

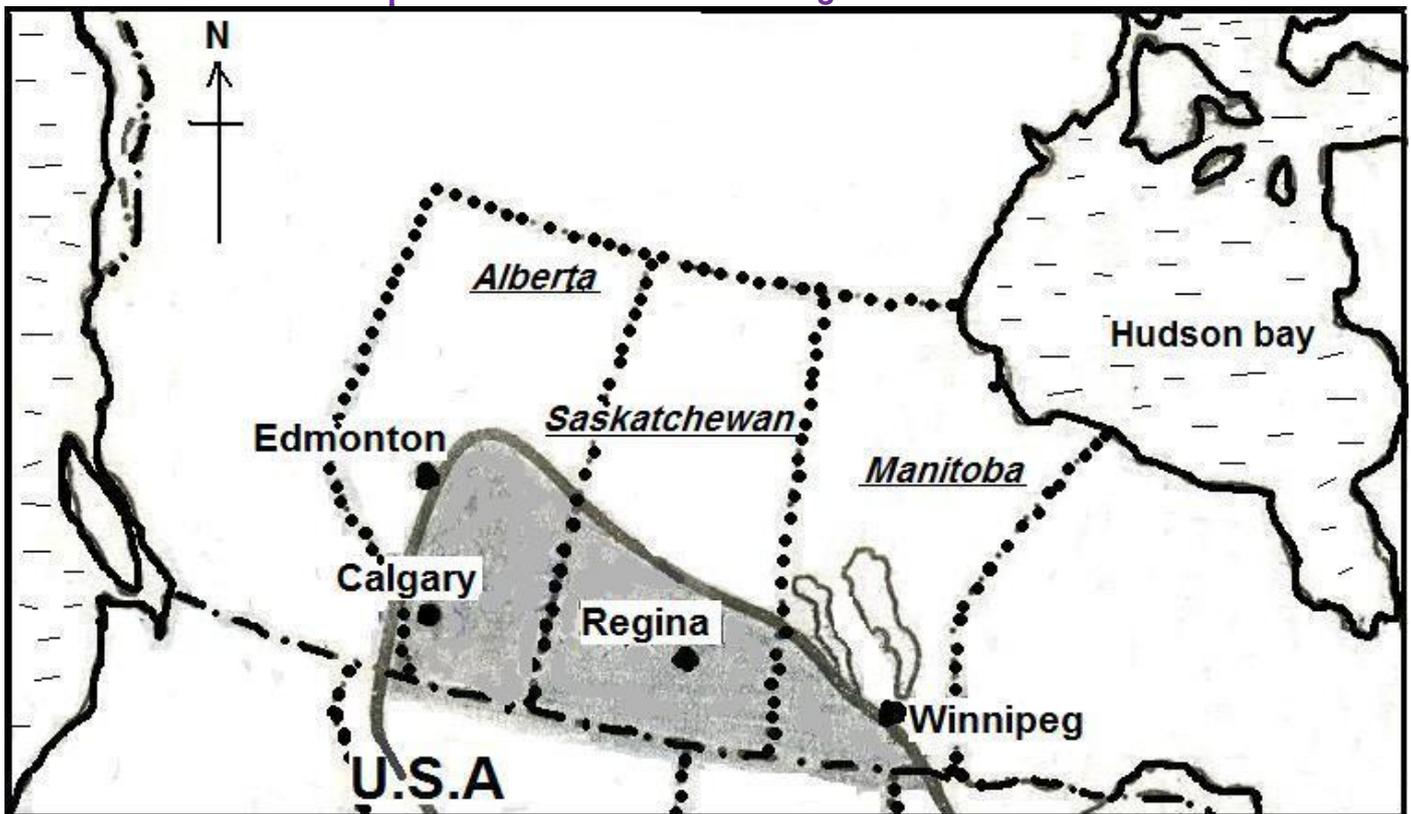
THE CANADIAN PRAIRIES

Introduction:

A prairie is a French word meaning meadows or an extensive grassland. It is an extensive temperate grassland—Canadian temperate grassland.

This region is located in central plains of North America between the Canadian Shield and the foothills of the Rocky Mountains. It covers the Southern parts of the provinces of Alberta, Saskatchewan and Manitoba which make about a fifth of the country's total land area. The grass land also extends to U.S.A in North Dakota, South Dakota and Montana states. The largest cities found in the Prairie Provinces are Edmonton and Calgary (Alberta), Regina (Saskatchewan) and Winnipeg (Manitoba). The Canadian Prairies region has a triangular shape with the base at the American border as illustrated below:

Sketch map of Canada showing the extension of the Canadian prairies and the major cities



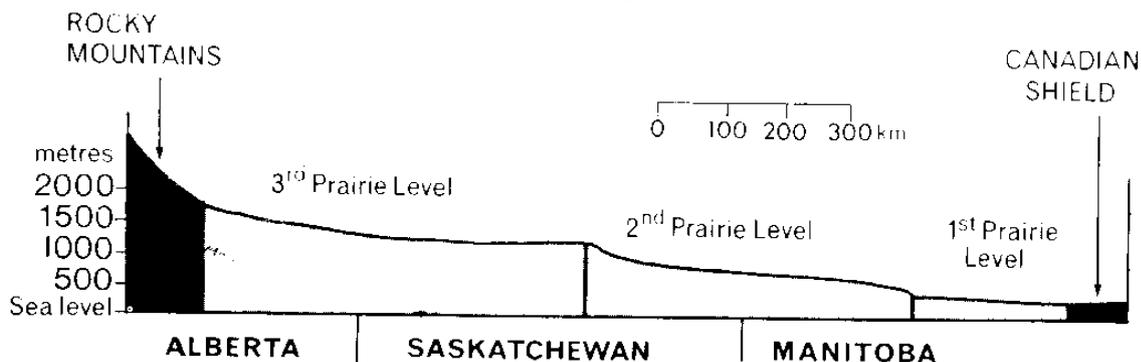
Relief of the Prairies

The Canadian prairies are characterized by plains that rise in a series of levels separated by hills gradually rising from 300metres near Winnipeg city in Manitoba in the east to 900 metres near Calgary city in Alberta in the west. The undulating plain is low in the east from the great lakes and rises in the west to foothills of Rocky Mountains.

Rivers like North and South Saskatchewan in Alberta, Assini boine; Souris and Red river from Lake Winnipeg in Manitoba and Athabasca in Alberta to Cedar Lake have

dissected the relief with deep valley. Therefore, the relief of Canadian prairies is a series of dissected plains (plateau) as illustrated.

Section across the Canadian prairies along latitude 50°N



Climate of the Canadian Prairies

The area experiences an extreme type of climate or cool temperate interior type of climate or a continental type of climate. Extremes in climatic conditions are experienced. The climate of the prairies is characterized by the following:-

- ✳ The summers are Warm with temperature over 15°C
- ✳ Several sunny days in summer or brilliant sunshine in the summer.
- ✳ The area receives Moderate cyclonic rainfall in summer of about 508 mm per annum. The rainfall is unevenly distributed. The eastern receives more rainfall compared to the western part of the Prairies.
- ✳ The winters are Very cold (0°-21°C) for example in January the temperature is -20°C
- ✳ Winter precipitation is in form of snow
- ✳ Winters are generally clear and bright
- ✳ Blizzards or snowstorms are sometimes experienced in winter because of the occasional depression of the westerlies.
- ✳ Four seasons are experienced that is spring, summer, autumn and winter.

Table showing the climate of Winnipeg, Canadian Prairies Altitude: 232 metres (760 feet) 15° N 97° W

Months	J	F	M	A	M	J	J	A	S	O	N	D
Temp °C	-20	-18	-9	3	11	17	19	18	12	5	-6	-3
RF mm	23	18	30	36	51	79	79	56	56	36	28	23

Factors influencing the climate of the Canadian Prairies

There are several factors that influence the climate of the Canadian Prairies. The main factors influencing the climate of the prairies are: - latitude, altitude, relief and masses.

1. The air masses that affect the climate of the Prairies are:

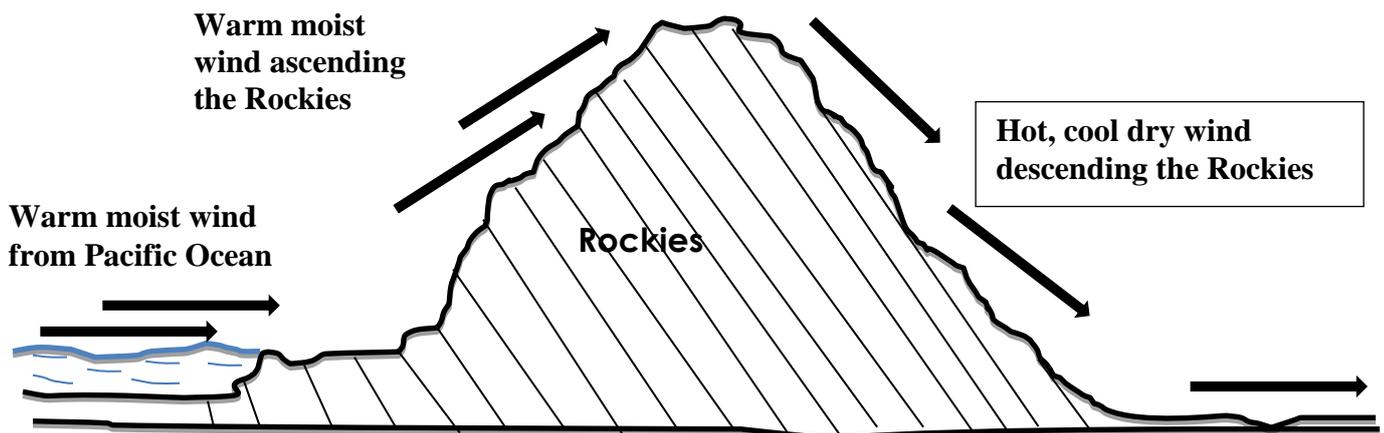
- a) The **tropical maritime winds**:-these are warm moist winds from the Gulf of Mexico which usually brings hot humid conditions in the Canadian Prairies.
- b) The **polar continental air mass**: - these are cool winds from the Arctic Circle or North Pole usually brings cold and dry conditions to the Canadian Prairies.

NB: The two air masses that is the **tropical maritime winds** and **polar continental air mass** coverage or meet in the Canadian Prairies resulting into cyclonic rainfall.

- c) The **Chinook winds** [local winds] come in a south westerly direction. These are westerly winds originating from the Pacific Ocean. This brings warm pleasant condition and has a considerable effect on the local pastures. It actually comes

with depressions in winter or early spring from the Pacific coast ascending the Rockies and then descending to the Canadian Prairies as illustrated below:

Diagram showing the effect of the Chinook wind in Canadian Prairies



It is a hot wind which can raise the temperature by 22^oc [40^of] within a matter of 20 minutes. It melts the snow covered pastures and animals can be driven out doors to grass in the open fields. The agricultural year is thus accelerated. Local farmers welcome the Chinook because frequent Chinook mean mild and early spring.

Other factors include:

2. The distance from the sea/ continental location
3. The influence of the Great lakes
4. The influence of the nature of the landscape
5. The influence of vegetation cover.

Soils of the Prairies

Soils are black, deep and fertile with adequate humus. They resulted from glacial deposition. These soils have supported cultivation in the region for long. However, the soils suffered erosion.

Natural Vegetation of the Prairies

The vegetation of the Prairies is characterized by temperate grassland which is practically tree less and the grasses are much shorter where the rainfall is moderate above 508 mm [20 inches], the grasses are tall, fresh and nutritious and better described as the long prairie grass with few scattered trees mainly in the east of the Prairies.

There is also the boreal vegetation on the slopes of the Rocky Mountains.

Types of farming carried out on the Canadian Prairies

There are several types of farming carried out on the Canadian Prairies and these include:

• Extensive grain farming

This is the growing of cereals on a large scale using scientific methods of farming for commercial purposes.

It is characterized by:

- Mechanization –use of different machinery like combined harvesters

- Growing of crops on a large scale.
- Use of the skilled labour force.
- Use of scientific methods of farming like use of fertilizers, pesticides, herbicides and irrigation farming.
- Growing of one or two crop[s].
- It is capital intensive
- Crop yields per unit area are high.

• **Intensive farming**

This is the growing of crops, fruits, vegetables/ rearing of animals on a relatively small scale. It is sub divided into the following:

- Horticulture
- Floriculture
- Market Gardening [truck farming]: This is the growing of vegetables, fruits and flower mainly/solely for the urban market. Most of the farms are located near the cities.
- Factory farming: This is the type of farming where livestock especially poultry, cattle and pigs are raised indoors. They are confined to stoves or pens instead of letting them graze freely on farms/pastures.

It is characterized by:

- Use of the scientific farming techniques.
- It is capital intensive.
- Use of skilled labour.
- It is mainly carried out in urban areas and peri-urban areas.
- A lot of care for animals and crops.

• **Mixed farming**

It is practiced mainly in the northern part of the Prairies. It involves growing a variety of crops like barley, oats, peas and flax e as well as rearing a number of animals such as cattle and pigs on the same piece of land for commercial purposes. Crop rotation is practiced and the used of fertilizers or animal manure to maintain soil fertility. Stall feeding is practiced. The main products of livestock include milk, Butter, skins / hides, cheese and beef.

Several farmers in the Canadian Prairies have now adopted mixed farming. This is because of the following reasons:

- a. Favourable government of agricultural diversification.
- b. To have a variety of sources of income
- c. To benefit from the symbiotic relations between the plants and the animals for example they complement each other whereby crop harvests are used as animal feeds and the livestock manure helps in improving soil fertility.
- d. To practice rotational agriculture to help maintain the soil fertility. This is because monoculture leads to soil exhaustion.
- e. To have a stable source of income since dependency on wheat alone is quite risky because of in times of fall in prices and incomes also fall.

• **Cattle ranching**

It is the rearing of animals on a large scale [extensive farming] using modern animal husbandry techniques for commercial purpose. It is mainly for beef production. Ranching in the Prairies has been favoured by the following;

- i. Vast areas of grassland producing (providing) pastures.

- ii. Available rivers providing water for the animals.
 - iii. Suitable relief to enable movement of the animals.
- However, some problems of ranching especially problems of pastures during winter, pests and diseases as well as limited market for the products do exist.

WHEAT FARMING ON THE CANADIAN PRAIRIES

The Canadian Prairies has been for long been known for wheat growing. Canada is one of the leading wheat exporters in the world. Wheat is extensively grown in Canada. Almost all the wheat from Canada is spring wheat and 95 % of the total comes from the prairie provinces of Saskatchewan, Alberta and Manitoba. Saskatchewan alone accounts for as much as two-thirds of the production. Of the remaining provinces only Ontario and British Columbia have significant wheat cultivation. Wheat is of two main types: -

- Spring wheat is planted in spring and harvested in late summer or autumn.
- Winter wheat is planted in late autumn or early winter and harvested in early summer.

Alberta province is the leading producer of other grain crops such as oats, barley and fodder crops followed by Saskatchewan and Manitoba provinces.

Background to wheat farming on the Canadian Prairies

Wheat farming on the Canadian Prairies began in 1912 on substance level. It was introduced by scotch settlers. However, as population and opportunities for market increase, commercial wheat farming started. Originally the Canadian Prairies was a hunting area for the Red Indian natives (Cree) who mainly hunted bison (Buffaloes).

Factors that have favoured commercial wheat farming the Canadian Prairies

Commercial wheat farming on the Prairies has been favoured by both physical and human factors. These factors include the following:

Physical factors:

- ✳ Existence of extensive open land with sparse population which allows wheat to be cultivated on a very large scale.
- ✳ Land is generally flat or gently undulating and it makes the land well drained for wheat growing, allows mechanization and the construction of the roads.
- ✳ The presence of well drained deep fertile Chernozem (prairie) soils with essential nutrients to wheat growing.
- ✳ Presence of conducive climate characterized by the following;
 - a) Adequate and timely rainfall received during the growing season
 - b) There are warm conditions that facilitate the growing of the plants
 - c) There is abundant sunshine that to enable the ripening of the grains.

Human factors:

- ✳ Presence of adequate capital in terms of cash and machinery.
- ✳ Presence of reliable and efficient transport networks like roads, railways and water ways for example the Canadian Pacific railway and Canadian National railway which link the farms with sea ports.
- ✳ The opening of the St. Lawrence Seaway which link the prairies to the rest of the world.
- ✳ Presence of reliable markets for the Canadian wheat. The internal market is provided by manufacturing sector of Canada and the external market is provided

by the European countries like Germany and Asian countries like China, Russia and Japan.

- ✦ Availability of large supply of skilled labour and experienced farmers as far wheat growing is concerned.
- ✦ The presence of adequate storage facilities i.e. elevators where wheat is graded, packed and stored ready for export.
- ✦ Research into quick ripening varieties such as reward, red fife, sounders & marquis.
- ✦ Favourable government policy that facilitated the establishment of home farms that have engaged in wheat farming.
- ✦ Canadian Homestead Act of 1922 that favours establishment of Wheat farms.

Characteristics of the Prairies Farms

A typical Canadian Prairies farm has the following characteristics:-

- **Size:** They are extensive or large scale farms with in average of 224 hectares. This is all to allow time for fallow. Wheat farms vary in size from about 100 hectares in the eastern part to over 200 hectares in the western part.
- **Shape:** They have rectangular shape in order to enable easy workability by machinery.
- **Ownership:** The farms are owned and managed by homesteads or families which have established themselves in the prairies. They are known as home farms.
- **Labour force:** Labour is mainly provided by family members. A few part-time workers for example 10-15 people are sometimes employed during the busy periods especially during harvesting.
- **Machinery:** The farms are highly mechanized. Most of the work is done by the use of the machines such as;
 - a. *Seeder discer* – this prepares the land for sowing, sows the seeds and adds fertilizers at some time.
 - b. *Swather* – this cuts the wheat and drops them in narrow bands for the grains to dry.
 - c. *Combine harvester* – this collects the grains a few days later, threshes the grains and scatters the straw over the field and delivers the grain to the truck.
 - d. *Tractor, ploughs / cultivators* – these are used for cultivating the fields.

Other equipment used includes grain clearing equipment as used in the elevators.

Wheat farmer's calendar

The Prairie wheat farmer may have the following annual timetable or calendar which is mainly influenced by climate as shown below:

During spring

- Ploughing the fields
- Planting of the crop
- Application of fertilizers to fields

During summer

- Spraying crops with insecticides and pesticides
- Weeding or spraying weed-killers or herbicides
- Harvesting in late summer

In autumn

- Harvesting of the wheat and other crops like soya beans.

Winter

- Holiday
- Planting of winter wheat
- Updating record books/book keeping
- Checking and repairing machinery
- Planning next season's work
- Purchasing and making orders for inputs like seeds, herbicides, fertilizers etc.

Contributions of wheat farming to the economy of Canada

- Provision of food for the people i.e. source of wheat flour.
- Source of income to the farmers. Wheat is sold cold locally or exported.
- Source of government revenue through taxation.
- Source of government revenue for labour i.e. people have acquired jobs on wheat farms e.g. of book keepers, machine operators etc.
- Wheat has been a source of raw material for industrial development i.e. wheat has led to industrialization e.g. grain milling industries and food processing industries.
- It has led to development of infrastructure in the region e.g. development of roads railway lines, storage facilities and other services.
- Wheat farms have been a tourist attraction thereby helping to bring in foreign exchange.

Products of wheat

The wheat grains are ground into wheat flour or whole meal flour which is used to produce bread/wheat bread, cakes, biscuits, breakfast cereals, ice-cream cones, macaroni, noodles, spaghetti etc. Other products include Wheat meal, bran for livestock feeds, wheatgrass and Wheat germ. Industrial uses of wheat include distillation of alcohol, the preparation of glues and adhesives, baking and food flavoring materials.

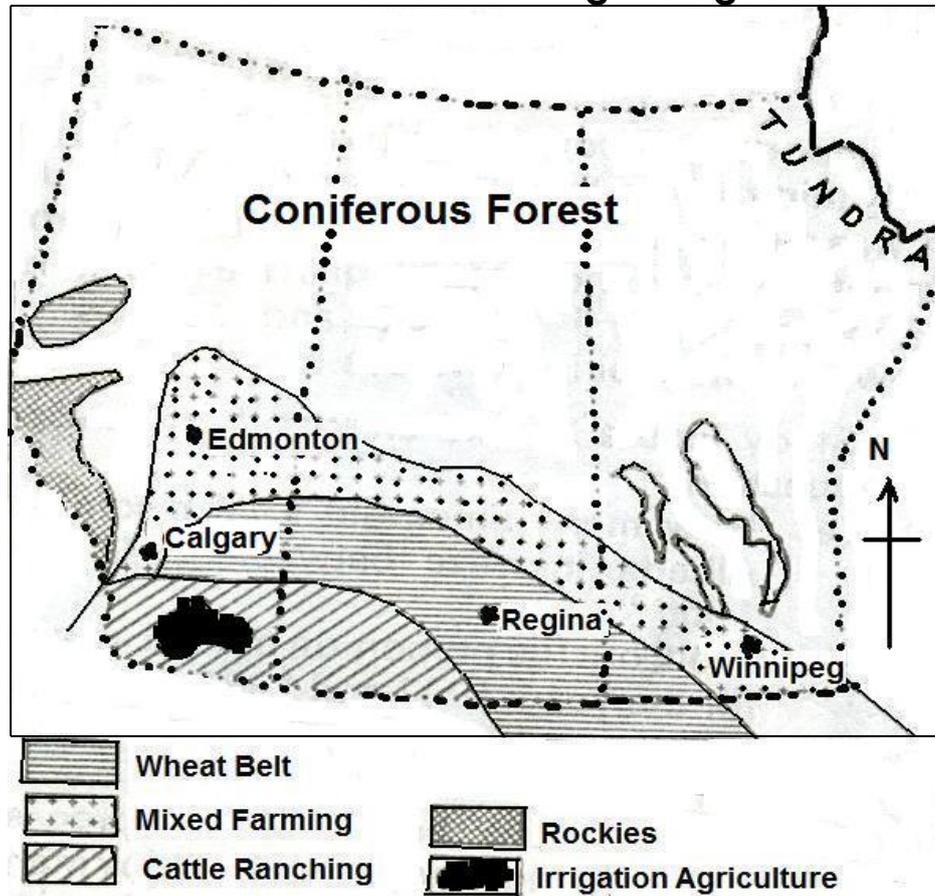
LAND USE IN THE CANADIAN PRAIRIES

The Canadian prairies have 3 major types of agricultural land use, some of which may be under irrigation.

These land use types include;

1. **Wheat farming:** This is practiced in the central part of the prairies and is characterized by extensive growth of what. It is at times referred to as the wheat belt.
2. **Mixed Farming:** Is practiced mainly in the northern part of the prairies. It involves the growing of a variety of crops including barley, oats, flax as well as cattle keeping and rearing of animals such as pigs.
3. **Ranching/Cattle farming:** This is practiced in the dry belt of the Canadian Prairies i.e. in the South West of the region. It is referred to as the dry belt because it receives very little rainfall. Most of the animals are for the production of beef and dairy products.
4. **Irrigation agriculture:** This is also practiced in the dry belt of the Canadian Prairies. It involves the growth of crops under irrigation. Irrigation waters are obtained from rivers within such as river Saskatchewan.

A map of the Canadian Prairies showing the agricultural land use



DRY FARMING

This is practiced in the semi-arid areas without the help of irrigation. The land is left under fallow in order to conserve and preserve the natural moisture and regain its fertility. Regular cultivation may take place to kill the weeds that may use the moisture. The land after sometime i.e. planted with crops especially the drought resistant crops.

Exportation of Canadian wheat

Much of Canadian wheat is exported. Canadian is one of the world's leading exporters of wheat. After the wheat has been harvested, it is stored in elevators where wheat is graded, weighed and packed ready for transportation by railway to the terminal elevators ready for export. The main countries to which Canadian wheat is exported include Commonwealth Independent States of Russia, China, Britain, France, Belgium, Netherlands, U.S.A, Japan, India and some countries from South America and Africa. The main ports through which Canadian wheat is exported include Vancouver, Prince Rupert, Churchill, Montreal, Quebec, New York, and Thunder Bay.

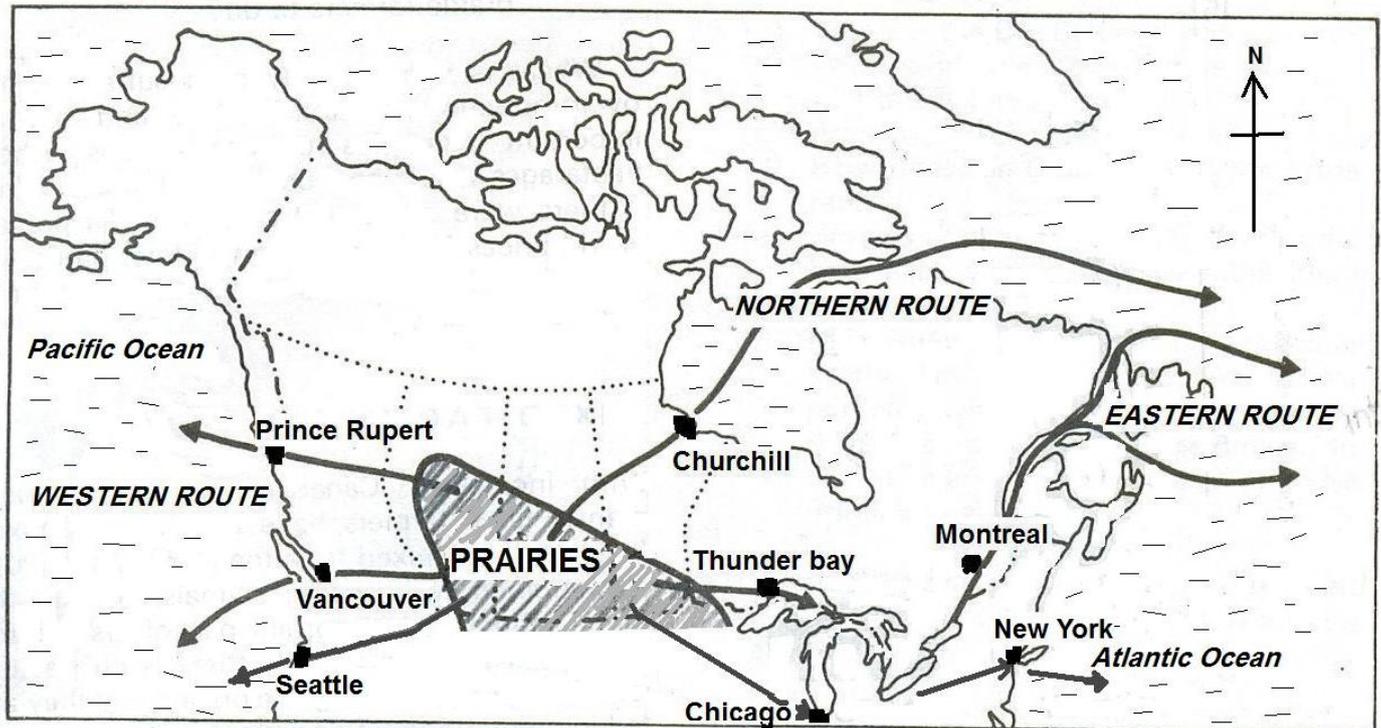
Wheat Export Routes

● **Eastern route:** through the port of Thunder Bay, the great lakes and Saint Lawrence River, port Montreal and Quebec. The other branch is from the Great lakes, then by the New York state-Barge and then through New York port.

☘ **Western route:** by Trans-Canadian railway to the ports of Prince Rupert and Vancouver.

☘ **Northern Route:** Through the port of Churchill on Hudson Bay

Map of Canada showing the wheat export routes and ports



The Eastern route:

It is the most widely used route because of the associated favourable conditions. The factors that have favoured the use of the eastern route include:

- ☘ The opening up of the Great lakes and the St. Lawrence sea way, thereby reducing the land costs.
- ☘ It is the shortest distance to the major wheat importers of Western Europe.
- ☘ The route does not freeze for the greater part of the year.
- ☘ There are many ports and port facilities on this route.
- ☘ The advantages of the New York State Barge Canal which connects Lake Erie to the Hudson River.

The northern route:

It is the least used route because of the following factors:

- ☘ Freezing of the Hudson Bay for the greater part of the year i.e. over seven months.
- ☘ The long stretch of land route or land transport from Regina to Churchill is very expensive.
- ☘ The limited ports and port handling facilities leading to congestion.
- ☘ Remoteness of the northern route because it passes through a large tract of forested unproductive areas of the Canadian Shield.
- ☘ Transport costs are generally high. It is quite expensive to export through this port.

The Western route:

It has its own advantages and that's why a lot of wheat is exported through this route especially to China, Japan, Russia and the other Commonwealth Independent States (C.I.S) as well as some South East Asian countries.

It is ice free throughout the year due to the warm North Pacific current. It has elevators and excellent port facilities.

The table below shows the percentage of wheat exported per wheat export route:

Route	Percentage of wheat exported
Eastern	51
Western	45
Northern	04
TOTAL	100

Draw a pie-chart to show the relative importance of Canada's wheat export routes

Problems facing wheat production in Canada

- ⊕ Over-production of wheat leading to storage problems.
- ⊕ Extensive farming is expensive because it is capital intensive meaning that the farmers incur high costs of production.
- ⊕ The monoculture practiced results into soil exhaustion i.e. loss of fertility
- ⊕ Problem of soil erosion leading to poor soils
- ⊕ Price fluctuations of wheat on the world market.
- ⊕ Competition for the market with other wheat producing and exporting countries e.g. Argentina, U.S.A.
- ⊕ Over-dependency on external markets. This is because of the low Canadian population.
- ⊕ Drought or periods of extended aridity resulting into moisture problems.
- ⊕ Natural disasters like hail storms that lead to the destruction of the plants.
- ⊕ Competition for port handling facilities along the export routes.
- ⊕ Pests that attack the wheat.
- ⊕ Diseases that affect the wheat.

Possible solutions to the problems of the wheat farmers

- There has been the encouragement of mixed farming or diversification to reduce on the problem of over-production and single crop dependency.
- The practice of better cultivation methods like contour Ploughing and strip cropping to check on erosion.
- The practice of rotational farming to reduce on soil exhaustion by monoculture.
- The subsidization of farmers by the government in order to protect them from foreign competition.
- Practice of controlled production i.e. the farmers are encouraged to produce the amounts that can be sold or marketed i.e. to avoid over production. In the process, some of the fields may be left under fallow.
- Putting the land into the "soil bank"
- Application of fertilizers/manure, crop rotation and fallowing in order to enhance soil fertility.
- Irrigation of the fields during periods of draught. The source of water for irrigation is rivers such as River Saskatchewan.
- Spraying of the crops with the use of pesticides in order to fight pests and diseases.
- Research into better varieties that requires less moisture, quick ripening and more resistant to diseases.

Mining industry in the Canadian Prairies

Mining is one of the most important economic activities carried out in the Prairie Provinces of Canada. Canada's manufacturing and high technology industries subsist on mineral products. Canada is one of the world's largest exporters of minerals and mineral products.

Alberta and Saskatchewan provinces are among the leading mining areas of Canada. Others are British Columbia, Quebec and Newfoundland.

The major minerals mined in the Prairie Provinces of Canada are:

1. **Crude Oil:** This is mined from Red Deer and Edmonton oil fields.
2. **Natural gas:** This is mined in the southern Alberta at Medicine Hat which is one of the largest natural gas fields of Canada. Natural gas is transported using pipelines and is a source of energy.
NB: Alberta province is the largest producer of crude oil and natural gas in Canada and accounts for 74% of the total production.
3. **Coal:** coal deposits are found in eastern and western parts of Alberta.
4. **Potash:** This is mined at Esterhazy in Saskatchewan province. Saskatchewan province is the world's leading producer of potash. Potash is used for the manufacture of chemicals and fertilizers.
5. **Uranium:** is mined in Saskatchewan province. Saskatchewan province is also one of the world's most important suppliers of uranium.

Factors favouring the development of the mining industry in the Canadian Prairie Provinces

- Presence of rich and large mineral deposits of crude oil at Red Deer and Edmonton, natural gas in Medicine Hat, uranium and potash in Saskatchewan, coal deposits in eastern Alberta and western Saskatchewan.
- Presence of adequate capital provided by the Canadian government and private sector used in the extraction, processing, marketing and distribution of minerals.
- Presence of reliable market for the minerals in different parts of the world for example local market is provided by manufacturing sector and international market is provided by the European and Asian countries.
- The presence of reliable and efficient transport and communication networks. Most the mining areas are well served with roads and high ways like the Trans- Canada high way, railways and pipelines to transport oil and natural gas; airports like Edmonton and Calgary; seaports like Churchill and Saint Lawrence sea way.
- Availability of ready sources/wide variety of power or energy for example there are several hydroelectric power stations constructed to provide power to mining areas such as Ottawa dam on river Ottawa.
- Presence of abundant skilled and migrant labour employed in the mining sector.
- Advanced technology used in the mining activities like use of drilling method in Red Deer and Edmonton oil fields.
- Nearness of the minerals to the earth's surface like coal in eastern Alberta and western Saskatchewan has eased its extraction using open cast method.
- Geological research carried out by the mineral departments of Canada.
- Favourable government policies like liberalization and the promotion of the sector for export have led to the development the sector.

- Presence of water bodies like rivers and lakes, which provide water, used in the processing of minerals and rivers generate hydro electrical power used in processing of the minerals.

Importance of the mining industry to the Canadian Prairies region

1. Mining is an important source of foreign exchange of the Canadian government for example oil from Red Deer and Edmonton oil fields is export mainly to USA and this earns Canada foreign exchange.
2. Development of industries: minerals provide the basic raw materials for the manufacturing industries for example the extraction of oil from the Red Deer and Edmonton oil fields has led to the development of petro-chemical industries and oil refining industries.
3. The mining sector generates revenue to the Canadian government because the government gets revenue from exportation of minerals and taxes on companies that deal with minerals.
4. It provides employment to the people of Canada. This has led to improved standard of living and increased the purchasing power of the miners to buy manufactured goods.
5. Mining improves upon the infrastructure of Canada. The areas where mining is carried out are served with improved and well maintained roads and railway networks, electricity and telephone services.
6. It has led to the development of towns like Edmonton, Calgary, Red Deer, Medicine Hat, Saskatoon, Regina, Fort Macleod and Prince Albert.
7. It has led to diversification of the economy of Canada thereby reducing its reliance on other sectors like tourism, forestry and fishing sectors.
8. Mining has promoted international relations and co-operation.
9. It has boosted tourism in Canada because mining sites are tourist attractions.
10. It has facilitated the exploitation of other resources for example underground mining has facilitated the exploitation of forest resources because timber props are used as pillars to protect the walls of the tunnels from collapsing.
11. It has boosted the agricultural sector by providing ready market to the agricultural produce. This is because the large mining population provides ready market for agricultural and industrial products.
12. It has contributed towards research/education.
13. Minerals are sources of power/energy for domestic and industrial use for example oil, uranium, natural gas and coal are used in the industrial sector.

Negative effects of mining to the environment

- It has led to destruction of useful agricultural land due to open cast mining.
- The open cast mines are affected by severe winter seasons whereby the mines are filled with ice/snow making mining very difficult.
- The mining sector has increased pollution of air, water and land by the mineral processing industries.
- It has led to the destruction of vegetation cover/deforestation.
- It has led to destruction of habitat for wildlife.
- Increasing costs of mining.

- It has led to the loss of the aesthetic value of the landscape as hills are excavated and the landscape is filled with pits.
- Mining has led to exhaustion of some mineral in the Canadian prairies.

Industrial development in the Canadian Prairies

Canada is one of the world's major industrialized nations along with the United States of America, Japan, Russia, Germany and the United Kingdom.

The industrial sector is characterized by high-tech industries, good results and competitiveness; chemical, pharmaceutical, and iron and steel industries.

The major industrial centres found in the Canadian Prairie Provinces include:

- | | | |
|-------------|-------------|-----------------|
| ■ Edmonton, | ■ Churchill | ■ Saskatoon |
| ■ Red Deer | ■ Brandon | ■ Prince Albert |
| ■ Calgary | ■ Thompson | ■ Moose Jaw |
| ■ Winnipeg | ■ Regina | |

The main industries in the Canadian Prairies:

- Petro-Chemical industries – These produce synthetic rubber, plastics, detergents, medicines, polyethylene, vinyl and are found in Edmonton and Red Deer.
- Oil refining industries – These are oil refineries in Edmonton to refine crude oil.
- Steel works and engineering industries– These are mainly located in Regina and Winnipeg. The steel based industries use scrap as input. The engineering works are associated with these industries and produce farm machinery, railway equipment, bridges and construction equipment.
- Graining milling industries like the wheat milling industry
- Textile and clothing industries like those producing cotton and synthetic textiles.
- Food processing industries for example dairies, creameries, canning and bottling industries. They are found in Winnipeg and Prince Albert.
- Footwear industries – For the manufacture of ladies and gents shoes, slippers, gum boots and sports shoes.
- Pulp and paper industry - mainly in northern Alberta.
- Mechanical engineering industry.

The population of the prairies has increased greatly and most people now live in towns, the largest being Winnipeg. The other major towns may include Edmonton, Regina and Calgary.

Factors favouring industrial development in the Canadian Prairie Provinces

Its industrialization is based on the following factors:

- Presence of reliable source of raw materials for example agricultural produce like wheat from the Canadian prairies; minerals like crude oil from Edmonton, potash from Esterhazy in Saskatchewan province and water from the rivers.
- Presence of different sources of energy or power for example the hydro electrical power from Ottawa dam, thermal electricity from the crude oil from Edmonton; nuclear power and natural gas which is used in running of the machines and in all the production lines for the manufacturing of the goods.

- Presence of efficient transport and communication networks. The major industrial centres are served by an integrated transport infrastructure of roads, railways, rivers, canals, seaports and airports that provides easy access to markets of Western Europe and beyond. The Saint Lawrence sea way and canals provide cheap water transport for bring in raw materials and distributing manufactured goods.
- Presence of reliable market for the manufactured goods both internal and external markets because of the high quality goods manufactured.
- Use of advanced technology in the processing and manufacturing goods.
- Presence of large supply of skilled and semi-skilled labour used in the processing, marketing and distribution of manufactured goods.
- Availability of adequate capital provided by multi-national companies. Capital has been used in the construction of the industries, buying of the inputs and advertising of the manufactured goods.
- Presence of abundant water supply from the Great lakes and Ottawa River for cooling and cleaning of the industrial machines and processing of steel.
- Favourable government policy of encouraging industrialization.
- Political stability has encouraged both internal and foreign investment in the Canadian Prairie Provinces.
- Need to diversify the economy given the fact that much of her land is not suitable for agriculture.

Contribution of the industrial sector to the development of the Canadian Prairie Provinces

There are several benefits of industrialization and these include:

- It has improved the Canada's balance of trade through the exportation of processed commodities which command higher prices in the outside markets.
- Manufacturing industries provide employment to the people of Canada.
- It has encouraged diversification of the Canadian economy.
- Manufacturing has led to self-sufficiency in manufactured goods.
- It has encouraged efficient and maximum use of the available resources like minerals, forests and water resources.
- It provides market for agricultural and industrial products.
- Industrialization has raised the standards of living since the urban industrial workers have higher and more reliable incomes than farmers.
- It has also stimulated the development of infrastructure and social services.
- It has led to the growth and development of urban areas like Edmonton, Winnipeg, Calgary, Brandon, Regina and Saskatoon.
- There is capital inflow from the foreign investors.
- It has promoted the tourist industry.
- Diversification of the economy through inter-sectorial linkages between agriculture and industry
- It has promoted inter province relations.

Problems resulting from industrialization

Industrial development has come along with disadvantages as listed below;

- Environmental pollution of air, water and land through oil spills, dumping of waste, emission of industrial fumes.
- It has led to unemployment in the prairies due to the use of automated machines.
- Depletion of natural resources like fish and forest resources.
- It has led to de-vegetation of large areas thus affecting bio-diversity.
- It has led to process of urbanization with its related problems.
- Loss of rich agricultural land through the construction of infrastructure.
- It has led to congestion in urban areas.
- Increased competition for labour between agriculture and industry sectors has led to high costs of labour.

Revision Questions:

1. (a) Draw a sketch map of the Canadian Prairie Provinces and on it mark and name:
 - (i) Lake Manitoba
 - (ii) River Saskatchewan
 - (iii) Towns: Calgary, Winnipeg and Regina
 - (iv) The **three** wheat growing provinces
 - (b) Describe the factors which have favoured extensive wheat farming on the Canadian Prairies.
 - (c) Explain the contribution of wheat growing to the development of Canada.
 - (d) Outline any three steps being taken to improve agriculture in Canada.
2. Study the table below showing grain production in Canada (2013/2014) and answer the questions that follow:

Grain Production in Canada (2013/2014)

Type of Grain	Production ('000 metric tons)
Wheat	31,025
Barley	10,237
Corn	14,194
Oats	3,906
Rye	223
Total	59, 585

- (a) Draw a pie chart to represent the information contained in the table above:
- (b) (i) Identify the grain which is produced in:
 - Smallest
 - Largestquantities in Canada.
- (ii) Name any **one** major grain growing region in Canada.
- (iii) Mention any **two** ports through which Canada exports its goods.
- (c) Describe the activities carried out on the farm in all the four climatic seasons in the region identified in (b) (ii) above.
- (d) Outline the steps being taken to increase grain production in Canada.