

Moderate to severe soil salinity reduces annual yields of most cereal and oilseed crops by about 50 percent. An indicator that assesses the risk of soil salinization under dryland agriculture in the Prairies shows that about 60 percent of prairie cropland was at low risk of soil salinization in 1996. About 3 percent of cropland shifted from the high to moderate risk class between 1981 and 1996, probably because of changes in agricultural practice, including adoption of conservation tillage and reduction of area under summerfallow.

### *Water Issues*

The agricultural uses of water are many, including growing crops, watering livestock, cleaning farm buildings and implements, and using it in the home. It is safe to say that without an adequate supply of water of sufficient quality, the economies and ecosystems of the rural landscape would decline and eventually cease to function.

### **Water Quality**

A general decline in the risk of soil erosion by water and wind implies a decline in the sedimentation of watercourses and water bodies by farm soil. If sedimentation continues to decrease, so too will the risk of water contamination by substances carried by soil particles, such as phosphorus, some pesticides, and bacteria. However, sediment contamination continues to be a serious water quality problem at some times of the year in many regions, especially in the Maritime provinces, where wide-row crops are grown on rolling land with soils susceptible to erosion.

Nitrate from mineral fertilizer and animal manure is present in nearly all groundwater underlying the main agricultural regions of Canada. Nitrate levels in groundwater supplies are generally below the Canadian guideline for drinking water quality, but in some areas of intensive agriculture they exceed the guideline. Under prevailing management practices, residual nitrogen is accumulating in many agricultural soils under intensive production, such as the Lower Fraser Valley in British Columbia and the Great Lakes–St. Lawrence Lowlands in Ontario and Quebec, increasing the risk of groundwater contamination by nitrogen in these areas. In some areas of the Prairies, there is an accumulation of nitrate under the root zone that may move into groundwater if leaching conditions occur.

Some pesticides are commonly detected in both the groundwater and surface waters in Canada's agricultural regions, but generally at concentrations well below the Canadian guideline for drinking water

### **Nitrate Contamination of the Abbotsford–Sumas Aquifer in British Columbia**

*The Abbotsford–Sumas aquifer straddles the border between British Columbia and the state of Washington. Groundwater nitrate concentrations exceed the Canadian guideline for drinking water quality of 10 milligrams of nitrate per litre (mg/L) in a large portion of the aquifer, and concentrations in individual wells have been as high as 40 mg/L. Agriculture has been one of the main contributors to nitrate contamination of the aquifer. Over the past 30 years, an increase in poultry operations (which do not have a large enough land base for manure application) and an increase in the production of raspberries (a crop with a low nitrogen requirement and to which manure is applied) have resulted in the application of excessive amounts of manure, and thus of nitrogen, to the limited land base. This in turn has led to nitrate contamination of the aquifer. Steps are now being taken by farmers to manage nutrients more carefully and to transport manure to other locales with lower animal populations.*