Almost every terrestrial organism on the planet needs soil. Historically, soil has been an integral part of human health and prosperity; entire civilizations have prospered and faltered because of the health of their soil. Here in Canada, despite the value of this resource, soil is being degraded across the country by practices such as deforestation, vegetation removal, poor cultivation practices, and overgrazing. As a result, soil salinization, acidification, and erosion are problems facing many regions of Canada. The consequences of reduced soil quality are wide-ranging and include negative impacts on agricultural productivity, water quality, and ecosystem health. And once healthy soil is lost it is not easily replaced. Canada’s Prairie soils took over 10,000 years to form. Yet, more than half of the organic matter in these soils has been lost over the last century.

In Prairie Canada, erosion has reduced the agricultural productivity of soil by ten to 15 per cent.

**Environmental Values**

- Soil reduces greenhouse gases in the atmosphere by storing carbon, thus playing a crucial role in the carbon cycle that moderates our climate. Soil stores 1.8 times more carbon than vegetation does.
- Soil provides habitat for a multitude of organisms including soil crustaceans, mites, worms, bacteria and termites, and contributes to ecosystem biodiversity.
- Soil helps moderate the effects of water on the landscape. Enough precipitation falls each year to cover the entire planet in one metre of water. Soil soaks this water up and slowly releases it to plant roots, aquifers, and surface streams. Without soil, water would immediately run off of land and cause flooding.
- Soil stores and delivers nutrients to plants and crops.
- Soil decomposes dead organic matter and wastes and replenishes the nutrient stores necessary for plant growth. Soil organisms produce antibiotics that render the toxins and pathogens present in waste and organic matter harmless.
- Soil provides physical support for plants and crops by protecting seeds during germination and providing structural support and nourishment during growth.
Economic Values

When soil decreases in quantity and quality there is a financial cost incurred to replace the lost ecological goods and services it provides, such as:

1. Increased costs for fertility in agricultural production
2. Decreased property value
3. Decreased quality of drinking water and food
4. Increased water treatment costs
5. Increased illness and health care costs
6. Increased costs to manage watercourses and estuaries
7. Losses to fishery resources
8. Decreased revenues from tourism activities associated with healthy ecosystems

Maintaining and improving soil quality will provide economic benefits in the form of increased productivity, more efficient use of nutrients and pesticides, improvement in water and air quality and the reduction of greenhouse gases.

— Agriculture and Agri-Food Canada, 2004

Endnotes


