



## Learning Activity 3.1

### Locations and Conditions for Food Production

1. The government has classified the land in Canada in seven different classes. What is the difference between Class 1 land and Class 7 land?
2. In which three provinces is most of Canada's best agricultural land found?
3. This chart shows the area of dependable agricultural land per province as well as the total portion of that land in Canada as a whole.

Province	Dependable Agricultural Land (Class 1, Class 2, and Class 3)	Portion of Total Land in Canada
British Columbia	6,922 km <sup>2</sup>	1.4%
Alberta	106,462 km <sup>2</sup>	21.6%
Saskatchewan	190,105 km <sup>2</sup>	38.6%
Manitoba	56,228 km <sup>2</sup>	11.4%
Ontario	76,537 km <sup>2</sup>	15.5%
Quebec	24,560 km <sup>2</sup>	5.0%
New Brunswick	15,879 km <sup>2</sup>	3.2%
Nova Scotia	11,920 km <sup>2</sup>	2.4%
Prince Edward Island	4,048 km <sup>2</sup>	0.8%
Newfoundland and Labrador	67 m <sup>2</sup>	0%

Hofmann, N., Filoso, G., and Schofield, M. Statistics Canada. "The Loss of Dependable Agricultural Land in Canada." Rural and Small Town Canada Analysis Bulletin. Volume 6, Number 1. January 2005.

[www.smartgrowth.bc.ca/Portals/0/Downloads/Loss%20of%20Dependable%20Land%20in%20Canada.pdf](http://www.smartgrowth.bc.ca/Portals/0/Downloads/Loss%20of%20Dependable%20Land%20in%20Canada.pdf)  
(4 April 2013).

- a) Which province contains the most dependable agricultural land?
- b) How many square kilometres (km<sup>2</sup>) of dependable agricultural land are located in Manitoba?
- c) Using the information in the chart in this question and the information in the pie charts in this module, identify at least three provinces that do not contain Class 1 land.

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### Learning Activity 3.1: Locations and Conditions for Food Production (continued)

4. Why do you think land in Classes 1, 2, and 3 is called dependable agricultural land? What makes land dependable agricultural land?
5. On the following diagram, label the horizons of soil and briefly describe the components of each horizon.

Soil Profile	Description
Level 1 _____	
Level 2 _____	
Level 3 _____	

6. In the past 100 years or so, great technology has been created and great scientific advances have been made regarding the way we farm the land in North America; however, each of these advances to increase agricultural output and yield has come with a toll on the physical environment, notably the soil.

The following organizer shows some of the technological and scientific advances made in agriculture over the past century. Read the technological/scientific advance in the left-hand column and complete the right-hand column, summarizing the negative impact on the physical environment. The first one is completed for you as an example to help you get started.

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### Learning Activity 3.1: Locations and Conditions for Food Production (continued)

Technological/Scientific Advance	Negative Impact on the Physical Environment
Farmers use heavy equipment like combines, tractors, and balers.	Compaction of soil
Irrigation is the artificial application of water to the soil. It is mainly used to replace missing rainfall in periods of drought, but also to protect plants against frost.	
Farmers use poor agricultural practices aimed at increasing yields, such as overgrazing and over-cropping.	
Farmers use chemicals such as fertilizers, herbicides, and pesticides to increase yields and profits.	

7. Read the following case study and carefully inspect the map of the Andersens' farm. Answer the questions that follow. You may need to consult the glossary at the end of this course or a dictionary for new terms.
  - a) What evidence is there that the Andersens are currently trying to protect the topsoil?
  - b) Approximately what percentage of their farmland is in summer fallow?
  - c) Based on the diagram of the Andersens' farm, from what direction do you think the wind usually comes on the farm? How do you know this?
  - d) Considering the Andersen farm topography, how would they plough their fields? Choose one of the following options and justify why you chose it.
    - i) Plough the rows from east to west
    - ii) Plough the rows from north to south

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## Learning Activity 3.1: Locations and Conditions for Food Production (continued)

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### Case Study: The Andersens—Grain Farmers

The Andersens own a large wheat farm south of Winnipeg. Like many people on the Prairies, they make their living from farming as land as their parents and grandparents did before them.

The Andersen family farms a much larger farm than their ancestors did. They depend a great deal on modern machinery and chemicals to do the work on their farm. Their family consists of the two parents, two teenaged sons, and an 11-year-old daughter. The Andersens are able to handle all the work on the farm except at harvest time, when they hire extra people to drive trucks and do other work that must be done to get the crop off the field.

The Andersens are very aware that their farm and their livelihood are dependent on the quality and quantity of their soil. In order to protect the land, they have adopted several agricultural practices intended to preserve the topsoil and the environment. They also recently attended a seminar in Winnipeg aimed at farmers called "Sustainable Agriculture—Ensuring Your Farming Future" to learn even more.

Some of the practices the Andersens are currently using or learned about at the seminar include the following:

- Summer fallowing
    - leaving farmland without a crop to conserve soil nutrients and moisture; may be cultivated during the summer
  - No-till cropping
    - leaving stubble from the previous year's crop so that it holds the soil in place and protects it from wind erosion
  - Contour ploughing
    - ploughing across hilly fields, rather than up and down to reduce the damage caused by soil erosion
  - Shelterbelts
    - planting one or more rows of trees that function to reduce wind erosion
  - Biological control of pests
    - controlling pests, such as insects, without the use of chemicals
    - examples include spraying "enemy" bacteria on worms and sterilizing male insects by radiation
  - Use of organic fertilizers
    - rather than using chemicals, farmers use naturally occurring, organic fertilizers such as manure and sewage
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## Learning Activity 3.1: Locations and Conditions for Food Production (continued)

