Land Use Classification

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Land Use Classification
Proposed to Be Used in the System of Integrated Environmental and Economic Accounting (SEEA)[*]

(Draft Version)

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Introduction and Background

The SEEA hinges on a lot of the work being done by FAO in particular concerning definitions and classifications of the natural resources, including forestry, fisheries, land, soil, ecosystems, and water among others. As listed in its "Agreed List of Issues for the SEEA Revision," one of the priorities to be tackled is: "19 a. Classification of land: There is no internationally agreed classification of land use and land cover. Corine land cover and the FAO classification seem to be the most commonly used classifications. Is there a way that these two classifications can be reconciled and a land use/land cover classifications agreed in the revised SEEA?"

Both the theory and practice tell us that although land cover (LC) and land use (LU) are closely related, thus many proposed land use classifications are actually mixing land cover and land use where natural and semi-natural vegetation are described in terms of land cover, agricultural and urban areas in terms of land use, and, in particular, the definition of forests is a combination on land cover and land use. Still it is necessary to develop LU classification separately from LC classification due to the differences between these two and the importance of LU statistics for related policy analysis and decision making.

LC is defined as the observed (bio)-physical cover of the earth's surface (Di Gregorio and Jansen 1997, 1998). Such an observation can be made by the human eye, aerial photographs, satellite sensors, or simply existing maps. The definition embraces vegetation and man-made features and includes bare rocks, bare soils, and water areas. LU can be considered as to reflect the degree of human activities directly related to land and making use of its resources or having an impact (reference: Young 1994). Two key aspects of LU are the products and benefits from use of the land and the operations applied to the land in order to produce these products and benefits. LU is difficult to "observe." Field and ground information such as surveys and censuses are usually required.

Thus, the differences between LC and LU are: LC is about the biophysical aspect of land and LU is about the functional aspect of land. LU is the cause and LC is the effect. Many of the LU operations lead to the change in LC, which is the consequence of interactions between the natural environment (especially vegetation) and the use. In some cases, it is possible to determine functional aspect from biological aspect. For instance, the use of land for nomadic or extensive grazing will frequently be based on a land cover of unimproved grassland, although this is an inference which requires field checking. In many other cases, one biophysical category may correspond to a large number of functional categories. Areas of grass may, for example, correspond to a lawn in an urban environment, an airport runway, a sown meadow, rough pasture, or a golf course.

In the agricultural census, the area of the holding is classified according to its main land use. Knowledge of current land use is essential to support analysis and management of land, vegetation, water resources and quality, and the maintenance of biodiversity. Land is the major agricultural and natural resources with significant impact on economic, environmental and social aspects of a nation and the world. Agricultural land-use data are important for many of the regional and global activities,

for example, the validation of agricultural land evaluation, the preparation of perspective studies on agricultural production and food security, early warming for food security, natural disaster relief operations, farming systems studies, and policy formulation among others.

In this paper, a consolidated land use classification is proposed to be used in the System of Integrated Environmental and Economic Accounting (SEEA) based on the major LU databases at the global level and the work of FAO across various Departments and Divisions, including FAOSTAT, World Programme for the Census of Agriculture 2010 (WCA 2010) in Statistics Division; the Global Forest Resources Assessment 2010 (FRA2010) in the Forestry Department; efforts made by colleagues from the Natural Resources Management and Environment Department; and Fisheries and Aquaculture Department. The issue of land use classification is a truly cross-cutting one.

The rest of this paper is organized as follows: in the next section, it shows that the proposed LU classification is constructed on the basis of the major LU databases/datasets at the global level. It is followed by a section describing the structure and features of the proposed LU classification. After that is a section of a brief note discussing issues related to the proposed LU classification. The proposed LU classification is presented in Table 1, related categories, concepts, and definitions are in Table 2, and a copy of the Indicative Crop Classification, which is part of the proposed LU classification, is included in Table 3.

Major Global LU Datasets as the Basis for the Proposed LU Classification

The objective of a LU classification is to provide a theoretical structure to guide data collection and creation of effective databases to ensure comparability and compatibility. Accordingly, the classification is expected to be as pragmatic and easy to understand as possible to be widely recognized and accepted. The approach taken here is to build the proposed LU classification based on the existing LU concepts, definitions, and classifications, especially those used by the major global LU databases/datasets, among which those of agricultural, forest, and fishery land use are housed at FAO. Handbook of fishery statistical standards by the Coordinating Working Party on Fishery Statistics (CWP), the reports of their sessions, and the final draft of "Handbook of National Accounting: Integrated Environmental and Economic Accounting for Fisheries" are taken into account when developing fisheries and aquaculture land use. For non-agricultural and non-forest land use, the Standard International Statistical Classification for Land Use adopted by the United Nations Economic Commission for Europe (UNECE) and modified by Eurostat seems to be appropriate one to be adopted (which is to be added and not completed yet in this paper).

There are at least five datasets at FAO that are relevant to the LU classification:

• Agricultural LU database in FAOSTAT has been collected since 1961. Data in FAOSTAT are collected by a variety of means and aggregated at the country level., e.g. (a) through annual questionnaires, (b) through electronic data transfers, (c) national and international publications, (d) reports made by FAO statisticians

during country visits and/or reports by the local FAO representatives. These data are subsequently disseminated to the public through various publications and online via the FAOSTAT database. FAOSTAT datasets related to LU are located in two domains: one is called "Land" under "Resources" and another is called "Area Harvested" under "Production." For the former, classes of the LU classification used include country area, land area, agricultural area, arable land and permanent crops, arable land, temporary crops, temporary meadows and pastures, fallow land, permanent crops, permanent meadows and pastures, forest area, other land, inland water, and irrigated area; for the latter, it uses mainly the FAOSTAT Commodity List, which is a product classification.

- Through the decennial World Programme for the Census of Agriculture (WCA), FAO has been responsible for preparing guidelines on concepts, definitions, classifications, and methodology to help countries plan and carry out their census of agriculture since its founding in 1945; as well as summarized the results of the agricultural censuses undertaken around the world and disseminated them through publications and Internet Website. The related global land use dataset provided and maintained by the WCA used to be considered as one of the most comprehensive agricultural land use datasets at the global level. It provides country-level information on several variables, including agricultural land, cropland, land under temporary crops, land under temporary meadows, land temporarily fallow, land under permanent crops, permanent meadows and pastures, forest or other wooded land, and other land. The variables reported vary according to the country, highlighting the need for greater standardization of terminology and development of an international agreed land use classification serving as a correlation system through which land use classes from existing national systems could be correlated and harmonized.

- The Global Forest Resources Assessment Programme (FRA) has been developed by FAO since 1946 to meet the need for improved access to reliable and standardized information on trends in the extent, condition, and uses and values of forests. FAO reports regularly at five year intervals on the state of the world forests through FRA, which relies on information provided by the individual countries. For the purpose of national inventories of forest and tree resources, a classification for forest land use has been developed, which has been recommended to countries for setting up their own classification systems with the necessary disaggregation that meets national needs and to reflect the characteristics of forest LU types and classes in the countries. Its classes include country area, forest and other wooded land, forest, other wooded land, other land, inland water, as well as other land with tree cover as a sub-category of other land (and as a link between land cover and land use estimates). The category of other land with tree includes all permanent agricultural tree crops, agro-forestry areas where agriculture is the main land use but the tree cover meets the criteria for forests; and urban parks.

- Designed to be the "global spatial database of sub-national agricultural land-use statistics" <http://www.fao.org/corp/statistics/en/>, AGRO-MAPS provides a dataset of areas under a selected number of primary crops at sub-national level based on the FAOSTAT Commodity List, which is a product classification. The

data used are obtained mainly from published reports on national agricultural censuses, usually carried out every five to ten years or annual statistics reported in published sources.

- FAO has collected number of units and areas of aquaculture facilities by type of grow-out structures (e.g. ponds and tanks, enclosures and pens, cages, raceways and silos, etc), water types (e.g. freshwater, brackish water, and marine water) and type of products (e.g. fishes, crustaceans, and molluscs) from countries through questionnaires, though these data has not been disseminated to public. Classification used in this data collection is based on the agreement at CWP, the coordinating mechanism established in 1959 under FAO with mandate to agree standard concepts, definitions, classifications and methodologies for the collection and collation of fishery statistics and review them regularly.

Based on the classifications used in the above databases/datasets, a consolidated LU classification is proposed in Table 1 below.

Structure and Features of the Proposed LU Classification

Some distinct features of the proposed LU classification are as follows.

- The proposed LU classification reflects the close relationship and integrative nature of the work on LU databases/datasets by various Departments and Divisions at FAO as discussed in the previous section. It is a consolidated summary of the LU classifications used in WCA2010 and the questionnaires for the dataset "Land" under "Resources", which are the higher level and more aggregated classes for agricultural land use; the LU classifications used in AGRO-MAPS and the questionnaires for the dataset "Area Harvested" under "Production," which in fact are the crop classification as in ICC (discussion on the similarity and difference between the product classification and the crop classification can be found in the document of WCA2010); and the LU classification used in FRA2010, which is those classes for forest land use.

- The proposed LU classification provides a great flexibility in terms of application through its hierarchical structure. The higher levels related to land use of different industries, such as agriculture, forestry, fishery/aquaculture, and others. The lower levels include data on commodities or vegetation (e.g. crops such as cereals and oil seeds). As in any other classifications with a hierarchical structure, one can use it at the more aggregated level as in the "WCA2010 Item" column only the seven items, as almost double number of items as in the FAOSTAT column, or follow easily the leads of the ICC code and use the more detailed crop list under Table 3 "Indicative Crop Classification Version 1.0," which is what have been practiced so far with the questionnaires for the dataset "Area Harvested" under "Production" in FAOSTAT and that in AGRO-MAPS.

- The proposed LU classification establishes a linkage between itself with other major international classifications such as ISIC and CPC through the ICC. This is because the ICC was originally developed and built based on the concepts and structures of CPC and ISIC (more discussion on this can be found in the document

of WCA2010). Such as linkage will facilitate better not only for data collection, compilation, but also for data analysis. To construct a LU classification to be used at the global level and linked with internationally recognized socio-economic classifications (e.g. ISIC and CPC) has been the desired characteristic proposed by many but not properly resolved yet.

- The proposed LU classification integrate aquaculture and fishery land use including water bodies by applying consistent concept as agricultural and forest land use. This will assist to develop integrated holistic understandings on land and water use in context of food security and promote management policy to pursue long term sustainability of ecosystem including human communities as a whole. The proposed classifications for water bodies mainly focus on food security aspects.

Some Discussions of the Proposed LU Classification

Nature and Function of the Proposed LU Classification

The proposed LU classification is not intended to be designed in a vacuum. On one hand, it should adhere to the commonly agreed principles resulting from previous theoretical and empirical researches in this field; and on the other hand, it has to be rooted in the existing LU global statistical databases. It thus is not to invent something new, rather it is to build on the existing concepts, definitions, and classifications used by the major global LU databases/datasets, and especially the work that has been done by FAO, to come up with a classification structure that would summarize and consolidate classifications used in different domains, so that people working in various global LU databases, such as the ones mentioned above would find that the classifications used by them have been reflected and included in the proposed structure. The proposed structure could then be used as the common LU classification for the future. By doing so, it would encourage and facilitate more comparability and compatibility among these datasets.

The function of such a LU classification just like many currently used at the global level is mainly to serve as a correlation system through which land use classes from existing national systems could be correlated and global LU databases can be continuously maintained and developed. It is not realistic to expect that, through this proposed LU classification, countries would be asked to change their existing national classification systems that have been developed and applied in response to local decision-making needs.

Irrigation

Irrigation is not included in the proposed LU classification due to two difficulties: One is conceptual and the other is practical one.

Conceptually, a good classification system requires a clear and systematic description of the class. For LU classification, this means that it should distinguish clearly between purpose of the use, and means employed to achieve this purpose, that is, between functional and operational land use. Irrigation is one of many "land use

attributes" used to describe one feature or property of land use on a plot. Other attributes relevant to agriculture, for example, are land tenure, cropping systems, use of fertilizers, mechanization, soil conservation practices, commercial or subsistence orientation (Young 1994). Any of them can be added into the LU classification just as irrigation. Apparently, however, it is not feasible for a classification to accommodate all these attributes at the same time. Besides, more work is required for better understanding irrigation systems and for harmonisation of its definition. It is noted that variables on irrigation have different meanings from country to country and imply major uncertainties when used for global analysis. Data collected for some cases concern only the equipped irrigated areas which do not necessarily correspond to the actually irrigated area.

Other difficulties concern the data available of the related information. At present, there is no summary data for the world total area of agricultural land use with the breakdown of irrigation in FAOSTAT. Agricultural land use data with irrigation breakdown are available for the following 39 individual countries for the years from 2001 to 2005: Australia, Austria, Azerbaijan, Belarus, Channel Islands, Cyprus, Denmark, Ecuador, Finland, Greece, Guadeloupe, Hungary, Iran, Islamic Republic of, Israel, Italy, Japan, Jordan, Kenya, Kuwait, Kyrgyzstan, Lebanon, Mali, Moldova, Nepal, New Zealand, Occupied Palestinian, Territory, Pakistan, Poland, Portugal, Puerto Rico, Romania, Russian Federation, Saudi Arabia, Slovakia, Slovenia, Spain, Sudan, Tunisia, and Turkey. If irrigation is introduced, to be consistent in the treatment within the classification, it should apply to forestry as well. At the current stage, it seems to be difficult to obtain data as detailed as irrigated plantation forestry land on which irrigated plantations of trees or shrubs at the global level.

To exclude irrigation from the classification system does not undermine the importance of irrigation in land use. Rather the related information can be obtained from questionnaires by applying the land use classification with a binary breakdown of every relevant category at the most detailed level.

Indicative Crop Classification (ICC)[1]

As explained in the FAO WCA2010 document: *World Programme for the Census of Agriculture 2010*, the Indicative Crop Classification (ICC) is very closely related to the FAOSTAT Commodity List, which is a product classification. The difference between the two is that the crop classification refers to crops that are grown whereas the FAOSTAT Commodity List 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 cotton seed.

Because crops are still grown therefore they reflect the on-going agricultural activities, the ICC, recommended to be used for the 2010 round of agricultural censuses, has thus been developed based on the latest versions of the two international

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[1] The discussion here can be found in Appendix 3 of *World Programme for the Census of Agriculture 2010* (FAO 2005, Rome).

classifications: the Central Product Classification (CPC) and the activity classification, the International Standard Industrial Classification of All Economic Activities (ISIC). To the latest versions of both CPC and ISIC, FAO has contributed substantial inputs. When describing land use, the ICC is considered to be more appropriate than the FAOSTAT Commodity List.

ICC classifies crops into categories based on three main elements:

- CPC Grouping Structure. The product type is provided in the structure of CPC, especially at the group and class level. Thus, under ICC, crops are first divided into groups such as cereals, vegetables, etc., and each group is further sub-divided 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 75) 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 and economic use of the crop than the botanical similarities between crops. Thus, "Oilseed crops" (Group 4) is a grouping of crops of many different botanical types that produce the same type of product: oil.

- Temporary vs. Permanent Crop. The distinction between temporary and permanent is considered as fundamental to a crop classification. Because of this, some CPC classes are divided into temporary and permanent sub-classes. In ICC, a separate code is provided to indicate whether the crop is temporary or permanent.

Compared with the crop list used in WCA2000, in which it reflected various elements related to crops, including the growing cycle (temporary/permanent), crop species, crop variety (e.g. hybrid/ordinary maize), season (e.g. winter/spring wheat), land type (e.g. wetland/dryland rice), crop use (e.g. pumpkin for food/fodder), type of product (e.g. fresh/dried beans), how the crop is processed (e.g. industrial crops), and cultivation methods (e.g. crops grown under protective cover); in a strict sense, the ICC is more like a classification while the crop list in WCA2000 is more like a questionnaire item list. As a general principle, a particular crop is classified only once in ICC regardless of how the crop is used. Thus, pumpkin is assigned to Sub-class 226 under Group 2 (vegetables). Previously, pumpkins were shown in different parts of the classification as "Pumpkin for food" or "Pumpkin for fodder". Also, pepper is assigned to Order 6211, regardless of whether it is used for fresh or dried produce, the latter in fact was a confusion of the crop with the product.

Table 1: Proposed Land Use Classification to SEEA

1	L1	L2	L3	L4	L5	L6	Proposed LU Classification	WCA2010 ICC Code	FAOSTAT Code	WCA2010 Item
2							*Country area*		6600	
3	100000						Land area		6601	
4		110000					Agricultural area		6610	
5			111000				Arable land and Permanent crops		6620	
6				111100			Arable land		6621	
7					111110		**Land under temporary crops**		6630	1
8						111111	Cereals	1000		
9						111112	Vegetables and melons	2000		
10						111113	Temporary oilseed crops	4100, 4200, 4300		
11						111114	Root/tuber crops with high starch or inulin content	5000		
12						111115	Tempoary spice crops	6210		
13						111116	Leguminous crops	7000		
14						111117	Sugar crops	8000		
15						111119	Other tempoary crops	9210, 9310, 9510, 9600, 9910		
16					111120		**Land under temporary meadows and pastures**		6633	2
17						111121	Temporary grasses and other fodder crops	9110		
18					111130		**Land temporarily fallow**		6640	3
19				111200	111210		**Land under permanent crops**		6650	4
20						111211	Fruit and nuts	3000		
21						111212	Permanent oilseed crops	4400		
22						111213	Beverage and permanent spice crops	6100, 6220		
23						111219	Other permanent crops	9220, 9320, 9400, 9520, 9920		
24			112000	112100	112110		**Permanent meadows and pastures**		6655	5
25						112111	Permanent grasses and other fodder crops	9120		
26		120000					**Forest and other wooded land**			6
27			121000				Forest		6661	

#									
28				121100			Naturally regenerated forest		
29					121110		Primary forest		
30					121120		Other naturally regenerated forest		
31				121200			Planted forest		
32			122000				Other wooded land		
33		130000	131000				**Land with aquaculture facilities**		
34					131110		Hatcheries		
35					131120		Managed grow-out sites		
36						131121	Fish		
37						131122	Crustaceans		
38						131123	Molluscs		
39						131124	Others		
40		140000					**Other land**	6670	7
41	200000						**Inland water**	6680	
42			211000				Areas with aquaculture or holding facilities		
43						211121	Fish		
44						211122	Crustaceans		
45						211123	Molluscs		
46						211124	Others		
47			212000				Other inland water areas		
48				212100			Enhanced areas		
49				212200			Open access waters without enhancement		
50	300000						**Marine water**		
51			311000				Areas with aquaculture or holding facilities		
52						311121	Fish		
53						311122	Crustaceans		
54						311123	Molluscs		
55						311124	Others		
56			312000				Other marine water		
				312100			Enhanced areas		
57				312200			Open access waters without enhancement		

Table 2: Categories and Definitions

Category	Definition
Country area	The total of areas under "Land area" and "Inland water," excluding offshore territorial waters.
Land area	The total of areas under "Agricultural area," "Forest or other wooded land," and "Other land."
Agricultural area	The total of areas under "Arable land and permanent crops" and "Permanent meadows and pastures".
Arable land and Permanent crops	The total of areas under "Arable land" and "Land under permanent crops".
Arable land	Land used for growing temporary crops (Ref: in the land use questionnaire, multiple-cropped areas are counted only once), temporary meadows for mowing or pasture, land under market and kitchen gardens and land temporarily fallow (less than five years). It does not include land under permanent crops or land that is potentially cultivable but is not normally cultivated.
Land under temporary crops	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 as temporary crops. Asparagus, strawberries, pineapples, bananas and sugar cane, for example, are grown as annual crops in some areas. Such crops should be classified as temporary or permanent according to the custom in the country.
Land under temporary meadows and pastures	Land temporarily cultivated with herbaceous forage crops for mowing or pasture. A period of less than five years is used to differentiate between temporary and permanent meadows.
Land temporarily fallow	Arable land that is not seeded for one or more growing seasons. The maximum idle period is usually less than five years. Land remaining fallow for too long may acquire characteristics requiring it to be reclassified, such as "permanent meadows and pastures" (if used for grazing), "forest or other wooded land" (if overgrown with trees), or "other land" (if it becomes wasteland).
Land under permanent crops	Land cultivated with long-term crops which do not have to be replanted for several years (such as cocoa and coffee); land under trees and shrubs producing flowers (such as roses and jasmine); and nurseries (except those for forest trees, which should be classified under "forest"). Permanent meadows and pastures are excluded from land under permanent crops.
Permanent meadows and pastures	Land used permanently (for five years or more) to grow herbaceous forage crops through cultivation or naturally (wild prairie or grazing land).

Category	Definition
Forest	**Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds *in situ*. It does not include land that is predominantly under agricultural or urban land use.** Explanatory notes 1. Forest is determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 meters *in situ*. 2. Includes areas with young trees that have not yet reached but which are expected to reach a canopy cover of 10 percent and tree height of 5 meters. It also includes areas that are temporarily unstocked due to clear-cutting as part of a forest management practice or natural disasters, and which are expected to be regenerated within 5 years. Local conditions may, in exceptional cases, justify that a longer time frame is used. 3. Includes forest roads, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific environmental, scientific, historical, cultural or spiritual interest. 4. Includes windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 hectares and width of more than 20 meters. 5. Includes abandoned shifting cultivation land with a regeneration of trees that have, or is expected to reach, a canopy cover of 10 percent and tree height of 5 meters. 6. Includes areas with mangroves in tidal zones, regardless whether this area is classified as land area or not. 7. Includes rubber-wood, cork oak and Christmas tree plantations. 8. Includes areas with bamboo and palms provided that land use, height and canopy cover criteria are met. 9. <u>Excludes</u> tree stands in agricultural production systems, such as fruit tree plantations, oil palm plantations and agroforestry systems when crops are grown under tree cover. <u>Note:</u> Some agroforestry systems such as the "Taungya" system where crops are grown only during the first years of the forest rotation should be classified as forest.
Naturally regenerated forest	**Forest predominantly composed of trees established through natural regeneration.** Explanatory notes 1. In this context, predominantly means that the trees established through natural regeneration are expected to constitute more than 50% of the growing stock at maturity. 2. Includes coppice from trees established through natural regeneration. 3. Includes naturally regenerated trees of introduced species.
Primary forest	**Naturally regenerated forest of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.** Explanatory note 1. Some key characteristics of primary forests are: - they show natural forest dynamics, such as natural tree species composition, occurrence of dead wood, natural age structure and natural regeneration processes;

	- the area is large enough to maintain its natural characteristics; - there has been no known significant human intervention or the last significant human intervention was long enough ago to have allowed the natural species composition and processes to have become re-established.
Other naturally regenerated forest	**Naturally regenerated forest where there are clearly visible indications of human activities.** Explanatory notes 1. Includes selectively logged-over areas, areas regenerating following agricultural land use, areas recovering from human-induced fires, etc. 2. Includes forests where it is not possible to distinguish whether planted or naturally regenerated. 3. Includes forests with a mix of naturally regenerated trees and planted/seeded trees, and where the naturally regenerated trees are expected to constitute more than 50% of the growing stock at stand maturity.
Planted forest	**Forest predominantly composed of trees established through planting and/or deliberate seeding.** Explanatory notes 1. In this context, predominantly means that the planted/seeded trees are expected to constitute more than 50% of the growing stock at maturity. 2. Includes coppice from trees that were originally planted or seeded. 3. Excludes self-sown trees of introduced species.
Other wooded land	**Land not classified as "Forest", spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds *in situ*; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.** Explanatory notes 1. The definition above has two options: • The canopy cover of trees is between 5 and 10 percent; trees should be higher than 5 meters or able to reach 5 meters *in situ.* or • The canopy cover of trees is less than 5 percent but the combined cover of shrubs, bushes and trees is more than 10 percent. Includes areas of shrubs and bushes where no trees are present. 2. Includes areas with trees that will not reach a height of 5 meters *in situ* and with a canopy cover of 10 percent or more, e.g. some alpine tree vegetation types, arid zone mangroves, etc. 3. Includes areas with bamboo and palms provided that land use, height and canopy cover criteria are met.
Other land	Land not classified as "Agricultural land" and "Forest area and other wooded land," including land used for aquaculture, land occupied by buildings, parks and ornamental gardens, built-up areas, roads or lanes, open spaces needed for storing equipment and products, barren land, wasteland, land under permanent ice, and any other land not reported under previous classes.

Category	Definition
Land with aquaculture facilities	Land used for aquaculture facilities including supporting facilities. Aquaculture refers to the farming of aquatic organisms: fish, molluscs, crustaceans, aquatic plants, crocodiles, alligators, turtles, and amphibians. Farming implying some form of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc. Aquaculture facilities include ponds and tanks (artificial units of varying sizes constructed above or below ground level capable of holding and interchanging waters), raceways and silos (artificial units constructed above or below ground level capable of high rate of water interchange in excess of 20 changes per day) and hatcheries (housing facilities for breeding, nursing and rearing seed of fish, invertebrates or aquatic plants to fry, fingerlings or juvenile stages).
Inland water	Area occupied by lakes, reservoirs, rivers, brooks, streams, ponds, inland canals, dams, and other land-locked (usually freshwater) waters.
Marine water	Oceans and seas including adjacent saltwater areas including internal waters, within national exclusive economic zone. Internal waters is considered as those waters of the sea on the landward side of the baseline used by the national authorities of the coastal country to measure further seawards the width of the territorial sea and any adjacent marine waters, whether salt, brackish, or fresh in character, following the Article 8 of the Informal Composite Negotiating Text/Revision 2 (A/CONF.62/WP.10/Rev.2, 11 April 1980) of the United Nations Third Conference on the Law of the Sea.
Areas with aquaculture or holding facilities	Water surface areas above, on or below which are used for aquaculture facilities including supporting facilities. Aquaculture refers to the farming of aquatic organisms: fish, molluscs, crustaceans, aquatic plants, crocodiles, alligators, turtles, and amphibians. Aquaculture facilities include enclosures and pens (water areas confined by net, mesh and other barriers allowing uncontrolled water interchange), cages (open or covered enclosed structure constructed with net, mesh or any porous materials allowing natural water interchange), barrages (semi-permanent or seasonal enclosures formed by impervious man-made barriers and appropriate natural features), and rafts, ropes, stakes (raft, long lines or stakes used to culture shellfish and seaweeds).
Enhanced Area	Areas with enhancement including stocking, fertilization, enginerring, predator control, habitat modifications, and/or access limits, including Marine Protected Area.
Open access waters without enhancement	Area without any enhancements and access limitation.

Sources: FAOSTAT Resources Questionnaire; WCA2010; and Specification of National Reporting Tables for FRA 2010; and CWP Handbook.

Table 3: Indicative Crop Classification (Version 1.0)

(1 = temporary and 2 = permanent under column "Crop Type")

N	Group	Class	Sub-class	Order	Title	Crop Type	ICC Code
1	1				**Cereals**	1	1000
2		11			Wheat	1	1100
3		12			Maize	1	1200
4		13			Rice	1	1300
5		14			Sorghum	1	1400
6		15			Barley	1	1500
7		16			Rye	1	1600
8		17			Oats	1	1700
9		18			Millets	1	1800
10		19			Other cereals, n.e.c.	1	1900
11			191		Mixed cereals	1	1910
12			192		Other	1	1920
13	2				**Vegetables and melons**	1	2000
14		21			Leafy or stem vegetables	1	2100
15			211		Artichokes	1	2110
16			212		Asparagus	1	2120
17			213		Cabbages	1	2130
18			214		Cauliflowers & broccoli	1	2140
19			215		Lettuce	1	2150
20			216		Spinach	1	2160
21			217		Chicory	1	2170
22			219		Other leafy or stem vegetables, n.e.c.	1	2190
23		22			Fruit-bearing vegetables	1	2200
24			221		Cucumbers	1	2210
25			222		Eggplants (aubergines)	1	2220
26			223		Tomatoes	1	2230
27			224		Watermelons	1	2240
28			225		Cantaloupes and other melons	1	2250
29			226		Pumpkin, squash and gourds	1	2260
30			229		Other fruit-bearing vegetables, n.e.c.	1	2290
31		23			Root, bulb, or tuberous vegetables	1	2300
32			231		Carrots	1	2310
33			232		Turnips	1	2320
34			233		Garlic	1	2330
35			234		Onions (incl. shallots)	1	2340
36			235		Leeks & other alliaceous vegetables		2350
37			239		Other root, bulb, or tuberous vegetables, n.e.c.	1	2390
38		24			Mushrooms and truffles	1	2400
39		29			Vegetables, n.e.c.	1	2900
40	3				**Fruit and nuts**	2	3000
41		31			Tropical and subtropical fruits	2	3100
42			311		Avocados	2	3110
43			312		Bananas & plantains	2	3120
44			313		Dates	2	3130
45			314		Figs	2	3140
46			315		Mangoes	2	3150

47			316		Papayas	2	3160
48			317		Pineapples	2	3170
49			319		Other tropical and subtropical fruits, n.e.c.	2	3190
50		32			Citrus fruits	2	3200
51			321		Grapefruit & pomelo	2	3210
52			322		Lemons and Limes	2	3220
53			323		Oranges	2	3230
54			324		Tangerines, mandarins, clementines	2	3240
55			329		Other citrus fruit, n.e.c.	2	3290
56		33			Grapes	2	3300
57		34			Berries	2	3400
58			341		Currants	2	3410
59			342		Gooseberries	2	3420
60			343		Kiwi fruit	2	3430
61			344		Raspberries	2	3440
62			345		Strawberries	2	3450
63			346		Blueberries		3460
64			349		Other berries	2	3490
65		35			Pome fruits and stone fruits	2	3500
66			351		Apples	2	3510
67			352		Apricots	2	3520
68			353		Cherries & sour cherries	2	3530
69			354		Peaches & nectarines	2	3540
70			355		Pears & quinces	2	3550
71			356		Plums and sloes	2	3560
72			359		Other pome fruits and stone fruits, n.e.c.	2	3590
73		36			Nuts	2	3600
74			361		Almonds	2	3610
75			362		Cashew nuts	2	3620
76			363		Chestnuts	2	3630
77			364		Hazelnuts	2	3640
78			365		Pistachios	2	3650
79			366		Walnuts	2	3660
80			369		Other nuts n.e.c.	2	3690
81		39			Other fruits, n.e.c.	2	3900
82	4				**Oilseed crops**		4000
83		41			Soya beans	1	4100
84		42			Groundnuts	1	4200
85		43			Other temporary oilseed crops	1	4300
86			431		Castor bean	1	4310
87			432		Linseed	1	4320
88			433		Mustard	1	4330
89			434		Niger seed	1	4340
90			435		Rapeseed	1	4350
91			436		Safflower	1	4360
92			437		Sesame	1	4370
93			438		Sunflower	1	4380
94			439		Other temporary oilseed crops, n.e.c.	1	4390
95		44			Permanent oilseed crops	2	4400

96			441		Coconuts	2	4410
97			442		Olives	2	4420
98			443		Oil palms	2	4430
99			449		Other oleaginous fruits, n.e.c.	2	4490
100	5				Root/tuber crops with high starch or inulin content	1	5000
101		51			Potatoes	1	5100
102		52			Sweet potatoes	1	5200
103		53			Cassava	1	5300
104		54			Yams	1	5400
105		59			Other roots & tubers, n.e.c.	1	5900
106	6				Beverage and spice crops		6000
107		61			Beverage crops	2	6100
108			611		Coffee	2	6110
109			612		Tea	2	6120
110			613		Maté	2	6130
111			614		Cocoa	2	6140
112			619		Other beverage crops, n.e.c.	2	6190
113		62			Spice crops		6200
114			621		Temporary spice crops	1	6210
115				6211	Chilies & peppers (capsicum spp.)	1	6211
116				6212	Anise, badian, and fennel	1	6212
117				6219	Other temporary spice crops, n.e.c.	1	6219
118			622		Permanent spice crops	2	6220
119				6221	Pepper (piper spp.)		6221
120				6222	Nutmeg, mace, cardamoms		6222
121				6223	Cinnamon (canella)		6223
122				6224	Cloves	2	6224
123				6225	Ginger	2	6225
124				6226	Vanilla	2	6226
125				6229	Other permanent spice crops, n.e.c.		6229
126	7				Leguminous crops	1	7000
127		71			Beans	1	7100
128		72			Broad beans	1	7200
129		73			Chick peas	1	7300
130		74			Cow peas	1	7400
131		75			Lentils	1	7500
132		76			Lupins	1	7600
133		77			Peas	1	7700
134		78			Pigeon peas	1	7800
135		79			Leguminous crops, n.e.c.	1	7900
136	8				Sugar crops	1	8000
137		81			Sugar beet	1	8100
138		82			Sugar cane	1	8200
139		83			Sweet sorghum	1	8300
140		89			Other sugar crops n.e.c.	1	8900
141	9				Other crops		9000
142		91			Grasses and other fodder crops		9100
143			911		Temporary grass crops	1	9110
144			912		Permanent grass crops	2	9120

145		92			Fibre crops		9200
146			921		Temporary fibre crops	1	9210
147				9211	Cotton	1	9211
148				9212	Jute, kenaf, and other similar crops	1	9212
149				9213	Flax, hemp, and other similar products	1	9213
150				9219	Other temporary fibre crops	1	9219
151			922		Permanent fibre crops	2	9220
152		93			Medicinal, aromatic, pesticidal, or similar crops		9300
153			931		Temporary medicinal, etc. crops	1	9310
154			932		Permanent medicinal, etc. crops	2	9320
155		94			Rubber	2	9400
156		95			Flower crops		9500
157			951		Temporary flower crops	1	9510
158			952		Permanent flower crops	2	9520
159		96			Tobacco	1	9600
160		99			Other crops		9900
161			991		Other crops – temporary	1	9910
162			992		Other crops – permanent	2	9920

Source: WCA2010.

REFERENCE

(To be added)