



TRENDING **environments**

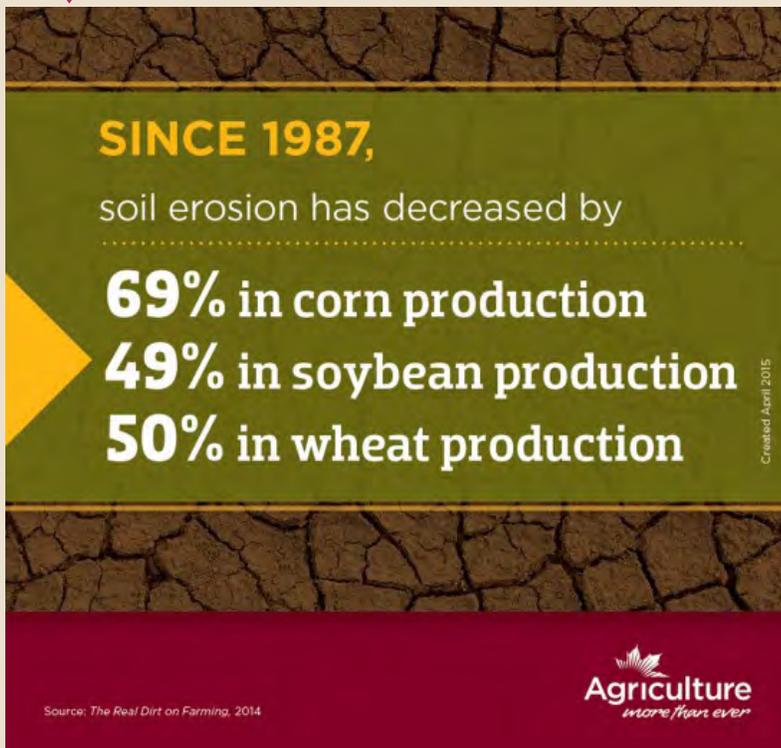
Two main trends have changed Canadian agriculture. Both trends affect the soil, air, water and other plants in the environment.

- ◆ The first trend is a movement toward fewer, but bigger, farms.
- ◆ The second trend is the use of technology and improved agricultural practices to produce more agricultural commodities, such as grains and milk.

What are the effects of these trends? Read on to identify some trends and find out more about them.



Protecting the Soil



The quality of soil in Canada has improved over the last 30 years. Farmers traditionally used plows to turn over and loosen the soil after they harvest a crop. This traditional tillage left the soil exposed to wind and rain and led to erosion, which reduced the topsoil and nutrients needed to grow healthy crops.

Two new tillage methods leave old plant materials in the soil. These methods work like **composting**, adding organic matter to the soil while protecting it against erosion. **Conservation tillage** uses special equipment to plant seeds, leaving some of the old crop materials in the soil. **No-till** is a method used to plant seeds without disturbing the old crop materials. No-till practices are used in over 56 percent of cropland in Canada.

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Why is it important to find ways to protect the soil for farmers who grow crops as well as for farmers who raise animals?



Manure



Manure refers to animal excrement that is used for fertilizer. It is a valuable by-product from dairy farms and is used as a resource with many benefits. Applying manure to cropland as a fertilizer is a sustainable agricultural practice because nutrients can be effectively recycled.

Manure is a source of plant nutrients and improves soil organic matter, structure, aeration and water holding capacity. It is not just used on farms as a fertilizer. It is also used by many home gardeners.



Agroforestry



Agroforestry is the use of trees as shelter to protect soil, water and animals. **Shelterbelts** are lines of trees that are planted to reduce soil loss and increase soil moisture. Fields that are protected by shelterbelts can produce better crops.



Water Quality



Agriculture uses water to irrigate crops and feed animals. Some of this water returns to its **original sources**, where the water first came from. These sources can include lakes, rivers and streams.

However, this water can carry soil and other substances. There may be surface runoff of **pesticides**, which are substances used to kill insects. Fertilizers and manure can also mix with the surface water. All of these substances can also run into **groundwater**, which is water found in the soil or in dents and cracks in rock. This groundwater, along with these different substances, will eventually find its way into lakes, rivers or the ocean.

There has been an increase in the use of plant nutrients and manure for fertilizer and higher use of pesticides. This has resulted in a trend toward lower water quality.

Why is it important to keep pesticides, fertilizers and manure out of groundwater?





Air Quality



Greenhouse gases are gaseous substances that can trap and hold heat in the atmosphere. Greenhouse gas emissions were lower in 2011 than they were in 1981. Greenhouse gases can include the methane that cows produce when they digest their food.

Manure emits **methane**, the main component of natural gas, and nitrous oxide. If methane leaks into the air, it absorbs the sun's heat. This warms the atmosphere and contributes to climate change.

Dairy farmers have improved the type of feed used with their cows. This has contributed to their ability to produce the same amount of milk with fewer cows. These improvements have helped reduce greenhouse gas.

Air quality also looks at the presence of tiny particles of solid matter and liquid droplets that are suspended in the air. These solids and liquids can come from chemical substances in things like fertilizers and pesticides. They can also include dust, feather fibres and bacteria.

These particles are invisible. They come from human activities like preparing cropland for planting and harvesting. Changes to soil practices, like the use of no-till, reduces the dust and other particles in the air. The trend across Canada's prairie provinces has been a decrease in these particles. This has a positive effect on air quality.

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