Agriculture Canada

Farming in Canada

Canada

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This publication gives a general review of Canadian farming. It outlines the physical and social conditions under which farming is carried out, the types of production found from coast to coast, the way farm products reach the consumer, and how the federal government helps the farmer and safeguards Canada's food supply. It will help you understand the agricultural industry of the country, its significance to the nation, and the opportunities that it offers.

The publication does not include technical and statistical information, and is not a handbook on how to farm. If you wish to know more about farming in Canada, please contact:

- Agriculture Canada or Employment and Immigration Canada, Ottawa;
- provincial departments of agriculture;
- Agriculture Canada or Employment and Immigration Canada representatives abroad.

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Contents

Origins of Canadian Agriculture

The known history of agriculture in Canada dates from the beginning of the 17th century, though native peoples farmed the land much earlier. In the span of 350 years, farms have spread from a small plot on a settlement in Acadia to about 68 million hectares across the continent. Production was once limited to a few bare necessities; net farm income now exceeds $5.5 billion a year, not counting even greater earnings by industries that depend on agriculture.

Early days

When Europeans came to North America, native people were already cultivating beans, pumpkins and corn. These crops saved many early European settlers from starvation.

The French, led by the great explorer Samuel de Champlain, established their first permanent settlement in Canada in 1605 at Port Royal (now Annapolis Royal', Nova Scotia). The first settler to make his living from farming in the new country was Louis Hébert, who cleared land near Quebec City in 1617. He grew grain, pumpkins and beans, and raised livestock that had come from France.

During the 17th century, the French settlers extended their farms along the St. Lawrence River from Montreal to Fort Frontenac (later Kingston, Ontario) and along the St. John River in what later became New Brunswick. At Port Royal they grew wheat, oats and flax, and raised cattle, horses, sheep, goats and poultry.

In the 18th century, the Acadians moved into Prince Edward Island and diked some tidal marshlands around the Bay of Fundy, where their crops included fruit. During this period, the English established a settlement at Halifax. Germans and Swiss settled around Lunenburg. New Englanders grew grain, hay and potatoes in the Annapolis Valley, and Massachusetts colonists farmed in the Fredericton area. United Empire Loyalists settled in the Eastern Townships of Quebec and at Niagara, York and the Bay of Quinte in Upper Canada.

In 1786, John McKay cleared the first land at Nootka Sound on Vancouver Island. This was sown to crops the following year, but it was seized by Spaniards, who later raised cattle, swine, goats and poultry. The Hudson's Bay Company established other farms on Vancouver Island.

Agriculture began on the western prairies in 1812 with the arrival of the Selkirk settlers at the Red River near Winnipeg. Soon after, other settlers began harvesting wheat, barley, oats and vegetables at Hudson's Bay Company trading posts in the territories that would become Saskatchewan, Alberta and British Columbia.

Meanwhile, agriculture was becoming organized in the east. There were land boards in Upper Canada (later Ontario), agricultural societies and boards of agriculture in Quebec, and an agricultural society in Nova Scotia. Before Confederation in 1867, the new Province of Canada had a department of agriculture and the first agricultural school had opened at Ste.-Anne-de-la-Pocatière.

Confederation and after

One of the first results of Confederation was the establishment of the Canada Department of Agriculture. The department had the added responsibilities for immigration, public health, arts and manufactures, statistics, patents, copyright, industrial design and trademarks. Its most urgent task was to establish quarantine stations at ports of entry to prevent imported cattle from introducing contagious diseases.

The Homestead Act of 1870 offered free land to settlers in western Canada. But it was not until 1886, when the Canadian Pacific Railway opened its line from Montreal to Vancouver, that the real flow of homesteaders into the prairies began. Most of these pioneer farmers grew wheat, but some also raised cattle, horses and sheep.

By the end of the 19th century, Canada was becoming one of the world's great food producers. Farms occupied more than 25 million hectares. Yearly grain exports had reached 272 000 t. Canada had shipped butter and cheese to Britain under refrigeration and the Department of Agriculture was setting up cold storage facilities. Federal experimental farms now existed in five provinces. We had also established federal inspection of perishable products for export. The country was changing from one that practised hand-to-mouth agriculture into one that could compete in world markets.

In the first decade of the 20th century, while the population of Canada swelled by more than one-third, the land used for farming went from 25 million hectares to 45 million. The value of our field crops grew from $195 million to $385 million and exports of wheat from 272 000 to 1 252 000 t. From this spectacular beginning, Canadian farming gained an impetus that has kept it among the most progressive in the world. In taking these giant steps from an era of hardship and backbreaking toil to one of mechanization and businesslike enterprise, it has been spurred by the demands of two world wars, the bitter lessons of depression and drought, and world hunger. With modern science, technology and management now available, the story of Canadian farming may have just begun.

Geography

Canada is the largest country in the Western Hemisphere and the second largest in the world, next to the Union of Soviet Socialist Republics (USSR). Canada's closest neighbors are the United States of America, the USSR and Greenland. From south to north, the country stretches 4800 km between Lake Erie and and the upper tip of Ellesmere Island. From east to west, it extends for 6500 km between the Atlantic and Pacific oceans.

Canada covers 10 000 000 km^2, but most of this is unsuited to agriculture because of forests, lakes, mountains, rock and climate. Still, farms occupy 678 000 km^2. The improved land alone, 460 000 km^2, is greater than the total area of Japan, which has a population nearly five times that of Canada.

Almost all Canadian farms lie less than 500 km from the southern border. They spread unevenly across the 10 provinces, with some farming in the Northwest and Yukon Territories. In glacial times, the moving ice modified the land surface, laying down the soils' parent materials and roughly establishing the drainage. Bedrock was the main source of the mineral material laid down, and climate and vegetation then became the major influences on soil development. Because of their different origins and locations, Canada's soils support a wide variety of crops.

The climate varies almost as much as the soils. Typically, the prairies have low rainfall and extremes of temperature. The maritime region has more precipitation and more moderate temperatures. The climate of Ontario and Quebec falls roughly between the two. In the mountains of British Columbia, the weather may vary greatly within short distances.

Canada has 15 terrestial ecozones; these roughly subdivide the environment according to such characteristics as vegetation, soil type, climate and physiography. Farming takes place in eight of these ecozones. A brief look at each gives an idea of the pattern of Canadian agriculture.

Atlantic maritime

This is the eastern, hilly region that includes the Atlantic Provinces (New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland) and the part of Quebec south of the St. Lawrence River. Most of the soils are leached acid soils developed under forest cover. The river valleys and the smoother uplands provide considerable areas of farmland. The climate, moderated by the sea, is generally warm and humid. This is a region of mixed farms with important areas devoted to potatoes and orchard crops.

Mixed wood plains

This lowland area, containing more than half of Canada's population, borders the St. Lawrence River and extends westward through southern Ontario to Lake Huron. Fertile soils and a climate modified by large bodies of water account for districts that specialize in fruits, tobacco and vegetables, as well as conventional field crops. Livestock and dairy products are the staples of this region's farming, and the large cities and towns provide ready markets.

Boreal shield

The boreal (or Canadian) shield covers nearly half of Canada's land. It is a V-shaped expanse centered on Hudson Bay and narrowing towards the south. Some land in the southern portion suits agriculture, but most of the region contains rock outcrops, swamp, poor soils and an unfavorable climate.

Prairie, boreal and taiga plains

The region comprising Manitoba, Saskatchewan and Alberta, commonly called the Prairie Provinces, has 75% of Canada's farmland. The winters are long and cold, but the summers are warm and sunny, and precipitation is light, especially in the south. Both soil and climate favor extensive grain growing, notably hard red spring wheat. The region also has rangeland and pasture to support a large cattle population, and livestock in general has become a major industry.

The plains extend into the Northwest Territories, a vast area with 1.8 million hectares of arable land.

Montane cordillera and Pacific maritime

In the mountains of the far west, farmland is confined to the valleys and the smoother plateaus. The prevailing westerly winds from the warm Pacific bring mild winters and warm summers to the coastal area. Farther inland, the temperature range widens and the rainfall decreases. The many differences in soil and climate have led to an agriculture that varies from ranches to peach orchards.

The region extends northward into Yukon Territory, which contains large tracts of arable land. Developing agriculture in the Yukon, like in the Northwest Territories, presents a challenge. The growing season is less than 100 days, precipitation is low and soils generally lack enough available nutrients. Typical ventures produce honey, forages, cereals, berries, elk, reindeer and other livestock.

Terrestrial Ecozones of Canada

Tundra cordillera
Boreal cordillera
Pacific maritime
Montane cordillera
Boreal plains
Taiga plains
Prairie
Taiga shield
Boreal shield
Hudson plains
Mixed wood plains
Atlantic maritime
Southern arctic
Northern arctic
Arctic cordillera

Source: Environment Canada

The Canadian Farm

There is no such thing as a typical Canadian farm. The farmer could have a broiler-chicken operation on a few hectares, a cattle ranch that covers several townships, or almost anything in between. But Canadian agriculture does consist largely of family farms, run individually or as combinations of family farms with individual ownership and control. In 1986, the census classed only 2607 out of 293 089 farms as non-family-farm units.

The area cultivated is usually limited to a size the family can manage. However, some families do hire help. A farm that specializes in crops such as fruits or vegetables may cover a small area yet require a great deal of labor. On a mechanized prairie grain farm, a farmer may work 400 ha or more with little help.

Ownership

Most farmers want to own the farms they operate — and 86% of them do. But, as farms have tended to become fewer and bigger, many farmers rent part of the land they work. The 1986 census showed that 34% of farms were partly owned and partly rented by the farmers, the ratio being higher in the west than in the east. Only one in 16 was entirely a tenant farm.

Some farmers pay a cash rental, but in many cases the landlord takes a share of the crop or receipts from the sale of livestock or milk. Where most of the farm income comes from grain, one common arrangement lets the tenant assign the landlord a third of all grain produced on the farm. The landlord supplies some land, with or without buildings, pays taxes and fire insurance on his buildings, and provides materials for maintaining buildings and fences. A landlord that receives half the crop pays for half the seed and half the harvesting expenses. Another type of share-rental covers both grain and livestock. An important advantage of share-rental (for the farmer) is that the landlord shares the risk of poor crops with the tenant.

Predominant Farm Type, by Census Division, 1981

Source: Statistics Canada, *Profiles of Canadian Agriculture*

Types of farming

Broadly speaking, Canada has four main types of farm: livestock, grain, combination grain and livestock, and special crops. A farm is usually classified as a certain type if more than half of its total sales are of that type.

Farms specializing in livestock production are mainly in Ontario and Alberta, with Quebec and Saskatchewan next. Quebec and Ontario have by far the greatest number of dairy farms. About half Nova Scotia's farmers run dairy operations.

Livestock production is becoming more intensive with feedlot finishing of cattle, large-scale feeding of hogs bought as weanlings from other farms, and larger poultry meat and egg operations.

Grain farms that grow crops such as wheat, oats, barley, flax and canola are found mostly in Saskatchewan, Alberta and Manitoba. Those with most of their land in wheat are predominantly in Saskatchewan.

Farms with a combination of grain and livestock operate mainly in Alberta, Saskatchewan and Manitoba.

Special-crop farms earn most of their revenue from forages, tobacco, pulses, sugar beets, mustard, buckwheat, canaryseed and greenhouse crops. Of these, forages rank as by far the most important.

Integration and crop contracting

Integration refers to an arrangement whereby a feed supplier or a meat processor pays for a farmer's labor and/or use of facilities to raise livestock. The practice is becoming less popular as some farmers choose to raise livestock they own.

In crop contracting, the farmer sells the crop before seeding, sometimes at a stated price. For example, almost all sugar beets and canning crops are grown under contracts made with processors, who may supply seed and other materials.

The attractions of integration and crop contracting for the producer lie with better financing and the prospect of a stable income; for the integrator, they provide a steady supply of farm products that meet required quality standards.

Farm labor

One farm worker provides food for more than 100 people. While farm production has gone up, the labor force has declined, and the widening gap has been bridged by machines. But a strong demand still exists for experienced workers, notably in dairy farms, and for seasonal workers for jobs such as fruit harvesting.

Farm families provide most of the labor on Canadian farms. In some districts, farmers often meet the need for extra hands during certain seasons by helping each other through cooperatives or other friendly arrangements. Some pay for custom work, hiring machinery and people to operate it, as in the case of travelling combine harvesters in the west and potato harvesters in the east.

Employment and Immigration Canada operates various programs to meet the demand for both year-round and seasonal farm workers. The department has also established Agricultural Employment Services (AES) in areas of high demand. These services help producers find temporary or permanent workers.

Home and community

Most farmhouses have the same comforts and conveniences as city homes, and most farming communities lie close to larger urban centers.

It is common for a farm to have more than one good home on it, so that married members of a family or hired help may have separate accommodation.

The social and shopping facilities available in rural towns have improved greatly in recent years, and most farm families can easily reach larger centers by car. New industries, too, have helped bring prosperity to small towns and provide alternative employment for many farm families.

Many communities have social and educational organizations, including farm management clubs, 4-H and Young Farmers' groups, agricultural and livestock organizations, and district branches of the Canadian Federation of Agriculture, the National Farmers' Union and Women's Institutes. Farmers have also set up cooperatives for a wide range of purposes from selling livestock to making local improvements.

Education

Canada has many post-secondary agricultural schools. Each province has at least one faculty of agriculture; some have more than one. Entrance requirements for degree programs resemble those for other science faculties.

In addition to the universities with degree programs, several technical agricultural colleges offer 2-year diploma programs. Newfoundland has no agricultural schools but offers scholarships for agricultural education in other provinces.

Immigration and settlement

In recent years, Canadian agriculture has moved toward fewer but larger farms and to increased mechanization and specialization, with large increases in capital costs. At present, only four out of every 100 Canadians live on farms.

The small farm has become increasingly difficult to manage profitably, and to immigrants this means that they must buy, or rent, much larger farms and a great deal of expensive equipment. As an alternative, they can farm part-time while working at another job. This arrangement lets a person who wishes to go into farming full-time gain experience in crop and livestock production without becoming totally dependent on farm income for survival. Also, a farmer can build equity over time.

Tools of Production

Machinery

Canada now has more tractors than farms. They range from large 300-hp, four-wheel-drive tractors on the big grain farms of the west to small tractors designed for horticultural crops. Four out of five farms in Canada have trucks, and their numbers are increasing. Trucks deliver feed to farms, collect milk in bulk tanks and perform other duties.

Farmers use combine harvesters almost exclusively to harvest grain and oil-seed crops. Balers, bale loaders, forage harvesters and hay stacking wagons provide fully mechanized methods of handling forage. Mechanical potato diggers and sorters, harvesters for tomatoes, sugar beets and other vegetables, fruit-tree shakers and other harvesting aids reduce the labor involved in bringing in these crops.

For tilling soil, there is a large variety of chisel plows, harrows, diskers, cultivators and weeders, most controlled from a tractor seat through hydraulic systems. For seeding and fertilizing, tractors often pull several diskers and seed drills at once. Chemical sprayers have been adapted to a wide range of crops. Special planters now exist for crops such as potatoes, sugar beets, vegetables and tree seedlings.

Although gasoline and diesel fuel supply most of the energy needed for farm machinery, electricity runs much of the stationary equipment, such as grain augers, elevators, pumps, barn cleaners, crop dryers and milking machines, as well as the workshop tools that have become a necessity on mechanized farms.

Fertilizers

Farmers use commercial fertilizers extensively in various combinations of nitrogen, phosphorus, potassium and micronutrients for different soils and crops. Manure also plays an important role in maintaining fertility on livestock farms. Producers in eastern Canada and British Columbia use lime extensively on acid soils, but those in the Prairie Provinces rarely do as the majority of soils are neutral or alkaline.

Aside from bringing immediate advantages, fertilizers have long-term value; they help soil make better use of moisture.

Agricultural chemicals

In addition to fertilizers, Canadian farmers use veterinary and other agricultural products to protect livestock and to maximize yields of high-quality crops.

While encouraged to rely on pesticides as little as possible, most Canadian farmers would have difficulty surviving without their judicious use.

Without pesticides (including biological and chemical), production would drop drastically because of insects, diseases and weeds. Food would not only become more expensive, it would fall in short supply and quality would deteriorate. This would have serious effects on the entire Canadian economy, including our ability to export grain around the world.

Before pesticides can legally be used in Canada, they must be registered under the Pest Control Products Act, administered by Agriculture Canada. To get a product registered, a manufacturer must submit data on its efficacy and toxicological and environmental effect, which the federal government evaluates. In this way, we ensure that human health and the environment are not jeopardized when people use the product according to label directions.

Undoubtedly, synthetic chemical fertilizers and pesticides will remain important to agriculture. However, the agricultural community has begun to scrutinize their use more closely.

Farmers are aware of consumers' growing concerns about agricultural chemicals and the safety of our food. They also recognize that fertilizers and pesticides may affect soil and water and that these products account for a large part of production costs. They are therefore looking at new ways to use chemicals more wisely and efficiently.

Crops and Livestock

Although soils and climate vary considerably, Canada may be divided for practical purposes into five main agricultural regions: Atlantic, Central, Prairie, Pacific and Northern. The following pages discuss each separately.

Atlantic region

This region comprises the provinces of Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick, and the Gaspé district of Quebec. Its climate is not extreme. Though modified by the sea, it is also influenced by cold currents from the coast of Labrador and winds from northern Quebec. The annual precipitation ranges from 75 to 140 cm.

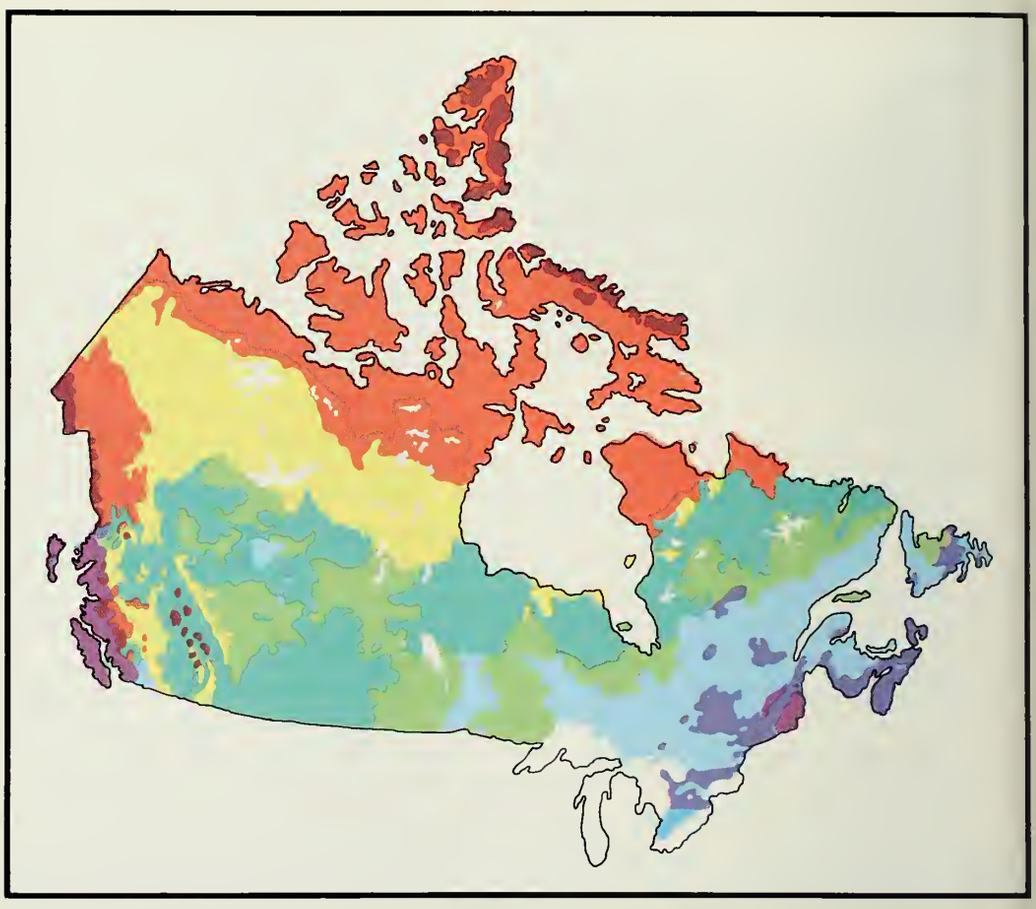
In general, the climate and terrain favor mixed farming. Conditions suit forage crops especially well, and hence a livestock industry. It is not unusual to find farming combined with fishing or lumbering.

Newfoundland has crops of the hardier kinds. Because of a shortage of arable land, agriculture is mainly of local importance.

The province is self-sufficient in eggs, broilers and fluid milk. Attempts have been made to extend swine, sheep and vegetable production. Every year, Newfoundland exports large quantities of wild blueberries and its strawberry sector is growing rapidly. Fur and greenhouse production have also shown considerable growth in recent years.

Farming is the principal occupation on Prince Edward Island. The most important single crop is potatoes, but with its mixed grains and lush grass, this fertile island also supports dairying and other livestock enterprises. In recent years, small fruits and vegetables have begun to show great promise.

Total Rainfall (mm) during
the growing season, related to soil
geographic areas, 1951–80 normals



Source: Agriculture Canada, Land Resource Research Centre

In Nova Scotia, the main agricultural areas surround the Bay of Fundy and Northumberland Strait, where they are protected from Atlantic gales. Mixed farming is common, with emphasis on dairying, poultry and horticultural crops. Producers show an increasing interest in beef cattle. Nova Scotia is famous for apples it grows in the Annapolis Valley. Strawberries and blueberries are other important fruit crops. Grain and forage crops grow in several areas, including the fertile, tidal marshlands on the Bay of Fundy.

The main farming area in New Brunswick lies in the Saint John River Valley. At the riverhead, in the northwest corner of the province, livestock and potatoes are the main products. As the river winds through grassland, potatoes become the major crop, whereas in the south, near the mouth of the St. John, dairy farming predominates.

Farmers grow feed grains in rotation in the potato-growing areas and in marshlands. They carry out mixed farming along the eastern coast of New Brunswick while in the northeast and southwest blueberries have become an important economic crop. Strawberries and apples are grown on a small scale throughout the province.

Central region

The second-largest agricultural region of Canada, most of the central region's farms are confined to the shores of the St. Lawrence, the Ottawa Valley and southern Ontario. It also has the densest population, so that few farms lie far from big markets.

Large bodies of water modify the climate, particularly in southwestern Ontario, where the winters are mild. The region includes the southernmost part of Canada, which has roughly the same latitude as northern California. The precipitation ranges from 75 to 115 cm a year. Most of the agricultural soils formed from glacial drift that later developed under deciduous forest cover.

Quebec's agriculture depends mainly on mixed farms, many dating back to the early days of the French settlers. But the rural scene is changing rapidly, and just as Quebec is developing industrially into one of the more important areas in North America, its farms are becoming geared to the demands of a forward-looking, businesslike agriculture. Most of the farms are from 40–160 ha.

Almost half of Quebec's commercial farms specialize in dairying. This is not surprising, as the province has more than a quarter of Canada's population to supply with fluid milk and produces half the nation's butter, cheese, yogurt and other dairy products. Quebec's other main farm types are those that produce hogs, poultry, beef, sheep and mixed produce.

Forage is Quebec's largest cultivated crop. Barley predominates among the feed grains, but production of feed corn has become more important, especially in the southern parts of the province. Fruit and vegetable production has followed the trend toward greater self-sufficiency, aided by better storage and processing techniques. In particular, the province has become a serious competitor with other apple-producing areas.

Ontario has more farms than any other province, — a quarter of Canada's total. Most cover 30–160 ha. The province's agriculture is very diversified just as its frost-free period varies from 150 days in the extreme southwest to under 100 days in northern parts. The lowlands of the south contain not only the most densely populated and highly industrialized area in Canada, but are also the most agriculturally productive.

Ontario has specialized crops such as grapes and tobacco, but it also has the largest number of commercial livestock farms, and ranks second only to Quebec in dairy farms. Forages are the largest cultivated crops, followed by corn, winter wheat, soybeans, oats and barley.

Most of Ontario's dairy industry lies in the southwest, the Bruce Peninsula and the eastern counties. Beef cattle have become a specialty on the shores of Lake Huron and Georgian Bay, where they find ample pasture. Sheep are scattered throughout the province. The hog industry is Canada's largest; as in Quebec, hogs often get started on one farm and finished on another. Poultry lend themselves to intensive production, and both egg and poultry meat production are big business. A small number of farms in the Niagara region account for most of the total poultry production, especially of broilers.

Ontario is a major producer of apples, and the Niagara Peninsula grows most of Canada's tender tree fruits and grapes. Farmers grow vegetables near most of the larger centers and on reclaimed muck land. Ontario uses greenhouses more extensively than other provinces, and potatoes and soybeans are significant crops.

In this region (especially in Quebec), maple syrup has long been an important part of farming. Native people made the syrup from the sap of maple trees even before the European settlers came to North America.

Prairie region

Manitoba, Saskatchewan and Alberta make up this region of vast farms and big machines. They contain three-quarters of the the farmed land of Canada. Although famous for producing grain and cattle on a grand scale, their farming is more diversified than first appears, and it is becoming increasingly so.

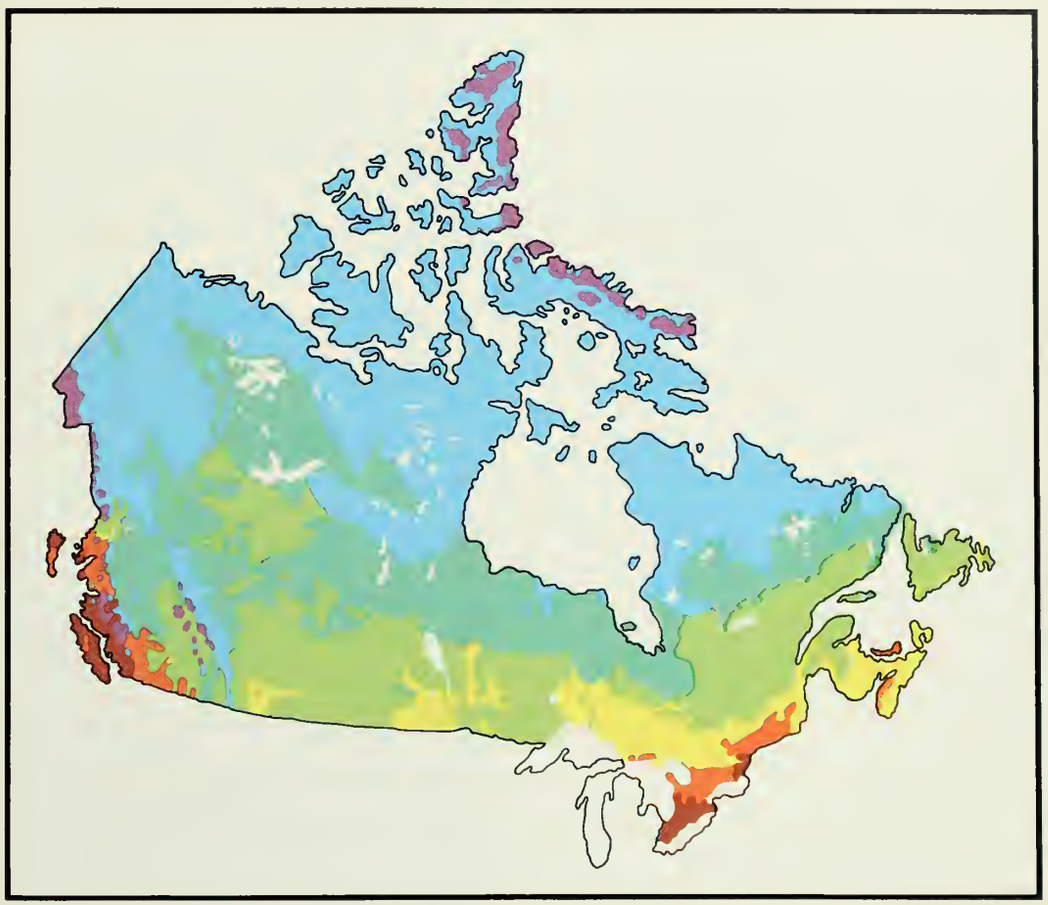
The lowest recorded temperature in the farming areas is $-55°C$; the highest is $45°C$. The weather rarely approaches these extremes, but the winters are cold and the summers hot and dry. The annual precipitation is between 30 and 50 cm.

The main grain-growing area lies within a triangle that has the U.S. border as its base and Lloydminster on the Alberta-Saskatchewan border as its apex. Because of the low precipitation, farmers sometimes use summerfallow to store moisture for the next year's crop. The climate especially favors the production of high-quality, hard red spring wheat, which is by far the largest single crop in all three provinces.

Manitoba has the highest rainfall of the three Prairie Provinces. Most of its agricultural areas have an average of 100 or more frost-free days. Wheat and other grains predominate, but canola and sunflower are grown, too. Manitoba is noted for its special crops such as sugar beets, peas, buckwheat, mustard, canaryseed, coriander and caraway. Most of the dairy farms lie within easy reach of Winnipeg. Beef cattle are raised mainly in the southwest and interlake region. Hog production is widespread and you can find some flocks of sheep. Most of the poultry farms do not compare with the large plants of the east, but they are important to the province.

In Saskatchewan, frost-free days number about 100 a year. Generally excellent for grain production, the weather varies considerably. Rainfall is light but usually timely in the growing season and the amount of sunshine is usually high. The province grows about two-thirds of all Canada's wheat as well as large quantities of other grains. Oilseeds, especially canola and pulse crops, are gaining increasing importance as cropping patterns become more diversified.

Growing Season Length (days) related to soil geographic areas, 1951–80 normals



Source: Agriculture Canada, Land Resource Research Centre

After wheat, barley and canola, forage ranks as the most important crop in the province. Products such as forage seed and dehydrated alfalfa are becoming significant exports. Many farmers also earn their incomes from livestock. After a significant decline in the late 1970s and early 1980s, the number of beef cattle and hogs have increased. Meat processors have rationalized their facilities, leading to some growth in capacity.

The province produces enough dairy products and poultry to meet its domestic needs.

Although agriculture is Saskatchewan's primary industry, oil, potash and uranium production contributes a great deal to the province's economy. Saskatchewan also plays a leading role in agricultural research and development.

In Alberta, Chinook winds sometimes relieve the winter cold. Frost-free days average 100 a year. Agriculture is by far the largest industry in Alberta, but rich oil fields have helped its economy greatly. The province ranks second to Saskatchewan in grain production. It has more beef cattle than any other province, owing largely to the big ranches in the south and Rocky Mountain foothills, and to expanding cattle-feeding operations. Alberta is the third-largest producer of hogs and has a quarter of Canada's sheep. Irrigation is highly developed in the south, making this an important area for forage and canning crops. The province grows about 60% of Canada's sugar beets.

Alberta has more mixed farms than either of the other Prairie Provinces. Dairy and poultry products figure prominently in the mixed-farm economy.

The Peace River district of the northwest has become a significant area for grain, oilseeds and livestock. The district is also important for honey, with the greatest concentation of producers in Canada. Alberta and Saskatchewan produce more than 80% of Canada's canola.

Pacific region

Mountains and forests cover the greatest part Canada's most western region. Consisting of most of British Columbia, it depends heavily on its forest resources. Less than 2% of the area is prime agricultural land, but where farming does occur, it is usually very productive. The province has a variety of climatic regions — the coast has mild temperatures and a high rainfall, the southern interior has moderate temperatures and areas as dry as the prairies, and the central interior (although a little cooler) has fairly high precipitation. With the exception of a few very large ranches, farms tend to be small and in the river valleys, the south-central mainland and southern Vancouver Island.

British Columbia is Canada's largest producer of apples. The Okanagan Valley also grows fruits such as peaches, plums, cherries and grapes. In addition, the province ranks foremost for raspberries and strawberries, which it grows largely in the Fraser Valley and on Vancouver Island. Other crops for processing include apricots, grapes, tomatoes, sweet corn, potatoes, peas, onions and carrots.

Livestock and dairy products account for the greater part of British Columbia's agricultural production. Many farms raise hogs and beef cattle, although beef production centers largely on the farms and ranches of the central and southern interior. The province's dairy farms and its poultry meat and egg production are concentrated mainly in the lower Fraser Valley where most of the people live. Mixed farming also exists in scattered areas.

The south of Vancouver Island has a climate so mild that that it has become famous for flowering bulbs, as well as other horticultural crops. In contrast, the Peace River district, like the adjacent northern part of Alberta, has a much shorter growing season. It produces mostly grain and livestock.

Northern region

This region lies north of latitude 55° and consists mainly of parts of northern British Columbia, plus the Yukon and the Mackenzie River Valley of the Northwest Territories. Precipitation varies from light in the northern Yukon to heavy on the mountainous coast of British Columbia. Frosts can occur in any month, but crops grown on the slopes may escape some of the damage. The north has more than 2.4 million hectares of potentially arable land and many hundreds of thousands of hectares of grazing land.

Farming still exists on a restricted scale in this region. Typical products include forages, cereals, honey, bean sprouts, berries and livestock. The farming possibilities are being explored but the fledgling agricultural industries are still struggling. Agriculture's long-term aim in the north is to reduce imports of foodstuffs by developing sustainable production.

Marketing and Supplies

Canada markets its farm products through a blend of private trading, public sales, auctions, sales under contract and through cooperatives or marketing boards. Methods vary with the type of product, the region and the preferences of producers.

Livestock and poultry

Canada's principal livestock markets are at Montreal, Toronto, Winnipeg, Calgary and Edmonton. But many other outlets exist, ranging from large stockyards to country collection points.

Of the cattle and calves marketed, more than half get sold by auction at public stockyards. Most of the remainder go directly to packing plants and about 6% directly to export. Cooperatives and producers' organizations make other sales. Breeding stock may be auctioned publicly or sold privately.

Provincial marketing boards market the hogs. None of these boards have supply management powers; their main function is to promote pork and act as a central selling agent for producers.

Sheep producers sell a large proportion of their animals at the farm gate. Lambs are also marketed through stockyards or get sold directly to packers.

The Canadian Egg Marketing Agency regulates egg marketing to stabilize production and price. The agency's powers include the authority to establish provincial marketing quotas, to remove surplus eggs from the market, to set prices according to a formula, and to impose and collect producer levies. Provincial boards act as agents for the national agency.

Turkey marketing is regulated by the Canadian Turkey Marketing Agency, whose functions parallel those of the Canadian Egg Marketing Agency, except that it can't buy surplus product and set prices.

Both the Canadian Chicken Marketing Agency and provincial chicken marketing boards regulate production of chickens grown for meat. The provincial boards have the authority to allocate producer quotas, set producer prices and collect levies.

Almost all replacement poultry as chicks or poults come through registered hatcheries, from hatching eggs produced by provincially approved supply flocks. The Canadian Broiler Hatching Egg Marketing Board has authority over the provincial boards responsible for broiler hatching eggs.

Milk

Some 38 000 dairy farmers in Canada supply the milk needed for the country's domestic and export markets. Both the fluid milk processors and the dairy plants that manufacture products such as butter, cheese, ice cream, yogurt and skim milk powder are well supplied.

In Canada, provincial milk marketing boards regulate quality standards, prices and deliveries, plus the marketing of fluid milk. These boards estimate their market requirements and assign producers a share of the market.

A comprehensive market-sharing system for industrial milk operates in all Canadian provinces except Newfoundland. This plan, under which each producer is allocated a share of the Canadian market, applies to industrial milk producers and to fluid producers for that portion of their milk used for industrial purposes. The provincial milk marketing boards administer market shares under the authority and direction of the Canadian Dairy Commission. To supplement the market price that producers receive for their industrial milk and cream, the Canadian Dairy Commission makes payments directly to the producers, based on their individual market shares.

Grain

The Prairie Provinces grow most of the grain marketed in Canada. The farmers deliver it to country elevators owned by private firms or cooperatives. After inspection and grading at these elevators, the grain is shipped to terminal, mill and port elevators in various parts of the country. Grain elevators in Canada have a combined capacity of more than 15 million tonnes.

The Canadian Wheat Board is the sole marketing agency for western Canadian wheat, oats and barley destined for export and domestic consumption. It also coordinates the movement of these grains and of rye, flax and rapeseed. Returns from wheat, oats and barley marketed through the board go into annual pools for each grade, so that all producers receive averaged prices per tonne for the same grades of grain.

The board regulates the flow of grain from farms to elevators through quotas based on area seeded, and negotiates handling and storage charges with elevator companies. It also determines the kinds and grades of grain needed to meet contracts it makes with foreign buyers.

All of Ontario's wheat is sold through the Ontario Wheat Producers' Marketing Board.

Fruits and vegetables

Producers have a choice of outlets for their fruits and vegetables — fresh and frozen food markets, canneries and other processors. Marketing agencies, wholesalers, canners and processors usually have offices in the producing areas, or close to them. Most produce is grown under a contract or a prearranged marketing scheme. More and more crops are being handled by marketing boards, producers' associations and cooperatives, all of which are particularly active in British Columbia, Ontario, Quebec and Nova Scotia.

Of the other important crops, marketing boards control tobacco in Ontario and Quebec and soybeans in Ontario; refineries in Quebec, Manitoba and Alberta let contracts for sugar beets.

Marketing boards and cooperatives

Marketing boards operate under the authority of provincial governments to deal with commodities produced and marketed within their home provinces. These boards must obtain federal permission before they can regulate the marketing of their products outside their own provincial borders. By using both federal and provincial legislation, producers can set up national agencies to cover all aspects of marketing. A national agency meshes provincial boards into an overall, coordinated entity to handle products country-wide.

Farmers usually organize cooperatives to handle or market their crops or livestock, or to supply the goods and services they need to farm. A cooperative may offer one or both of these services. In addition, many other kinds of cooperatives exist that are not directly involved in marketing.

Where cooperative pooling arrangements exist to market farm products, farmers receive guaranteed cash advances on their deliveries, whether their products are sold immediately or not.

Food processing

Processing includes such basic services as flour milling and meat packing. It speeds delivery of fresh products to the consumer, treats products for storage until they are needed, or converts products into different forms. Quick-freezing, freeze-drying, ready-mixing, precooking and improved packaging are examples.

Both government and industry do research into processing; in Agriculture Canada, this work is carried out by the Research Branch.

Feed processing

Canadian livestock farms are using more and more feed rations. One reason is the development of large operations that follow up-to-date methods of animal nutrition. Another is a growing realization that profitable feeding requires carefully balanced rations, including extra nutrients such as trace minerals and vitamins.

Farmers can buy mixed feeds from commercial sources in bags or in bulk. However, many Canadians prepare their own livestock feeds, mixing homegrown grains with whatever additional ingredients may be required.

Seed

In Canada, seed marketing is carried on by private seed companies, farmer-owned cooperatives and the seed growers themselves; marketing boards are not involved. Seed grades, established by federal government regulation, make marketing easier by giving the buyer information on the relative usefulness of different lots of seed. The sellers bear responsibility for processing the seed to meet grade specifications. Some provinces assist in the construction of cooperative seed-cleaning plants to ensure that farmers have the proper equipment to clean seed they sell or use themselves.

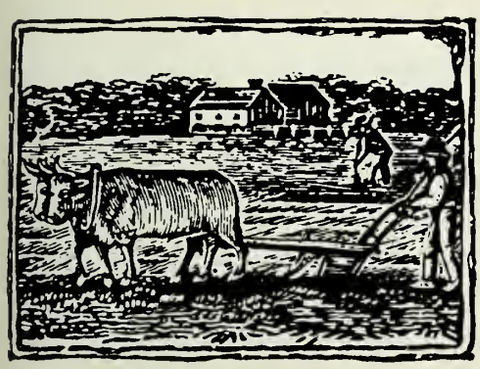
Members of the Canadian Seed Growers' Association produce pedigreed seed under conditions that ensure that the purity of the varieties are maintained. Agriculture Canada inspectors check all pedigreed seed in the field, and label and seal the processed product with official tags and seals. Certified seed of small grains can be sold in bulk.

Government research institutions have developed many of the crop varieties used in Canada and growers and trade organizations arrange multiplication and distribution programs that make pedigreed seed available to the public. Before they can be registered and sold, Agriculture Canada evaluates all new plant varieties in various soils and climates, in cooperation with breeders and trade and industry representatives. In addition, seed of many privately developed varieties is produced for domestic and foreign markets under the pedigreed seed program.

Farm supplies

Farmers obtain their machinery, building materials, fertilizers, agricultural chemicals and other supplies through normal commercial and cooperative outlets. They may reduce their costs by sharing equipment cooperatively or by other pooling arrangements.

Transportation and Storage



In a country where distances are great, transportation is a major concern. Canada ships its farm products by road, rail and water, and sometimes by air. To deliver them in good condition we need well-organized facilities, including vehicles designed for fresh or refrigerated products, livestock, milk or grain. Collection and distribution points abound for livestock and perishable goods, and there is a considerable amount of dry and cold storage.

Trucking

Almost every commercial farm has at least one truck or car, or both. With good roads in most areas, farmers carry much of their grain to elevators and their other products to markets and plants. All farm products get trucked at least part of the way to market. Trucks move practically all livestock from country points to stockyards and packing plants. Eggs, poultry, cream, fruits and vegetables go by road to local markets, plants or delivery points. Tank trucks pick up milk directly from bulk coolers on the farms. Commercial firms and cooperatives use trucks extensively to market and distribute agricultural products, and to deliver supplies to farmers.

Railways

Much of the former rail traffic in farm products has been diverted to trucks, and the switch will apply to more and more products if increasing numbers of railway branch lines are abandoned. But freight trains remain the basic way to carry millions of tonnes of grain from country elevators to terminals and mills. They often carry livestock and meat over long hauls, particularly livestock travelling from stockyards in the prairies to British Columbia. Shippers sometimes prefer railways for taking bulky crops, such as sugar beets, from country collecting points to refineries.

Improvements to containers, particularly those for frozen products, have widened the scope of the railways. There is also the piggyback container, which can be transferred from truck to flatcar and back again, or onto ships, without unloading its contents.

Water routes

The Great Lakes and St. Lawrence Seaway have long been used during the shipping season to transport grain from terminal elevators at Thunder Bay, Ontario, to eastern Canada. Another seasonal route for grain from the prairies goes through the port of Churchill on Hudson Bay. Halifax and the Pacific coast have year-round shipping facilities.

At each end of the country, water transport acts as an extension of railroad transport, a feature vital to Newfoundland, Prince Edward Island and Vancouver Island.

Cold storage

British Columbia, Ontario and Quebec have two-thirds of the country's cold storage space. This corresponds roughly with the proportion of Canada's population these three provinces have. A small percentage of the space consists of locker plants for meat storage.

Several types of storages for fruit and vegetables control temperature and humidity. Most of these are on farms. Controlled-atmosphere and low-oxygen storages are now in general use for fruit, particularly apples.

Services for Farmers and Consumers

Agricultural and food services are a joint undertaking of the federal government, provincial governments, business firms, cooperatives and farm organizations. Many of these have been mentioned in previous sections. This section deals mainly with federal programs and related provincial services. The provincial governments and other organizations will readily give you more information about their programs on request.

Research

The Research Branch of Agriculture Canada does about half of the country's agricultural research. The branch consists of a network of research centers, research stations, experimental farms and research services, stretching from coast to coast. Research projects cover all elements of the food chain — soils, plants, animals and plant and animals products — and associated microorganisms, pests and diseases and their control, and food processing and storage.

The research stations and experimental farms are problem-oriented and are located geographically to solve problems inherent with the climate, soil and other conditions of the various areas.

Geography does not necessarily determine the work of the research centers and research services; they investigate general agricultural problems.

Close cooperation exists between the Research Branch establishments and universities and provincial departments of agriculture.

The department's Food Production and Inspection Branch also carries out research, as does the Canadian Grain Commission.

Improvement programs

The federal government makes grants to organizations, fairs and exhibitions that promote farming improvements and to a number of producers' organizations.

Grants also help maintain the Canadian Livestock Records Corporation, an organization that serves the breed associations by processing purebred livestock records. Other grants to the Canadian Seed Growers' Association promote production of recommended seed varieties.

Federal contributions also help organizations that deliver livestock performance improvement programs. These programs record milk production and milk composition from dairy animals and growth rate and reproductive performance of beef cattle, swine and sheep. National advisory boards coordinate the programs that establish standards to ensure country-wide uniformity in animal identification, data collection, laboratory analysis, data processing and genetic evaluations. Agriculture Canada monitors to ensure standards are adhered to.

Agriculture Canada computes national genetic evaluation ratings for individual animals, giving farmers information they find valuable when selecting breeding stock. This improves economically important traits in the national herds and flocks.

Protection of crops and livestock

To prevent the introduction or spread of pests and diseases, Canada subjects the movement of livestock and plant material into and within the country to strict safeguards. These measures not only help guard farmers against losses but also help ensure that foreign customers keep their doors open to plant material and livestock from Canada.

Unless coming from the United States, livestock can only enter Canada with permits. They may need tests and quarantine in the country of origin, as well as on arrival in Canada. The federal government has disqualified some countries from shipping livestock to Canada because of disease problems. Livestock for export must also undergo control and testing. Similarly, meat products may not be imported or exported except under federal control.

The largest programs for eradication of diseases within Canada have been for bovine tuberculosis and bovine brucellosis. Bovine brucellosis was a serious problem for decades, but has, in recent years, been eradicated. As well, we've virtually eradicated bovine tuberculosis. Other potentially dangerous diseases are hog cholera, which is held in check mainly by rigorous federal supervision of farms that feed garbage, and rabies, for which we have a program of diagnosis, quarantine and vaccination.

The federal government controls imports of plant material into Canada, to protect the country's agricultural and forestry industries against new insects and diseases that destroy vegetation. Importers need permits for all plant materials, which are subject to inspection; any found to be infested may be fumigated, destroyed or returned to the country of origin. Countries known to be infested with plant pests not found in Canada cannot get permits to import. Generally, we do not permit the import of soil or plants with soil adhering. In addition, certain plant species must be grown in post-entry quarantine, either on the importers' premises or at stations operated by Agriculture Canada. The import safeguards, along with quarantine and other measures, let Canada meet the phytosanitary requirements of her trading partners and maintain her exports of food and fiber.

Meat inspection

The meat inspection legend with an establishment number is Canada's stamp of approval. It is placed on all red meat and poultry products processed in meat establishments operating under the Meat Inspection Act. This mark means that both the live animal and the carcass have been examined to ensure a disease-free and wholesome product.

Inspection also ensures that sanitation in and around the plant meets national and international standards. Canada maintains strict hygiene throughout the entire process, including packaging, shipping and transportation.

Controlled labeling guarantees that required information is given and that additives are within legal limits.

Establishments must destroy or denature all diseased or unwholesome materials, under direct supervision. Only meats bearing the 'Canada' legend may be shipped out of a province or out of Canada. Likewise, meats may be imported only from a country that has a national meat inspection program equal to the Canadian one.

Grading and inspection

Commodity grading and inspection aim for quality, safety and wholesomeness. Most of Canada's red meats and poultry sell at retail by grade, and Agriculture Canada grades all cattle, hogs, sheep and poultry slaughtered and processed at registered plants according to national standards. Farmers sell almost all their hogs and lambs and some beef by carcass weight and grade; they get paid accordingly.

Eggs from registered stations are subject to inspection to ensure uniform application of grade standards.

Agriculture Canada inspects all manufactured dairy products for composition, weight and labeling. Inspection also ensures uniform grades for butter, cheddar cheese and skim milk powder.

Wind Erosion Risk

Source: Statistics Canada, *Human Activity and the Environment*

Low
An area of low wind-erosion risk has a combination of fine-textured soil, low maximum wind speeds, humid climate and little tilled land and/or summerfallow.

Moderate
An area of moderate wind-erosion risk has a combination of medium-textured soil, moderate maximum wind speeds, moderately humid climate and a moderate amount of tilled land and/or summerfallow.

High
An area of high wind-erosion risk has a combination of coarse-textured soils, high maximum wind speeds, a dry climate and a large amount of tilled land and /or summerfallow.

The Canada Grain Act, administered by the Canadian Grain Commission, establishes grain grades.

Agricultural seed offered for sale, whether produced in Canada or imported, is inspected to ensure that it is labeled with the proper grade and meets the required standards. Pedigreed seed crops are graded in the field and officially labeled. Seed potatoes are inspected in the field, bin and at shipping point, and must meet specific grade and health standards. In British Columbia, flower bulbs for sale are inspected and certified.

Generally, only those fresh and processed fruits and vegetables, maple products and honey for international and interprovincial trade get inspected and graded. At the request of several provinces, the federal government enforces the regulations and grade standards for trade within their boundaries.

Farm credit and financing assistance

During the last three decades, agriculture has become a capital-intensive industry.

The Farm Credit Corporation is the main source of federal-sponsored long-term mortgage credit. Through the Farm Credit Act, it makes loans available to help farmers establish profitable farms.

The corporation also administers the Farm Syndicates Credit Act, under which it makes loans to syndicates of three or more farmers to buy machinery, buildings and install equipment they can use profitably on a cooperative basis.

Farmers may obtain credit for intermediate and short terms under the Farm Improvement and Marketing Cooperatives Loans Act. Chartered banks make this type of loan to individual farmers and farming cooperatives under a government guarantee of repayment.

Farm Debt Review Boards ensure that farmers in financial difficulty or facing foreclosure have access to impartial third-party review. The boards consider individual circumstances and possible financing/refinancing options. The Advance Payments for Crops program provides interest-free loans to eligible producer groups so they can make advance payments to their members. These payments let farmers store their crops until market conditions improve.

Farmers, like other citizens, may also arrange term financing through chartered banks and the Federal Business Development Bank (a subsidiary of the Bank of Canada) for new or existing farm enterprises.

Other sources of credit for farmers include provincial programs, credit unions and cooperatives, banks, and commercial and industrial firms.

Safety net programs

Natural, uncontrollable forces — hail, drought, frost and sometimes insects and disease — destroy crops and jeopardize the financial stability of Canadian farmers. The federal government contributes to federal-provincial crop insurance programs by reducing the premiums farmers have to pay. Other safety net programs make payments to farmers to help them recover production expenses when market prices fall below what it costs to produce their commodities.

Regional development

Agricultural development agreements between the federal government and the provinces encourage regional development. Based on the agricultural and food production potential of the individual province, these programs conserve resources, improve productivity, exploit export opportunities and foster new secondary industries. Other federal-provincial programs improve soil and water

Water Erosion Risk

Source: Statistics Canada, *Human Activity and the Environment*

Low

An area of low water-erosion risk has a combination of coarse-textured soils, low surface runoff, low-intensity rainstorms and little land area under wide-row crops and/or summerfallow.

Medium

An area of moderate water-erosion risk has a combination of medium-textured soils, moderate surface runoff, medium-intensity rainstorms and a moderate amount of land under wide-row crops and/or summerfallow.

High

An area of high water-erosion risk has a combination of fine-textured soils, high surface runoff, high-intensity rainstorms and a large amount of land under wide-row crops and/or summerfallow.

quality, encourage the transfer of technology to farmers, increase the production capability for feed grain and forage, and stimulate research into biotechnology.

The federal government also funds programs to develop new markets for agricultural and food products, and to provide assistance for production. In addition, the New Crop Development Fund promotes development of new crop varieties by universities and other non-profit organizations.

Prairie Farm Rehabilitation Administration (PFRA)

The federal government established the administration in 1935 to help rehabilitate those areas of Manitoba, Saskatchewan and Alberta afflicted by drought and soil drifting. PFRA promotes farm practices, tree culture, water supply and land use that help stabilize the region's agricultural economy. Since the 1930s, PFRA has built many thousands of water storage, delivery and irrigation facilities, ranging from small individual farm dugouts to multimillion-dollar projects. It operates a network of community pastures to reclaim and use marginal lands and to help farmers with livestock. Each year, PFRA distributes 6–8 million tree seedlings for conservation shelterbelt plantings.

In addition to on-farm water development, the administration helps groups and prairie agricultural communities with their special water needs. It studies larger multipurpose projects which it develops with the provincial governments.

In recent years, the administration has given farmers technical and financial assistance so they can diagnose soil problems and practise corrective soil conservation. PFRA continues to study the effects of drought and develops the means to respond. It also administers special federal assistance programs to combat the effects of recent droughts.

Transportation assistance programs

The Western Grain Transportation Act subsidizes the railways to make up the difference between freight rates paid by prairie grain producers and the cost of moving their grain to ports in British Columbia, Thunder Bay and Churchill. Other specialized programs support transportion of agricultural products such as feed grain.

Special assistance

The Canadian Rural Transition Program helps farm families who cease farming because of financial difficulties and wish to start a new non-farming career. The program provides for a transition grant and additional financial assistance. It helps train these people and transport them to seek employment and, if necessary, to relocate and start a new business. It also reimburses employers for wages and makes job and personal counseling available.

The federal government funds many other programs that benefit farmers. They include:

- developing and promoting exports;
- disseminating market information through market price reports and forecasts; and
- supervising national marketing agencies for eggs, turkeys and broiler chickens.

Information services

Both the federal and provincial governments inform Canadians about developments in agriculture. The Communications Branch of Agriculture Canada prepares press releases, feature articles, publications, reports, radio tapes, video cassettes, short films, slide kits, photographs and exhibits. It produces longer films in collaboration with the National Film Board. The branch also answers inquiries from the public.

Agriculture Canada supplies market information on farm products through daily, weekly, monthly and annual reports.

Provincial services

All provinces have departments of agriculture. The Yukon and Northwest Territories each have a branch of a department devoted to agriculture. The provinces and territories stay in close contact with producers through local officers known as agricultural representatives or district agriculturists. These professional agrologists help and advise farmers, help organize clubs, and arrange demonstrations of farming practices and (sometimes) short courses. Some provinces also employ home economists.

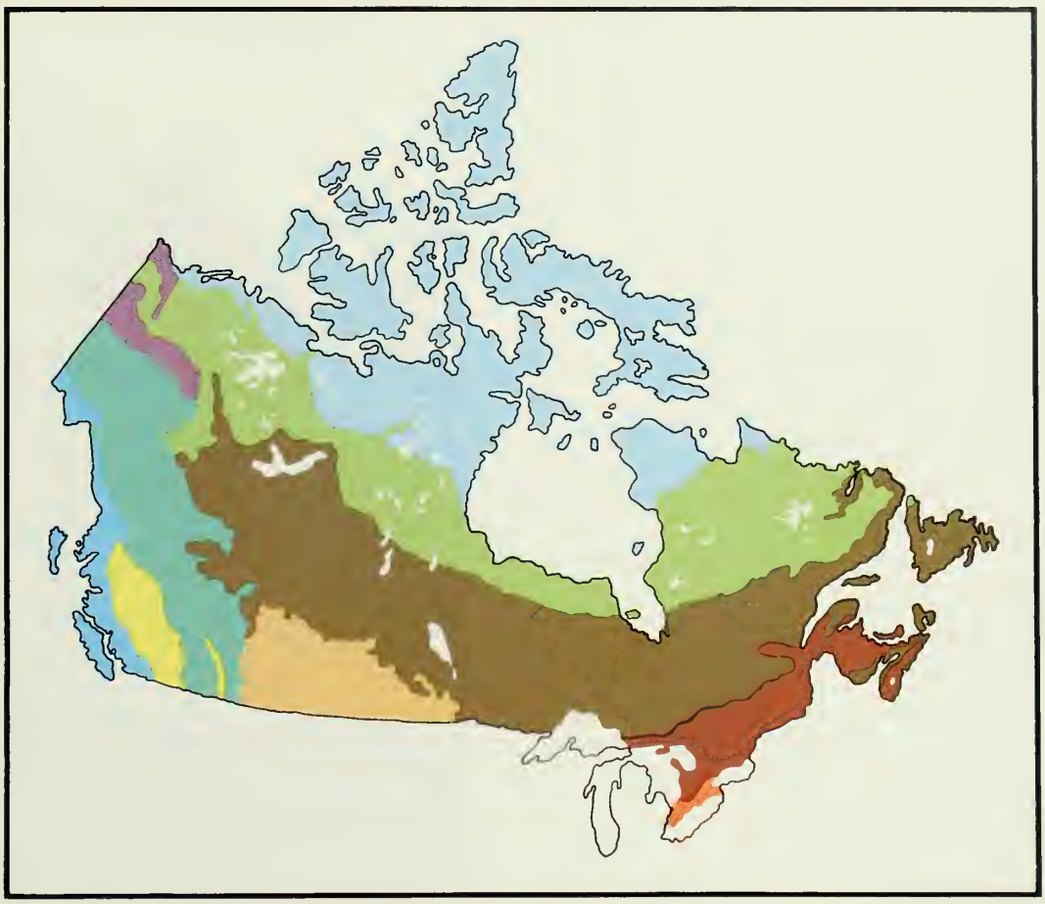
Like Agriculture Canada, each provincial department has specialists in all the aspects of agriculture that concern its farmers. Each also administers provincial farm legislation.

If you would like information on provincial services, inquire at the provincial department of agriculture's nearest office or its headquarters in the provincial capital.

Other excellent sources of information include books on farming and more than 100 farm periodicals available in Canada.

Ecoclimatic Provinces of Canada

Arctic	26.09% of area
Subarctic	19.98% of area
Boreal	28.87% of area
Cool temperate	4.02% of area
Moderate temperate	0.22% of area
Grassland	5.03% of area
Subarctic cordilleran	1.49% of area
Cordilleran	9.43% of area
Interior cordilleran	2.09% of area
Pacific cordilleran	2.49% of area



Source: Sustainable Development Branch, Canadian Wildlife Service, Environment Canada