2011 Farm Environmental Management Survey
Crops Module

PRELIMINARY SECTION: CHARACTERISTICS OF THE OPERATION

The following questions deal with ALL LAND OPERATED

Include
- land rented from other operations
- crown or public land used for agricultural operations

Exclude
- land rented to other operation

1. In 2011, which types of crop did you have on your operation? (Mark all that apply)
   - O Annual field crops for grain, seed or feed or summerfallow
   - O Perennial crops for hay, silage or seed production
   - O Fruits or nuts
   - O Vegetables and potatoes
   - O Greenhouse, nursery or floriculture
   - O No crop, only livestock

2. Which crop type contributed most to your gross farm receipts?
   - O (Got to question 3)
   - O (Go to question 10)
   - O (Go to question 17)
   - O (Go to question 3)
   - O (Go to end)

Definitions:

Annual field crops include wheat, canola, corn, barley, oats, peas, soybeans, lentils, etc.

Perennial forage crops include alfalfa, grass, clover, etc.
SECTION I: CROP AND NUTRIENT MANAGEMENT

**Conventional** tillage is soil disturbance through tillage, planting and other field operations that together incorporate most of the previous crop residues into the soil (less than 30% of the previous crop’s residues remain on the soil after planting). For fallow land, weed control is done by tillage only.

**Conservation tillage** is soil disturbance through tillage, planting and other field operations that together retain a considerable portion (30-60%) of the previous crop residues on the surface. For fallow land, weed control is done by tillage and herbicides.

**No till/zero till** means no tillage prior to planting. Seeding and fertilizer operations are done with implements that minimize soil disturbance. More than 60% of the previous crop’s residues remain on the soil after planting. For fallow land, weed control is done by herbicides only (e.g. chem fallow).
3. What were your five largest annual crops, by land area, harvested in 2011? (Include summer fallow.)

4. What was the harvested area?

5. What area was prepared using the following methods prior to planting?

6. What crop was harvested on this land the previous year? (If there was more than one crop, indicate the one that occupied the largest area.)

<table>
<thead>
<tr>
<th>Crop 1:</th>
<th>O Conventional:</th>
<th>O Conservation:</th>
<th>O No-till (zero-till):</th>
<th>O Other (please specify):</th>
<th>O Not applicable/no tillage required</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. O acres
2. O hectares
3. O arpents

AC01
AC03
AC05
AC10

AC04
AC07[1]
AC08[1]
AC09[1]
AC16[1]
AC06[1]
AC07[1]
AC08[1]
AC09[1]
AC16[1]
AC06[1]
3. What were your five largest annual crops, by land area, harvested in 2011? (Include summer fallow.)

<table>
<thead>
<tr>
<th>AC01</th>
</tr>
</thead>
</table>

4. What was the harvested area?

<table>
<thead>
<tr>
<th>AC03</th>
</tr>
</thead>
</table>

5. What area was prepared using the following methods prior to planting?

<table>
<thead>
<tr>
<th>AC05</th>
</tr>
</thead>
</table>

6. What crop was harvested on this land the previous year? (If there was more than one crop, indicate the one that occupied the largest area.)

<table>
<thead>
<tr>
<th>AC10</th>
</tr>
</thead>
</table>

[2]

Crop 2: ________________

<table>
<thead>
<tr>
<th>AC04</th>
</tr>
</thead>
</table>

1. O Conventional: ________________

<table>
<thead>
<tr>
<th>AC07[2]</th>
</tr>
</thead>
</table>

2. O Conservation: ________________

<table>
<thead>
<tr>
<th>AC08[2]</th>
</tr>
</thead>
</table>

3. O No-till (zero-till): ________________

<table>
<thead>
<tr>
<th>AC09[2]</th>
</tr>
</thead>
</table>

4. O Other (please specify)__________: AC06[2]

<table>
<thead>
<tr>
<th>AC16[2]</th>
</tr>
</thead>
</table>

5. O Not applicable/no tillage required
3. What were your five largest annual crops, by land area, harvested in 2011? (Include summer fallow.)

4. What was the harvested area?

5. What area was prepared using the following methods prior to planting?

6. What crop was harvested on this land the previous year? (If there was more than one crop, indicate the one that occupied the largest area.)

<table>
<thead>
<tr>
<th>Crop 3:</th>
<th>1 O Conventional: [AC07]</th>
<th>2 O Conservation: [AC08]</th>
<th>3 O No-till (zero-till): [AC09]</th>
<th>4 O Other (please specify): [AC06]</th>
<th>5 O Not applicable/no tillage required</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 O acres</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 O hectares</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 O arpents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For Information Only
3. What were your five largest annual crops, by land area, harvested in 2011? (Include summer fallow.)

4. What was the harvested area?

5. What area was prepared using the following methods prior to planting?

6. What crop was harvested on this land the previous year? (If there was more than one crop, indicate the one that occupied the largest area.)

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>__________</td>
<td>O Conventional:</td>
<td>O Conservation:</td>
<td>O Other (please specify):</td>
</tr>
<tr>
<td>O acres</td>
<td>O hectares</td>
<td>O arpents</td>
<td>AC01[4]</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>AC05[4]</td>
</tr>
<tr>
<td>O Not applicable/no tillage required</td>
<td></td>
<td></td>
<td>AC09[4]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AC10[4]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AC16[4]</td>
</tr>
</tbody>
</table>
3. What were your five largest annual crops, by land area, harvested in 2011? (Include summer fallow.)

<table>
<thead>
<tr>
<th>Area</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>acres</td>
<td></td>
</tr>
<tr>
<td>hectares</td>
<td></td>
</tr>
<tr>
<td>arpents</td>
<td></td>
</tr>
</tbody>
</table>

4. What was the harvested area?

5. What area was prepared using the following methods prior to planting?

<table>
<thead>
<tr>
<th>Method</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional</td>
<td></td>
</tr>
<tr>
<td>Conservation</td>
<td></td>
</tr>
<tr>
<td>No-till (zero-till)</td>
<td></td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
</tr>
<tr>
<td>Not applicable/no tillage required</td>
<td></td>
</tr>
</tbody>
</table>

6. What crop was harvested on this land the previous year? (If there was more than one crop, indicate the one that occupied the largest area.)

7. If you answered conservation tillage for any of the crops in question 5, when did you first practice conservation tillage on your operation?
8. If you answered no tillage/zero tillage for any of the crops in question 5, when did you first practice no tillage/zero tillage on your operation?

1. Prior to 1990
2. Between 1990 and 1994
4. Between 2000 and 2004
5. After 2004
9. How were the crop residues for AC01 managed in 2011? 

Were they… *(Mark all that apply)*

1 O … chopped and spread?
2 O … spread without being chopped?
3 O … baled (straw)?
4 O … burned?
5 O … incorporated into the soil?
6 O … collected (chaff portion)?
7 O … grazed by livestock?
8 O … left on the ground with no additional management?
9 O other (specify):

10 O Not applicable/ no crop residues

If no perennial forage crops indicated in Q1, Go to question 17.

<table>
<thead>
<tr>
<th>Perennial crop 1: PC01[1]</th>
<th>Perennial crop 2: PC01[2]</th>
<th>11. What was the area?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 O acres 2 hectares 3 arpents</td>
<td>1 O acres 2 hectares 3 arpents</td>
<td>PC03[1] PC03[2]</td>
</tr>
</tbody>
</table>

For Information Only
10. What were your three largest perennial crops, by land area, harvested in 2011? (Treat a mix as a single crop.)

11. What was the area?

12. How many cuts or harvest operations were made in 2011?

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 O acres  
2 O hectares  
3 O arpents

13. Was it grown in rotation with annual crops on the same land?

14. How many years were annual crops grown in this rotation cycle?

15. Which annual crops were grown in this rotation cycle?

16. How many years was the perennial crop grown in this rotation cycle?

|-------------------|---------|---------|---------|

1 O Yes  
2 O No (Go to Perennial crop 2)

|-------------------|---------|---------|---------|

1 O Yes  
2 O No (Go to Perennial crop 3)

|-------------------|---------|---------|---------|

1 O Yes  
2 O No (If fruit/nut crops indicated in Q1, Go to question 17, if not, go to question 19)
If no fruit/nut crops indicated in Q2, Go to question 19.

<table>
<thead>
<tr>
<th>17.</th>
<th>What were your three largest fruit or nut crops, by land area, harvested in 2011?</th>
<th>18.</th>
<th>What was the area?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit/nut crop 1:</td>
<td>_______________</td>
<td>_______________</td>
<td>_______________</td>
</tr>
<tr>
<td></td>
<td>_______________</td>
<td>_______________</td>
<td>FC03[1]</td>
</tr>
<tr>
<td></td>
<td>1 O acres</td>
<td>2 O hectares</td>
<td>3 O arpents</td>
</tr>
<tr>
<td>Fruit/nut crop 2:</td>
<td>_______________</td>
<td>_______________</td>
<td>_______________</td>
</tr>
<tr>
<td></td>
<td>1 O acres</td>
<td>2 O hectares</td>
<td>3 O arpents</td>
</tr>
<tr>
<td>Fruit/nut crop 3:</td>
<td>_______________</td>
<td>_______________</td>
<td>_______________</td>
</tr>
<tr>
<td></td>
<td>_______________</td>
<td>_______________</td>
<td>FC03[3]</td>
</tr>
<tr>
<td></td>
<td>1 O acres</td>
<td>2 O hectares</td>
<td>3 O arpents</td>
</tr>
</tbody>
</table>
Commercial fertilizer application

The following questions refer to your commercial fertilizer application practices.

19. Were any commercial fertilizers or micronutrients applied to your operation between harvest 2010 and summer 2011?
   1. Yes
   2. No (Go to question 30)

20. What methods were used to apply commercial fertilizer or micronutrients to the land where (crop1) was grown? *(Mark all that apply)*

<table>
<thead>
<tr>
<th>Method used</th>
<th>Crop 1 (Please specify):</th>
<th>Crop 2 (Please specify):</th>
<th>Crop 3 (Please specify):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall subsurface application (e.g. banding or injection)</td>
<td>1 O</td>
<td>1 O</td>
<td>1 O</td>
</tr>
<tr>
<td>Fall surface spread and worked into the soil</td>
<td>2 O</td>
<td>2 O</td>
<td>2 O</td>
</tr>
<tr>
<td>Fall or winter surface spread and not worked into the soil</td>
<td>3 O</td>
<td>3 O</td>
<td>3 O</td>
</tr>
<tr>
<td>Spring pre-seeding subsurface application (e.g. banding or injection)</td>
<td>4 O</td>
<td>4 O</td>
<td>4 O</td>
</tr>
<tr>
<td>Spring pre-seeding surface spread and worked into the soil</td>
<td>5 O</td>
<td>5 O</td>
<td>5 O</td>
</tr>
<tr>
<td>Spring pre-seeding surface spread and not worked into the soil</td>
<td>6 O</td>
<td>6 O</td>
<td>6 O</td>
</tr>
<tr>
<td>Applied with seed</td>
<td>7 O</td>
<td>7 O</td>
<td>7 O</td>
</tr>
<tr>
<td>Subsurface application during seeding in separate band away from seed</td>
<td>8 O</td>
<td>8 O</td>
<td>8 O</td>
</tr>
<tr>
<td>Subsurface application during seeding in separate band away from seed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-seed or post-emergent application (includes side dress of row crops)</td>
<td>9 O</td>
<td>9 O</td>
<td>9 O</td>
</tr>
<tr>
<td>Other</td>
<td>10 O</td>
<td>10 O</td>
<td>10 O</td>
</tr>
</tbody>
</table>
If no perennial forage crops indicated in Q1, Go to Question 23

<table>
<thead>
<tr>
<th>Perennial Crop 1</th>
<th>21. Thinking of all your commercial fertilizer or micronutrients spread on the land where your perennial crop was grown, what percent was applied…</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Note: Percent should add up to 100</td>
</tr>
<tr>
<td></td>
<td>22. How often was commercial fertilizer or micronutrients applied to the land?</td>
</tr>
</tbody>
</table>
| Perennial Crop 1 | right after harvest 2010?  
|  | ______ | FU04[1] |
|  | during winter?  
|  | ______ | FU05[1] |
|  | before crop growth began in 2011?  
|  | ______ | FU06[1] |
|  | after crop growth began in 2011?  
|  | ______ | FU07[1] |
| Perennial Crop 2 | right after harvest 2010?  
|  | ______ | FU04[2] |
|  | during winter?  
|  | ______ | FU05[2] |
|  | before crop growth began in 2011?  
|  | ______ | FU06[3] |
|  | after crop growth began in 2011?  
|  | ______ | FU07[4] |
| Perennial Crop 2 | right after harvest 2010?  
|  | ______ | FU04[2] |
|  | during winter?  
|  | ______ | FU05[2] |
|  | before crop growth began in 2011?  
|  | ______ | FU06[3] |
|  | after crop growth began in 2011?  
|  | ______ | FU07[4] |

Go to Question 26
23. What methods were used to apply commercial fertilizer or micronutrients to the land where your fruit/nut crops were grown? *(Mark all that apply)*

<table>
<thead>
<tr>
<th>Method used</th>
<th>Fruit/nut Crop 1</th>
<th>Fruit/nut Crop 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface spread and not worked into the soil</td>
<td>1 O</td>
<td>1 O</td>
</tr>
<tr>
<td>Surface spread and worked into soil</td>
<td>2 O</td>
<td>2 O</td>
</tr>
<tr>
<td>Side dress in row or beside row</td>
<td>3 O</td>
<td>3 O</td>
</tr>
<tr>
<td>Through drip irrigation nozzles</td>
<td>4 O</td>
<td>4 O</td>
</tr>
<tr>
<td>Through irrigation sprinklers</td>
<td>5 O</td>
<td>5 O</td>
</tr>
<tr>
<td>Other (specify): _________________________</td>
<td>6 O</td>
<td>(Please specify):</td>
</tr>
</tbody>
</table>

24. Thinking of all your commercial fertilizer or micronutrients spread on the land where your perennial crop was grown, what percent was applied…

*Note: Percent should add up to 100*

25. How often was commercial fertilizer or micronutrients applied to the land?

<table>
<thead>
<tr>
<th>Fruit/nut Crop 1</th>
<th>right after harvest 2010?</th>
<th>FU11[1]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 O</td>
</tr>
<tr>
<td></td>
<td>during winter?</td>
<td>2 O</td>
</tr>
<tr>
<td></td>
<td>before crop growth began in 2011?</td>
<td>3 O</td>
</tr>
<tr>
<td></td>
<td>after crop growth began in 2011?</td>
<td>4 O</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fruit/nut Crop 2</th>
<th>right after harvest 2010?</th>
<th>FU15[2]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 O</td>
</tr>
</tbody>
</table>
26. When deciding on the rate and amount of fertilizer to apply, what importance did the following factors have?

<table>
<thead>
<tr>
<th>Factor</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil testing or plant analysis:</td>
<td>1 O</td>
<td>2 O</td>
<td>3 O</td>
<td>4 O</td>
</tr>
<tr>
<td>Cost of fertilizer or crop prices:</td>
<td>1 O</td>
<td>2 O</td>
<td>3 O</td>
<td>4 O</td>
</tr>
<tr>
<td>Soil moisture, temperature or other growing conditions:</td>
<td>1 O</td>
<td>2 O</td>
<td>3 O</td>
<td>4 O</td>
</tr>
<tr>
<td>Nutrient requirement of crop grown or carryover nutrients from previous crop:</td>
<td>1 O</td>
<td>2 O</td>
<td>3 O</td>
<td>4 O</td>
</tr>
<tr>
<td>External information sources (e.g. crop advisor, fertilizer dealer, provincial recommendations, neighbours etc.):</td>
<td>1 O</td>
<td>2 O</td>
<td>3 O</td>
<td>4 O</td>
</tr>
<tr>
<td>Amount used in the past or based on experience:</td>
<td>1 O</td>
<td>2 O</td>
<td>3 O</td>
<td>4 O</td>
</tr>
<tr>
<td>Amount allowed by regulation:</td>
<td>1 O</td>
<td>2 O</td>
<td>3 O</td>
<td>4 O</td>
</tr>
<tr>
<td>Other (specify):</td>
<td>1 O</td>
<td>2 O</td>
<td>3 O</td>
<td>4 O</td>
</tr>
</tbody>
</table>

27. Between harvest 2010 and summer 2011, did you apply both commercial fertilizer and manure to the same land?
   1 O Yes
   3 O No (Go to Question 29)

28. Was the amount of commercial fertilizer reduced to compensate for the nutrient content of the manure?
   1 O Yes
   3 O No
29. How often is soil tested for nutrient content for a typical field? (*If it varies for different fields, give the average.*)
   1. Every year
   2. Every 2-3 years
   3. Every 4-5 years
   4. Every 6 years or more
   5. Do not test soil

**Liquid or semi-solid manure**

30. Between fall 2010 and summer 2011, which did you spread more of on your operation: solid manure or liquid or semi-solid manure (e.g. pumpable)?
   1. Solid manure (*Go to Q44*)
   2. Liquid or semi-solid manure
   3. Spread the same amount of both solid and liquid or semi-solid manure
   4. Did not spread manure (*Go to Q57*)

31. In 2011, what were your two largest crops, by area, grown on land that had liquid or semi-solid manure spread on it?

   **Crop 1:** ______________  Other (please specify): ______________  **LM03[1]**

   **Crop 2:** ______________  Other (please specify): ______________  **LM03[2]**

32. What was the area of ^**Crop 1** that liquid or semi-solid manure was applied to?
   __________  1. acres  2. hectares  3. arpents  **LM05[1]**

33. Which of the following methods were used to apply liquid or semi-solid manure to the land where ^**Crop 1** was grown in 2011? (*Mark all that apply*)
   1. Direct injection into the soil (*Go to Q35*)
   2. Low boom applicator, below crop canopy (e.g. sleighfoot or sidedress) (*Go to Q35*)
   3. Spread and not worked into the soil (*Go to Q35*)
   4. Spread and worked into the soil

34. In general, was the liquid or semi-solid manure worked into the soil...
35. Thinking of all your liquid or semi-solid manure spread on the land where ^Crop 1 was grown, what percent of that manure was applied …
   LM08[1]… right after harvest 2010? _______
   LM09[1]… during winter? _______
   LM10[1]… before crop growth began in 2011? _______
   LM11[1]… after crop growth began in 2011? _______
   (Percent values for this question should add up to 100)

36. In general, how often is liquid or semi-solid manure applied to the land where ^Crop 1 was grown?
   1 O More than twice a year
   2 O Twice a year
   3 O Once per year
   4 O Once every two years
   5 O Less than once every two years

37. What was the area of ^Crop2 that liquid or semi-solid manure was applied to?
   _________ 1 O acres 2 O hectares 3 O arpents  LM05[2]

38. Which of the following methods were used to apply liquid or semi-solid manure to the land where ^Crop 2 was grown in 2011? (Mark all that apply)
   1 O Direct injection into the soil (Go to Q40)
   2 O Low boom applicator, below crop canopy (e.g. sleighfoot or sidedress) (Go to Q40)
   3 O Spread and not worked into the soil (Go to Q40)
   4 O Spread and worked into the soil

39. In general, was the liquid or semi-solid manure worked into the soil…
   1 O on the same day as it was spread?
   2 O 1-2 days after it was spread?
   3 O 3-5 days after it was spread?
   4 O more than 5 days after it was spread?
40. Thinking of all your liquid or semi-solid manure spread on the land where ^Crop 2 was grown, what percent of that manure was applied …
   LM08[2]… right after harvest 2010? ________
   LM09[2]… during winter? ________
   LM10[2]… before crop growth began in 2011? ________
   LM11[2]… after crop growth began in 2011? ________
   (Percent values for this question should add up to 100)

LM12[2] 41. In general, how often is liquid or semi-solid manure applied to the land where ^Crop 2 was grown?
   1 O More than twice a year
   2 O Twice a year
   3 O Once per year
   4 O Once every two years
   5 O Less than once every two years

LM13 42. In 2011, was the liquid or semi-solid manure tested for its nutrient content before being applied to the land?
   1 O Yes
   2 O No

43. What importance did the following factors have when deciding on the rate and amount of liquid or semi-solid manure to apply?

<table>
<thead>
<tr>
<th>Factor</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil testing or plant analysis:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Cost of fertilizer or amount of fertilizer applied:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Cost of transporting manure or distance from manure storage:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Amount of land available to receive manure:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Soil moisture, temperature or other growing conditions:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Nutrient content of manure:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Nutrient requirement of crop grown or carryover nutrients from last crop:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td>None</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------</td>
<td>--------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td><strong>External sources of information (Crop advisor, fertilizer dealer, provincial recommendations, neighbours etc.)</strong></td>
<td>1 O</td>
<td>2 O</td>
<td>3 O</td>
<td>4 O</td>
</tr>
<tr>
<td><strong>The quantity of fertilizer used in the past, or based on experience:</strong></td>
<td>1 O</td>
<td>2 O</td>
<td>3 O</td>
<td>4 O</td>
</tr>
<tr>
<td><strong>Other factor (Please specify):</strong></td>
<td>1 O</td>
<td>2 O</td>
<td>3 O</td>
<td>4 O</td>
</tr>
</tbody>
</table>

**Solid Manure**

44. In 2011, what were your two largest crops, by area, grown on land that had solid manure spread on it?  
[NOTE: we are interested in manure spread between harvest 2010 and summer 2011]  

**SM01[1]** Crop 1: ____________  Other (please specify): ____________  **SM02[1]**

**SM01[2]** Crop 2: ____________  Other (please specify): ____________  **SM02[2]**

45. What was the area of ^**Crop 1** that solid manure was applied to?  

__________  1 O acres  2 O hectares  3 O arpents  **SM04[1]**

46. Which of the following methods were used to apply solid manure to the land where ^**Crop 1** was grown in 2011? (Mark all that apply)  
1 O Spread and not worked into the soil (Go to Q48)  
2 O Spread and worked into the soil

**SM05[1]**

47. In general, was the solid manure worked into the soil…  
1 O less than 2 hours after application?  
2 O more than 2 hours after application on the same day as it was spread?  
3 O 1-2 days after it was spread?  
4 O 3-5 days after it was spread?
O more than 5 days after it was spread?

48. Thinking of all your solid manure spread on the land where ^Crop 1 was grown, what percent of that manure was applied …
   SM07[1]… right after harvest 2010? _______
   SM08[1]… during winter? _______
   SM09[1]… before crop growth began in 2011? _______
   SM10[1]… after crop growth began in 2011? _______
   (Note: percent values for this question should add up to 100)

49. How often is solid manure applied to the land where ^Crop 1 is grown?
   1 O More than twice a year
   2 O Twice a year
   3 O Once per year
   4 O Once every two years
   5 O Less than once ever two years

50. What was the area of ^Crop 2 that solid manure was applied to?
   __________ 1 O acres  2 O hectares  3 O arpents

51. Which of the following methods were used to apply solid manure to the land where ^Crop 2 was grown in 2011? (Mark all that apply)
   1 O Spread and not worked into the soil (Go to Q53)
   2 O Spread and worked into the soil

52. In general, was the solid manure worked into the soil…
   1 O less than 2 hours after application?
   2 O more than 2 hours after application on the same day as it was spread?
   3 O 1-2 days after it was spread?
   4 O 3-5 days after it was spread?
   5 O more than 5 days after it was spread?

53. Thinking of all your solid manure spread on the land where ^Crop 2 was grown, what percent of that manure was applied …
   SM07[2]… right after harvest 2010? _______
54. How often is solid manure applied to the land where \(^{\text{Crop 2}}\) is grown?
   1. O More than twice a year
   2. O Twice a year
   3. O Once per year
   4. O Once every two years
   5. O Less than once every two years

55. In 2011, was the solid manure tested for its nutrient content before being applied to the land?
   1. O Yes
   3. O No

56. What importance did the following factors have when deciding on the rate and amount of solid manure to apply?

<table>
<thead>
<tr>
<th></th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil testing or plant analysis:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Cost of fertilizer or amount of fertilizer applied:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Cost of transporting manure or distance from manure storage:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Amount of land available to receive manure:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Soil moisture, temperature or other growing conditions:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Nutrient content of manure:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Nutrient requirement of crop grown or carryover nutrients from last crop:</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>External sources of information (Crop advisor, fertilizer dealer, provincial recommendations, neighbours etc.)</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>
### The quantity of fertilizer used in the past, or based on experience:

<table>
<thead>
<tr>
<th>Option</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 O</td>
<td>2 O</td>
<td>3 O</td>
<td>4 O</td>
</tr>
</tbody>
</table>

Other factor *(Please specify):*

<table>
<thead>
<tr>
<th>Option</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 O</td>
<td>2 O</td>
<td>3 O</td>
<td>4 O</td>
</tr>
</tbody>
</table>

### Section 2: Pesticide application practices

The following questions refer to your pesticide application practices.

57. In 2011, were any herbicides applied to your operation?

1 O Yes
3 O No *(Go to question 59)*

58. What crops did you apply herbicides to during the 2011 growing season?

<table>
<thead>
<tr>
<th>Crop 1:</th>
<th>Number of applications:</th>
<th>Crop 2:</th>
<th>Number of applications:</th>
<th>Crop 3:</th>
<th>Number of applications:</th>
</tr>
</thead>
</table>

59. In 2011, were any insecticides applied to your operation?

1 O Yes
3 O No *(Go to question 61)*

60. What crops did you apply insecticides to during the 2011 growing season?

<table>
<thead>
<tr>
<th>Crop 1:</th>
<th>Number of applications:</th>
<th>Crop 2:</th>
<th>Number of applications:</th>
</tr>
</thead>
</table>

For Information Only
61. In 2011, were any fungicides applied to your operation?
   1 O Yes
   3 O No  (Go to question 63)

62. What crops did you apply fungicides to during the 2011 growing season?

63. Now, thinking about all of your pesticide use, what importance did the following factors have in deciding if and when to apply herbicides, insecticides or fungicides?
   If you do not use pesticides, go to Q67.

<table>
<thead>
<tr>
<th>Factor</th>
<th>High (1)</th>
<th>Medium (2)</th>
<th>Low (3)</th>
<th>None (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal experience, historical patterns or regular schedule:</td>
<td>PU13[1]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crop condition or growth stage:</td>
<td>PU13[2]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather conditions:</td>
<td>PU13[3]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic factors such as input costs or crop prices:</td>
<td>PU13[4]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detection of pests, field scouting or regional pest data:</td>
<td>PU13[5]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advice from other farm operators:</td>
<td>PU13[6]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advice from specialists (e.g. pesticide sales representative, agronomist, crop consultant):</td>
<td>PU13[7]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General recommendations provided through publications:</td>
<td>PU13[8]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other factor <em>(Please specify)</em>:</td>
<td>PU13[9]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

64. In 2011, did a formally certified or licensed person apply or supervise the application of herbicides, insecticides or fungicides on your operation?
   1 O Yes, all applications
   2 O Yes, some applications
   3 O No

65. In 2011, at which of the following times was the sprayer, used to apply herbicides, insecticides or fungicides, calibrated? (Mark all that apply)
   1 O At the beginning of the crop season, before the first application
   2 O Before every use
   3 O When it broke down or major components were replaced
   4 O Between applications of different types of pesticides
   5 O Did not calibrate
   6 O Not applicable, sprayer not used on your operation
   7 O Not applicable, spraying done by custom
   8 O Other (specify):________________________

66. In 2011, were any of the following methods used to control herbicide, insecticide or fungicide spray drift on your operation? (Mark all that apply)
   1 O Apply only when winds are below recommended thresholds for application rate/wind speed
   2 O Use low drift or low pressure nozzles
   3 O Use shrouded booms or low boom applicators
   4 O Add anti-drift agents or chemical to the herbicides, insecticides or fungicides
   5 O Leave untreated buffer zones
   6 O Other (specify):________________________
   7 O None of the above

67. In 2011, were any of the following methods used specifically to control weeds, insects or diseases? (Mark all that apply)
   1 O Plant crop varieties that are resistant to specific pesticides
   2 O Rotate crops to disrupt pest cycles
   3 O Eliminate, remove or incorporate diseased plants, pruning residues or cull piles
   4 O Use fall planted species (e.g. winter wheat, fall rye)
Section 3: Land and water management practices

The following questions refer to land and water management practices on your operation.

68. In 2011, were any of the following practices used on your operation?

   LU01  •  Cover or companion crops
          1  O Yes
          3  O No

   LU02  Over what area? __________________ 1  O acres  2  O hectares  3  O arpents  LU03

   LU04  •  Winter cover or green manure
          3  O Yes
          3  O No

   LU05  Over what area? __________________ 1  O acres  2  O hectares  3  O arpents  LU06

   LU07  •  Terracing, contour or across the slope cropping
          1  O Yes
          3  O No

   LU08  Over what area? __________________ 1  O acres  2  O hectares  3  O arpents  LU09

   LU10  •  Permanent perennial forages on erodible land
          1  O Yes
          3  O No

   LU11  Over what area? __________________ 1  O acres  2  O hectares  3  O arpents  LU12

   LU13
- Adding straw to improve soil condition (e.g., mulching)
  - O Yes
  - O No
  - Over what area? ______________
    - LU14

- Placing eroded soil back on hilltops
  - O Yes
  - O No
  - Over what area? ______________
    - LU16

- Controlled or slow release nitrogen fertilizer products (e.g., urease inhibitors, ESN technology)
  - O Yes
  - O No
  - Over what area? ______________
    - LU19

- Field shelterbelts/windbreaks
  - O Yes
  - O No
  - Over what area? ______________
    - LU22

- Surface or sub-surface drainage of land
  - O Yes
  - O No
  - Over what area? ______________
    - LU25

- Restore or plug previously drained wetlands to natural condition
  - O Yes
  - O No
  - Over what area? ______________
    - LU28

- Other (please specify): ____________________________
  - O Yes
    - LU31

LU14 LU15
LU16 LU17
LU18 LU19
LU20 LU21
LU22 LU23
LU24 LU25
LU26 LU27
LU28 LU29
LU30 LU31
LU32
3 O No

LU33 Over what area? ______________ 1 O acres 2 O hectares 3 O arpents

LU35 59. In 2011, was GPS equipment or products used on your operation?
1 O Yes
3 O No

LU36 70. Was the GPS equipment used… (Mark all that apply)
1 O As a tracking or guidance system on tractor to eliminate overlaps and misses in field operations (e.g. seeding, fertilizing, spraying and harvesting)?
2 O To generate yield maps from a combine yield monitor?
3 O To target or vary fertilizer or manure application rates across a field?
4 O To target or vary pesticide application rates across a field?
5 O To design improved drainage of land?
6 O Other (please specify): ________________________________
7 O None of the above

The following questions are about land use changes.

LU38 71. In 2011, what was the total woodland area on your operation?
______________ 1 O acres 2 O hectares 3 O arpents

LU40 72. Since 2006, how much of your land area was changed FROM woodland TO pasture or cultivated cropland?
______________ 1 O acres 2 O hectares 3 O arpents

LU42 73. Since 2006, how much of your land area was changed FROM pasture or cultivated cropland TO woodland?
______________ 1 O acres 2 O hectares 3 O arpents
74. In 2011, how much of your land area was changed FROM cultivated cropland TO pasture?

______________  ¹ O acres  ² O hectares  ³ O arpents

75. In 2011, how much of your land area was changed FROM pasture TO cultivated cropland?

______________  ¹ O acres  ² O hectares  ³ O arpents

Wetlands and water management

Seasonal wetlands

76. Were there any seasonal wetlands on your cropland in 2011?

  ¹ O Yes
  ³ O No (Go to Q80)

Seasonal wetlands normally have water present until mid-summer or early fall and, in most years it is too wet to plant a crop in these areas. Examples include ponds, sloughs, potholes, marshes and treed wet swamps. Don’t consider permanent wetlands.

77. Did you maintain a riparian buffer around or beside the seasonal wetlands?

  ¹ O Yes, all
  ² O Yes, some
  ³ O No (Go to Q80)

A riparian buffer is permanent planted or natural vegetation adjacent to a seasonal or permanent wetland or waterway, extending upslope from the normal shoreline.

78. What type of vegetation was your riparian buffer composed of? (Mark all that apply)

  ¹ O Trees
  ² O Shrubs
  ³ O Grasses
  ⁴ O Legumes
  ⁵ O Other (please specify): ____________________________
79. Was the riparian buffer harvested or left idle?
   1. Harvested, all
   2. Harvested, some
   3. Left idle

**Permanent wetlands**

80. Were there any permanent wetlands on your cropland in 2011?
   1. Yes
   2. No (Go to Q84)

*Permanent wetlands* are similar to seasonal wetlands, except they are usually flooded year-round, except for during periods of extreme drought. They also include lakes, reservoirs and dugouts.

81. Did you maintain a riparian buffer around or beside the permanent wetlands?
   1. Yes, all
   2. Yes, some
   3. No (Go to Q84)

82. What type of vegetation was your riparian buffer composed of? *(Mark all that apply)*
   1. Trees
   2. Shrubs
   3. Grasses
   4. Legumes
   5. Other (please specify): ________________________

83. Was the riparian buffer harvested or left idle?
   1. Harvested, all
   2. Harvested, some
   3. Left idle

**Waterways**

84. Were there any waterways on your cropland in 2011?
   1. Yes
Waterways are channels that contain flowing water year round or for at least part of the year, usually in spring. Examples include drainage ditches, draws or coulees, grassed waterways, streams, creeks and rivers.

85. Did you maintain a riparian buffer around or beside the waterways?
   1. O Yes, all
   2. O Yes, some
   3. O No (Go to Q88)

86. What type of vegetation was your riparian buffer composed of? (Mark all that apply)
   1. O Trees
   2. O Shrubs
   3. O Grasses
   4. O Legumes
   5. O Other (please specify): ____________________________

87. Was the riparian buffer harvested or left idle?
   1. O Harvested, all
   2. O Harvested, some
   3. O Left idle

Domestic water

88. In 2011, were there any wells on your operation that are no longer used?
   1. O Yes
   3. O No (Go to Q90)

89. Have these wells been decommissioned?
   1. O All decommissioned
   2. O Some decommissioned
   3. O None

Energy

90. Do you use or generate any of the following alternative or renewable energy sources on your operation? (Mark all that apply)
   1. O Solar
   2. O Wind
3. O Biogas or methane
4. O Biomass (e.g. wood, crop residue, other organic based fuels)
5. O Hydro electricity generated on your operation
6. O Other (please specify): ____________________________  LU67
7. O None

Section 4: Wildlife Damage

The following questions refer to wildlife damage on your operation.

91. In 2011, were any of your crops damaged by wildlife?
   1. O Yes
   2. O No (Go to Q93)

92. What were your three most damaged crops, by area?

<table>
<thead>
<tr>
<th>What were your three most damaged crops, by area?</th>
<th>WD02[1]</th>
<th>WD02[2]</th>
<th>WD02[3]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. O 0-5%</td>
<td>1. O 0-5%</td>
<td>1. O 0-5%</td>
<td></td>
</tr>
<tr>
<td>2. O 6-10%</td>
<td>2. O 6-10%</td>
<td>2. O 6-10%</td>
<td></td>
</tr>
<tr>
<td>4. O 31% or more</td>
<td>4. O 31% or more</td>
<td>4. O 31% or more</td>
<td></td>
</tr>
</tbody>
</table>

93. Since 2006, were any of the following practices used to reduce the impact of wildlife damage to your crops? (Mark all that apply)
   1. O Fencing to protect crops
   2. O Scaring devices or repellent systems
   3. O Shooting or trapping by yourself or others
   4. O Planting lure crops
   5. O Planting less palatable crops
   6. O Border cropping
   7. O Netting
   8. O Other (please specify): ____________________________  WD06
   9. O None
Section 5: Waste management and hazardous materials

The following questions refer to waste management and hazardous materials on your operation.

94. In 2011, did you store commercial fertilizers on your operation?
   1. O Yes
   3. O No (Go to Q96)

95. Did the commercial fertilizer storage site have a containment system to handle spills?
   1. O Yes
   3. O No

96. In 2011, did you store pesticides (herbicides, insecticides or fungicides) on your operation?
   1. O Yes
   3. O No (Go to Q98)

97. Did the pesticide storage site have a containment system to handle spills?
   1. O Yes
   3. O No

98. In 2011, did you store fuel (diesel or gasoline) on your operation?
   1. O Yes
   3. O No (Go to Q100)

99. Did the fuel storage site have a containment system to handle spills?
   1. O Yes
   3. O No

100. In 2011, did you store other petroleum products (oil, grease or waste oil) on your operation?
    1. O Yes
    3. O No (Go to Q102)

101. Did the storage site have a containment system to handle petroleum product spills?
    1. O Yes
    3. O No
102. In 2011, how was wastewater managed on your operation? (Mark all that apply)

- O Discharged to a constructed retention or holding pond
- O Discharged to a septic or sewer system
- O Discharged into a vegetative filter strip or constructed wetland
- O Applied to agricultural land by gravity release, pumping, spreading, or irrigation system
- O Included in the liquid manure system
- O Collected in holding or storage tank
- O Other (please specify): ____________________________
- O Not actively managed. Wastewater removed through natural drainage.
- O Not applicable/ no wastewater.

Wastewater includes water from cleaning sprayers and other farm equipment, water from washing farm produce, milkhouse, pens or facilities, silage leakage or runoff from livestock pens, etc.

Section 6: Environmental Farm Plan

103. Does your farm have a formal, written environmental farm plan?

- O Yes, plan is developed
- O Yes, plan is in development and being reviewed
- O No (Go to end)

An Environmental Farm Plan is a formal, written overall assessment of environmental issues or concerns related to your operation and can include individual and/or group planning processes.

104. When was this Environmental Farm Plan developed or last updated?

- O Less than 1 year ago
- O 1-3 years ago
- O 4-5 years ago
- O More than 5 years ago

105. To what extent were the Beneficial Management Practices identified in the action plan of your Environmental Farm Plan implemented on your operation?

- O Practices fully implemented (Go to Q107)
- O Practices partially implemented
- O Practices not implemented
Beneficial Management Practices are practices that improve environmental benefit or reduce environmental risk on farms. These practices may be eligible for funding under environment programs.

106. What is the main reason that you have not implemented the Beneficial Management Practices in your action plan? (Mark only one)
   1. Economic pressures
   2. Lack of time
   3. Lack of information
   4. Don’t accept recommendations
   5. Other (please specify): ____________________________

107. Did you receive any technical assistance from any of the following groups to help implement the Beneficial Management Practices identified in the action plan? (Mark all that apply)
   1. Government agency
   2. Industry (input supplier, processors, etc.)
   3. Environmental non-governmental organization (conservation authority, watershed coordinator, etc.)
   4. Producer association
   5. College/university
   6. Environmental Farm Plan advisor
   7. Other (please specify): ____________________________
   8. No assistance

108. Did you receive any financial assistance to offset costs for implementation of the Beneficial Management Practices identified in your action plan?
   1. Yes
   2. No
Comments:

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

THANK YOU FOR YOUR PARTICIPATION