SOIL MANAGEMENT IN CANADA

The relentless forces of wind and rain which sweep millions of tonnes of soil off Canadian farms every year are a constant reminder of the fragility of one of our most valuable natural resources.

Since its beginning a century ago, Agriculture Canada's Research Branch has been tackling the serious and costly problem of soil degradation by developing new agricultural techniques and adapting old methods to solve modern-day problems.

Because of its northern latitude, Canada has relatively short growing seasons. It also has soil formation processes, such as the decomposition of organic material, which operate slowly. Thus, Canada's mantle of topsoil is thin -- an average of 20 to 25 centimetres -- and vulnerable to both man-made and natural abuses.

The main problem is that so much soil is being lost every year through erosion; it would take literally hundreds of years for nature to rebuild it. In addition, there is other damage such as loss of nutrients and soil structure.

Last year, Agriculture Canada's Research Branch allocated more than $5 million to research on soil and water management and conservation. In some projects, it combined forces with other Canadian agencies such as the Prairie Farm Rehabilitation Administration. The branch also works to define the extent of soil degradation with soil inventories, which were originally prompted by the dust bowl of 50 years ago.

Through these inventories, farmers and planners can find out which of 2,000 types of soil an area has, what it is best suited to grow, how productive crops are likely to be, the probability of flooding or erosion, and the possibilities for non-agricultural uses ranging from pipeline construction to housing development.

The Research Branch works with the provinces to establish joint programmes in soil surveying and conservation. Joint projects have been undertaken with Prince Edward Island, Nova Scotia, New Brunswick, Manitoba and Saskatchewan.

Canadian farmers are aware of the problems of soil degradation, but many of the solutions are costly. The agricultural community has turned to the practise of farming systems which are cost-effective, which do not result in lost production and which arrest degradation.

In both the eastern and western regions of Canada, the preferred method of conserving land is by biological methods, as opposed to so-called engineering methods such as terracing. Crop rotation, for example, can make a big difference in soil protection.

Planting a forage crop on a wheat field that might otherwise be left fallow once every two or three years will reduce erosion, and in some cases, even restore nutrients such as nitrogen to the soil.

Another biological method of saving soil is to plant another crop after harvest. In Prince Edward Island, rye is often grown after potatoes are harvested so the soil is not left bare and vulnerable to erosion.

Western farmers frequently practise summerfallowing to conserve water. Strips of high stubble or tall grasses can trap snow in the winter, which makes the soil more moist in the spring and allows planting, thereby avoiding wind erosion during the summer.

With extensive knowledge gained at home, Canadian soil scientists are well equipped to offer their expertise to find solutions to similar problems experienced in countries in all parts of the world.■