

Agricultural Water Survey in 2010

CONFIDENTIAL when completed

Si vous préférez recevoir ce questionnaire en français, veuillez composer le 1-800-461-1662.

Correct pre-printed information, if necessary, using the corresponding boxes below.

Farm Name *(If applicable)*

C0002

Telephone

C0017

Surname or Family Name

C0028

First Name

C0008

Address *(R.R., Box No., Number and Street Name)*

C0004

City

C000

Province

Postal Code

C0006 C0007

Information for the Respondent

Survey purpose

The Agricultural Water Survey is conducted to gather information on water use, irrigation methods and practices, and sources and quality of water used for agricultural purposes on Canadian farms. The results will help farm operators, governments and the Canadian public gain a better understanding of the demand for water and how it is used on Canadian farms.

Confidentiality

Statistics Canada is prohibited by law from publishing any statistics which would divulge information obtained from this survey that relates to any identifiable business, institution or individual, unless written consent has been given by the respondent, or as permitted by the *Statistics Act*. The data reported on this questionnaire will be treated in confidence, used for statistical purposes and published in aggregate form only. The confidentiality provisions of the *Statistics Act* are not affected by either the *Access to Information Act* or any other Legislation.

Authority

This is a voluntary survey conducted under the authority of the *Statistics Act*, Revised Statutes of Canada, 1985, Chapter S19. Your cooperation is important to ensure that the information collected in this survey is as accurate as possible.

Data linkage

To enhance the data from this survey, Statistics Canada may combine it with information from other surveys or from administrative sources.

Data sharing agreements

In an effort to reduce respondent burden, Statistics Canada has entered into agreements, under Section 12 of the *Statistics Act*, for sharing information from this survey with: Agriculture and Agri-food Canada; Environment Canada; Prince Edward Island Department of Agriculture; New Brunswick Department of Agriculture and Aquaculture; the Institut de la statistique du Québec; Manitoba Agriculture, Food and Rural Initiatives; Saskatchewan Ministry of Agriculture; and Alberta Agriculture and Food. These organizations must keep the information confidential and use it for statistical or research purposes only, not for regulatory activities.

Under Section 12 of the *Statistics Act*, you may refuse to share your information with any of these organizations by writing a letter of objection to the Chief Statistician and returning it with the completed questionnaire. Please specify the organization with which you do not want to share your data. For agreements with provincial government organizations, the shared data will be limited to information pertaining to farm operations located within the jurisdiction of the respective province.

YOUR PARTICIPATION IN THIS SURVEY IS IMPORTANT
REGARDLESS OF HOW MUCH IRRIGATION WAS DONE DURING THE GROWING SEASON.



General instructions for completion of this questionnaire

Please refer to the 2010 GROWING SEASON when answering the following questions.

Include:

- all irrigated land, producing or non-producing, used for fruits, vegetables, field crops, hay and improved pasture, on owned land or land rented or leased FROM OTHERS

Exclude:

- land rented or leased TO OTHERS
- summerfallow
- Christmas trees
- non-irrigated land

Please return the completed questionnaire using the enclosed, postage paid envelope.

Cropland and irrigation in 2010

1. Are you an irrigator, or have you previously irrigated your crops?

C0101

1 Yes → Go to Question 2

3 No → **Thank you for your cooperation.**
Return the questionnaire using the enclosed postage paid envelope.

An irrigator is defined as a person who applies water to the soil to assist the growing of crops in dry areas and during periods of inadequate rainfall; to protect plants against frost; and to prevent soil consolidation.

2. In the 2010 growing season, what was the total area of irrigated cropland and irrigated improved pasture of this operation?

C0102

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*Total area of cropland and pasture
(irrigated land, producing or
non-producing)*

C0103

1 Acres

2 Hectares

3 Arpents

Irrigation volumes

3a. Did you produce or grow FIELD CROPS on this operation during the 2010 growing season?
(You may refer to the crop guide on page 11 of the questionnaire.)

- C0500_1 1 Yes
- 3 No → Go to question 4a on next page

3b. Irrigated FIELD CROP area

- C0501_1
- C0502_1
- 1 Acres
- 2 Hectares
- 3 Arpents

3c. Irrigation method (you may refer to the irrigation methods guide on page 12 of the questionnaire).
(Mark all that apply)

- C0503_1 1 Sprinkler
- 2 Micro
- 3 Surface

3d. How much water was applied to the FIELD CROPS in each of the following months?
Please report using one of the units of measure listed below. Use a "0" to indicate no irrigation for a particular month.

	Quantity of water	Unit of measure <i>(Check one only)</i>
<p>April</p> <hr/> <p>May</p> <hr/> <p>June</p> <hr/> <p>July</p> <hr/> <p>August</p> <hr/> <p>September <i>(estimate if necessary)</i></p> <hr/> <p>October <i>(estimate)</i></p> <hr/> <p>TOTAL</p> <hr/>	<p>C0504_1 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0505_1 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0506_1 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0507_1 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0508_1 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0509_1 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0510_1 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0511_1 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p>	<p>C0512_1</p> <p>01 <input type="radio"/> Inches per acre</p> <p>02 <input type="radio"/> Millimetres per hectare</p> <p>03 <input type="radio"/> Total acre-feet</p> <p>04 <input type="radio"/> Total gallons</p> <p>05 <input type="radio"/> Total litres</p> <p>06 <input type="radio"/> Total cubic feet</p> <p>07 <input type="radio"/> Total cubic metres</p> <p>08 <input type="radio"/> Acre-feet per acre</p> <p>09 <input type="radio"/> Gallons per acre</p> <p>10 <input type="radio"/> Litres per hectare</p> <p>11 <input type="radio"/> Cubic feet per acre</p> <p>12 <input type="radio"/> Cubic metres per hectare</p> <p>13 <input type="radio"/> Other unit of measure, specify:</p> <p>C0513_1 <input style="width: 100%;" type="text"/></p>

Irrigation volumes – *continued*

4a. Did you produce or grow **FRUIT CROPS** on this operation during the 2010 growing season? (You may refer to the crop guide on page 11 of the questionnaire.)

- C0500_2 1 Yes
- 3 No → Go to question 5a on next page

4b. Irrigated **FRUIT CROP** area

- C0501_2
- C0502_2
- 1 Acres
- 2 Hectares
- 3 Arpents

4c. Irrigation method (you may refer to the irrigation methods guide on page 12 of the questionnaire). (Mark all that apply)

- C0503_2 1 Sprinkler
- 2 Micro
- 3 Surface

4d. How much water was applied to the **FRUIT CROPS** in each of the following months? Please report using one of the units of measure listed below. Use a "0" to indicate no irrigation for a particular month.

	Quantity of water	Unit of measure (Check one only)
April <hr/> <small>C0504_2</small>	<input type="text"/>	01 <input type="radio"/> Inches per acre 02 <input type="radio"/> Millimetres per hectare 03 <input type="radio"/> Total acre-feet 04 <input type="radio"/> Total gallons 05 <input type="radio"/> Total litres 06 <input type="radio"/> Total cubic feet 07 <input type="radio"/> Total cubic metres 08 <input type="radio"/> Acre-feet per acre 09 <input type="radio"/> Gallons per acre 10 <input type="radio"/> Litres per hectare 11 <input type="radio"/> Cubic feet per acre 12 <input type="radio"/> Cubic metres per hectare 13 <input type="radio"/> Other unit of measure, specify:
May <hr/> <small>C0505_2</small>	<input type="text"/>	
June <hr/> <small>C0506_2</small>	<input type="text"/>	
July <hr/> <small>C0507_2</small>	<input type="text"/>	
August <hr/> <small>C0508_2</small>	<input type="text"/>	
September <i>(estimate if necessary)</i> <hr/> <small>C0509_2</small>	<input type="text"/>	
October <i>(estimate)</i> <hr/> <small>C0510_2</small>	<input type="text"/>	
TOTAL <hr/> <small>C0511_2</small>	<input type="text"/>	C0513_2 <input type="text"/>

Irrigation volumes – *continued*

5a. Did you produce or grow **VEGETABLE CROPS** on this operation during the 2010 growing season? (You may refer to the crop guide on page 11 of the questionnaire.)

- C0500_3 1 Yes
- 3 No → Go to question 6a on next page

5b. Irrigated **VEGETABLE CROP** area

- C0501_3
- C0502_3
- 1 Acres
- 2 Hectares
- 3 Arpents

5c. Irrigation method (you may refer to the irrigation methods guide on page 12 of the questionnaire). (Mark all that apply)

- C0503_3 1 Sprinkler
- 2 Micro
- 3 Surface

5d. How much water was applied to the **VEGETABLE CROPS** in each of the following months? Please report using one of the units of measure listed below. Use a "0" to indicate no irrigation for a particular month.

	Quantity of water	Unit of measure (Check one only)
April	C0504_3 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	C0512_3 01 <input type="radio"/> Inches per acre
May	C0505_3 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	02 <input type="radio"/> Millimetres per hectare
June	C0506_3 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	03 <input type="radio"/> Total acre-feet
July	C0507_3 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	04 <input type="radio"/> Total gallons
August	C0508_3 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	05 <input type="radio"/> Total litres
September (estimate if necessary)	C0509_3 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	06 <input type="radio"/> Total cubic feet
October (estimate)	C0510_3 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	07 <input type="radio"/> Total cubic metres
TOTAL	C0511_3 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	08 <input type="radio"/> Acre-feet per acre
		09 <input type="radio"/> Gallons per acre
		10 <input type="radio"/> Litres per hectare
		11 <input type="radio"/> Cubic feet per acre
		12 <input type="radio"/> Cubic metres per hectare
		13 <input type="radio"/> Other unit of measure, specify:
		C0513_3 <input type="text"/>

Irrigation volumes – continued

6a. Did you produce or grow HAY on this operation during the 2010 growing season?

- C0500_4 1 Yes
 3 No → Go to question 7a on next page

6b. Irrigated HAY area

- C0501_4
- C0502_4
 1 Acres
 2 Hectares
 3 Arpents

6c. Irrigation method (you may refer to the irrigation methods guide on page 12 of the questionnaire).
 (Mark all that apply)

- C0503_4 1 Sprinkler
 2 Micro
 3 Surface

6d. How much water was applied to the HAY in each of the following months?

Please report using one of the units of measure listed below. Use a "0" to indicate no irrigation for a particular month.

	Quantity of water	Unit of measure (Check one only)
<p>April</p> <hr/> <p>May</p> <hr/> <p>June</p> <hr/> <p>July</p> <hr/> <p>August</p> <hr/> <p>September (estimate if necessary)</p> <hr/> <p>October (estimate)</p> <hr/> <p>TOTAL</p> <hr/>	<p>C0504_4 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0505_4 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0506_4 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0507_4 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0508_4 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0509_4 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0510_4 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> <p>C0511_4 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p>	<p>C0512_4</p> <p>01 <input type="radio"/> Inches per acre</p> <p>02 <input type="radio"/> Millimetres per hectare</p> <p>03 <input type="radio"/> Total acre-feet</p> <p>04 <input type="radio"/> Total gallons</p> <p>05 <input type="radio"/> Total litres</p> <p>06 <input type="radio"/> Total cubic feet</p> <p>07 <input type="radio"/> Total cubic metres</p> <p>08 <input type="radio"/> Acre-feet per acre</p> <p>09 <input type="radio"/> Gallons per acre</p> <p>10 <input type="radio"/> Litres per hectare</p> <p>11 <input type="radio"/> Cubic feet per acre</p> <p>12 <input type="radio"/> Cubic metres per hectare</p> <p>13 <input type="radio"/> Other unit of measure, specify:</p> <p>C0513_4 <input type="text"/></p>

Irrigation volumes – continued

7a. Did you produce or grow IMPROVED PASTURE on this operation during the 2010 growing season?

- C0500_5 1 Yes
 3 No → Go to question 8 on next page

Improved pasture is defined as pasture area improved by seeding, draining, irrigating, fertilizing, and brush or weed control, not including area where hay, silage or seeds are harvested.

7b. Irrigated IMPROVED PASTURE area

- C0501_5
- C0502_5
 1 Acres
 2 Hectares
 3 Arpents

7c. Irrigation method (you may refer to the irrigation methods guide on page 12 of the questionnaire).
 (Mark all that apply)

- C0503_5 1 Sprinkler
 2 Micro
 3 Surface

7d. How much water was applied to the IMPROVED PASTURE in each of the following months?

Please report using one of the units of measure listed below. Use a "0" to indicate no irrigation for a particular month.

	Quantity of water	Unit of measure (Check one only)
April	C0504_5 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	C0512_5 01 <input type="radio"/> Inches per acre 02 <input type="radio"/> Millimetres per hectare
May	C0505_5 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	03 <input type="radio"/> Total acre-feet 04 <input type="radio"/> Total gallons
June	C0506_5 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	05 <input type="radio"/> Total litres 06 <input type="radio"/> Total cubic feet
July	C0507_5 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	07 <input type="radio"/> Total cubic metres 08 <input type="radio"/> Acre-feet per acre
August	C0508_5 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	09 <input type="radio"/> Gallons per acre 10 <input type="radio"/> Litres per hectare
September (estimate if necessary)	C0509_5 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	11 <input type="radio"/> Cubic feet per acre 12 <input type="radio"/> Cubic metres per hectare
October (estimate)	C0510_5 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	13 <input type="radio"/> Other unit of measure, specify:
TOTAL	C0511_5 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	C0513_5 <input type="text"/>

Irrigation practices and water sources

The following questions ask about irrigation practices used on this operation during the 2010 growing season.

8. Which of the following practices were used in 2010 for the purpose of water or energy conservation? (Mark all that apply)

- C0108
- 1 Wind breaks
 - 2 Leaving stubble on fields (e.g., minimum tillage, direct seeding)
 - 3 Watering at night or in the morning
 - 4 Pressure reduction
 - 5 Water or energy saving nozzles
 - 6 Other energy saving methods or devices
 - 7 No practices done

9. In 2010, did this operation stop irrigating OR not irrigate for any reason?

- C0109
- 1 Yes
 - 3 No → Go to Question 11

10. Why was irrigation stopped or not done in 2010?
(Mark all that apply)

- C0110
- 01 Shortage of surface water
 - 02 Shortage of underground water (include shallow wells and deep wells)
 - 03 Irrigation equipment failure
 - 04 Poor water quality
 - 05 Cost of water
 - 06 Irrigation ban
 - 07 Crop did not require irrigation
 - 08 Labour shortage
 - 09 Fuel or energy cost
 - 10 Other reason

The following questions deal with possible sources of water used for irrigation.

11. In 2010, did this operation use any of the following sources of water?
(Mark all that apply)

- C0111
- 1 ON-FARM underground water or well water
(include shallow wells and deep wells)
 - 2 ON-FARM lakes, rivers, creeks or streams,
ponds or dugouts i.e. direct access (surface water)
 - 3 OFF-FARM water transported TO THE FARM
e.g., via pipeline, canal system or vehicle
(this includes municipal water)
 - 4 Other

If OFF-FARM water is selected, go to **Question 12**.
Otherwise, go to **Question 14**.

12. In 2010, which of the following OFF-FARM water sources did this operation use for irrigation purposes? (Mark all that apply)

- C0112
- 1 Tap water (drinking water or municipal water)
 - 2 Treated wastewater
 - 3 Provincial water sources (irrigation district, irrigation project)
 - 4 Private sources
 - 5 Other sources

13. Why did this operation need to obtain water from an OFF-FARM source in 2010?
(Mark all that apply)

- C0113
- 1 No water or not enough water available ON THE FARM (for irrigation)
 - 2 Poor quality of ON-FARM water (for irrigation)
 - 3 Other reason

The following questions deal with irrigation water that has been treated to improve its overall quality.

14. In 2010, did this operation treat water prior to use for irrigation purposes?

- C0114
- 1 Yes
- 3 No → **Thank you for your cooperation.**
Please return the completed questionnaire by mail, using the enclosed, postage paid envelope.

15. Which of the following water treatment practices were used by this operation for irrigation water in 2010? (Mark all that apply)

- C0115
- 1 Treatment to kill bacteria or other foreign bodies (i.e. disinfection)
- 2 Treatment to equalize pH levels
- 3 Treatment to remove solids (i.e. filtration)
- 4 Treatment to prevent or to clear mineral fouling
- 5 Treatment to prevent corrosion
- 6 Treatment to reduce water hardness
- 7 Treatment to reduce salinity
- 8 Other treatment to purify water

Thank you for your cooperation.
Please return the completed questionnaire by mail, using the enclosed, postage paid envelope.

Crop list

Field Crops

- Barley
- Borage seed
- Buckwheat
- Canary seed
- Canola
- Caraway seed
- Chick peas
- Coriander seed
- Corn for fodder
- Corn for grain
- Dry beans
- Dry field peas
- Flaxseed
- Lentils
- Linola
- Mixed grains
- Mustard seed
- Oats
- Potatoes
- Rye
- Safflower
- Soybeans
- Sugar beets
- Sunflower seeds
- Tobacco
- Triticale
- Wheat
- Other field crops

Fruits

- Apples
- Apricots
- Blueberries
- Cherries
- Cranberries
- Grapes
- Kiwis
- Nectarines
- Peaches
- Pears
- Plums
- Prunes
- Raspberries
- Saskatoon berries
- Strawberries
- Other fruit

Vegetables

- Asparagus
- Beans (green or wax)
- Beets
- Broccoli
- Brussels sprouts
- Cabbage (Chinese)
- Cabbage (regular)
- Carrots (including baby)
- Cauliflower
- Celery
- Corn (sweet)
- Cucumbers
- Garlic
- Gherkins
- Leeks
- Lettuce
- Melons (watermelon)
- Melons, other
- Onions (dry)
- Onions, green
- Parsley
- Parsnips
- Peas (green)
- Peppers
- Pumpkins
- Radishes
- Rhubarb
- Rutabagas
- Spinach
- Squash
- Tomatoes
- Turnips
- Zucchini
- Other vegetables

Irrigation methods

Sprinkler

- Hand move
- Solid or permanent set
- Side roll, wheel line, wheel move or wheel roll
- Traveller, volume gun, travelling gun, walker, overhead or circular
- Linear move
- Centre pivot

Micro

- Surface drip
- Sub-surface drip
- Micro-sprinkler
- Bubblers
- Microjet
- Hand watering

Surface

- Down rows
- Furrows
- Corrugations
- Border dyke
- Level basins
- Uncontrolled flooding
- Back flooding