global implementation, the *Global Strategy to Improve Agricultural and Rural Statistics* was designed as a 15-year, multiphase initiative to provide “a framework for national and international statistical systems enabling developing countries to produce, and to apply, the basic data and information needed in the 21st century”.

2.57. During the first phase of its implementation (2012–2018), the *Global Strategy to Improve Agricultural and Rural Statistics* was based on three pillars outputs produced through three technical components: Methodological Research, Technical Assistance and Training. The guidelines, handbooks and training materials developed during this phase are available at [FAO \(2025c\)](#). The census of agriculture contributes to the three pillars as follows:

- A minimum set of core data: the agricultural census contributes to many of the minimum set of core data, and it is specifically important for countries without an established and well-functioning annual survey programme. In the absence of an annual survey programme, the census can provide about a third of the minimum set of core data in the year of the census. In addition, the census can provide a frame for specialized surveys for more than half of the minimum set of core data.
- A master sample frame: the census of agriculture is one of the main data sources for building the master sample frame. This master frame facilitates the integration of the census with the annual agricultural and rural survey programme. This pillar encouraged the design of a SPARS mainstreamed into the NSDS for the integration of the agricultural census and surveys in the agricultural statistical system, with the census at the core.
- Capacity building: the planning and implementation of the census involves comprehensive capacity-building activities, which can significantly contribute to the overall goal of strengthening capacity in agricultural statistics.

2.58. The second phase of the *Global Strategy to Improve Agricultural and Rural Statistics* (2020–2025), starting in 2021, focus on the application of methodologies and approaches developed in the framework of the first phase and strengthening the statistical capacities of countries through the provision of training and technical assistance at national, regional and global level. The work of the *Global Strategy to Improve Agricultural and Rural Statistics* is interlinked with the activities of the “50x2030 Initiative to close the agricultural data gap” ([FAO, 2025a](#)), aimed at collecting data in 50 low income and lower middle-income countries by 2030.

2.59. An important methodological development under pillar 2 was the elaboration of an Agriculture Integrated Survey (AGRISurvey) methodology for collection of relevant agricultural and rural data on a regular basis. AGRISurvey is a modular survey programme conducted on an annual basis during the inter-censal period. It consists of one core module and three rotating modules: “Farm income, labour and productivity”, “Production methods and environment”, and “Machinery, equipment and assets” ([FAO 2025a](#)).

The 50x2030 Initiative to close the agricultural data gap

2.60. The 50x2030 Initiative is a multipartner program launched in 2018 that seeks to bridge the global agricultural data gap by transforming country data systems in 50 low and lower-middle-income countries, mainly in Africa, by 2030. This initiative focuses on improving country-level rural and agricultural data by implementing an improved AGRISurvey methodology (see above), using the census of agriculture as the frame.

2.61. The initiative also supports the countries’ production of four priority indicators, three from SDG 2, namely 2.3.1 (labour productivity), 2.3.2 (small holder income), 2.4.1 (land under sustainable production), and one from SDG 5, 5.a.1 (women’s ownership of agricultural land); and three additional SDG indicators: 1.4.2 (land tenure rights), 12.3.1 (food loss index) and 1.5.2 (economic loss attributed to disasters).

2.62. Low and lower-middle-income countries benefiting from the initiative are those expressing demand and showing leadership. Partner countries are required to contribute resources to their chosen survey programmes, with the view of assuming financial and technical responsibility for the survey programmes in five to eight years. More information about the initiative is available here on the website of the initiative (*50x2030 Initiative*, n.d.)

The Cape Town Global Action Plan for Sustainable Development Data

2.63. The Cape Town Global Action Plan for Sustainable Development Data (CTGAP) launched in 2017, provides a framework for planning and implementing the statistical capacity-building activities needed to achieve the scope and intent of the 2030 Agenda ([UNSC, 2017](#)). The global action plan underpins the importance of reliable agricultural statistics for the assessment and monitoring of progress towards the 2030 SDGs.

2.64. The CTGAP proposes six strategic areas, each associated with several objectives and related implementation actions:

- Strategic area 1: Coordination and strategic leadership on data for sustainable development.
- Strategic area 2: Innovation and modernization of national statistical systems.
- Strategic area 3: Strengthening of basic statistical activities and programmes, with a particular focus on addressing the monitoring needs of the 2030 Agenda.
- Strategic area 4: Dissemination and use of sustainable development data.
- Strategic area 5: Multistakeholder partnerships for sustainable development data.
- Strategic area 6: Mobilize resources and coordinate efforts for statistical capacity building.

2.65. As an integral part of the national statistical system, the census of agriculture mainly contributes to strategic areas 2 and 3:

- Under strategic area 2, the census of agriculture promotes the use of new and emerging technologies in data collection, data processing, dissemination, and analysis and the use of data from other sources (e.g. administrative registers and geospatial data).
- Under strategic area 3, the regular implementation of the census of agriculture supports the monitoring needs of the 2030 Agenda (see next section) and provides the sampling frame for relevant agricultural surveys as an integral part of integrated census and survey systems.

The 2030 Agenda and the Sustainable Development Goals

2.66. The 2030 Agenda for Sustainable Development, adopted in 2015, proposed 17 SDGs, each with its own set of targets and indicators. The work of FAO supports many of the goals, in particular SDG 2 – “End hunger, achieve food security and improved nutrition, and promote sustainable agriculture”. The indicators used to assess progress towards achieving various SDGs are derived mainly from surveys. While the census of agriculture is not considered a primary data source for tracking SDGs, it can play a supportive role in the development of indicators for SDG 2 and SDG 5 (“Achieve gender equality and empower all women and girls”) in the absence of relevant household surveys and administrative sources.

2.67. While the SDG indicators are only valid until 2030, it is important to recognize that the contribution of the census of agriculture may remain relevant beyond the 2030 Agenda, when a new sustainable development plan should be agreed with possibly a similar set of indicators. Specifically, the census can provide partial data to monitor SDG target 5.a addressing ownership or secure rights over agricultural land ([FAO, 2017a](#)), and SDG target 2.3 relating to the productivity and income of small holders.⁵ More specifically, the census of agriculture can provide some data for several SDG indicators:

- 2.3.1: Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size;
- 2.3.2: Average income of small-scale food producers, by sex and Indigenous status;
- 5.a.1.a: Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and
- 5.a.1.b: Share of women among owners or rights bearers of agricultural land, by type of tenure.

2.68. Furthermore, the census of agriculture supports the statistical system that monitors the SDGs and provides the sampling frame for the agricultural survey programme and a benchmark for the national agricultural statistical system. Also, as mentioned in paragraphs 2.54 and 2.55, agricultural censuses can

⁵ Agricultural censuses do not collect information on agricultural production, income and detailed labour use required for SDGs 2.3.1 and 2.3.2 (see Annex 11).

provide data to improve estimates in small areas through models adjusted using SAE techniques.

2.69. Surveys and administrative sources are the preferred data source to regularly monitor the progress in achieving the various SDG indicators. In contrast, censuses of agriculture are not considered a primary source due to several reasons. Censuses are conducted usually once every ten years, which limits their ability to closely track progress on the indicators. Additionally, the census coverage is restricted to structural elements of agriculture, which makes it inappropriate for estimating all needed indicators.

2.70. However, in the absence of regular household surveys and administrative sources, some countries have turned to the census of agriculture to include sample modules to collect some data to estimate SDG indicators, such as SDG 2.3.1, 2.3.2 and 5.a.1. Annex 11 discusses how the agricultural census could provide partial data for these indicators. Therefore, the use of additional sources of data, such as household surveys and agricultural surveys, is strongly recommended.

DRAFT

CHAPTER 3 RELATIONSHIP TO OTHER CENSUSES

This chapter highlights the relationships between the agricultural census and other data collection operations within an integrated statistical system. It discusses approaches to enhance census data collection: first, by using the population and housing census to gather agricultural data to help meet demand; and second, by coordinating with and linking to related censuses – specifically, the aquaculture census, the economic census, and forestry and fishing modules.

Introduction

3.1 In the WCA 2030, as in previous programmes, emphasis is placed on coordinating the census of agriculture with other censuses. This chapter discusses the ways in which such coordination can be achieved. It is not possible, however, to provide a single set of recommendations applicable to all countries, as national circumstances differ. The approach adopted will depend on factors such as the timing of censuses, costs, the degree of overlap between operations, data collection considerations, organizational arrangements and existing coordination mechanisms. Nevertheless, due importance should be attached to the use of international standard concepts, definitions and classifications.

A. Relationship with the population and housing census

3.2 The population and housing census is one of the most important statistical exercises carried out by a country, normally every ten years. In an integrated statistical system, the link between the population and housing census and the agricultural census is particularly strong when households are engaged in agricultural activities. It is therefore useful to explore ways of strengthening the relationship between the two censuses.

3.3 The WCA 2030 continues the trajectory initiated by the WCA 2010, promoting a more robust linkage between population and housing censuses and agricultural censuses. Several countries embraced this approach during the WCA 2020. This stems from the recognition of the pivotal role played by a coordinated and integrated statistical system, where these two significant statistical activities serve as the main pillars of the entire system. Additional guidance on the relationship between these two censuses is available in publications such as the *Guidelines for Linking Population and Housing Censuses with Agricultural Censuses* (FAO and UNFPA, 2012), and *Principles and Recommendations for Population and Housing Censuses Revision 4* (UN, 2025d).

3.4 Linking population and housing census data with agricultural census data offers numerous advantages. Such linkage can significantly enhance the analytical value of both datasets and generate cost savings in data collection. As many demographic and activity status items collected in the population and housing census overlap with those in the agricultural census, establishing a connection between the two eliminates the need for duplication. This approach also enables the production of comprehensive cross-tabulations without redundant data collection.

Agriculture in the household sector

3.5 Linking the agricultural census with the population and housing census is particularly relevant in countries where households and agricultural holdings are closely related, as most agricultural production activities take place within the household sector – a situation common in many developing countries. At the operational level, such linkage is most suitable where both censuses are conducted as household enquiries. This creates opportunities for coordination that can reduce costs for the national statistical system and enhance the value of agricultural census data. However, because the population and housing census covers only households and not enterprises, the linkage applies exclusively to agricultural holdings in the household sector. Holdings in the non-household sector must therefore be addressed separately.

Statistical units in the agricultural and population censuses

3.6 The statistical unit of the census of agriculture is the agricultural holding, defined as an economic unit of agricultural production under single management, comprising all livestock kept and all land used

wholly or partly for agricultural production, regardless of title, legal form or size (see paragraphs 4.2–4.3). By contrast, the primary statistical unit of the population census is the household. The unit common to both censuses is therefore the household engaged in own-account agricultural activities. This linkage is particularly relevant in many developing countries where most agricultural production takes place within the household sector. In most cases, there is only one agricultural holding per household, and this one-to-one correspondence enables the linking of the two censuses.

3.7 There are instances in which a household may operate two or more holdings, or in which two or more households may operate a single holding, but such cases are rare. These situations can be addressed in different ways to match holdings with households (see next paragraph). In practice, countries adopt the approach most appropriate to their context. For example, some countries define the agricultural holding as equivalent to the household to simplify agricultural census field procedures. For further information on the concepts of household and holding, see paragraphs 4.6–4.18.

3.8 The need to link the statistical units in both censuses cannot be overemphasized. The most direct approach is to assign the same identifier to each household in both censuses, which is feasible when the agricultural census is based on a list frame derived from the population and housing census. When there is a one-to-one correspondence between the household and the holding, the matching is straightforward. However, when a holding is managed by multiple households or when one household manages several holdings, linking units can be more complex – particularly if there is a time gap between the two censuses. In such cases, careful attention should be given to determining the identifiers required for matching the data. A unique identifier based on a code that combines variables such as geographical coordinates, identification numbers, names, date of birth and sex can be useful for this purpose. Statistical methods of record linkage can also support the matching process.

Options for coordinating the agricultural, population and housing censuses

3.9 Coordination between the two censuses can take several forms, ranging from aligning operational aspects – such as cartography and enumeration areas – to including key agricultural items in the population and housing census. In the past, data from the population and housing census have been used to identify households engaged in own-account agricultural production by analysing information on each household member's main activity, type of industry and employment status. However, this approach has limitations: it may not capture all persons working in agriculture due to the seasonality of many agricultural activities and the fact that agriculture may not be a person's main activity. *The* FAO and United Nations Population Fund *Guidelines for Linking Population and Housing Censuses with Agricultural Censuses* (FAO and UNFPA, 2012) provide recommendations on basic items that can be included in a population and housing census to identify households engaged in own-account agricultural production, together with examples of country practices. In a few specific cases, data collection for the two censuses has been conducted as a joint field operation, although this is not generally encouraged and is feasible only in countries with extensive experience in merging censuses.

3.10 The coordination between the two censuses can cover:

- Coordinating aspects of the two censuses in terms of:
 - Use of common concepts, definitions and classifications: using common statistical standards to ensure that data from the two sources are consistent and comparable, making it easier to analyse and interpret agricultural census data in relation to population census data;
 - Sharing field materials: using the same EA boundaries, maps, and other field material such a data collection devices;
- Using existing topics from the population census as a starting point for the frame for the household sector of the agricultural census (see paragraphs 3.12 and 3.14);
- Adding screening items in the population and housing census for collecting agricultural data (see paragraphs 3.15 to 3.20);
- An agriculture module in the population and housing census (see paragraphs 3.21 to 3.25)
- The core module of the agricultural census in the population and housing census (see paragraphs 3.26 and 3.27).
- The two censuses as a joint operation in specific circumstances only (see paragraphs 3.28 and

3.29).

3.11 The following table summarizes the main ways of coordinating the agriculture and the population and housing censuses. See Chapter 13 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* (FAO, 2018a) for further discussion and country practices on using the population census for build a frame for the household sector.

Table 3.1. Possible relationships between the population and housing census and agricultural census

Population and housing census (PHC)	Using only the usual PHC topics i) economic activity status; ii) main occupation; and iii) industry of main occupation	With two optional screening topics, as recommended in P&R for PHC Rev. 4 ^a i) Whether the household is engaged in own-account agriculture production, ii) Measure of farm size (land area and number of livestock)	With an agricultural module	With the core module of the AC
	Agricultural census (AC)	A starting point to build a household census frame. It should be followed by a listing operation before the AC	Build an accurate census frame and establishment of thresholds.	Build a census frame, establishment of thresholds, and easing the agricultural census questionnaire burden.
				Build a census frame for the supplementary modules (SMs) in the modular approach and establishment of thresholds. The auxiliary information is used to improve sampling design and expansion factors for the SMs

Notes: ^a UN. 2025d. *Principle and recommendations for population and housing censuses, revision 4*. New York.
Source: Authors' own elaboration.

Using existing topics from the population census

3.12 Some countries use some topics of the economic characteristics of the population and housing census to identify persons involved in own-account agriculture. The population census contains three "core topics" collected directly that are relevant for the census of agriculture:

- (i) Occupation: helps to identify persons working in an agricultural occupation.
- (ii) Status in employment: helps to identify persons who are employers or own-account workers.
- (iii) Industry: helps to identify persons involved in activities such as growing of crops and animal production, according to the most recent revision of the ISIC.

3.13 There are significant limitations to using such narrow topics for constructing the household frame for the census of agriculture (FAO and UNFPA, 2012; UN, 2025d). First, the population census typically collects information on a person's main job or work activity during a short reference period (usually one week prior to the census). This may not capture all persons engaged in agriculture, owing to the seasonal nature of many agricultural activities. Second, agriculture may be a secondary rather than a primary activity for the individual. Third, the population census provides data on all people working in agriculture, including paid employees. However, households comprising only paid employees fall outside the scope of the agricultural census, which focuses on households engaged in own-account agricultural production.

3.14 Therefore, the combination of these three core topics does not yield an accurate or complete list of farm households. However, they may still serve as a starting point for the listing exercise of the agricultural census. This initial household list is useful only if the agricultural census is conducted shortly after the population census; otherwise, the household list quickly becomes outdated and must be updated.

Adding screening items in the population census for collecting agricultural data

3.15 As indicated in *Principles and Recommendations for Population and Housing Censuses, Revision 4* ([UN, 2025d](#)),⁶ countries wishing to build a reliable frame of households involved in own-account agriculture may consider including additional agriculture-related items in their population census to address the limitations mentioned above. Two topics are recommended. The first involves collecting information to determine whether the household engaged in any form of own-account agricultural production (i.e. crop and/or livestock) during the year preceding the population census day. If so, the second topic gathers key data on farm size – such as the land area used for agricultural production and the number of livestock (for the main livestock species) – on the census reference day.

3.16 The first topic is particularly useful for establishing a frame for a subsequent agricultural census and surveys and is therefore recommended and discussed below. The basic screening items recommended for inclusion in the population and housing census are as follows:

Screening items

1: Whether the household is engaged in any form of own-account agriculture production

Reference period: a year before the population census reference day

2: Measure of farm size, such as the land area (or number of plots) used for agricultural production purposes, and the number of livestock (for the main livestock species)

Reference period: population census reference day

3.17 Screening items 1 and 2 constitute the minimum set of agriculture-related items to be included in the population and housing census at the household level. **Item 1** identifies households engaged in own-account agricultural production during the year preceding the census, either at their usual residence or elsewhere. This includes households using land – wholly or partly – for agricultural purposes or raising livestock. As noted in paragraph 3.13, a year-long reference period is necessary to capture seasonal variations, which cannot be adequately reflected using the shorter reference periods applied to other population census topics on economic characteristics. Households with members engaged in agricultural activities solely as paid employees would not qualify. **Item 2** collects information at the household level on the size of the farm – land area or number of plots – used for agriculture, as well as the number of livestock reared (for the main livestock species) on the population census day. This supports the assessment of the extent of a household's agricultural activities and the establishment of an appropriate threshold for inclusion in the census of agriculture (e.g. a minimum size limit).

3.18 By including these two screening items or questions, the following key uses for data collected from the population and housing census are possible:

- Serving as a frame for the household sector of the agricultural census;
- Improving sample design for surveys; and
- Planning the agricultural census fieldwork – for example, providing information on the geographical distribution of households with own-account agricultural production, which can help in organizing enumerator workloads.

3.19 Alternatively, the two screening items may be collected during the pre-census listing phase of the population census to avoid overburdening the questionnaire. This approach has the added advantage of allowing the frame for the census of agriculture to be compiled directly from the listing exercise, without the need to wait for the processing of the population census questionnaire.

3.20 Information on forestry, fishery and aquaculture activities may also be collected through the population and housing census when these activities are of significance at the household level in a given country. Such information can support the preparation of the frame when countries intend to conduct a subsequent agricultural census that extends beyond the scope of agriculture (as discussed in Chapter 5).

⁶ These agriculture topics are presented in [Part 5, Chapter II, Table 5.1, section J; and discussed in Part 5, Chapter IV, section J of UN \(2025d\)](#).

An agriculture module in the population census, ahead of an agricultural census

3.21 Some countries go further and collect more extensive data on agriculture by including an agriculture module in the population and housing census ahead of a census of agriculture. However, this practice may overburden the population and housing census questionnaire and is therefore not recommended. The additional data are generally used to more precisely characterise the frame of households engaged in agricultural activity and to define a threshold for the forthcoming census of agriculture. Module data – such as area of holding, number of livestock and type of land tenure – constitute auxiliary information that can also be used to enhance the sampling design and stratification of agricultural surveys.

3.22 Countries wishing to go beyond the two screening items recommended by FAO and the UN (2025d) by including an agriculture module into the population census could refer to the list below of suggested items.

Suggested items for an agriculture module

- Item 0101: Identification and location of agricultural holding*
- Item 0103: Legal status of agricultural holder (type of holder)*
- Item 0201: Total area of holding*
- Item 0203: Area of holding according to land use types*
- Item 0204: Area of holding according to land tenure types*
- Item 0302: Area of land actually irrigated: fully controlled and partially controlled irrigation*
- Item 0401: Types of temporary crops on the holding*
- Item 0407: Types of permanent crops on the holding and whether in compact plantations*
- Item 0415: Presence of nurseries*
- Item 0417: Presence of cropped land under protective cover*
- Item 0502: Number of animals (for each livestock species)*
- Item 1001: Presence of aquaculture on the holding (if relevant in the country)*
- Item 1101: Presence of woodland on the holding (if relevant in the country)*
- Item 1201: Engagement of household members in fishing activities (if relevant in the country)*

3.23 The suggested items listed above are primarily relevant at the household level. The required household-level information may be collected as part of the main enumeration. As noted above, the screening items may alternatively be included in the pre-census listing phase of the population census to avoid overburdening the questionnaire. In this way, the frame for the census of agriculture can be compiled directly from the listing exercise, without the need to wait for the results of the population census.

3.24 The suggested items mentioned above for the agriculture module in the population and housing census comprise a mix of essential items (see Chapter 6) and selected additional items (see Annex 4) useful for creating frames for relevant types of holdings. Four of the items refer to the “presence of”, implying a yes/no response, while three items are recommended only “if relevant in the country”. These suggested items go beyond the screening items to cover a broader range of data on agriculture in the household sector, which may be used to provide auxiliary information for the census of agriculture.

3.25 If including all the suggested items in the agriculture module is difficult and the country considers that it could jeopardize the quality of the population and housing census, a smaller subset of items could be selected to fit national needs. Approaches for selecting items are further detailed in *Guidelines for Linking Population and Housing Censuses with Agricultural Censuses* (FAO and UNFPA, 2012).

The core module of the agricultural census in the population census

3.26 Some countries – mainly in Africa – that favour the modular approach attach the core module of the agricultural census to the population and housing census and implement the supplementary modules at a later stage, using the core module as the frame for the household sector. The primary reason for adopting this approach is to address the limited resources available for the census of agriculture. As noted above (paragraph 3.9), conducting the two censuses as a joint field operation is not encouraged and is feasible only in a few countries with extensive methodological and field experience.

3.27 As explained in Chapter 5, the core module should include items required to construct the frame for the subsequent sample-based supplementary modules, as well as any essential items needed at the lowest administrative level – for example, to capture data on rare events or to establish a threshold, if applicable, for the supplementary modules. The core module included in the population census should provide the auxiliary information necessary to support the sampling design and stratification of the subsequent sample-based supplementary modules. It should not duplicate items already covered in the population census questionnaire, such as demographic and economic activity status data (e.g. household size, age, sex, occupation).

The two censuses as a joint operation

3.28 A few countries conduct the population and housing census and the agricultural census as a joint field operation. This may take the form of an agriculture module inserted into the population census questionnaire (as in some Pacific Island countries) or two separate questionnaires (as in Canada and Georgia), in order to maintain distinct identities. In both cases, field operations are synchronised to enable the two data collections to be carried out simultaneously by the same enumerators. The inclusion of an agriculture module in the population census questionnaire is preferred in some Pacific Island countries due to the geographic dispersion of atolls, high fieldwork costs and logistical challenges, which make it costly to conduct the two censuses separately. Although conducting the two censuses as a joint field operation is generally not recommended, it has been considered a feasible solution in these contexts.

3.29 Although this approach reduces the cost of data collection and enables an immediate link between household-level data from the population and agricultural censuses, it also presents several challenges. Countries often face administrative difficulties in synchronising the field operations and timing,⁷ of the two censuses, requiring special coordination arrangements to ensure successful implementation. In addition, adequately training field staff to cover all items from both the population and agricultural censuses is demanding – particularly when different government agencies are responsible for each (e.g. the national statistical office and the ministry of agriculture). Several essential items recommended by the WCA may also be excluded to limit the length of the questionnaire. Moreover, agricultural holdings in the non-household sector are not covered by the population census and must be enumerated separately, sometimes with a different reference period. Finally, this approach increases the burden on enumerators and respondents, which may negatively affect data quality.

B. Combining the census of agriculture with the census of aquaculture

3.30 There remains strong demand for structural data on aquaculture, and many countries are interested in linking aquaculture with agriculture by conducting the agricultural and aquacultural censuses together. Aquacultural data may be collected in the agricultural census by including a limited number of items on aquacultural production for agricultural holdings that also engage in aquaculture. Alternatively, in a joint aquaculture and agricultural census, data may be collected from both agricultural and aquacultural holdings, including aquacultural units not associated with agriculture (see Theme 10 in Chapter 7 and Annex 4). This approach, introduced in the World Programme for the Census of Agriculture 2010, continues under the current programme. This section outlines the main issues that countries should consider when undertaking the two censuses jointly. Further guidance is available in the *Guidelines on the Collection of Structural Aquaculture Statistics* (FAO, 1997) and the *Guidelines to Enhance Fisheries and Aquaculture Statistics through a Census Framework* (FAO, 2015c).

Scope of the aquacultural census

3.31 According to ISIC (Rev. 5), agriculture and aquaculture are separate economic activities. Aquacultural production represents activities under ISIC group 032, whereas agricultural production represents activities under groups 011 to 015 (see paragraph 4.26; UN, 2025a). Statistically, the two censuses are separate, but operationally, they can often be combined into a single field enumeration system, particularly in the case of freshwater, inland aquaculture or in the case of integrated aquaculture.

⁷ The timing of the census of agriculture is highly dependent on the agricultural and cropping calendar, according to the agricultural seasons in the country. The census should be undertaken as close as possible to the reference period (see paragraphs 4.37 and 4.45).

Such a joint census is referred to as a “census of agriculture and aquaculture”.

3.32 Aquaculture is the farming of aquatic organisms such as fish, crustaceans, molluscs and plants, as opposed to other forms of aquatic exploitation such as capture fishing. For more information on the definition of aquaculture, see Chapter 7, Theme 10 “Aquaculture”, paragraphs 7.10.3–7.10.6, which also include a clear distinction between aquaculture and capture fishing.

Statistical unit for the aquacultural census

3.33 The statistical unit for the aquacultural census is the **aquacultural holding**, defined in a similar way to an agricultural holding, as follows:

An aquacultural holding is an economic unit of aquacultural production under single management, comprising all aquaculture facilities, regardless of title, legal form or size. Single management may be exercised by an individual or household, jointly by two or more individuals or households, by a clan or tribe, or by a juridical person such as a corporation, cooperative or government agency. The aquaculture facilities of the holding may be located in one or more separate areas or administrative divisions, provided they share the same means of production – such as labour, buildings and machinery.

3.34 Aquaculture facilities include ponds, tanks, raceways, pens, cages, *hapas*, lines and stakes, as well as the area of the water body they occupy for aquacultural production. Rice–cum–fish culture areas and related facilities should also be considered part of aquaculture facilities.

3.35 Agricultural holdings and aquacultural holdings are distinct establishment units operating in different industries under the System of National Accounts (SNA) framework of the ISIC (see Annex 1). However, they may be closely related, as they can form part of the same enterprise. For example, a household may encompass both an agricultural holding and an aquacultural holding. Such holdings may also share inputs such as land, machinery and labour – for example, in rice–cum–fish culture.

Methodology for a census of agriculture and aquaculture

3.36 This section provides a broad outline of the methodology for conducting a joint census of agriculture and aquaculture and discusses the implications of combining the two census operations for item definitions. Information on tabulations for a census of agriculture and aquaculture is provided in Chapter 9.

3.37 The frame for the census of agriculture and aquaculture can be created in various ways:

- Including additional questions in the population census to identify households engaged in own-account agricultural production and/or own-account aquacultural production; and
- Developing a frame of agricultural and/or aquacultural holdings from administrative sources or statistical sources, such as business or statistical registers. This may be applicable to the non-household sector.

3.38 Usually, a combination of frames is used for a census of agriculture and aquaculture. The methodology used for the joint census will depend on the type of frame. If the frame for the household sector is based on the population census, the joint census would be conducted as follows:

- Construct the basic frame of households for the census of agriculture and aquaculture using the list of households enumerated in the population census (if the census of agriculture and aquaculture is conducted soon after the population census), or using updated household lists in population census EAs if the census is conducted at a later time.
- During the census listing operation, ask each household a set of screening questions to identify those engaged in crop, livestock and/or aquacultural production activities. Use this information to identify all agricultural holdings and all aquacultural holdings.

- Add holdings in the non-household sector (e.g. enterprises) and enumerate all agricultural and aquacultural holdings – from both the household and non-household sectors – to collect data for the census of agriculture and aquaculture.

3.39 An important aspect of integrating the agricultural and aquacultural censuses is the use of common items, concepts and definitions across both. Minor adjustments may be required to ensure that certain items apply to both agricultural and aquacultural holdings. For example, the term “agricultural holder” used in Item 0104 “Sex of agricultural holder” and Item 0105 “Age of agricultural holder” could be revised to “Sex of holder” and “Age of holder” to refer to the decision-maker of either an agricultural or aquacultural holding. Similarly, Item 0110 “Main purpose of production of the holding” would need to be amended in the aquacultural census to reflect income derived from aquacultural production.

3.40 For a census covering aquacultural holdings, some changes in the concepts and definitions would be needed in some themes:

- Theme 2: Land. The definition of area of holding includes areas used for aquaculture, including supporting facilities; however, additional aquacultural parcels would need to be defined. These parcels may consist of bodies of water. Special procedures would be required for Item 0205 “Location of parcel” in cases where a parcel is not situated within an administrative division but in the sea. Item 0211 “Use of shifting cultivation” and Item 0212 “Number of years since land cleared” would not be applicable to parcels consisting of bodies of water.
- Theme 3: Irrigation. In a standard agricultural census, the concept of irrigation refers to providing land with water to improve crop production. This concept may be widened to include the provision of water for aquaculture as well.
- Theme 6: Agricultural practices and equipment. As it stands, this category of items refers only to practices used for crop and livestock production. This would need to be expanded to cover aquaculture. Item 0604 should include machinery and equipment used for aquacultural production. Some additional practices specific to aquaculture may also be included.
- Theme 7: Services for agriculture. These items should also cover services for aquaculture. Items 0701, 0702, 0703 and 0704, relating to the use of credit facilities, should include credit for aquacultural purposes. Item 0708 should include insurance for aquaculture activities. Items 0705 and 0706, relating to sources of information and extension services, would also need to cover services for aquaculture.
- Theme 9: Work on the holding. Item 0902, working time on the holding, should include work in connection with aquaculture. Item 0903, relating to employees on the holding, should include labour used for aquacultural production. Item 0905, relating to contract work on the holding, should also include work for aquacultural production.

3.41 The need for data specific to agricultural holdings or to aquacultural holdings should also be considered in developing joint census implementation. For example, in an agricultural/aquacultural practices module, separate data may be needed on machinery used for: (i) only agriculture; (ii) only aquaculture; and (iii) both agriculture and aquaculture. Questionnaires must be carefully designed to ensure that those needs can be met.

3.42 An efficient way of carrying out the agricultural and aquacultural censuses together is through the modular approach. If a country decides to implement the joint census using the modular approach, the core module provides a limited set of key data on the structure of agricultural and aquacultural holdings and a sample-based supplementary aquaculture module provides more detailed data. The items related to basic structural data, such as household size and land use, should be included in the core module.

3.43 The use of a common set of items serving for creating frames for the agricultural and aquacultural censuses may make it possible to conduct the core modules of the two censuses using the same questionnaire.

3.44 The supplementary modules for the census of agriculture and aquaculture should be based on frames provided by the core module. The supplementary modules could be surveys of agricultural holdings, aquacultural holdings, or both agricultural holdings and aquacultural holdings. For example, an aquacultural supplementary module would be based on a frame of aquacultural holdings, whereas a livestock supplementary module might cover both agricultural holdings and some aquacultural holdings.

C. Relationship with economic census

3.45 The agricultural census is a component of the overall economic statistical system based on the SNA and ISIC (see Annex 1). Under SNA, all economic activities in a country are divided into industries, such as agriculture, manufacturing, etc. In designing their national statistical systems, countries usually carry out a series of industry-specific economic censuses or conduct regular economy-wide censuses covering all industries. The agricultural census measures the agricultural industry, and this is usually not covered in the economic census.

3.46 Economic censuses are normally carried out using the “establishment” as the statistical unit (see Annex 1). The definition of the agricultural holding is compatible with the establishment concept, provided that small and medium-sized holdings from the household sector are not excluded. This opens up the possibility of integrating the agricultural census into the economic census programme. This can take several forms:

- Use of common concepts, definitions and classifications. Ensuring that the concepts, definitions and classifications used in the agricultural census are consistent with SNA principles ensures that agricultural census data are consistent with data from other economic censuses and surveys. Countries should give special attention to the use of international statistical standards.
- Use of common frames. Many countries maintain a register of business establishments – including agricultural establishments – for use in economic censuses and surveys. These registers can provide a useful frame for the agricultural census. However, they often cover only the non-household sector (e.g. corporations, cooperatives and establishments with payroll) and are therefore used to supplement the frame of household units derived from the population census. Business registers typically contain basic information on each unit, which can support the planning and implementation of the agricultural census.
- Integrating the agricultural census into existing economic censuses. In some cases, it is possible to incorporate the agricultural census into an existing economy-wide economic census. The modular approach is well suited to this arrangement. One option is to include the core agricultural census module within the existing economic census, with supplementary agricultural census modules carried out as needed, based on the results of the core module.
- Linking data between the agricultural and economic censuses. Coordinating the agricultural and economic censuses can create opportunities to link data across the two. In this context, linking data means matching a specific agricultural holding in the agricultural census to the same unit in the economic census, thereby enabling the use of economic census data in the tabulation and analysis of the agricultural census.

D. Forestry module

3.47 The scope of an agricultural census is defined under ISIC (Rev.5) and falls under groups 011 to 015 (see paragraph 4.26; [UN, 2025a](#)). Forestry is classified as an economic activity under Division 02 of the ISIC and is therefore not covered by the census of agriculture unless the holding also engages in crop or livestock production. Forestry activities fall under ISIC Group 021 (silviculture and other forestry activities), Group 022 (logging), Group 023 (gathering of non-wood forest products) and Group 024 (support services to forestry, including the execution of forestry operations on a fee or contract basis).

3.48 As in previous programmes, the WCA 2030 offers a forestry theme of five additional items (see Theme 11 in Annex 4) for countries wishing to include a module to collect some forestry data, preferably on a sample basis, from agricultural holdings.

3.49 In a few countries, there is demand for data from households with woodland that may be used for

forestry production, resource protection, enhancement of agricultural production, social and cultural purposes, recreation, ecotourism or other uses. Countries wishing to collect data on small-scale forestry and related activities at the household level would need to expand the scope of the agricultural census to include limited forestry data for all households. This would require broadening the statistical unit of the census of agriculture to include households (i.e. non-agricultural holdings) with woodland, regardless of title or legal form, and building a wider frame to cover such units. The expanded agricultural census is not intended to cover forest estates and large-scale commercial forestry operations, which are based on different frames, distinct units of enumeration and combined measurement approaches, including satellite imagery. These units are typically covered through other data collection systems. Table 3.2 outlines a forestry module under the modular approach for both a typical agricultural census and a widened census. It should be noted that the latter is more complex to implement and less cost-effective; therefore, Case A in Table 3.2 is generally preferred.

Table 3.2 A forestry module in the census of agriculture

	A. Typical census of agriculture	B. Widened census of agriculture
Scope	Agricultural holdings	<ul style="list-style-type: none"> • Same as case A, plus • Households (non-agricultural holdings) with woodland
Frame	The same as for the census of agriculture	<ul style="list-style-type: none"> • For agricultural holdings: same as case A • For households (non-agricultural holdings) with woodland: created during the listing phase or population census by asking Item 1101 to all households
Census methodology (modular approach)	<ul style="list-style-type: none"> • Core module: item 1101 • Supplementary forestry module (sample-based): Items 1102 to 1105^a 	<ul style="list-style-type: none"> • For agricultural holdings: same as case A • For households (non-agricultural holdings) with woodland: module to a sample of units from the census frame

Note: ^a Item 1101 corresponds to "Presence of woodland on the holding". For Items 1101 to 1105 see Theme 11, Annex 4.

Source: Author's own elaboration.

E. Fishing module

3.50 As mentioned above, the scope of an agricultural census falls under ISIC groups 011 to 015 ([UN, 2025a](#)) (see paragraph 4.26). Therefore, capture fishing activities, which fall under ISIC Group 031, are classified as separate economic activities and remain outside the scope of the agricultural census. Since WCA 2020, the census programme has included a fishing theme comprising seven additional items (see Theme 12 in Annex 4) for countries that wish to include a module to collect selected fishing data – preferably on a sample basis – from agricultural holdings.

3.51 Despite this, in some countries there is still demand for data on household subsistence fishing. Countries wishing to collect data on small-scale fishing activities at the household level would need to expand the scope of the agricultural census to include limited additional fishing data, collected on a sample basis, for all households. This would require broadening the statistical unit of the census of agriculture to include households (i.e. non-agricultural holdings) engaged solely in own-account fishing activities, and developing a wider frame to cover these units. The expanded agricultural census is not intended to cover large-scale commercial fishing, which relies on separate frames, units of enumeration and methods. These are usually addressed through other data collection systems. Table 3.3 presents a fishing module under the modular approach, for both a typical agricultural census and a widened census. It should be noted that the latter is complex to implement and not cost-effective; therefore, Case A in Table 3.3 is generally preferred. Further guidance is available in the *Guidelines to Enhance Fisheries and Aquaculture Statistics through a Census Framework* ([FAO, 2015c](#)) and *Guidelines to Enhance Fisheries and Aquaculture Statistics through a Household Approach* (FAO, 2017d).

Table 3.3 A fishing module in the census of agriculture

	A. Typical census of agriculture	B. Widened census of agriculture
Scope	Agricultural holdings	<ul style="list-style-type: none"> • Same as case A, plus

		<ul style="list-style-type: none"> • Other households engaged only in own-account fishing activities
Frame	The same as for the census of agriculture	<ul style="list-style-type: none"> • For agricultural holdings: same as case A • For households engaged solely in own-account fishing: created during the listing phase or population census by asking Item 1201^a to all households
Census methodology (modular approach)	1.35 Core module: item 1201 1.36 Supplementary fishing module (sample-based): Items 1202 to 1207 ^a	<ul style="list-style-type: none"> • For agricultural holdings: same as case A • For households engaged solely in own-account fishing: module to a sample of units from the census frame

Note: ^a Item 1201 corresponds to “Engagement of household members in fishing activities”. For Items 1201 to 1207 see Theme 12, Annex 4.

Source: Authors’ own elaboration.

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**PART TWO THE WORLD PROGRAMME FOR THE CENSUS OF AGRICULTURE
2030**

DRAFT

CHAPTER 4 CONCEPTS AND DEFINITIONS

This chapter presents the concepts and definitions to be considered in the development of a census of agriculture. The concepts of agricultural holding and agricultural holder remain unchanged from the previous programme. Other key concepts – including scope, coverage, threshold, census reference period and timing – are also discussed. The main steps involved in planning and conducting an agricultural census are outlined.

Introduction

4.1 This chapter explains key concepts and definitions related to the statistical units used in the agricultural census. The statistical unit for data collection is the agricultural holding – an economic entity under single management, regardless of legal status or size. Agricultural holdings may be operated by individuals, households, corporations, cooperatives, government institutions and other entities. There are two main types of agricultural holdings: household-sector holdings, managed by individuals or families; and non-household-sector holdings, which include units such as enterprises and educational or government institutions. The scope, coverage and timing of the census are also defined.

Statistical unit

4.2 The statistical unit for data collection is the basic unit for which data are collected. In previous agricultural census programmes, the statistical unit used has been the agricultural holding and this is used again in WCA 2030.

The agricultural holding

4.3 The definition of an agricultural holding remains the same as in previous programmes; that is:

“An agricultural holding is an economic unit of agricultural production under single management, comprising all livestock kept and all land used wholly or partly for agricultural production purposes, regardless of title, legal form or size. Single management may be exercised by an individual or household, jointly by two or more individuals or households, by a clan or tribe, or by a juridical person such as a corporation, cooperative or government agency. The holding’s land may consist of one or more parcels, located in one or more separate areas or in one or more territorial or administrative divisions, provided the parcels share the same means of production, such as labour, farm buildings, machinery or draught animals.”

4.4 For information on the relationship between an agricultural holding and the national accounting framework, refer to Annex 1.

4.5 There are two types of agricultural holdings: (i) holdings in the household sector – that is, those operated by household members; and (ii) holdings in the non-household sector, such as corporations, cooperatives, military, educational institutions, prisons, religious organizations and government institutions. In most developing countries, the majority of agricultural production is in the household sector.

The household

4.6 “The concept of ‘household’ is based on the arrangements that a person or a group of persons make to provide themselves with food and other essentials for living. A household may be either: (a) a one-person household, where a person makes provision for their own food and other essentials for living without combining with any other to form a multi-person household; or (b) a multi-person household, which consists of a group of two or more persons living together who make joint provision for food and other essentials for living. Members of such a group may pool their resources, share a common budget, and may be related or unrelated to each other.” ([UN, 2025d, paragraph 2.41](#)).

4.7 A household may occupy an entire dwelling, part of a dwelling or more than one dwelling. There may be more than one household residing within a single dwelling. Some households consist of extended families making common provision for food and may occupy multiple dwellings. In other cases, different family units may live in separate dwellings but share a common head, as in polygamous unions. Some households reside in camps, boarding houses or hotels, or serve as administrative personnel in institutions. Others may be homeless. While the concept of a “family” is often more easily understood than that of a “household”, the two are not the same: a family may include individuals living in other households and in other locations.

4.8 For the household sector, there is typically a one-to-one correspondence between an agricultural holding and a household engaged in own-account agricultural production (whether for sale or own use). In other words, all own-account agricultural production activities carried out by members of a given household are usually undertaken under single management. Managing agricultural production activities often goes hand in hand with making common arrangements for food and other essentials, pooling incomes and operating under a shared household budget. It is uncommon for household members to manage agricultural land or livestock entirely independently while pooling incomes, or conversely, to operate land or livestock as a single unit while maintaining separate household budgets. Even where individual household members exercise a degree of independence in their agricultural activities, the resulting income or produce is generally pooled. While different members of the same household may own land, agricultural operations are typically carried out as a single unit.

4.9 There are two special cases where the agricultural holding and household concepts may diverge:

- If a household comprises two or more units – for example, a married couple living in the same dwelling as their parents – the units may operate land independently. However, as members of the same household, they typically make common arrangements for food and pool incomes.
- In addition to its own agricultural production activities, a household may operate land or keep livestock jointly with another household or group of households. In such cases, two agricultural holding units are associated with the household: (i) the agricultural production activities of the household itself; and (ii) the joint agricultural operations undertaken with the other household(s).

4.10 In the past, some countries have found it challenging to apply the concept of the agricultural holding in its strict sense and have instead defined the agricultural holding as equivalent to a household engaged in own-account agricultural production. In such cases, there is little distinction between an agricultural holding and a household with own-account agricultural production. These countries see several advantages in equating the agricultural holding with the household unit:

- Identifying the holding in the agricultural census is simplified, as it is no longer necessary to determine whether multiple holdings exist within the same household;
- It aligns the concept of the agricultural holding with practices already used in previous agricultural censuses in many countries;
- Using a common statistical unit – the household – facilitates linkage between the agricultural census and the population census;
- It supports more effective analysis of household characteristics; and
- If the scope of the agricultural census is broadened to include households not engaged in own-account agricultural production, the household remains a common unit between agricultural production and non-agricultural households.

4.11 Countries should consider the advantages of defining the agricultural holding unit in the household sector in this manner, taking into account operational considerations and the points outlined above. The definition of the holding (see paragraph 4.3) and the coverage of the agricultural census (see paragraphs 4.29–4.32) should be clearly stated in census dissemination products to support accurate interpretation of the data.

4.12 Care must be taken when defining the statistical unit for the non-household sector. Corporations and government institutions may have complex structures, with different activities carried out by different parts of the organisation. The national accounts concept of the establishment should be applied (see Annex 1), whereby an establishment is an economic unit engaged in a single main production activity and

operating at a single location.

4.13 One challenge with the definition of an agricultural holding is that a single holding may include land parcels located in more than one village, district or province, which can lead to anomalies in census results. The definition of a holding specifies that the various parcels must “share the same means of production, such as labour, farm buildings, machinery or draught animals”. Therefore, land parcels situated hundreds of kilometres apart should not be considered part of the same holding, if they cannot realistically share the same inputs. Countries should review how this definition applies in their local context. Some may choose to define a holding as confined to a single administrative unit, such as a district or province. For tabulation purposes, land area and livestock numbers should be reported under the administrative unit where the holding is located, regardless of where the holder was interviewed.

4.14 The following additional points relate to the identification of an agricultural holding:

- Agricultural holdings may be operated by persons who do not hold any agricultural use rights to the land, except for the right to harvest products from trees grown on it (tree holdings).
- If a member of a cooperative, religious organisation, government agency, clan or tribe is assigned a separate unit for agricultural production – operated under the member’s management and for which the member has general, technical and economic responsibility – that unit constitutes a separate holding.
- Open rangeland, such as land used for communal grazing, is not considered part of the holding. For holdings with access to communal grazing land, their share should not be included in the holding’s area unless a specific portion has been formally allocated – for example, through fencing or another form of boundary demarcation. However, farms using communal land should be identified to enable analysis of their characteristics and their impact on agriculture.

4.15 Normally, an agricultural holding is defined according to whether the unit is an agricultural production unit at the time of the agricultural census. However, there are some special cases for holdings in the household sector.

4.16 If a household sold all its land and livestock during the census reference year, it no longer qualifies as an agricultural production unit and therefore does not represent an agricultural holding. The household operating the land and livestock on the census reference day constitutes the agricultural holding and should report all crop and livestock activities undertaken during the reference year, including those carried out prior to the sale. This principle can be challenging to apply in practice. Linking with land registers can help reconstruct information prior to the change of holder.

4.17 If a household leases land to grow crops in a particular season, but the census is conducted in a different season, the household should still be considered an agricultural holding, even if it is not engaged in agricultural production activities at the time of the census. In such cases, the household should report crop activities undertaken during the reference year in the usual manner.

4.18 In some cases, a household that owns a piece of land may operate it during the summer season and rent it out to another household for cultivation during the winter season. In such instances, the land should be reported as part of the holding area for both households, resulting in double counting. If this practice is common in the country, it should be clearly noted in the tabulations and explained in the metadata report.

Parcel, field and plot

4.19 The agricultural holding is divided into parcels, where a parcel is defined as any piece of land under a single land tenure type (see paragraphs 7.2.38–7.2.47), entirely surrounded by other land, water, roads, forest or other features that are either not part of the holding or part of the holding under a different land tenure type. A parcel may consist of one or more adjacent fields or plots. The concept of a parcel used in the agricultural census may differ from that used in cadastral systems. The reference period for collecting data on parcels is a specific point in time, usually the census reference day.

4.20 A clear distinction should be made between a parcel, a field and a plot. A field is a piece of land within a parcel, separated from the rest of the parcel by easily recognisable demarcation lines, such as paths, cadastral boundaries, fences, waterways or hedges. A field may contain one or more plots. A plot is a part or the whole of a field on which a specific crop or crop mixture is cultivated, or which is left fallow or is awaiting planting.

Agricultural holder

4.21 The agricultural holder is defined as the civil person, group of civil persons or juridical person who makes the key decisions regarding resource use and exercises management control over the operation of the agricultural holding. The holder has technical and economic responsibility for the holding and may either assume all responsibilities directly or delegate the day-to-day management tasks to a manager.

4.22 By definition, the agricultural holding is under single management, exercised by the holder – whether a civil person, group of civil persons or juridical person. The concept of the agricultural holder can be challenging to apply due to complex decision-making processes within the holding. If a single person is responsible for the key decisions on resource use and exercises management control over the agricultural operations, that person should be defined as the holder. In some cases, the holder may be a group of civil persons – either members of the same household (such as a husband and wife) or from different households – referred to as joint holders. A joint holder is defined as a person who, in conjunction with one or more others, makes the key decisions on resource use, bears financial risk and exercises management control over the agricultural operations of the holding. If an analysis of decision-making processes reveals the existence of two distinct agricultural management units, the holding should be divided into two separate agricultural holdings. Where joint holders are present, data should be collected to identify each joint holder and their characteristics, including age, sex, educational attainment, agricultural training and national or ethnic group, to enrich the holding's identification and general profile.

4.23 The agricultural holder in the household sector is often, but not always, the household head. The holder may also engage in other work, and “farmer” may not be their main occupation. A distinction should be made between the agricultural holder and a manager who is not the holder. In the household sector, the manager and the holder are usually the same person. However, when they are not, the manager may be an employee of the holding (a hired manager), who is paid in cash, in kind or both, or may be a non-paid person, such as a family member or other unpaid individual. WCA 2030 introduces a distinction between the holder and the manager (Item 0114). This distinction is important for analysing different forms of holding management. The manager is the person who manages the agricultural holding on behalf of the holder and is responsible for the day-to-day financial and production activities of the holding.

4.24 Countries need to carefully consider how best to collect information on the agricultural holder in the agricultural census. Particular care is required to distinguish between the household head and the agricultural holder, where these are not the same person. Cultural factors often influence who is identified as the household head – for example, the oldest male – even if that person is not actively involved in the household's agricultural operations. A single question such as “Who is the main decision-maker for the holding?” may be insufficient. It may be necessary to ask a series of questions about each household member, their work on the holding and their role in its management. Special attention should be given to ensuring that the role of women is adequately recognised when identifying the agricultural holder. As with all data collection, questionnaires must be carefully designed and tested, and enumerators must be well trained and closely supervised.

Scope of the census of agriculture

4.25 Broadly speaking, an agricultural census aims to measure the structure of the agricultural production industry. The scope of this industry could be interpreted broadly to include not only crop and livestock production, but also forestry, fishing and other food- and agriculture-related activities. However, support activities to agriculture and post-harvest crop activities – such as agroprocessing – fall outside the scope of the agricultural census (see paragraph 4.26). Previous agricultural census programmes have adopted a narrower definition, focusing only on units engaged in the production of crop and livestock products. This approach remains valid for the 2030 round of agricultural censuses. Units engaged solely

in forestry, fishing or aquaculture are not covered, unless they also undertake some crop or livestock production.

4.26 International statistical standards for defining areas of economic activity have been established by ISIC ([UN, 2025a](#)). For more information on ISIC, see Annex 2 and Annex 3. The scope of an agricultural census may be defined under ISIC (Rev.5) (See Annex 2) as follows:

- Group 011: Growing of non-perennial crops
- Group 012: Growing of perennial crops
- Group 013: Plant propagation
- Group 014: Animal production
- Group 015: Mixed farming

4.27 Units merely producing agricultural services, such as agroprocessing and other post-harvest crop activities, fall under ISIC group 016 (see Annex 1) and are generally not included within the scope of the agricultural census. The scope should be clearly stated in the census dissemination products to help in the interpretation of data (see paragraph 4.11).

4.28 However, it is recognized that other activities outside the agricultural production industry, such as aquaculture (ISIC group 032) and forestry (ISIC groups 021–024), are becoming increasingly important in many parts of the world. Since WCA 2010, countries were given the option to conduct an aquaculture census in conjunction with the agricultural census, in cases where there was a need for such data. Having a joint census continues to be a feature in WCA 2030. Further information on the aquaculture census is given in Chapter 3.

Coverage of the census of agriculture

4.29 Ideally, an agricultural census should cover all agricultural activity in a country according to the above ISIC groupings. However, for operational reasons, sometimes countries omit certain areas of the country, such as urban areas, remote areas, areas with security problems or certain types of holdings (e.g. small subsistence holdings; see cut-off threshold below). In some countries, peri-urban agriculture plays an important role in metropolitan areas. Countries should decide on any out-of-coverage areas according to local conditions, making sure that the usefulness of the census is not jeopardized. For example, omitting remote desert regions may result in missing important livestock resources, such as in nomadic areas. Sometimes agricultural activities of the military, schools and/or religious organizations are also omitted, which results in incomplete coverage of the census.

4.30 Usually, it is not possible to cover all agricultural activity in an agricultural census for one reason or another. In planning the agricultural census, countries should be realistic about what can be done within available budgets and staff resources and ensure that what is done is done well.

4.31 It should be recognized that, in an integrated agricultural statistical system, any exclusions from the agricultural census do not just affect the results of the agricultural census, but also the surveys that are conducted based on the frame provided by the agricultural census. Thus, an agricultural production survey based on an agricultural census frame will not cover the census out-of-coverage units, and agricultural production estimates from the survey will be affected accordingly.

4.32 It is very important that countries clearly specify the coverage in the presentation of agricultural census results. When certain geographic areas are excluded or certain holding types are omitted, this should be highlighted in the census dissemination products to help users interpret and analyse the results.

Cut-off threshold

4.33 Many countries apply a minimum size limit for the inclusion of units in the census. This is often justified on the grounds that very small holdings – which are usually numerous – contribute little to total agricultural production, making their inclusion in the agricultural census not cost-effective. However, in

many developing countries, small-scale agriculture makes a significant contribution to household food supplies and is often an important source of supplementary income. In some countries, almost all households engage in own-account agricultural production, such as keeping a few chickens or maintaining a small family or kitchen garden (see paragraph 7.2.29 for more on land used for kitchen gardens). Including small holdings is also important to reflect women's participation in agricultural work (see paragraphs 2.21–2.24). In some cases, holdings that are small in land area may produce high-value crops such as premium cocoa, organic flowers, spices, selected vegetables and truffles.

4.34 Various criteria may be used to establish minimum size limits, such as: area of holding; agricultural area; area of arable land; area of temporary crops; number of livestock; number of livestock over a certain age; quantity of output produced; value of agricultural production; quantity of labour used; and quantity of produce sold. Sometimes, the scope of the agricultural census is limited to commercial agricultural activities, excluding households with a small area of crops used solely for home consumption. Setting a minimum value of agricultural production is difficult to apply, particularly when a large share of the output is for household consumption. Minimum size limits are also often difficult to implement – especially for livestock – where multiple criteria may be needed, involving the number of animals for each species. In all cases, the threshold criteria should be simple, clearly defined and stated in the census report, so that they are well understood by census personnel, respondents and users. Complex thresholds should be avoided. A simple threshold facilitates implementation in the CAPI application used by enumerators and improves the clarity and usability of the census results.

4.35 An alternative to setting minimum size limits is to include all units regardless of size, but to ask only a limited number of questions for small units. This approach is straightforward when – as is often the case – the agricultural census frame is based on a list of households and initial screening questions are used to identify agricultural holdings. In such cases, the following approach may be applied:

- First, ask questions about crops and livestock needed to identify all agricultural production units, regardless of size. Collect some basic information for those units.
- Second, ask some additional questions to identify those agricultural production units above the minimum size limit. Proceed to ask the more detailed questions for those units.

4.36 Because of the contribution of small-scale farming to home food security and total agriculture produce, it is important to have some estimate of its impact. The screening questions mentioned above can also be used to obtain a sampling frame of units below the threshold having some farm activity to allow conducting a sample survey on them. See Chapter 9 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* (FAO, 2018a) and Chapter 4 of the *Global review of agricultural census methodologies and results (2006–2015)* (FAO, 2021a) for more information about thresholds used by countries.

Reference period

4.37 The census has two main reference periods: the census reference year and the **census reference day**. The **census reference year** covers a 12-month period – usually a calendar year or an agricultural year – and generally encompasses the various time reference periods used for non-inventory items. Using the agricultural year can be advantageous, as respondents often think of their activities in seasonal terms and may therefore find it easier to recall information. The census reference day refers to a specific point in time, used for livestock numbers and other inventory items. Exceptions to these standard reference periods may apply. For example, in the case of population dynamics for certain types of livestock herds (Items 0509 to 0513), a reference period of less than 12 months may be appropriate. For Item 0606 (percentage of each major agricultural product sold), any suitable reference period may be used, such as the main harvest or the census reference year.

4.38 In practice, countries may choose to use the “day of enumeration” instead of a fixed census reference day to facilitate data collection. In such cases, the census reference day should be defined as the mid-point of the main enumeration period. Similarly, “the last 12 months” is often used in place of a fixed census reference year; here, the census reference year should correspond to the 12-month period leading up to the mid-point of the enumeration. In some cases, the agricultural census is conducted over

an extended period due to a shortage of enumerators or other field staff. Certain regions may be enumerated at different times of the year to account for seasonal or agricultural conditions. Countries should establish appropriate census reference periods to address these issues. The reference periods used should be clearly indicated in census dissemination products to assist users in interpreting and analysing the results.

Timing of the census of agriculture

4.39 The timing of the agricultural census is of critical importance. The World Programme for the Census of Agriculture 2030 (WCA 2030) covers the ten-year period from 2026 to 2035. Countries are encouraged to conduct at least one agricultural census during this period. However, in contexts where rapid changes in agricultural structure are occurring, countries may opt to carry out two censuses at five-year intervals. When the scope of the census is limited, a five-year interval is more feasible and can provide a reasonably up-to-date frame for interim annual sample surveys. Countries are further encouraged to conduct their agricultural census in 2030 or as close as possible to that year, to support meaningful international comparisons. Nonetheless, the timing of a country's census ultimately depends on several factors, including administrative and financial considerations.

4.40 Countries should particularly consider the timing implications of the population and housing census, especially when coordination between the two censuses is planned. The population and housing census programme recommends that countries conduct their censuses in years ending in "0" or as close as possible to such years. Many countries follow this recommendation.

4.41 There are several advantages to conducting the agricultural census soon after the population and housing census, particularly as agriculture-related data and field materials will still be current. If the population and housing census is used to develop the frame for the agricultural census, it becomes even more important to carry out the agricultural census promptly, to ensure that the frame remains as up to date as possible.

4.42 Another timing consideration is the potential overlap between the census calendar and scheduled political elections. Census coordinators should take into account the timing of upcoming elections when planning census operations. It is advisable to conduct the census sufficiently distant from major elections to avoid conflicts and reduce the risk of misunderstandings that could affect respondent cooperation and data accuracy.

4.43 The timing of the census of agriculture may be affected by unforeseen events, such as the COVID-19 pandemic. Some countries were better able to address the challenges posed by the pandemic, largely due to prior advancements in national statistical systems, the adoption of various information and communications technology (ICT) solutions, and the use of administrative registers as sources of census data. These measures significantly reduced the need for physical contact during key activities, including final fieldwork preparations, training and data collection. E-learning platforms and online courses also played a vital role in training trainers, supervisors and enumerators during lockdowns (see paragraph 5.52 and [Castano, 2020](#)).

4.44 Following a successful and satisfactory census, subsequent censuses should be conducted at regular intervals, unless compelling reasons require otherwise. Consistent census timing improves data comparability, facilitates analysis and supports administrative compliance by ensuring that all stakeholders complete the necessary preparations on time.

4.45 A key issue in many censuses concerns the timing of field operations. A specific feature of the census of agriculture is its strong dependence on the agricultural and cropping calendar. Planning for field operations must consider the timing of agricultural seasons, noting that some countries have more than one cropping season. In addition, certain times of the year may be more suitable for fieldwork due to operational factors such as transport conditions or heavy rainfall. Field operations should be conducted as close as possible to the selected reference period.

4.46 It is advisable to keep the enumeration period as short as possible. Ideally, it should not exceed one month, to minimise errors in certain census items that may arise from variability in events such as

employment in agriculture or livestock movement, even when a precise reference date or period is used.

Content of the agricultural census

4.47 The agricultural census continues to play a key role in collecting structural statistics on the agriculture sector and in providing the baseline and frame for agricultural surveys – including intermediate agricultural structure surveys – as the decennial census alone cannot capture rapid changes in some types of data (e.g. non-structural data such as production, prices and farm labour). It is important to recall that the census should be limited to providing data that cannot be obtained through sample surveys or administrative systems. Its content should focus on structural data and items required for survey frames, rare events, data for small administrative units and benchmarking purposes.

4.48 In addition to the items covered in Chapters 6 and 7, other important data should be included in the census questionnaire. For example, identification keys are necessary to integrate data from other sources and to enable record linkage. Georeferencing of holdings supports fieldwork, facilitates the presentation of results and allows agricultural census data to be linked to relevant GIS databases (see next section). The name of the respondent (Item 0102) is also required for supervisory follow-up during or after fieldwork, and for verifying census coverage through post-enumeration surveys. More broadly, it is essential to recognise that the agricultural census plays a central role in the integration of agriculture and rural statistics, and should therefore collect the items necessary to fulfil that function.

4.49 Some further issues for consideration in deciding on the content of the agricultural census are:

- **The data needs of agricultural policymakers and planners.** The agricultural census should be developed specifically to meet the needs of agricultural policymakers and planners. Data requirements will be different in each country, depending on the policy issues and priorities.
- **The suitability of the census vehicle for the collection of the data required.** An agricultural census is intended to collect structural data and the items included should focus primarily on those types of data. Items requiring in-depth questions, such as cost of production, are best collected in other agricultural surveys.
- **The technical, operational and financial resources available to undertake the census.** Conducting censuses is not only costly but also requires considerable human resources for the development, data collection and data processing. Countries need to balance the need for data against the resources available. The ability to produce timely data is an important issue.
- **The willingness and ability of the public to supply the information required.** Careful attention is required in selecting items and designing questionnaires to ensure that reliable data can be collected from respondents. Some items may be sensitive for cultural or economic reasons – for example, respondents may be reluctant to provide land data due to concerns about potential taxation consequences. In such cases, communication and public information efforts that emphasise the confidentiality and protection of the data are essential.
- **The data collected in previous rounds of the agricultural census.** Collecting the same data as in previous censuses can be valuable for tracking changes in the structure of agriculture over time. However, this applies only to structural items. Non-structural items⁸ should not be carried over automatically from one census to the next without reviewing their continued relevance to current data needs and the suitability of the associated concepts and definitions. Some countries tend to build census questionnaires by accumulating items from previous rounds, a practice that often results in overly lengthy questionnaires, increased respondent burden, unnecessary costs and reduced overall data quality.

⁸ As mentioned in Chapter 1 (Figure 1.1) and paragraph 1.16, non-structural data are fast-changing data (e.g. agricultural production, quantities of agricultural inputs, household income and expenditure, and agricultural prices) that are collected by agricultural sample surveys, reporting systems or other sources.

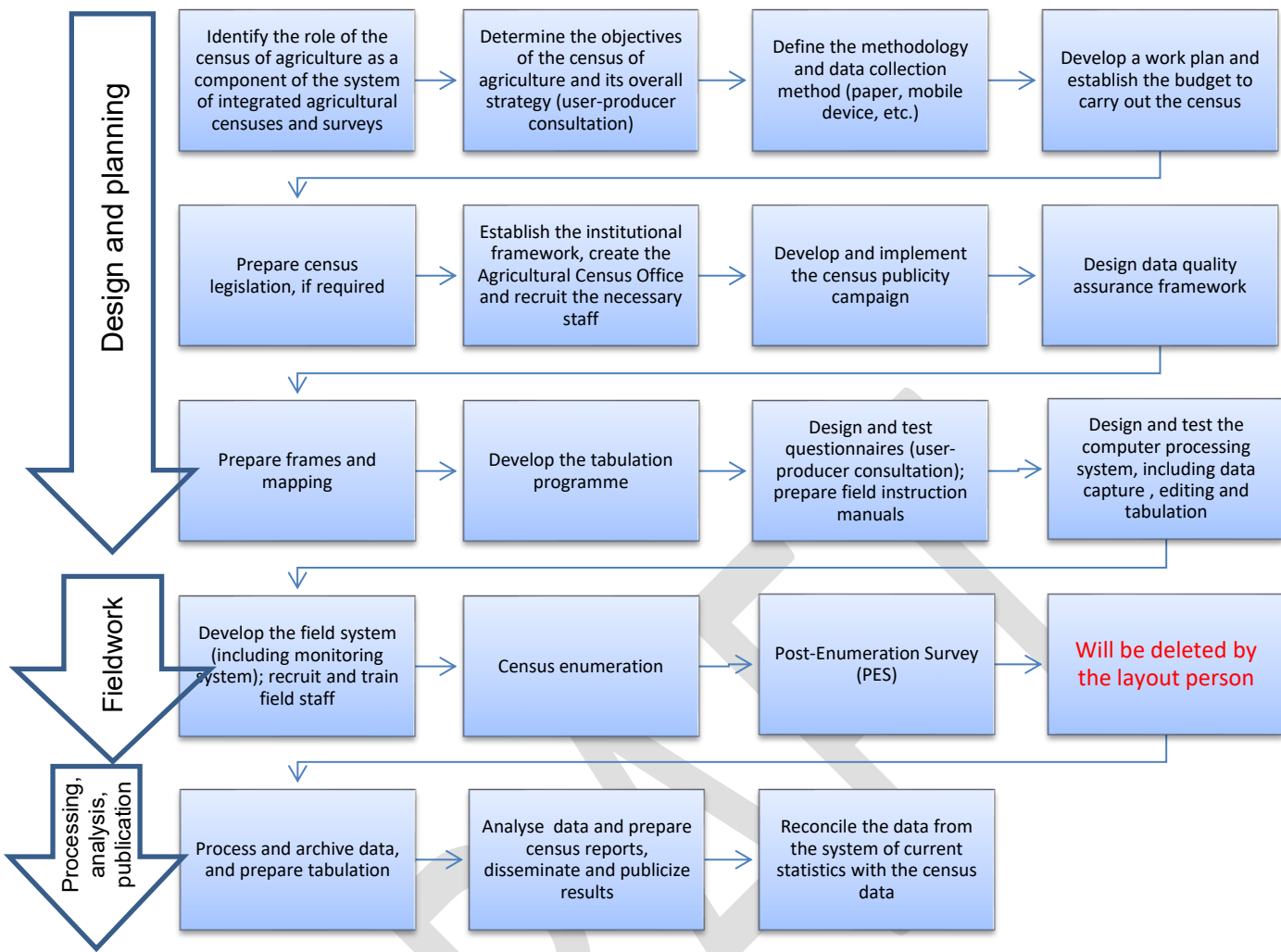
- **The need for data for international comparisons.** The recommended essential items will provide the basis for FAO to make a global assessment of agricultural holdings. FAO recommends that all Member Countries collect these items so that international comparisons can be made.
- **Items available from administrative and other sources.** Some census items may be fully sourced from reliable administrative or other data sources, such as geospatial data, for all or certain groups of respondents. These items may be excluded from the census questionnaire to reduce respondent burden.

Steps in developing the census of agriculture

4.50 Information on how to develop and conduct an agricultural census is discussed in the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* (FAO, 2018a). Figure 4.1 shows the steps in a sequential order, although in practice most steps are implemented simultaneously (in parallel with others). The steps and associated activities are grouped in three phases:

- Phase 1 is the most time-consuming phase and often underestimated by countries in terms of duration and resources. It covers planning of the census, methodology, legal and institutional framework, work plan and budgeting, census frame, tabulation programme, and design and testing of questionnaires, enumeration manuals and data processing systems.
- Phase 2 relates to the preparation of census fieldwork, recruitment of field staff, training, implementation of data collection, and the post-enumeration survey (PES).
- Phase 3 refers to the census data processing and archiving, data analysis, reporting and dissemination, and the reconciliation of discrepancies between current statistics and the new census results.

Figure 4.1 Phases and steps in developing and conducting the census of agriculture



Source: Authors' own elaboration.

CHAPTER 5 METHODOLOGICAL CONSIDERATIONS

This chapter discusses key methodological issues to consider in planning and developing the census of agriculture. A major decision is the choice of approach, whether to conduct a “classical” or a “modular” census, as this has implications for the integrated census and survey programme. Existing data sources should be thoroughly assessed before determining which items to include in the census questionnaire. Registers, administrative records and other statistical sources can provide valuable information. A good frame is essential to the success of the census and may be compiled from existing sources or through a special listing exercise. Often, the most effective solution is a combination of frames that apply common concepts. Combining complete and sample enumeration may offer a cost-effective solution when implementing a modular census. However, the potential loss of detailed data at subnational levels, particularly for the smallest administrative units, must be carefully evaluated when designing the sample. New developments in data collection methods, including the use of technology, should also be taken into account. These methodological issues, along with operational aspects of the census, are addressed in greater detail in the World programme for the census of agriculture 2020. Volume 2 Operational guidelines (FAO, 2018a).

Introduction

5.1 Chapter 1 emphasised that the census of agriculture should be conducted at least once every ten years through complete enumeration, focusing primarily on structural items. In contrast, the inter-censal programme of surveys should use the census frame to collect current non-structural data. A “census” conducted on a sample basis is considered an agriculture structure survey (see paragraph 5.5). FAO recognised that including too many items in a single statistical enquiry could be counterproductive, which led to the introduction of the modular approach in the WCA 2010. It was also acknowledged that many of the items included in the sample-based supplementary modules could be considered non-structural, meaning they change rapidly over time, and may therefore be better suited to the statistical survey programme. The WCA 2020 highlighted this by referring to such non-structural items as additional items, which do not require estimates at the smallest administrative level and may be collected on a sample basis. However, countries may exercise flexibility in including additional items considered important in the national context or for the development of sampling frames.

5.2 When deciding whether to include non-structural items in the census and whether to adopt the modular approach, consideration should be given to the national statistical survey programme to assess whether it provides a more appropriate means of collecting the required information. Countries with a well-established agricultural survey programme recognise that fast-changing non-structural items are best collected through the survey programme. Where non-structural items are more appropriately collected using a household frame, they are included in the household survey programme.

5.3 The WCA 2030 retains the principle that a wide range of items can be covered, while recognising that the census of agriculture can be implemented in various ways. However, the Programme continues to emphasise that the agricultural census should be limited, as far as possible, to structural items. The most important items to be covered through complete enumeration are referred to as essential items (see paragraph 1.24), while all other items are classified as additional.

5.4 For the purposes of this publication, three modalities are discussed, including the two basic methodological approaches: the classical approach and the modular approach, the latter introduced in the WCA 2010. The third modality involves the use of registers in combination with fieldwork data collection. The distinguishing features lie in the design of the three modalities, rather than in whether complete enumeration is combined with sample enumeration. An overview of these three modalities for conducting the census is provided in the following sections. Table 9.1 in Chapter 9 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* (FAO, 2018a) compares the main census methodological approaches.

5.5 Since the inception of the WCA in the 1920s, agricultural censuses have been recommended to follow the traditional statistical approach of complete enumeration, meaning that all agricultural holdings within a country are covered. Complete enumeration allows for the full achievement of census objectives. However, this recommendation has posed significant challenges for some countries, particularly those with underdeveloped agricultural statistical systems, a large number of scattered small-scale holdings, and insufficient resources to fund a complete enumeration. The WCA 1960 introduced the use of sampling methods as a convenient alternative to a full census, and the WCA 2020 referred to such operations as sample-based censuses. In practice, these operations may be more appropriately called **agriculture structure surveys**⁹ rather than censuses for several reasons. Firstly, the WCA defines a census of agriculture as a statistical operation aimed at collecting data on the structure of agriculture by enumerating either the entire country or a substantial portion of it (see paragraph 1.1). Secondly, a census based on complete enumeration of the target population aligns with the objectives outlined in Chapter 1 (see paragraph 1.14), which include the provision of comprehensive data on agricultural structure, including for small administrative units and rare events (see paragraphs 2.49–2.51), as well as the generation of benchmark data and the development of frames for agricultural sample surveys. By contrast, a sample-based operation or agriculture structure survey cannot provide data for every population unit, generate data for the smallest administrative units and rare events, or fully support the creation of adequate survey frames. Nonetheless, combining complete and sample enumeration offers a cost-effective alternative and is discussed further below (see paragraph 5.35).

The classical approach

5.6 The classical approach may be considered a census conducted as a single, one-off operation in which all essential items are recorded. This approach is suitable for countries that have an integrated census and survey programme or that wish to collect additional items at lower administrative levels. It typically uses a single questionnaire that includes all essential items (see paragraph 6.8) and may also include additional items (see paragraph 6.15 and Annex 4) that the country requires at the same low geographical level to generate reliable statistics for small administrative units. However, the questionnaire should not be overburdened with an excessive number of additional items, as this may affect the overall quality of the census. The classical approach should focus on collecting a coherent and manageable set of items. Chapter 10 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* (FAO, 2018a) provides practical details of this approach.

5.7 In a few instances, countries wishing to add items that are not usually covered in the census, resort to a combination of a short and a long questionnaire to reduce costs and burden on the respondents. In this case, the short questionnaire should contain all the essential items recommended by the WCA 2030 and relevant items needed to build the frames for the programme of agricultural surveys. The long questionnaire should encompass additional items to be collected from a sample of holdings (e.g. one every ten holdings or holdings within a sample of enumeration areas)¹⁰ or holdings identified according to specific criteria, for example those above a defined threshold or belonging to a particular population segment. Both the short and long questionnaires are completed during the same field visit and use the same reference period. This approach helps to avoid overloading the census questionnaire with non-essential items that do not require data at the lowest administrative level. Although the long questionnaire is not administered to all holdings, the resulting data are considered part of the census output. The short questionnaire should not be confused with the listing form used during the pre-census stage, which simply identifies holdings as households engaged in own-account agricultural production above a given size threshold. Similarly, the long questionnaire should not be confused with a supplementary module of the modular approach, which is thematic in nature and implemented in a separate field visit following the core module.

⁹ An agriculture structure survey is a sample survey designed to collect structural data for the entire country or for substantial regions of it. Its purpose is to obtain data at regular intervals on the structure of agricultural holdings in order to monitor trends and changes over time. The survey questionnaire is usually similar to a census questionnaire due to the structural nature of the items collected, but it should not be confused with a census.

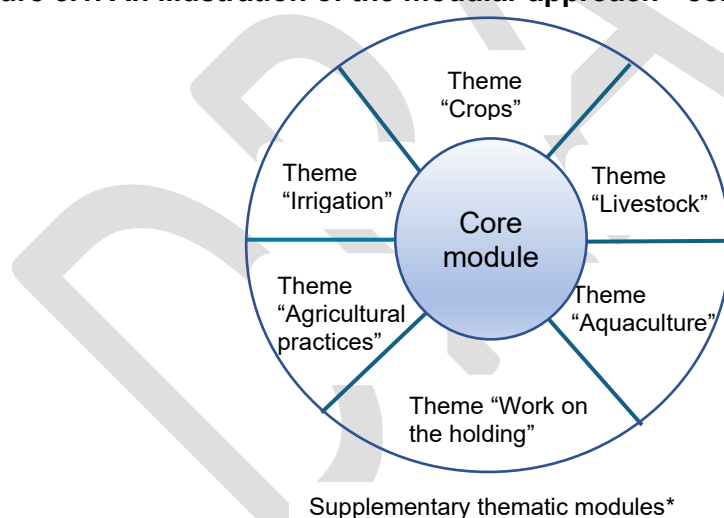
¹⁰ One advantage of the first sampling method, selecting one in every ten holdings, over the second method, which uses a sample of enumeration areas, is that it yields greater sampling precision. This is because clustering effects tend to increase sampling variance when entire enumeration areas are used as sampling units (UN, 2025d).

The modular approach

5.8 The modular approach consists of a clearly defined core module and one or more supplementary thematic modules, with the items collected in the core module used to construct the frame for the sample-based supplementary modules. This approach is suitable for countries that do not have a well-established agricultural survey system. For these countries, the modular approach may serve as a logical first step towards establishing an integrated system of agricultural censuses and surveys. In the absence of a survey programme, this approach enables the collection of a greater range of in-depth data (additional items) in the supplementary modules¹¹ using sampling methods to provide data not required at lower administrative levels. Chapter 11 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* (FAO, 2018a) provides practical details of the modular approach.

5.9 In this approach, the core module should cover all essential items, and its data should be used as frames for the supplementary thematic modules. These supplementary modules are used to collect a wider range of additional items under the same theme from a subset of holdings or a specific target population. Examples of thematic modules include crops, livestock and irrigation (see Figure 5.1). For instance, a livestock module would collect items from holdings that reported livestock in the core module, while an irrigation module would cover only the holdings with irrigation. In some cases, items from related themes can be combined into one module, such as crops and agricultural practices. The core module should be conducted on a complete enumeration basis, while supplementary modules are conducted on a sample basis,¹² usually during a second field visit.¹³ Both core and supplementary modules should be implemented within a short period of time, preferably within one year, to ensure that the frames from the core module remain valid and that all census items share the same reference period. A core module carried out simultaneously with a single supplementary module is considered equivalent to the short-long questionnaire concept and thus follows the classical approach.

Figure 5.1. An illustration of the modular approach - core and supplementary modules



Note: *Sample supplementary thematic modules contain additional items. See Chapter 6 and Annex 4 for additional items under themes crops, livestock, irrigation, agricultural practices, work on the holding, and aquaculture.

Source: Author's own elaboration.

5.10 In the modular approach, the core module includes the relevant items needed to build the frame for the subsequent sample-based supplementary thematic modules, as well as all essential items

¹¹ The supplementary modules correspond to the themes listed in Chapter 6, while additional items are described in Annex 4. For example, a supplementary module on crops could include any of the 13 additional items listed under the theme "crops".

¹² The sample design of each supplementary thematic module is more complex, as it requires screening of the target population, such as holdings with livestock, and the use of stratification. For this reason, supplementary modules are usually carried out during a second field visit.

¹³ The supplementary thematic modules should not be confused with the continuous survey programme. While the former are usually conducted only once after the core module as a single operation, the latter are carried out regularly during the inter-censal period.

recommended at the lowest administrative level. These items are necessary to capture data on rare events, provide benchmark data for current agricultural statistics and establish any thresholds. Accordingly, all essential items and the relevant frame-building items should be collected from all agricultural holdings in the core module.

5.11 The sample-based supplementary thematic modules use the frame generated from the core module to target specific populations. These may include all holdings, holdings above a certain size or subsets of agricultural holdings, such as livestock or crop producers, with or without size thresholds. Supplementary modules are used to collect a broader range of data than in the classical approach. They are usually thematic, covering a subset of holdings, but may also combine multiple themes when the same target population is involved. As the number and scope of supplementary modules are not fixed, the modular approach provides flexibility to collect a wide range of additional items, depending on national needs and available resources.

Implementing the census supplementary modules

5.12 In the modular approach, supplementary modules are implemented for subsets of holdings identified in the core module, where specific variables of interest are collected. The core module is carried out on a complete enumeration basis, while supplementary thematic modules are conducted through sampling. For example, Item 0502 “Number of animals (for each livestock species)”, an essential item in the core module, should be collected for all agricultural holdings. By contrast, additional items such as 0505 “Number of animals per breed category”, 0506 “Number of animals by age and sex” and 0507 “Number of animals according to purpose” could be included in a supplementary livestock module and collected from a sample, such as one in every five holdings reporting livestock.

5.13 Sampling for supplementary modules may be carried out either during the same fieldwork as the core module or, more commonly, during a subsequent visit timed as closely as possible to the core module. This ensures that the frame can be readily used and that the same reference period is maintained for all census items. Conducting sampling at the same time assumes the use of CAPI and offers simplicity and cost savings by avoiding a second visit to selected holdings. By contrast, carrying out sampling in a later visit allows the use of additional information to improve the sampling design before returning to the field.

5.14 When supplementary modules are implemented together with the core module, the sampling design may use systematic sampling, with the CAPI application automatically selecting one holding out of every k holdings from the population of interest, whether all holdings or those with the main characteristic covered by the module. In such cases, a screening variable is required. For example, in an irrigation module, one holding could be sampled out of every k holdings reporting irrigation, based on the screening question in Item 0302 “Area of land actually irrigated: fully controlled and partially controlled irrigation”.

5.15 When supplementary modules are sampled in a subsequent stage or visit, the information collected in the core module can be used for more complex sampling designs. A stratified sampling design could increase the precision of estimates for the parameters in the supplementary module or a design in two or more stages could reduce operational costs (see *World programme for the census of agriculture 2020. Volume 2 Operational guidelines*, [FAO, 2018a](#)).

Use of registers and administrative records as a source of census data

5.16 Registers and other administrative sources may be used for census data, depending on their content and quality. When sufficient information can be obtained from administrative sources, the production of census-type statistics is faster, cheaper and more comprehensive. A good practice is to thoroughly evaluate existing data sources, such as national registers, administrative records and other databases, before deciding which items must be collected directly through the census questionnaire. Maximising the use of these sources reduces respondent burden and improves the overall efficiency of the census operation. The most complete use of registers occurs when all essential census items can be derived from administrative sources.

5.17 In most cases, registers cannot provide all the essential items, therefore the most reasonable approach is to combine data from registers with data from field enumeration. Essentially, the combined methodology makes use of registers relevant to the census, complemented by census/survey data. The use of census/survey data is intended to:

- i. Provide information for census variables that cannot be based reliably on administrative data;
- ii. Check, update and improve, when relevant, the quality of census data derived from administrative sources;
- iii. Provide a linking mechanism in order to bring together different sources; and
- iv. Evaluate the quality of the administrative data sources.

5.18 The combination of administrative records with census/surveys can offer several advantages:

- i. It can be much cheaper than a classical census, with a full field enumeration collecting all census items from the whole population;
- ii. It can reduce the burden on enumerators and respondents;
- iii. It can reduce the non-response rate in cases where information is drawn from registers; and
- iv. It should be possible to correct the census/survey data for different levels of non-response in different population groups.

5.19 The use of administrative records may pose some challenges, including

- i. Access to datasets is difficult or even impossible if the legal background is inadequate;
- ii. It could be very difficult to establish a good cooperation with register owners;
- iii. The cost for the access to the administrative records could be too high;
- iv. Incoherence of concepts, definitions, classification, and reference periods could hamper the use of administrative sources; and
- v. There could be technical problems related to linking data from various data sources.

5.20 Regardless of the census methodology adopted, it is extremely important that a unique primary key variable or identifier is used in all the data sources. The use of a unique identifier is essential in order to link information successfully. Unique identifiers also assist in the detection (and correction as necessary) of identical statistical units (duplicates). Special care must be taken in protecting the confidentiality of sensitive data from registers when the information is used for the census.

5.21 If not all holdings are visited because complete registers are used for some of them, it is important that the registers provide geographical coordinates to map the holdings, their parcels or cadastral plots. For georeferencing, see Chapter 5, and for further details on the use of registers as a source of census data, see Chapter 12 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* ([FAO, 2018a](#)).

Frames for the agricultural census

5.22 In a statistical collection, the frame is the mechanism by which the statistical units to be enumerated are identified, in this case the agricultural holdings. An ideal frame is a list of all agricultural holdings, based on the operational definition adopted by the country, that identifies each unit without omission or duplication and excludes any non-agricultural units. Such a list may be obtained from a population and housing census for the household sector, a farm register, a listing exercise or other sources. The frame for the non-household sector may also be drawn from the farm register, administrative records or other data sources.

5.23 There are two main types of frames for collecting agricultural statistics: the list frame and the area frame. The list frame consists of a list of agricultural holdings, while the area frame consists of land segments. In some cases, a multiple-frame approach is used, in which part of the population is covered by a list frame, such as holdings in the non-household sector including enterprises and other juridical holdings, and the remainder by an area frame, such as holdings in the household sector ([FAO, 2015b](#)). For the census of agriculture, the list frame is the type most commonly used by countries.

5.24 Where a farm register exists, it can serve as a good frame for an agricultural census, provided that (a) it includes all agricultural holdings according to the established definition and (b) it is regularly updated to remove units that cease to operate as holdings and to add new ones.¹⁴ In addition to identification criteria, a farm register usually contains basic information on each unit, such as land area, types of livestock kept and types of crops grown. This information is periodically updated and can be useful for stratification when sampling techniques are applied. Farm registers may be created in different ways. In some cases, they are established during an agricultural census and updated regularly thereafter using various data sources. In other cases, they are established by law as part of an administrative process and updated annually.

5.25 For the non-household sector, such as corporations, cooperatives, the military, educational institutions, prisons, religious organizations and government agencies, frames may exist in the form of records from government regulatory bodies. Most countries maintain a business registration or licensing system, and membership lists from industry associations may also be useful. Where records are outdated or unreliable, frames can be created by asking local officials to provide lists of non-household agricultural units within their areas of responsibility. The community survey (see Chapter 8) also provides an opportunity to request community leaders or administrative representatives to supply lists of non-household and special holdings in the community (see paragraph 8.13).

5.26 One limitation of frames based on farm registers is that they are often established for administrative purposes and may not align with statistical needs. The unit in the register may not correspond to the definition of the agricultural holding used in the census. For example, the register may rely on cadastral or other land records that identify each parcel of land rather than the holding unit. Registers are also usually based on land ownership, which is not always appropriate for an agricultural census, since several members of a household may manage land separately and ownership does not necessarily coincide with management. Similarly, the landowner is not the land operator if the land is rented out. Frames based on business registration or licensing procedures are also problematic, as they reflect what the business is licensed to do rather than its actual activities. Another limitation in using farm registers as frames is incomplete coverage, particularly when farms are not legally required to register.

5.27 Another type of frame for the household sector of an agricultural census can be created from the population and housing census as a one-time exercise, without being maintained as a farm register thereafter (see Chapter 3). In this case, the population and housing census includes additional questions on agriculture to identify households engaged in own-account agricultural production, providing a frame for the agricultural census (see paragraph 3.16). For such a frame to be effective, the agricultural census should be conducted as soon as possible after the population and housing census to ensure that the list of households engaged in own-account agriculture remains current.

5.28 Another consideration with frames based on the population and housing census is the statistical unit. Even if additional questions on agriculture are included in the population and housing census or pre-census listing exercise, the frame would typically identify households engaged in own-account agricultural production, not agricultural holdings.

5.29 Even a list of all households from the population and housing census can provide a useful frame for an agricultural census, by using the following method:

1. Contact each household for the agricultural census;
2. Ask each household about the household's own-account agricultural production activities and the management of agricultural activities in the household, to identify each agricultural holding; and
3. Enumerate all agricultural holdings identified in the household for the agricultural census.

5.30 In all cases where the population and housing census is used to build the frame for agricultural holdings in the household sector, it is essential to apply the definition of the agricultural holding

¹⁴ The difference between a farm register and a statistical farm register lies in their purpose, content, and use. The purpose of the former is primarily administrative. It helps in identifying and managing farms for policy implementation, subsidies, inspections, and extension services. The purpose of the latter is to support the production of agricultural statistics, such as in censuses and surveys. The content covers all data in a farm register plus production volumes, input usage, labour data, machinery, income, etc., and is regularly updated. The data allow sampling, stratification, and statistical inference.

consistently. Where this definition is based on minimum size criteria, such as land area, number of livestock or number of fruit trees, these criteria must be identified at some stage.

5.31 Where a frame of agricultural holdings, households engaged in own-account agricultural production or rural households is not available from an existing farm register or from the population and housing census, it must be constructed as a preparatory activity of the agricultural census. For this purpose, the country is divided into suitable geographical units, or enumeration areas (EAs), covering the entire in-scope national territory. Each EA is then visited to identify all agricultural holding units, either through interviews with local authorities or by visiting each household. As population and housing censuses are usually conducted using EAs as the basic building block, it is often possible for the agricultural census to make use of the same EAs, including maps and other field materials.

5.32 Typically, a combination of frames is used for the agricultural census. Often, the household sector is enumerated based on the EA frame of the population and housing census, whereas a frame of agricultural holdings in the non-household sector is obtained from administrative sources, as explained above.

5.33 Care must be taken in establishing frames for the agricultural census to ensure that all agricultural production units are covered. If agricultural holdings are missing from the frame, they will not be enumerated in the agricultural census and the validity of the census results will be compromised. This is especially important in an integrated agricultural statistical system, as any weaknesses in the agricultural census frame will be reflected in all the surveys that follow. See Chapter 13 of the “Operational Guidelines” ([FAO, 2018a](#)) for more information about census frames.

Flexible enumeration strategies for agricultural censuses

5.34 As emphasised in the introduction to this chapter (see paragraph 5.5), the traditional statistical approach of complete enumeration remains the recommended foundation for agricultural censuses. However, in practice, some countries face significant challenges in implementing full enumeration—particularly where agriculture is dominated by small-scale, household-operated holdings dispersed across vast and often hard-to-reach areas. In such contexts, the logistical and financial demands of complete coverage can be prohibitive, requiring extensive resources for transportation, staffing, infrastructure, and administration.

5.35 To address these constraints while maintaining the integrity and usefulness of census results, the WCA 2030 encourages flexible enumeration strategies that combine complete and sample enumeration in a complementary manner. These strategies allow countries to tailor their census design to national agricultural structures and available resources, ensuring cost-effectiveness without compromising data quality or coverage.

5.36 The discussion on census modalities showed that in some instances complete enumeration can be combined with sampling enumeration to address these practical constraints. First, the classical approach allows the use of short and long questionnaires or forms—where the short form is administered to all holdings (complete enumeration) and the long form to a sample of holdings (see paragraph 5.7). Second, the modular approach allows to use complete enumeration for collecting the set of essential items recommended by the WCA 2030 in the core module, while collecting additional information in supplementary modules through sample enumeration.

5.37 In some developing countries, it may not be possible to cover all agricultural activity in an agricultural census for one reason or another. In planning the agricultural census, countries should be realistic about what can be done within available budgets and staff resources and ensure that what is done is done well. The guiding principle is to design and implement a census strategy that balances the need to meet overall census objectives with the practical limitations of available resources. This can be achieved by applying appropriate statistical methods to ensure cost-effectiveness. WCA 2020 (Chapter 4) outlined several alternative strategies that combine complete and sample enumeration, tailored to national agricultural structures and constraints. These include:

- Geographic stratification: Conducting complete enumeration in key agricultural regions while using sampling in areas where agriculture is less important or marginal. Unlike the modular approach, this method applies different enumeration methods to distinct populations.
- Threshold-based enumeration: In some countries, large, special holdings in the household sector, and holdings in the non-household sector account for the lion's share of the agriculture land and production. When faced with resource constraints, countries could apply complete enumeration to these holdings that contribute significantly to agricultural output and use sampling for a large number of smaller holdings that make little contribution to total agricultural production.

5.38 When using any of the above two alternative strategies to ensure cost-effectiveness, countries must make sure that the usefulness of the census is not jeopardized. Any exclusions from the agricultural census affect not only the census results, but also the resulting frame for subsequent surveys and production estimates from the surveys will be affected accordingly. It is very important that countries clearly specify the coverage, threshold, and statistical methods used in the presentation of agricultural census results to help users interpret and analyse the results.

5.39 Countries may consider additional cost-reduction strategies, such as:

- Coordinating the agriculture and population and housing censuses: Planning and coordinating these censuses can reduce the scope of the agricultural census and allow reuse of materials such as cartography, field materials, tablets, IT equipment, vehicles, and other logistics which can represent a meaningful share of agricultural census cost (see paragraph 3.10).
- Streamlining the census questionnaire: Focusing on the essential items recommended by the WCA 2030 not only improves census data quality by reducing response burden but also results in significant costs efficiencies (see paragraphs 6.8 and 6.11). The addition of questions not belonging to the census (i.e. non-essential items) overburdens the questionnaire and costs effort, time and money in designing, testing, training, collecting, processing and analysing.
- Adoption of modern technologies: Leveraging tools such as remote sensing, mobile devices, computer or telephone-assisted interviewing methods (e.g. CAWI, CATI), and artificial intelligence, where feasible, improve data quality and can enhance efficiency by reducing staffing and other costs (see paragraphs 5.43 and 5.48).

Quality assurance

5.40 Quality assurance is the process of ensuring that quality goals are consistently met throughout the entire system of census data production. The main objective of a quality assurance framework for the census of agriculture is to prevent and minimise potential errors at the design stage and to detect errors as early as possible, so that timely corrective measures can be taken while census operations are still under way. The focus should be on preventing errors from recurring, detecting errors efficiently and informing the relevant staff so that corrective actions are implemented without delay. Chapter 8 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* ([FAO, 2018a](#)) discusses several important dimensions to consider towards ensuring quality in census data. Quality assurance also applies to any data from registers used in the census.

5.41 Under the dimension of accuracy and reliability, the Operational Guidelines highlight some primary areas of quality evaluation, namely:

- Evaluation of coverage error, both undercoverage and overcoverage and response errors, usually done via the Post-enumeration Survey (PES; see Chapter 23 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* ([FAO, 2018a](#));

- Non-response rates¹⁵ and imputation rates;¹⁶
- Data capture error rates,¹⁷ coding error rates;¹⁸
- Measures of sampling error, when sampling is used for the census supplementary modules or the long questionnaires under the short-long questionnaire classical approach; and
- Any other serious accuracy or consistency problems with the results.

5.42 Quality is a relative rather than an absolute concept from the user's perspective. For example, while accuracy may be the most important aspect for the census agency, timeliness of release may be more relevant for decision-makers. Another important dimension is cost, or value for money, which is especially significant in developing countries with limited resources. The census of agriculture is a large and complex operation, and non-sampling errors, such as coverage and content errors arising during data collection and processing, are unavoidable. It is therefore recommended that the accuracy of the data collected be evaluated and reported, so that census organizers are aware of quality levels and users are informed of data limitations.

Methods of enumeration

Interviewing methods

5.43 This section provides a brief description of the enumeration modes commonly used in agricultural censuses. The advent of advanced technologies, such as information technology, GIS and the global positioning system (GPS), has created new opportunities for data collection, with the potential to improve efficiency and data quality. By applying these technologies, countries can achieve gains in timeliness, reduce undercoverage and response errors, and lower costs by reducing staffing and other expenses. Further information on these modes, including their strengths and weaknesses, is provided in Chapter 20 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* ([FAO, 2018a](#)).

5.44 The traditional pen and paper mode is being replaced by mobile devices, online interviewing and post, and this trend is expected to continue.

5.45 **Pen and paper interviewing (PAPI)** – PAPI is a conventional mode in which enumerators conduct face-to-face interviews and record responses on paper questionnaires. The mode is useful for respondents who need assistance in completing the questionnaire and requires little technical knowledge to implement. However, it involves complex logistics, including the preparation and printing of questionnaires, their distribution, centralization and storage, and the hiring of data-entry operators and supervisors, all of which increase operational costs. With advances in technology, there are now opportunities to streamline and improve data collection modes.

5.46 **Methods using advanced technologies** – In recent decades, advances in technology, particularly in information and communication technologies and georeferencing devices, have created new opportunities to improve timeliness, reduce enumerator and data processing errors, strengthen quality control and enhance overall data quality. These data collection modes are discussed and compared in Chapter 20 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* ([FAO, 2018a](#)).

- **Computer-assisted personal interviewing** – In the CAPI mode, the enumerator conducts an interview using an electronic questionnaire on a mobile device, such as a personal digital assistant, tablet, laptop or smartphone, to record the responses. Devices can be preloaded with addresses or maps of the enumeration area for use during fieldwork, and they can also be programmed for real-time sample selection, which is particularly useful for countries applying the modular approach or the short-long questionnaire of the classical approach. For the agricultural census, CAPI is often combined with GPS, either directly through the device or by linking to external GPS units, to identify the geographic coordinates of holdings or parcels and,

¹⁵ The unit non-response rate is the ratio of the number of units with no information to the total number of in-scope units. The item non-response rate is the ratio of the number of in-scope units that did not provide a response to a specific item to the total number of in-scope units eligible to respond to that item.

¹⁶ Imputation rate for a variable is the ratio of the number of imputed values to the total number of values of a given variable.

¹⁷ Data capture error rate is the ratio of the number of erroneously captured values to the total number of values to be captured.

¹⁸ Coding error rate is the ratio of the number of erroneously coded values to the total number of values to be coded.

in some cases, to measure areas. CAPI also improves the management of data collection by supervisors at regional and central levels.

- **Computer-assisted telephone interviewing (CATI)** – The CATI mode collects data from holdings by telephone, with the operator located at a central office reading the questionnaire and recording responses on a computer. In some cases, CATI may be used for specific census populations, such as enterprises and other non-household holdings, while face-to-face or mail-out/mail-back methods are used for the majority of holdings. CATI can also serve to follow up on non-response from other modes of data collection or to carry out quality checks through verification calls. Although CATI may not be feasible in many countries for data collection from most holdings, it can be an effective tool for follow-up and quality checking, particularly for certain populations such as enterprises or government farms.

5.47 Other modes, such as self-interviewing, require respondents to complete the census questionnaire themselves. These modes can generate significant cost savings compared with enumerator-based approaches, as they substantially reduce the field force. However, non-response is a major issue that must be addressed, particularly for populations that are difficult to enumerate, and resources need to be allocated for follow-up. In addition, self-interviewing systems require the establishment of support services, such as telephone, email, an agricultural census website or postal services in rural areas, to respond to queries from respondents.

- **Computer-assisted web interviewing (CAWI)** – The CAWI mode collects data by means of questionnaires placed on the internet using secure methods and completed by a knowledgeable respondent. Each holding is usually assigned a special password or security code to access the questionnaire, which allows the statistical office to track responses and to ensure that the questionnaire for a given holding is submitted only once. Computer and Web illiterate or visually impaired respondents might be discouraged to use CAWI.
- **Mail-out/mail-back and drop-off/pick-up** – The mail-out/mail-back mode is a self-enumeration approach in which questionnaires are mailed to respondents, completed by them and then returned by post. This mode requires careful questionnaire design to ensure suitability for self-enumeration, with formatting and layout differing from those used in interview-based modes. As the forms are paper-based, data capture and processing are required after their return, and dedicated follow-up efforts are usually necessary. The mode may be applied to specific census populations, such as enterprises or government farms. An alternative is the drop-off/mail-back or drop-off/pick-up mode, in which the census form is delivered to the respondent's address by an enumerator and either mailed back by the respondent or collected by the enumerator at a later date.

Complementary tools to data collection

5.48 As noted above, technology is increasingly used in enumeration modes, including mobile devices, computer-assisted interviewing and web interviewing. The use of technology in data collection for agricultural censuses has become more widespread, providing complementary tools to improve the efficiency and accuracy of enumeration. These technologies, as outlined in the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* (FAO, 2018a), offer valuable support throughout the data collection process. Emerging tools such as artificial intelligence (AI) and machine learning (ML) also present opportunities to further strengthen these processes.

5.49 **Remote sensing (RS) and aerial/orthophotos:** In the context of an agricultural census, remote sensing and aerial photos for agricultural statistics can be used for (i) cartography and frame building; (ii) supporting fieldwork; and (iii) crop area estimation. For more details on the use of remote sensing for agricultural statistics, see [FAO, 2017b](#).

5.50 **Handheld GPS devices:** Handheld GPS devices have gained prominence in census operations across many countries. These devices serve multiple purposes, including georeferencing land plots, location tracking and area measurement. They are particularly useful for building frames, and modern mobile data collection devices (e.g. smartphones and tablets) often include built-in GPS functionality, making them highly portable and suitable for georeferencing holdings. These devices

also help optimize logistical operations and enable enumerators to collect and compile paradata, facilitating effective monitoring of census progress.

5.51 Drones: Drones are emerging as a valuable tool for data collection, particularly in remote or difficult terrain. They can capture aerial photographs and are used to verify visual counts and reduce observer bias. Drones, including micro-drones, provide an alternative to manned flights for gathering aerial data and can be equipped with video or still cameras, making them useful for activities such as livestock enumeration where the livestock system permits aerial observation. Their range, however, is currently limited by battery capacity.

5.52 Social media: Social media platforms, such as WhatsApp, can be used to maintain communication within enumeration teams in the field. Enumerators can use chat functions to raise questions or request assistance from supervisors. Films and videos are also valuable training tools, for example by showing interviewing techniques or illustrating agricultural and living conditions in the country, thereby preparing trainees for fieldwork. These materials can be uploaded to social media platforms or other online channels for downloading and reproduction at training venues or refresher courses, and they can be accessed by trainees at any time. E-learning and online courses played a key role in training trainers, supervisors and enumerators during the COVID-19 pandemic, when countries went into lockdown. Those countries that used e-learning during the training phase of the census coped more effectively with the challenges posed by the pandemic.

5.53 Artificial intelligence and machine learning: The integration of AI and ML in agricultural census activities can significantly improve efficiency by automating traditionally labour-intensive tasks. AI-powered tools can streamline questionnaire design by analysing past data to suggest optimal formats, wording and sequencing, ensuring that questions are comprehensive and easy to understand. This reduces respondent burden and minimizes errors in data capture. AI can also support the preparation of supervisor and enumerator manuals by generating content aligned with best practices and common field scenarios. Advanced natural language generation (NLG) models can produce user-friendly guides and procedural checklists, while personalized digital training programmes can simulate field situations, providing scalable and consistent training across large teams and thereby improving data collection accuracy and reliability.

5.54 Furthermore, AI-based project management systems can optimize resource allocation, schedule tasks and monitor real-time progress, thereby improving the coordination of complex logistics. These systems can predict and mitigate potential risks, such as weather disruptions or equipment shortages, by analysing historical data and environmental factors. Automating key administrative tasks enables teams to focus on the strategic aspects of the census, ensuring smooth operations with fewer human errors. This improves data quality, reduces operational costs and leads to more timely outputs.

Georeferencing

5.55 An important factor in expanding the coverage of the census of agriculture is the georeferencing of holdings. Item 0101 “Identification and location of agricultural holding” recommends that holdings be georeferenced. Holdings in the household sector may also be listed and georeferenced in advance during a recent population and housing census or during the listing operation of the agricultural census, which provides the frame for the census.

5.56 GPS makes it possible to determine the geographic position of agricultural holdings, offering several advantages for frame preparation, fieldwork planning, presentation of results and the integration of agricultural census data with other GIS databases. This provides a more comprehensive view of the agricultural landscape.

5.57 The linkage of georeferenced census data to other available GIS databases is extremely useful and often in high demand by policymakers and the large user community ([UN, UN-GGIM and UNSC, 2019](#)).¹⁹ The linkage provides, for example, the opportunity to examine spatial patterns of the results

¹⁹ This linkage is closely aligned with Principle 3 of the UN Global Statistical Geospatial Framework (GSGF), which emphasizes the use of common geographies for the dissemination of statistics.

of the implementation of policies, and to identify areas for government to further plan interventions and agribusiness opportunities for the private sector.

5.58 GIS databases are increasingly used to illustrate the spatial distribution of agricultural characteristics. Data such as average holding size, proportion of agricultural land, main crops, irrigated land, livestock, use of paid workers, use of inputs and agricultural practices can be displayed on maps for different political, administrative or geographic areas using colours or shading. With modern GIS software and equipment, the production of such maps and other GIS products has become more efficient and effective.

5.59 By linking data from agricultural holdings to geographical areas (and in some countries with datasets of population census and other surveys), GIS provides powerful data management functionalities in allowing users to explore, analyse, describe and communicate census results according to their information needs. This allows for monitoring, policy analysis, planning, and research that can more readily identify policy and geographic priority areas and thus further facilitates evidence-based policy and decision-making at the subnational level.

5.60 Linking georeferenced agricultural census data with other GIS databases makes innovative analysis possible. If linked to a water resources database, one could analyse, for instance, the environmental implications of the use of irrigation and fertilizers. These cross-comparisons are, of course, possible for the lowest geographical level when the relevant census items (use of irrigation and fertilizers, in this example) are collected by complete enumeration.

Use of geospatial data to enhance census design and data collection

5.61 Earth observation is the gathering of information about the Earth's surface, waters and atmosphere via ground-based, airborne and/or satellite remote sensing platforms. EO is increasingly used in agricultural surveys and censuses to produce land cover (LC) and land use (LU) statistics. Existing LC and LU maps from national mapping authorities or from concerned line ministries can be used to extract areas classified as agriculture, cropland or other uses. In this exercise, it is important to inspect the metadata of the map and to ensure that the definition of the classes is in line and coherent with the definition of agricultural land.²⁰ Several countries are developing their technical capacity to produce their own national LC/LU maps using EO data. However, many still do not have this capacity and therefore can rely on existing global datasets.

5.62 Below are some examples of freely available global LC maps that can be used for this purpose (as of 2026):

- 1) European Space Agency CCI time series, 300 metres spatial resolution (1992 – 2020) ([ESA, 2026a](#))
- 2) Copernicus Land Cover Dynamic Land Cover, 100 metres spatial resolution (2015–2019) ([EU, 2026](#))
- 3) European Space Agency, WorldCover 2021, 10 metres spatial resolution (2021) ([ESA, 2026b](#)).

Benefits:

- The use of LC maps allows to rapid identification of the entire agricultural land at the national level, ensuring that holdings in remote areas are considered. The maps can be used for census planning, ensuring that the total cropland is completely covered during the enumeration.
- LC maps can be used to update any area frame in time as a result of LC changes taking place in the country, such as the expansion of agriculture to other areas previously used for other purposes.
- LC maps are subject to validation through ground truthing. The error and confidence intervals of the agricultural area derived from maps could be known.

Limitations:

- The definition of LC classes may not be aligned with the definition of agricultural land.
- LC maps may be affected by commission errors, where class pixels are incorrectly classified,

²⁰ Agricultural land is the land area that is either arable or under permanent crops and pastures (see paragraph 7.2.14).

and omission errors, where pixels are excluded from the correct class. At the global scale, these errors may be marginal. However, when only part of the map is used, such as the national territory of a given country, the errors may increase considerably. This can result in the exclusion of agricultural areas through omission or the erroneous inclusion of non-agricultural areas through commission.

- The spatial resolution of the map may not be high enough to correctly map the smallest holdings in a country. This may limit the inclusion of small holdings, resulting in the underestimation of the total agricultural area and underrepresentation of the smallholder class.
- The reference year of the map may be outdated compared to the reference year of the census.

5.63 Once the agricultural land of the country is mapped, any GIS software (e.g. QGIS)²¹ can be used to generate a regular grid and match it to the agricultural land. The pixels can then be characterised by homogeneous traits defined by EO data, and EO-derived variables can also be generated. A short list of possible EO-derived variables is provided below:

Agricultural Intensity. This variable is computed by dividing the area of each pixel by the portion of the pixel covered by agricultural land. It can be derived through a basic overlay and zonal statistics operation (i.e. summary statistics per grid cell) in any GIS, using the regular grid and a crop mask as inputs. A crop mask may be extracted from an existing national LC/LU map or from one of the global maps referenced in paragraph 5.57. It can also be produced from scratch using satellite and field data combined with a supervised classification.

Phenology. Strata can be created based on crop calendars. For example, a group of pixels may represent areas with dominant winter crops, summer crops or multiple cycles of irrigated and rainfed crops. Crop phenology can be measured using various vegetation indices derived from EO time-series data, which can be processed with free and open GIS software (e.g. QGIS) and RS data (e.g. Sentinel-2, Landsat 8, MODIS). A widely used vegetation index is the Enhanced Vegetation Index (EVI) (see [Henrich et al., 2012](#)).

Georeferencing and EO data

5.64 There are three main approaches to georeferencing: simplified georeferencing of the household location of the holding (see paragraphs 5.56–5.57) and, when feasible, full georeferencing of crop plots. The advantages and disadvantages of these approaches are outlined below. Both options can also be combined in the final protocol, balancing cost and accuracy.

- **Approach 1 – Simplified**

The GPS is used to georeference the location of the holding's household (paragraphs 5.56–5.57).

Strength: cost efficiency, minimization of time in the field.

Weakness: the crop information provided by holders during the interview is not necessarily linked to the location of the crop fields. As a result, census data cannot be fully integrated with EO data. Moreover, this approach does not allow mapping of the actual extent of the holding, including the dwelling and agricultural land, and therefore GIS functions cannot be used to measure field areas and compare them with the areas declared by the holder.

- **Approach 2 - Full**

The GPS is used to georeference the crop parcel(s) associated with each holding.²²

Strength: survey data is compatible for integration with EO data. This leads to higher accuracy in area estimation and the possibility of producing wall-to-wall crop type maps.

Weakness: it is resource-intensive, more suitable for surveys than for censuses of agriculture.

- **Approach 3 – Automated field boundary delineation using EO data**

A new method has emerged to reduce time in the field under this scenario. It involves preparatory deskwork to develop a wall-to-wall digital map of field boundaries. These maps are preloaded on enumerators' tablets and connected to the CAPI app. During the interview, the map automatically

²¹ QGIS is a free and open-source geographic information system software.

²² This approach involves three methods: i) georeferencing the parcel boundaries and the parcel centroid; ii) georeferencing only the parcel boundaries; and iii) georeferencing only the parcel centroid ([Azzari et al., 2021](#)).

zooms and pans to the enumerator's location in the holding. The enumerator asks the holder to indicate on the map the parcels associated with the holding and, by clicking on the screen, links the parcels to the holding and to relevant questions (e.g. crop type).

Such maps should be developed ahead of the census fieldwork using satellite images and applying artificial intelligence tools such as computer vision or machine learning classifiers to detect the discontinuity between fields. Post-processing is also necessary to clean up errors and to filter out non-crop polygons.²³ Some examples of this approach can be seen in [Masoud, K. M., Persello, C., and Tolpekin, V. A. \(2020\)](#), [FAO \(2024a\)](#) and [FAO \(2026\)](#).

Strengths: such an approach drastically reduces time in the field, as enumerators do not need to walk to each parcel of the holding; instead, they can visualize the plots on the tablet's screen. The method ensures maximum precision in area measurement at both the plot and holding levels.

Weaknesses: the production of a national wall-to-wall map of crop field boundaries requires investment and specific technical capacity prior to the census (see paragraph 5.67). Furthermore, the map should be updated regularly and before a new census.

Estimating holding area using georeferenced data

5.65 It is possible to use a variety of proprietary and open-source GIS software to estimate the area of any parcel and of the holding itself, using any of the three approaches discussed above (see paragraph 5.64). The area calculation function embedded in the GIS software requires the user to define the geographic coordinate system used in the country and the area unit (e.g. ha). To compute the total area of the holding, the identification of the holding or holder must be linked to the corresponding plots or parcels belonging to the holding.

5.66 The accuracy of area estimation depends directly on the georeferencing approach used and the accuracy of the GPS device. The georeferencing of crop plots or parcels under the full georeferencing approach enables better integration of census data with EO data through the correct positional alignment of crop parcel boundaries or centroids with the pixels of satellite images. The use of remote sensing data can improve the precision of crop area estimates by reducing uncertainty. This method also provides useful secondary data, such as values from multiple sensor bands and computed vegetation indices derived from combining these bands. When remote sensing data are combined with on-the-ground observations, they enhance the cost-effectiveness of statistical models used to estimate crop areas ([Ambrosio, L. et al., 2023](#);²⁴ [FAO, 2015d](#); [Gallego, F.G., 2004](#)).

EO and the enhancement of census statistics

5.67 Thanks to the integration of census and EO data, it is possible to set up a system to produce national wall-to-wall crop type maps at high spatial resolution (10 m). Timely, accurate and detailed crop type maps support a range of applications that increase the usefulness of the census and enhance its impact on the overall quality of national agricultural statistics. Using census data as the baseline, crop type maps also have applications in successive years during the inter-censal period, including

- **Crop area indicators.** The development of crop type maps is straightforward and they can be updated in any year of the inter-censal period. This makes it possible to compute crop area statistics directly from the map and to provide early area indicators, accompanied by error estimation. Area estimation is carried out by counting pixels and correcting bias using the confusion matrix²⁵ developed during a map validation phase.
- **Disaggregation of crop area at subnational level.** The high spatial resolution (10 m) of the updated crop type map makes it possible to compute area statistics at the smallest

²³ In 2024, the Brazilian Institute of Geography and Statistics was using this EO method to produce field boundary maps for the entire national territory for the reference year 2025. This effort faced some challenges, especially in accessing the adequate information technology infrastructure needed for such massive computation.

²⁴ [Ambrosio, L. et al., \(2023\)](#) shows that by using RS data in Senegal, the estimator accuracy improved considerably: the amplitude of the confidence interval decreased, and the estimation error was reduced by half.

²⁵ A confusion matrix is a two-by-two table that reports the number of true positives, false negatives, false positives and true negatives.

administrative unit. The crop type map can be used on its own for disaggregation or as a covariate in a small area estimation model together with field data.

- **Development of accurate area frames.** A national wall-to-wall crop type map updated for a specific inter-censal year can be used as a spatially explicit model of the crop area within the design of an area frame and the definition of strata (crop classes) so that and field sampling for surveys can be optimized, increasing accuracy and reducing time in the field.

Provisions for setting up EO systems

5.68 The production of crop type maps entails the establishment of a system supporting six basic functions:

- 1) Access to satellite images and their preprocessing to build an EO data cube;
- 2) Integration of in-situ data (e.g. holdings georeferenced during the census or parcels georeferenced on a sample basis) with EO data, allowing the extraction of spectral features such as EVI;
- 3) Training of a classification algorithm or machine learning model (e.g. random forest, temporal neural network, dynamic time warping);
- 4) Classification of the EO data cube into a crop type map;
- 5) Validation of the crop type map (ground truthing, confusion matrix); and
- 6) When crop yield data are available from surveys (e.g. crop production surveys), running regression models for early crop yield or production estimates.

5.69 The development of such a system requires technology (software), data storage and computing capacity (a server and computers for staff), specialised technical skills, as well as data governance frameworks and data confidentiality protocols. The system takes about two years to set up and should be in place before the census cartographic work.

5.70 While a mature EO-based crop statistical system can be achieved within two years through planning and adequate investment, it is possible to begin immediately with small incremental steps (e.g. sourcing free LC maps and EO data) at no or low cost. This approach allows the census agency to demonstrate the usefulness of EO for producing crop statistics and the efficiency gains achieved, while developing the necessary skills and experience. Such work will likely require the full-time involvement of one statistician or data scientist with a basic understanding of remote sensing and mapping techniques. The use of free and open software and cloud computing services is recommended (e.g. QGIS, Google Earth Engine, Digital Earth Africa). These activities should ideally be put in place one year before preparations for the census.

5.71 Countries could refer to existing available EO online platforms which provide free access to EO big data and offer free computing resources within given user limits. Some of the existing free platforms are listed below:

- [Digital Earth Africa, 2026](#);
- [OpenEO, 2026](#);
- System for Earth Observation Data Access, Processing and Analysis for Land Monitoring (SEPAL) ([FAO, 2024b](#));
- The European Space Agency, Network Of Resources (NOR) ([ESA, 2026c](#));
- Google Earth Engine ([GEE, 2026](#)). Although this is not an open platform, it does offer a free subscription for non-commercial use.

CHAPTER 6 LIST OF ITEMS FOR THE CENSUS OF AGRICULTURE

This chapter contains a list of items to be considered for inclusion in the census of agriculture. Distinction is made between essential and additional items. The items are presented according to 12 themes, corresponding to areas of interest for the census programme. The reference group for each theme is shown, along with cross-references to the descriptions of themes and items in Chapter 7 and Annex 4.

Introduction

6.1. This chapter lists the items for the census of agriculture. The list has been prepared by FAO based on countries' experience with previous agricultural censuses, while also considering emerging user needs and agricultural issues and problems faced by countries. The chapter refers only to items that can be reported by the agricultural holding; items for the community survey are also presented here but discussed in Chapter 8. A clear distinction is made between essential and additional items. A figure provides a decision tree to support countries in determining whether an item should be included in the complete enumeration census, in a supplementary census module on a sample basis, or in a subsequent survey. The chapter then presents all essential and additional items, grouped into 12 subject themes.

Changes from the earlier programme

6.2. The WCA 2020 programme classified census items into three categories: essential items, frame items and additional items. In that programme, there were 23 essential items (all to be included in the census), 15 frame items (6 of which were also essential) and 96 additional items, considered more suitable for sample census modules or surveys.

6.3. The WCA 2020 recommended that countries focus on collecting all essential items, defined as the minimum set of structural items that must be collected, while agricultural sample surveys should collect non-structural items that are needed more frequently. The inclusion of all essential items in the census enables both national and international comparison.

6.4. The WCA 2030 maintains the distinction between essential and additional items. However, as explained in Chapter 1, both essential and additional items may be used to create frames for sample-based census supplementary modules, the continuous survey programme or ad hoc surveys, depending on country needs. Items that can be useful for building frames are highlighted in the descriptions in Chapter 7 (for essential items) and Annex 4 (for additional items). Essential items are those that every country should collect through complete enumeration, regardless of the methodological approach used, as they are required for both national purposes and international comparison. Some essential items provide the frame for sample-based census supplementary modules (e.g. modules on crops, livestock or aquaculture in the modular approach) and for the continuous survey programme (e.g. surveys on crop or livestock production or production prices). Additional items remain more suitable for sample census modules or surveys, although some may be collected through complete enumeration if needed at the lowest geographical or administrative level. In certain cases, additional items may also be collected through complete enumeration to serve as items for creating sampling frames (e.g. surveys on irrigation or crops under protective cover).

6.5. As explained in Chapter 1, WCA 2030 has introduced some new items, moved items to other themes and removed some themes. In WCA 2030, there are a total of 123 items categorized as follows:

- 27 items are classified as essential (collected by complete enumeration), including those that serve for building frames for sample-based census supplementary modules and the continuous programme of surveys.
- 96 items are classified as additional (collected by sample enumeration). A few of them could be collected by complete enumeration if needed for national purposes or for creating sampling frames.

6.6. The 123 items are grouped into 12 themes. All items have a unique four-digit number. The first two digits refer to the number of the theme where they are described, and the next two digits refer to the

sequence of the items within the theme, starting from 01 for each theme. For example, the number for Item 0110 “Main purpose of production of the holding” is composed of “01”, which represents the number of Theme 1 “Identification and general characteristics” and “10” which represents the 10th item in this theme.

6.7. All new items in the lists are marked with a “+”. For example, essential Item 0402 is completely new and is marked with a “+” in the list of essential items below. Changes such as new items are discussed in Chapter 1.

Essential items

6.8. There are 27 essential items. These represent the minimum data set that all countries should collect, regardless of the methodological approach used. They are critical for compiling a minimum set of national indicators on the agricultural sector, needed for policy-making and planning. Data for these items are required at small administrative unit level, such as districts or villages, or in the form of detailed cross-tabulations, and they are also needed for international comparison. Their description is provided in Chapter 7.

List of recommended essential items (“+” denotes new item, “*” denotes formerly additional item²⁶)

0101	Identification and location of agricultural holding
0103	Legal status of agricultural holder (type of holder)
0104	Sex of agricultural holder
0105	Age of agricultural holder
0106	Household size by sex and age groups
0107*	Educational attainment of holder, spouse and manager
0110	Main purpose of production of the holding
0111	Other economic activities of the household
0201	Total area of holding
0203	Area of holding according to land use types
0204	Area of holding according to land tenure types
0302	Area of land actually irrigated: fully controlled and partially controlled irrigation
0402+	Area of temporary crops planted (for each temporary crop type)
0403	Area of temporary crops harvested (for each temporary crop type)
0408	Area of productive and non-productive permanent crops in compact plantations (for each permanent crop type)
0409	Number of permanent crop trees in scattered plantings (for each tree crop)
0413	Use of different types of fertilizing products
0501	Type of livestock production system
0502	Number of animals (for each livestock species)
0503	Number of female breeding animals (for each livestock species)
0601	Use of agricultural pesticides
0604*	Selected machinery and equipment used on the holding by source
0901	Whether working on the holding is the main activity
0902	Working time on the holding
0903	Number of employees on the holding by working time and sex
0905*	Use of contractors for work on the holding according to type of service
1001	Presence of aquaculture on the holding

Additional items

6.9. As emphasised in Chapter 5, FAO recommends focusing mainly on essential items. The remaining items are classified as additional and are preferably covered in surveys or in supplementary modules under the modular approach, or in the long questionnaire under the short–long questionnaire concept of the classical approach. In countries with integrated census and survey programmes, the

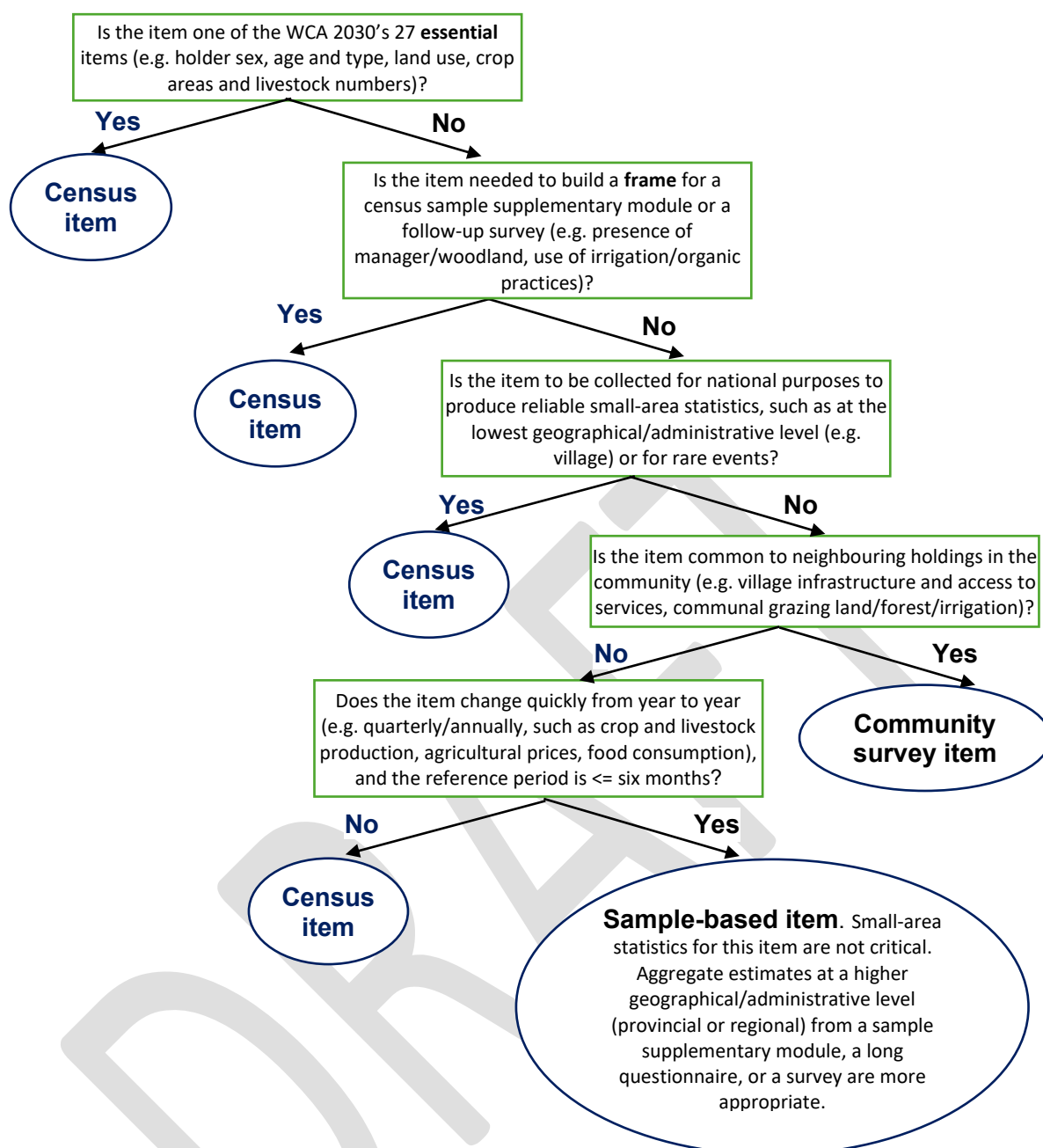
²⁶ As explained in Chapter 1 (paragraph 1.34), in the present Programme items 0107, 0604 and 0905 changed category from additional to essential items.

agricultural census is used mainly to collect structural, slow-changing items, while surveys are used to collect fast-changing, non-structural additional items. In some cases, however, it may be necessary to include non-structural items in the census, particularly when the census provides the only opportunity to collect such data, for example in the absence of ongoing agricultural surveys. To the extent possible, additional items should be collected on a sample basis (e.g. in sample census modules), supported by the frame provided by the census, in order to avoid overloading the questionnaires and placing unnecessary burden on respondents.

6.10. The 96 items categorized as “additional” in the WCA 2030 are listed below under each theme, while their description is provided in Annex 4.

6.11. Regardless of the approach followed for conducting the census, the decision on whether and which additional items to include, if any, is an important one to be made at the planning stage. In the classical approach, some key additional items may be treated as structural items because they are important for national comparison or because they provide frames for ad hoc surveys, depending on country requirements and resources. In the modular approach, essential and additional items needed for creating frames should, in principle, be included in the core module, which is generally sufficient for designing and implementing the supplementary modules. Additional items intended to provide more detailed data on a particular theme should be included in the supplementary modules, which are collected on a sample basis. However, if a country considers that a few key additional items need to be collected at the lowest administrative level to capture rare events or to provide frames for ad hoc surveys, such items may be included in the core module, which is carried out on a complete enumeration basis. Figure 6.1 presents a decision tree that countries are encouraged to use in deciding whether an item should be a complete enumeration census item or a sample-based item to be included in supplementary census modules (under the modular approach), in the long questionnaire (under the short–long questionnaire concept of the classical approach) or in surveys.

Figure 6.1 Decision tree for determining if an item is relevant for the census of agriculture



Source: Authors' own elaboration.

6.12. Annex 4 describes the additional items and identifies some items that can provide frames for ad hoc and specific surveys.

Items for consideration by theme

6.13. The WCA 2030 presents items grouped by theme, with each theme focusing on a specific area of interest for the agricultural census programme. If an item is also relevant to another theme, only a reference to the item is included in the latter, without repeating the full description. For example, Item 1105 “Whether agroforestry is practised” is described under Theme 11 “Forestry” but is also relevant to Theme 6 “Agricultural practices and equipment”; in Theme 6, therefore, only a reference to Item 1105 is made.

6.14. A “+” sign after item numbers denotes new items. For example, Item 0402+ “Area of temporary crops planted” is a new essential item.

6.15. The scope of each theme is shown in italics under each heading when necessary (e.g. *for the holdings, for each parcel and for each livestock species*). Paragraph references to the applicable concepts and definitions of essential items in Chapter 7 are shown in parentheses after each item. As mentioned earlier, additional items are described in Annex 4.

Theme 1 – Identification and general characteristics

Essential items

For the holdings

- 0101 Identification and location of agricultural holding (paragraphs 7.1.1 - 7.1.5)
- 0103 Legal status of agricultural holder (type of holder) (paragraphs 7.1.6- 7.1.10)
- 0104 Sex of agricultural holder (paragraphs 7.1.11 - 7.1.12).
- 0105 Age of agricultural holder (paragraphs 7.1.13 - 7.1.14)
- 0106 Household size by sex and age groups (paragraphs 7.1.15 - 7.1.17)
- 0107 Educational attainment of holder, spouse, and manager (paragraph 7.1.18 – 7.1.19)
- 0110 Main purpose of production of the holding (paragraphs 7.1.20 - 7.1.23)
- 0111 Other economic activities of the household (paragraphs 7.1.24 - 7.1.26)

Additional items (see Theme 1 in Annex 4)

For the holdings

- 0102 Respondent for the agricultural holding
- 0108 Agricultural training/education of the holder
- 0109 National/ethnic group of agricultural holder
- 0112 Proportion of income from holding's agricultural production in household's total income
- 0113 Main agricultural activity of the holding
- 0114 Presence of manager other than the holder
- 0115 Sex of manager other than the holder
- 0116 Age of manager other than the holder

Theme 2 – Land

Essential items

For the holdings

- 0201 Total area of holding (paragraphs 7.2.1–7.2.7)
- 0203 Area of holding according to land use types (paragraphs 7.2.8–7.2.37)
- 0204 Area of holding according to land tenure types (paragraphs 7.2.38–7.2.47)

Additional items (see Theme 2 in Annex 4)

For the holdings

- 0202+ Number of parcels

For each parcel

- 0205 Location
- 0206 Area
- 0207 Sex of household member managing the parcel
- 0208 Land use
- 0209 Land tenure
- 0210 Terms of rental (*for rented parcels*)
- 0211 Use of shifting cultivation

0212 Number of years since cleared

Theme 3 – Irrigation

Essential items

For the holdings

0302 Area of land actually irrigated: fully controlled and partially controlled irrigation (paragraphs 7.3.5 - 7.3.6)

Additional items (see Theme 3 in Annex 4)

- 0301 Use of irrigation on the holding: fully and partially controlled irrigation
- 0303 Area of land actually irrigated according to land use type: fully controlled and partially controlled irrigation
- 0304 Area of land actually irrigated according to method of irrigation: fully controlled irrigation
- 0305 Area of crops actually irrigated for each crop type: fully controlled irrigation
- 0306 Sources of irrigation water: fully controlled irrigation
- 0307 Payment terms for irrigation water: fully and partially controlled irrigation
- 0308 Use of other types of irrigation: partially controlled irrigation
- 0309 Area equipped for irrigation in working order: fully and partially controlled irrigation
- 0310 Presence of drainage equipment

Theme 4 – Crops

Essential items

Temporary crops

- 0402+ Area of temporary crops planted (for each temporary crop type) (paragraphs 7.4.1– 7.4.3.)
- 0403 Area of temporary crops harvested (for each temporary crop type) (paragraphs 7.4.4– 7.4.15)

Permanent crops

- 0408 Area of productive and non-productive permanent crops in compact plantations (for each permanent crop type) (paragraphs 7.4.16– 7.4.20)
- 0409 Number of permanent crop trees in scattered plantings (for each tree crop) (paragraphs 7.4.21– 7.4.22)

For the holdings

- 0413 Use of different types of fertilizing products (paragraphs 7.4.23 - 7.4.30)

Additional items - Temporary Crops (see Theme 4 in Annex 4)

- 0401 Types of temporary crops on the holding
- 0404 Area of temporary crops harvested according to end use (for each selected crop type)
- 0405 Production of temporary crops harvested (for each selected crop type)
- 0406+ Presence of hydroponic/vertical farming

Additional items - Permanent Crops (see Theme 4 in Annex 4)

- 0407 Types of permanent crops on the holding and whether in compact plantations
- 0410 Area of productive permanent crops in compact plantations according to end use (for each selected permanent crop type)
- 0411 Production of permanent crops (for each selected permanent crop type)

Additional items - For the holdings (see Theme 4 in Annex 4)

- 0412 Area of land used to grow temporary crops as a secondary land use

- 0414 Area fertilized for each type of fertilizer and major crop type
- 0415 Presence of nurseries
- 0416 Area of nurseries
- 0417 Presence of cropped land under protective cover
- 0418 Area of cropped land under protective cover

Theme 5 – Livestock

Essential items

For the holdings

- 0501 Type of livestock production system (paragraph 7.5.3)

For each livestock species

- 0502 Number of animals (paragraphs 7.5.4 - 7.5.6)
- 0503 Number of female breeding animals (paragraph 7.5.7)

Additional items - *For each livestock species (see Theme 5 in Annex 4)*

- 0504 Number of animals by sex of the household member managing them
- 0505+ Number of animals per breed category
- 0506 Number of animals: age and sex
- 0507 Number of animals according to purpose
- 0508 Number of milking animals according to milk status
- 0509 Number of animals born
- 0510 Number of animals acquired
- 0511 Number of animals slaughtered
- 0512 Number of animals disposed of
- 0513 Number of animals that have died from natural causes
- 0514 Types of feed

Additional items - *For the holdings (see Theme 5 in Annex 4)*

- 0515 Use of veterinary services

Theme 6 – Agricultural practices and equipment

Essential items

For the holdings

- 0601 Use of agricultural pesticides (paragraph 7.6.2–7.6.3)
- 0604 Selected machinery and equipment used on the holding by source (paragraphs 7.6.4 –7.6.6)
- See Item 0413* Use of different types of fertilizing products

Additional items (see Theme 6 in Annex 4)

- 0602 Use of seeds produced by modern biotechnologies.
- 0603 Use of seeds produced by modern biotechnologies according to crop type
- 0605 Non-residential buildings
- 0606 Percentage of each major agricultural product sold
- 0607 Use of organic agricultural practices.
- 0608 Type of seed for each major crop type
- 0609 Source of seed inputs for each major crop type

0610	Types of tillage practices
0611	Presence of conservation agriculture
0612	Presence of soil conservation practices
0613+	Use of technology on the holding
0614	Type of animal grazing practices
0615	Manure application
0616	Manure management system
See Item 1105	Whether agroforestry is practised
See Item 0301	Use of irrigation on the holding: fully and partially controlled irrigation
See Item 0414	Area fertilized for each type of fertilizer and major crop type

Theme 7– Services for agriculture

Additional items (see Theme 7 in Annex 4)

For the holdings

0701	Receipt of credit for agricultural purposes
0702	Source of credit
0703	Type of collateral for credit
0704	Period of loan or credit
0705	Sources of agricultural information
0706	Sources of agricultural extension services used
0707	Travelling time to nearest periodic or permanent agricultural produce market for selling products
0708+	Type of insurance coverage

Theme 8 – Demographic and social characteristics

Additional items (see Theme 8 in Annex 4)

For each household member

0801	Sex
0802	Age
0803	Relationship to household head or other reference person
0804	Marital status
0805	Educational attainment for each household member excluding holder and spouse.

Theme 9 – Work on the holding

Essential items

For each household member of working age

0901	Whether working on the holding is the main activity (paragraph 7.9.9)
0902	Working time on the holding (paragraphs 7.9.10 –7.9.14)

For the holdings

0903	Number of employees on the holding by working time and sex (paragraphs 7.9.15–7.9.21)
0905	Use of contractors for work on the holding according to type of service (paragraphs 7.9.22–7.9.25)

Additional items (see Theme 9 in Annex 4)

For the holdings

0904	Form of payment for employees
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Theme 10 – Aquaculture

Essential items

For agriculture holdings or aquaculture holdings

- 1001 Presence of aquaculture on the holding (paragraphs 7.10.2 - 7.10.6)

Additional items (See Theme 10 in Annex 4)

- 1002 Area of aquaculture according to type of site
1003 Area of aquaculture according to type of production facility
1004 Type of water
1005 Sources of water for aquaculture
1006 Type of aquacultural organism cultivated

For the modular approach, the reference group is holding with aquaculture production activities in essential item 1001

Theme 11 – Forestry

Additional items (see Theme 11 in Annex 4)

- 1101 Presence of woodland on the holding
1102 Area of woodland
1103 Purposes of woodland
1104+ Whether forestry activities are practised
1105 Whether agroforestry is practised

For the modular approach, the reference group is holdings with woodland (additional item 1101).

Theme 12 – Fishing

Additional items (see Theme 12 in Annex 4)

- 1201 Engagement of household members in fishing activities
1202 Number of household members engaged in fishing activity by sex
1203 Number of fishers employed by the household by sex
1204 Access arrangements for fishing
1205 Main purpose of household fishing activity
1206 Type of fishing vessel used by source
1207 Type of fishing gear used

For the modular approach, the reference group is households with fishing activities in additional item 1201.

Community-level items

6.16. In addition to items collected at holding level, the WCA 2030 also proposes items to be collected at community level (see Chapter 8). These may be used to complement the data on holdings in the agricultural census. Community-level items are particularly relevant for decentralised planning, the design of targeted area development programmes and the assessment of infrastructure and services available to agricultural holdings. The community-level items recommended below are general, as it is not possible to make specific recommendations for each country. The WCA 2030 recommends the following items:

Geography

- 2101 Location (paragraph 8.20)
- 2102 Agroecological, climatic, topographical or soil types (paragraph 8.21)
- 2103 Land use (paragraph 8.22)
- 2104 Area of communal grazing land (paragraphs 8.23 - 8.24)
- 2105 Area of communal forest (paragraphs 8.23 - 8.24)
- 2106 Communal area under water used for aquaculture (paragraph 8.23 - 8.24)
- 2107 Travelling time and the associated mode of travel to the nearest major urban centre (by season, if applicable) (paragraph 8.25)
- 2108 Whether the community has year-round access to the nearest urban centre by a motorable road (paragraph 8.25)
- 2109 Whether the community is prone to natural disasters, such as droughts and floods (if applicable) (paragraph 8.26)

Socioeconomic conditions

- 2201 Population according to population group (paragraph 8.27)
- 2202 Number of households (paragraph 8.27)
- 2203 Economic status (if applicable) (paragraph 8.28)
- 2204 Main economic activities (paragraph 8.29)
- 2205 Whether there are seasonal food shortages (if applicable) (paragraph 8.30)

Community infrastructure and services (see paragraph 8.31)

- 2301 Presence of a fertilizer dealer; if not, travelling time to the nearest fertilizer trading centre (by season, if applicable)
- 2302 Presence of a pesticides dealer; if not, travelling time to the nearest pesticides trading centre (by season, if applicable)
- 2303 Presence of a seed dealer; if not, travelling time to the nearest seed trading centre (by season, if applicable)
- 2304 Presence of a credit institution; if not, travelling time to the nearest credit institution (by season, if applicable)
- 2305 Presence of irrigation facilities
- 2306 Area equipped for irrigation
- 2307 Availability of veterinary services (if needed, further broken down by specific types: animal health post/clinic, veterinarian, animal health assistant, dipping tank); if not, travelling time to the nearest veterinary services (by season, if applicable)
- 2308 Presence of a periodic or permanent agricultural produce market; if not, travelling time to the nearest periodic or permanent agricultural produce market (by season, if applicable)
- 2309 Whether the community is covered by the agricultural produce collection network
- 2310 Presence of food storage facilities; if not, travelling time to the nearest food storage facility (by season, if applicable)
- 2311 Presence of agricultural processing facilities; if not, travelling time to the nearest agricultural processing facility (by season, if applicable)
- 2312 Presence of facilities for maintaining agricultural machinery
- 2313 Existence of farmers' associations, cooperatives and other bodies providing support and services to farmers
- 2314 Availability of agricultural extension service
- 2315 Whether electricity is connected
- 2316 Presence of a primary school; if not, travelling time to the nearest primary school (by season, if applicable)
- 2317 Presence of a health facility; if not, travelling time to the nearest health facility (by season, if applicable)
- 2318 Presence of radio, telephone (including mobile phone coverage), and Internet services.

2319 Availability of public transport: bus, train, boat; if not, travelling time to the nearest bus station, train station, dock, etc. (by season, if applicable)

Development programmes

2401 Presence of specific development projects in the community (*See paragraph 8.32*)

DRAFT

CHAPTER 7 DESCRIPTION OF ESSENTIAL ITEMS

This chapter describes the themes, concepts and definitions of the agricultural census items presented in Chapter 6, with a focus on the essential items recommended for the census of agriculture. Additional items are presented in Annex 4. The concepts and definitions were developed with reference to international standards and the need for comparability with earlier agricultural censuses and other data sources. Major changes from previous programmes are highlighted. Countries should adapt these concepts and definitions to their specific needs and circumstances.

Introduction

7.1 This chapter provides a description of the themes and concepts and definitions for the essential census items shown in Chapter 6. The concepts and definitions are based on international standards, where applicable, to ensure that agricultural census results are comparable with other data sources. Where items were included in earlier agricultural census programmes, the concepts and definitions are generally the same as those previously used, unless a new international standard has been adopted.

7.2 In an integrated agricultural statistical system, the need for uniformity in concepts and definitions between the agricultural census and other agricultural statistics is also important. Often, there are well-established standards for current agricultural statistics; for example, many countries already have standards for reporting on crops or seasons, which should be consistent with the agricultural census.

7.3 It is recognized that countries will need to adapt the concepts and definitions given in this chapter to meet their needs and circumstances, but this should be done in such a way that the census data are compatible with international standards. Where it is necessary to depart from the concepts and definitions given in this chapter, the differences should be highlighted in the presentation of the census results, and explanations given as to how the national data can be compared with those from other countries.

7.4 For each agricultural census item described in this chapter, the recommended reference period is provided. There are two main reference periods recommended, namely the census reference year and the census reference day (see Chapter 4, paragraphs 4.37–4.38). The census reference year is a period of twelve months, usually either a calendar year or an agricultural year, generally encompassing the various time reference dates or periods of data collection for individual census items. The census reference day is a point in time used for livestock numbers and other inventory items.

Theme 1: Identification and general characteristics

0101 IDENTIFICATION AND LOCATION OF AGRICULTURAL HOLDING

Essential item. Reference period: census reference day.

7.1.1 Identification of the agricultural holding usually includes the holding name and administrative unit code, the holder's name, address and other contact information (telephone number, email address, etc.), and the location of the holding. The location of the holding may differ from the holder's address, in which case both should be collected.

7.1.2 The location of the agricultural holding is needed to assign agricultural holdings to administrative units or agroecological zones,²⁷ which are key classification items in the tabulation of agricultural census results. Usually, the location of a holding is defined as the place where all or most of the agricultural production occurs – where administrative or farm buildings and agricultural machinery are located or, in case there is no administrative or farm building, where the majority of the land is located. Sometimes, the location of each parcel is also identified (see additional Item 0205, Annex 4).

²⁷ An agroecological zone is defined as "a land resource mapping unit, defined in terms of climate, landform, and soils, and/or land cover, and having a specific range of potentials and constraints for land use" ([FAO & IIASA, 2025](#)).

7.1.3 Identification and location of the holding also play an important role when building sampling frames for sample census modules or ongoing sampling surveys. A list frame of holdings should contain clear identification and precise locations to facilitate the sample design and reach the sampled units.

7.1.4 Location is normally identified through a geographic coding system, based on the administrative structure of the country. Codes are provided for each administrative unit, such as province, district and/or village. This identifies the location of the holding down to the lowest administrative unit. Where a standard national geographic coding system exists, it should be used for the agricultural census to make it easier to link data between the different sources.

7.1.5 Other types of geocoding systems can also be used, such as direct georeferencing of holdings with the use of GPS or by using cadastral maps. The geocoding system can improve the presentation of census results through GIS and enables linking of the agricultural census data to other data sets. Countries are encouraged to move in this direction.

0103 LEGAL STATUS OF AGRICULTURAL HOLDER (TYPE OF HOLDER)

- *A civil person*
- *Group of civil persons*
- *Juridical person*

Essential item. Reference period: census reference day

7.1.6 The term “legal status of the holder” or “type of holder” is not confined to the holder’s legal characteristics but refers more broadly to the identification of specific types of holdings. From a legal perspective, a holding may be operated by civil persons, either by a single individual or jointly by several individuals (a group of civil persons) belonging to the same or to different households, with or without a contractual agreement. A holding may also be operated by a juridical person who is neither an individual nor a group of individuals, such as a corporation, a cooperative, a government institution or a church. Information on the type of holder is an important classification item, especially in combination with other main classification items (see Table 9.1 in Chapter 9).

7.1.7 The sector to which the holding belongs may be classified as “household sector” or “non-household sector”. Countries are encouraged to distinguish between these two sectors in the census tabulation.

7.1.8 **Household sector** holdings are those operated by household members. Usually there is only one holding in a household (a single-holding household), but there may also be two or more holdings in a household (a multiple-holding household). A holding may also consist of a partnership of two or more households. In many developing countries, most agricultural holdings are in the household sector.

7.1.9 **Non-household sector** holdings are those that do not belong to the household sector. Corporations and cooperatives are defined within the framework of national laws and practices. Cooperatives include different types of organizations that combine, to varying degrees, the principles of individual ownership, joint ownership or leasehold. Other non-household sectors include tribes, clans, private schools, religious institutions and government, which comprise agricultural production entities operated directly by central or local government or through a special body. In some countries, large commercial-oriented or special holdings (e.g. with rare commodities) operated by households are classified in the non-household sector for operational purposes.

7.1.10 The correspondence between the legal status of the holder (type of holder) and the sector to which the holding belongs is not straightforward and depends largely on the legal system and national context. For example, a holding may be registered as a legal entity but function as a household holding. Such a holding is usually classified in the household sector, although some countries may place it in the non-household sector.

0104 SEX OF AGRICULTURAL HOLDER

- *Male*
- *Female*

Essential item. Reference period: census reference day

7.1.11 Item 0104 is important for analysing the gender aspects of agricultural production and, in particular, for examining the role of women in managing agricultural holdings. The sex of every holder (male or female) should be recorded in the census questionnaire. According to the *Principles and recommendations for population and housing censuses* ([UN, 2025d, paragraph 5.168](#)), some countries have started collecting data on gender identity in addition to information on sex, to allow respondents to express their identity beyond traditional binary options. However, there are no international standards for measuring this fluid and evolving concept. Item 0104 is also useful for analysing gender aspects of agricultural production management and may serve as the basis for a sampling frame for specialised gender surveys.

7.1.12 Data on the sex of the agricultural holder are collected only for holdings in the household sector. For holdings in the non-household sector (corporations, government institutions, etc.), the sex of the manager is collected (see Item 0115). Where there are joint holders in a household-sector holding, the sex of each holder should be reported. For the definition of an agricultural holder, see paragraphs 4.21–4.24. For guidance on tabulating sex of holder data, see Table 9.1 in Chapter 9.

0105 AGE OF AGRICULTURAL HOLDER

Essential item. Reference period: census reference day

7.1.13 The age of the holder is important for studying the relationship between age and the characteristics of agricultural holdings and, in particular, for comparing young and older farmers. It is also useful for analysing gender issues and may serve as a stratification variable for ongoing surveys.

7.1.14 Age refers to the interval between the date of birth and the date of the census, expressed in completed solar years ([UN, 2025d, paragraph 5.169](#)). This item is collected only for holdings in the household sector. Where there are joint holders in a household-sector holding, the age of each person should be reported. For the definition of an agricultural holder, see paragraphs 4.21–4.24. For guidance on tabulating age of holder data, see Table 9.1 in Chapter 9. For holdings in the non-household sector (corporations, government institutions, etc.), the age of the manager is collected (see Item 0116).

0106 HOUSEHOLD SIZE BY SEX AND AGE GROUPS

Essential item. Reference period: According to the “de jure” concept, the data on household size relate to persons who, at the day of the census, are usually resident in the household.

7.1.15 Household size by sex and age group refers to the number of members of the holder's household, classified by sex and age group (see Table 9.1 in Chapter 9 for guidance on tabulating data by sex and age group). This information can be obtained either by listing all household members, recording the sex and age of each, and aggregating the information by sex and age group, or by asking a direct question on the number of household members and their distribution by sex and age group. Disaggregation of data by sex is a fundamental requirement for gender statistics. Age groups may be determined according to national circumstances. However, countries should be able to differentiate among children, working-age adults and older persons. This is important for calculating the dependency ratio (the ratio of those not gainfully employed to those who are gainfully employed within the household) and for poverty analysis. A household is defined as one or more persons living together who make common provision for food or other essentials for living (see paragraph 4.6).

7.1.16 It is recommended that household data be collected only for agricultural holdings in the household sector that are operated by households with a single holding. For other types of holdings, household data are difficult to interpret and could result in duplicate counting of household members. Household data are not normally collected for juridical holdings (i.e. those other than civil persons) in Item 0103, although some countries collect household data for multiple-holding households by referring to the group of persons within the household operating the holding.

7.1.17 Household size can be measured in two ways: (i) persons present on the census reference day, or (ii) persons who are usually resident in the household. The usual residence approach, known as the *de jure* concept, is recommended for the agricultural census and is the basis for official population estimates. In most cases, it is not difficult to identify a person's place of usual residence. However, some family members may be studying or working away from home but return regularly. The treatment of such cases should be clearly stipulated (for the definition of the usual residence concept and the treatment of special cases, see [UN, 2025d, paragraphs 2.48–2.66](#)).

0107 EDUCATIONAL ATTAINMENT OF HOLDER, SPOUSE AND MANAGER

Essential item. Reference period: census reference day

7.1.18 Educational attainment data are useful in an agricultural census for examining the effects of education on characteristics such as cropping systems and agricultural practices. Educational attainment refers to the highest grade of formal education successfully completed by a person. In the agricultural census, data on educational attainment should be collected for the agricultural holder, the holder's spouse and the manager, if present, as the educational levels of all can be important factors in agricultural and household activities.

7.1.19 Data on educational attainment should be recorded in suitable categories. Attention should be paid to consistency with other national statistical collections, especially the population census, and to the International Standard Classification of Education (ISCED) ([UNESCO, 2011](#)). For international comparison purposes, educational attainment should be classified into at least four levels of education ([UNESCO, 2011, paragraph 89, Table 1](#)): less than primary (for persons not having completed primary education) primary, secondary (comprising lower and upper secondary education levels), and post-secondary (comprising post-secondary non-tertiary education, short-cycle tertiary education, bachelor's or equivalent level, master's or equivalent level, doctoral or equivalent level). Each level may be further subdivided to meet national needs.

0110 MAIN PURPOSE OF PRODUCTION OF THE HOLDING

- *Producing mainly for own consumption*
- *Producing mainly for sale*

Essential item. Reference period: census reference year.

7.1.20 The aim of this item is to obtain a broad indicator of the extent to which agricultural holdings participate in the market economy. Data on the purpose of production are usually collected for household-sector holdings, although some countries may also wish to collect this information for certain types of non-household holdings (e.g. schools, religious institutions). The most appropriate reference period is the census reference year, although in countries with several harvesting seasons during the year, alternative reference periods may also be suitable.

7.1.21 In cases where a holding sells part of its produce and uses the rest for own consumption, the main purpose should be identified as the one that represents the larger value of agricultural production, either own consumption or sale. Sale includes selling produce for cash or in exchange for other produce (barter). Other forms of disposal of agricultural produce – such as payment of labour, transfers to family members, gifts or payment of taxes – should not be considered when determining the main purpose of production. Several questions may be required to obtain data for this item (see additional items 0112 and 0606, Annex 4).

7.1.22 In some cases, a more detailed identification of participation in the market economy by small producers would be needed – for instance, to identify holdings where the main purpose of production is for own consumption, but some sale takes place when there is a surplus. For this purpose, and in line with AGRISurvey ([FAO, 2018b, Annex 2–1, section 3](#)), the following four-item classification would be appropriate:

- Producing primarily for sale (selling 90 percent or more)
- Producing mainly for sale, with some own consumption (selling more than 50 percent and up to 90 percent)

- Producing mainly for own consumption, with some sales (selling more than 10 percent and up to 50 percent)
- Producing primarily for own consumption (selling 10 percent or less)

7.1.23 One use of the item is for developing a frame for a survey of farm food stocks for sale, in which case the item should be collected together with additional Item 0605 (Non-residential buildings) (See Annex 4) and the above categories should be used.

0111 OTHER ECONOMIC ACTIVITIES OF THE HOUSEHOLD

- Support activities to agriculture and post-harvest crop activities
- Hunting, trapping and related service activities
- Forestry and logging
- Fishing and aquaculture
- Manufacturing:
 - . Processing of agricultural products (agroprocessing)
 - . Handicrafts
- Wholesale and retail trade, repair of motor vehicles and motorcycles
- Hotels and restaurants (excluding agrotourism)
- Agrotourism
- Other

Essential item. Reference period: census reference year

7.1.24 An agricultural holding in the household sector consists of the agricultural production activities of a household enterprise. A household containing an agricultural holding may also be engaged in non-agricultural economic activities. The enumerator should record all activities that apply. For example, a household may operate a shop or restaurant in addition to managing the agricultural holding. Item 0111 is included in this theme to help understand the relationship between agricultural production and other economic activities, and to provide insights into life and economics in rural areas.

7.1.25 Other economic activities are those undertaken by the household, linked to the premises of the agricultural holding or in its close vicinity, but not involving agricultural production on the holding. These may include fishing, collecting forestry products, craft activities or operating a family business. They do not include paid employment, whether agricultural or non-agricultural, on the holding itself or in a business not associated with the holding.

7.1.26 The activity categories listed above are based on ISIC (Rev. 5) codes ([UN, 2025a](#)), with the exception of agrotourism. Countries may wish to apply more detailed breakdowns of ISIC activities, such as groups or classes, for national purposes (see Annex 2 for more information). Agrotourism refers to all tourism-related activities that make use of the land, buildings or other resources of the holding, including accommodation services, farm visits for tourists or other groups, and sport or recreation activities. Agrotourism is not a separate group in ISIC; however, given its growing importance, it has been added as a separate category in the list above. The final category, Other, covers all remaining economic production activities in ISIC (Rev. 5), including activities related to construction and transportation.

Theme 2: Land

0201 TOTAL AREA OF HOLDING

Essential item. Reference period: census reference day

7.2.1 The total area of the holding is the area of all land making up the agricultural holding. It provides a measure of holding size, which is an important element of agricultural census analysis. It includes all land operated by the holding, regardless of title or legal form. Land owned by household members but rented to others should not be included in the holding area, while land not owned by household members but rented from others for agricultural production purposes should be included.

7.2.2 In determining the total area of the holding, the following types of land should be included:

- Land used for cultivation of crops (temporary and permanent, including cropped land under protective cover, see Annex 4, Theme 4, paragraph 25), meadows and pastures, and fallow land;
- Unutilized agricultural land;
- Forest and other wooded land;
- Bodies of water;
- Farmyards and land occupied by farm buildings;
- Land for which a holding does not have any rights to agricultural use, except for the products of the trees growing on it.

7.2.3 Depending on national circumstances, the total area of a holding may be very small or even zero, while still having agricultural activity. For example, some holdings without land used for agricultural production may raise livestock solely on communal land. Such holdings may be considered landless. However, care should be taken in classifying them as landless, as they may use areas or buildings (own or rented) for keeping livestock, which, according to paragraph 7.2.2, form part of the total area of the holding (farmyards and land occupied by farm buildings).

7.2.4 The land of a holding may consist of one or more parcels, located in one or more separate areas or administrative units, provided that the parcels form part of the same economic production unit and share the same means of production, such as labour, farm buildings, machinery and draught animals. The total holding area is an important stratification variable for sampling frames used in census supplementary modules and ongoing surveys. Further information on defining holding units when land is located in more than one administrative unit is provided in paragraph 4.13. Land data are often collected parcel by parcel, with the total holding area derived by summing the area of all parcels.

7.2.5 The following special cases should be noted:

- When an agricultural holding is operated by a household, the land area of the household's house should be included, provided the house is located on the holding (and not, for example, in a nearby village or town) and is used mainly for residential purposes.
- Where shifting cultivation is present, the area of the holding should include the area under crops and the area prepared for cultivation, but not sown or planted as of the census reference day. Land abandoned before the census reference day should be excluded.
- Open rangeland, such as land open to communal grazing, is not considered to be part of the holding. For holdings with access to communal grazing land, their share of such land should not be included in the holding area unless a specific area has been assigned to the holding and is delimited by fencing or another form of boundary demarcation. However, such agricultural land, which does not belong directly to any holding, may be covered in the census through community-level data collection, as recommended in Chapter 8.

7.2.6 Data on area of holding must refer to a point of time, i.e. to the census reference day.²⁸ If a holder bought land before the census reference day, the area of land purchased should be included in the holding area; if land was sold before the census reference day, the area sold should be excluded. For more information, see paragraph 4.16.

7.2.7 The most common method for collecting data on parcel and total holding areas in the census of agriculture is by holder declaration. In some countries, holders may not be able to provide reliable estimates of crop areas. To address this problem, when countries count with additional resources employ alternative methods in sample surveys, such as objective measurement in which the area is measured using GPS devices, including involving remote sensing (see paragraphs 5.49–5.50 and 5.67–5.69). The accuracy of crop areas could be improved if both declared areas and objective measurements could be drawn from a sample, where a correction factor may be constructed based on their correlation (for more details, see Chapter 20 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines*, [FAO, 2018a](#); as well as [FAO, 2018c](#) and David, 1978,).

0203 AREA OF HOLDING ACCORDING TO LAND USE TYPES

²⁸ Regarding crop area, paragraph 7.4.1 explains that when the same area is planted two or more times in the case of successive cropping or during two different seasons, the planted area should be counted only once.

Essential item. Reference period: census reference year

7.2.8 This item provides a breakdown of the total area of the holding collected in Item 0201 according to land use. While data on total area of the holding are based on the census reference day (see paragraph 7.2.6), in determining land use reference is made to the activities carried out during the census reference year.

7.2.9 The internationally accepted standard for land use is the FAO land use classification ([FAO, 2024c](#)), which served as the basis for the interim land use classes of the SEEA Central Framework, adopted by the UNSC in 2012, and the SEEA Agriculture Forestry and Fisheries (AFF), accepted as an internationally recognized methodological document in support of the SEEA, in 2018. The land use classes recommended in these guidelines are harmonized with the FAO land use classification (see Annex 5).

7.2.10 In its basic form, the FAO Land Use Classification covers land in the sense of terrestrial areas and inland waters, but in its extended form it may also cover coastal waters and Exclusive Economic Zones (EEZ) of a country. According to FAO and SEEA, land use reflects both (i) the activities undertaken and (ii) the institutional arrangements established for a given area for the purposes of economic production or the maintenance and restoration of environmental functions. Use of an area implies some form of human intervention or management. Land in use therefore includes, for example, protected areas under the active management of institutional units of a country for the purpose of excluding economic or human activity. The FAO land use classes also cover areas not in use, to provide a complete accounting of the land within a country.

7.2.11 Land use should be distinguished from “land cover”, which describes the physical characteristics of the land, such as grassland or forest.

7.2.12 The FAO land use classes are designed to cover the whole territory of a country. Therefore, not all of its classes are directly relevant for describing the area of an agricultural holding. For the purposes of the agricultural census, it is recommended that nine basic land use classes be identified:

- Land under temporary crops;
- Land under temporary meadows and pastures;
- Land temporarily fallow;
- Land under permanent crops;
- Land under permanent meadows and pastures;
- Land under farm buildings and farmyards;
- Forest and other wooded land;
- Area used for aquaculture (including inland and coastal waters if part of the holding);
- Other area not elsewhere classified.

7.2.13 Definitions of these land use classes are given in paragraphs 7.2.18 - 7.2.37. The area of the holding is classified according to its main land use. See paragraph 7.2.17 for more information about main land use.

7.2.14 For presenting agricultural census results, the nine land use classes should be grouped in a suitable way. This can be done using terms such as agricultural land, cultivated land, cropland and arable land, although there are no standard definitions for many of these terms. For example, in some countries arable land is defined as land that is potentially cultivable, while in others it is considered to be land under temporary crops or meadows. Figure 1 shows the basic and aggregate land use classes recommended by WCA 2030. The relationship between the basic land use classes recommended by WCA 2030 and the relevant categories or classes of the SEEA land use classification is provided in Annex 5.

Figure 7.1: Classification of land use for the agricultural census

Basic land use classes		Aggregate land use classes		
LU1. Land under temporary crops	LU1-3. Arable land	LU1-4. Cropland	LU1-5. Agricultural land	LU1-6. Land used for agriculture
LU2. Land under temporary meadows and pastures				
LU3. Land temporarily fallow				
LU4. Land under permanent crops				

LU5. Land under permanent meadows and pastures		
LU6. Land under farm buildings and farmyards		
LU7. Forest and other wooded land		
LU8. Area used for aquaculture (including inland and coastal waters if part of the holding)		
LU9. Other area not elsewhere classified		

Source: Authors' own elaboration.

7.2.15 A country may choose to use its own land use classes and classification if these are well established and meet national needs. In particular, a country may wish to further disaggregate the proposed basic land use classes (see Annex 5). For example, "land under permanent meadows and pastures" may be subdivided into cultivated and naturally grown; "forest and other wooded land" into "forest land" and "other wooded land"; and "forest land" into naturally grown and planted. Countries using their own land use classes should ensure that these can be aggregated into the nine basic land use types. Land use data should also be presented according to FAO recommendations to enable international comparison.

7.2.16 Land use data are often collected at parcel level. A parcel may have more than one land use, and questionnaires should normally allow for the parcel area to be divided into more than one land use type. For example, if some fields in a parcel are used for temporary crops while others are fallow, the areas under temporary crops and fallow should be recorded separately. The areas under the different land use classes should add up to the total area of the parcel.

7.2.17 Sometimes a parcel or field has mixed land uses that cannot be subdivided, for example, where permanent and temporary crops are grown together as associated crops (see paragraph 7.4.20), or where the same land is used for aquaculture in one season and rice cultivation in another. In such cases, land use should be determined according to its main use. Main use is normally defined on the basis of the value of production from each activity, such as for associated permanent and temporary crops or aquaculture–agriculture combinations. Where value of production is not an appropriate criterion (as in forestry), the main use may be determined on the basis of the primary purpose of the land area, for example in agriculture–forestry combinations. Where agriculture, aquaculture or forestry activities are carried out on the same land together with other activities, the agricultural, aquacultural or forestry use normally takes precedence. If land use changes during the year, such as when fruit trees are planted on land formerly used for rice, the land should be classified under its current use.

7.2.18 **Land under temporary crops** includes all land used for crops with a less than one-year growing cycle which must be newly sown or planted for further production after the harvest. Some crops that remain in the field for more than one year may also be considered temporary crops, e.g. asparagus and sugar cane (see ISIC Group 011 in Annex 2). Multiple/successive cropped areas are counted only once.

7.2.19 Annex 6 provides the Indicative Crop Classification, which is recommended to be used by countries, including for identification of crop types, i.e. temporary or permanent crops. If a country uses a national breakdown of crops by temporary and permanent types that differs from the one recommended by ICC, the differences should be specified in the census report.

7.2.20 The area of land under temporary crops refers to the physical area of land on which temporary crops are grown. When measuring the area of land under temporary crops, the gross area should be considered, that is, the area including uncultivated patches, bunds, footpaths, ditches, headlands, shoulders and shelter beds, rather than the net area, which excludes them. For more information on the distinction between gross and net area, see paragraphs 35 and 58 of *Estimation of crop areas and yields in agricultural statistics* (FAO, 1982).

7.2.21 **Land under temporary meadows and pastures** includes land temporarily cultivated with herbaceous forage crops for mowing or pasture, as part of crop rotation periods of less than five years. A period of less than five years is used to differentiate between temporary and permanent meadows and pastures. If country's practice differs from this, the country definition should be clearly indicated in census reports.

7.2.22 **Land temporarily fallow** refers to land that is not seeded for one or more growing seasons, usually for a period of less than five years. Such land may also be sown exclusively for the production of green manure. It may form part of the holding's crop rotation system or be left fallow because the normal crop cannot be planted due to flood damage, lack of water, unavailability of inputs or other reasons.

7.2.23 Land is not considered temporarily fallow unless it has been, or is expected to be, left at rest for at least one agricultural year. If the census is conducted before sowing or planting has been completed, land lying fallow at that time but intended to be put under crops soon afterwards should be classified as land under temporary crops, not as fallow. Fallow land temporarily used for grazing should still be classified as fallow if it is normally used for growing temporary crops.

7.2.24 Land left fallow for too long may acquire characteristics that require it to be reclassified, for example as "permanent meadows and pastures" if used for grazing, "forest and other wooded land" if overgrown with trees, or "other land" if it becomes wasteland. The maximum idle period is usually less than five years. Land cultivated on a two- or three-year rotational basis is considered fallow if it was not cultivated during the reference year. Land temporarily fallow should be distinguished from land abandoned through shifting cultivation: the former remains part of the holding, while the latter does not.

7.2.25 Land under permanent crops refers to land cultivated with long-term crops that do not need to be replanted for several years, land with trees and shrubs producing flowers (such as roses and jasmine), and nurseries (except forest tree nurseries, which should be classified as "forest and other wooded land"). Land under permanent meadows and pastures is excluded from permanent crops.

7.2.26 The ICC is provided in Annex 6, with the specification of permanent crops (see also paragraph 7.2.19).

7.2.27 **Land under permanent meadows and pastures** includes land used permanently (growth cycle of five years or more) to grow herbaceous forage crops, through cultivation or naturally (as wild prairie or grazing land). Permanent meadows and pastures on which trees and shrubs are grown should be recorded under this heading only if the growing of forage crops is the most important use of the area. Measures may be taken to keep or increase productivity of the land (i.e. use of fertilizers, mowing or systematic grazing by domestic animals.) This class includes:

- Grazing in wooded areas (agroforestry areas, for example)
- Grazing in shrubby zones (heath, maquis, garigue)
- Grassland in the plain or low mountain areas used for grazing: land crossed during transhumance where the animals spend a part of the year (approximately 100 days) without returning to the holding in the evening: mountain and subalpine meadows and similar; and steppes and dry meadows used for pasture.

7.2.28 Whether **land under permanent meadows and pastures** is cultivated or naturally grown has important environmental implications; therefore, countries are encouraged to further subdivide it according to this characteristic.

7.2.29 **Land under farm buildings and farmyards** refers to land used for agriculture occupied by dwellings on farms, operating buildings (such as hangars, barns, cellars, greenhouses and silos), buildings for animal production (such as stables, cow sheds, pig sheds, sheep pens and poultry yards), facilities for hydroponics or vertical farming, and farmyards. It includes land used for growing temporary or permanent crops under protective cover, as well as land used for family or kitchen gardens. The area under the holder's house, including the surrounding yard, is also classified here if it forms part of the agricultural holding. This category excludes buildings for agrifood manufacturing and buildings in rural areas used exclusively for residential purposes (see paragraph 7.2.5).

7.2.30 **Forest and other wooded land** is land not classified as "agricultural land" that satisfies either of the following definitions:

- **Forest land** is land of more than 0.5 ha with trees higher than 5 m and a canopy cover of more than 10 percent, or with trees capable of reaching these thresholds in situ. It includes both

natural and plantation forests, as well as forest roads, firebreaks and other small open areas. Areas temporarily without trees (owing to clear-cutting under forest management, abandoned shifting cultivation or natural disasters) are also included if they are expected to revert to forest within five years (in exceptional cases, a longer time frame may be justified by local conditions). Windbreaks, shelterbelts and tree corridors with an area of more than 0.5 ha and a width of more than 20 m are included, as are forest tree nurseries that form an integral part of the forest.

- **Other wooded land** is land spanning more than 0.5 ha²⁹ with: (i) trees higher than 5 m and a canopy cover of 5 to 10 percent, or trees able to reach these thresholds *in situ*; (ii) trees not able to reach a height of 5 m *in situ* but with a canopy cover of more than 10 percent (e.g. some alpine tree vegetation types, arid zone mangroves, etc.); or (iii) combined cover of shrubs, bushes and trees of more than 10 percent.

7.2.31 Forest or other wooded land of less than 0.5 ha that is not classified as agricultural land should be recorded under “other area not elsewhere classified”. Some countries, particularly those with very small territories such as small island States, may wish to apply a lower threshold or no threshold at all when classifying land as “forest land” or “other wooded land”. In such cases, the country should clearly state this in the census report and provide separate tabulations for holdings with forest or wooded land above 0.5 ha, to ensure international comparability.

7.2.32 A clear distinction must be made between “forest and other wooded land” and “land under permanent crops”. Plantations of rubber or Christmas trees, as well as palm and other cultivated food tree crops, are generally classified as permanent crops, while plantations of bamboo, cork oak, eucalyptus for oil or other cultivated non-food tree crops are classified as forest and other wooded land. Special cases may arise and should be addressed according to national conditions and practices. The treatment of borderline cases should be clearly explained in the presentation of census results.

7.2.33 In agroforestry systems, land used predominantly for agricultural purposes (e.g. grazing in wooded areas or shrubby zones) is excluded from “forest and other wooded land”, even if it meets the height and canopy cover criteria described above. However, some agroforestry systems, such as the Taungya system, where crops are grown only during the first years of forest rotation, should be classified as forest.

7.2.34 **Area used for aquaculture** includes area (land, inland waters, or coastal waters) for aquaculture facilities, including supporting facilities. Aquaculture refers to farming of aquatic organisms such as fish, molluscs, crustaceans, plants, crocodiles, alligators and amphibians (see paragraph 7.10.3). Farming implies some form of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc.

7.2.35 According to national circumstances, countries may wish to further subdivide this class into three subclasses in line with the FAO Land Use Classification (see Annex 5), specifically “land used for aquaculture”, “inland waters used for aquaculture” and “coastal waters used for aquaculture”. Definitions of these subclasses as well as more information on aquaculture are given in Annex 4, additional item 1002, paragraphs 2 and 3 under Theme 10 Aquaculture.

7.2.36 **Other area not elsewhere classified** includes all areas of the holding not covered by other categories. This includes uncultivated land producing some type of utilizable vegetable product, such as reeds or rushes for matting and livestock bedding, wild berries, or plants and fruit. It also covers land that could be brought into crop production with only slightly more effort than common cultivation practices. Also included in this category are land occupied by non-farm buildings, parks and ornamental gardens, roads or lanes (except forest roads, which are included under forest; see paragraph 7.2.30), open spaces used for storing equipment and products, wasteland, land under water not used for aquaculture, and any other area not reported under previous classes (such as marshlands and wetlands).

7.2.37 FAO’s recommended land use classification in the Figure 7.1 includes the following aggregate classes:

²⁹ This minimum threshold is introduced for harmonization with the definition of the “forest land” and “other wooded land” in the FAO land use classification.

- **Arable land** is land used for cultivation of crops in rotation with fallow, meadows and pastures within cycles of up to five years. It includes the total of areas under "Temporary crops", "Temporary meadows and pastures" and "Temporary fallow". Arable land does not include land under permanent crops or land that is potentially cultivable but is not normally cultivated.
- **Cropland** is the total of arable land and land under permanent crops.
- **Agricultural land** is the total of cropland and permanent meadows and pastures.
- **Land used for agriculture** is the total of "agricultural land" and "land under farm buildings and farmyards".

0204 AREA OF HOLDING ACCORDING TO LAND TENURE TYPES

- *Legal ownership or legal owner-like possession*
- *Non-legal ownership or non-legal owner-like possession*
- *Rented from someone else (including rent-free)*
 - *Rented-in, leased or sharecropped with written agreement*
 - *Rented-in, leased or sharecropped without written agreement*
- *Other types of land tenure, including*
 - *State or common land used with written agreement (certified use rights)*
 - *State or common land used without written agreement (uncertified use rights)*
 - *Occupied/squatted without any permission*

Essential item. Reference period: census reference day

7.2.38 Item 0204 refers to the breakdown of the total area of the holding according to specific land tenure types. A holding may have one or more tenure types corresponding to each land parcel (for the definition of a parcel, see paragraph 4.19). Land tenure refers to the arrangements or rights under which the holder operates the land making up the holding. A distinction is made between legal and non-legal ownership, as this is a key element of tenure security. There are many different systems of formal and informal land tenure worldwide, and the distinction between legal and non-legal ownership is often blurred. Some broad guidelines are provided in the following paragraphs, but it is recognized that countries should define land tenure types according to national circumstances.

7.2.39 Broadly speaking, **legal ownership or legal owner-like possession** refers to land rights that provide statutory security of tenure. Security of tenure has several aspects. Most importantly, ownership must be recognized by the state, with administrative structures in place to ensure that property rights are enforceable. This may be achieved through a formal land title system, but it may also include certain forms of customary land tenure arrangements in which land rights are registered or certified in some way. Typically, legal ownership means that the landowner has the right to determine how the land is used (within certain limits) and may also have the right to sell or rent out the land. It also implies that the owner may access credit using the land as collateral. The following types of tenure arrangements may be included under this heading:

- The holder or members of the holder's household possess title of ownership, which gives the holder the right to determine the nature and extent of the use of the land.
- The land is held under conditions that enable it to be operated as if legally owned by the holder or members of the holder's household. A common type of legal owner-like possession is where land is operated under hereditary tenure, perpetual lease or long-term lease, with nominal or no rent.
- The land is held under a tribal or traditional form of tenure, which is legally recognized by the state. Such arrangements usually involve land being held on a tribal, village, kindred or clan basis, with land ownership being communal in character but with certain individual rights being held by virtue of membership in the social unit. Such arrangements can be formalized through the establishment of legal procedures to identify the community's land and to manage the land rights of community members.

7.2.40 Optionally, the country may ask about the person or persons who own the land. This information is important for calculating SDG indicator 5.a.1 (See Annex 11).

7.2.41 **Non-legal ownership or non-legal owner-like possession** describes a variety of informal land tenure arrangements, which do not provide security of tenure, and where circumstances could arise in which the holder may be dispossessed of the land. The following types of tenure arrangements may be included under this heading:

- The holder or members of the holder’s household have operated the land without interruption for a long period without any form of legal ownership, title, long-term lease or payment of rent.
- The land is operated under a system in which a rent-free plot of tribal or other communal land is received and retained as long as it is kept under cultivation by the recipient's personal and household labour, but which cannot be sold or mortgaged.
- The holder is operating land owned by the state, without any legal rights.
- The land operated by the holder is held under a tribal or traditional form of tenure, which is not recognized by the state and is outside the realm of the law.

7.2.42 **Rented land from someone else** means that the holding rented or leased land from other people, usually for a limited time period. Rental arrangements can take different forms. Land may be rented for an agreed sum of money and/or produce, for a share of the produce or in exchange for services. Land may also be granted rent-free.

7.2.43 Rental arrangements may take different forms:

- Land rented for **an agreed sum of money and/or produce** is usually the result of a straightforward transaction between the owner of the land and the holder, who takes responsibility for managing and operating the land.
- **Share of the produce**, either in kind or in equivalent amount of money, covers the situation in which a share amount is agreed upon by the owner and the holder, depending on local conditions and the type of agriculture involved. Technical responsibility for management is usually exclusively with the holder, but is sometimes shared, to a limited degree, with the owner. Here, the owner may contribute tools, fertilizers or other aids, and may also share the economic risks.
- **Exchange for services** refers to arrangements in which the holder is granted the use of land in return for services. This is often in lieu of wages, for example when an agricultural labourer operates a piece of land in return for working unpaid for the landlord for a certain number of days. Another example is when a holder is granted the use of land as partial payment for services to a government body, religious organization or other institution.
- **Other rental arrangements** include land granted rent-free, perhaps under stipulated conditions such as growing certain crops.

7.2.44 There are various **other types of land tenure**:

- “Common land” is agricultural land used by a holding but not directly belonging to it, that is, land on which common rights apply. Such land is normally under the responsibility of a public authority (e.g. the state or a parish), while other persons are entitled to exercise rights of common, usually in conjunction with others. Common land consists mainly of permanent grassland, although it may also include horticultural or arable land. These areas are most often used for grazing animals.
- Land operated on a squatter basis – that is, private or public land operated without ownership title and without the owner's consent.
- Land operated under transitory tenure forms, such as trusteeship; land received by members of collective holdings for individual use; and land under inheritance proceedings. Countries may add further classes to suit local conditions.

7.2.45 When common land is used by several holdings for agricultural production, it should be allocated to the respective holdings, in the same way that rented land is not considered part of the owner's holding but rather part of the tenant's holding.

7.2.46 The area of common land assigned to a particular holding should be determined proportionally. This option is recommended if there is a guarantee of no double counting of the area.

7.2.47 Holdings report all the categories to describe the tenure of the land used by the holding. Possible multiple responses provided by holdings have to be clearly tabulated as one tenure or two and more in the census report.

Theme 3: Irrigation

7.3.1 **Irrigation** refers to the intentional supply of water to land, as opposed to rainfall, to improve pastures or crop production. It usually involves infrastructure and equipment for applying water to crops, such as irrigation canals, pumps, sprinklers or localized irrigation systems. It also includes manual watering of plants using buckets, watering cans or other devices. Uncontrolled flooding of land by overflowing rivers or streams is not considered irrigation.

7.3.2 Irrigation includes any process by which water is transported from a source and applied to agricultural crops. Water for irrigation may come from rivers, dams or wells, as well as from non-conventional sources such as wastewater or desalinated water. It may be provided through a major irrigation scheme serving many farmers across a large area, a local scheme serving a small community, or through individual arrangements whereby farmers obtain water from rivers, streams, wells or ponds using equipment such as pumps or manual methods such as buckets. In urban and peri-urban areas, irrigation may also be carried out with hoses and buckets, sometimes using the municipal water supply.

7.3.3 Irrigation includes fully controlled and partially controlled irrigation. Fully controlled irrigation refers to surface, sprinkler and localized irrigation methods. Partially controlled irrigation refers to the use of floodwaters for crop irrigation (spate irrigation) or to equipped lowlands, including water control methods in wetland areas and inland valley bottoms, as well as flood recession cultivation. Items 0302 and additional Items 0301, 0303, 0307 and 0309 apply to both fully and partially controlled irrigation. Additional Items 0304, 0305 and 0306 are relevant to fully controlled irrigation methods, while additional Item 0308 applies to partially controlled irrigation methods (see Annex 4 for descriptions of additional items).

7.3.4 Items 0301 to 0308 concern the actual use of irrigation, not whether the holding is equipped for irrigation. A holding may have irrigation infrastructure such as canals or sprinkler systems but may not use them during the reference period due to water shortages, lack of fuel, inability to pay water fees or favourable weather conditions. Irrigation is defined as the provision of water at least once during the census reference year, regardless of whether the amount was sufficient. Additional Item 0309 refers to the area equipped for irrigation, while additional Item 0310 relates to the presence of drainage equipment on the holding (see Annex 4). Both items are important for sample surveys on irrigation and drainage equipment.

0302 AREA OF LAND ACTUALLY IRRIGATED: FULLY CONTROLLED AND PARTIALLY CONTROLLED IRRIGATION

- Fully controlled irrigation
- Partially controlled irrigation

Essential item. Reference period: census reference year

7.3.5 This item covers areas actually irrigated by both fully controlled and partially controlled irrigation. The area refers to the physical land irrigated, not the total area of crops irrigated. Thus, if the same land is cropped, irrigated and harvested twice in a year, it is counted only once. Additional Item 0305 relates to the area of crops actually irrigated (see Annex 4). Area actually irrigated is an important stratification variable in sampling frames for census supplementary modules and ongoing surveys on irrigation.

7.3.6 This item is a holding level item. However, for operational reasons, countries may find it easier to collect the data at the parcel level and aggregate up to the holding level.

Theme 4: Crops

0402 AREA OF TEMPORARY CROPS PLANTED (for each temporary crop type)

Essential item. Reference period: census reference year

7.4.1 In this new item, **area planted** refers to the total physical area on which sowing or planting was carried out on prepared soil at least once during the reference year. If the same area is planted more than once, as in successive cropping or in two different seasons, the area should be counted only once. When assigning a crop to a planted area in cases of successive cropping, the crop with the highest value or the crop that occupied the land for the longest time should be considered.

7.4.2 In the case of intercropping, mixed cropping or associated crops, the criterion for allocating the planted area between crops may follow the same approach described in Item 0403 (see paragraphs 7.4.11 to 7.4.15). Some countries may prefer to report a crop mixture or interplanting as a single crop unit rather than as individual crops, as it represents an important production system. However, it is recommended that, where possible, the planted area of such mixtures also be subdivided into their component crops to allow international comparisons of planted areas. Data on temporary crops should be collected with respect to the census reference year to reflect crops grown in all seasons of that year. The agricultural year is generally the most appropriate reference period, as both enumerators and farmers can usually relate to it easily when reporting crop data. Crops should normally be reported according to the year in which they are planted. The approach for reporting planted area is the same as that discussed in paragraphs 7.4.6 and 7.4.7 for harvested area.

7.4.3 As mentioned in paragraph 7.2.7, in some countries, holders may not be able to provide reliable estimates of crop areas. Alternative methods are sometimes employed in sample surveys, such as objective measurement, to improve the declared crop areas in the census by calculating correction factors.

0403 AREA OF TEMPORARY CROPS HARVESTED (for each temporary crop type)

Essential item. Reference period: census reference year

7.4.4 Area harvested refers to the total area from which a crop is gathered. Area where harvest was lost because of drought, flooding, pest attack or other causes is excluded. A percentage loss criterion, such as the proportion of area lost due to extreme events (droughts, floods, etc.), may be applied to determine whether a crop should be considered destroyed. Crops that are damaged but not destroyed are included in the area harvested. Where possible, the area harvested should exclude uncultivated patches, footpaths, ditches, headlands, shoulders and shelterbelts.

7.4.5 Area harvested covers only crops grown to maturity. It does not include nurseries where plant propagation materials are produced for sale or for use on the holding (see Annex 4, Theme 4, paragraphs 22–23). For example, if rice seedlings are grown for transplanting on the holding, the nursery area is not included in the area harvested, but the harvest from the transplanted seedlings is included. Area harvested includes all crops gathered regardless of end use, whether for human consumption, animal feed, biofuels or other purposes. Crops grown to maturity specifically for seed production (“seed fields”) should also be included.

7.4.6 Usually, it is straightforward to assign crops to the reference year. However, some crops may be planted in one agricultural year and harvested in the next. In other cases, the crop season may extend over a long period, resulting in part of the crop being harvested in one year and the remainder in the next. Difficulties also arise when crop seasons differ across regions of a country, for example when a seasonal crop is planted late in the agricultural year in one area and early in the following year in another.

7.4.7 The recommended approach is to identify crops in the census according to whether they are harvested during the reference year, with special exceptions for end-of-year crops. An alternative approach used by some countries is to classify crops by the season in which they grow, rather than by the agricultural year. Depending on how end-of-year crops are treated and on the timing of data collection, some crops may not yet be harvested at the time of the census, in which case data on “expected area harvested” should be reported. As noted in Chapter 4 (paragraph 4.45), the timing of census fieldwork is crucial. Accurate data on harvested area depends heavily on aligning fieldwork with the agricultural and cropping calendar.

7.4.8 Temporary crops may be grown more than once on the same land in the same agricultural year. These are called **successive crops**. They may involve the same crop or different crops and are common in countries with more than one cropping season. For successive crops, the area should be reported for each crop each time the land is sown during the year. For example, if a 1 ha field is used for rice in the summer and maize in the winter, the crop area data are reported as 1 ha of rice and 1 ha of maize. If two rice crops—a summer and a winter crop—are grown on the same 1 ha field during the year, the rice area is reported as 2 ha. Successive crops grown by two different holdings should be counted under each holding.

7.4.9 Successive crops should be distinguished from successive harvests of the same standing crop, such as sugar cane or hay, where the area is counted only once. The same applies when the same crop produces more than one product during the agricultural year, such as cotton producing both fibre and seed. In such cases, the area harvested should be reported under the principal product.

7.4.10 A plot or field in which one crop is planted between rows of another crop – for example, sorghum and groundnuts between cotton rows – is considered **inter-planted**. In such cases, the area of the inter-planted plot or field is assigned to each crop in proportion to the area it occupies, and the sum of the individual crop areas must equal the total area of the plot or field.

7.4.11 The same applies to **mixed crops**, where more than one crop, often several, is grown unsystematically in a plot or field. In such cases, it is more difficult to calculate the areas and some estimation is required. Estimates may be based on the quantity of seed used for each crop in the mixture, plant density, eye estimates of the proportions of area occupied by the component crops, or the number of plants per unit of area. The sum of the areas of the individual mixed crops must equal the total area of the plot or field.

7.4.12 In some cases, countries may choose to report a crop mixture or inter-planting as a single crop unit rather than as individual crops, particularly when the mixture represents an important production system. This often applies to crops that are intentionally grown together, especially grains, where it can be difficult to apportion the area to each crop. Such cases may be reported under a suitable crop title, such as “mixed cereals for grain”. However, it is recommended that, where possible, the area of these crop mixtures also be subdivided into their component crops to enable international comparisons. Standard crop mixtures, where they exist, can assist in this process.

7.4.13 A temporary crop grown in a compact plantation of permanent crops – a so-called **associated crop** – should be distinguished from a mixed crop. Normally, the area of the temporary crop is estimated by apportioning the land in a suitable manner. See paragraph 7.4.20 for more information.

7.4.14 Sometimes, temporary crops are grown scattered around the holding, and it is difficult to measure the area. Some estimation is usually possible where the crops are grown in some sort of systematic manner, such as on the bunds of a paddy field. If the crop is not planted systematically or sufficiently densely to permit the area to be measured, the crops are often omitted. Sometimes, countries impose a minimum size criterion for the collection of area data – for example, 100 m².

7.4.15 Countries could compare the area of crops planted (Item 0402) and the area of crops harvested (Item 0403) to assess crop loss if the census reference year is the same for both planted and harvested areas (see paragraphs 7.4.6 and 7.4.7). In cases when holders cannot provide reliable estimates of crop areas, please refer to paragraph 7.2.7.

0408 AREA OF PRODUCTIVE AND NON-PRODUCTIVE PERMANENT CROPS IN COMPACT PLANTATIONS (for each permanent crop type)

Essential item. Reference period: census reference day

7.4.16 **Permanent crops** are crops with a more than one-year growing cycle (see paragraph 7.2.25). For help in identifying crops, see Annexes 6 and 7. For the definition of a **compact plantation**, see Annex 4, Theme 4, paragraph 13).

7.4.17 **Area of permanent crops** refers to the area of the crop at a single point of time. Permanent crops should only be included if they are grown for the purpose of producing crops. This category does not include nurseries, where plant propagation materials are produced for sale or use on the holding (see Annex 4, Theme 4, paragraph 22). In addition to the area, some countries may also wish to collect data on the number of permanent crop trees in compact plantations.

7.4.18 **Permanent crops of productive age** refer to permanent crops already bearing fruit or otherwise productive. Most tree crops and some other permanent crops become productive after a certain age. Crops at that stage should be enumerated as “of productive age” even if, due to weather or other reasons, they did not yield a harvest in the most recent season. Senile or other trees of productive age, but no longer productive, should not be considered as productive.

7.4.19 Two or more permanent crops grown together in a compact plantation should be treated in the same way as inter-planted or mixed temporary crops (see paragraphs 7.4.11 -7.4.12).

7.4.20 Special procedures are required to measure areas where permanent crops are grown in a compact plantation in association with temporary crops (see also paragraph 7.4.13). If the density of trees or plants for the permanent crop is not affected by the presence of temporary crops, the area of permanent crops is normally recorded as the full area of the compact plantation. This is common when temporary crops are grown between rows of existing trees or plants, sometimes even benefiting the permanent crop. For example, a 1 ha compact plantation of coffee grown with vegetables would be recorded as 1 ha of coffee and 0.5 ha of vegetables. In this case, the total area of the associated crops is greater than the physical area of the land. This differs from the treatment of inter-planted or mixed crops (see paragraphs 7.4.11–7.4.12). Often, associations of temporary and permanent crops are complex, with several types of each grown together in a single compact plantation, requiring countries to develop procedures suited to their national circumstances.

0409 NUMBER OF PERMANENT CROP TREES IN SCATTERED PLANTINGS (for each tree crop)

Essential item. Reference period: census reference day

7.4.21 Item 0409 refers to the number of trees in scattered permanent crops for tree crops. Tree crops are defined as permanent crops in group 3, class 4.04 or class 9.04 of the crop classification (see Annex 6). Countries may wish to include other permanent crops, if suitable. Nurseries are excluded (see Annex 4, Theme 4, paragraphs 22–23).

7.4.22 For the definition of **permanent crops**, see paragraph 7.4.16. For help in identifying crops, see Annexes 6 and 7. **Scattered plants** are those planted in such a manner that it is not possible to estimate the area. Often, they are scattered around the holding.

0413 USE OF DIFFERENT TYPES OF FERTILIZING PRODUCTS (for the holding)

- *Fertilizers*
 - . *Mineral fertilizers*
 - . *Organo-mineral fertilizers*
 - . *Organic fertilizers*
 - . *Biofertilizers*
 - . *Manure*
- *Other organic materials to enhance plant growth*
- *Biostimulants*

Essential item. Reference period: census reference year.

7.4.23 For the purposes of the agricultural census, **fertilizers** are mineral or organic substances, natural or manufactured, applied to soil, irrigation water or a hydroponic medium to supply plants with nutrients or to enhance plant growth. The term “fertilizer” generally refers to sources of plant nutrients containing at least 5 percent of a combination of the three primary nutrients (N, P₂O₅ and K₂O). Products with less than 5 percent of combined plant nutrients should be recorded under “other organic materials to enhance plant growth”. A holding may use one or more types of fertilizer.

7.4.24 **Mineral fertilizers** are nutrient-rich products prepared from inorganic materials through industrial processes. Manufacturing may involve mechanical enrichment, simple crushing, or more elaborate chemical transformation of one or more raw materials. Mineral fertilizers are also referred to as “chemical fertilizers”, “artificial fertilizers” or “inorganic fertilizers”.

7.4.25 **Organo-mineral fertilizers** are materials produced by blending or processing organic materials with mineral fertilizers to increase their nutrient content and fertilizing value. In these fertilizers, the mineral nutrients are bound and absorbed by the organic component, which helps ensure a gradual release of nutrients in the soil and reduces nutrient losses.

7.4.26 **Organic fertilizers** are carbon-rich products prepared from processed plant or animal material and/or unprocessed mineral materials (such as lime, rock or phosphate) that contain at least 5 percent of combined plant nutrients. They include materials of animal origin such as guano, bone meal, fish meal, leather meal and blood meal. Other organic materials, such as compost and sewage sludge, which contain less than the required nutrient content, should be classified as “other organic materials to enhance plant growth”.

7.4.27 **Biofertilizers** are products containing living or dormant micro-organisms, such as bacteria, fungi, actinomycetes or algae, alone or in combination, which provide nutrients to enhance plant growth. When applied, these microbial inoculants help fix atmospheric nitrogen or solubilize and mobilize soil nutrients ([FAO, 2019](#)).

7.4.28 **Animal manure** is material from livestock production operations used for fertilization purposes. It has three main forms: solid or farmyard, liquid and slurry. **Solid or farmyard** manure is a mixture of solid excreta from domestic animals with or without bedding litter, sometimes including a small amount of urine. **Liquid** manure is urine from domestic animals, sometimes with a small amount of excrement and/or water. **Slurry** is manure in liquid form, consisting of a mixture of liquid and solid animal excreta, with or without dilution by water and/or a small amount of litter. Manures enhance soil fertility by adding organic matter and nutrients such as nitrogen, phosphorus, potassium and micronutrients.

7.4.29 **Other organic materials to enhance plant growth** are plant, animal or unprocessed mineral materials, other than fertilizers, applied to the soil to correct low nutrient content or other problems. They include lime, gypsum, sawdust, crop residue and synthetic soil conditioners, which may vary widely in composition. These materials may contain fertilizer elements but are primarily used to improve soil properties such as structure, porosity, water-holding capacity, aeration and temperature control. Green manure or cover crops (GMCCs) ([FAO, 2011](#)) are plants grown to provide soil cover and improve the physical, chemical and biological characteristics of soil, either sown independently or alongside crops. Compost consists of organic material of animal, plant or human origin partially decomposed through fermentation. Sewage sludge is residual organic material derived from sewage.

7.4.30 **Biostimulants** are products that stimulate plant growth through the synthesis of growth-promoting substances and/or plant nutrition processes independently of nutrient content. Their aim is to improve one or more of the following: plants’ nutrient use efficiency or uptake, tolerance to abiotic stress, or crop quality traits ([FAO, 2019](#)).

Theme 5: Livestock

7.5.1 **Livestock** refers to all animals, birds and insects kept or reared in captivity mainly for

agricultural purposes. This includes terrestrial species such as cattle, buffaloes, horses and other equine animals, camels, sheep, goats and pigs, as well as avian species (poultry), bees (counted by number of colonies), silkworms and others (see Annex 8). Domestic animals such as cats and dogs are excluded unless raised for food or other agricultural purposes. Further details on livestock are provided in the explanatory notes of the Central Product Classification (CPC), Version 3.00 ([UN, 2025b](#)).

7.5.2 This theme should cover all livestock described in paragraph 7.5.1 that are raised on the holding. Reference should be made to the list of livestock species in Annex 8. Sometimes, a country may wish to subdivide an important livestock species by breed or by adaptation to local conditions (i.e. livestock types); for example, chickens may be split into locally adapted and exotic breeds.

0501 TYPE OF LIVESTOCK PRODUCTION SYSTEM (for the holding)

- . *Integrated cro--livestock production systems/mixed systems*
- . *Specialized livestock production systems*
 - o *Landless livestock production systems*
 - . *Landless backyard livestock production system*
 - . *Landless intensive livestock production system*
 - o *Grassland-based livestock production systems/grazing system*
 - . *Pastoralism*
 - . *Ranching*

Essential item. Reference period: census reference day

7.5.3 The **livestock production system (LPS)** refers to the general characteristics and practices of raising livestock on the holding. There are large variations in the scale and intensity of livestock production systems ([FAO, 2009](#)) and it is difficult for a classification system to capture all of this diversity. For the purpose of the agricultural census the following livestock systems are identified:

1. **Integrated crop-livestock production systems or “mixed” LPS** are those in which either 10 percent or more of the dry matter fed to animals comes from crop by-products or stubble, or 10 percent or more of the total value of production comes from non-livestock farming activities ([Seré and Steinfeld, 1996](#)), or those where 15 percent or more of the land area has to be dedicated to cropping ([Teufel et al., 2010](#)). Moreover, mixed systems are found in areas dominated by cropland or areas with growing period of 60 days or more and human density 20 people or more per km² (see Global Livestock Environmental Assessment Model (GLEAM) in [FAO, 2022b](#)).
2. **Specialized livestock production systems**

2.1 Landless livestock production systems are those in which less than 10 percent of the dry matter fed to animals is farm-produced and in which annual average stocking rates are less than 10 livestock units (LSUs) per hectare of agricultural land ([Seré and Steinfeld, 1996](#)). They can be found in all agroecological zones where livestock rearing depends on external feed resources and where on-farm feed production is nil ([Teufel et al., 2010](#)). LSU is a reference unit that is used to make different species comparable and to calculate stocking densities of all different species together in a single value. In GLEAM ([FAO, 2022b](#)), the reference unit that is used to calculate LSU is based on the weight of a North American dairy cow (1.0 LSU) and takes into account the variations in weights for different cohorts (based on the calculated herd structure).

2.1.1 Landless backyard livestock production systems are those where farmers keep a few LSUs (1 to 5) mainly used for family needs which are fed with material coming from outside the farm or internal by-products with extensive management.

2.1.2 Landless intensive livestock production systems are high-external input dependent and (sometimes called industrial) systems; examples include cattle feedlots systems ([FAO, 2022c](#)). An emerging type of landless intensive livestock production systems are so-called vertical systems, which are fully independent from the natural

environment. This includes vertical farming of poultry, which involves raising domestic birds, such as chickens or quails, in multi-tiered structures designed to optimize space and resources.

2.2 Grassland-based livestock production systems are those where at least 10 percent of the dry matter fed to animals is farm-produced and the annual average stocking rates are 10 or less LSU per hectare of agricultural land ([Seré and Steinfeld, 1996](#)), [Notenbaert et al. \(2009\)](#) define grassland-based systems as those with a cropland coverage of less than 10 percent of the total land area. Grassland-based livestock production systems are found in areas dominated by pastures and rangelands with a short growing period (less than 60 days) or very low human density (20 people or fewer per km²) ([FAO, 2022c](#)). Grassland-based systems include pastoralism ([Notenbaert et al., 2009](#)) and ranching:

2.2.1 Pastoralism ([FAO, 2001](#)): differentiated depending on the level of migration:

- a. Mobile pastoralism or nomadic pastoralism, where there is usually no established home base and people migrate with their animals following the availability of natural resources;
- b. Transhumance (seasonal migration of animals and herd-splitting); and
- c. Agropastoralism and silvopastoralism (no human migration, feed supplementation from crop and/or tree production).

2.2.2 Ranching: no human migration, land control with land boundaries and commercial purposes.

0502 NUMBER OF ANIMALS (for each livestock species)

Essential item. Reference period: census reference day

7.5.4 The number of livestock is one of the essential items of the agricultural census and is especially useful as a means of providing sampling frames for livestock-related census supplementary modules and surveys.

7.5.5 The **number of animals** refers to the animal population on the holding at a specific point in time, usually the census reference day. The animal population is the number of animals being raised by the holding on the reference date, regardless of ownership. As mentioned in paragraph 7.5.1, species include cattle, buffaloes, horses and other equine animals, camels, sheep, goats and pigs, as well as avian species (poultry), bees (counted by number of colonies), silkworms and others (see Annex 8). Animals raised include those present on the holding as well as those being grazed on communal land or in transit at the time of enumeration, except livestock belonging to another holding that are moved temporarily for sanitary or other reasons. The latter should be reported by the other holding. If other units are used, this must be specified in reports and dissemination products.

7.5.6 A holding is considered to be **raising** an animal if it has primary responsibility for looking after the animal on a long-term basis and for making day-to-day decisions about its use. Most holders own and raise their own animals, but sometimes they raise animals belonging to someone else under a lease agreement. This may involve payment in cash or in other forms, such as a share of the livestock produce. A distinction must be made between raising an animal and being employed by an animal owner to look after the animal, where the owner remains the decision-maker. Such arrangements are often complex; for example, a person may work as an employee under the condition that any offspring of the livestock being cared for belong to them. In this case, they may be an agricultural holder with respect to some livestock but working as an employee for other livestock. References to this distinction must be made in relation to Theme 9: Work on the holding.

0503 NUMBER OF FEMALE BREEDING ANIMALS (for each livestock species)

Essential item. Reference period: census reference day

7.5.7 **Breeding animals** refers to the number of female animals that are kept for reproduction

purposes rather than food production for each livestock species (see Annex 8).

Theme 6: Agricultural practices and equipment

7.6.1 Following the criterion of WCA 2020, the section on agricultural practices provides items to better cover some critical elements of sustainability in production systems. It should be noted that this section includes only items suitable for collection in the agricultural census and therefore does not provide a comprehensive set of items needed to measure the sustainability of agricultural practices. The section also includes some items already discussed in other themes, relisted here to highlight their contribution to sustainable practices. These items will help to measure the adoption of and transition to improved agricultural practices and structural changes that enhance the sustainable provision of goods and services in agriculture. The data can also contribute to defining and measuring key indicators of resource use efficiency and resilience.

0601 USE OF AGRICULTURAL PESTICIDES (for the holding)

- *Insecticides*
- *Herbicides*
- *Fungicides*
- *Plant growth regulators*
- *Rodenticides*
- *Other*

Essential item. Reference period: census reference year.

7.6.2 **Pesticides** refers to any substance, or mixture of substances of chemical, biological or genetic (synthetic) ingredients intended for repelling, destroying or controlling any pest, or regulating plant growth ([FAO and WHO, 2014](#)). These can be categorized as shown above.

7.6.3 **Insecticides** are substances used to kill or repel insects. **Herbicides** are substances used to destroy or inhibit the growth of plants, such as weeds. **Fungicides** are substances that destroy or inhibit the growth of fungi. **Plant growth regulators** are natural or synthetic substances used to control or modify plant growth processes without reducing nutritive value or causing severe phytotoxicity. They are applied to modify plant growth, for example to increase branching, suppress shoot growth, increase return bloom, remove excess fruit or alter fruit maturity. **Rodenticides** are substances that kill, repel or control rodents.

0604 SELECTED MACHINERY AND EQUIPMENT USED ON THE HOLDING BY SOURCE (for the holding)

Essential item. Reference period: census reference year

7.6.4 This item identifies machinery and equipment used on the holding, wholly or partly for agricultural production. Machinery and equipment used exclusively for purposes other than agricultural production should be excluded. Machinery or equipment owned by the holder but not used should also be excluded.

7.6.5 A broad concept of **machinery and equipment** is used for the agricultural census, covering all machinery, equipment and implements used as inputs to agricultural production. This ranges from simple hand tools, such as a hoe, to complex machinery, such as a combine harvester. The main focus, however, is on farm mechanization. In more developed countries, the emphasis is on machinery such as tractors, harvesting machines and office equipment, while in less developed countries there may be interest in animal-powered or even hand-powered equipment as well as machinery. Items of machinery and equipment should be clearly described; for example, a seeder could range from a simple manual device to a complex machine. To help identify machinery and equipment items for the agricultural census, a classification of machinery and equipment is provided in Annex 9, together with a list of some of the major items under each heading.

7.6.6 **Source** of the machinery/equipment refers to the means by which the holder obtained the right to use the specific item. The following response categories are recommended:

- Owned solely by the holder or members of the holder's household
- Owned by the holding jointly with other holdings
- Provided by the landlord
- Provided by other private holders (excluding cooperatives)
- Provided by a cooperative
- Provided by a private agricultural service establishment
- Provided by a government agency

0413 USE OF DIFFERENT TYPES OF FERTILIZING PRODUCTS (for the holding)

Essential item. Reference period: census reference year

7.6.7 This item is covered under Theme 4: Crops. The use of fertilizers, and whether organic or inorganic practices are followed, is important for sustainable agricultural practices.

0302 AREA OF LAND ACTUALLY IRRIGATED: FULLY CONTROLLED AND PARTIALLY CONTROLLED IRRIGATION

- Fully controlled irrigation
- Partially controlled irrigation

Essential item. Reference period: census reference year

7.6.8 This item is covered in Theme 3: Irrigation. The area of land actually irrigated complements Item 0301 and contributes to understanding the adoption of sustainable agriculture practices.

Theme 7: Services for agriculture

All items of this theme are classified as additional; see Annex 4.

Theme 8 – Demographic and social characteristics

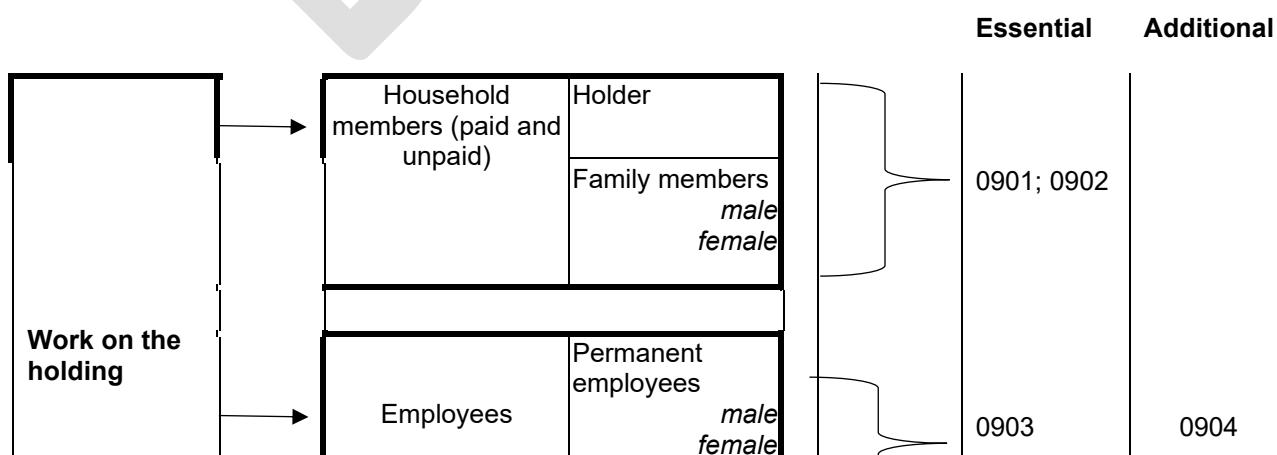
All items of this theme are classified as additional; see Annex 4.

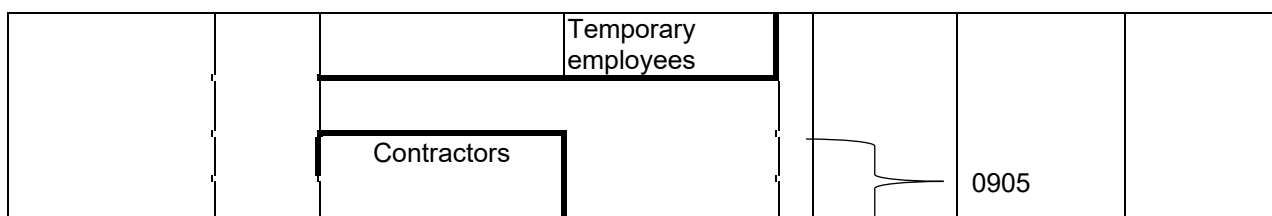
Theme 9: Work on the holding

Reference concepts of work and forms of work in labour statistics

7.9.1 This theme covers items related to the two types of labour inputs on agricultural holdings: (i) work provided by household or family members, and (ii) work provided by external workers: paid employees and contractors (see Figure 2).

Figure 7.2 - Correspondence between types of labour inputs and work on the holding's items





Source: Authors' own elaboration.

7.9.2 Data collection on work on the holding in the agricultural census should be in line with recommendations provided in the *Resolution concerning statistics of work, employment and labour underutilization* (ILO, 2013) adopted by the 19th International Conference of Labour Statisticians (ICLS) in 2013 and amended by the 21st ICLS in 2023 (ILO, 2023a) (below referred to as the Resolution). The Resolution establishes a framework for work statistics that uses short reference periods, such as one week or one month, for the operational definitions of forms of work. However, for the agricultural census, a longer observation period, such as one year, is more appropriate given the seasonal nature of many agricultural activities. For more detailed information on concepts and operational definitions related to forms of work from the ILO resolutions, see Annex 10.

7.9.3 Work in the scope of the agricultural census is considered as every type of work on the holding that contributes to either:

- The activities defined in the International Standard Industrial Classification of All Economic Activities (see Annexes 2 and 3) for crop and animal production and related service activities (see also the definition of agricultural holding in paragraph 4.3);
- Maintenance of the means of production; or
- Activities directly derived from these productive actions.

7.9.4 It does not include domestic and personal services provided for the household's own consumption.

7.9.5 This theme collects information about the working-age population. To determine the working-age population, the Resolution recommends that: (i) the lower age limit should be set taking into account the minimum age for employment and exceptions specified in national laws or regulations, or the age of completion of compulsory schooling; and (ii) no upper age limit should be set, so as to permit comprehensive coverage of work activities of the adult population and to examine transitions between employment and retirement. A minimum age limit lower than that used to define the working-age population may be appropriate in countries where children often participate in agricultural work. To facilitate international comparisons, tabulations should distinguish between persons under 15 years and those aged 15 years and above. Where countries set the minimum age limit below ten years, tabulations should also distinguish children aged less than ten years.

Census reference year

7.9.6 The labour statistics framework uses short reference periods, such as one week or one month, for the operational definitions of forms of work. However, for the agricultural census, a longer observation period, such as 12 months, is more appropriate to capture work inputs into agricultural production throughout the year, given the seasonal nature of many agricultural activities. **For all items in this theme, the reference period is the census reference year.** For the purposes of this theme, some concepts are adapted to suit the long reference period (see definition of "main activity" in Item 0901).

7.9.7 As for other items in the agricultural census, countries need to carefully design questionnaires for the collection of data related to work on the holding, suitable to national circumstances.

7.9.8 As noted in Annex 10, only work activities which are within the SNA production boundary are covered in the items of the present theme.

Items

0901 WHETHER WORKING ON THE HOLDING IS THE MAIN ACTIVITY (for each household member of working age, identifying the sex)

Essential item. Reference period: census reference year

7.9.9 The purpose of this item is to determine whether or not, during the census reference year, the household member spent more time working on the agricultural holding than outside the holding (considering activities within the SNA production boundary). The main job is determined by either the job with the longest typically worked hours or, if unavailable, the job generating the highest income for the worker.

0902 WORKING TIME ON THE HOLDING (for each household member of working age, identifying the sex)

Essential item. Reference period: census reference year

7.9.10 This item is intended to collect information on the volume of work contributed by household members to the operation of the holding, in both paid and unpaid forms of work, according to national circumstances. It also provides data on the number of household members working on the holding, disaggregated by sex. In countries where paid work of family members in agriculture is widespread, working time may be collected through Item 0903, provided it is possible to clearly distinguish between paid and unpaid forms of family work.

7.9.11 To measure the volume of work, the WCA 2030 follows the same approach as WCA 2020, using measurement of working time as recommended by the 18th ICLS Resolution ([ILO, 2009](#)). As defined in that resolution, working time “comprises the time associated with productive activities and the arrangement of this time during a specified reference period”. For this item, working time refers to the time household members spend in jobs and work activities on the agricultural holding during the twelve-month reference period.

7.9.12 The measurement of working time can be carried out by assessing hours or days worked on the holding, or by using broad categories such as full-year/part-year or full-time/part-time, as appropriate to national circumstances. **Full-year/part-year** work reflects the number of months or weeks worked during the year, while **full-time/part-time** work reflects the number of hours worked per day or week, assessed against a norm such as an eight-hour day or a 40-hour week.

7.9.13 Countries should give careful consideration to the measurement of working time, taking into account national circumstances and the way data will be presented in census tabulations. Using a broad categories approach, one option is to present data according to specified weeks or months per year and hours per day or week groupings. Another option is to summarize working time into the following six categories:

- Full-time job:
 - Worked 1–3 months in the year
 - Worked 4–6 months in the year
 - Worked 7 or more months in the year
- Part-time job:
 - Worked 1–3 months in the year
 - Worked 4-6 months in the year
 - Worked 7 or more months in the year.

7.9.14 As relevant to national circumstances, it is recommended that **the number of persons who worked on the holding** during the census reference year (i.e. the number of household members of working age who worked on the holding in paid or unpaid work), as well as their working time, be cross-tabulated according to whether the work was in employment or in own-use production work, and also by sex. A person who worked on the holding with break(s) during the census reference year should be counted only once, according to a proxy measurement of his/her main form of work. Countries are

recommended to present census results on Item 0902 with respect to the main form of work (employment or own-use production work), a derived variable based on the intended destination of the output of the holding (i.e. for sale/barter or for own final use) and a suitable threshold of working time over the long reference period. Thus, the number of household members of working age who engaged in work on the holding (Item 0902) during the census reference year will constitute a proxy measure of:

- a) *Number of persons working on holdings where the main intended destination of production is for sale or barter (proxy for employment)* if the holding's intended destination of production during the census reference year has been primarily for sale or barter *and* the person was engaged in a job(s) on the holding for at least a minimum threshold number of hours; the threshold is to be defined according to national circumstances.
- b) *Number of persons working on holdings where the main intended destination of production is own final use (proxy for own-use production work)* if the holding's intended destination of production during the census reference year has been for own final use *and* they were engaged in work activity (activities) on the holding for at least a minimum threshold number of hours; the threshold is to be defined according to national circumstances.

0903 NUMBER OF EMPLOYEES ON THE HOLDING: BY WORKING TIME AND SEX (for the holding)

- *Number of employees*
 - *Males*
 - *Females*

Essential item. Reference period: census reference year

7.9.15 Items 0901 and 0902 refer to the work that household members supply to the holding. The current Item 0903 refers to the use of paid workers on the holding. For holdings in the non-household sector, it refers to all employees on the holding, while in the household sector, it refers only to employees who are not members of the holding's household.

7.9.16 An **employee on the holding** is a person who had a job on the holding at some time during the reference year, whose status in employment for that job was "employee" (see Annex 10). This includes regular employees as well as seasonal, short-term and casual workers. Employees are usually paid in cash or in the form of food or other farm produce, but other remuneration arrangements may also exist. Exchange of labour should be treated as a form of paid employment. Persons employed by the household but not working on the agricultural holding are excluded. Household members are excluded from Item 0903 because their work inputs to the holding are covered under Item 0902. A hired manager (see Annex 4, Theme 1, paragraph 12) remunerated in the form of wages or in-kind payments is considered part of the employees on the holding.

7.9.17 A distinction is made between hiring an employee to work on the holding for a defined remuneration and engaging a contractor to provide certain agricultural services for an agreed fee. Item 0903 covers only employees. Contract work is covered in Item 0905. For more information on the difference between employees and contractors, see Annex 10.

7.9.18 The number of employees on the holding refers to a count of the number of persons who were classified as employees on the holding at some time during the reference year. Thus, a person who worked on the holding several times during the reference year is counted only once.

7.9.19 In some countries, immigrant workers may significantly contribute to work in agricultural holdings. Where it is deemed important and feasible, countries may consider collecting Item 0903 by immigrant status as well. However, population censuses and labour force surveys are probably better instruments for collecting such data as immigrants also contribute to many other economic sectors.

7.9.20 Working time data for employees should be consistent with the similar data for household members (see Annex 10). In this regard, the working time groupings/categories considered in paragraph

7.9.13 should be suitable. Employees can be grouped according to the short or long duration of their implicit or explicit contracts (e.g. regular employees, seasonal, short-term and casual workers).

7.9.21 As for all working time data, care is needed in designing suitable questionnaires and data collection procedures, appropriate to national circumstances.

0905 USE OF CONTRACTORS FOR WORK ON THE HOLDING ACCORDING TO TYPE OF SERVICE (for the holding)

Essential item. Reference period: census reference year

7.9.22 This item refers to whether agricultural service contractors were used for work on the holding during the census reference year.

7.9.23 Dependent contractors are defined as workers who have contractual arrangements of a commercial nature (but not a contract of employment) to provide goods or services for or through another economic unit. The type of services provided includes crop protection, tree pruning, crop harvesting, sheep shearing or farm administration. Dependent contractors satisfy the following conditions:

- They are not employees of that economic unit, but are dependent on that unit for organization and execution of the work, income, or access to the market;
- They are workers employed for profit, who are dependent on another entity that exercises control over their productive activities and directly benefits from the work performed by them;
- The activity of the dependent contractor would potentially be at risk in the event of termination of the contractual relationship with that economic unit.

7.9.24 Care should be taken to distinguish an agricultural service contractor from an employee on the holding, which is covered in Item 0903. According to the ICSE-18 ([ILO, 2023b](#)), dependent contractors as workers employed for profit are usually responsible for arranging their own social insurance and other social contributions, and the entity on which the workers are dependent does not withhold income tax for them.

7.9.25 According to national circumstances and needs, countries may wish to differentiate contractors according to the type of service provided by them, such as crop protection, tree pruning, crop harvesting, sheep shearing or farm administration.

Theme 10: Aquaculture

7.10.1 The content of this theme is in line with the FAO land use classification and SEEA Land Use Classification (refer to paragraphs 7.2.9–7.2.10). The current theme outlines the fundamental items recommended for aquaculture. For further information the reader may refer to the publication *Guidelines to Enhance Fisheries and Aquaculture Statistics through a Census Framework* ([FAO, 2015c](#)).

1001 PRESENCE OF AQUACULTURE ON THE HOLDING

Essential item. Reference period: census reference year

7.10.2 In the context of the agricultural census, presence of aquaculture refers to aquacultural production activities carried out in association with agricultural production. This means that the aquacultural activities are integrated with agricultural production, such as in rice-cum-fish culture, or that aquaculture and agriculture share the same inputs, such as machinery and labour. This item could be used to establish sampling frames for aquaculture-related census supplementary modules and ongoing surveys on aquaculture. For a complete picture of aquaculture activities in a country, the frame must include all aquaculture holdings at both the household and non-household levels, and not just those associated with an agricultural holding. For more information on the treatment of aquaculture in the context of the national accounting framework, see Annex 3.

7.10.3 **Aquaculture** is the farming of aquatic organisms such as fish, molluscs, crustaceans, plants,

crocodiles, alligators and amphibians, and falls under group 032 of ISIC (Rev. 5). In this context, farming refers to some intervention in the rearing process to enhance production, such as regular stocking, feeding and protection from predators. Aquaculture normally involves rearing of organisms from fry, spat or juveniles. Aquaculture may be carried out in ponds, paddy fields, lagoons, estuaries, irrigation canals or the sea, using structures such as cages and tanks. It may take place in freshwater, brackish water or saltwater.

7.10.4 A distinction must be made between aquaculture and other forms of aquatic exploitation, such as capture fishing. Capture fishing involves catching aquatic animals or gathering aquatic plants (i.e. seaweed and other algae) in the wild. An important characteristic of capture fishing is that the aquatic organisms being exploited are common property, as opposed to being owned by the holding, as is the case for aquaculture.

7.10.5 The boundary between aquaculture and capture fishing may be blurred. Where fish are caught in the wild and fattened for sale, the fattening process should be considered aquaculture. Limited enhancement actions taken to increase fish production, such as modifications to the aquatic habitat, should not be regarded as aquaculture.

7.10.6 Data on aquaculture usually relate to activities carried out over a twelve-month period, usually the census reference year.

Theme 11: Forestry

All items of this theme are classified as additional; see Annex 4.

Theme 12: Fishing

All items of this theme are classified as additional; see Annex 4.

CHAPTER 8 COMMUNITY-LEVEL DATA

The collection of community-level data was first introduced in the WCA 2010 programme and is maintained in the current programme. This chapter outlines the purpose of collecting community-level data, identifies items suitable for inclusion in the community survey, and discusses related methodological issues.

Introduction

8.1 The main focus of an agricultural census is structural data collected at the holding level. These structural data concern decisions made by the holding, such as what crops to grow and what agricultural inputs to use, and therefore can only be reported by the holding itself, not by public administrations.

8.2 However, some types of community-level data are of interest for policymaking, particularly for planning targeted development programmes. For example, data on the infrastructure and services available to holdings are useful for designing policies aimed at improving rural infrastructure and services, while data on whether the community is prone to natural disasters or subject to seasonal food shortages can inform food security analysis. Although, in theory, these and other types of community-level data could also be collected from holdings, it is often more practical to collect them directly at the community level. Moreover, some data – such as area of communal grazing land, area of communal forest, or area equipped for irrigation – can be meaningfully obtained only at the community level.

8.3 To respond to the strong demand for community-level data, a community component was introduced in the WCA 2010. Having proven useful to some countries, it was retained in the subsequent programme and is maintained in the current round. Countries are encouraged to include this component according to their national circumstances and data requirements. However, inclusion of a community survey should not compromise the census operation, which remains the main priority. Community-level data should be collected only if time and budget permit. Community-level data are of statistical interest for several reasons.

8.4 First, they are useful for analysing the characteristics of communities. For example, information on whether a community has an agricultural input supplier can help assess constraints farmers face in adopting improved agricultural practices. Similarly, the number of people living in communities prone to natural disasters can be estimated.

8.5 Second, such data are valuable when analysed in relation to holding-level data. For instance, tabulating the number of holdings growing cash crops against whether an agricultural produce market exists in the community can shed light on how access to markets influences cropping patterns. Likewise, comparing the number of holdings participating in farmers' associations with the presence of such organizations in communities can help to evaluate their effectiveness.

8.6 Third, community-level data can complement holding-level data, particularly for land use. Land reported by holdings may not capture the total land used for agricultural purposes due to the presence of communal land not directly belonging to any agricultural holding, such as land for communal grazing. This is especially relevant in pastoral areas, where extensive areas fall under community control. In such cases, complementing holding-level land use data with community-level information provides a more complete picture of land used for agriculture at national and subnational levels.

8.7 An important advantage of collecting community-level data in the agricultural census is the relatively low additional cost of integrating it into census fieldwork. In some cases, the community administration is directly involved in census data collection or in the listing of households or holdings, making it possible to gather community-level data with minimal expense. In other cases, supervisors or regional coordinators take responsibility for collecting the community-level data.

Methodological considerations

Defining a community as a statistical unit for community-level data collection

8.8 A **community** can be defined as a self-contained unit of social and economic activities (FAO 1983). Population and housing censuses use the similar concept of **locality**, which is “a distinct population cluster (also designated as inhabited place, populated centre, settlement and so forth) in which the inhabitants live in neighbouring or contiguous sets of living quarters and that has a name or a locally recognized status” (UN, 2025d, paragraphs 5.93–5.96). Under these definitions, the community or locality may not be the same as the lowest administrative unit.

8.9 For statistical purposes, the unit chosen for the community survey should consider operational factors and the circumstances of the country:

- **Data collected.** Often, the data require the community to maintain certain administrative records, which are usually only available for administrative units, commonly the village or commune. Sometimes, the lowest administrative unit has no substantial administrative function, and the community unit may need to be defined at a higher level.
- **Cost.** The data collection and processing task must be manageable, and this may influence whether to collect data at, for example, the commune or village level.
- **Identifying community units.** Most countries maintain lists of community units down to a certain level. Easy access to such information is needed to do a community survey.
- **Stability of community units.** In many countries, changes in administrative units are common and not well-coordinated, making it difficult to carry out a community survey.

8.10 Defining the coverage of a community survey is an important consideration. In practice, countries usually do not cover all communities but restrict data collection to those that contain agricultural holdings, since field staff must visit them to enumerate the holdings. Because some agricultural holdings are located in urban areas, this may also involve urban communities, although administering a community questionnaire in certain urban settings can be difficult or inappropriate. At a minimum, countries should aim to cover all rural communities and urban communities where community-level agriculture is present.

8.11 Community surveys are feasible only in countries with appropriate community-level organization. In some rural areas, communities may not exist as administrative units, may lack clearly defined boundaries, or may have weak administrations. When constructing the frame of community units, it is essential to ensure that areas do not overlap to avoid duplicate counting.

Data collection

8.12 The approach to collecting community-level data in the agricultural census depends on how fieldwork for holding-level data is organized. Fieldwork is usually structured by dividing the country into enumeration areas (see paragraph 5.31). Community units identified for the survey are often subdivided into suitably sized EA units. In such cases, the most experienced supervisors or enumerators responsible for data collection in the community may be assigned in advance to administer the community questionnaire.

8.13 When the community administration prepares the list of households or holdings for the agricultural census, it may be possible to ask the community chief or other representatives to also complete the community questionnaire. Since census field staff often visit each community to obtain the household/holding list, this provides a good opportunity to meet the appropriate community representatives and collect the data.

8.14 Community administration may also be involved in the holding survey operation itself. Community officials are sometimes engaged to help locate each household, and in some cases they

assist in interviewing households, such as by serving as translators. In such circumstances, the community questionnaire can be completed with the relevant persons at an appropriate time.

8.15 The community questionnaire may be completed through an interview with the village head by an enumerator or by using the expert group technique for each community. The expert group typically includes the village chief along with prominent citizens and resource persons familiar with the community's social, economic and environmental situation, such as teachers, nurses, extension officers, religious leaders, NGO representatives, and leaders of farmers' organizations. Consideration may also be given to collecting community-level data by mail, provided the questionnaire is simple enough for community administrations to complete it independently, with cost being an important factor. Another option is to use the CAWI method, whereby community officials are given a link to complete the online questionnaire.

Community-level items

8.16 Many types of data may be of interest for the community survey. The content should be determined by assessing national data needs and considering the availability of community-level information from other sources. It is not possible to make specific recommendations on which items to include, so only general guidelines are provided here.

8.17 Countries should make every effort to coordinate community-level data from different sources. Many countries maintain community registers or databases, sometimes linked to the population census. Where a common geographic coding system for communities exists, the agricultural census should adopt this system for identifying agricultural holdings and during community-level data collection. This enables linkage with existing registers or databases and helps to avoid duplication of data already available, allowing the census to focus on agriculture-related data.

8.18 Other issues to be considered in deciding on the content of the community survey are:

- The collection of data directly from holdings is one of the features that distinguish an agricultural census from the administrative reporting systems used in many countries. The community survey should not be used for acquiring data that are better collected directly from holdings. For example, data on crops grown and livestock raised should be collected directly from holdings, not by asking a community official to provide estimates.
- Communities should not be asked to report the same data as holdings. The only exception could be land use data from community records. If they are deemed of good quality and their concepts and definitions are compatible with those adopted for the agricultural census, they could be used for checking at the aggregate level the land use data reported by holdings.
- The community survey should not be used for collecting data available from other reliable statistical and administrative data sources.
- Community-level data are only useful if they can be presented in statistical summaries. Emphasis should be given to the tabulation needs in the design of the community survey. More information on tabulation for the community-level data is given in paragraphs 9.34–9.36.
- The community-level items should be limited to key administrative information or aspects of the community that are well-known to people in the community, such as weather conditions, economic activities, and whether certain infrastructure and services exist.
- The number of community-level items should be kept to a minimum – normally 10–20 items.

8.19 A list of possible items for inclusion in the community survey is provided in paragraph 6.16 of Chapter 6. The list is not exhaustive and should be adapted to the specific circumstances of each

country. Some items may already exist in registers, databases or population and housing censuses and would therefore not need to be collected again in the agricultural census.

Concepts and definitions for selected community-level items

8.20 **Location** (Item 2101) is normally based on a geographic coding system (see paragraphs 7.1.2–7.1.4). This item is needed to summarize the data by geographical groupings, to relate the data to holding-level data, and to link community databases.

8.21 **Agroecological, climatic, topographical or soil types** (Item 2102). Countries may have one or more standard groupings of areas, which may reflect different agricultural conditions, climatic conditions, or even living standards and ethnic groups.

8.22 **Land use** (Item 2103) at the community level provides a comprehensive picture of all land in the community in addition to the land operated by holdings as obtained in the holding-level collection. Land use classes should be compatible with the classification used in the holding-level collection (see paragraphs 7.2.8–7.2.37). Land use data at the community level may be shown in more detail, such as showing land under water or identifying different forest types.

8.23 **Area of communal grazing land** (Item 2104), **area of communal forest** (Item 2105) and **communal area under water used for aquaculture** (Item 2106) are part of the comprehensive land use data (Item 2103) but may be collected independently if Item 2103 is not included in the community questionnaire. Items 2104–2106 help to fill in the gaps from the holding-level collection.

8.24 When collecting community-level data on items 2103–2106 to complement the individual data collected from holdings, it is important to ensure that duplicate counting of data is avoided. In this respect, community-level data should specify community land area rented out to individual holdings. In order to make up aggregations for total land area by land use types, the land use classification recommended in the Chapter 7, Theme 2 should be applied (see paragraph 7.2.14).

8.25 **Travelling time and the associated mode of travel to the nearest major urban centre** (Item 2107) provide a good indication of the degree of isolation of the community and its impact on agricultural practices and living standards. Travelling time may vary by season, for example between wet and dry seasons or between summer and severe winter conditions. Modes of travel may include walking, motor vehicles, animal-drawn vehicles, buses, bicycles, and others, depending on national circumstances. Where more than one mode is available, the most usual mode and its corresponding travelling time should be reported. The related item on **whether the community has year-round access to the nearest urban centre by a motorable road** (Item 2108) helps to illustrate the transport challenges faced by the community.

8.26 **Whether the community is prone to natural disasters** (Item 2109) is important for countries that face regular crises because of flooding, droughts or other natural disasters. This is often a major cause of food insecurity and may influence farmers' agricultural practices. Quantitative information may be collected on the number of occurrences of various types of natural disasters during, say, the last five or ten years.

8.27 **Population according to population group** (Item 2201) can be useful in classifying the community by type, such as according to ethnic group. Population data can also be useful for providing population-based estimates based on the community-level data. **Number of households** (Item 2202) is used to provide household-based estimates for community-level data.

8.28 **Economic status** (Item 2203). In some countries, each community is assigned an economic status measure, which can be useful to analyse holding-level characteristics with respect to whether the community is "rich" or "poor".

8.29 **Main economic activities** (Item 2204) should be based on the ISIC Rev. 5 ([UN, 2025a](#)).

8.30 **Whether there are seasonal food shortages** (Item 2205). This item is suitable for countries where seasonal factors affect food supplies. The reference period could be the census reference year.

8.31 **Community infrastructure and services** (Items 2301–2319). Countries should choose items suited to national conditions. The key for these items is whether people have ready access to specific infrastructure and services in the community itself or in a nearby centre – hence, the travelling time component in many items. As with Item 2107, if multiple modes of travel exist, the travelling time for the most usual mode should be reported, taking into account any seasonal variations where relevant.

8.32 **Presence of specific development projects in the community** (Item 2401). This item is of interest in places where specific government or other development programmes are implemented to raise living standards or for agricultural development. These programmes might be administered by the government, non-government organizations, international agencies or on a bilateral basis. The data provided are of interest to evaluate the benefits of those programmes.

DRAFT

CHAPTER 9 TABULATION

To be useful, data collected in an agricultural census must be presented in aggregated and synthesized form, especially in statistical tables. This chapter presents the recommended tables for the tabulation of results, identifies the most important census classification items, proposes basic cross-tabulations for the essential items, and highlights the main issues in the tabulation programme for the community survey as well as for the census of agriculture, aquaculture and forestry. The tabulation programme serves as a roadmap for organizing the data collected from an agricultural census and analysing it in a structured and consistent manner.

Introduction

9.1 Following the census data collection, countries should embark in data processing, including tabulation. These operational topics are discussed in detail in Chapter 21 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* (FAO, 2018a).

9.2 Data collected in an agricultural census are of statistical value only if they can be aggregated and analysed to provide meaningful insights into the agricultural sector. The primary form of presenting such data is the statistical table. Statistical tables provide a structured and organized way to display information, enabling comparison, analysis and interpretation of census results. The tabulation programme for an agricultural census refers to the set of statistical tables prepared to present the main findings and key results. These tables should be designed to meet the primary needs and requirements of the intended users of census data.

9.3 With the rapid advancement of information and communication technologies, the presentation of census data is changing significantly. Traditional printed reports are becoming less relevant as new tools and platforms are increasingly used. The compilation and dissemination of census data have become more user-friendly, thanks to technological progress. This interactivity and flexibility enable users to explore census data in ways that meet their specific requirements and research interests. Nevertheless, three important considerations remain:

- a) Existence of a tabulation programme: during questionnaire design, it is necessary to determine the generic tabulation programme for the agricultural census. This ensures that the data collected align with the requirements of the tabulation programme.³⁰ The choice of a tabulation programme can also influence the overall census design. For example, the level of administrative units included in the tabulation programme may affect decisions related to the census enumeration method and the determination of sample size for supplementary modules if the modular approach is adopted.
- b) Production of basic standard reports: while web-based data have made it easier for users to access and analyse census data, it is still important for countries to produce basic standard reports. These reports serve as a fundamental source of information and are disseminated through various media channels such as print, pen drives or the internet. The purpose of producing standard reports is to ensure that the census results reach a wide audience, including those who may not have access to or prefer web-based platforms.
- c) Standard tables for international comparisons: to facilitate international comparisons and promote harmonization of census data across countries, the use of standard tables is essential. Even for countries that do not have their census databases on the web, it is important to provide standard tables that contain comparable data. By adhering to standard tables, countries can ensure consistency and compatibility in their census data, enabling meaningful cross-country analyses and benchmarking exercises.

³⁰ In other words, the questions asked in the census should be designed in a way that allows for effective data analysis and aggregation according to the desired tabulation programme.

9.4 In a standard report of an agricultural census, statistical tables are commonly used to present summarized measures of the collected data. These may include:

- Totals for items collected. These are aggregate figures that represent the sum of all the individual data points for a specific item or variable. For example, the total area of sugar cane harvested across all farms or agricultural holdings included in the census.
- Total number of units with certain characteristics. This refers to the count of units or entities that possess specific characteristics of interest. For example, it could be the total number of farms or agricultural holdings that have pigs.
- Averages for items. Averages provide a measure of central tendency. In the case of an agricultural census, this could be the average area of a holding or farm, calculated by dividing the total area of all holdings by the number of holdings.
- Percentages. Percentages could be used to indicate the proportions, such as proportion of holdings using organic fertilizers or the percentage of communities with electricity connected.

9.5 All data items collected in the census should be presented in at least one table cross-tabulated with the administrative region or agroecological zone (see definition in paragraph 7.1.2). A holding may manage land in different administrative units and even in different agroecological zones. If this is significant in a country, tabulating agricultural holdings by administrative unit or agroecological zone could lead to misleading results. In such cases, the location of parcels (additional Item 0205) could be used as the main classification variable in relevant cross-tabulations.

9.6 A feature of statistical tables is that they provide data classified according to various characteristics. For example, one may wish to know the average household size for different areas of holdings, or the percentage of holdings using organic fertilizers for holders of different ages. Here, “area of holding” and “age of holder” are the **classification variables**. Most censuses and surveys contain some **main classification variables** that are used in many tables. Often, classification variables need to be formed into suitable classes for presentation in the tables. Thus, in the above examples, age of holder needs to be grouped into suitable age classes and area of holding into suitable area classes. The most basic set of census tables presents the data for each item against a common variable such as the administrative regions of the country. It is important that data for all census items are tabulated; otherwise, the user will question why the data was collected.

9.7 Often, more complex cross-tabulations are prepared, showing census data classified by two different items simultaneously. An example of a cross-tabulation is a table showing the number of holdings classified by age of holder and area of holding. This would be a two-way table showing the number of holdings in each age/area class; for example, one cell of the table would show the number of holdings for which: (i) age of holder is in the range 25–34 years; and (ii) area of holding is in the range 1.00–<2 ha. There are a very large number of possible cross-tabulations and an even larger number of three-way tabulations, such as number of holdings classified by age of holder, area of holding and region. For the main census report, cross-tabulations should only be considered in very special cases, and three-way tables should be avoided. Cross-tabulations and three-way tabulations are particularly useful for in-depth studies, where analysts should have access to the public database so that they can generate their own specific set of tables.

9.8 An important element in preparing the agricultural census tabulation programme is deciding on the tabulation classes. In many instances, international standards exist, and countries should strive to adhere to these standards whenever possible to facilitate cross-country comparisons. It is also essential to ensure consistency within a country’s statistical collections. For instance, using age groups such as 25–34 and 35–44 in one data collection and 20–30 and 31–40 in another would hinder meaningful comparison. This chapter provides recommended classes for use in agricultural census tabulation programmes. However, countries are encouraged to introduce more detailed classes to accommodate national reporting requirements that do not align with the recommended tabulation classes. This flexibility allows for later re-aggregation to international standards for the purpose of comparison. In cases where countries employ unique units of measure, additional tabulations using both international units of measure and the tabulation classes specified in Table 9.1 become necessary to enable international comparisons. If a country opts for different class groupings in its standard reports, it should

also report results according to the provided guidelines to ensure international comparability. Another important element in a table is its title, which must provide basic and clear information about the table contents.

Essential items to be tabulated in standard reports

9.9 Essential items are the data items or variables that are crucial for every country to collect during an agricultural census. They are important for both national and international purposes. Examples include land area, livestock populations and other key aspects of agriculture (see Chapters 6 and 7). Essential items are further classified into groups referred to as tabulation classes. In some cases, a specific component or attribute of an essential item is used to establish the tabulation classes; this is known as a classification variable. It defines the different groups within the essential item and helps organize the data for analysis and reporting. For example, when classifying holdings according to land size, a classification variable could be land size classes. Table 9.1 summarizes the tabulation classes and reference groups for each essential item or variable. The tabulation classes represent the categories into which the data are classified based on size, type or other relevant factors. The reference group refers to the specific set of holdings or units for which the item is tabulated. For example, the item “area irrigated” is meaningful only when tabulated for land holdings, as it relates to the area of land that receives irrigation. Certain items may be tabulated in more than one way; for instance, holdings can be tabulated by whether they have each livestock species or by the number of a particular species they keep.

9.10 If a community survey is carried out as part of the agricultural census, consideration should also be given to using community-level data as classification variables. These variables categorize or group census data for tabulation, especially when dealing with essential concepts such as the number of holdings. They also enable the exploration of connections between agricultural holdings and the characteristics of the community, supporting a deeper understanding of these relationships (see paragraph 9.39).

9.11 In some countries, economic typologies play an important role in agricultural censuses. These typologies classify agricultural activities within a country, for example, by identifying the main agricultural activity of a holding or categorizing different types of farms. Although not explicitly defined in the WCA, the essential items of the census provide an important data source for developing such typologies.

Table 9.1 - Agricultural census essential items: tabulation classes

ESSENTIAL ITEM/CLASSIFICATION VARIABLE	TABULATION CLASSES	REFERENCE GROUP
Administrative unit or agroecological zone (From 0101 Identification and location of the agricultural holding)	Based on national groupings	All holdings
0103 Legal status of agricultural holder (type of holder)	A civil person Group of civil persons Juridical person	All holdings
0104 Sex of agricultural holder	Holder is a civil person (one holder) Male Female Joint holders Holders are male only Holders are female only Holders are both male and female	Holdings in household sector
0105 Age of agricultural holder	Holder is a civil person Under 25 years 25–34 years 35–44 years 45–54 years	Holdings in household sector

	55–64 years 65 years and over Joint holders	
Household size (from 0106 Household size by sex and age groups)	1 person 2–3 persons 4–5 persons 6–9 persons 10 persons and over	Holdings in household sector
0107 Educational attainment of holder, spouse, and manager	Less than primary Primary Secondary Post-secondary	Holdings in household sector
0110 Main purpose of production of the holding	Producing mainly for home consumption Producing mainly for sale	Holdings in household sector
0111 Other economic activities of the household	Support activities to agriculture and post-harvest crop activities Hunting, trapping and related service activities Forestry and logging Fishing and aquaculture Manufacturing Wholesale and retail trade, repair of motor vehicles and motorcycles Hotels and restaurants (excluding agrotourism) Agrotourism Other	Holdings in the household sector (one holding can belong to more than one class)
0201 Total area of holding	Holdings without land Holdings with land Less than 1 ha 1–< 2 ha 2–< 5 ha 5–< 10 ha 10–< 20 ha 20–< 50 ha 50–< 100 ha 100–< 200 ha 200–< 500 ha 500–< 1000 ha 1 000–< 2 500 ha 2 500 ha and over	All holdings
Land use types (from 0203 Area of holding according to land use types)	Land under temporary crops Land under temporary meadows and pastures Land temporarily fallow Land under permanent crops Land under permanent meadows and pastures Land under farm buildings and farmyards Forest or other wooded land Area used for aquaculture (including inland and coastal waters if part of the holding) Other land not elsewhere classified.	All holdings
Area of agricultural land (from 0203 Area of holding according to land use types)	Holdings without agricultural land Holdings with agricultural land (Area groupings as for “area of holding”)	All holdings

Land tenure types (from 0204 Area of holding according to land tenure types)	Holdings without land Holdings operated under one tenure form <ul style="list-style-type: none"> ◆ Legal ownership or owner-like possession ◆ Non-legal ownership or owner-like possession ◆ Rented from someone else ◆ Other Holdings operated under two or more tenure forms	All holdings
0302 Area of land actually irrigated: fully and partially controlled irrigation	Holdings without irrigated land Holdings with land actually irrigated <ul style="list-style-type: none"> ◆ Fully controlled irrigation ◆ Partially controlled irrigation (area groupings as for "area of holding") 	Holdings with land
Area of temporary crops planted (from 0402 [for each temporary crop type])	Holdings without temporary crops Holdings with temporary crop area planted (Area groupings as for "area of holding")	All holdings
Area of temporary crops harvested (from 0403 [for each temporary crop type])	Holdings without temporary crops Holdings with temporary crop area harvested (area groupings as for "area of holding")	All holdings
Area of permanent crops (from 0408 Area of productive and non-productive permanent crops in compact plantations)	Holdings without permanent crops in compact plantations Holdings area under permanent crops in compact plantations Based on crop classification in Annex 6 Also classified by: Area grouping of compact plantations	All holdings
Presence of scattered permanent crop trees (from 0409 Number of permanent crop trees in scattered plantings)	Based on crop classification in Annex 6	All holdings
0413 Use of different types of fertilizing products	No use of fertilizing products Use of fertilizing products <ul style="list-style-type: none"> ◆ Mineral fertilizers ◆ Organo-mineral fertilizers ◆ Organic fertilizers ◆ Biofertilizers ◆ Manure ◆ Other organic materials to enhance plant growth 	Holdings with land (one holding can belong to more than one class)
0501 Type of livestock production system	Holdings without livestock Holdings with livestock <ul style="list-style-type: none"> ◆ Integrated crop-livestock production systems/mixed systems ◆ Specialized livestock production systems <ul style="list-style-type: none"> ◇ <i>Landless livestock production systems</i> 	All holdings

	◇ <i>Grassland-based livestock production systems/grazing system</i>	
Livestock species (from 0502 Number of animals)	Holdings without livestock Holdings with livestock Based on livestock classification in Annex 8	All holdings (one holding can belong to more than one class)
0502a Number of cattle	Holdings with no cattle Holdings with cattle 1–2 head 3–4 head 5–9 head 10–19 head 20–49 head 50–99 head 100–199 head 200–499 head 500 head and over	All holdings
0502b Number of buffaloes	Same as for “Number of cattle”	All holdings
0502c Number of sheep	Holdings with no sheep Holdings with sheep 1–4 head 5–9 head 10–19 head 20–49 head 50–99 head 100–199 head 200–499 head 500 head and over	All holdings
0502d Number of goats	Same as for “Number of sheep”	All holdings
0502e Number of pigs	Same as for “Number of sheep”	All holdings
0502f Number of poultry	Holdings with no poultry Holdings with poultry 1–9 poultry 10–49 poultry 50–99 poultry 100–199 poultry 200–499 poultry 500–999 poultry 1 000– 4 999 poultry 5 000– 9 999 poultry 10 000 poultry or more	All holdings
0503 Number of female breeding animals	Holdings without livestock Holdings with livestock (same classes as for number of livestock by species [0502af])	All holdings
0601 Use of agricultural pesticides	No use of agricultural pesticides Use of pesticides: Insecticides Herbicides Fungicides Plant growth regulators Rodenticides Other	All holdings (one holding can belong to more than one class)

0604 Selected machinery and equipment used on the holding by source	Total tractors of all kinds Four-wheel tractors Track-laying tractors Combine harvesters Ploughs (machine powered) Other machine-powered (to be specified)	All holdings
Number of household members for whom working on the holding is the main activity (from 0901 Whether working on the holding is the main activity)	Male <ul style="list-style-type: none"> ◆ 1 person ◆ 2–3 persons ◆ 4–5 persons ◆ 6–9 persons ◆ 10 persons and over Female Groups as above	Holdings in household sector
Working time on the holding by household members (from 0902 Working time on the holding)	Male No work Work <ul style="list-style-type: none"> ◆ Full-time work during 1–3 months in the year ◆ Full-time work during 4–6 months in the year ◆ Full-time work during 7 or more months in the year ◆ Part-time work during 1–3 months in the year ◆ Part-time work during 4–6 months in the year ◆ Part-time work during 7 or more months in the year Female Groups as above	All household members of holdings in household sector
Working time on the holding by employees (from 0903 Number of employees on the holding by working time and sex)	Male <ul style="list-style-type: none"> ◆ Full-time work during 1–3 months in the year ◆ Full-time work during 4–6 months in the year ◆ Full-time work during 7 or more months in the year ◆ Part-time work during 1–3 months in the year ◆ Part-time work during 4–6 months in the year ◆ Part-time work during 7 or more months in the year Female Groups as above	All employees in all holdings
0905 Use of contractors for work on the holding according to type of service	No use of contractors Use of contractors <ul style="list-style-type: none"> ◆ Crop protection ◆ Tree pruning ◆ Crop harvesting ◆ Sheep shearing ◆ Farm administration ◆ Other 	All holdings
1001 Presence of aquaculture on the holding	Aquaculture is present Aquaculture is not present	All holdings

Source: Authors' own elaboration.

Main classification variables

9.12 Nine main classification variables have been identified for tabulations of the essential items in the census reports. These variables are discussed in the following paragraphs. Table 9.1 refers to the essential items. Countries may, however, introduce finer classifications, provided they remain consistent with the classes listed here.

9.13 **Administrative unit or agroecological zone** (from Item 0101). The subdivision of census data into administrative units or agroecological zones is a key tabulation requirement. The location of the holding defines the administrative unit or agroecological zone. Basic cross-tabulations typically present the collected variables by administrative unit or agroecological zone.

9.14 **Legal status of agricultural holder (type of holder)** (Item 0103). This item captures information on the legal structure of the entity operating the agricultural holding. It provides essential data for comparative analysis among different types of holders regarding their legal status, such as households, cooperatives, corporations, educational institutions, and other juridical entities.

9.15 **Total area of holding** (Item 0201). The area of holding is the most widely used classification variable in agricultural census tables, as it generally provides a good measure of holding size, particularly in regions with homogeneous land. However, it has limitations because it may include forest, woodland, or other land not used for agricultural purposes, and it does not reflect land quality. For example, non-irrigated land in arid or semi-arid regions may be less productive than irrigated land elsewhere, and land at higher altitudes may have different productive capacities compared to similar land at lower altitudes. In addition, the measure does not account for land use intensity, since some parcels may produce several crops per year while others may only yield a crop every two or three years. To ensure international comparability, countries should convert all land areas to hectares where different measurement units are used, thereby facilitating meaningful tabulation and cross-country analysis.

9.16 **Area of agricultural land** (from Item 0203). This variable measures land used mainly for crop production and grazing. Other measures, such as area of permanent crops, may also be useful, but consistent reporting in hectares is essential for comparability.

9.17 **Number of livestock (for a particular livestock species)** (Items 0502a–0502f). The number of livestock of a specific species is a useful measure of livestock activity, especially where one type of livestock predominates. For example, in a sheep-raising country, census data may be classified by sheep numbers in ranges such as 1–4, 5–9, and so on. While it is difficult to meaningfully combine all species, some groupings such as “large animals” (cattle/buffaloes), “small animals” (sheep/goats/pigs), and “poultry” (chickens/ducks) may be used.

9.18 **Main purpose of production of the holding** (Item 0110). Purpose of production serves as a valuable indicator for analysing holdings based on their market orientation. In agricultural census data, the purpose of production refers to the primary objective or goal for which a holding engages in agricultural activities. The purpose of production provides insights into whether a holding is primarily focused on producing goods for the market, such as crops, livestock, or other agricultural products intended for sale.

9.19 **Household size by sex and age groups** (Item 0106). Household size is considered a valuable classification variable as it may provide insights into the relationship between rural populations and land dependence, as well as the potential availability of labour within households for agricultural activities. To further analyse and present data on household size, some countries may choose to use equivalence scales. These scales take into account the demographic characteristics of households, such as the number of adults and children, to provide a more accurate assessment of the household’s economic resources and needs. For more information, see *Handbook on Household Income Statistics* ([UNECE, 2011](#)).

9.20 **Sex of agricultural holder** (Item 0104). The sex of the agricultural holder is a valuable measure for analysing the involvement and role of women in agriculture. However, tabulating the sex of the holder can be complex due to situations where multiple individuals are considered as holders.

9.21 In case of multiple holders for the same holding, determining the sex of the holder requires careful consideration. Various approaches can be used to address this complexity:

- Primary holder: One approach is to identify a primary holder within the holding. The primary holder can be determined based on factors such as decision-making authority, management responsibilities or the individual primarily engaged in agricultural activities. In this case, the sex of the primary holder can be recorded.
- Joint holding: If the agricultural holding is jointly managed by multiple holders, it may be necessary to record the sex of each person involved. This can be done by collecting information on the sex of each holder and indicating the specific roles and responsibilities of each individual within the holding.
- Aggregated data: In some cases, it may not be possible or practical to record the sex of each individual holder within a complex holding. In such situations, aggregated data can be used. This involves reporting the total number of male and female holders within the holding, without specifying the sex of each individual.

9.22 It is important to note that the specific approach to tabulating the sex of agricultural holders may vary depending on the context, cultural norms and data collection methodologies employed in a particular country or region.

9.23 **Age of agricultural holder** (Item 0105). This classification variable is intended for the purpose of comparing the age demographics of farmers (e.g. categorizing the population of farmers into age groups and investigating the impacts of rural-to-urban migration). It specifically focuses on a subset of agricultural holdings led by a single individual, where the age of the holder holds particular significance for analysing and making informed decisions within the realm of agriculture and rural development. the population of farmers into age groups and investigating the impacts of rural-to-urban migration). It specifically focuses on a subset of agricultural holdings led by a single individual, where the age of the holder holds particular significance for analysing and making informed decisions within the realm of agriculture and rural development.

Table 9.2 - Agricultural census essential items: recommended cross-tabulations

ESSENTIAL ITEM*	MAIN CLASSIFICATION VARIABLE								
	Administrative unit agroecological	Legal status of the holder (type of holder)	Total area of holding	Area of agricultural land	Number of livestock	Purpose of production	Household size	Sex of holder	Age of holder
0101 Location of agricultural holding	::								
0103 Legal status (type of holder)	N,A,L	-	N,A		N,L				
0104 Sex of agricultural holder	N							-	
0105 Age of agricultural holder	N					::	N		-
Household size (from 0106 Household size by sex and age groups)	N,A,L		N,A	N,A	N,L	N	-		
0107 Educational attainment of holder, spouse, and manager	N		N						
0108 Agricultural training/education of the holder	N		N					N	N

0110 Main purpose of production of the holding	N,A,L	N				-	N		
0111 Other economic activities of the household	N		N		N		N		
0201 Total area of holding	N,A	N,A	-			N,A	N,A	N,A	N,A
0203 Area of holding according to land use type	N,A	N,A	N,A	-		N,A	N,A		
0204 Area of holding according to land tenure types	N,A	N,A	N,A			N,A	N,A		
0302 Area of land actually irrigated: fully and partially controlled irrigation	N,A		N,A	N,A					
0402 Area of temporary crops planted	N,A	N,A	N,A	N,A		N,A	N,A		
0403 Type of temporary crops harvested	N,A	N,A	N,A	N,A		N,A	N,		
0408 Area of productive and nonproductive permanent crops in compact plantations	N,A	N,A	N,A	N,A		N,A	N,A		
Presence of scattered permanent crop trees (from 0409 Number of permanent crop trees in scattered planting)	N	N	N	N			N		
0413 Use of different types of fertilizing products	N	N			N	N	N		
0501 Type of livestock production system	N,L	N,				N,L	N,L		
0502 Number of animals	N,L	N,L				N,L	N,L		
0503 Number of female breeding animals	N,	N,A	N,A	N,A		N,A			
0601 Use of agricultural pesticides	N		N,A		N,L				
0604 Selected machinery and equipment used on the holding by source	N	N	N	N	N				
Number of household members for whom the working on the holding is the main activity (from 0901 Whether working on the holding is the main activity)	N,A,L		N,A	N,A	N,L	N	N		
1001 Presence of aquaculture	N		N						

Notes: *Please refer to Table 9.1 for the tabulation classes of the essential items.

N = Number of holdings; A = Area; L = Number of livestock.

Source: Authors' own elaboration.

Working time on the holding

9.24 Data on working time at the holding level (Items 0902 and 0903) provide valuable insights into the amount of work required for different types of holdings, such as livestock holdings or those with temporary crops. However, the tabulation classes in Table 9.1 only allow for reporting the number of workers based on categories of working time. To measure the total labour input to holdings, it is necessary to aggregate the total working time contributed by all workers on the holding. This requires converting categorical data on working time for household members and employees into continuous or ratio data. Once converted, the aggregate working time can be calculated. Various methods are available for converting categorical into continuous data. After determining the quantity of working time for household members and employees, these values can be aggregated to obtain the total working time on the holding. Some countries establish special units of working time, defined as the work performed by one person on an agricultural holding on a full-time basis. Increasingly, third-party workers are employed, contracted either from other farms or from specialized enterprises (see paragraphs 7.9.17 and 7.9.22–7.9.25). The time worked by such workers should also be included in the total labour input for holdings.

9.25 However, the specific units used for measuring working time are determined by each country according to its needs and requirements. The tabulation of the data should involve reporting the amount

of aggregate working time or the number of special units of time based on various characteristics, such as the sex of workers, the legal status of holdings, and the size of holdings.

Essential items: cross-tabulations

9.26 In an agricultural census, there are numerous possibilities for generating tables based on different combinations of variables. Even with a limited number of items, the potential for cross-tabulations is vast. Each essential item collected in the census can be analysed in relation to various main classification variables. For example, the item “presence of aquaculture” can be cross-tabulated against the administrative units to examine the geographical distribution of aquaculture, providing insights into the regions or districts where aquaculture is more prevalent or concentrated. Similarly, aquaculture can be cross-tabulated against the area of holding to explore the relationship between aquaculture and the size of agricultural holdings, helping to identify patterns or correlations between aquaculture activities and the scale of farming operations. Furthermore, these cross-tabulations can be combined to gain a more comprehensive understanding. For instance, aquaculture can be cross-tabulated simultaneously by administrative unit and area of holding, allowing for a deeper analysis of how aquaculture and the size of holdings vary across different parts of the country. This could reveal if certain regions have a higher concentration of aquaculture in specific sizes of agricultural holdings. This section presents the most common cross-tabulations of essential items. However, the variables that can be cross-tabulated are numerous and other cross-tabulations can be made according to national needs. As highlighted earlier (paragraph 9.7), cross-tabulations should only be considered in very special cases, while three-way tables should be avoided in the census report. For in-depth studies, analysts could generate a more detailed set of tables.

9.27 Generating a statistical table from an agricultural census requires expertise in data analysis and tabulation techniques. Countries need to develop a practical census tabulation program that considers available resources and the significance of the information to be included in the final report. It is important to strike a balance between the level of detail in the tabulations and the resources required for their production. For instance, it might be essential to include a table that presents the distribution of land area by the age of the holders. However, tabulating the type of permanent crops by the age of the holders might not be as crucial and could add unnecessary complexity to the data analysis process. Countries should exercise caution when classifying data into fine categories for cross-tabulations. This is because smaller subgroups may result in table cells being based on only a few holdings. Such limited sample sizes can compromise data confidentiality, as it becomes easier to identify individual farms or holders from the published information. This concern becomes even more significant when presenting census data on the web. Without appropriate precautions and data anonymization techniques, there is a risk that users accessing the online data may be able to extract individual-level information. This can raise privacy and confidentiality issues, which need to be addressed to ensure the responsible use and dissemination of agricultural census data.

9.28 The most common cross-tabulations for the essential items are summarized in Table 9.2. The rows of Table 9.2 show the essential items to be tabulated in a standard report, while the columns show the nine main classification variables given in paragraphs 9.13–9.23. Classification variables appear in both the rows and columns. The body of Table 9.2 shows the characteristic being measured in the cross-tabulation: N = Number of holdings; A = Area; L = Number of livestock. Essential items on working time at the holding level (Items 0902 and 0903) are not included in the rows of Table 9.2, as they need to be converted from categorical to continuous data (see paragraph 9.24). Often, the aggregated working time at the holding level is shown in the body of the table together with N (Number of holdings), A (Area), or L (Number of livestock).

9.29 The following example illustrates the use of Table 9.2. Item “total area of holding” (row) is shown as being classified against classification variable “household size” (column) with the characteristics “number of holdings” and “area.” This means that two tables should be prepared: one showing the number of holdings for each area of holding and household size class as given in Table 9.1, and the other showing the total area of holdings for each area of holding and household size class.

9.30 In the context of tabulating the “number of holdings,” the cells in the table may or may not be mutually exclusive (see “Reference group” in the last column of Table 9.1). For example:

- Mutually exclusive classes. One case is when the number of holdings is classified by land size. In this scenario, each holding is assigned to a particular land size class category, meaning it can only belong to one class.
- Non-mutually exclusive classes. In other cases, the classes or categories may not be mutually exclusive, which means that a given holding can be included in multiple categories simultaneously. One example is when the number of holdings is classified by land use. Here, a holding may have multiple land use types (e.g. it may have land allocated for permanent crops, forest and other land uses simultaneously), and it would be counted in each relevant category. In the case of non-mutually exclusive classes, the total of holdings is not relevant.

9.31 Given that all data items collected in the census should be tabulated in at least one basic table by administrative region or agroecological zone, the number of additional cross-tabulations for the main census report will be limited. In addition to the main census report, countries may choose to prepare supplementary thematic reports that focus on specific areas of interest. For example, a thematic report might analyse the gender dimension of agriculture, examining data related to female holders, their access to resources, and their contribution to agricultural production. Another thematic report could analyse crops or livestock. With advancements in technology, countries could disseminate additional cross-tabulations and detailed data through web-based platforms. These online resources can provide interactive visualizations, allowing users to explore specific cross-tabulations of interest, such as comparing livestock populations across agroecological zones. The tabulation programme in Table 9.2 will not necessarily meet all data needs, even for the essential items, and countries should prepare additional tables as required.

Data confidentiality and data disclosure control

9.32 Data collected during the agricultural census must be tabulated and disseminated in a manner that ensures the confidentiality of individual holdings and respondents. Particular care is needed when producing detailed tables or cross-tabulations, especially at lower levels of geographic disaggregation or when using fine classification variables, as these may lead to the identification of individual units.

9.33 To prevent disclosure of confidential information, countries should apply appropriate disclosure control measures during the tabulation process. These may include suppressing cells with small counts; aggregating data into broader classes; applying minimum threshold rules; or limiting the number of variables used simultaneously in cross-tabulations ([UNSD, 2007](#)).

Community-level data

9.34 Community-level data in an agricultural census refers to information collected at the community level through the community survey (see Chapter 8), which can be used in two main ways. First, it can be summarized to provide an overview of the characteristics and attributes of communities themselves, including demographic information, socioeconomic indicators, infrastructure availability, and other relevant factors. Second, community-level data can be used as classification variables to categorize and analyse census holding-level data, by linking each individual agricultural holding to its corresponding community. Establishing this link can be challenging in many countries, as communities may be referred to by different names or have ambiguous or undefined boundaries. For this reason, preliminary cartographic work is essential to clearly determine the community or communities to which each enumeration area (EA) in the census belongs.

9.35 The cross-tabulation of community-level and holding-level data is also very important for assessing the quality and reliability of the information collected during the census. By comparing data at these two levels, inconsistencies or discrepancies can be identified and investigated further. For instance, if a census questionnaire indicates that a holder is a member of a farmers' association, but there is no record of such an association within the community, it raises the need for clarification.

Similarly, if a holder is reported to have animals grazing in communal land, but there is no communal grazing land documented in the community, clarification becomes necessary.

9.36 In certain situations, community-level data needs to be organized into appropriate groupings for effective tabulation and presentation in a standardized report. This is particularly relevant for data concerning traveling time, where it is important to create meaningful categories that reflect the accessibility of a specific service for people in the community. For instance, the traveling time data collected from different communities can be grouped into categories such as “less than 1 hour”, “1–2 hours”, and “more than 2 hours”. These groupings would provide a clear understanding of the distribution of commuting times and the level of convenience or difficulty people face in accessing a service.

Summary characteristics of communities

9.37 The primary tabulation requirement in any standard report is for data on the number, or percentage, of communities with specific community characteristics, such as availability of electricity, seasonal food shortages, or exposure to natural disasters. Tabulations can also extend beyond community-level characteristics to include holdings or the population. For instance, tabulating the number of agricultural holdings or the percentage of the population engaged in specific community characteristics, such as access to extension services.

9.38 The classification variables used for tabulations can vary depending on the data collected. Administrative divisions, such as provinces or districts, are commonly used for categorizing communities. Additionally, agroecological zones, which consider ecological factors like climate, soil type and vegetation, may be employed to classify communities with specific agricultural characteristics.

Community-level data as classification variables for holding-level data

9.39 When tabulating holding-level data using community-level classification variables, the choice will vary based on the specific content of the community survey. The primary holding-level data commonly used in these tabulations include the number and area of holdings, and the population associated with those holdings.

Typical community-level classification variables are:

- **Access to urban centre.** This item is useful for analysing agricultural practices of individuals residing in isolated areas. One way to measure access is by considering the traveling time from a community to the nearest urban centre.³¹ Another aspect of access is whether the community is connected to the urban centre by a year-round motorable road.³²
- **Risk of natural disasters.** This item serves to assess how farmers modify their agricultural methods in response to natural disasters. In some cases, the classification specifies the nature of the natural disaster, such as flood or storm.
- **Economic status.** If this item is available from the community survey, it could be used to provide a poverty dimension to the analysis of the census data. Sometimes, “poor” is divided further into “hungry” and “not hungry” groups.
- **Occurrence of seasonal food shortages.** This is a useful classification variable for analysing whether or not agricultural holdings in the surveyed communities face **seasonal food shortages**.

³¹ For example, if a community has a short travel time to reach the nearest urban centre, it suggests relatively easier access to resources, markets, and services available in urban areas. On the other hand, if the travel time is significantly longer, it indicates a more remote and isolated location, which may have implications for agricultural practices due to limited access to external inputs, markets, and infrastructure.

³² This criterion focuses on the presence of a reliable road infrastructure that allows regular transportation between the community and the urban centre throughout the year. A year-round motorable road ensures smoother movement of goods, services and people, enabling farmers in isolated areas to access markets, agricultural inputs and other essential resources more conveniently. In contrast, if a community lacks a year-round motorable road, it may face challenges in transportation, leading to difficulties in agricultural activities and limited integration with the broader agricultural economy.

- **Presence of a periodic or permanent agricultural produce market.** This variable examines whether a community has a periodic or permanent agricultural produce market or the proximity of the community to the nearest market. It provides valuable information for analysing crop and livestock activities in relation to market availability. For example, a community with a permanent market nearby may have more opportunities for farmers to sell their produce, leading to different agricultural practices compared to a community that relies on periodic or distant markets. This variable helps assess the market access and potential economic benefits for agricultural holdings in different communities.
- **Access to veterinary services.** This item focuses on the availability of veterinary services in a community, or the travel time required to reach the nearest veterinary services. It serves as a useful classification variable for analysing livestock-related data, such as livestock deaths. For example, a community with easy access to veterinary services may experience lower livestock mortality rates due to timely disease prevention and treatment. Understanding this relationship enables targeted interventions to improve animal health.
- **Access to farm input trading centre.** This item examines whether an input trading centre is available in the community or the travel time to reach the nearest input supplier. It provides insights into the accessibility of farm inputs, such as seeds, fertilizers and machinery. This classification variable can be used to examine the constraints to improving agricultural productivity because of difficulties in accessing farm inputs.
- **Access to credit institutions.** This classification variable helps to assess the presence of rural banks or credit institutions in the community or the travel time to the nearest rural financial institution. It serves as a classification variable to analyse credit data and evaluate the ease of accessing credit facilities for agricultural purposes. For example, communities with limited access to credit institutions may face difficulties in obtaining financial resources for farming activities.
- **Access to farmers' association.** This item examines the existence of farmers' associations in the community. It can also identify different types of associations if applicable. Analysing this variable helps study the benefits that farmers derive from such associations. Farmers' associations often provide platforms for knowledge sharing, collective bargaining and accessing resources. For example, a community with active farmers' associations may experience enhanced market opportunities, improved agricultural practices, and stronger social networks among farmers.
- **Presence of specific development projects.** This can be a useful classification variable for examining how such projects have benefited farmers. Development projects can include initiatives focused on infrastructure development, technology adoption, irrigation systems, or value-chain interventions.

Other tabulations

Aquaculture

9.40 As with the census of agriculture, each item related to aquaculture should first be tabulated by administrative unit or agroecological zone.

9.41 Seven main classification variables are recommended for tabulations on aquaculture, made up of six items used for agricultural census tabulations and one item specific to aquaculture. These are shown below, together with the relevant reference group.

- **Administrative unit or agroecological zone** (Reference group: all aquacultural holdings): as for agricultural holding tables (see paragraph 9.13).
- **Legal status of holder** (Reference group: all aquacultural holdings): as for agricultural holding tables (see paragraph 9.14).
- **Total area of holding** (Reference group: all aquacultural holdings): as for agricultural holding tables (see paragraph 9.15).
- **Area of aquaculture** (Reference group: all aquacultural holdings). This is based on Item 1002 (see Annex 4, Theme 10). The area groupings should be the same as for the area of holding (see Table 9.1). This is useful as a measure of size of the aquacultural activities.

- **Household size by sex and age groups** (Reference group: all aquacultural holdings in sector “holdings in household sector” in Item 0103): as for agricultural holding tables (see paragraph 9.19).
- **Sex of holder** (Reference group: all aquacultural holdings in sector “holdings in household sector” in Item 0103): as for agricultural holding tables (see paragraph 9.20).
- **Age of holder** (Reference group: all aquacultural holdings in sector “holdings in household sector” in Item 0103): as for agricultural holding tables (see paragraph 9.23).

9.42 A number of cross-tabulations for aquaculture can be considered, both within the aquaculture items themselves and with the agricultural holding items. Countries should determine their own priority set of cross-tabulations dependent on users’ needs.

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CHAPTER 10 DATA DISSEMINATION, DATA CONFLICTS AND ARCHIVING

This chapter emphasizes the **importance** of data access as a key **component of** the agricultural census **programme**, particularly **with regard to** dissemination, **conflict resolution**, archiving, and **the** safe accessibility of census metadata, aggregated data, and microdata. **It also highlights the benefits of** archiving census data.

Introduction

10.1 Following data processing, census data needs to be analysed and published. Chapter 24 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* (FAO, 2018a) discusses census dissemination strategies and analytical products.

10.2 The agricultural census aims to provide valuable insights for stakeholders to plan, evaluate and monitor policies. At the same time, the data collected are of great importance for sectors such as private enterprises, research institutions and industry. Dissemination and archiving are the stages of the census process at which census data are made available to users and their long-term preservation is ensured. Meeting users' needs for data by providing structural data on agriculture should be regarded as one of the main purposes of the census, and ensuring access to as wide a range of data as possible is an essential component to be planned for. Increased use of census data helps to maintain strong demand for the census and supports future rounds. The Cape Town Global Action Plan for Sustainable Development Data 2017 (UNSC, 2017) identifies as its objective in Strategic Area 4 the dissemination and use of sustainable development data, through seven key actions. In 2018, the United Nations Statistical Commission established a subgroup on open data³³ under the Friends of the Chair group on the Fundamental Principles of Official Statistics (FOC-FPOS) to work on principles, guidance and support for the implementation of open data in countries. Successful dissemination and archiving require that appropriate metadata accompany both macrodata and microdata.

10.3 Metadata provide information about one or more aspects of the data and help users understand what the data measure and how they have been collected. This prevents misinterpretation and promotes appropriate use of the data. Metadata also support understanding of data quality by explaining the data collection process. In addition to standard metadata items, all released data should be accompanied by quality measures to help users interpret the census results more effectively. These quality measures may be included as part of the metadata or presented separately, for example in a technical report.

10.4 Various standards and procedures for metadata documentation exist. These set out appropriate structures for metadata, as well as information about the descriptions that should be included in the metadata. One widely used standard is the [Data Documentation Initiative \(DDI\)](#) (DDI Alliance, n.d.), standards, such as the [Statistical Data Metadata Exchange \(SDMX\)](#) (SDMX, n.d.) or the [Dublin Core Metadata Initiative \(DCMI\)](#) (Dublin Core, n.d.), are also used. Chapter 22 and Annex 4 of the Operational Guidelines (FAO, 2018a) further discuss census metadata.

10.5 Data dissemination and archiving of the census should ideally be incorporated into the dissemination and archiving practices of the institution. The institution's data dissemination policies, release practices, approach to user support, and standards used for data documentation and archiving should be applied. Where practices are not yet in existence, the census provides an opportunity for the institution to establish these for all surveys and censuses.

Dissemination of aggregate results

10.6 A census is not complete until the information collected is made available to potential users in a

³³ Open data is data that can be freely used, re-used and redistributed by anyone, subject only, at most, to the requirement to attribute and share alike (UNSD, 2019).

form suited to their needs. The results of the census are relevant to a wide range of users. Within government, users include policy makers at the national level and local authorities covering economic growth, food security, industrial competitiveness, national accounts, environmental protection, etc. Private sector users include those wishing to establish farm infrastructures and services, investors in agriculture, etc., in addition to users in academic and research communities, civil society and special interest organizations such as farmers' organizations, nongovernmental organizations working to improve agriculture, and international organizations. A standard dissemination plan should be developed as part of census preparation, including development of output systems, dissemination products, management of the release, and promotion and management of user support. A variety of census products can be disseminated which are tailored to meet the needs of each particular type of user. For example, policy users in government may require that the results be analysed and include focused basic summaries of key changes and problem areas relevant to the agricultural policy of interest, with accompanying graphics, maps, and appropriate analysis. On the other hand, the needs of users such as researchers may be met by providing access to as many of the detailed data tables as possible. The researchers would then conduct the analysis as needed. The products should include both products for public use and specific products for internal agency use.

10.7 Common dissemination products are a final report on the main results and a summary report of key results. The reports could make useful comparisons with previous censuses, identifying trends and structural transformations of the agricultural sector, which could point towards areas for policy intervention. For countries conducting the modular approach there should be a report on the core module and reports for each supplementary module. Other reports include a non-household holdings report, a rural community report, and various thematic reports, including a gender report. In addition, as part of the advocacy, a brochure presenting the key findings can be produced, or social media posts and videos promoting the publication of the different reports. The dissemination plan should also include a technical reference report containing metadata, methodological and operative actions, the census questionnaires, the main census manuals, and quality assessments, such as response rate, census coverage, proportion of imputed data by variable, etc. Consideration should be given to developing a regionally standardized reporting format to allow for easier comparison and knowledge-sharing among countries in the region.

10.8 A variety of media can be used for dissemination, including print, online and social media, although online dissemination is currently the preferred method by almost all countries due to its simplicity and cost. To better meet the data needs of users, electronic dissemination allows for further analysis and wider outreach. Dissemination through the Internet should also be encouraged to provide easier access for users. Chapter 24 of the Operational Guidelines ([FAO, 2018a](#)) discusses census dissemination products.

10.9 The results can be published as reports for general distribution (standard reports), as tables, or by providing ad hoc user-generated requests for access to a database or provision of tables. When user-generated tables are possible, care must be taken to ensure that the outputs produced have been tested for statistical reliability and confidentiality. Limits may therefore be placed on which variables can be tabulated or at which geographical levels. A wider range of dissemination modalities should be encouraged, such as tabulations or reports in electronic format with online distribution, which allow for broader dissemination and greater use of the data. The use of electronic formats also facilitates further analysis by users and is therefore recommended wherever possible.

10.10 Value added products can also be provided, such as census maps, preferably in digital form, which can be included in the overall dissemination programme of an agricultural census. In addition to preparing maps for the census tables and reports, countries should also produce an agricultural atlas. Other forms of access to maps include Web-based mapping and GIS. These technologies allow for the construction of interactive maps, such that users can generate maps that focus on various census themes, targeting specific geographies of interest, and allow linkage between maps, tables, graphs, and charts for easier interpretation of data. Maps should be produced at nested levels of administrative geography, to the smallest administrative unit which can be safely released. Chapter 24 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* ([FAO, 2018a](#)) discuss census geographic products.

10.11 The presentation of census results should be an important national event. A national seminar to

disseminate the main census results, along with regional dissemination seminars, is strongly suggested to place the census of agriculture on the national agenda through stakeholder engagement and public awareness. Press conferences conducted by the main authorities responsible for the census results also provide an effective means for wide dissemination. The majority of these activities should preferably be conducted via online platforms to broaden participation, particularly for those located far from venues. It is also useful to make these videos available on the census website so that they can be accessed asynchronously by different users.

10.12 In addition to providing statistical products, dissemination includes promoting data products and managing user support to help users access and use the census outputs. Managing dissemination involves several planned activities, including preparing and updating dissemination databases, preparing census dissemination products, managing the release of census results, promoting census dissemination products, and providing user support.

10.13 By disseminating standard tables in line with the recommendations outlined in Chapter 9, countries can ensure consistency and compatibility in their census data, enabling meaningful cross-country analyses and benchmarking exercises. At the end of each decennial census round, FAO reviews national census results and publishes international comparison tables under the Statistical Development Series (SDS). Since 2022, the FAOSTAT domain has disseminated structural data from agricultural censuses in a standard format.³⁴

Safe access to census microdata

10.14 Microdata from national censuses represent a valuable public good that should be widely promoted by national census offices to enhance their use by various users and to justify the high cost of conducting a census. Microdata are data recorded at the unit of enumeration – the holding or household – when an agricultural census is conducted. Each set of information about a unit constitutes a microdata record.

10.15 Microdata allow users to conduct a wider range of analyses than is possible with aggregate data. Potential users include government research departments, academic institutions, researchers in non-governmental organizations, and international agencies. To carry out this work effectively, researchers require access to high-quality statistical data. If statistical organizations possess such data, they should explore ways to satisfy this demand. Otherwise, researchers may resort to conducting their own studies and surveys, which can be less efficient and more costly.

10.16 Providing access to microdata requires balancing the demands of the research community with the legislated obligation to maintain the confidentiality of information collected from respondents. To ensure safe access to microdata, both respondents' privacy and data producers' confidentiality requirements must be respected. This means reducing the risk of disclosure while maintaining the usefulness of the data. It may not always be feasible to create a fully anonymized public file for distribution to researchers. In some cases, access to microdata may need to be provided through mediated services managed by the data producers. If such arrangements are not possible, custom tabulations may remain the only option available to researchers.

10.17 Further guidance on provision of microdata to users and considerations to be taken into account by the statistical office can be found in *Providing Access to Agricultural Microdata: A Guide* (FAO, 2014). This publication provides relevant references about Statistical Disclosure Control (SDC).³⁵

10.18 Different methods of access to microdata are possible, offering different tradeoffs between the level of detail released and the protection of confidentiality. Other issues to be considered are the costs and level of organization necessary to generate and manage the various methods.

10.19 Common types of methods for safe access are:

³⁴FAOSTAT domain on Structural data from agricultural censuses is available at: <https://www.fao.org/faostat/en/#data/WCAD>

³⁵ Some references include [Hundepool et al., 2024](#); [Templ et al., 2014](#); and [Dupriez and Boyko, 2010](#).

- **Public use files (PUFs):** These files (which may be from a sample of census records) undergo a rigorous statistical disclosure control process so that the chance of re-identification of respondents is minimal.
- **Licensed files:** Licensed files are also anonymized but with the possibility of fewer SDC procedures being applied. This will depend on the nature of the file and the policies of the producer; thus, they may include more detail. The data producers ask the researchers to identify themselves and be explicit about the research that they are doing. They will be asked to sign a license that identifies who can have access to the file and what the conditions of use are.
- **Remote access facilities (RAFs):** RAFs involve a service window provided by the data producers, which allows researchers to supply the algorithm they will be using in their analysis. The researcher is provided with a synthetic file that replicates the structure and the content of the actual data sets. The researcher can then develop programs and procedures using tools such as SAS, SPSS, STATA or R. The programs can be transmitted to the data producer, who can run the job against the actual data set and vet the results for disclosure before returning the output to the user.
- **Data enclaves:** A data enclave consists of a facility within the premises of the statistical organization to which researchers can perform their research on detailed files. These files are the most detailed ones available to the researchers, other than the actual master file. Users will be expected to identify the part of the data set they are interested in, and only that data subset will be made available to them. The results produced by the researcher must be vetted by a statistical organization staff member before they can be removed from the premises. Researchers must have specific goals prior to being allowed to perform the research in the data enclave.
- **Deemed employee:** A final model for consideration is “hiring” the researcher to work with the agency as a temporary staff member. In this case, the researcher would be subject to the same secrecy and ethical provisions as the regular staff members. This is generally limited to projects that assist the data producer in meeting their organization’s goals and for which they do not possess the necessary skills.

Promoting statistics through contemporary media and tools

10.20 Ensuring broader accessibility of agricultural census results to non-experts is crucial. While reports and microdata often target experts, policymakers and researchers, the general public requires alternative avenues to engage with these statistics.

10.21 Social media comprise a group of internet-based applications based on content created by their users, where the information goes viral quickly based on recommendations and actions of other users. Over time, different platforms and applications have become more or less popular. The vertiginous changes occurring in this area make it impossible to recommend a particular medium, and each country will decide which medium is the most appropriate to that end.

10.22 Social media should be used to popularize the key results of agricultural census and surveys, through different publications and videos. In the same way, the available reports of final results can be publicized through different platforms. Some of the outreach activities mentioned in 10.10 and 10.11 may be broadcast live to reach a more interested audience and should remain available on official websites to be accessible at any time.

10.23 It is important to note that social media should be used throughout the census operation. In the pre-census period, explaining the scope of the census, the different data collection modes and other characteristics of the operation and promoting the participation of those surveyed. During the census, informing about different problems that may occur during the field operation and serving as a hotline to help the respondents. And in the post-census period, as mentioned in previous paragraphs of this section, for the dissemination and popularization of statistics.

Data conflicts

10.24 One of the main objectives of the agricultural census is for benchmarking and for reconciliation of current agricultural statistics with the census data (See Chapter 1, paragraph 1.14b.). In Chapter 2, this aspect is discussed in paragraphs 2.32–2.36. Indeed, the census of agriculture provides an opportunity to improve current agricultural statistics through data reconciliation. Any data discrepancies and conflicts should be resolved prioritizing census data.

10.25 Data conflicts are unavoidable, and it is important to analyse and address them. These occur when the estimates of some variables from the census differ from those obtained from other sources, such as surveys, expert opinion or administrative records. These other sources provide current information on variables that change quickly over time. Census data should be given more weight, as they cover the entire population and therefore have no sampling error. Data reconciliation implies not only the checking of data of variables collected in the census vis-à-vis data of the same variable estimated from other sources, but also checking its consistency with correlated data (e.g. international trade).

10.26 Conflicts and discrepancies between census data and current agricultural statistics can be due to different causes, which should be adequately identified before any intent of data reconciliation. Sources of discrepancy are [\(FAO, 2017c\)](#):

- a) Varying concepts and timeliness: absence of harmonization of concepts and definitions in censuses and surveys, different thresholds and reference periods, reliability of most recent census and surveys, and lack of reliability of previous surveys compared to more recent censuses and surveys.
- b) Non-sampling errors: out-of-date sampling frames, wrong classification of sampling units, non-response and the solutions applied (change of sampling weights, imputations), inadequate census questionnaires, defective methods of data collection, tabulation, coding, etc.
- c) Sampling errors: when estimated confidence intervals from the survey do not cover the census data.

10.27 Therefore, when faced with conflicting data, the first step is to identify the source of the discrepancy. Once it is identified, reconciliation methods can be applied (see [FAO, 2017c, Chapter 3](#)). Before applying any reconciliation method, it is important to decide whether the census data should have priority over data from other sources (the usual case because the census is undertaken without sampling error). In such cases, the corresponding census information is “officialized” and the survey designs or non-survey procedures need to be calibrated. More information on how to correct discrepancies can be found in Chapter 25 of the *World programme for the census of agriculture 2020. Volume 2 Operational guidelines* [\(FAO, 2018a\)](#).

10.28 The identification of data conflicts and discrepancies, along with the evaluation of data quality, is especially important in countries where regular data production is based on expert estimates, where censuses are not carried out regularly or are being conducted for the first time, and where there are significant discrepancies between survey data and census data. If this analysis is not undertaken, discrepancies may have adverse consequences. For example, census data may not be accepted, and as a result, may not be used or may be used to a degree insufficient to justify the investment in the census.

Data archiving

10.29 Data archiving is a means of ensuring long-term preservation of data and assists users in understanding and interpreting data. It primarily relates to digital data that can be vulnerable to obsolescence of enabling technologies, from hardware and software used to store and access the data to physical damage rendering the technologies unusable and to loss due to the passage of time. This section provides a summary of the rationale for data archiving and its process. Appropriate considerations for data archiving policies and organizational and technological considerations for establishing a data

archive are set out in *International Household Survey Network (IHSN) Working Paper 3: Principles and Good Practices for Preserving Data* ([IHSN, 2009](#)).

10.30 Data archiving has several benefits. It allows the statistical institute to meet legislative requirements for preservation of data. It can help to increase investment in census data collection by ensuring that data are available in the future, thus fully utilizing the resources spent on the census. It ensures the continued access to the census data by users over long periods of time.

10.31 Data archiving involves explicitly identifying the census data to be preserved, safe storage of the data in a sustainable environment with appropriate policies and procedures and ensuring that the archived census data can be made available over time to authorized users. A census data archive should include raw and edited microdata and macrodata, together with the appropriate metadata, census dissemination products and census tools such as computational programs, conversion tables, enumeration manuals, training manuals, supervision manuals, questionnaires, cartography, etc. In addition, archived data must contain information about its quality, so it is important to include quality reports, estimated sampling errors in the case of sample modules, results from PES (if applicable), etc.

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ANNEXES

ANNEX 1 The agricultural census within the framework of the system of national accounts

The SNA/ISIC framework

The System of National Accounts ([UN, 2025e](#)) provides a standard national accounting framework for reporting of national income and product statistics. International standards for concepts, definitions and classifications are presented by the United Nations ([EC et al., 2025](#)). A specific system covering the food and agricultural sector has been issued by FAO ([FAO 1996b](#)) to supplement the SNA.

The SNA defines two main types of economic production units: enterprises and establishments.

- An **enterprise** is an economic unit of production, under single management, that independently directs and manages all the functions needed to carry out production activities. An enterprise may engage in more than one type of activity and may have its operations in more than one location. Enterprises may be corporations, government institutions or other units, including households.
- An **establishment** is an enterprise or part of an enterprise situated in a single location and primarily engaged in a single type of production activity. Any secondary activity should be on a small scale. An enterprise that is engaged in growing crops as well as processing the crops on a significant scale is considered to be two establishments, corresponding to the two types of activities.

In order to group units engaged in similar activities, establishments are assigned to **industries**. International guidelines for defining industries are presented in the International Standard Industrial Classification of Economic Activities, issued by the United Nations. The current version of ISIC is Revision 5 ([UN, 2025a](#)).

ISIC provides a hierarchical classification of activities. Thus, in ISIC (Rev. 5.), the first level (Section A: Agriculture, forestry and fishing) is divided into three subdivisions: (01) Crop and animal production, hunting and related service activities; (02) Forestry and logging; and (03) Fishing and aquaculture. These divisions are then further subdivided into groups and classes corresponding to more specific activities, such as growing crops and raising animals.

Scope of the agricultural census

The agricultural census aims to cover establishments engaged in **agricultural production activities**. Normally, this is restricted to units engaged in the production of **agricultural goods** – namely, crops and livestock products. This corresponds to the following ISIC (Rev. 5) groups:

- Group 011: Growing of non-perennial crops;
- Group 012: Growing of perennial crops
- Group 013: Plant propagation
- Group 014: Animal production
- Group 015: Mixed farming

Under SNA principles, another type of unit is also engaged in agricultural production activities – namely, units producing **agricultural services**. These are defined under ISIC (Rev. 5) as:

- Group 016: Support activities to agriculture and post-harvest crop activities

This group includes activities incidental to agricultural production and activities similar to agriculture that are not undertaken for production purposes (in the sense of harvesting agricultural products), which are done on a fee or contract basis. Also included are post-harvest crop activities, aimed at preparing agricultural products for the primary market. These service activities are becoming increasingly important, but are generally not included within the scope of the agricultural census. However, countries can obtain information about the holdings' involvement in post-harvest crop activities in Item 0111 "Other

economic activities of the household”, option “Other: all other ISIC classes not covered in the above categories”.

The agricultural holding as an establishment

Under SNA, an establishment in the agricultural industry (ISIC groups 011, 012, 013, 014 and 015) is one whose principal activity is in one of the designated ISIC groups. Such an establishment may also have a secondary activity not related to agriculture. Similarly, an establishment in a non-agricultural industry may have a secondary activity in agriculture. Thus, establishments in the five ISIC groups do not provide full coverage of all agricultural production activities.

An **agricultural holding** is an economic unit of agricultural production under single management. If the principal economic production activity of the agricultural holding is agricultural production, the agricultural holding is considered an establishment in the agricultural industry. However, the unit is not considered the same if the agricultural production activity of the agricultural holding is a secondary activity of a non-agricultural establishment. In this case, the agricultural holding may be considered to be an establishment-like unit in the agricultural industry. For the purposes of the agricultural census, the agricultural holding is treated as equivalent to an establishment unit under the SNA framework.

Most agricultural production activities are undertaken by households. For the household sector, the enterprise is the agricultural production management unit in the household, and the agricultural holding (establishment) is the unit of agricultural production within the management unit. Thus, usually:

- There is only one management unit in the household, and therefore, the household itself is the enterprise.
- There is only one agricultural production establishment in the household, and therefore, the agricultural holding is equivalent to the agricultural production activities of the household.

However, there are some special cases:

- If two family units in a household manage agricultural production activities independently, each family unit corresponds to an enterprise (because they are separate agricultural management units). Each family unit (enterprise) contains one agricultural holding (establishment) unit.
- If a household undertakes agricultural production activities both on its own and in partnership with other households, there are two separate management units associated with the household, which therefore correspond to two enterprises. Each enterprise unit contains one agricultural holding (establishment) unit.

In SNA terms, an agricultural holding in the household sector, as an establishment unit, consists of the agricultural production activities of the household enterprise unit, along with any small-scale secondary activities. Any significant economic activities in the household enterprise unit outside of the five ISIC groups covered by agricultural censuses are considered activities of other establishments. For example, a household engaged in significant forestry activity alongside its primary agricultural activity would consist of two establishment units: an agricultural establishment and a forestry establishment. Therefore, data on forestry collected in agricultural censuses do not, technically speaking, relate to the agricultural holding itself but to the enterprise unit of which the holding is a part. This distinction helps clarify the interpretation of non-agricultural data collected in agricultural censuses: they capture (i) agriculture-related data about the holding (establishment) and (ii) other data about the household (enterprise) unit.

A key challenge in linking the agricultural holding unit with the establishment unit lies in the single location concept in the definition of an establishment. The land operated by an agricultural holding under single management often consists of multiple parcels, each typically located in a different place (a parcel is a piece of land of one tenure type, entirely surrounded by land of another tenure type or land not operated by the holding). In principle, this would imply that each parcel could correspond to a separate establishment. However, SNA allows some flexibility in interpreting the single location criterion; for agricultural holdings, it may be applied more broadly to include activities within a specific administrative unit, such as a district or province. Moreover, the agricultural holding definition emphasizes the use of common inputs such as labour across parcels, limiting the geographical dispersion of land within a holding and aligning it with the SNA establishment concept.

Aquaculture

Aquaculture data collected in the agricultural census relate to aquaculture activities carried out in association with the agricultural production activities of the agricultural holding, using the same inputs. In SNA terms, agricultural and aquacultural activities fall under different ISIC divisions and, conceptually, should be treated as separate establishment units, even when closely linked. However, if the aquacultural activity is small-scale relative to the holding's principal agricultural production activity, it may be classified as a secondary activity of the agricultural holding and considered part of the agricultural industry.

An aquacultural census covers aquacultural production activities, defined by ISIC (Rev. 5) as:

- Group 032: Aquaculture.

The statistical unit for an aquacultural census is the **aquacultural holding**, defined as an economic unit of aquacultural production under single management. In SNA terms, an aquacultural holding is an establishment in the aquacultural industry; that is, in ISIC (Rev. 5) group 032. This is analogous to the concept of an agricultural holding in the agricultural industry.

Conceptually, the agricultural census and the aquacultural census are separate censuses of different industries. However, they can be combined into a single field enumeration system as part of a **census of agriculture and aquaculture**.

Other economic activities of the household (Item 0111)

Item 0111 in the list of items refers to activities, other than agricultural production on the holding, carried out by the enterprise of which the holding is a part. According to SNA principles, each type of economic activity in a given location is carried out by a separate establishment. Thus, if the household is also engaged in collecting forest products and operating a shop, then both these activities represent establishments. A household could also be engaged in agricultural production activities outside the holding; for example, if there are two holdings in a household or if the household is involved in a partnership agreement.

All activities are classified according to ISIC (Rev. 5.) as follows:

- Other agricultural production activities: ISIC groups 011–015.
- Support activities to agriculture and post-harvest crop activities: ISIC group 016
- Hunting, trapping and related service activities: ISIC group 017. This group, together with Agricultural services (ISIC group 016) covers the rest of ISIC Division 01 (Crop and animal production, hunting and related service activities) not included within the scope of the agricultural census.
- Forestry and logging: ISIC Division 02.
- Fishing and aquaculture: ISIC Division 03.
- Manufacturing: ISIC Divisions 10–33.
- Wholesale and retail trade; repair of motor vehicles and motorcycles: ISIC Divisions 45–47.
- Accommodation and food service activities: ISIC Division 55–56.
- Other: all other ISIC classes not covered in the above categories.

ANNEX 2 International standard industrial classification of all economic activities (ISIC):³⁶ scope of the agricultural census

ISIC Group 011: Growing of non-perennial crops

This group comprises the activity of growing non-perennial crops – i.e. plants that do not last more than two growing seasons. Included is the growing of these plants for the purpose of seed production. It consists of seven ISIC classes:

- ISIC Class 0111: Growing of cereals (except rice), leguminous crops and oil seeds
- ISIC Class 0112: Growing of rice
- ISIC Class 0113: Growing of vegetables and melons, roots and tubers
- ISIC Class 0114: Growing of sugar cane
- ISIC Class 0115: Growing of tobacco
- ISIC Class 0116: Growing of fibre crops
- ISIC Class 0119: Growing of other non-perennial crops

The following are included:

- Growing of cereals such as: wheat, grain maize, sorghum, barley, rye, oats, millet, other cereals not elsewhere classified (n.e.c.)
- Growing of leguminous crops such as: beans, broad beans, chickpeas, cowpeas, lentils, lupins, peas, pigeon peas, other leguminous crops
- Growing of oil seeds such as: soybean, groundnut, castor bean, linseed, mustard seed, niger seed, rapeseed, safflower seed, sesame seed, sunflower seed, other oil seeds
- Growing of rice (including organic farming and the growing of genetically modified rice)
- Growing of leafy or stem vegetables such as: artichokes, asparagus, cabbage, cauliflower and broccoli, lettuce and chicory, spinach, other leafy or stem vegetables
- Growing of fruit-bearing vegetables such as: cucumbers and gherkins, eggplants (aubergines), tomatoes, watermelons, cantaloupes, other melons and fruit-bearing vegetables;
- Growing of root, bulb or tuberous vegetables such as: carrots, turnips, garlic, onions (including shallots), leeks and other alliaceous vegetables, other root, bulb or tuberous vegetables
- Growing of mushrooms and truffles
- Growing of vegetable seeds, except beet seeds
- Growing of sugar beet
- Growing of other vegetables
- Growing of roots and tubers such as: potatoes, sweet potatoes, cassava, yams, other roots and tubers
- Growing of sugar cane
- Growing of unmanufactured tobacco
- Growing of cotton
- Growing of jute, kenaf and other textile bast fibres
- Growing of flax and true hemp
- Growing of sisal and other textile fibre of the genus agave
- Growing of abaca, ramie and other vegetable textile fibres
- Growing of other fibre crops
- Growing of swedes, mangolds, fodder roots, clover, alfalfa, sainfoin, maize and other grasses, forage kale and similar forage products
- Growing of beet seeds (excluding sugar beet seeds) and seeds of forage plants
- Growing of flowers, including production of cut flowers and flower buds
- Growing of flower seeds

The following are excluded:

- Growing of mushroom spawn, see 0130

³⁶ ISIC, Revision 5

- Growing of non-perennial spices, aromatic, drug and pharmaceutical crops, see 0128.

ISIC Group 012: Growing of perennial crops

This group includes the growing of perennial crops – i.e. plants that last for more than two growing seasons, either dying back after each season or growing continuously. Included is the growing of these plants for the purpose of seed production. The group consists of nine ISIC classes:

- ISIC Class 0121: Growing of grapes
- ISIC Class 0122: Growing of tropical and subtropical fruits
- ISIC Class 0123: Growing of citrus fruits
- ISIC Class 0124: Growing of pome fruits and stone fruits
- ISIC Class 0125: Growing of other tree and bush fruits and nuts
- ISIC Class 0126: Growing of oleaginous fruits
- ISIC Class 0127: Growing of beverage crops
- ISIC Class 0128: Growing of spices, aromatic, drug and pharmaceutical crops
- ISIC Class 0129: Growing of other perennial crops

The following are included:

- Growing of wine grapes and table grapes in vineyards
- Growing of tropical and subtropical fruits: avocados, bananas and plantains, dates, figs, mangoes, papayas, pineapples, other tropical and subtropical fruits
- Growing of citrus fruits: grapefruit and pomelo, lemons and limes, oranges, tangerines, mandarins and clementines, other citrus fruits
- Growing of pome fruits and stone fruits: apples, apricots, cherries and sour cherries, peaches and nectarines, pears and quinces, plums and sloes, other pome fruits and stone fruits
- Growing of berries: blueberries, currants, gooseberries, kiwi fruit, raspberries, strawberries, other berries
- Growing of fruit seeds
- Growing of edible nuts: almonds, cashew nuts, chestnuts, hazelnuts, pistachios, walnuts, other nuts
- Growing of other tree and bush fruits: locust beans
- Growing of oleaginous fruits: coconuts, olives, oil palms, other oleaginous fruits
- Growing of beverage crops: coffee, tea, mate, cocoa, other beverage crops
- Growing of perennial and non-perennial spices and aromatic crops: pepper (*piper spp.*), chilies and peppers (*capsicum spp.*), nutmeg, mace and cardamoms, anise, badian and fennel, cinnamon (*canella*), cloves, ginger, vanilla, hops, other spices and aromatic crops
- Growing of drug and narcotic crops
- Growing of plants used primarily in perfumery, in pharmacy or for insecticidal, fungicidal or similar purposes
- Growing of rubber trees
- Growing of Christmas trees
- Growing of trees for extraction of sap
- Growing of vegetable materials of a kind used primarily for plaiting

The following are excluded:

- Manufacture of wine, see 1102
- Growing of soybeans, groundnuts and other oil seeds, see 0111
- Gathering of tree sap or rubber-like gums in the wild, see 0230

ANNEX 3 International standard industrial classification of all economic activities (ISIC):³⁷ aquaculture

This annex is relevant to WCA 2030 if either an aquaculture module is included in the agricultural census or the agricultural and aquaculture censuses are conducted jointly.

ISIC Group 032: Aquaculture

This group includes aquaculture (or aquafarming) – i.e. the production process involving the culturing or farming (including harvesting) of aquatic organisms (fish, molluscs, crustaceans, plants, crocodiles, alligators and amphibians) using techniques designed to increase the production of the organisms in question beyond the natural capacity of the environment (for example, regular stocking, feeding and protection from predators).

Culturing/farming refers to rearing the above organisms to their juvenile and/or adult phase under captive conditions. In addition, aquaculture also encompasses individual, corporate or state ownership of the individual organisms throughout the rearing or culture stage, up to and including harvesting.

It consists of the following ISIC classes:

- ISIC Class 0321: Marine aquaculture
- ISIC Class 0322: Freshwater aquaculture

The following are included:

- Fish farming in seawater or freshwater, including farming of marine ornamental fish
- Fish farming in freshwater, including farming of freshwater ornamental fish
- Production of bivalve spat (oyster, mussel, etc.), lobsterlings, shrimp post-larvae, fish fry and fingerlings
- Growing of laver and other edible seaweeds
- Culture of crustaceans, bivalves, other molluscs and other aquatic animals in seawater
- Aquaculture activities in brackish waters
- Aquaculture activities in saltwater-filled tanks or reservoirs
- Operation of fish hatcheries(marine)
- Operation of fish hatcheries (freshwater)
- Operation of marine worm farms
- Culture of freshwater crustaceans, bivalves, other molluscs and other aquatic animals
- Farming of frogs

The following are excluded:

- Operation of sport fishing preserves, see 9319.

³⁷ ISIC, Revision 5

ANNEX 4 Additional Items of WCA 2030

This annex provides a description of the concepts and definitions for the additional items shown by theme in Chapter 6. The concepts and definitions are based on international standards, where applicable. However, countries should refer to AGRISurvey ([FAO, 2025a](#)) for more precise definitions of additional items and implementation approaches in agricultural surveys (see Chapter 2, paragraphs 2.59–2.62). As explained in Chapter 6, additional items are better collected on a sample basis, either in sample census modules or follow up surveys. The chapter proposes a decision tree that countries are encouraged to use to support the decision on whether an item is a census or a survey item.

Theme 1 : Identification and general characteristics

0102 RESPONDENT FOR THE AGRICULTURAL HOLDING

Reference period: census reference day

1. Respondent is the person from whom data are collected about the agricultural holding. This item can be used for quality assessments and checks. The respondent should be someone sufficiently knowledgeable to answer the census questions accurately; usually this is the holder or manager. The name and the position of the respondent in the holding are usually asked.

0108 AGRICULTURAL TRAINING/ EDUCATION OF THE HOLDER

Reference period: census reference day

2. This item aims at collecting information on training/education received by the holder for a specific field or task in agriculture. These data can be obtained by asking the holder about their agricultural education/training.

3. Data on agricultural training/education of the holder should be recorded in suitable categories according to national circumstances. Attention should be paid to consistency of those categories with the categories recommended by International ISCED ([UNESCO, 2011](#)). Countries may wish to consider the following categories, which correspond to the ISCED 2011 classification. Definitions of each category can be found in ISCED 2011:

- **Informal learning in agriculture** – refers to practical agricultural training/education, i.e. experience acquired through practical work (field tours, etc);
- **Non-formal education in agriculture** – refers to short-term, ad hoc courses in agriculture, completed at or provided by a government institution, international organization or any specialized institution in agriculture;
- **Secondary education in agriculture** – refers to any education in agriculture completed at the secondary education level;
- **Tertiary education in agriculture** – refers to high level education training, acquired at the tertiary education level.

0109 NATIONAL/ETHNIC GROUP OF AGRICULTURAL HOLDER

Reference period: census reference day

4. The collection of data regarding the national or ethnic group of households has become increasingly pertinent for countries, especially in the context of shaping migration policies, fostering integration and addressing minority concerns. The decision to collect data and disseminate information about the ethnic or national composition of a population in a census is contingent on various factors and national circumstances. These factors may include the specific needs of the country for such data, as well as the suitability and sensitivity of incorporating ethnicity-related questions in the census. For further insights into the definition of ethnicity, one can refer to the *Principles and Recommendations for Population and Housing Censuses* ([UN, 2025d](#)), specifically detailed in section D, paragraph 5.203.

5. In many countries, there are major differences in agricultural practices between different national or ethnic groups, which are important to measure in an agricultural census. For the agricultural census analysis, a single national/ethnic group indicator for the holding must be designated, and this is usually done by referring to the agricultural holder, which in the household sector is usually the household head. However, this may not always be appropriate. The national/ethnic groups used by a country should be consistent with the population census and other national statistics.

0112 PROPORTION OF INCOME FROM HOLDING'S AGRICULTURAL PRODUCTION IN HOUSEHOLD'S TOTAL INCOME

- Less than a quarter
- A quarter to less than half
- Half to less than three-quarters
- Three-quarters to less than all
- All income

Reference period: census reference year

6. The aim of this item is to get a broad indicator of the extent to which agricultural holdings rely on their own production for the total household income. Data for this item are collected only for agricultural holdings in the household sector. Together with data from essential Item 0111 (paragraphs 7.1.24–7.1.26), an indication about the holding's diversification could be obtained. This item gives information needed for the distinction between subsistence agriculture and agricultural production as recreational or leisure activities.

7. The income from the holding's agricultural production is calculated as the total value of the available production from the census reference year that will be sold, used as a means of production, processed by the household, consumed in the household, put into storage or used as an own-account produced fixed capital good.

8. According to *Principles and Recommendations for Population and Housing Censuses (UN, 2025d)*, **household income** may be defined as all receipts, whether monetary or in kind (goods and services) that are received by the household or by individual members of the household at annual or more frequent intervals, but excluding windfall gains and other such irregular and typically one-time receipts. Household income covers:

- (a) Income from employment (both paid and self-employment);
- (b) Income from the production of goods for own final use;
- (c) Income from the provision of household services for own final use;
- (d) Property income; and
- (e) Current transfers received.

0113 MAIN AGRICULTURAL ACTIVITY OF THE HOLDING

- Mainly crop production
- Mainly livestock production
- Mixed (crop and livestock)

Reference period: census reference year

9. The aim of this item is to get an indicator of the main agricultural production activity of the holding. Combined with other data it could be used for formulation of policies for the agricultural sector.

10. An agricultural holding is oriented to only one of the above-mentioned categories. It falls under the "crop production" category when at least two-thirds of the total value of the holding's production in the census reference year comes from crop production. An agricultural holding falls under the "livestock production" category when at least two-thirds of the total value of the holding's production in the census reference year comes from livestock production. If neither crop nor livestock production account for at least two-thirds of the total value of the holding's production, the holding is classified as mixed (crop and livestock). The value of the holding's production means the total potential value of the available

production in the census reference year, which will be either sold, used as a means of production, processed by the household, consumed in the household, put into storage or used as own-account produced fixed capital good.

11. When calculating the total value of production, often agricultural holdings do not include the production for own consumption. It is important to ask for all agricultural products produced in the census reference year, regardless of their destination; otherwise, the information would be incomplete, and the agricultural holding could be wrongly classified. Several questions may be needed to obtain data for this item.

0114 PRESENCE OF MANAGER OTHER THAN THE HOLDER

Reference period: census reference day

12. The **manager** is the person who oversees an agricultural holding on behalf of the agricultural holder and is responsible for the day-to-day financial and production routines of its operation. A distinction should be made between an agricultural holder and a manager who is not the holder (see paragraph 4.23). In the household sector, the manager and the holder are usually the same person. When they are not, the manager may be a paid employee (hired manager) or an unpaid individual, such as a family member or another person. A hired manager may be remunerated in wages or in-kind payments. This item can be useful for building sampling frames for surveys that analyse different types of holding management.

0115 SEX OF MANAGER OTHER THAN HOLDER

- *Male*
- *Female*

Reference period: census reference day

13. This item is important for analysing the gender aspects of agricultural production management. It could also be useful as basis for a sampling frame for special gender surveys.

0116 AGE OF MANAGER OTHER THAN HOLDER

Reference period: census reference day

14. The age of the manager is important for studying the relationship between age and the characteristics of agricultural holdings and, to compare the agricultural practices used by young and old managers. Age refers to the interval between the date of birth and the date of the census, expressed in completed solar years ([UN, 2025d, paragraph 5.169](#)). This item could be useful as a stratification variable for ongoing surveys.

Theme 2 : Land

0202 NUMBER OF PARCELS

Reference period: census reference day

1. Similar to total area of the holding (Item 0201), the number of parcels is a new item that provides information on the extent of agricultural activities in the holding. Many countries already collect this item because of its importance in building the frame for agricultural surveys, especially for countries where area data is missing or not reliable. The number of parcels (see paragraph 4.19) used by the holding for agricultural purposes could be included, regardless of their land tenure status.

2. The number of parcels used by the holding is important in some countries for building frames for agricultural surveys. Land parcelling out is important to understand the managerial characteristics of holdings. In some countries, holdings consist of many parcels operated by different members of extended households and also under different forms of tenure. For example, the design of sample surveys on crop or livestock production yields could be improved with data about highly and small parcelled holdings.

0205 LOCATION (for each parcel)

Reference period: census reference day

3. As mentioned in paragraph 4.19, for the purposes of the agricultural census, a holding is divided into parcels, where a parcel is any piece of land, of one land tenure type, entirely surrounded by other land, water, road, forest or other features not forming part of the holding or forming part of the holding under a different land tenure type. A parcel may consist of one or more fields or plots adjacent to each other. The concept of a parcel used in the agricultural census may not be consistent with that used in cadastral work. The reference period is a point of time, usually the census reference day.

4. A distinction should be made between a parcel, a field and a plot. A field is a piece of land in a parcel separated from the rest of the parcel by easily recognizable demarcation lines, such as paths, cadastral boundaries, fences, waterways or hedges. A field may consist of one or more plots, where a plot is a part or whole of a field on which a specific crop or crop mixture is cultivated.

5. The **location** of the parcel is important when disaggregating land data by administrative units. In an agricultural census, the location of a holding is usually defined by where the farm buildings or agricultural machinery are located (see paragraph 7.1.2). If the location of each parcel is not identified, all parcels would be assigned to the location of the holding, which could lead to inconsistencies with data from other sources. The location of the parcel n. For more information on collecting location data, see paragraphs 7.1.2–7.1.4.

0206 AREA (for each parcel)

Reference period: census reference day

6. This item is for those censuses that intend to collect data on holding area at the parcel level. For the definition of a parcel, see paragraphs 4.19. For information on how to determine the area of a holding, see paragraphs 7.2.1–7.2.7. Note that the sum of the parcel areas must be equal to the total area of the holding.

0207 SEX OF HOUSEHOLD MEMBER(S) MANAGING THE PARCEL (for each parcel)

Reference period: census reference day

7. This item is useful to identify the intra-household distribution of managerial decisions and ownership of parcels of the holding. The role of gender in the management of the parcel is complemented with parcel area (Item 0206) and tenure (Item 0209). The understanding of this role should lead to improved gender sensitivity in policies and programmes.

8. This item collects the sex of any household members (not just the holder or joint holder) making managerial decisions at the parcel level. If the parcel is managed by different household members, persons, the sex of the each of them could be taken. The list of managerial decisions to be investigated depends on country-specificities. An indicative list of possible categories of managerial decisions is given below:

- Area of land cultivated and area of land left fallow
- Types of crops grown
- Marketing of crops growing on this parcel
- Types of inputs used (fertilizers, pesticides, irrigation, hired labour, etc.)

9. Countries may wish to collect data for this item by identifying, for each household member, the managerial decision(s) made by them. Alternatively, countries could collect data for this item by indicating, for each managerial decision, whether it was made by a male or female household member, or jointly.

0208 LAND USE (for each parcel)

Reference period: census reference year

10. As mentioned in paragraph 7.2.16, land use data are often collected at the parcel level. This item serves this purpose. Land use classes, as recommended and defined in essential Item 0203 (paragraphs 7.2.8–7.2.37), should be used. In conjunction with the parcel area (additional Item 0206), the information collected in this item can be used to estimate the area under different land use classes.

0209 LAND TENURE (for each parcel)

- *Legal ownership or legal owner-like possession*
- *Non-legal ownership or non-legal owner-like possession*
- *Rented from someone else*
 - *Rented-in, leased or sharecropped with a written agreement*
 - *Rented-in, leased or sharecropped without a written agreement*
- *Other types of land tenure*
 - *State or common land used with a written agreement (certified use rights)*
 - *State or common land used without a written agreement (uncertified use rights)*
 - *Occupied/squatted without any permission*

Reference period: census reference day

11. Item 0203 “Area of holding according to land tenure types” was recommended in Chapter 6 as an essential item. However, countries may wish to collect land tenure data at a more detailed, parcel level. This item serves this purpose. It refers to the tenure type of each parcel. This information can be used in conjunction with the parcel area to estimate the area under different land tenure types. Countries wishing to get information about the efficiency of their official land registration system may go into more detail and ask about whether the parcel is officially registered or not. This may not be relevant to all land tenure types. If the parcel is under land tenure type “rented from someone else” or “non-legal ownership or non-legal owner-like possession”, the respondent might not be aware of its registration status.

12. Note that a parcel must be of one tenure type (paragraph 4.19). Refer to paragraphs 7.2.38–7.2.47 for definitions of land tenure and a description of the different land tenure types.

0210 TERMS OF RENTAL (for each rented parcel)

- *For an agreed amount of money and/or produce*
- *For a share of produce*
- *In exchange for services*
- *Under other rental arrangements*

Reference period: census reference day

13. This item relates to the conditions under which land is rented from others. It applies to parcels “rented from someone else” in additional Item 0209 (see above) and refers to the current rental arrangements (as of census reference day). See paragraph 7.2.43 of essential Item 0204 for the description of the above four forms of rental arrangements.

0211 USE OF SHIFTING CULTIVATION (for each parcel)

Reference period: census reference year

14. **Shifting cultivation** is a farming practice whereby a particular piece of land is cultivated for some years and then abandoned for a period sufficient to restore its fertility by natural vegetative growth before being re-cultivated. Often, fertilizers are not used. As a result, the productivity of the cultivated land quickly deteriorates, and the land is abandoned because it becomes economically unviable to continue cultivating it. Abandoned land usually takes a long time to regain fertility by natural processes. Sometimes, farmers cultivate the land on a rotating basis. Some holders move their dwellings when they shift to new land; others do not. Shifting cultivation is also known as “slash-and-burn cultivation”.

15. Data are collected on whether or not the parcel has been cultivated using shifting cultivation

practices during the census reference year.

0212 NUMBER OF YEARS SINCE CLEARED (for each parcel)

Additional item. Reference period: census reference day

16. The purpose of this item is to better understand the extent of recent land clearances, especially where shifting cultivation is present or where deforestation is a concern. Usually, it will only be necessary to collect data in broad ranges, such as: (i) in the last year; (ii) 1–3 years ago; (iii) 4 or more years ago.

17. Where different parts of the parcel are cleared at different times, the time when most of the land was cleared should be reported. If land is re-cleared after being left uncultivated for a long time, the most recent land clearance should be recorded.

Theme 3: Irrigation

0301 USE OF IRRIGATION ON THE HOLDING: FULLY AND PARTIALLY CONTROLLED IRRIGATION

Reference period: census reference year

1. The definition of irrigation is provided in paragraphs 7.3.1 to 7.3.3 and the item refers to both fully controlled and partially controlled irrigation methods. This item also helps to better understand cropping practices and the constraints in improving agricultural productivity. It is recommended to include this item in the core module when using a modular approach, to provide a sampling frame for the census supplementary irrigation module and for other irrigation surveys. Countries wishing to set up a list frame of holdings using irrigation may collect this item in the census by complete enumeration to support the design of specific sample surveys on this type of holdings.

0303 AREA OF LAND ACTUALLY IRRIGATED ACCORDING TO LAND USE TYPE: FULLY CONTROLLED AND PARTIALLY CONTROLLED IRRIGATION (for the holding)

- Land under permanent crops
- Land under temporary crops
 1. Single-irrigated crop
 2. Multiple-irrigated crops
- Land under temporary meadows and pastures
- Land under permanent meadows and pastures

Reference period: census reference year

2. See paragraphs 7.3.1–7.3.3 for the definition of irrigation and 7.3.5 for the definition of area irrigated. This item includes areas actually irrigated by both fully controlled and partially controlled irrigation. See paragraph 7.2.25 for the definition of “land under permanent crops”, paragraph 7.2.18 for the definition of “land under temporary crops”, paragraph 7.2.21 for the definition of “land under temporary meadows and pastures” and paragraph 7.2.27 for the definition of “land under permanent meadows and pastures”. Crops grown under protective cover should be included under the category “**land under farm buildings and farmyards**”, as indicated in the definition.

3. Note that “area irrigated” in this item refers to the physical area of land irrigated, not the total area of crops irrigated (see additional Item 0305). Thus, land irrigated for successive crops in different seasons within the reference year is only counted once in computing the area of land irrigated and is shown under multiple-irrigated crops. Land under temporary crops with single-irrigated crop refers to land with a single-irrigated crop during the reference year, or land with successive crops with irrigation being used for only one of the crops during the reference year.

4. This item is a holding-level item. However, for operational reasons, countries may find it easier to collect the data at the parcel level and aggregate up to the holding level. Countries may wish to include this item in the core module if a supplementary irrigation module is not conducted.

0304 AREA OF LAND ACTUALLY IRRIGATED ACCORDING TO METHOD OF IRRIGATION: FULLY CONTROLLED IRRIGATION (for the holding)

- Surface irrigation
- Sprinklers
- Localized irrigation

Reference period: census reference year

5. See paragraphs 1 and 2 above for more information on land irrigated.

6. This item includes only areas of land irrigated by fully controlled irrigation methods. Surface irrigation refers to a method of irrigation in which water is applied to the land by allowing it to flow by simple gravity, before infiltrating. There are several types of irrigation, including furrow, border-strip, and basin irrigation. Basin irrigation includes submersion irrigation for rice. Manual irrigation using buckets or watering cans is also included. The use of water from water harvesting facilities, such as roof water harvesting, is included if the water supply is reliable. Surface irrigation does **not** refer to the method of transporting the water from the source up to the field, which may be done by gravity or by pumping.

7. Sprinkler irrigation refers to pipe networks through which water moves under pressure before being delivered to the crop via sprinkler nozzles. The system basically simulates rainfall in that water is applied through overhead spraying. Sprinkler irrigation systems are sometimes known as overhead irrigation systems.

8. Localized irrigation is a system whereby water is distributed under low pressure through a piped network, in a pre-determined pattern, and applied as a small discharge to or adjacent to each plant. There are three main categories: drip irrigation (where drip emitters apply water slowly to the soil surface); spray or micro-sprinkler irrigation (where water is sprayed to the soil near individual plants or trees); and bubbler irrigation (where a small stream is applied to flood small basins or the soil adjacent to individual trees). Other terms commonly used to refer to localized irrigation are micro-irrigation, trickle irrigation, daily flow irrigation, drop-irrigation, sip irrigation and diurnal irrigation.

0305 AREA OF CROPS ACTUALLY IRRIGATED FOR EACH CROP TYPE: FULLY CONTROLLED IRRIGATION (for the holding)

Reference period: census reference year

9. This item includes only areas of crops irrigated by fully controlled irrigation methods. This item refers to the area of crops irrigated, as opposed to the area of land irrigated given in Items 0302 (essential), 0303 and 0304 (see paragraphs 2–8 above). For example, a plot of 0.4 ha with crops irrigated in two seasons within the reference year is recorded as 0.4 ha of land irrigated in essential Item 0302 and 0.8 ha of crops irrigated in this item. Analysis of the irrigated crop area in relation to the land irrigated provides information on cropping intensity under irrigation.

10. For temporary crops, this item refers to that portion of the harvested area (see paragraphs 7.4.4–7.4.15) irrigated at any time during the reference period. For permanent crops, this item refers to the portion of the area of permanent crops present on the *census reference day* (see paragraph 7.4.17) that was irrigated at some time during the reference period.

0306 SOURCES OF IRRIGATION WATER: FULLY CONTROLLED IRRIGATION (for the holding)

- Surface water
- Groundwater
- Mixed surface water and groundwater
- Municipal water supply
- Treated or not-treated wastewater
- Agricultural drainage water
- Desalinated water
- Other

Reference period: census reference year

11. This item includes only areas of land irrigated by fully controlled irrigation methods. This item refers to whether irrigation water used on the holding was obtained from the given sources. A holding may obtain water from more than one source.

12. The source of irrigation water refers to the categories provided above. **Surface water** is water found on the earth's surface that is naturally open to the atmosphere, in streams, rivers, reservoirs, ponds, lakes, impoundments, wetlands, and estuaries. **Groundwater** is water stored underground in aquifers – that is, water in soil in the saturated zone beneath the water table, where the soil voids are filled with water. It is usually pumped from wells. **Municipal water supply** is a source of water accessible to at least two holdings. It refers to water withdrawn from the public piped distribution network, and a fee is usually charged for access. **Treated wastewater** is water with no further immediate value for the purpose for which it was used or produced because of its quality (i.e. wastewater), which has undergone treatment and is delivered to the user. **Agricultural drainage water** is water withdrawn for agriculture but not consumed and then returned, which can be recovered and reused. **Desalinated water** is water produced by desalination of brackish or salt water. For more information, see *AQUASTAT – FAO's Global Information System on Water and Agriculture* ([FAO, 2025d](#)).

13. Sometimes intermediary sources are used; in such cases, the most primary source from the list above should be selected. For example, if a canal network distributes water from a dam to farmers, the source of the water is surface water. If water is taken from a tap in a house or village, the source is municipal water supply. Countries may need to adapt or further elaborate the classes provided to meet their specific needs.

0307 PAYMENT TERMS FOR IRRIGATION WATER: FULLY AND PARTIALLY CONTROLLED IRRIGATION (for the holding)

- *Did not pay for water*
- *Paid for water*
 - . *Fee based on area of land irrigated*
 - . *Fee based on volume of water*
 - . *Other*

Reference period: census reference year

14. This item refers to whether payment was made for the irrigation water used on the holding. If payment is made in more than one way – such as both on an area and volume basis – it should be assigned to the “other” category.

0308 USE OF OTHER TYPES OF IRRIGATION: PARTIALLY CONTROLLED IRRIGATION (for the holding)

1. *Equipped wetland and inland valley bottoms*
2. *Equipped flood recession cultivation*
3. *Spate irrigation*
4. *Other*

Reference period: Data on partially controlled irrigation are normally collected for the census reference year, but data may be distorted by unusual weather conditions in the reference year – for example, if there is no flood recession cultivation because of low flood levels. A longer reference period, such as a three-year period, may be considered for some countries and, if used, should be reported as such in the reports of results to permit proper interpretation.

15. This item refers to whether partially controlled irrigation methods were used on the holding. Partially controlled irrigation covers the specific methods listed above. A holding may have more than one type of partially controlled irrigation activity.

16. **Wetland and inland valley bottoms** are lowland areas subject to seasonal flooding that are used for crops when covered with water. Water control structures, such as canals, may be constructed to aid crop cultivation, in which case this falls in the partially controlled irrigation category.

17. **Flood recession** refers to areas along the edges of rivers or other bodies of water where crops are grown, taking advantage of receding floods water. Floating rice is included as a flood recession crop. Structures may be built to retain receding water; in which case this falls in the partially controlled irrigation category.

18. **Spate irrigation** is a method of random irrigation that uses floodwaters from a normally dry watercourse or riverbed (*wadi*). Spate irrigation is also referred to as floodwater harvesting. There are two types of spate irrigation. One is when floodwater is harvested in streambeds and spread through the *wadi* in which crops are planted. Cross-*wadi* dams are constructed with stones or earth, often reinforced with gabions. A second type is when floodwater is diverted from seasonal rivers to adjacent embanked fields for direct application. Here, a stone or concrete structure raises the water level within the *wadi* to enable it to be diverted. Spate irrigation falls under the partially controlled irrigation category.

19. **Other** irrigation may include, for example, manual watering of plants using buckets, watering cans or other devices.

0309 AREA EQUIPPED FOR IRRIGATION IN WORKING ORDER: FULLY AND PARTIALLY CONTROLLED IRRIGATION

Reference Period: census reference day

20. This item refers to the existence of infrastructure and equipment for applying water to crops, which is in working order. Manual watering of plants using buckets, watering cans or other devices is not covered by this item.

21. Unlike essential Item 0302 (paragraphs 7.3.5–7.3.6), which refers to the area actually irrigated, this item refers only to whether the holding is equipped for irrigation and the equipment is in good working order on the census reference day. The equipment does not have to be used during the reference year.

22. The area equipped for irrigation covers areas equipped for fully controlled irrigation by any of the methods of surface, sprinkler or localized irrigation. It also includes areas under partially controlled irrigation methods of spate irrigation (controlling flood waters to water crops), equipped wetlands and inland valley bottoms and equipped flood recession.

0310 PRESENCE OF DRAINAGE EQUIPMENT (for the holding)

Reference period: census reference day

23. For the purpose of the agricultural census, drainage means the artificial removal of excess surface water or groundwater – together with dissolved substances – from the land surface by means of surface or subsurface conduits, to enhance agricultural production. It does not include natural drainage of excess water into lakes, swamps, and rivers.

24. **Presence of drainage equipment** means that the equipment is present in the holding on the census reference day. There are different types of drainage facilities. Surface drains divert excess surface water away from an agricultural area to prevent flooding. Subsurface drains allow excess water and dissolved substances to flow through the soil to open wells, moles, pipe drains and/or open drains. On irrigated land, drainage may control salinity or waterlogging. Management of water for flood recession cropping (additional Item 0308) is considered partially controlled irrigation, not drainage.

Theme 4: Crops

0401 TYPES OF TEMPORARY CROPS ON THE HOLDING

Reference period: census reference year

1. The information on temporary crops is limited to whether the holding grew each specific type of crop. This item is useful to provide a sampling frame for crop surveys. Area data for temporary crops are collected in Items 0402 and 0403.

2. Temporary crops are those with a growing cycle of less than one year (see paragraphs 7.2.18 and 7.2.19). A census provides a unique opportunity to collect information on all crops grown, including minor crops. In an agricultural survey, data on minor crops are likely to be less reliable, so only the major crops should be canvassed.

3. A crop classification is shown in Annex 6 to assist in collecting and tabulating crop data. An alphabetical list of crop names is provided in Annex 7. The crop classification is not exhaustive, and not all crops listed apply to any one country. Countries should expand or abridge the crop list as appropriate, considering the importance of specific crops in each country. For a dominant crop, a country may wish to provide further detail, such as by season (for example, summer/winter or wet/dry), land type (for example, lowland/upland), or variety (for example, local/improved). Countries may also wish to disaggregate data by end use, such as whether it is intended for food, animal feed, biofuels, or other purposes. Refer to Annex 6 for more information on the principles underlying the crop classification and the issues in providing further detail.

4. Data on temporary crops are collected with respect to the census reference year to reflect crops grown in all seasons of the year. The agricultural year is usually the most suitable reference period because enumerators and farmers can usually easily relate to that period in reporting crop data. Crops are normally reported according to the year in which they are harvested (see paragraphs 7.4.6 and 7.4.7). See paragraph 4.16 for more information on how to report crops where land is bought.

0404 AREA OF TEMPORARY CROPS HARVESTED ACCORDING TO END USE (for each selected crop type)

Reference period: census reference year

5. Countries should collect data on end use according to national conditions and data requirements, focusing on crops with multiple uses. As a minimum, the following end use types should be identified:

- *Food for human consumption*
- *Feed for animals*
- *Biofuels*
- *Other uses*

6. The end use concept has been introduced to help assess food supplies and the production of fodder crops.

7. **End use** refers to the purpose of the crop. Crops may be grown for human consumption, as animal feed, for producing biofuels, or for **non-food** products such as tobacco and flowers. A single crop may have multiple uses, such as maize being grown partly for human consumption, partly as fodder, and partly for biofuel production. Some countries may also be interested in the type of product obtained from a crop, such as whether chilies are harvested for fresh or dried use, or whether cotton is harvested for fibre or seeds. In addition, certain countries may place emphasis on crops used for producing biofuels. The major temporary crops used for biofuel production are maize, soybean, rapeseed, sunflower, cassava, sugar cane and sweet sorghum; wheat and sugar beet are used to a lesser extent. For assistance in identifying crops, refer to the ICC in Annex 6 and the alphabetical list of crops in Annex 7. Countries may also wish to identify other crop uses, such as seed production (“seed fields”), fibre production, medicinal purposes, and others. The reference period should be consistent with essential Item 0403 (paragraphs 7.4.4–7.4.15), usually the census reference year.

0405 PRODUCTION OF TEMPORARY CROPS HARVESTED (for each selected crop type)

Reference period: census reference year

8. Collecting production in the census of agriculture is not advisable. Surveys are more appropriate means to collect this time-consuming data. If countries must collect this type of data, it is preferable that production for only a few selected crops be collected on a sample basis (e.g. sampled census modules). Countries should choose the crops according to their needs. Production data in an agricultural census are useful as benchmarks for current crop production statistics.

9. Production refers to the actual quantity of produce after drying and processing, ready for sale or consumption and after deducting pre-harvest, harvest and post-harvest losses (FAO, 1982, paragraphs 61–68).

0406 PRESENCE OF HYDROPONIC/VERTICAL FARMING

Reference period: census reference day

10. This new item refers to whether some area of the holding was used for growing crops under hydroponic or vertical method during the census reference year. Vertical farming refers to crop production in vertically stacked “land” in a controlled environment that provides suitable light, water, nutrients, and heat adjusted by electronic sensors (Esposito et al., 2017; FAO et al., 2022). Countries wishing to set up a list frame of holdings practicing hydroponic/vertical farming may collect this item in the census by complete enumeration to support the design of specific sample surveys on this type of holding.

11. There are three main system types for vertical farming: (1) **hydroponic**, (2) **aquaponic**, and (3) **aeroponic**.

- **Hydroponic** covers a range of methods used to grow agricultural crops without using soil. Instead of soil, various inert growing media, also called substrates, are used. It includes growing plants either on a substrate or bare roots in an aqueous medium.
- **Aquaponic**: integrates recirculating aquaculture and hydroponics in one production system. Aquaponics uses fish (tilapia being the most common) to generate nitrate-rich plant food.
- **Aeroponic** is a way of farming in which roots are suspended on the air and grow in a humid environment without soil. The plants are sprayed with water and nutrient solution.

0407 TYPES OF PERMANENT CROPS ON THE HOLDING AND WHETHER IN COMPACT PLANTATIONS

Reference period: census reference day

12. This item on permanent crops refers to whether each specific type of crop is present on the holding, and which crops are grown in compact plantations. This item is useful for sampling frames for crop surveys. It is proposed that more detailed data on permanent crops be collected in Items 0408–0411. Some countries may wish to include more detailed data according to national needs.

13. **Permanent crops** are crops with a more than one-year growing cycle (see paragraph 7.2.25). Permanent crops may be grown in a compact plantation or as scattered trees/plants and both should be included. A **compact plantation** includes plants, trees and shrubs planted in a regular and systematic manner, such as in an orchard (or forming an irregular pattern, but densely enough to be considered an orchard), to which a specific area can be attributed.

14. Countries should refer to Annexes 6 and 7 for a list of crops. Countries should expand or abridge the crop list as appropriate, considering their circumstances and data needs (see Annex 4, Theme 4, paragraph 3).

0410 AREA OF PRODUCTIVE PERMANENT CROPS IN COMPACT PLANTATIONS ACCORDING TO END USE (for each selected permanent crop type)

Reference period: census reference day

15. End use refers to the purpose of the crop (see paragraph 3 above). Countries should collect end use data specific to their national conditions and data requirements, focusing on those crops with multiple uses. As a minimum, the following end-use types should be identified:

- Food for human consumption
- Feed for animals
- Biofuels
- Other uses

16. For the definitions of permanent crops and compact plantation, see paragraph 13 above. For

information on area of permanent crops, see paragraphs 7.4.16–7.4.20. For the definition of permanent crops of productive age, see paragraph 7.4.18. The major permanent crops used to obtain biofuels are oil palm and coconut. New permanent crops can be used for biofuels as technology evolves. For help in identifying crops, refer to the crop classification in Annex 6 and the alphabetical list of crops in Annex 7.

0411 PRODUCTION OF PERMANENT CROPS (for each selected permanent crop type)

Reference period: census reference year

17. See paragraph 8 above for information on production data in the agricultural census. **Production** refers to the actual quantity of product, ready for sale or consumption (see paragraph 9 above).

0412 AREA OF LAND USED TO GROW TEMPORARY CROPS AS A SECONDARY LAND USE (for the holding)

Reference period: census reference year

18. Most temporary crops are grown on land classed as having “land under temporary crops” as its main use in the land use classification (see paragraphs 7.2.14–7.2.16). However, temporary crops can also be grown on other land use types. They may be grown in association with permanent crops on land classed as “land under permanent crops” or grown on land classed as “forest and other wooded land”. Also, land mainly used for aquaculture may be cropped during part of the year.

19. To get a complete picture of temporary crops, it is necessary to find out about land used for growing temporary crops as a secondary land use. For associated crops and crops grown in forest and other wooded land, the proportion of the parcel/field/plot used for temporary crops needs to be estimated (see paragraphs 7.4.2 and 7.4.10 to 7.4.14). Where a piece of land has a primary use, such as for aquaculture, which also enables it to be cropped for part of the year, the area cropped should be reported.

20. This item relates to land as measured in the land use classification – namely, the area on the census reference day according to its main use during the census reference year. Secondary land use relates to secondary activities on the land.

0414 AREA FERTILIZED FOR EACH TYPE OF FERTILIZER AND MAJOR CROP TYPE (for the holding)

Reference period: census reference year

21. This item refers to the area of crops fertilized, according to the definition of fertilizers in essential Item 0413 (see paragraphs 7.4.23–7.4.30). For temporary crops, the area fertilized refers to that part of the area harvested to which fertilizers were applied sometime during the census reference year. For permanent crops, the area fertilized refers to that part of the current area of permanent crops fertilized at some time during the census reference year. The area of a crop fertilized may be all or part of the total area of the crop. Note that this item relates to the crops fertilized, not the land fertilized; thus, if fertilizer is used on two crops grown successively on the same land in two seasons, the fertilized area should be counted twice. Countries will wish to limit this item to the most important national crops.

0415 PRESENCE OF NURSERIES (for the holding)

Reference period: census reference year

22. A **nursery** is an area where young plants, trees or vines are propagated for the purpose of transplanting. A nursery might be in the open or under protective cover. It may be used for the development of planting materials for the holding itself or for sale. Nurseries do not include seed fields (see paragraph 7.4.5).

23. This item refers to whether some area of holding was used as a nursery during the census reference year. Countries wishing to set up a list frame of holdings with nurseries may collect this item in the census by complete enumeration to support the design of specific sample surveys on this type of holding.

0416 AREA OF NURSERIES (for the holding)

Reference period: census reference year

24. For a definition of a nursery, please refer to paragraph 22 above. Plants in a nursery are not harvested and are therefore not included in the area harvested ("temporary crops" in essential Item 0403 (paragraphs 7.4.4–7.4.15)), or current area ("permanent crops" in essential Item 0408 (paragraphs 7.4.16 – 7.4.20)). This item refers to the area of land used for nurseries, not the total area of the nursery crops. Thus, a piece of land used during the year for nurseries for two crops should be counted only once.

0417 PRESENCE OF CROPPED LAND UNDER PROTECTIVE COVER (for the holding)

Reference period: census reference year

25. **Cropped land under protective cover** is land used for agriculture under a permanent structure with a roof of glass, plastic or other material, used for protecting crops against the weather, pests or diseases. Such structures may be used for growing temporary or permanent crops. Typical crops grown under protective cover are vegetables, herbs and flowers. Structures to provide protection against the weather are known as "greenhouses". Temporary devices for short-term protection, such as plastic covering to protect against frosts, should not be included. Netting to protect against insects or other animals should also be excluded. Nurseries should also be excluded.

26. This item refers to whether some area of the holding was used for growing crops under protective cover during the census reference year. Countries wishing to set up a list frame of holdings growing crops under protective cover may collect this item in the census by complete enumeration to support the design of specific sample surveys on this type of holdings.

0418 AREA OF CROPPED LAND UNDER PROTECTIVE COVER (for the holding)

Reference period: census reference year

27. For a definition of cropped land under protective cover, refer to paragraph 25 above. This item relates to the area of land used for growing crops under protective cover during the census reference year. If a piece of land under protective cover was used for growing different crops during the census reference year, it will be counted only once.

Theme 5: Livestock

0504 NUMBER OF ANIMALS BY SEX OF THE HOUSEHOLD MEMBER MANAGING THEM (for each livestock species)

Reference period: census reference day

1. The purpose of this item is mainly to understand the role of gender in the distribution of managerial decisions on the holding regarding livestock. This item complements Item 0207 regarding the sex of the household member managing the parcel (see Theme 2). Countries might collect data for this item by identifying, for each household member, the numbers and types of livestock under his/her sole or joint management. It may be suitable to group livestock into broad categories based on the Classification of Livestock given in Annex 8. The livestock grouping should take into account country specificities and allow a meaningful analysis by sex groups. One possible grouping is:

- ◆ *Bovine animals*
- ◆ *Sheep and goats*
- ◆ *Swine/pigs*
- ◆ *Camels and camelids*
- ◆ *Poultry and birds*
- ◆ *Other animals*

2. Alternatively, countries could collect this item by indicating, out of the total number of each livestock species collected in essential Item 0502, the number under the management of a male or

female household member or jointly managed by male and female household members, not only by the holder or joint holders.

0505 NUMBER OF ANIMALS PER BREED CATEGORY (for each livestock species)

Reference period: census reference day

3. This is a new additional item introduced as some countries may wish to also collect number of animals per breed for species that are important to them. Breed is defined as “either a sub-specific group of domestic livestock with definable and identifiable external characteristics that enable it to be separated by visual appraisal from other similarly defined groups within the same species or a group for which geographical and/or cultural separation from phenotypically similar groups has led to acceptance of its separate identity” (FAO, 2012). Countries might want to distinguish between basic categories (FAO, 2005b):

- **Locally adapted breeds**, “which have been in the country for a sufficient time to be genetically adapted to one or more of traditional production systems or environments in the country.”
- **Indigenous breeds**, also termed autochthonous or native breeds, “originating from, adapted to and utilized in a particular geographical region, form a subset of the Locally adapted breeds.”
- **Exotic breeds**, “which are maintained in a different area from the one they were developed and including breeds that are not locally adapted. Exotic breeds comprise both recently introduced breeds and continually imported breeds.”

4. Not all animals can always be classified under a specific breed as they might belong to an “undescribed” or “crossbred” population.

0506 NUMBER OF ANIMALS: AGE AND SEX (for each livestock species)

Reference period: census reference day

5. **Age of livestock** data are collected in suitable age groupings, depending on the livestock species of the animal. Examples of age groupings are:

- Cattle, buffaloes: calf (less than one year); young stock (one year or more to less than two years); adult cattle/buffaloes (two years or more).
- Sheep, goats: lamb/kid (less than one year); adult sheep/goat (one year or more).
- Pigs: piglet (less than three months); young pig (three months to nine months), adult pig (over nine months).
- Horses, camels, mules/hinnies, asses: foal (less than one year); yearling (one year or more to less than two years); young stock (two years or more to less than four years); adult stock (four years or more).
- Poultry: young birds (for example, aged less than three weeks); adult birds.
- Other animals: according to circumstances.

6. countries often collect age and sex data only for the major livestock species. For some livestock species, it might be more convenient to add physical characteristics (e.g. weight) when determining the age. For poultry, it is often not necessary to distinguish between male and female young birds; for example, chickens may be divided into: adult males; adult females; chicks.

0507 NUMBER OF ANIMALS ACCORDING TO PURPOSE (for each livestock species)

Reference period: census reference day

7. **Purpose** refers to the main reason for the animals being kept. This is usually straightforward for large farms and enterprises, as specific breeds of animals are used for certain purposes. The specific purposes recorded will depend on the livestock species and local conditions. Normally, the following main purposes are identified. Countries may wish to develop further or combine some of the categories below:

- Cattle, buffaloes: milk; meat; draught power; breeding.

- Sheep, goats: milk; meat; wool; breeding.
- Pigs: meat; breeding.
- Horses, camels, mules/hinnies, asses: milk; meat; draught power; breeding.
- Poultry: meat; eggs; breeding.
- Other animals: according to circumstances.

8. To assess the main purpose, reference should be made to the main use of the animals during the census reference year or the intended main use in the future. Countries usually collect data regarding purpose for the major livestock species only.

0508 NUMBER OF MILKING ANIMALS ACCORDING TO MILK STATUS (for each livestock species raised for milking)

- In milk
- Dry

Reference period: census reference day

9. This item relates to the livestock species raised for milking, as identified above in additional Item 0507. For the purposes of the agricultural census, a **milking animal** is defined as an animal present on the census reference day that has been milked at some time during the census reference year. **Milk status** refers to whether the milking animal is in milk or dry on the census reference day.

0509 NUMBER OF ANIMALS BORN (for each livestock species)

0510 NUMBER OF ANIMALS ACQUIRED (for each livestock species)

0511 NUMBER OF ANIMALS SLAUGHTERED (for each livestock species)

0512 NUMBER OF ANIMALS DISPOSED OF (for each livestock species)

- Sold or otherwise disposed of for slaughter
- Other disposals

0513 NUMBER OF ANIMALS THAT HAVE DIED FROM NATURAL CAUSES (for each livestock species)

Reference period for the five items above: For cattle, buffaloes and other large animals, normally the census reference year is taken. For smaller animals, such as sheep, goats and pigs, a six-month reference period is often used. For poultry, a one-month reference period is often most suitable.

10. These five items provide information on the population dynamics of livestock herds, such as measures of reproductive rates and take-off rates. Countries should decide on the livestock species to be covered by these data, according to national conditions.

11. The five items refer to the number of events (such as births and deaths) during a given reference period. The reference period depends on the livestock species and operational factors: one-year reference period – normally, the census reference year – for large animals; a six-month reference period for smaller animals; and a one-month reference period for poultry (see above).

12. **Number of animals born** refers to live births during the reference period to animals that were part of the holding at the time of the birth. Births to animals belonging to another holding that are temporarily on the holding should not be included.

13. **Number of animals acquired** refers to purchases or other livestock acquisitions by the holding during the reference period. This includes animals received as gifts or as payment for work.

14. **Number of animals slaughtered** refers to the number of slaughtering during the reference period of animals that were being raised on the holding. This includes slaughtering carried out on the holding, as well as slaughtering carried out by someone else on behalf of the holding. Sales of live animals for slaughtering – for example, to an abattoir – should be shown as disposals under additional Item 0512. Slaughtering of other people's animals on the holding should not be included.

15. **Number of animals disposed of** refers to sales or other disposals during the reference period of animals being raised on the holding. It includes animals sold, as well as animals given as gifts, as payment for services or for other reasons. Two types of disposals are shown. **Sold or**

otherwise disposed of for slaughter includes all disposals of animals for the purpose of slaughtering. This is usually through sales to abattoirs, meat packing plants or butchers' shops, but also includes donations of animals for slaughter for festivals and other community events. Slaughtering carried out on a fee basis by, for example, a butcher on behalf of the holding should be included under slaughtering in additional Item 0511. **Other disposals** cover sales and other disposals, such as gifts or as payment for services that do not involve slaughtering.

16. **Number of animals that have died from natural causes** refers to deaths from natural causes during the reference period of animals that were being raised on the holding at the time of their death.

0514 TYPES OF FEED (for each livestock species)

- Forages/roughages
- Agro-industrial by-products/concentrate components, including crops
- Swill/household waste
- Supplements/additives

Reference period: census reference year

17. Countries should decide on the livestock species to be covered by this item, according to national conditions. **Type of feed** refers to the source of feed for the livestock species for a given reference period, usually the census reference year. For more information, see [Gerber et al., 2013](#). More than one type of feed may be used for a specific livestock species during the reference year. Countries may wish to distinguish between dry and wet seasons. In some countries, for example, animals may be grazed during the summer but need to be fed using prepared feed during the winter. For information on animal grazing practices see additional Item 0614 "Type of animal grazing practices" (see Theme 6 below).

18. **Forages/roughages** includes fresh grass or grass-legume mixture, grazed or cut and distributed; silage of grass or grass-legume mixture; hay (dry grass or grass-legume mixture); whole plant silage (maize, wheat, barley, oats, rye, etc.); crop residues (maize stover, crop straws, sugar-cane tops, banana leaves, etc.); tree leaves. **Agro-industrial by-products/concentrate components (including crops)** includes grain (corn, wheat, barley, oat, rye, sorghum, etc.); beans (including soybeans); corn gluten meal and feed; oilseeds; oilseed and cottonseed cakes; brans and middling; by-products from breweries and distillers' grains; molasses; fishmeal; cassava; banana fruit. **Swill/household waste** refers to organic household residues used as feed. Supplements/additives includes vitamins, amino acids and minerals.

0515 USE OF VETERINARY SERVICES (for the holding)

- Number of visits by an extension officer /veterinarian
- Type of services received.

Reference period: census reference year

19. **Veterinary services** cover all professional veterinary services used to protect animal health for the livestock kept on the holding. **Type of services received** includes curable treatment of diseases, surgical procedures, artificial insemination, breeding, vaccination, deworming, treatment against external parasites, general advice, etc. It includes services provided by government organizations, such as through veterinary field workers, as well as by the private sector.

20. Data on the use of veterinary services may be collected in two ways. Data for the holding as a whole can be useful as an indicator of whether such services are generally available to the holding. Data for each major livestock species can help in assessing the animal health situation of each species. Countries collect data in the form suited to their needs.

Theme 6: Agricultural practices

0602 USE OF SEEDS PRODUCED BY MODERN BIOTECHNOLOGIES (for the holding)

Reference period: census reference year

1. Item 0602 relates to whether any seeds produced by modern biotechnologies were used on the holding. It refers to crops grown from seeds, which possess a novel combination of genetic material obtained through the use of modern biotechnology. This includes genetically modified seeds and gene-edited seeds. Countries wishing to set up a list frame of holdings using seeds produced by modern biotechnologies may collect this item in the census by complete enumeration to support the design of specific sample surveys on this type of holdings.

0603 USE OF SEEDS PRODUCED BY MODERN BIOTECHNOLOGIES ACCORDING TO CROP TYPE (for the holding)

Reference period: census reference year

2. This item relates to what types of seeds produced by modern biotechnologies were used on the holding. It identifies the specific types of crops that are grown using these seeds.

0605 NON-RESIDENTIAL BUILDINGS (for the holding)

Type of non-residential building

- For keeping livestock other than poultry (area)
- For keeping poultry (area)
- For storing agricultural products (area or volume)
- For mixed or other purposes (area)

Tenure

- Owned
- Rented
- Other

Reference period: census reference year

3. This item identifies non-residential buildings used by the holding, wholly or partly, for agricultural purposes. The item covers all non-residential buildings used by the holding regardless of their physical location, as buildings owned or rented are considered part of the holding. Use of buildings such as community storage facilities should be included under the tenure category “other”. Non-residential buildings used exclusively for purposes other than agricultural purposes should be excluded. For each type of non-residential building, the number, tenure and size should be collected.

4. Identification in the category “For storing agricultural products (area or volume)” together with the detailed categories of essential Item 0110 “Main purpose of production of the holding” (paragraphs 7.1.20–7.1.23) can be used to develop a frame of holdings for a more detailed survey of farm food stocks for sale. For instance, it would allow the development of a frame of grain producers entering into the market – that is, holdings with storage facilities producing mainly for sale or mainly for own consumption with some sales, while identifying the capacity of the storage facility.

5. When intended for the purpose of creating a frame for a detailed stocks survey, the following more detailed categories are recommended for the category “For storing agricultural products (area or volume)” in order to identify the relevant types of storage facilities used by the holding:

- For grain crops (area or volume)
- For root crops (area or volume)
- For fruit and vegetable crops (area or volume)
- For livestock products (area or volume)
- For other agricultural products (area or volume)

0606 PERCENTAGE OF EACH MAJOR AGRICULTURAL PRODUCT SOLD (for the holding)

Reference period: any suitable reference period, such as the main harvest or the census reference year

6. This item is important for countries with significant home consumption of agricultural produce. Only the most important staple food crops, such as rice, wheat, maize and cassava, should be included. Percentage should relate to the quantity of production. Usually, this item is collected in ranges, such as 0 to 19 percent, 20 to 49 percent, 50 percent or more.

0607 USE OF ORGANIC AGRICULTURAL PRACTICES (for the holding)

Reference period: Census reference day

7. **Organic agriculture** is a holistic production management system which promotes and enhances agroecosystem health, including biodiversity, biological cycles and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological and mechanical methods, as opposed to using synthetic materials, to fulfil any specific function within the system ([FAO & WHO, 2006](#)).

8. Organic agriculture comprises a set of practices. Some of the most recognized practices are aimed at enhancing agroecosystem health, including biodiversity, biological cycles and soil biological activity. This includes working toward the achievement of socially, ecologically and economically sustainable agroecosystems, such as by not using chemical fertilizers or pesticides and not using GM crops.

9. In identifying the use of organic agricultural practices, it should be noted that:

- The term organic agriculture refers to specific and precise standards of production which aim at achieving optimal agroecosystems that are socially, ecologically and economically sustainable.
- To be considered organic, the agricultural production processes must adhere to the “principles of organic practices”. Although no unique standards have yet been defined for organic agriculture, two of the most widely used standards, developed at an international level, are the CODEX Alimentarius ([FAO & WHO, 2006](#)) and the standards developed by the International Federation of Organic Agricultural Movements (IFOAM).
- countries may also have their own national standards; however, organic agriculture must be organic by intent and not by default. Thus, non-sustainable production systems that do not use synthetic inputs (for example, for reasons such as economic restriction) are not considered organic.

10. Data collection for this item should include:

- **Certified organic** – this certifies that a farm is producing agricultural products which have been produced, stored, processed, handled and marketed in accordance with precise technical specifications (standards) and certified as “organic” by a certification body. Some bodies allow certification of part of a farm as long as organic and non-organic products are not mixed, while others require whole farm certification.
- Certification can be through a third party accredited certification body or authority, or through Participatory Guarantee Systems (PGS) ([IFOAM, 2025](#)). Third-party certification bodies are accredited to a particular market (that is, the certification ensures that the production systems meet the regulations applying to a particular market) and being certified by a certification body enables producers to export products labelled as organic to that market (being certified does not allow access to all markets). PGS is based on the active participation of stakeholders and is only recognized within the country in question. It thus provides certification of organic production only for local markets, not for export.
- Census items should identify whether the holding has been certified as an organic producer and, if so, whether for only local markets or for export markets. The particular export market that certification allows access to could be determined, if it is important to countries.
- **In-conversion to certified organic** – this covers producers undergoing a conversion process

to organic agricultural systems certified by third-party certification bodies. Products can be marketed as in-conversion. The producer must have registered with the certification body and initiated conversion in accordance with the requirements of the certification body. There is usually a set time period for conversion, from initiation to completion of the process.

11. It is also possible to recognize non-certified (de facto) organic agriculture or products, which involve agricultural production systems that follow the principles of organic production but are not certified by a certification body or PGS. The designation excludes agriculture systems that do not use synthetic inputs by default (e.g. systems that lack soil-building practices and degrade land).

12. It is recognized that identifying non-certified organic systems may be difficult without detailed questioning about specific agricultural production practices. Furthermore, there is no single agreed standard for the practices that should be followed. As a result, this category may be difficult to collect and analyse, and it is not recommended for inclusion in the census.

13. This item would facilitate the conduct of surveys or supplementary modules for in-depth assessments of the use of organic practices and their characteristics.

1105 WHETHER AGROFORESTRY IS PRACTISED (for the holding)

Reference period: census reference year

14. This item is defined in Theme 11 Forestry: Item 1105. The presence of agroforestry on the holding constitutes a sustainable agriculture practice through its impact on soil, water, plant, animal and atmospheric relations. Countries wishing to set up a list frame of holdings practicing agroforestry may collect this item in the census by complete enumeration to support the design of specific sample surveys on this type of holding.

0301 USE OF IRRIGATION ON THE HOLDING: FULLY AND PARTIALLY CONTROLLED IRRIGATION

Reference period: census reference year

15. This item is covered in Theme 3: Irrigation. The use of irrigation helps in better understanding cropping practices and the constraints in improving agricultural productivity.

0608 TYPE OF SEED FOR EACH MAJOR CROP TYPE (for the holding)

- Certified seed from the formal seed sector
- Seed from the formal sector, with quality control, but not certified
- Seed from farmers seed systems.

Reference period: census reference year

16. This item refers to whether the seed used has had its quality tested, either through a certification system or another quality control mechanism such as truth in labelling or quality declared seed, or whether it has been acquired through an informal seed system without quality control. It also refers to whether the seed belongs to a modern or farmer's variety. For more information on seeds, see additional Item 0609 below. The reference period is the census reference year.

17. Certified seeds are those verified as meeting specific national standards for physical and genetic purity. Seed certification systems vary between countries. Some countries rely on a self-regulatory system within the seed production industry, while others have a government regulatory agency responsible for controlling the seed production process and certifying seed quality. Certified seeds are usually labelled. For the agricultural census, seeds should be classified as "certified" only if they were purchased from the market or otherwise received as certified seed during the reference year. Only newly acquired certified seed should be included; seed collected from a crop originally planted with certified seed in a previous year should not be considered certified.

18. Seed quality control may be carried out through certification, where an independent body

inspects the field and conducts laboratory testing, or through company declaration, also known as quality declared seed, where the producer performs the inspection. Seeds without a formally recognized quality control mechanism are often provided through the informal sector. Modern varieties are the result of plant breeding in the formal system by professional breeders. These varieties are also referred to as “high-yielding varieties” or “high-response varieties.” Countries with a system for registering and releasing cultivated varieties develop lists or catalogues of modern varieties, which can be used when collecting these data in the agricultural census.

19. Farmers’ varieties, also known as landraces or traditional varieties, are the product of breeding or selection carried out by farmers, either deliberately or not, continuously over many generations. These traditional varieties are usually well adapted to local conditions and stresses, and are clearly identified by farmers.

0609 SOURCE OF SEED INPUTS FOR EACH MAJOR CROP TYPE (for the holding)

- Self-production
- Exchanges within community
- Local market
- Seed company
- Donation

Reference period: census reference year

0610 TYPES OF TILLAGE PRACTICES (for the holding)

- Conventional tillage
- Conservation tillage
- Zero tillage or no tillage

Reference period: census reference year

20. Tillage refers to arable land of the holding sown/cultivated in the census reference year (see paragraph 7.2.14, Figure 7.1, category LU1-3). It can be defined as any physical loosening of the soil carried out in a range of cultivation operations, either by hand or mechanized. Tillage practices are controversially debated among agricultural scientists and practitioners. While traditionally tillage was seen to be a useful and necessary agricultural practice, inappropriate tillage practices are also identified as one of the major reasons for soil erosion and land degradation. There is a common understanding that tillage practices should be reduced to a minimum to achieve sustainable intensification of agriculture.

21. Tillage practices can be placed on a continuum of soil cover retained and reduced tillage effort, with the most sustainable practices defined as conservation agriculture (see additional Item 0611 below). For the purposes of the agricultural census, the following groupings are identified to reflect this continuum.

22. **Conventional tillage** involves inversion (turning over) of the soil over the whole area with tillage operations including inversion tillage/ploughing using tillage tools or equipment, such as a mouldboard or disc plough or powered tillage equipment, such as a rotovator. In other cases, traditional ploughs, of either wood or iron, drawn by animal power, may be used.

23. **Conservation (low) tillage** involves tillage practice or practices that leave plant residues (at least 30–35 percent) on the soil surface for erosion control and moisture conservation. Soil should normally not be inverted but only ripped.

24. Conservation tillage can include the following systems and the item definition should refer to those which are present in the country:

- ♦ *Reduced tillage/minimum tillage* – The arable land is prepared with equipment which does not invert the soil and which causes little compaction but which leaves some ripping lines. For this reason, the soil normally remains with a good cover of residues on the surface. Reduced tillage is usually carried out with specialized tined implement, such as a ripper.

- ◆ *Strip tillage* – In this case, strips are tilled to receive the seed, while the soil along the intervening bands is not disturbed and remains covered with residues such as mulch.
- ◆ *Ridge tillage* – This is a system of ridges and furrows. The ridges may be narrow or wide and the furrows can be parallel to the contour lines or constructed with a slight slope, depending on whether the objective is to conserve moisture or to drain excess moisture. The surface is prepared by scraping off the top of a ridge, with the crops planted into the tops of the ridges formed during cultivation of the previous crop. The soil is covered with residue between the rows until planting. The ridges can be semi-permanent or be constructed each year, which will govern the amount of residue material that remains on the surface.

25. **Zero tillage or no tillage** does not involve any tillage operations on arable land. After the seeding operation, not more than 25 percent of the soil surface is allowed to be disturbed. The soils are always covered, including for the period between harvest and sowing. The stubble is retained, and the soil surface is covered by residue mulch or stubble for erosion control.

26. Seeding/planting is done with special no-tillage/direct seeders, which can open a narrow slot in the soil (through soil cover), drop the seed, and close the slot again. Zero tillage is carried out with implements such as direct planters or hand jab planters. Seed can also be sown by broadcasting into standing vegetation or into small holes in the ground intended for seed placement.

0611 PRESENCE OF CONSERVATION AGRICULTURE (for the holding)

Reference period: census reference year

27. In addition to sustainable tillage practices, it is also important to keep soils covered to protect them from the impacts of sun, wind, and heavy rainfall in order to achieve sustainable intensification of agriculture. Conservation Agriculture aims to achieve this by applying the three principles of zero/no tillage (additional Item 0610) in combination with useful crop rotations (additional Item 0612) and permanent soil cover, where the soil is always covered, including during the period between harvest and sowing. FAO defines this combination of crop rotations, zero/no tillage, and permanent soil cover as Conservation Agriculture. In a Conservation Agriculture system, all these components are combined and applied at the same time on the holding and on the same parcel. Countries wishing to collect information on the presence of Conservation Agriculture should refer to these three practices.

0612 PRESENCE OF SOIL CONSERVATION PRACTICES (for the holding)

- Crop rotation
- Terraces or other means to control erosion on slopes

Reference period: census reference year

28. Soil conservation is a sustainable practice to prevent and reverse the degradation of soil through appropriate land use and management practices. It is defined as activities to maintain or enhance the productive capacity of the land in areas affected by or prone to degradation, including prevention and reduction of soil erosion, compaction and salinity, conservation or drainage of soil water, and maintenance or improvement of soil fertility. Where feasible, information on the percentage of land area under each type of soil conservation practice should be collected. Other activities related to crop cover apply to soil conservation but are not recommended for collection during the census.

29. **Terracing** – Terracing is found on sloping lands and is mainly used for erosion control and for growing crops on sloping lands. Terracing is generally continuous. Bench terraces are a series of level or nearly level strips running across the slope at vertical intervals, supported by steep banks or risers. Discontinuous terracing can take several forms, including hillside ditches, which are discontinuous types of narrow bench terraces built across the hill slopes; orchard terraces, which are narrow bench terraces built across slopes where fruit trees or food trees are planted; or convertible terraces, which are bench terraces that alternate with the original slope and are used for the mixed cultivation of annual and tree crops.

30. **Crop rotation** – Crop rotation is the growing of alternating species or families of crops in a

specific field in a planned pattern or sequence to break weed, pest, and disease cycles and to maintain or improve soil fertility and organic matter content.

0613 USE OF TECHNOLOGY ON THE HOLDING

- Automated guidance steering systems (auto-steer) on farm equipment
- GIS and mapping tools
- Use of drones in crops and livestock monitoring and field surveillance
- Vertical farming (see Item 0406)
- Automatic dairy installations
- Automatic feeder systems
- Automatic irrigation systems
- Robotic greenhouse equipment
- AI for disease and pest management
- Mobile applications and alerts (SMS, WhatsApp, etc.) for weather forecasting, market conditions, advisory, etc.
- Renewable energy sources for in-farm energy needs

Reference period: census reference year

31. The use of new technologies and innovations in agricultural practices has accelerated in the past decade and it is profiling as a structural characteristic of modern agriculture. This new item is introduced considering that the extent of the use of new technology in farming is still low in many countries (rare event), and then the agricultural census may be an appropriate place for collecting this type of data.

32. The use of technology in farming practices refers to the incorporation of ICT to increase efficiency, productivity and sustainability in agricultural production. It includes the employment of advanced techniques such as precision agriculture, automatic controlled irrigation, precise animal health control, remote control for the physical security surveillance, etc. Different means are employed: drones, GIS, AI, cameras, etc.

33. "Smart farming" is a broad concept involving the automatization of the crop or livestock production cycle by means of these mechanisms listed above ([FAO, 2022c](#)).

34. "Precision agriculture" is a farm management strategy that helps farmers make decisions based on observations and measurements of crop and soil conditions, as well as microclimate, for every variable of crop farming. Precision agriculture enables centralized management of fields by processing and analysing information collected over time, across space, and from individual plots. With comprehensive control of field conditions, tailored management decisions can be made for sub-field areas, such as adjusting fertilizer application, optimizing farming schedules, and adopting suitable technologies. This approach ultimately improves production efficiency, product quality, farmers' profits, and the sustainability of agricultural production. Precision agriculture relies on several resources ([FAO, 2022c](#)):

- **Automated guidance steering systems (auto-steer) on farm equipment.** Tractor autosteer is a programmed tractor guidance system that does the job precisely as expected, avoiding human errors and with great precision.
- **GIS** used for precise mapping on soil quality, yields and vegetation among others.
- **Drones** can scan a field from above and report problems like crop health status, pests, infections and lack of nutrients and general information on the state of fields and plots. They can also be used for monitoring livestock movement.
- **Vertical farming** (see Item 0406).
- **Weather forecasting mobile or web applications** with real-time and accurate information can assist in making informed decisions about farmer's operations.
- **Advanced automatic irrigation systems** designed can efficiently manage water resources, reduce labour, and ensure that plants receive the right amount of water at the

right time.

- Utilizing AI in agriculture for disease and pest management, control and/or for more efficient and proactive approaches in crop protection.
- **Blockchain technology** creates transparent and traceable supply chains and automated and secure contracts for transactions within the supply chain.
- **Cameras** for physical security surveillance.
- **Renewable energy sources for in-farm energy needs** (ex-solar powered irrigation systems) help in sustainability, cost savings, and reduction of the environmental impact.

35. The use of new advanced technologies also reaches animal production. In this respect, some resources are:

- **Automatic dairy installations**, which enable automatic cow milking without human intervention, preserving the hygiene and health of the milked animals.
- **Automatic animal feeders** that provide animals with feed tailored to their specific needs and in the right amount.

36. In the case of greenhouses, modern tech-heavy equipment, using automated control systems and robots to perfectly tailor the growing environment, are increasingly used.

0614. TYPE OF ANIMAL GRAZING PRACTICES

Reference period: census reference year

37. Animal grazing is practically the only source of feed for livestock raised under the grazing system (see essential Item 0501 “Type of livestock production system”, paragraph 7.5.3). However, this item is not needed for the nomadic livestock category. Grazing is also a common practice under the mixed system but is rarely applied under the industrial system.

38. Animal grazing has a significant impact on the quality of pastures. Combining the information from the livestock module with the grazing categories below improves estimation of the status of pastures – non-degraded, moderately degraded or severely degraded. Importantly, this item allows for more accurate estimation of the area in which manure is left on pasture. The latter process represents the second largest source of GHG agriculture emissions globally, as well as in many countries where livestock is a dominant production activity.

39. The agricultural census distinguishes between two types of animal grazing:

- Grazing on the holding:
 - . Area grazed during the year
 - . Number of animals
 - . Fraction of the year with animals on pasture
- Common pasture grazing:
 - . Number of animals
 - . Fraction of the year with animals on pasture

40. **Common pasture** refers to land not belonging directly to agricultural holding, but on which common rights apply. In general terms, common pasture is an agricultural area owned by a public authority (state, parish, etc.) over which another person is entitled to exercise rights of common, and these rights are generally exercisable in common with others. Pastures which are rented or over which the holder enjoys rights allotted by the parish or other organization – e.g. common grazing land apportioned on an acreage basis – are not included here.

41. **Area grazed during the year** means the total area of pastures owned, rented or otherwise allocated to the agricultural holding on which animals were kept for grazing during the reference year. The grazed area can also be harvested by mowing or other means.

42. **Number of animals** means the total number of animals of the holding grazed outdoors. If the

animals are grazed more than one time during the reference year, they are counted only once.

43. **Fraction of the year with animals on pasture** refers to the approximate length of time that the animals spent outside on the pasture (owned, rented or otherwise allocated to the agricultural holding or on common pasture) during the census reference year. The fraction is determined regardless of whether the animals were also on pasture during the night or spent the night indoors. The fraction can be asked as an approximate number of months or in time classes:

- Up to three months
- From three to less than six months
- From six to nine months
- More than nine months

44. Usually, the time with animals outside on the pasture is the same for all the holdings practicing animal grazing in a given area. Thus, an expert estimate or small sample of holdings would provide the necessary information.

0615. MANURE APPLICATION

Reference period: census reference year

45. This item is relevant for the calculation of agroenvironmental indicators and particularly for GHG and ammonia emissions. It is not applicable to holdings with a nomadic livestock system (see essential Item 0501 "Type of livestock production system" in Chapter 7).

- Percentage of holding's pastures on which the manure is left on pasture by livestock (this category is not necessary if items on animal grazing are included)
- Fraction of manure left on pasture that is removed for use as fuel
 - . Nothing is removed
 - . Up to 50 percent is removed
 - . More than 50 percent is removed, but not all
 - . All manure is removed
- Agricultural area on which solid/farmyard manure is applied (spread)
- Agricultural area on which slurry is applied (spread)
- Manure directly daily spread on the field

(see definitions in paragraph 48 below)

0616 MANURE MANAGEMENT SYSTEM

Reference period: census reference year

46. This item is relevant for the calculation of agroenvironmental indicators and particularly for GHG and ammonia emissions. It is not applicable to holdings with a nomadic livestock production system (see essential Item 0501 "Type of livestock production system").

- Availability of storage facilities for:
 - . Solid/farmyard manure
 - . Liquid manure
 - . Slurry
- Type of storage facilities used:
 - For all manure:
 - . Digesters (biogas reactors)
 - For slurry:
 - . Slurry tank
 - . Anaerobic lagoon
 - . Aerobic treatment
- Covered or open storage facilities

- . For solid/ farmyard manure
- . For liquid manure
- . For slurry

47. Cases may exist in which there are both covered and open storage facilities of the same type for one holding. Where feasible, information on the percentage of the capacity of the covered facilities could be asked.

48. For the purpose of the agricultural census, the following definitions will be used:

- **Solid/farmyard manure** is excrements (with or without litter) of domestic animals, possibly including a small amount of urine.
- **Liquid manure** is urine from domestic animals, possibly including a small amount of excrement and/or water.
- **Slurry** is manure in liquid form, a mixture of excrements and urine of domestic animals, possibly including water and/or a small amount of litter.
- **Manure removed for use as fuel** is dried dung cakes created and burned for fuel.
- **Directly daily spread** means the manure is routinely removed from the confinement facility and is applied to cropland or pasture within 24 hours of excretion; no storage is needed.
- **Storage facility for solid/farmyard manure** usually means a three-sided, rectangular or square structure with a concrete floor and reinforced concrete or timber walls. The floor may slope towards the open side where the seepage/drainage (liquid fraction) from the stacked solid manure is collected in a gutter and stored separately. A heap or stack of solid manure stored in a field prior to spreading is excluded.
- **Storage facility for liquid manure/slurry** usually means a watertight tank, open or covered, or a lined lagoon for storage of liquid manure/slurry.
- **A slurry tank** is usually made of an impermeable material, used for the storage of slurry. Watertight pits or cellars beneath/integrated into the livestock houses are also included.
- **An anaerobic lagoon** is a pit dug in the soil, usually lined, used for the storage of slurry. Anaerobic lagoons are designed for varying lengths of storage, depending on the climate region, the volatile solids loading rate and other operating factors. The water from the lagoon may be recycled as flush water or used to irrigate and fertilize fields.
- **Aerobic treatment** is the biological oxidation of manure collected as a liquid with either forced or natural aeration. Natural aeration is limited to aerobic and facultative ponds and wetland systems and is due primarily to photosynthesis. Hence, these systems typically become anoxic during periods without sunlight.
- **Storage facilities for manure are considered covered** (by concrete lid, tent, tarpaulin, etc.) when they are protected from rain or other precipitation and the cover can reduce ammonia emissions.
- **Digesters (biogas reactors)** are reactors in which animal excreta, with or without straw and/or other materials such as wood shavings, sawdust, are collected and anaerobically digested in a large containment vessel or covered lagoon. Digesters are designed and operated for waste stabilization by the microbial reduction of complex organic compounds to CO₂ and CH₄, which may be captured and flared or used for energy production.

0414 AREA FERTILIZED FOR EACH TYPE OF FERTILIZER AND MAJOR CROP TYPE (for the holding)

Reference period: census reference year

49. This additional item is covered in Theme 4: Crops. Use of fertilizers and whether organic or inorganic practices are followed is important for sustainable agriculture practices.

Theme 7: Services for agriculture

0701 RECEIPT OF CREDIT FOR AGRICULTURAL PURPOSES (FOR THE HOLDING)

Reference period: census reference year

0702 SOURCE OF CREDIT (FOR THE HOLDING)

Reference period: census reference year

0703 TYPE OF COLLATERAL FOR CREDIT (FOR THE HOLDING)

- The holder's land
- Other assets
- Other type of collateral
- No collateral

Reference period: census reference year

0704 PERIOD OF LOAN OR CREDIT (FOR THE HOLDING)

Reference period: census reference year

1. Credit for agricultural purposes encompasses any form of credit that has been authorized and is accessible for activities directly associated with the functioning of the agricultural holding. This includes credit used for procuring agricultural inputs for both crops and livestock, funding the construction of agricultural structures, acquiring agricultural machinery, and securing working capital for daily farm operations. It is important to note that credit unrelated to agricultural operations, such as financing the holder's residential property, supporting other family businesses, or covering personal consumption expenses, should be expressly excluded from credit for agricultural purposes.

2. Receipt of credit refers to whether the agricultural holder used a loan for agricultural purposes during the reference year, not whether there were outstanding loans at the time of the census. A holder may have made use of credit on more than one occasion during the year, and therefore more than one source or type of collateral may be reported. Credit received by the holder as well as members of his/her household should be included.

3. The term "credit" refers to a broad range of financial arrangements, including the approved ability to borrow money directly and the practice of purchasing goods and services on credit terms. Borrowing money can occur through various channels, such as financial institutions, other entities, or individuals, and it is typically intended for specific purposes, such as acquiring assets like a tractor. Buying goods and services on credit, on the other hand, involves an agreement in which payment is postponed beyond the point of delivery. For example, this could entail purchasing fertilizer with the understanding that payment will be made after the crop's harvest.

4. Within the context of credit, the concept of a "loan" is a subset and pertains to financial resources provided in the form of cash from either formal or informal sources. It is important to note that credit extends beyond cash loans and covers loans provided in-kind, which may take the form of inputs, equipment, or machinery, among other things.

5. Additional Item 0702, source of credit, refers to who provided the credit. The specific source classes will depend on the institutional arrangements for credit in the country. Typical groups are:

- Commercial banks
- Agricultural development banks
- Cooperative credit societies
- Money lenders
- Input suppliers
- Self-help groups
- Family or friends
- Governments
- Buyers/traders
- Other sources

6. In additional Item 0703, collateral is defined as assets offered as security when obtaining a loan. This means that if the borrower fails to meet the loan's terms, the collateral can be sold, and the resulting funds used to settle the loan. In the context of the agricultural census, collateral is applied

more broadly to include a guarantee provided for the acquisition of goods and services. While this guarantee typically relates to the production of agricultural goods, it may also involve assets.

7. The collateral for larger holdings is often the holder's land. This is prevalent where there is a well-developed land tenure system with legal ownership of land. Otherwise, other assets may be used as collateral. For a loan to buy farm machinery, for example, the purchased machinery may be used as collateral. Additionally, a different form of collateral covers the acquisition of goods and services on credit, where payment is agreed upon for a future date, or when credit is extended without requiring collateral, solely relying on a personal guarantee. It is worth noting that sometimes it is possible for a farmer to obtain credit or a loan with no collateral, particularly through government-backed agricultural financing schemes or cooperative credit institutions.

8. Period of loan or credit refers to the period over which the loan or credit is to be paid off, as agreed at the time the loan was received. Where credit was received more than once during the reference year, the period should be reported for the loan or credit of highest value. Normally, the period of loan or credit is reported in ranges to reflect the likely reasons for using credit, such as short-term (for the current crop) or long-term (for major capital outlays). Typical groupings are:

- Less than 12 months
- 12–35 months
- 36 months or more

0705 SOURCES OF AGRICULTURAL INFORMATION (FOR THE HOLDING)

- Extension services
- Radio
- Television
- Input agencies
- Online information (internet)
- Mobile phone
- Other farmers
- Other

Reference period: census reference year

9. Sources of agricultural information refers to where the holder received information to help manage the agricultural holding. This includes information on weather, selection of crop varieties, new agricultural practices, farm machinery, credit facilities, plant diseases and pests, marketing, and commodities or crop varieties being promoted by the government. The reference period is the census reference year.

10. Most farmers use various sources of information. Usually, countries prefer to collect data on all the sources. Extension services refer to advice received through government or non-government extension services. This is covered in more detail in additional Item 0706 below.

0706 SOURCES OF AGRICULTURAL EXTENSION SERVICES USED (FOR THE HOLDING)

Reference period: census reference year

11. Agricultural extension refers to the provision of agricultural advice and information to crop and livestock producers. Extension services may be provided by government institutions, non-government organizations, farmer organizations, educational institutions, informal grassroots organizations, and others. Extension services may cover advice to farmers in areas such as farm management, selection of crop varieties, use of inputs such as fertilizers, credit, farm mechanization, animal health, plant protection, sustainable development, and marketing. Extension services may also be used by governments to distribute inputs, disseminate market information, and promote the production of particular commodities or crop varieties.

12. In most countries, the government serves as the primary provider of extension services through its network of agricultural field staff. However, there is a growing trend towards the utilization of fee-

based private extension services offered by specialized firms and input suppliers in some countries. These private extension services are becoming increasingly significant and are being adopted by farmers seeking tailored expertise and support beyond what traditional government channels offer. The organization of government extension services varies from country to country. Sometimes, extension services are centralized in a single ministry with general extension officers providing advice in all disciplines. In other countries, there are specialized extension services in crops, livestock, and perhaps other fields.

13. There are various approaches to delivering extension services. Extension workers frequently make farm visits to offer immediate guidance. Occasionally, small groups of farmers are organized for demonstrations of new farming methods or technologies, while more structured training programs may be conducted for larger farmer groups. Additionally, study tours are sometimes arranged for farmers to observe agricultural practices in different regions. Agricultural extension services are typically provided to farmers free of charge, although exceptions may apply.

14. Additional Item 0706 refers to the source or provider of agricultural extension services used by the holding during the census reference year. It refers to personal contact with extension personnel (including telephone service and social media with user access to a live extension agent) or direct participation in extension activities such as a farm demonstration. It does not include accessing extension material through printed brochures, radio, television, menu-driven recorded telephone messages and services, or the Internet. Also, extension services used should be limited to formal contacts with extension workers specifically employed for that task; advice received from other informal sources should not be included. A farmer may have received extension services from more than one source.

15. The categorization of sources for agricultural extension services will vary depending on the organization of these services within each country. Countries may opt to categorize them based on the specific discipline, such as crops or livestock, and the type of providing organization, whether it is a government institution or a farmer organization. Typical source categories are:

- Government organization
 - For crop production
 - For livestock production
- Farmer association
- Other

0707 TRAVELLING TIME TO NEAREST PERIODIC OR PERMANENT AGRICULTURAL PRODUCE MARKET FOR SELLING PRODUCTS (FOR THE HOLDING)

Reference period: census reference year

16. This item is included to help assess how easy it is for farmers to access markets (and the associated mode of travel). Travelling time is usually expressed in ranges, such as:

- Up to 30 minutes
- More than 30 to 60 minutes
- More than 60 to 120 minutes
- More than 2 hours

17. Sometimes, travelling times vary according to, for example, the wet and dry seasons. Some countries may wish to collect these data for different seasons. There may be different modes of travel, such as walking, a motor vehicle, an animal-powered vehicle, bus, bicycle, etc. The specific list of modes depends on the country's circumstances. If more than one mode of travel is available, then the most usual mode and travelling time associated with it should be reported.

18. Periodic or permanent agricultural produce market refers to a market where farmers can bring their produce for sale. The markets may operate every day or on certain days of the week.

0708 TYPE OF INSURANCE COVERAGE (FOR THE HOLDING)

- No insurance coverage

- Insurance related to crop/livestock production.
- Other insurance related to crop or livestock production (e.g. holding equipment, infrastructure).

Reference period: census reference year

19. The purpose of this new item is to determine the use of insurance coverage in agricultural holdings. It helps assess the level of financial protection available to farmers against potential losses in crop/livestock production that can significantly impact their livelihoods. Personal insurance unrelated to the holding, such as life and health insurance, is excluded.

20. Insurance related to crop production specifically provides protection against risks, such as adverse weather conditions (e.g. droughts, floods, storms), pests, and diseases that can harm crops. Insurance related to livestock production helps mitigate the financial impact of livestock losses due to risks such as diseases, accidents, or natural disasters. Other insurance related to crop or livestock production may include additional insurance types or coverage that are not explicitly covered by the above two categories. It could involve insurance for farm equipment, infrastructure, market fluctuations or other aspects of agricultural production.

Theme 8: Demographic and social characteristics

0801 SEX (for each household member)

- Male
- Female

Reference period: census reference day

0802 AGE (for each household member)

Reference period: census reference day

1. Age refers to the interval between the date of birth and the date of the census, expressed in completed solar years ([UN, 2025d, paragraph 5.169](#)). Data on age may be collected by asking directly for the age at the person's last birthday or by obtaining the person's date of birth (year, month, and day). Age data are sometimes difficult to collect. In some countries, people have different ways of calculating age, such as age at last birthday. There is also a tendency for people to round ages to the nearest five or ten years. Date of birth can also be difficult to collect, as it may be known only according to an alternative calendar, such as a lunar calendar. Sometimes, people can only identify their date of birth in relation to major events or may only know the season, not the exact date. Various data collection tools are available to help overcome these problems.

0803 RELATIONSHIP TO HOUSEHOLD HEAD OR OTHER REFERENCE PERSON (for each household member)

Reference period: census reference day

2. Relationship data are collected by first identifying the household head (or another reference person) and then recording the relationship of each household member to that person. In the household sector, the agricultural holder is usually the household head. In the agricultural census, relationship data are collected only to determine household and family composition. Therefore, it does not matter who the reference person is or, if it is the household head, whether that title reflects the person's role. Countries may use whichever reference person is considered most appropriate to national circumstances. It is not intended that household head data – for example, by sex – will be analysed in the agricultural census. Instead, census data will be analysed in relation to different household composition types, such as a married couple with children or an extended household.

3. The relationship categories should be based on international standards used in the population census programme ([UN, 2025d, paragraph 5.149](#)), to ensure consistency with other national statistics.

The recommended categories are given below. Some countries may wish to identify more complex relationship structures, such as child/parent relationships for different family units within a household.

- Head
- Spouse
- Partner in consensual union (cohabiting partner), where applicable
- Child
- Spouse of child
- Grandchild or great grandchild
- Other relative
- Other unrelated person

4. Households should be divided into household composition types based on the family nucleus. The following groupings used in the population census ([UN, 2025d, paragraph 5.159](#)) are usually suitable:

- One-person household
- Nuclear household
 - . Married couple family with children
 - . Married couple family without children
 - . Partner in consensual union (cohabiting partner) with children
 - . Partner in consensual union (cohabiting partner) without children
 - . Father with children
 - . Mother with children
- Extended household
- Composite household
- Other
- Unknown or not stated

0804 MARITAL STATUS (for each household member)

Reference period: census reference day

5. **Marital status** refers to the status of the household member in relation to the marriage laws or customs of the country. The marital status categories should be based on international standards used in the population census programme ([UN, 2025d, paragraph 5.182](#)), to ensure consistency with other national statistics. The following groupings are recommended:

- Never married
- Married
- Married, but separated
- Divorced and not remarried
- Widowed and not remarried

6. Countries may wish to take local conditions into account in determining marital status categories. In some countries, customary unions such as “registered partnership” and “consensual union” may be needed to reflect unions, which are legal and binding under the law. Other countries may need to take into account cohabitation, polygamous or polyandrous practices.

7. Data on marital status are sometimes collected for all persons, regardless of age, but often the category is restricted to those above the minimum legal marriage age. Whichever approach is taken, countries should show marital status data in the census tables for persons aged 15 years and over, to provide international comparisons.

0805 EDUCATIONAL ATTAINMENT (for each household member, excluding holder and spouse)

Reference period: census reference day

8. Educational attainment data are useful in an agricultural census to examine the effects of education on characteristics such as cropping systems, agricultural practices and household food security. **Educational attainment** refers to the highest grade of formal education successfully completed by a person. In the agricultural census, educational attainment data should be collected for each household member, as the educational levels can be important factors in agricultural and household activities.

9. Data on educational attainment should be recorded in suitable categories. Attention should be paid to consistency with other national statistical collections, especially the population census, and to the International Standard Classification of Education ([UNESCO 2011](#)). For international comparison purposes, educational attainment should be classified into at least four levels of education ([UNESCO, 2011](#), paragraph 89, table 1): less than primary (for persons not having successfully completed primary education), primary, secondary (comprising lower and upper secondary education levels), and post-secondary (comprising post-secondary non-tertiary education, short-cycle tertiary education, bachelors or equivalent level, master's or equivalent level, doctoral or equivalent level). Each level may be further subdivided to meet national needs.

Theme 9: Work on the holding

0904 FORM OF PAYMENT FOR EMPLOYEES (for the holding)

Reference period: census reference year

1. Additional Item 0904 is important in countries where there are various forms of remuneration for employees. It refers to the form or forms of payment used on the holding during the reference year. The form of payment for each employee is usually not reported. The payment methods can vary from country to country and each country needs to determine categories suitable to national conditions. Typical forms of payment groups are:

- Money
- Farm produce
- Exchange of labour
- Other forms of in-kind payment

2. If more than one form of payment is used on the holding, then all forms of payment practiced by holdings should be reported.

Theme 10: Aquaculture

1002 **AREA OF AQUACULTURE ACCORDING TO TYPE OF SITE** (for the holding)

- Land-based
 - . Arable land
 - . Non-arable land
- Inland waters
- Coastal waters

Reference period: census reference year

1. **Area of aquaculture** refers to the area under water used for aquaculture on the holding. This may be of three types: land-based; based on inland water; and based on coastal waters. The two latter types of area are parts of bodies of water, usually rented from others for use for aquacultural purposes. Such bodies of water could include parts of rivers, lakes, reservoirs, dams, canals, lagoons/estuaries, bays/coves or the open sea. The area figure should include supporting structures such as pond banks and floating structures of cages.

2. **Land-based** aquaculture is aquaculture practised in rice fields, ponds, tanks, raceways and other land areas on the holding. In the case of ponds, countries may need to develop criteria to distinguish between land-based and inland water aquaculture. Such criteria may include size of the pond, whether it is artificial or natural, whether cages and *hapas* (see paragraph 6 below) are used, etc. The area of land-based hatcheries and nurseries should be included, while the area of land-based aquaculture-related facilities, such as storage buildings, fish processing facilities, laboratories, and

offices, should not be included. The split into **arable** and **non-arable** land is intended to determine what part of the land-based aquaculture is practised on land that is also used for crop production. Examples of non-arable land are saline-alkaline lands and wetlands. Refer to paragraph 7.2.37 for the definition of arable land. From the land use point of view, all land-based areas of aquaculture, except the one classified as arable land, should be classified as LU8 “area used for aquaculture” (see Figure 7.1 in Chapter 7) or more specifically to “land used for aquaculture” if a country wishes to further subdivide the class LU8 in line with the SEEA land use classification (see SEEA land use class 1.3 in Annex 5).

3. **Inland waters** include dams, reservoirs, lakes, and rivers. **Coastal waters** include lagoons, estuaries, shallow and open seas, bays, and coves, including inter-tidal mudflats. The area of aquaculture should refer to the part of the body of water that is occupied by the aquacultural facilities – for example, the total area of the pen or cage network in the water. Area of aquaculture based on inland waters and coastal waters should be classified as LU8 “area used for aquaculture” (see Figure 7.1 in Chapter 7) or more specifically to “inland waters used for aquaculture or holding facilities” and “coastal waters used for aquaculture or holding facilities”, respectively, if a country wishes to further subdivide the class LU8 in line with the SEEA land use classification (see SEEA land use classes 2.1 and 3.1 in Annex 5).

1003 AREA OF AQUACULTURE ACCORDING TO TYPE OF PRODUCTION FACILITY (for the holding)

- *Rice-cum-fish culture*
- *Ponds*
- *Pens, cages and hapas*
- *Tanks and raceways*
- *Floating rafts, lines, ropes, bags and stakes*

Reference period: census reference year

4. **Rice-cum-fish culture** is the use of land for the culture of both rice and aquatic organisms. One form of rice-cum-fish culture is the introduction of broodstock or seed into flooded paddy fields, often modified for aquacultural purposes. Another form of rice-cum-fish culture is where rice and fish are raised on the same land in different seasons. Fishing associated with fish from the wild that enter paddy fields during flooding is not included.

5. **Pond culture** is the breeding or rearing of aquatic plants or animals in natural or artificial enclosures. Pond culture is usually carried out in stagnant waters with periodic water exchange or water flushing through inlets and outlets. Sometimes, large ponds are used in association with cages or *hapas*. Often there is some integration between crops, livestock and pond culture, as in fish-cum-vegetable culture or fish-cum-animal husbandry.

6. **Pens, cages and hapas** are net enclosures used for rearing aquatic animals or plants in lakes, rivers, reservoirs or the open sea. Pens are fixed by frameworks made of metal, plastic, bamboo or wood. Cages are held in place by floating structures. Hapas are simple net enclosures suspended by stakes at the four corners in open water bodies.

7. **Tanks and raceways** are fixed structures used for raising aquatic animals or plants. They are normally built above ground and can be made of bricks, concrete or plastic. Tanks are small round or rectangular structures, whereas raceways are long, narrow structures.

8. **Floating rafts, lines, ropes, bags and stakes** refer to the aquacultural practice based on these facilities, commonly used for the cultivation of shellfish and seaweed.

1004 TYPE OF WATER (for the holding)

- *Freshwater*
- *Brackish water*
- *Saltwater*

Reference period: census reference year

9. This item refers to whether aquaculture on the holding was carried out during the reference year using water of the above types. There may be more than one type of water used on a holding. The type of water is usually closely related to the type of site in additional Item 1002.

10. **Freshwater** refers to reservoirs, rivers, lakes and canals, with consistently negligible salinity. **Brackish water** refers to waters with appreciable salinity but not to a constant high level. It is characterized by fluctuations in salinity due to regular influxes of freshwater and seawater, such as in estuaries, coves, bays and fjords. Enclosed water bodies in which salinity is greater than freshwater but less than seawater are also regarded as brackish. **Saltwater** (or marine water) refers to coastal and offshore waters where salinity is high and is not subject to significant daily or seasonal variation.

1005 SOURCES OF WATER FOR AQUACULTURE (for the holding)

- Rain-fed
- Groundwater
- Rivers/canals
- Lakes/reservoirs
- Dams
- Estuaries/lagoons
- Coves/bays/sea

Reference period: census reference year

11. This item refers to whether water for aquacultural production on the holding during the census reference year was obtained from the above sources. There may be more than one source of water used for aquaculture on a holding. The source of water is usually closely related to the type of site in additional Item 1002. Countries may wish to adapt these categories to suit local conditions.

1006 TYPE OF AQUACULTURAL ORGANISM CULTIVATED (for the holding)

- Freshwater fish
- Diadromous fish
- Marine fish
- Crustaceans
- Molluscs
- Other aquatic animals
- Aquatic plants

Reference period: census reference year

12. This item refers to which of the above types of aquatic organisms were cultivated on the holding during the census reference year. More than one type of organism may be cultivated on a holding. The classification refers to the type of aquatic animal or plant cultivated, not the type of aquacultural product generated. Thus, pearl production is shown under “Molluscs”.

13. The main types of **freshwater fish** are carps, catfish, and tilapias. **Diadromous fish** are fish that can live in both fresh and marine water, such as trout, salmon, eels and sturgeon. **Marine fish** include groupers, seabream, flatfish, and tuna. **Crustaceans** are aquatic animals with hard shells, such as crabs, crayfish, lobsters, shrimps, and prawns. **Molluscs** are animals belonging to the phylum *Mollusca*, including abalones, oysters, mussels, scallops, clams and squids. **Other aquatic animals** include frogs, crocodiles, alligators, turtles, sea squirts, sea cucumber and sea urchins. **Aquatic plants** include seaweed and algae.

Theme 11: Forestry

1101 PRESENCE OF WOODLAND ON THE HOLDING

Reference period: census reference day.

1. Holdings with wooded areas can be identified through Item 0203 “Area of holding according to land use types”. If some area of the holding is classified as “forest and other wooded land” (refer to

paragraph 7.2.30–7.2.31 for the definition of this land use category), then the holding (an agricultural holding with the presence of woodland) contains some wooded areas. However, this may not be sufficient for identifying all holdings with wooded areas without regard to title or legal form, potentially usable for forestry activities or other purposes.

2. First, land use classification is based on the concept of the main use of the land. Some holdings may have land that is not classified according to the land use “forest and other wooded land” but contains groups of forest trees or other wooded plants satisfying the criteria for “forest and other wooded land”. For example, “land under permanent meadows and pastures” may span over 0.5 ha and contain forest trees and other wooded plants more than five metres in height with crown cover of more than 10 percent. To identify all holdings with forest and other wooded land, data on secondary land use are needed.

3. Second, the criterion of spanning over 0.5 ha limits the capacity of the land use approach for identifying all holdings with wooded areas potentially usable for forestry activities or other purposes. In some countries, small wooded areas on holdings may play an important role in sustaining the livelihoods of the households operating them. Because of the 0.5 ha criterion, such areas might be classified as “other area” (land use class LU9 in Figure 7.1, see also paragraph 7.2.36).

4. Because of the above considerations, the concept of **woodland** is used for the purposes of the present theme. It refers to the area of land satisfying all criteria for either forest land or other wooded land (see paragraph 7.2.30) except the criterion of spanning over 0.5 ha. **Presence of woodland** refers to whether such areas are present on the land making up the agricultural holding without regard to title or legal form.³⁸ The reference period is the *census reference day*. Countries wishing to set up a list frame of holdings with woodland may collect this item in the census by complete enumeration to provide a frame for census supplementary forestry module and relevant sample surveys (see paragraph 3.47 and 3.49 for the scope of a forestry module).

- 1102 AREA OF WOODLAND (for the holding)
- Forest land as primary land use
 - Other wooded land as primary land use
 - Forest land as secondary land use on agricultural land
 - Other wooded land as secondary land use on agricultural land
 - Other woodland

Reference period: census reference day.

5. This item collects data on the total area of woodland on the holding as defined in paragraph 4 above, further subdivided into various components. The total area of forest and other wooded land as a primary land use is given in the land use classification in essential Item 0203 (see paragraph 7.2.30). Subitems a and b subdivide it into its two components. Subitems c and d refer to those areas on the holding that satisfy the criteria for forest land and other wooded land (see paragraph 7.2.30), respectively, but were classified as agricultural land according to their primary land use. **Agricultural land** covers arable land, land under permanent crops, and permanent meadows and pastures (see paragraph 7.2.37). Subitem e covers those areas that span less than 0.5 and satisfy all other criteria for either forest land or other wooded land.

- 1103 PURPOSES OF WOODLAND (for the holding)
- Production
 - Soil and water protection
 - Improving agricultural production
 - Social and cultural values
 - Recreation and ecotourism
 - Other

Reference period: the census reference year

³⁸ Woodland owned by household members but rented to others should not be considered as presence of woodland in the holding. Conversely, woodland not owned by members of a household but rented from others for forestry production, resource protection, improving agricultural production, social and cultural values, recreation, ecotourism or other purposes should be considered.

6. This item relates to all woodland on the holding, including all categories listed in additional Item 1103. Purposes are assessed with respect to an extended period, usually the census reference year.

7. **Production** refers to the production and extraction of forest goods, including both wood (timber, fuelwood, wood chips) and non-wood (wild-growing mushrooms, berries and nuts, oils, leaves, bark) forest products.

8. **Soil and water protection** refers to the protection of soils from wind and water erosion. Forests conserve water by increasing infiltration, reducing runoff velocity and surface erosion, and decreasing sedimentation. Forests play a role in filtering water pollutants, regulating water yield and flow, moderating floods, enhancing precipitation and mitigating salinity.

9. **Improving agricultural production** refers to the various situations in which trees are integrated into agricultural systems, providing a range of benefits in terms of restoring or sustaining soil fertility and boosting food production. For example, in upland areas, where steep slopes and high rainfall create a high risk of erosion, trees help to stabilize topsoil and prevent loss of important nutrients, helping to maintain agricultural production. In dryland and semi-arid areas, trees and woodlands provide shade to growing crops and protect them from extreme temperatures. Trees minimize soil water loss through evaporation and transpiration and reduce wind speed and loss of topsoil through wind erosion. Trees planted in windbreaks and shelterbelts protect agricultural land and infrastructure.

10. **Social and cultural values** as a purpose refers to the situation in which forest area is primarily designated or managed for spiritual or cultural values or for public recreation – e.g. forests or other religious areas, spirit forests, sacred areas, burial grounds, initiation areas, taboo areas or areas related to other forms of community spiritual or cultural practices.

11. Increased attention is being given to the development of forest-based **recreation and ecotourism**, driven by the overall expansion of the tourism sector, including agrotourism, and the special capacity of forests to improve the living environment and provide various amenities. Ecotourism can conserve natural resources, provide employment opportunities and boost the rural economy. Other includes woodland with no specific function.

1104 WHETHER FORESTRY ACTIVITIES ARE PRACTISED (for the holding)

- Logging
- Afforestation (planting trees)
- Reforestation (replanting trees)
- Nursery (cultivating seedlings for afforestation or reforestation)
- Extraction of fuelwood and production of charcoal
- Gathering of plant-based edible and non-edible wild non-wood products
- Gathering of animal-based edible and non-edible wild non-wood products

Reference period: the census reference year

12. The purpose of this new item is to determine any forestry activities practised in the woodland, including silviculture (e.g. timber production) and other activities such as nurseries, production of charcoal, and gathering of non-wood forest products. These activities are also own-account activities in the woodland and do not include paid or unpaid work for a unit not associated with the holding.

1105 WHETHER AGROFORESTRY IS PRACTISED (for the holding)

Reference period: the census reference year

13. **Agroforestry** is a sustainable land management system in which forest species of trees and other wooded plants are purposely grown on the same land as agricultural crops or livestock, either concurrently or in rotation. Agroforestry is characterized by the existence of both ecological and economic interactions between the different components. Agroforestry includes agrosilvicultural (trees and crops), silvopastoral (trees and livestock), and agrosilvipastoral (trees, crops and livestock) systems.

14. Agroforestry refers to specific forestry practices that complement agricultural activities, such as by improving soil fertility, reducing soil erosion, improving watershed management, or providing shade and food for livestock. Countries need to develop their own procedures to collect data on agroforestry systems. Some may wish to collect data on specific agroforestry activities. The reference period for agroforestry data is the census reference year. Countries wishing to set up a list frame of holdings practicing agroforestry may collect this item in the census by complete enumeration to support the design of specific sample surveys on this type of holding.

Theme 12: Fishing

1201 ENGAGEMENT OF HOUSEHOLD MEMBERS IN FISHING ACTIVITY

- *In the household*
- *In other economic units*

Reference period: census reference year

1. A household member is a person forming part of the household. The definition of the household is given in paragraph 4.6.

2. The item refers to households in which any member is engaged in either marine or freshwater capture fishing activities, regardless of the amount of time engaged. Engagement in household fishing relates to own-account fishing activity of the household – i.e. for own final use or for sale/barter. Engagement “in other economic units” refers to member(s) of the household engaged in capture fishing activity outside of the household, i.e. in another household, fishing enterprise or other economic unit. Countries wishing to set up a list frame of holdings engaged in fishing activities may collect this item in the census by complete enumeration to provide a frame for census supplementary modules and relevant sample surveys.

3. The item does not cover households with members engaged only in the processing of products from fisheries (defined under ISIC Rev.5 class 1020) or only in trading of products from fishing. Trading refers to exchange of products in kind (including barter) or for monetary payment.

4. Capture fishing falls under group 031 of ISIC (Rev. 5) and covers both marine and freshwater fishing. It includes “the hunting, collecting and gathering activities directed at removing or collecting live wild aquatic organisms (predominantly fish, molluscs and crustaceans) including plants from the oceanic, coastal or inland waters for human consumption and other purposes by hand or more usually by various types of fishing gear such as nets, lines and stationary traps. Such activities can be conducted on the intertidal shoreline (e.g. collection of molluscs such as mussels and oysters), using shore-based netting, or from home-made dugouts or more commonly using commercially made boats in inshore, coastal waters or offshore waters. Unlike in aquaculture (group 032 of ISIC Rev. 5), the aquatic resource being captured is usually a common property resource, irrespective of whether the harvest from this resource is undertaken with or without exploitation rights. Such activities also include fishing in restocked water bodies.” Fishing activity excludes raising fish, molluscs and crustaceans in captivity, which is covered under Theme 10: Aquaculture.

5. Fishing includes any activity – other than scientific research conducted by a scientific research vessel – that involves the catching, taking or harvesting of fish or any attempt to do so, as well as any activity that can reasonably be expected to result in the catching, taking or harvesting of fish, and any operations at sea, in coastal waters or inland waters, in support of it.

1202 NUMBER OF HOUSEHOLD MEMBERS ENGAGED IN FISHING ACTIVITY BY SEX

- Total of which is engaged in:*
- *The household's fishing activity*
 - *Other economic units*

Reference period: census reference year

6. The purpose of this item is to obtain information regarding the number of household members engaged in:

- a) Household fishing activity – i.e. for the household's own-account capture fishing; and/or
- b) Capture fishing activity outside of the household – i.e. in other households, fishing enterprises or other economic units.

7. If a household member has been engaged in capture fishing activity both in the household and in another economic unit, they should be counted only once and assigned to the activity/unit in which he/she has spent the most time during the reference year.

8. Countries may wish to quantify the volume of work contributed by household members engaged in the household's fishing activity. The measurement of working time related to fishing activity of household members could be based on the assessment of hours or days engaged in the holding's fishing activity, or by using broad categories such as full-year/part-year or full-time/part-time, as feasible and relevant to national circumstances. Full-year/part-year work measures the number of months or weeks of work carried out during the year. Full-time/part-time work measures the number of hours worked per day or week, as assessed against a norm such as an eight-hour day or a 40-hour week.

9. Data regarding sex are important to capture accurate information on the activities of women in fishing.

1203 NUMBER OF FISHERS EMPLOYED BY THE HOUSEHOLD BY SEX

Reference period: census reference year

10. This item refers to paid workers engaged in fishing activities of the fishing households – i.e. workers who are **not** household members. These are people who had a job in fishing activities for the household fishing enterprise at some time during the reference year and whose status in employment for that job was “employee”, meaning they worked for the household fishing enterprise at some time during the year in a paid employment job. This includes regular employees, as well as seasonal, short-term and casual workers. Data regarding sex are important to capture information on the activities of women in fishing. Employees may be paid in cash or in the form of food or other products, but there may also be other remuneration arrangements. Exchange of labour should be treated as a form of paid employment. People employed by the household but not working in fishing are excluded. Family members are covered in additional Item 1202 and are excluded here. Countries may wish to quantify the volume of work contributed by employed fishers. Working time data for employees engaged in fishing activities of the household should be consistent with the similar data for household members (see paragraph 8 above).

1204 ACCESS ARRANGEMENTS FOR FISHING

- *Access arrangement for marine fishing*
- *Access arrangement for freshwater fishing*
- *No access arrangement required for marine fishing*
- *No access arrangement required for freshwater fishing*

Reference period: census reference year

11. This item refers to access arrangements for individuals to utilize aquatic resources for the purpose of fishing. Access arrangements include formal (such as licenses) and informal tenure given to either individuals or communities. Tenure systems are used to regulate access to natural resources such as fish stocks and can be informal or established formally through legislation or through community customs.

12. Marine fishing refers to fishing in oceans and seas, including adjacent saltwater and shore areas; freshwater fishing refers to fishing in inland waters, including lakes, rivers, brooks, streams, ponds, inland canals, dams and other landlocked water areas, regardless of water salinity.

1205 MAIN PURPOSE OF HOUSEHOLD FISHING ACTIVITY

- *Producing mainly for own consumption*
- *Producing mainly for sale*

Reference period: census reference year

13. The aim of this item is to get a broader indicator of the extent of participation in the market economy. In cases where the household fishing is for more than one purpose, the main purpose should be the one which represents the larger value of products from fishing.

14. Sale includes selling produce for cash or in exchange for other produce (barter). Disposal of fishing products in other ways, such as payment for labour, sending to family members, gifts or payments of taxes, should not be considered in assessing main purpose.

1206 TYPE OF FISHING VESSEL USED BY SOURCE

a) Motorized vessels:

- Owned solely by household members
- Owned by the household jointly with other households
- Lent from others (with or without payment)

b) Non-motorized vessels:

- Owned solely by household members
- Owned by the household jointly with other households
- Lent from others (with or without payment)

c) No vessel used

Reference period: census reference year

15. This item refers to the use of a vessel for fishing. Source refers to owned vessels or lent from others. Motorized vessel refers to the use of motors, either inboard or outboard, for propulsion. It does not include vessels on which motors are used only for powering winches or equipment. In some cases, fishing takes place from the shore or on the shore, in which case a vessel is not used.

1207 TYPE OF FISHING GEAR USED

Reference period: census reference year

16. This item refers to the type of fishing gear used by the fisher. The following classifications, based on the International Standard Statistical Classification of Fishing Gears (ISSCFG) ([FAO, 2016](#)), are recommended for collecting information on fishing gear:

- Surrounding nets
- Seine nets
- Trawls
- Dredges
- Lift nets
- Falling gear
- Gillnets and entangling nets
- Traps
- Hooks and lines
- Miscellaneous gear (including gathering by hand with simple hand implements)

17. Detailed descriptions of gear under each category are available in the Classification and illustrated definition of fishing gears ([FAO, 2021b](#)). The category of “miscellaneous gear” includes hand and landing nets, drive-in nets, gathering by hand with simple hand implements with or without diving equipment, poisons and explosives, trained animals, electrical fishing, etc.

ANNEX 5 Correspondence between WCA 2030, FAO and SEEA land use classes

WCA 2030 main land use classes	FAO land use classes	SEEA 2012 land use classification		
LU1. Land under temporary crops	6630. Temporary crops	1.1 Agriculture	1.1.1 Land under temporary crops	
LU2. Land under temporary meadows and pastures	6633. Temporary meadows and pastures		1.1.2 Land under temporary meadows and pastures	
LU3. Land temporarily fallow	6640. Temporary fallow		1.1.3 Land with temporary fallow	
LU4. Land under permanent crops	6650. Permanent crops		1.1.4 Land under permanent crops	
LU5. Land under permanent meadows and pastures	6655. Permanent meadows and pastures		1.1.5 Land under permanent meadows and pastures	1.1.5.1 Cultivated
				1.1.5.2 Naturally grown
LU6. Land under farm buildings and farmyards	6649. Farm buildings and farmyards		1.1.6 Land under protective cover	
LU7. Forest and other wooded land	6646. Forest land*	1.2 Forestry	1.2.1 Forest land	
	6670. Other land**	1.2 Forestry	1.2.2 Other wooded land	
LU8. Area used for aquaculture (including inland and coastal waters if part of the holding)	6670. Other land**	1.3 Land used for aquaculture		
	6680. Inland waters	2.1 Inland waters used for aquaculture or holding facilities		
	6773. Coastal waters	3.1 Coastal waters used for aquaculture or holding facilities		
LU9. Other area not elsewhere classified	6670. Other land**	1.4 Use of built-up and related areas		
		1.5 Land used for maintenance and restoration of environmental functions		
		1.6 Other uses of land, n.e.c.		
		1.7 Land not in use		
	6680. Inland waters	2.2 Inland waters used for maintenance and restoration of environmental functions		
		2.3 Other uses of inland waters, n.e.c.		
		2.4 Inland waters not in use		
	6773. Coastal waters	3.2 Coastal waters used for maintenance and restoration of environmental functions		
		3.3 Other uses of coastal waters, n.e.c.		
		3.4 Coastal waters not in use		

Notes: * "6646. Forest land" excludes "other wooded land"; ** "6670. Other land" includes "other wooded land".
Source: Authors' own elaboration.

ANNEX 6 Classification of crops

The Indicative Crop Classification (ICC 1.1) developed in the WCA 2020 round has been revised for the 2030 round of agricultural censuses and is provided at the end of this annex as Version 1.2.

The ICC used in the 2020 agricultural census programme reflected various elements related to crops, including the growing cycle (temporary/permanent), crop genus or species (each crop can be described by its botanical name), and product type (provided in the structure of Central Product Classification Version 3).

The ICC has been revised based on the Central Product Classification Version 3 (UN, 2025b). CPC classifies goods and services into categories based on the nature of the product and its industry of origin. Crop products are classified mainly according to the type of crop. CPC itself is based on the Harmonized Commodity Description and Coding System (HS), a classification of the World Customs Organization. CPC is also broadly compatible with ISIC, in that the industry of origin is related to ISIC. The ICC is also consistent with the classification of commodities used in FAO's online database, FAOSTAT.

From a statistical point of view, the crop classification should be closely related to the product classification, and to some extent to the economic activity classification (ISIC). The crop classification refers to which crops are grown, whereas the product classification refers to the product(s) generated from that crop. Thus, "mustard" is an oilseed crop, whereas "mustard seed" is the oilseed product. There is not always a one-to-one correspondence between a crop and a product. The same crop may yield two products – for example, cotton may yield cotton fibre and cottonseed.

ICC Version 1.2 is based on the revised CPC Version 3, to which FAO has provided input. ICC Version 1.2 classifies crops into categories based on three main elements:

- **Product type.** The product type is provided in the structure of CPC, especially at the group and class level. Thus, under ICC Version 1.2, crops are first divided into groups such as cereals, vegetables, fruits, etc., and each group is further subdivided by crop type, such as leafy/stem vegetables, fruit-bearing vegetables, etc.
- **Crop genus or species.** At the lowest level of the classification, each crop can be described by its botanical name; thus, "Lentils" (class 7.05) is identified as the species *Lens culinaris*. However, it should be noted that ICC is not a botanical classification, as the groupings are based more on the agricultural use of the crop than the botanical similarities between crops. Thus, "Oilseed crops and oleaginous fruits" (group 4) is a grouping of crops of many different botanical types that produce the same type of product: oil.
- **Whether the crop is temporary or permanent.** CPC does not always permit a temporary/permanent division, because this is not important in a product classification. However, this distinction is fundamental to a crop classification. Because of this, some CPC classes are divided into temporary and permanent subclasses. In ICC Version 1.2, a separate code is provided to indicate whether the crop is temporary or permanent.

It should be noted as a general principle that in the ICC, a particular crop is classified only once in the classification, regardless of how the crop is used.

If a country wishes to separately identify the different uses of a crop – such as food or fodder, fresh or dried, fruit or oil, and industrial or non-industrial – it has two options:

- Further subdivide the crop in the crop classification, as required. Thus, subclass 2.02.04 could be subdivided into 2.03.05.01 (Pumpkin for food) and 2.03.05.02 (Pumpkin for fodder). If data on fodder crops are required from the agricultural census, the relevant fodder crop codes can be grouped.
- Include an item in the agricultural census on end use of the crop.

The following examples illustrate how to handle multiple-use crops in developing a crop classification based on ICC Version 1.2:

- All grain and vegetable crops should be assigned to groups 1 or 2, regardless of whether they are used for human consumption or as animal feed. Note that Class 9.01 (Grasses and other fodder crops) refers to crops that are solely fodder crops.
- The same principle applies to sugar crops. Maize should be designated as a cereal crop (Class 1.02), even if it is used as a sugar crop. Note that group 8 (Sugar crops) refers to sugar beet, sugar cane and other specific sugar crops.
- Crops such as coconut that are grown either as fruit crops or as oil crops should be classified according to their primary use in the country. In ICC Version 1.1, coconut has been shown as an oil crop (Subclass 4.04.01).
- Problems arise where the same physical crop is used for harvesting two products. The use of cotton to produce cottonseed and cotton fibre is one example. Such a crop should be shown only once in the harvested area data (harvested area relates to the area of the principal crop harvested – see paragraph 7.4.9), but could have a secondary use in production data. The crop should be classified according to its primary use in the country. For example, in ICC Version 1.1, cotton has been defined as a fibre crop (Order 9.02.01.01).

ICC provides only a broad-level structure for the classification of crops. For groups 1–8, ICC is consistent with CPC at the group level and generally consistent at the class level. At the subclass level, the two classifications are similar.

To help countries use ICC, an alphabetical list of crops with botanical names and crop codes is shown in Annex 7.

Note that the different levels of ICC – namely, groups, classes, subclasses and orders – do not relate in any way to the same terms used in the botanical taxonomic hierarchy.

As in the past, the crop classification needs to be adapted by countries to take account of national conditions. Not all crops are applicable to all countries, which may also wish to separately identify crops not shown in ICC or to show crops in more detail than is given in ICC. In particular, countries may wish to provide more detail for important national crops; for example, a rice-producing country may wish to show rice classified by variety, season or land type.

Indicative Crop Classification Version 1.2 (ICC)

Group	Class	Sub class	Order	Descriptor	Crop type*
1				Cereals	T
	1.01			Wheat	T
	1.02			Maize	T
	1.03			Rice	T
	1.04			Sorghum	T
	1.05			Barley	T
	1.06			Rye	T
	1.07			Oats	T
	1.08			Millet	T
	1.09			Triticale	T
	1.10			Buckwheat	T
	1.11			Fonio	T
	1.12			Quinoa	T
	1.13			Canary seed	T
	1.14			Mixed cereals	T
	1.90			Other cereals, n.e.c	T
2				Vegetables and melons	T
	2.01			Leafy or stem vegetables	T
		2.01.01		Artichokes	T
		2.01.02		Asparagus	T
		2.01.03		Cabbages	T
		2.01.04		Cauliflower and broccoli	T
		2.01.05		Lettuce	T
		2.01.06		Spinach	T
		2.01.07		Chicory	T
		2.01.90		Other leafy or stem vegetables, n.e.c.	T
	2.02			Fruit-bearing vegetables	T
		2.02.01		Cucumbers	T
		2.02.02		Eggplants (aubergines)	T
		2.02.03		Tomatoes	T
		2.02.04		Pumpkin, squash and gourds	T
		2.02.05		Okra	T
		2.02.90		Other fruit-bearing vegetables, n.e.c.	T
	2.03			Root, bulb or tuberous vegetables	T
		2.03.01		Carrots	T
		2.03.02		Turnips	T
		2.03.03		Garlic	T
		2.03.04		Onions (including shallots)	T
		2.03.05		Leeks and other alliaceous vegetables	T
		2.03.90		Other root, bulb, or tuberous vegetables, n.e.c.	T
	2.04			Mushrooms and truffles	T
		2.04.01		Mushrooms	T
		2.04.02		Truffles	T
	2.05			Melons	T
		2.05.01		Watermelons	T
		2.05.02		Cantaloupes and other melons	T
	2.90			Other vegetables n.e.c.	T
3				Fruit and nuts	P
	3.01			Tropical and subtropical fruits	P
		3.01.01		Avocados	P
		3.01.02		Bananas	P
		3.01.03		Plantains	P
		3.01.04		Dates	P
		3.01.05		Figs	P
		3.01.06		Mangoes, guavas and mangosteens	P
		3.01.07		Papayas	P
		3.01.08		Pineapples	P

Group	Class	Sub class	Order	Descriptor	Crop type*
		3.01.90		Other tropical and subtropical fruits, n.e.c.	P
	3.02			Citrus fruits	P
		3.02.01		Grapefruit and pomelo	P
		3.02.02		Lemons and limes	P
		3.02.03		Oranges	P
		3.02.04		Tangerines mandarins, clementines	P
		3.02.90		Other citrus fruits, n.e.c.	P
	3.03			Grapes	P
	3.04			Berries	P
		3.04.01		Currants	P
		3.04.02		Gooseberries	P
		3.04.03		Kiwi fruit	P
		3.04.04		Raspberries	P
		3.04.05		Strawberries	P
		3.04.06		Blueberries	P
		3.04.07		Cranberries	P
		3.04.90		Other berries, n.e.c.	P
	3.05			Pome fruits and stone fruits	P
		3.05.01		Apples	P
		3.05.02		Apricots	P
		3.05.03		Cherries and sour cherries	P
		3.05.04		Peaches and nectarines	P
		3.05.05		Pears and quinces	P
		3.05.06		Plums and sloes	P
		3.05.90		Other pome fruits and stone fruits, n.e.c.	P
	3.06			Nuts	P
		3.06.01		Almonds	P
		3.06.02		Cashew nuts	P
		3.06.03		Chestnuts	P
		3.06.04		Hazelnuts	P
		3.06.05		Pistachios	P
		3.06.06		Walnuts	P
		3.06.07		Brazil nuts	P
		3.06.08		Areca nuts	P
		3.06.09		Cola nuts	P
		3.06.90		Other nuts, n.e.c.	P
	3.90			Other fruits, n.e.c.	P
4				Oilseed crops and oleaginous fruits	
	4.01			Soya beans	T
	4.02			Groundnuts	T
	4.03			Other temporary oilseed crops	T
		4.03.01		Castor bean	T
		4.03.02		Linseed	T
		4.03.03		Mustard	T
		4.03.04		Niger seed	T
		4.03.05		Rapeseed	T
		4.03.06		Safflower	T
		4.03.07		Sesame	T
		4.03.08		Sunflower	T
		4.03.09		Shea tree (shea butter or karite nuts)	T
		4.03.10		Tung tree	T
		4.03.11		Jajoba	T
		4.03.12		Poppy	T
		4.03.13		Tallow tree	T
		4.03.90		Other temporary oilseed crops, n.e.c.	T
	4.04			Permanent oilseed crops	P
		4.04.01		Coconuts	P
		4.04.02		Olives	P
		4.04.03		Oil palms	P
		4.04.90		Other oleaginous fruits, n.e.c.	P

Group	Class	Sub class	Order	Descriptor	Crop type*
5				Root/tuber crops with high starch or inulin content	T
	5.01			Potatoes	T
	5.02			Sweet potatoes	T
	5.03			Cassava	T
	5.04			Yams	T
	5.05			Taro	T
	5.06			Yautia	T
	5.90			Other roots and tubers, n.e.c.	T
6				Stimulant, spice and aromatic crops	
	6.01			Stimulant crops	P
		6.01.01		Coffee	P
		6.01.02		Tea	P
		6.01.03		Maté	P
		6.01.04		Cocoa	P
		6.01.05		Chicory roots	P
		6.01.90		Other stimulant crops, n.e.c.	P
	6.02			Spice and aromatic crops	
		6.02.01		<i>Temporary spice and aromatic crops</i>	T
			6.02.01.01	Chillies and peppers (<i>capsicum spp.</i>)	T
			6.02.01.02	Anise, badian, and fennel	T
			6.02.01.90	Other temporary spice crops, n.e.c.	T
		6.02.02		<i>Permanent spice and aromatic crops</i>	P
			6.02.02.01	Pepper (<i>piper spp.</i>)	P
			6.02.02.02	Nutmeg, mace, cardamoms	P
			6.02.02.03	Cinnamon (<i>canella</i>)	P
			6.02.02.04	Cloves	P
			6.02.02.05	Ginger	P
			6.02.02.06	Vanilla	P
			6.02.02.07	Hops	P
			6.02.02.90	Other permanent spice and aromatic crops, n.e.c.	P
7				Leguminous crops	T
	7.01			Beans	T
	7.02			Broad beans	T
	7.03			Chickpeas	T
	7.04			Cowpeas	T
	7.05			Lentils	T
	7.06			Lupins	T
	7.07			Peas	T
	7.08			Pigeon peas	T
	7.09			Bambara beans	T
	7.10			Vetches	T
	7.90			Leguminous crops, n.e.c.	T
8				Sugar crops	T
	8.01			Sugar beet	T
	8.02			Sugar cane	T
	8.03			Sweet sorghum	T
	8.90			Other sugar crops, n.e.c.	T
9				Other crops	
	9.01			Grasses and other fodder crops	
		9.01.01		<i>Temporary grass and fodder crops</i>	T
		9.01.02		<i>Permanent grass and fodder crops</i>	P
	9.02			Fibre crops	
		9.02.01		<i>Temporary fibre crops</i>	T
			9.02.01.01	Cotton	T
			9.02.01.02	Jute, kenaf, and other similar crops	T
			9.02.01.03	Flax	T
			9.02.01.04	Hemp	T
			9.02.01.90	Other temporary fibre crops, n.e.c.	T
		9.02.02		<i>Permanent fibre crops</i>	P

Group	Class	Sub class	Order	Descriptor	Crop type*
			9.02.02.01	Ramie	P
			9.02.02.02	Sisal	P
			9.02.02.90	Other permanent fibre crops, n.e.c.	P
	9.03			Medicinal, pesticidal or similar crops	
		9.03.01		Temporary medicinal, pesticidal or similar crops	T
			9.03.01.01	Mint	T
			9.03.01.02	Basil	T
			9.03.01.90	Other temporary medicinal, pesticidal or similar	T
		9.03.02		Permanent medicinal, pesticidal or similar crops	P
			9.03.02.01	Ginseng	P
			9.03.02.02	Coca	P
			9.03.02.03	Kava	P
			9.03.02.04	Guarana	P
			9.03.02.90	Other permanent medicinal, pesticidal or similar	P
	9.04			Rubber	P
	9.05			Flower crops	
		9.05.01		Temporary flower crops	T
		9.05.02		Permanent flower crops	P
	9.06			Tobacco	T
	9.90			Other crops, n.e.c.	
		9.90.01		Other crops, n.e.c. – temporary	T
		9.90.02		Other crops, n.e.c. – permanent	P

Notes: *T = temporary, P = permanent.
Source: Authors' own elaboration.

ANNEX 7 Alphabetic list of crops with botanical name and crop code (ICC and CPC)

Crop name	Botanical name	ICC 1.1 Code	ICC 1.2 Code	CPC 3.0 Code
Abaca (Manila hemp)	<i>Musa textilis</i>	9.02.01.04	9.02.01.04	01929.07
Alfalfa for fodder or seed	<i>Medicago sativa</i>	9.01.01	9.01.01	01912*
Almond	<i>Prunus dulcis</i>	3.06.01	3.06.01	01371
Angelica stems	<i>Angelica archangelica</i>	6.02.02.90	6.02.02.90	01699*
Anise seeds	<i>Pimpinella anisum</i>	6.02.01.02	6.02.01.02	01654*
Apple	<i>Malus sylvestris</i>	3.05.01	3.05.01	01341
Apricot	<i>Prunus armeniaca</i>	3.05.02	3.05.02	01343
Areca (betel nut)	<i>Areca catechu</i>	3.06.08	3.06.08	01379.01
Arracha	<i>Arracacia xanthorrhiza</i>	5.9	5.9	01599*
Arrowroot	<i>Maranta arundinacea</i>	5.9	5.9	01599*
Artichoke	<i>Cynara scolymus</i>	2.01.01	2.01.01	01216
Asparagus	<i>Asparagus officinalis</i>	2.01.02	2.01.02	01211
Avocado	<i>Persea americana</i>	3.01.01	3.01.01	01311
Bajra (Pearl millet)	<i>Pennisetum americanum</i>	1.08	1.08	01181*, 01182*
Bambara bean	<i>Voandzeia subterranea</i> or <i>Vigna subterranea</i>	7.09	7.09	01708
Banana	<i>Musa sapientum</i> , <i>M. cavendishii</i> , <i>M. nana</i>	3.01.02	3.01.02	01312.01, 01312.02
Barley	<i>Hordeum vulgare</i>	1.05	1.05	01151, 01152
Bay leaves	<i>Laurus nobilis</i> ,	6.02.02.90	6.02.02.90	01699*
Basil	<i>Ocimum basilicum</i>	9.03.01.02	9.03.01.02	01930.90*
Beans	<i>Phaseolus vulgaris</i>	7.01	7.01	01701*, 01241.01*, 01241.90*
Beet, fodder (mangel) red, sugar, sugar for fodder, sugar for seeds	<i>Beta vulgaris</i>	8.01	8.01	01919.90* (fodder), 01259* (red), 01801 (sugar), 01803 (sugar for seeds)
Bergamot	<i>Citrus bergamia</i>	3.02.90	3.02.90	01329

Crop name	Botanical name	ICC 1.1 Code	ICC 1.2 Code	CPC 3.0 Code
Betel nut	<i>Areca catechu</i>	3.06.08	3.06.08	
Black pepper	<i>Piper nigrum</i>	6.02.02.01	6.02.02.01	01651
Blackberries of various species	<i>Rubus spp.</i>	3.04.90	3.04.90	01353.02*
Blueberry	<i>Vaccinium myrtillus</i> ; <i>V. corymbosum</i>	3.04.06	3.04.06	01355.01
Brazil nut	<i>Bertholletia excelsa</i>	3.06.07	3.06.07	01377
Breadfruit	<i>Artocarpus altilis</i>	3.01.90	3.01.90	01319*
Broad bean,	<i>Vicia faba</i>	7.02	7.02	01702*, 01243*
Broccoli	<i>Brassica oleracea var. botrytis</i>	2.01.04	2.01.04	01213
Broomcorn millet	<i>Panicum miliaceum</i>	1.08	1.08	01181*, 01182*
Broom sorghum	<i>Sorghum bicolor</i>	1.04	1.04	01141*, 01142*, 01919.01*
Brussels sprouts	<i>Brassica oleracea var. gemmifera</i>	2.01.90	2.01.90	01212*
Buckwheat	<i>Fagopyrum esculentum</i>	1.1	1.1	01192
Cabbage (red, white, Savoy)	<i>Brassica oleracea var. capitata</i>	2.01.03	2.01.03	01212*, 01919.90* (fodder)
Cabbage, Chinese	<i>Brassica chinensis</i>	2.01.03	2.01.03	01212*
Cacao (cocoa)	<i>Theobroma cacao</i>	6.01.04	6.01.04	01640
Cantaloupe	<i>Cucumis melo</i>	2.05.02	2.05.02	01229
Caraway seeds	<i>Carum carvi</i>	6.02.01.90	6.02.01.90	01654*
Cardamom	<i>Elettaria cardamomum</i>	6.02.02.02	6.02.02.02	01653*
Cardoon	<i>Cynara cardunculus</i>	2.01.90	2.01.90	01219.90*
Carob	<i>Ceratonia siliqua</i>	3.9	3.9	01356
Carrot	<i>Daucus carota ssp. sativa</i>	2.03.01	2.03.01	01251* (edible), 01919.90* (fodder)
Cashew nuts	<i>Anacardium occidentale</i>	3.06.02	3.06.02	01372
Cassava (manioc)	<i>Manihot esculenta</i>	5.03	5.03	01520.01*, 01520.02*, 01219.01*

Crop name	Botanical name	ICC 1.1 Code	ICC 1.2 Code	CPC 3.0 Code
Castor bean	<i>Ricinus communis</i>	4.03.01	4.03.01	01447
Cauliflower	<i>Brassica oleracea var. botrytis</i>	2.01.04	2.01.04	01213
Celeriac	<i>Apium graveolens var. rapaceum</i>	2.03.90	2.03.90	01259* ' '
Celery	<i>Apium graveolens</i>	2.01.90	2.01.90	01290.90*
Chayote	<i>Sechium edule</i>	2.02.90	2.02.90	01239.90*
Cherry	<i>Prunus avium, cerasus avium</i>	3.05.03	3.05.03	01344.02
Chestnut	<i>Castanea sativa</i>	3.06.03	3.06.03	01373
Chickpea (gram pea)	<i>Cicer arietinum</i>	7.03	7.03	01703
Chicory	<i>Cichorium intybus</i>	2.01.07	2.01.07	01214*, 01691*
Chili (all varieties)	<i>Capsicum spp. (annuum)</i>	6.02.01.01	6.02.01.01	01652*, 01231*
Cinnamon	<i>Cinnamomum verum</i>	6.02.02.03	6.02.02.03	01655
Citron	<i>Citrus medica</i>	3.02.90	3.02.90	01329
Citronella	<i>Cymbopogon citrates/ Cymbopogon nardus</i>	9.02.02.90	9.02.02.90	01699*, 01930.90*
Clementine	<i>Citrus reticulata</i>	3.02.04	3.02.04	01324.02*
Clove	<i>Eugenia aromatica (Syzygium aromaticum)</i>	6.02.02.04	6.02.02.04	01656
Clover for fodder (all varieties)	<i>Trifolium spp.</i>	9.01.01	9.01.01	01919.03*
Coca	<i>Erythroxypum novogranatense, E. coca</i>	9.03.02.02	9.03.02.02	01990*
Cocoa (cacao)	<i>Theobroma cacao</i>	6.01.04	6.01.04	01640
Coconut	<i>Cocos nucifera</i>	4.04.01	4.04.01	01460
Cocoyam	<i>Colocasia esculenta</i>	5.9	5.9	01599*
Coffee	<i>Coffea spp.</i>	6.01.01	6.01.01	01610
Cola nut (all varieties)	<i>Cola acuminata; C. nitida; C. vera</i>	3.06.09	3.06.09	01379.02
Colza (rapeseed)	<i>Brassica napus</i>	4.03.05	4.03.05	01443

Crop name	Botanical name	ICC 1.1 Code	ICC 1.2 Code	CPC 3.0 Code
Corn (see maize)				
Corn salad (mâché/lamb's lettuce)	<i>Valerianella locusta</i>	2.01.90	2.01.90	01219.90*
Cotton (all varieties)	<i>Gossypium spp.</i>	9.02.01.01	9.02.01.01	01921.01, 01921.02
Cottonseed (all varieties)	<i>Gossypium spp.</i>	9.02.01.01	9.02.01.01	01431, '01432,'01921.01
Cowpea, for grain or harvested green	<i>Vigna unguiculata</i>	7.04	7.04	01706*
Cranberry	<i>Vaccinium macrocarpon; V. oxycoccus</i>	3.04.07	3.04.07	01355.02
Cress	<i>Lepidium sativum</i>	2.01.90	2.01.90	01219.90*
Cucumber	<i>Cucumis sativus</i>	2.02.01	2.02.01	01232
Currants (all varieties)	<i>Ribes spp.</i>	3.04.01	3.04.01	01351.01
Custard apple	<i>Annona reticulata</i>	3.01.90	3.01.90	01319*
Dasheen	<i>Colocasia esculenta</i>	5.9	5.9	01599*
Date	<i>Phoenix dactylifera</i>	3.01.04	3.01.04	01314
Dill and dill seed	<i>Anethum graveoles</i>	6.02.02.90	6.02.02.90	01699*
Drumstick tree	<i>Moringa oleifera</i>	6.02.02.90	6.02.02.90	01699*
Durra (sorghum)	<i>Sorghum bicolour</i>	1.04	1.04	01141*, 01142*, 01919.01*
Durum wheat	<i>Triticum durum</i>	1.01	1.01	01111*, 01112*
Earth pea	<i>Vigna subterranea</i>	7.9	7.9	01709.90*,01249*
Edo (eddoe)	<i>Xanthosoma spp.; Colocasia spp.</i>	5.9	5.9	01599*
Eggplant	<i>Solanum melongena</i>	2.02.02	2.02.02	01233
Endive	<i>Cichorium endivia</i>	2.01.90	2.01.90	01214*
Fennel	<i>Foeniculum vulgare</i>	6.02.01.02	6.02.01.02	01654*
Fenugreek	<i>Trigonella foenum-graecum</i>	7.9	7.9	01699*
Fig	<i>Ficus carica</i>	3.01.05	3.01.05	01315

Crop name	Botanical name	ICC 1.1 Code	ICC 1.2 Code	CPC 3.0 Code
Filbert (hazelnut)	<i>Corylus avellana</i>	3.06.04	3.06.04	01374
Fique	<i>Furcraea macrophylla</i>	9.02.01.90	9.02.01.90	01929.90*
Flax for fibre	<i>Linum usitatissimum</i>	9.02.01.03	9.02.01.03	01929.01*
Fonio	<i>Digitaria exilis; D. iburua</i>	1.11	1.11	01193
Formio (New Zealand flax)	<i>Phormium tenax</i>	9.02.01.03	9.02.01.03	01929.90*
Garlic	<i>Allium sativum</i>	2.03.03	2.03.03	01252*
Geranium	<i>Pelargonium spp.; Geranium spp.</i>	9.03.01	9.03.01	01930.90*
Ginger	<i>Zingiber officinale</i>	6.02.02.05	6.02.02.05	01657
Ginseng	<i>Panax spp.</i>	9.03.02.01	9.03.02.01	01930.90*
Gooseberry (all varieties)	<i>Ribes spp.</i>	3.04.02	3.04.02	01351.02
Gourd	<i>Lagenaria spp; Cucurbita spp.</i>	2.02.04	2.02.04	01235
Gram pea (chickpea)	<i>Cicer arietinum</i>	7.03	7.03	01703
Grape	<i>Vitis vinifera</i>	3.03	3.03	01330*
Grapefruit	<i>Citrus paradisi</i>	3.02.01	3.02.01	01321
Grass esparto	<i>Lygeum spartum</i>	9.90.01	9.90.01	01929.90*
Grass, orchard	<i>Dactylis glomerata</i>	9.01.01	9.01.01	01919.90*
Grass, Sudan	<i>Sorghum bicolor var. Sudanense</i>	9.01.01	9.01.01	01919.90*
Groundnut (peanut)	<i>Arachis hypogaea</i>	4.02	4.02	01421*, 01422*
Guarana	<i>Paulinia cupana</i>	9.03.02.04	9.03.02.04	01930.90*
Guava	<i>Psidium guajava</i>	3.01.06	3.01.06	01316.02
Guinea corn (sorghum)	<i>Sorghum bicolor</i>	1.04	1.04	01141*, 01142*, 01919.01*
Guinea pepper	<i>Aframomum melegueta, piper guineense, xylopi aethiopica</i>	6.02.02.90	6.02.02.90	01653*
Hazelnut (filbert)	<i>Corylus avellana</i>	3.06.04	3.06.04	01374
Hemp fibre	<i>Cannabis sativa ssp. Indica</i>	9.02.01.04	9.02.01.04	01929.02

Crop name	Botanical name	ICC 1.1 Code	ICC 1.2 Code	CPC 3.0 Code
Hemp, Manila (abaca)	<i>Musa textilis</i>	9.02.01.04	9.02.01.04	01929.07
Hemp, sun	<i>Crotalaria juncea</i>	9.02.01.04	9.02.01.04	01922.02*
Hempseed	<i>Cannabis sativa (marijuana)</i>	4.03.90	4.03.90	1449.02
Henequen	<i>Agave fourcroydes</i>	9.02.02.90	9.02.02.90	01929.06*
Henna	<i>Lawsonia inermis</i>	9.01.01	9.01.01	01912, 01919.03, 01919.90*
Hop	<i>Humulus lupulus</i>	6.02.02.07	6.02.02.07	01659
Horse bean	<i>Vicia faba</i>	7.02	7.02	01702*, 01243*
Horseradish	<i>Armoracia rusticana</i>	2.03.90	2.03.90	01259*
Hybrid maize	<i>Zea mays</i>	1.02	1.02	01121*, 01122*, 01911, 01290.01*
Indigo	<i>Indigofera tinctoria</i>	9.90.01	9.90.01	01930.90*, 01990*
Jasmine	<i>Jasminum spp.</i>	9.05.02	9.05.02	01930.90*
Jerusalem artichoke	<i>Helianthus tuberosus</i>	2.01.01	2.01.01	01599*
Jojoba	<i>Simmondsia californica or S. chinensis</i>	4.03.11	4.03.11	01499.03
Jowar (sorghum)	<i>Sorghum bicolor</i>	1.04	1.04	01141*, 01142*, 01919.01*
Jute	<i>Corchorus spp. (over 30 sp.)</i>	9.02.01.02	9.02.01.02	01922.01*
Kale	<i>Brassica oleracea var. Acephala</i>	2.01.90	2.01.90	01219.90*, 01919.90*
Kapok	<i>Ceiba pentandra</i>	9.02.02	9.02.02	01499.05, 01929.03
Kava	<i>Piper methysticum</i>	9.03.02.03	9.03.02.03	01930.90*
Kenaf	<i>Hibiscus cannabinus</i>	9.02.01.02	9.02.01.02	01922.02*
Kiwi fruit	<i>Actinidia deliciosa</i>	3.04.03	3.04.03	01352
Kohlrabi	<i>Brassica oleracea var. gongylodes</i>	2.03.90	2.03.90	01219.90*, 01919.90*
Kola nut	see Cola nut	3.06.09	3.06.09	01379.02

Crop name	Botanical name	ICC 1.1 Code	ICC 1.2 Code	CPC 3.0 Code
Lavender	<i>Lavandula spp.</i> (over 15 sp.)	9.03.01	9.03.01	01930.90*
Leek	<i>Allium ampeloprasum</i> ; <i>Allium porrum</i>	2.03.05	2.03.05	01254
Lemon	<i>Citrus limon</i>	3.02.02	3.02.02	01322*
Lemon grass	<i>Cymbopogon citratus</i>	9.02.02.90	9.02.02.90	01699*, 01930.90*
Lentil	<i>Lens culinaris</i>	7.05	7.05	01704
Lespedeza (all varieties)	<i>Lespedeza spp.</i>	9.01.01	9.01.01	01919.90*
Lettuce	<i>Lactuca sativa var. capitata</i>	2.01.05	2.01.05	01214*
Lime, sour	<i>Citrus aurantifolia</i>	3.02.02	3.02.02	01322*
Lime, sweet	<i>Citrus limetta</i>	3.02.02	3.02.02	01322*
Linseed (flax for oil seed)	<i>Linum usitatissimum</i>	4.03.02	4.03.02	01441
Liquorice	<i>Glycyrrhiza glabra</i>	9.03.01	9.03.01	01930.90*
Litchi	<i>Litchi chinensis</i>	3.01.90	3.01.90	01319*
Loquat	<i>Eriobotrya japonica</i>	3.05.90	3.05.90	01349.10, 01349.20
Lupine (all varieties)	<i>Lupinus spp.</i>	7.06	7.06	01709.02
Macadamia (Queensland nut)	<i>Macadamia spp. ternifolia</i>	3.06.90	3.06.90	01379.03
Mace	<i>Myristica fragrans</i>	6.02.02.02	6.02.02.02	01653*
Maguay	<i>Agave atrovirens</i>	9.02.02	9.02.02	01929.06*
Maize (corn), ordinary, hybrid	<i>Zea mays</i>	1.02	1.02	01121*, 01122*, 01290.01*, 01911* (silage)
Mandarin	<i>Citrus reticulata</i>	3.02.04	3.02.04	01324.01*
Mangel (fodder beet)	<i>Beta vulgaris</i>	8.01	8.01	01919.90*
Mango	<i>Mangifera indica</i>	3.01.06	3.01.06	01316.01
Mangosteen/Mangostano	<i>Garcinia mangostana</i>	3.01.06	3.01.06	01316.03

Crop name	Botanical name	ICC 1.1 Code	ICC 1.2 Code	CPC 3.0 Code
Manioc (cassava)	<i>Manihot esculenta</i>	5.03	5.03	01520.01*, 01520.02*, 01219.01*
Maslin (mixed cereals)	<i>Mixture of Triticum spp.; Secale cereale</i>	1.14	1.14	01199.02
Medlar	<i>Mespilus germanica</i>	3.05.90	3.05.90	01349.20
Melon (except watermelon)	<i>Cucumis melo</i>	2.05.02	2.05.02	01229, 01449.01
Millet, bajra, bulrush or pearl	<i>Pennisetum americanum</i>	1.08	1.08	01181*, 01182*
Millet, finger	<i>Eleusine coracana</i>	1.08	1.08	01181*, 01182*
Millet, foxtail	<i>Setaria italica</i>	1.08	1.08	01181*, 01182*
Millet, Japanese	<i>Echinochloa esculenta</i>	1.08	1.08	01181*, 01182*
Millet, common, proso	<i>Panicum miliaceum</i>	1.08	1.08	01181*, 01182*
Mint (all varieties)	<i>Mentha spp.</i>	9.03.01.01	9.03.01.01	01930.01
Mulberry for fruit (all varieties) or for silkworms	<i>Morus spp.</i>	3.9	3.9	01353.02*
Mushrooms	<i>Agaricus spp. ; Pleurotus spp ; Volvariella</i>	2.04	2.04.01	01271
Mustard	<i>Brassica nigra; Sinapis alba</i>	4.03.03	4.03.03	01442
Nectarine	<i>Prunus persica var. nectarina</i>	3.05.04	3.05.04	01345*
New Zealand flax (formio)	<i>Phormium tenax</i>	9.02.01.03	9.02.01.03	01929.90*
Niger seed	<i>Guizotia abyssinica</i>	4.03.04	4.03.04	01449.90*
Nutmeg	<i>Myristica fragrans</i>	6.02.02.02	6.02.02.02	01653*
Oats, for grain or fodder	<i>Avena spp. (about 30 sp.)</i>	1.07	1.07	01171, 01172, 01919.90* (for fodder)
Oil palm	<i>Elaeis guineensis</i>	4.04.03	4.04.03	01491.01, 01491.02
Okra	<i>Abelmoschus esculentus; Hibiscus esculentus</i>	2.02.05	2.02.05	01239.01
Olive	<i>Olea europaea</i>	4.04.02	4.04.02	01450

Crop name	Botanical name	ICC 1.1 Code	ICC 1.2 Code	CPC 3.0 Code
Onion	<i>Allium cepa</i>	2.03.04	2.03.04	01253.01
Opium	<i>Papaver somniferum</i>	9.03.01	9.03.01	01448
Orange	<i>Citrus sinensis</i>	3.02.03	3.02.03	01323*
Orange, bitter	<i>Citrus aurantium</i>	3.02.03	3.02.03	01323*
Ornamental plants	Various	9.05.01	9.05.01	01961*, 01962*
Palm palmyra	<i>Borassus flabellifer</i>	9.09.02	9.09.02	01929.90*, 01809*
Palm, (kernel) oil	<i>Elaeis guineensis</i>	4.04.03	4.04.03	'01491.02
Palm, sago	<i>Metroxylon sagu</i>	9.09.02	9.09.02	01599*
Papaya (pawpaw)	<i>Carica papaya</i>	3.01.07	3.01.07	01317
Parsnip	<i>Pastinaca sativa</i>	2.03.90	2.03.90	01259*
Pea	<i>Pisum sativum</i>	7.07	7.07	01705 (dry), 01241 (green)
Peach	<i>Prunus persica</i>	3.05.04	3.05.04	01345*
Peanut (groundnut)	<i>Arachis hypogaea</i>	4.02	4.02	01421*, 01422*
Pear	<i>Pyrus communis</i>	3.05.05	3.05.05	01342.01
Pecan nut	<i>Carya illinoensis</i>	3.06.90	3.06.90	01379.90*
Pepper, black	<i>Piper nigrum</i>	6.02.02.01	6.02.02.01	01651
Pepper	<i>Capsicum spp. (over 30 sp.)</i>	6.02.01.01	6.02.01.01	01652
Pepper, sweet	<i>Capsicum annuum</i>	6.02.02.01	6.02.02.01	01231*, 01652*
Persimmon	<i>Diospyros kaki; Diospyros virginiana</i>	3.01.90	3.01.90	01359.01
Pigeon pea	<i>Cajanus cajan</i>	7.08	7.08	01707
Pineapple	<i>Ananas comosus</i>	3.01.08	3.01.08	01318
Pistachio nut	<i>Pistacia vera</i>	3.06.05	3.06.05	01375
Plantain	<i>Musa paradisiaca</i>	3.01.03	3.01.03	01313.01, 01313.02
Plum	<i>Prunus domestica</i>	3.05.06	3.05.06	01346
Pomegranate	<i>Punica granatum</i>	3.9	3.9	01359.90*

Crop name	Botanical name	ICC 1.1 Code	ICC 1.2 Code	CPC 3.0 Code
Pomelo	<i>Citrus grandis</i>	3.02.01	3.02.01	01321
Poppy seed	<i>Papaver somniferum</i>	4.03.12	4.03.12	01448
Poppy straw	<i>Papaver somniferum</i>	9.03.01.90	9.03.01.90	01930.90* 03249
Potato	<i>Solanum tuberosum</i>	5.01	5.01	01510
Potato, sweet	<i>Ipomoea batatas</i>	5.02	5.02	01530*
Prune	<i>Prunus domestica</i>	3.05.06	3.05.06	01346
Pumpkin	<i>Cucurbita spp. (over 25 sp.)</i>	2.02.04	2.02.04	01235 (edible), 01919.90* (fodder)
Pyrethrum	<i>Chrysanthemum cinerariaefolium</i>	9.90.01	9.90.01	01930.02, 01930.03,
Queensland nut	See Macadamia	3.06.90	3.06.90	01379.90*
Quince	<i>Cydonia oblonga</i>	3.05.05	3.05.05	01342.02
Quinine	<i>Cinchona spp. (more than 6 sp.)</i>	9.03.02	9.03.02	01930.90*
Quinoa	<i>Chenopodium quinoa</i>	1.12	1.12	01194
Radish	<i>Raphanus sativus (inc. Cochlearia armoracia)</i>	2.03.90	2.03.90	01259*
Ramie	<i>Boehmeria nivea</i>	9.02.02.01	9.02.02.01	01929.04*
Rapeseed (colza)	<i>Brassica napus</i>	4.03.05	4.03.05	01443
Raspberry (all varieties)	<i>Rubus spp. (over 360 sp.)</i>	3.04.04	3.04.04	01353.01
Red beet (see Beet, red)				
Redtop	<i>Agrostis spp.</i>	9.01.01	9.01.01	01919.90*
Rhea	<i>Boehmeria nivea</i>	9.02.02	9.02.02	01929.04*
Rhubarb	<i>Rheum spp.</i>	2.01.90	2.01.90	01219.90*
Rice	<i>Oryza sativa; Oryza glaberrima</i>	1.03	1.03	01131, 01132
Rose	<i>Rose spp.</i>	9.05.02	9.05.02	01961.01*, 01962.02*
Rubber	<i>Hevea brasiliensis</i>	9.04	9.04	01950.01, 01950.02

Crop name	Botanical name	ICC 1.1 Code	ICC 1.2 Code	CPC 3.0 Code
Rutabaga (swede)	<i>Brassica napus</i> var. <i>napobrassica</i>	2.03.90	2.03.90	01259*, 01919.90*
Rye	<i>Secale cereale</i>	1.06	1.06	01161, 01162
Ryegrass seed	<i>Lolium</i> spp. (about 20 sp.)	9.90.01	9.90.01	01919.02
Safflower	<i>Carthamus tinctorius</i>	4.03.06	4.03.06	01446
Saffron	<i>Crocus savitus</i>	6.02.02.90	6.02.02.90	01699*
Sainfoin	<i>Onobrychis viciifolia</i>	9.01.01	9.01.01	01919.90*
Salsify	<i>Tragopogon porrifolius</i>	2.03.90	2.03.90	01259*
Sapodilla	<i>Achras sapota</i>	3.9	3.9	01319
Satsuma	<i>Citrus unshiu</i>	3.02.04	3.02.04	01329
Scorzonera (black salsify)	<i>Scorzonera hispanica</i>	2.03.90	2.03.90	01259*
Sesame	<i>Sesamum indicum</i>	4.03.07	4.03.07	01444
Shea tree (shea butter or karite nut)	<i>Vitellaria paradoxa</i> or <i>Butyrospermum parkii</i>	4.03.09	4.03.09	01499.01
Sisal	<i>Agave sisalana</i>	9.02.02.02	9.02.02.02	01929.05
Sorghum, broom, durra, guinea corn or jowar	<i>Sorghum bicolor</i>	1.04	1.04	01141*, 01142*, 01919.01*
Sorghum, sweet	<i>Sorghum bicolor</i>	8.03	8.03	01919.01*
Sour cherry	<i>Prunus cerasus</i> , <i>cerasus acida</i>	3.05.03	3.05.03	01344.01
Soybean or soybean hay	<i>Glycine max</i>	4.01	4.01	01411*, 01412*
Spelt wheat	<i>Triticum spelta</i>	1.01	1.01	01111*, 01112*
Spinach	<i>Spinacia oleracea</i>	2.01.06	2.01.06	01215
Squash	<i>Cucurbita</i> spp. (over 25 sp.)	2.02.04	2.02.04	01235
Strawberry	<i>Fragaria</i> spp. (over 30 sp.)	3.04.05	3.04.05	01354
Sugar beet (see Beet, sugar)				
Sugar cane for sugar, alcohol, thatching or fodder	<i>Saccharum officinarum</i>	8.02	8.02	01802*, 01919.90* (fodder)
Sunflower for fodder	<i>Helianthus annuus</i>	4.03.08	4.03.08	01919.90*

Crop name	Botanical name	ICC 1.1 Code	ICC 1.2 Code	CPC 3.0 Code
Sunflower for oil seed	<i>Helianthus annuus</i>	4.03.08	4.03.08	01445
Sunhemp	<i>Crotalaria juncea</i>	9.02.01.04	9.02.01.04	01922.02*
Swede	<i>Brassica napus</i> var. <i>napobrassica</i>	2.03.90	2.03.90	01259*
Swede for fodder	<i>Brassica napus</i> var. <i>napobrassica</i>	2.03.90	2.03.90	01919.90*
Sweet lime (see Lime, sweet)				
Sweet pepper (see Pepper, sweet)				
Sweet potato (see Potato, sweet)				
Sweet sorghum (see Sorghum, sweet)				
Tallow tree	<i>Shorea aptera</i> ; <i>S. stenocarpa</i> ; <i>Sapium sebiferum</i> ; <i>Stillingia sebifera</i>	4.03.13	4.03.13	01499.04
Tangerine (see Mandarin)				
Tannia	<i>Xanthosoma sagittifolium</i>	5.9	5.9	01591*
Taro	<i>Colocasia esculenta</i>	5.05	5.05	01550
Tea	<i>Camellia sinensis</i>	6.01.02	6.01.02	01620.01, 01620.02, 01930.04
Teff	<i>Eragrostis abyssinica</i>	1.9	1.9	01199.01
Thymus	<i>Thymus vulgaris</i>	6.02.02.90	6.02.02.90	01699*
Timothy	<i>Phleum pratense</i>	9.01.01	9.01.01	01919.90*
Tobacco	<i>Nicotiana tabacum</i>	9.06	9.06	01970
Tomato	<i>Lycopersicon esculentum</i>	2.02.03	2.02.03	01234
Trefoil	<i>Lotus</i> spp. (about 100 sp.)	9.90.01	9.90.01	01919.90*
Triticale	Hybrid of <i>Triticum aestivum</i> and <i>Secale cereale</i>	1.09	1.09	01191
Truffles	<i>Genus tuber</i>		20.04.02	01272
Tung tree	<i>Aleurites</i> spp.; <i>Fordii</i>	4.03.10	4.03.10	01499.02
Turmeric	<i>Curcuma longa</i>	6.02.02.90	6.02.02.90	01699*

Crop name	Botanical name	ICC 1.1 Code	ICC 1.2 Code	CPC 3.0 Code
Turnip	<i>Brassica rapa</i>	2.03.02	2.03.02	01251* (edible), 01919.90* (fodder)
Urena (Congo jute)	<i>Urena lobata</i>	9.02.01.02	9.02.01.02	01922.02*
Vanilla	<i>Vanilla planifolia</i>	6.02.02.06	6.02.02.06	01658
Vetches	<i>Vicia sativa</i>	7.1	7.1	01709.01
Walnut	<i>Juglans spp. (over 20 sp.), ep. regia</i>	3.06.06	3.06.06	01376
Watermelon	<i>Citrullus lanatus</i>	2.05.01	2.05.01	01221
Wheat	<i>Triticum aestivum</i>	1.01	1.01	01111*, 01112*
Yam	<i>Dioscorea spp. (over 120 sp.)</i>	5.04	5.04	01540
Yautia	<i>Xanthosoma sagittifolium</i>	5.06	5.06	01591*
Yerba mate	<i>Ilex paraguariensis</i>	6.01.03	6.01.03	01630

The main objective of this annex is to provide guidance to countries to identify crops and the links with ICC and CPC 3.0

ICC 1.1 code refers to the crop codes used in the current WCA 2020.

ICC 1.2 code refers to the crop codes used in the current WCA 2030.

CPC 3.0 code refers to corresponding codes in Central Product Classification (CPC) Version 3.0

Note: *Indicates when more than one ICC code is linked to the same CPC code or when one ICC code is linked to more than one CPC code

Source: Authors' own elaboration.

ANNEX 8 Classification of livestock

Group	Class	Descriptor	Link to CPC Ver. 3.0	
1	1	Bovine animals	0211	
	11	Cattle	02111	
	12	Buffaloes	02112	
	19	Other bovine animals	02119	
2	2	Sheep and goats	02122–02123	
	21	Sheep	02122	
	22	Goats	02123	
3	3	Swine/ pigs	02140	
4	4	Equines	02131–02133	
	41	Horses	02131	
	42	Asses	02132	
	43	Mules and hinnies	02133	
	5	5	Camels and camelids	02121
		51	Dromedary	02121*
		52	Bactrian camel	02121*
		53	Llamas and alpacas	02121*
	6	59	Other camelids	02121*
		6	Poultry	0215
61		Chickens	02151	
62		Turkeys	02152	
63		Geese	02153	
64		Ducks	02154	
7	65	Guinea fowls	02155	
	7	Other animals	02129, 02191–02195, 02199*	
	71	Deer, elk, reindeer and other ruminants	02129	
	72	Rabbits and hares	02191	
	73	Fur-bearing animals such as foxes and minks	02192*	
	74	Dogs and cats	02192*	
	75	Ostriches and emus	02193	
76	Other birds (e.g pigeons)	02194		
79	Other animals (e.g. primates, elephants, reptiles, zebras)	02192*, 02195, 02199*		
8	8	Insects and worms	02196, 02199*	
	81	Bees	02196	
	82	Silkworms	02199*	
	89	Other insects and worms	02199*	

Note: *Indicates a partial link between the Census classification and CPC codes – i.e. that many livestock categories in the census are linked to one category in CPC.

Source: Authors' own elaboration.

ANNEX 9 Classification of machinery and equipment

Group	Classes	Subclasses	Descriptor	Types of machinery and equipment included	HS 2022 code		
1			Manually-operated equipment	Seed/fertilizer drill	8432.31 8432.39		
				Transplanter	8432.31 8432.39		
				Thresher	8433.52		
				Winnower	8437.10		
				Sprayer	8424.41 8424.49		
				Duster	8424.82		
				Hand pump or other hand irrigation devices	8413.20		
2			Animal-powered equipment	Wooden plough	8432.10		
				Steel plough	8432.10		
				Cultivator	8432.29		
				Disk harrow	8432.21		
				Seed/fertilizer drill	8432.3 (8432.31, 39)		
				Leveller	8429.20		
				Animal cart	8716.20		
				Animal-operated irrigation devices	8424.49		
3	31		Machine-powered equipment				
			Machines for general farm use	Internal combustion engine	8407		
				External combustion engine	8412.80		
				Electric generator	85.01		
				Electric motor	85.01		
				Computer used for farm management	84.70		
	Other electronic equipment used for farm management			8470.90			
	32			Tractors, bulldozers and other vehicles	Track-laying tractor	8701.30	
					Tractors of engine power	Up to 18 kW	8701.91
						Over 18kW to 27 kW	8701.92
						Over 27 kW to 75 kW	8701.93
						Over 75 kW to 130 kW	8701.94
						Over 130 kW	8701.95
					Single-axle tractor	8701.10	
					Bulldozer	8429.11	
					Carryall	8709.11, 8709.19	
Truck					8704.10-.90		
Boat	8901.20-.90; 8902						
Other vehicle	8701.91 8701.92 8701.93						

Group	Classes	Subclasses	Descriptor	Types of machinery and equipment included	HS 2022 code
					8701.94 8701.95
				Trailer	8716.20
	33		Crop machinery and equipment		
		331	<i>Land preparation and planting machinery and equipment</i>	Power tiller	8432.10
				Plough	8432.10
				Rotary tiller	8432.10
				Rotary harrow	8432.29
				Disk harrow	8432.21
				Grain drill	8432.80
				Broadcast seeder	8432.31 8432.39
				Seed/fertilizer drill	8432.31 8432.39
				Cultivator	8432.29
				Planters	8432.31 8432.39
				Levellers	8429.20
				Diggers	8429.51-.59
				Land plane	8432.80
				Transplanter	8432.31 8432.39
		332	<i>Crop maintenance machinery and equipment</i>	Manure spreader	8432.41 8432.42
				Fertilizer broadcaster	8432.41 8432.42
				Sprayer	8424.41 8424.49 8424.82
				Duster	8424.41 8424.49 8424.82
				Water pump	8424.41 8424.49 8424.82
				Drip irrigation	8424.41 8424.49 8424.82
				Sprinkler irrigation	8424.41 8424.49 8424.82
				Sprayers and other localized irrigation devices	8424.41 8424.49 8424.82
				Other irrigation equipment	8424.41 8424.49 8424.82
		333	<i>Crop Harvesting machinery and</i>	Mower for grass crops	8433.11; 8433.20
				Hay rake	8433.30

Group	Classes	Subclasses	Descriptor	Types of machinery and equipment included	HS 2022 code			
			<i>equipment</i>	Hay baler	8433.40			
				Forage harvester	8433.59			
				Forage blower	8433.59			
				Combine harvester	8433.51			
				Corn picker	8433.59			
				Digger, potato harvester	8433.53			
				Sugar beet harvester	8433.59			
				Reaper-binder	8433.59			
				334	<i>Post-harvest machinery and equipment</i>	Thresher	8433.52	
						Grain cleaner	8437.10	
						Sorters and graders	8437.10	
						Other machinery	8437.80	
				34		Livestock machinery and equipment	Milking machine	8434.10
							Dairy machine	8434.20
	Milk cooler	8419.89						
	Cream separator	8421.11						
	Incubator	8436.21						
	Beekeeping machine	8436.80						
	35		Aquacultural machinery and equipment		8902.00			
	36		Forestry machinery and equipment		8436.80			
	37		Unmanned Aerial vehicle and robots		8806.00			

Source: Author's own elaboration.

ANNEX 10 Overview of ILO Resolutions concerning statistics of work

The Resolution concerning statistics of work, employment and labour underutilization (ILO, 2013) adopted by the 19th International Conference of Labour Statisticians (ICLS) in 2013 and amended by the 21st ICLS in 2023 (ILO, 2023a) (below referred to as the Resolution) defines the basic concept of **work** as comprising “any activity performed by persons of any sex and age to produce goods or to provide services for use by others or for own-use”.

Work, as defined in the Resolution, can be performed in any type of economic unit as distinguished by the SNA 2008,³⁹ namely: (i) market units (i.e. corporations, quasi-corporations, and household unincorporated market enterprises, the latter encompassing, as a subset, informal sector units); (ii) non-market units (i.e. government and non-profit institutions serving households); and (iii) households that produce goods or services for own final use.

The Resolution identifies five mutually exclusive subsets of work activities or **forms of work**, distinguishing them based on the intended destination of the production (for own final use or use by others, i.e. other economic units) and the nature of the transaction (i.e. monetary or non-monetary transactions and transfers). These forms are:

- a) *Own-use production work*, comprising the production of goods and services for own final use⁴⁰ (an unpaid form of work);
- b) *Employment work*, comprising work performed for others in exchange for pay or profit;
- c) *Unpaid trainee work*, comprising work performed for others without pay to acquire workplace experience or skills;
- d) *Volunteer work*, comprising non-compulsory work performed for others without pay; and
- e) *Other work activities* (including such activities as unpaid community service and unpaid work by prisoners, when ordered by a court or similar authority, and unpaid military or alternative civilian service).

Own-use production of goods, employment, unpaid trainee work, part of volunteer work, and “other work activities” are within the SNA 2008 production boundary, while own-use production of services and the remaining part of volunteer work are outside the SNA production boundary but inside the SNA general production boundary. Figure 1 presents the conceptual framework for work statistics, delineating the forms of work categories within the SNA 2008 production boundary that are relevant to the scope of this theme and should therefore be covered, depending on the national context and information needs of countries.

Figure 1 Conceptual framework for work statistics

Intended destination of production	For own final use		For use by others				
	Own-use production work		Employment (work for pay or profit)	Unpaid trainee work	Other work activities	Volunteer work	
Forms of work	of services	of goods				In market and non-market units	In households producing
					Goods	Services	
Relation to SNA 2008	Activities within the SNA production boundary*						
	Activities inside the SNA general production boundary						

Note: *The scope of the present theme corresponds to forms of work categories within SNA production boundary.
Source: ILO. 2023a. Resolution to amend the 19th ICLS resolution concerning statistics of work, employment and labour underutilization. 21st International Conference of Labour Statisticians, 11-20 October 2023. Geneva. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms_230304.pdf

³⁹ The SNA 2025 was being developed at the time of preparation of the WCA 2030.

⁴⁰ “Own final use” includes for final consumption of the household or family of the producer.

The resolution highlights subsistence foodstuff producers as an important subgroup of persons in own-use production work, defined as all those who performed any activities related to the production and/or processing for storage of agricultural, fishing, hunting, and gathering products in order to produce foodstuffs that contribute to the livelihood of the household or family. It excludes persons engaged in such production as recreational or leisure activities.

It is very important to verify the subsistence nature of the activity for operational purposes, clarifying that it is carried out without workers hired for pay or profit. For purposes of monitoring labour market performance in relation to insufficient access to, or integration into, markets or other factors of production, this group should be tabulated and reported separately to serve policy needs (see Chapter 9, Table 9.2 – cross-tabulation of Item 0901 “whether working on the holding is the main activity” with Item 0110 “main purpose of production”).

Operational definitions of relevant forms of work

One of the main features of the labour statistics framework that is particularly relevant to the agricultural sector is the distinct treatment of persons in employment and persons in own-use production work (e.g. of agricultural goods).

Persons in employment are defined as all those of working age who, during a short reference period (that is, seven days or one week), were engaged in any activity to produce goods or provide services for pay or profit. They comprise employed persons “at work”, i.e. those who worked in a job for at least one hour, as well as employed persons “not at work” due to temporary absence from a job or to working-time arrangements (such as shift work, flexitime, or compensatory leave for overtime). “For pay or profit” refers to work done as part of a transaction in exchange for remuneration payable in the form of wages or salaries for time worked or work done, or in the form of profits derived from the goods and services produced through market transactions. Remuneration may be in cash or in kind. Included in employment are persons who work in their own economic units to produce goods intended mainly for sale or barter, even if part of the output is consumed by the household or family, as well as household or family members of such persons working in those market-oriented units. Employment also covers persons with seasonal jobs during the off-season if they continue to perform some tasks and duties of the job; this type of employment may be particularly relevant for this theme.

This definition has important implications for defining employment for Theme 9 of the WCA 2030. For agricultural holdings in the household sector, working-age members of the holder’s household who have worked on the holding will be considered in employment only if the holding’s intended destination of production during the census reference year was mainly for sale or barter and the person meets a minimum threshold number of hours worked, defined by countries according to national circumstances.⁴¹

Persons in own-use production work of goods are defined in the Resolution as all those of working age who, during a short reference period (that is, four weeks or one calendar month), performed any activity to produce goods for own final use for a cumulative total of at least one hour. For the purpose of Theme 9 of the WCA 2030, working-age members of the agricultural holding’s household who have worked on the holding will be considered in own-use production work if the holding’s intended destination of production during the census reference year was primarily for own use (as noted in the footnote of the previous paragraph, the approach differs in labour force surveys) and the person meets a minimum threshold number of hours worked, defined by countries according to national circumstances.

The Resolution indicates that “for own final use” is interpreted as production for which the intended destination of the output is mainly for final use by the producer in the form of capital formation or final consumption by household members, or by family members living in other households. In the case of agricultural goods production, while the intended destination of the products produced is for own use, some portion may nonetheless be sold or bartered.

International Classification of Status in Employment

In October 2018, the 20th ICLS adopted the Resolution concerning statistics on work relationships to

⁴¹ In labour force surveys, employment is looked more at the individual level. A person may be considered employed if the production they are working on is mainly for sale/barter even if at the holding level the majority of production is for own use.

replace the ICSE-93 that had been adopted by the 15th ICLS in January 1993 (ILO, 1993). The resolution included a new international classification of status in employment (ICSE-18) as well as the broader international classification of status at work.

ICSE-18 comprises 10 basic categories of status of employment, designed to provide a more detailed and meaningful classification reflecting working relationships in the labour market. These categories can be aggregated according to two different hierarchies. One (ICSE-18-R) is based on economic risk and creates a dichotomy between work in employment for profit and work in employment for pay, while the other (ICSE-18-A) is based on the type of authority and creates a dichotomy between independent workers and dependent workers. The aggregation according to ICSE-18-A is presented below. For each of the 10 basic categories, their place in the ICSE-18-R dichotomy is also indicated.

(a) Dependent workers

- *Dependent contractors (for profit)*
- *Employees*
 - *Permanent employees (for pay)*
 - *Fixed-term employees (for pay)*
 - *Short-term and casual employees (for pay)*
 - *Paid apprentices, trainees and interns (for pay)*
- *Contributing family workers (for profit)*

(b) Independent Workers

- *Employers*
 - *Employers in corporations (for pay)*
 - *Employers in household market enterprises (for profit)*
- *Independent workers without employees*
 - *Owner-operators of corporations without employees (for pay)*
 - *Own-account workers in household market enterprises without employees (for profit)*

There are two types of persons in employment: dependent workers (i.e. dependent contractors, employees and contributing family workers) and independent workers (i.e. employers and independent workers without employees). Dependent workers are those, who do not have complete authority or control over the economic unit for which they work. Independent workers own the economic unit for which they work and control its activities.

An **employee** is a worker employed for pay, on a formal or informal basis, who does not hold controlling ownership of the economic unit in which they are employed. Typically, an employee receives wages and salaries for the time worked. However, remuneration may also be in the form of in-kind payments, such as food, or on a commission or piece-rate basis.

Permanent employees are employees who are guaranteed a minimum number of hours of work and are employed on an ongoing or indefinite basis. They are full-time or part-time workers employed for pay, in formal or informal jobs, who have employment arrangements whereby:

- There is no specified date or event on which employment in a particular economic unit will be terminated other than any age or time for retirement;
- The employer agrees to provide work and pay for a specified number of hours or to pay for the number of goods or services produced in a set period; and
- The worker agrees to work for at least the specified number of hours, or for the time required to produce a specified number of goods or services.

This group includes recently appointed employees with jobs that are subject to an initial trial period but are expected to continue indefinitely.

Fixed-term employees are employees who are guaranteed a minimum number of hours of work and are employed on a time-limited basis for a period of three months or more.

Short-term and casual employees are employees without a guaranteed minimum number of hours of work per pay period or with short-term employment arrangements for a period less than three months,

irrespective of whether there is a guaranteed minimum number of hours of paid work or not.

Paid apprentices, trainees and interns are employees who perform any activity to produce goods or provide services for others, in order to acquire workplace experience or skills in a trade or profession and receive payment in return for work performed. Acquiring “workplace experience or skills” may occur through traditional, formal, or informal arrangements whether or not a specific qualification or certification is issued. They are usually remunerated at a reduced rate compared to fully qualified workers.

Dependent contractors is a new status in employment category, introduced with ICSE-18. They are defined statistically as workers who have contractual arrangements of a commercial nature (but not a contract of employment) to provide goods or services for or through another economic unit, and satisfy the following conditions:

- They are not employees of that economic unit, but are dependent on that unit for organization and execution of the work, income or access to the market;
- They are workers employed for profit, who are dependent on another entity that exercises control over their productive activities and directly benefits from the work performed by them;
- The activity of the dependent contractor would potentially be at risk in the event of termination of the contractual relationship with that economic unit.

A contributing family worker is a person who assists a family or household member in a market-oriented enterprise operated by that family or household member, or in a job in which the assisted family or household member is an employee or dependent contractor. Contributing family workers do not receive regular payments, such as wages or salaries, for the work performed, but may benefit in kind or receive irregular payments in cash as a result of the outputs of their work. They do not make the most important decisions affecting the enterprise or hold responsibility for it. Thus, the agricultural holder of a market-oriented holding without regularly engaged employees is classified as an independent worker without employees, and any other household member whose main job is working on the holding is a contributing family worker. In contexts where it is customary for people to work without pay in a business operated by a related person not living in the same household, the requirement of co-residence may be reconsidered

Independent workers own the economic unit for which they work and exercise control over its activities. They make the key strategic and operational decisions regarding the economic unit and the organization of their work. They are not accountable to, or supervised by, other persons, nor are they dependent on a single other economic unit or person for access to markets, raw materials, or capital items.

An employer is a person who owns the economic unit in which they work and controls its activities on their own account or in partnership with others, and, in this capacity, has employed on a regular basis (including the reference period) one or more persons to work for them as an employee. They make the operational decisions that affect the enterprise or delegates such decisions while retaining responsibility for the welfare of the enterprise.

Independent workers without employees operate an economic unit alone or in partnership with others, and do not employ any persons other than themselves, their partners, and contributing family workers to work in the economic unit on a regular basis as an employee.

Note that agricultural holders employed in market-oriented holdings are considered employers if they engage employees on a regular basis and independent workers without employees if they do not.

ANNEX 11 SDG Indicators covered partially by agricultural censuses

As mentioned in the 2030 Agenda and the Sustainable Development Goals (paragraphs 2.66 to 2.70), surveys are the preferred data source to regularly monitor progress in achieving the various SDG indicators. In the absence of periodic household surveys, a sample-based module in the agricultural census may provide partial data or coverage for Indicators 5.a.1, 2.3.1, and 2.3.2. Below is the list of WCA 2030 items related to each of the SDG indicators mentioned above.

Indicator 5.a.1: (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure

This indicator is part of SDG 5, which aims to achieve gender equality and empower all women and girls. The sub-indicator 5.a.1 (a) measures the prevalence of people in the agricultural population with ownership or tenure rights over agricultural land, disaggregated by sex. The sub-indicator 5.a.1 (b) measures the extent to which women are disadvantaged in ownership/tenure rights over agricultural land. More information can be found in FAO's SDG Indicators Data Portal ([FAO, 2025b](#)).

Agricultural land includes land under temporary crops, meadows, pastures, and fallow, as well as land under permanent crops, meadows and pastures, following the classification of land use for the agricultural census recommended by WCA 2030 (see Figure 7.1 in Chapter 7).

The reference population is the agricultural population (i.e. adult population living in households operating agricultural holdings), not the total population. The reason is that tenure rights over agricultural land are relevant for individuals whose livelihood relies on agriculture.

Three proxies are identified to measure the concept of ownership or tenure rights over agricultural land. Based on the recommendations from the Evidence and Data for Gender Equality (EDGE)⁴² ([UN, 2025c](#)) project pilot tests ([UN, 2019](#)): (i) presence of a legally recognized document in the name of individual; (ii) right to sell; and (iii) right to bequeath. Owners or holders of land tenure rights over agricultural land are individuals who meet at least one of the three proxies. The EDGE pilots show that these three proxies offer the most robust measure of land tenure rights, ensuring comparability across countries with a diverse prevalence of legal documents. It should be noted that these proxies do not correspond to items of the WCA 2030. Only if the three proxies are included in the questionnaire the indicator could be computed.

Surveys are the preferred sources of data for this indicator due to their periodicity, but the agricultural census could serve as a viable alternative when agricultural or household surveys are unavailable by incorporating a sample module in the census questionnaire. The following table summarize the items needed to compute SDG indicator 5.a.1 and the related WCA 2030 items, some of which, items 0208, 0209, 0801 and 0802, are additional.

Table 1. List of elements of SDG indicator 5.a.1 and related WCA2030 items

Element	Related WCA 2030 items
Agricultural land	0203, 0208
Agricultural population	0106, 0801, 0802
Ownership or tenure rights over agricultural land	Partially 0204, 0209*

Note * WCA items 0204 and 0209 partially satisfy the measurement of the element "Ownership and tenure rights." Using instead the three land tenure rights proxies mentioned above enables a better measurement of the element.

Source: Authors' own elaboration.

⁴² The EDGE project is a joint initiative of the United Nations Statistics Division and UN Women that seeks to improve the integration of gender issues into the regular production of official statistics for better, evidence-based policies. For more information on the EDGE project, please see <https://unstats.un.org/edge>.

Indicator 2.3.1: Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size

Indicator 2.3.2: Average income of small-scale food producers, by sex and Indigenous status

These indicators measure the progress in achieving Target 2.3 to double the agricultural productivity and incomes of small-scale food producers by 2030. In the case of indicator 2.3.1, the classification of producers considers two categories: small-scale and large-scale food producers. Although the former is the principal category, the indicator for the latter is calculated and published as a complementary series.

The small-scale food producer is defined using criteria of physical and economic size. The physical size comprises the area of operated land and the number of livestock heads in production. The economic size is expressed by its revenues. For each of the three size measures, a relative threshold is established as 40th percentile of its national cumulative distribution. Those producers below all three thresholds (i.e. operated land, livestock heads and revenue) are defined as small-scale food producers. The large-scale food producers are defined as those producers who are above at least one of the three thresholds, that is, they are not classified as small-scale food producers.

Indicator 2.3.1 focuses on labour productivity, where labour input is measured by the number of labour days utilized by the food producer during a year (all forms of paid and unpaid labour). More information can be found in FAO's SDG Indicators Data Portal ([FAO, 2025b](#)).

Indicator 2.3.2 focuses on income from on-farm production activities, including crop production, livestock production, fisheries and aquaculture production, and forestry production. These components refer to gross income, defined as revenues minus operating costs without considering the depreciation of assets. More information can be found in FAO's SDG Indicators Data Portal ([FAO, 2025b](#)).

Agricultural censuses do not collect information on agricultural production, income and detailed labour use. Several data sources need to be considered to collect data for the computation of both indicators. Agricultural surveys are the most appropriate data source for collecting information on the total volume of agricultural production, gross income and labour input from agricultural holdings. Some of these surveys include the Agricultural Integrated Surveys (AGRISurvey; [FAO, 2025a](#)) and the Living Standards Measurement Study–Integrated Surveys on Agriculture (LSMS-ISA) promoted by the World Bank. However, the latter use the household rather than agricultural holdings as a reference. Administrative data and registers constitute an alternative source of some data for computing both indicators, in countries with good coverage of agricultural holdings in those registers.

Despite all these recommendations, a small number of countries use agricultural censuses to calculate these indicators, incorporating sample modules in the questionnaires that allow data to be collected for their calculation. The following table summarizes the items needed to compute SDG indicators 2.3.1 and 2.3.2 and the related WCA 2030 items.

Table 2. List of elements of SDG indicators 2.3.1 and 2.3.2 and related WCA 2030 items

Element	Related WCA 2030 items
Operated land	0203
Number of livestock heads in production	0502
Economic size	Partially 0405, 0411, 0506, 0508, 0512, 1003, 1006, 1103, 1104, 1206, 1207*
Labour	Partially 0902, 0903*
Production costs	No items
Demographic information	0109, 0801

Note: * Agricultural censuses do not collect information on agricultural production, income and detailed labour use.

Source: Authors' own elaboration.

GLOSSARY OF TERMS

Additional items: One of the two categories of census items provided for countries wishing to collect – preferably on a sample basis – more in-depth (supplementary) data on specific themes. These may be collected using either the classical or modular approach (paragraph 1.26). Some of these items can be used to provide sampling frames for census supplementary modules and relevant sample surveys.

Agricultural holder: A civil person, group of civil persons or juridical person who makes the major decisions regarding resource use and exercises management control over the agricultural holding (paragraph 4.21).

Agricultural holding: An economic unit of agricultural production under single management, comprising all livestock kept and all land used wholly or partly for agricultural production purposes, regardless of title, legal form or size (paragraphs 4.3–4.5).

Agricultural land: Total cropland and permanent meadows and pastures (paragraph 7.2.37).

Agriculture structure survey: A sample survey aimed at collecting structural data for the entire country or substantial regions of it (paragraph 5.5).

Agroforestry: A sustainable land management system in which forest species of trees and other woody plants are purposefully grown on the same land as agricultural crops or livestock, either concurrently or in rotation (Annex 4, Theme 11, paragraph 13).

Aquacultural census: A collection of structural data from all aquacultural production units (paragraphs 3.30–3.32).

Aquacultural holding: An economic unit of aquacultural production under single management, comprising all aquaculture facilities regardless of title, legal form or size (paragraphs 3.33–3.35).

Aquaculture: The farming of aquatic organisms such as fish, crustaceans, molluscs and aquatic plants, as opposed to capture fishing (paragraphs 7.10.3–7.10.4).

Arable land: Land used for the cultivation of crops in rotation with fallow, meadows and pastures within cycles of up to five years. Includes areas under “temporary crops”, “temporary meadows and pastures” and “temporary fallow” (paragraph 7.2.37).

Archiving: A means of ensuring the long-term preservation of data, including its understandability by users (paragraph 10.29).

Area frame: A set of land elements, which may be either points or segments of land. The sampling process may involve single or multiple stages. In most agricultural area frame surveys, the sampling unit is associated with a holding.

Associated crop: A temporary crop grown in a compact plantation of permanent crops (paragraph 7.4.13).

Biofertilizers: Products containing living or dormant micro-organisms, such as bacteria and fungi, which provide nutrients to enhance plant growth (paragraph 7.4.27).

Biofuel: Fuel, such as biogas or biodiesel, produced over a short time span from biomass, rather than by the slow natural processes involved in the formation of fossil fuels. Biofuel can be derived from plants or from agricultural, domestic or industrial biowaste.

Census: A statistical collection involving the enumeration of all units of a pre-defined population.

Census classical approach: A census conducted as a single one-off operation in which all census information is recorded (paragraphs 5.6–5.7).

Census core module: The primary agricultural census collection in the modular approach, conducted as a complete enumeration to provide key structural data and frames for supplementary modules (paragraphs 5.8–5.9).

Census coverage: The set of agricultural producers in a country covered by census activities. Some

countries may omit certain areas, such as urban or remote regions, or specific types of holdings (e.g. small subsistence holdings), for operational reasons (paragraph 4.29).

Census modular approach: A census approach consisting of a clearly defined core module and supplementary sample-based modules, with the core module providing the frame for the supplementary ones (paragraphs 5.8–5.11).

Census of agriculture and aquaculture: A combined enumeration system that includes both an agricultural census and an aquacultural census (paragraph 3.30).

Census of agriculture: A statistical operation for collecting, processing and disseminating data on the structure of agriculture, covering the whole or a significant part of a country (paragraph 1.1).

Census reference day: A point in time used for data collection on livestock numbers and other inventory items (paragraph 4.37).

Census reference year: A period of twelve months – either a calendar year or an agricultural year – generally encompassing the various reference dates or periods of data collection for non-inventory items (paragraph 4.37).

Census scope: The types of agricultural production activities included in the agricultural census. The WCA 2030 defines the census scope as the units engaged in the production of crop and livestock products. Units engaged in forestry, fishing and aquaculture are not covered unless they also had some crop or livestock production activities (paragraph 4.25).

Census supplementary module: A sample-based module used in the modular approach in conjunction with the core census module, designed to target specific populations and collect more in-depth data (paragraph 5.11).

Classification variables: Characteristics used for the classification of data in cross-tabulations (paragraph 9.6).

Common pasture: Land not owned by the agricultural holding, but over which common rights apply. Typically owned by a public authority and subject to shared usage rights (Annex 4, Theme 6, paragraph 40).

Communal land: Land collectively owned and managed by a community or state, rather than by individuals or private entities.

Community-level data: Data collected at the community level, such as community infrastructure and services, communal grazing areas, forest areas, or irrigation-equipped zones (paragraph 8.2).

Compact plantation: Plants, trees or shrubs planted in a regular or dense manner – typically forming an orchard – to which a specific area can be attributed (Annex 4, Theme 4, paragraph 13).

Complete enumeration: Collection of data from all units of the population, as opposed to sample-based enumeration.

Compost: Organic material of animal, plant or human origin, partially decomposed through fermentation, used to improve soil structure and provide nutrients (paragraph 7.4.29).

Computer-assisted personal interviewing (CAPI): A mode of interviewing where enumerators record responses using an electronic questionnaire on mobile devices, such as tablets, smartphones or laptops (paragraph 5.46).

Computer-assisted telephone interviewing (CATI): A data collection mode conducted by telephone, with operators reading questions and recording answers directly into a computer (paragraph 5.46).

Computer-assisted web interviewing (CAWI): A data collection mode whereby respondents complete secure online questionnaires (paragraph 5.47).

Conservation agriculture: A sustainable farming system combining crop rotation, minimal soil disturbance (e.g. zero or no tillage), and permanent soil cover (Annex 4, Theme 6, paragraph 27).

Crop rotation: The practice of growing different species or families of crops in a planned sequence

over time on the same field (Annex 4, Theme 6, paragraph 30).

Cropland: The total of arable land and land under permanent crops (paragraph 7.2.37).

Cross-tabulations: Statistical tables showing data classified by two variables simultaneously (paragraph 9.7).

Current agricultural statistics: Ongoing statistics on aspects such as agricultural production and prices, as distinct from structural data collected through the agricultural census.

Cut-off threshold: The minimum size limit for including agricultural units in the census (paragraph 4.33).

Digester (biogas reactor): A containment structure in which animal excreta – with or without straw or other organic material – are anaerobically decomposed to produce biogas (Annex 4, Theme 6, paragraph 48).

Drainage: The artificial removal of excess surface or groundwater, including dissolved substances, to enhance agricultural production (Annex 4, Theme 3, paragraphs 23–24).

Educational attainment: The highest grade of formal education completed or attended by a person (paragraphs 7.1.18–7.1.19).

Employee: A person who holds a paid employment job (Annex 10).

Employer: A self-employed person who, alone or with partners, has engaged one or more persons on a continuous basis to work as employees (Annex 10).

Enterprise: An economic unit of production, under single management, that independently directs and manages all functions necessary for production (Annex 1).

Enumeration area: A small geographic unit defined for the purposes of census enumeration (paragraph 5.31).

Essential items: The minimum set of structural census items that all countries should collect, regardless of the approach taken (paragraph 1.24). Some may be used to create sampling frames for supplementary modules or surveys.

Establishment: An enterprise – or part thereof – located at a single site and engaged primarily in one type of production activity (Annex 1).

Fertilizers: Substances – either mineral or organic, natural or manufactured – applied to soil, irrigation water or hydroponic media to provide plant nutrients or enhance growth (paragraph 7.4.23).

Field: A portion of a parcel that is physically demarcated from the rest by visible boundaries such as fences, paths or waterways (paragraph 4.20).

Forest land: Land spanning more than 0.5 ha with trees taller than 5 metres and a canopy cover of over 10 percent, or with trees capable of reaching these thresholds in situ (paragraph 7.2.30).

Frame: The basis used for identifying all statistical units to be enumerated in a statistical collection.

Georeferencing: The process of aligning maps or images with geographic coordinates to determine the exact location of points on the Earth's surface.

Global Positioning System (GPS): A satellite-based system used to georeference locations on the Earth's surface by latitude and longitude. Also used to measure areas (paragraph 5.56).

Gross area: The total area including uncultivated patches, bunds, footpaths, ditches, and other land features; used in land use measurement (paragraph 7.2.20).

Holder: See *agricultural holder*.

Holding: See *agricultural holding*.

Holdings in the household sector: Agricultural holdings operated by household members (paragraph

4.5).

Holdings in the non-household sector: Agricultural holdings operated by entities outside the household sector, such as corporations or cooperatives (paragraph 4.5).

Household: A group of persons who make common arrangements for food and other essentials for living, either individually or collectively (paragraphs 4.6–4.7).

Inter-planted crops: Crops planted between the rows of another crop (paragraph 7.4.10).

Irrigation: The purposeful application of water to land – other than by rainfall – to support crop or pasture production (paragraphs 7.3.1–7.3.3).

Joint holder: A person who shares responsibility for decision-making and management control of the agricultural holding, along with one or more others (paragraph 4.22).

Land tenure: The legal or customary arrangements under which land on the holding is operated (paragraphs 7.2.38–7.2.44).

Land under farm buildings and farmyards: Agricultural land occupied by residential or operating buildings on farms – including greenhouses, silos, animal housing and kitchen gardens – but excluding purely residential or agrifood manufacturing facilities (paragraph 7.2.29).

Land use classification: Classification of land based on its primary activity or use (paragraphs 7.2.8–7.2.37).

Land used for agriculture: The total of *agricultural land* and *land under farm buildings and farmyards* (paragraph 7.2.37).

Legal status of the holder: The legal form or entity type under which the agricultural holding is operated (paragraph 7.1.6).

Liquid manure: Animal urine, possibly mixed with small quantities of faeces and/or water (paragraph 7.4.28).

List frame: A listing of agricultural holdings and/or households derived from censuses, registers or administrative sources, used as a sampling frame. Enumeration areas may be used as a proxy if such lists are unavailable.

Livestock: All animals, birds and insects reared or kept in captivity primarily for agricultural purposes (paragraphs 7.5.1–7.5.2).

Machinery and equipment: Tools and machines – ranging from hand tools to complex equipment such as tractors and harvesters – used as inputs in agricultural production (see Item 0604 and Annex 9).

Manager: A person appointed to manage an agricultural holding on behalf of the holder and who is responsible for the daily operations and financial decisions. In the household sector, the manager and the holder are usually the same person. However, when they are not, the manager may be an employee of the holding (a hired manager), who is paid in cash, in kind or both, or they may be a non-paid person, such as a family member or other unpaid individual (paragraph 4.23).

Manure: Fertilizer made from organic material, including animal or plant matter (paragraphs 7.4.28–7.4.29).

Metadata: Descriptive information that explains what the data measure and how they were created, supporting appropriate interpretation and use (paragraph 10.3).

Microdata: Data recorded at the unit level – typically the holding or household – during an agricultural census. Each set of information about a unit constitutes a microdata record (paragraph 10.14).

Mineral fertilizers: Fertilizers manufactured from inorganic materials through industrial processes (paragraph 7.4.24).

Mixed crops: Two or more crops grown together in a field without a systematic planting pattern (paragraph 7.4.11).

Net area: The cultivated area excluding uncultivated patches, bunds, paths, ditches and other non-productive features; used for estimating crop area, yield and production (paragraph 7.2.20).

Nursery: An area used for propagating young plants, trees or vines for later transplanting (Annex 4, Theme 4, paragraph 22).

Organic agriculture: A holistic production management system that promotes agro-ecosystem health, biodiversity and soil biological activity (Annex 4, Theme 6, paragraph 7).

Organic fertilizers: Fertilizers made from processed plant or animal material and/or unprocessed natural mineral material, containing at least five percent combined plant nutrients (paragraph 7.4.26).

Organo-mineral fertilizers: Fertilizers produced by blending or processing organic materials with mineral fertilizers to improve nutrient content and effectiveness (paragraph 7.4.25).

Other wooded land: Land spanning more than 0.5 ha with any of the following: (i) trees taller than 5 metres with canopy cover of 5–10 percent, or trees able to reach these thresholds *in situ*, (ii) trees unable to reach 5 metres but with canopy cover above 10 percent; or (iii) combined cover of shrubs, bushes and trees exceeding 10 percent (paragraph 7.2.30).

Own-use production work: Production of goods and services for own final use, carried out without monetary compensation (Annex 10).

Pen and paper interviewing (PAPI): A traditional data collection mode in which enumerators record responses on paper questionnaires (paragraph 5.45).

Parcel: A contiguous piece of land of uniform land tenure type, surrounded by land, water, roads or other features not belonging to the holding, or belonging to the holding under a different tenure arrangement (paragraph 4.19).

Permanent crops: Crops with a life cycle exceeding one year (paragraph 7.4.16).

Persons in employment: Persons of working age who, during a short reference period, were engaged in any activity to produce goods or provide services for pay or profit (Annex 10).

Persons in own-use production work of goods: Persons of working age who, during a short reference period, engaged in producing goods for own final use for at least one cumulative hour (Annex 10).

Pesticides: Substances – chemical, biological or synthetic – intended for repelling, destroying or controlling pests, or regulating plant growth (paragraph 7.6.2).

Plot: A part or the entirety of a field on which a specific crop or crop mixture is cultivated (paragraph 4.20).

Population census: The total process of planning, collecting, processing, disseminating and evaluating demographic, economic and social data at the smallest geographical level pertaining, at a specified time, to all persons in a country or in a well-delimited part of a country ([UN, 2025d, paragraph 1.4](#)).

Production: The actual quantity of produce, after drying and processing, ready for sale or consumption (Annex 4, Theme 4, paragraph 9).

Protective cover: A permanent structure, with a roof made of glass, plastic or other materials, used to protect crops from weather, pests or diseases (Annex 4, Theme 4, paragraph 25).

Reference group: The group of holdings to be tabulated for a specific item. For example, “area irrigated” is only meaningful for holdings with land (paragraph 9.9).

Sample enumeration: In the agricultural census, the process of selecting part or all of the target population for supplementary modules in the modular approach (paragraph 5.11).

Sample survey: A statistical operation in which data are collected from a representative sample of units, rather than from all units as in a census.

Sampling errors: Errors arising in survey statistics because data are collected from only a sample of

the population rather than from the whole population.

Sampling frame: A list or other source of information that defines the population from which a sample is drawn (paragraph 2.37).

Scattered plants: Plants or trees distributed in such a way that the area they occupy cannot be estimated (often found around the holding) (paragraph 7.4.22).

Seeds produced by modern biotechnologies: Seeds containing a novel combination of genetic material obtained through modern biotechnology, including genetically modified and gene-edited seeds (Annex 4, Theme 6, paragraph 1).

Shifting cultivation: A farming practice in which a plot of land is cultivated for some years and then left fallow for a sufficient period to restore fertility before being re-cultivated (Annex 4, Theme 2, paragraph 14).

Slurry: Manure in liquid form – a mixture of excreta and urine of domestic animals, possibly with water and/or small amounts of litter (paragraph 7.4.28).

Soil conservation practices: Sustainable land use and management practices aimed at preventing or reversing soil degradation (Annex 4, Theme 6, paragraph 28).

Solid/farmyard manure: The excrement of domestic animals, with or without litter, possibly including a small amount of urine (paragraph 7.4.28).

Statistical unit: The basic unit for which data are collected. In the agricultural census, the statistical unit is the agricultural holding (paragraph 4.2).

Structural data: Data on the fundamental organizational features of agricultural holdings that change little over time, such as holding size, land tenure, land use, crop area, irrigation, livestock numbers, labour and use of inputs.

Successive crops: Temporary crops cultivated more than once on the same land within a single agricultural year (paragraphs 7.4.8–7.4.9).

Table: A structured presentation of statistical data, typically used to summarize results (paragraph 9.2).

Tabulation programme: The set of statistical tables prepared to present the main results of an agricultural census (paragraph 9.2).

Temporary crops: Crops with a growing cycle of less than one year (paragraph 7.2.18).

Theme: A broad subject category containing a group of related census items.

Tillage: The physical loosening of soil carried out through various cultivation operations, either manually or mechanically (Annex 4, Theme 6, paragraph 20).

Woodland: Land that meets all the criteria for *forest land* or *other wooded land* except for the minimum area requirement of 0.5 ha (Annex 4, Theme 11, paragraph 4).

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