Learning Sources

PROJECT Agriculture
Project-Based Learning and Teaching Series

The Amazing Race

How does agriculture make regions unique?

ALBERTA milk

www.albertamilk.com/teacher-resources/

Cross Country Canada

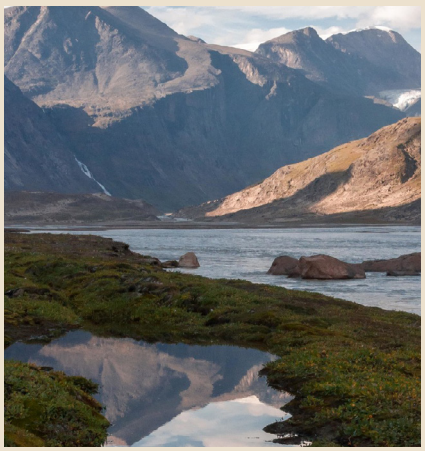
How do geographers define a region? **Regions** are areas that share common characteristics. They are identified by the natural features or geographic characteristics that an area shares.

Regions are often named by the main physical or geographic feature. For example, the main geographic feature in the Atlantic region is the Atlantic Ocean. The main geographic feature in the Canadian Shield region is a "shield of rock" called the Canadian Shield.

Landscapes Across Canada





1. .....

2. .....

3. .....

4. .....

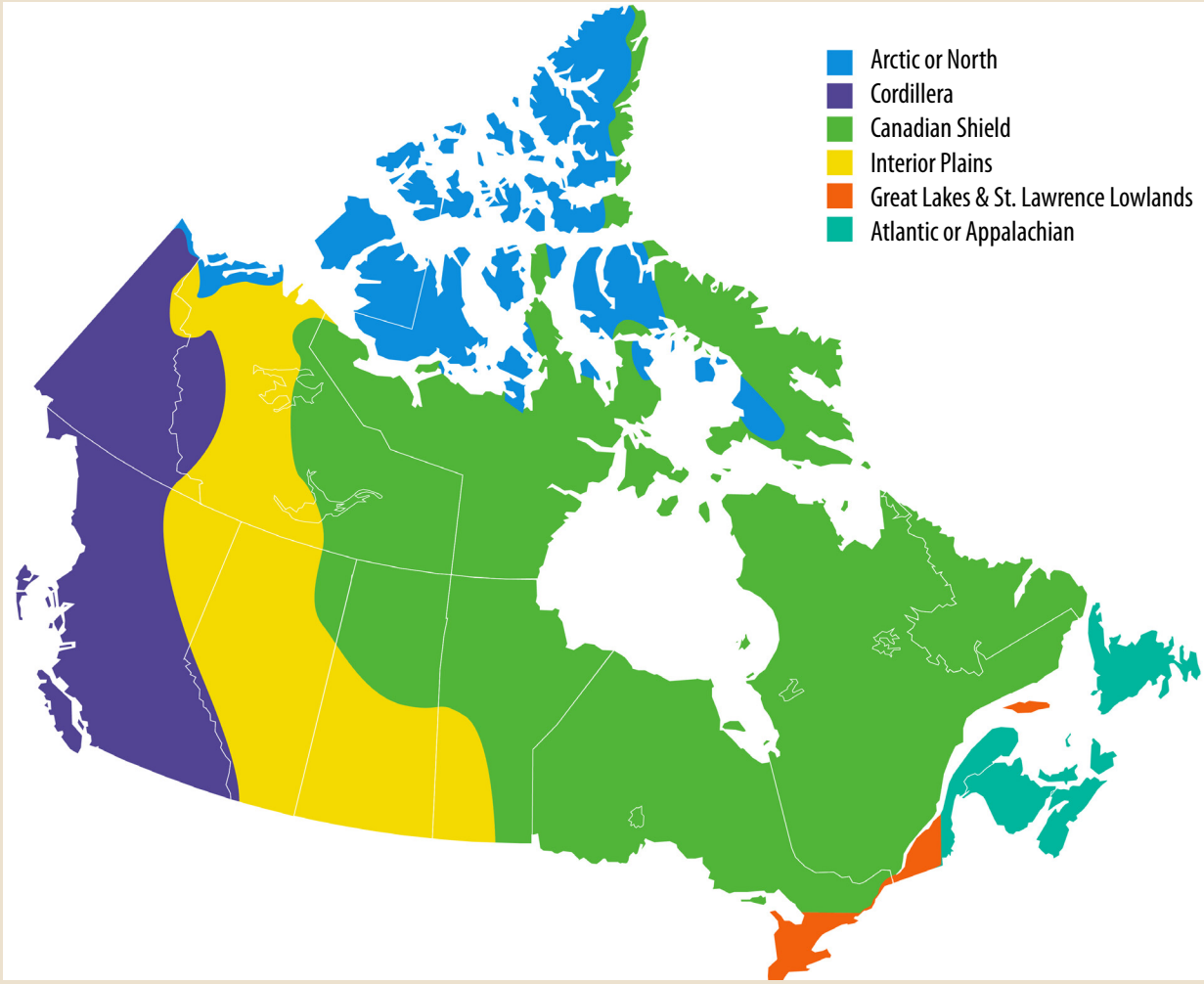
5. .....

6. .....

Each photo shows a region of Canada. Can you identify each region? Use the map of *Canada's Six Geographic Regions* to revisit where each region is located.

Canada can be divided into six regions that are based on geographic features. Can you identify all six on the map below?

Canada's Six Geographic Regions

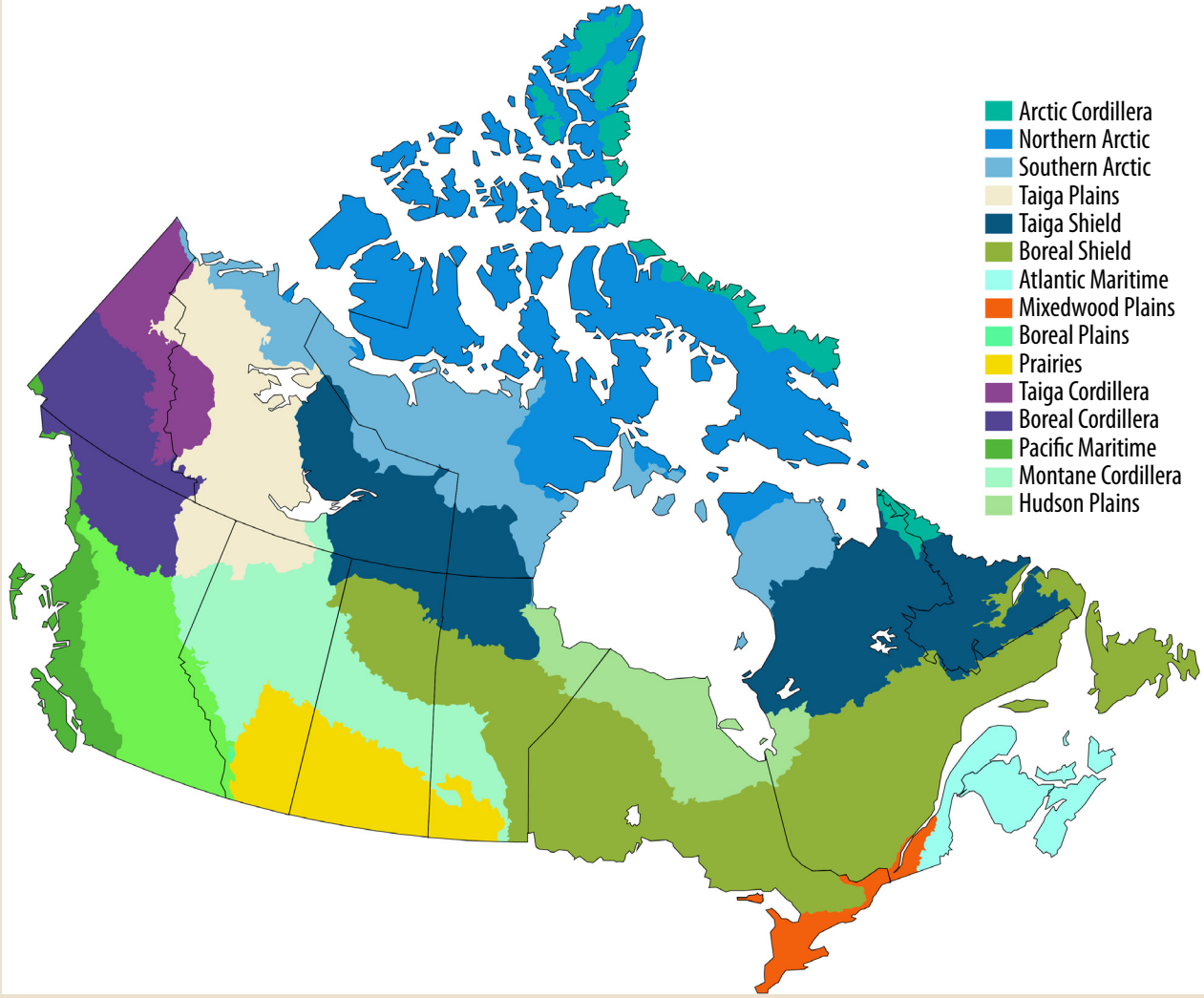


Another way to identify the characteristics of Canada's six natural regions is through ecozones. An **ecozone** is formed where there are similar types of plants, animal life, climate, landforms and human activities. The living and non-living characteristics of one ecozone are different from those found in another ecozone.

Canada has 15 ecozones throughout its six regions. Ecozones help us understand more about the characteristics of each region.

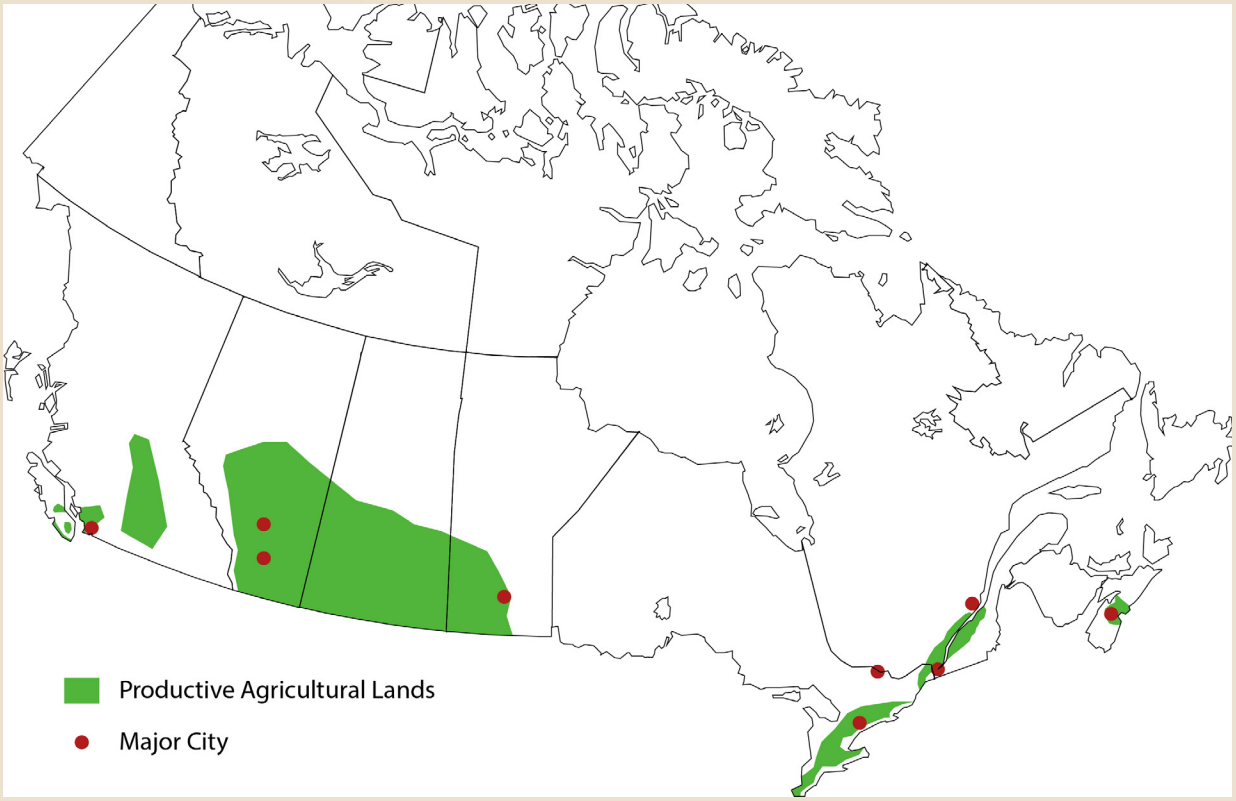
How do you think the characteristics of Canada's ecozones help define Canada's six natural regions?

Canada's Ecozones



What observation can you make from the *Communities that Depend on Agriculture* map?

Communities that Depend on Agriculture

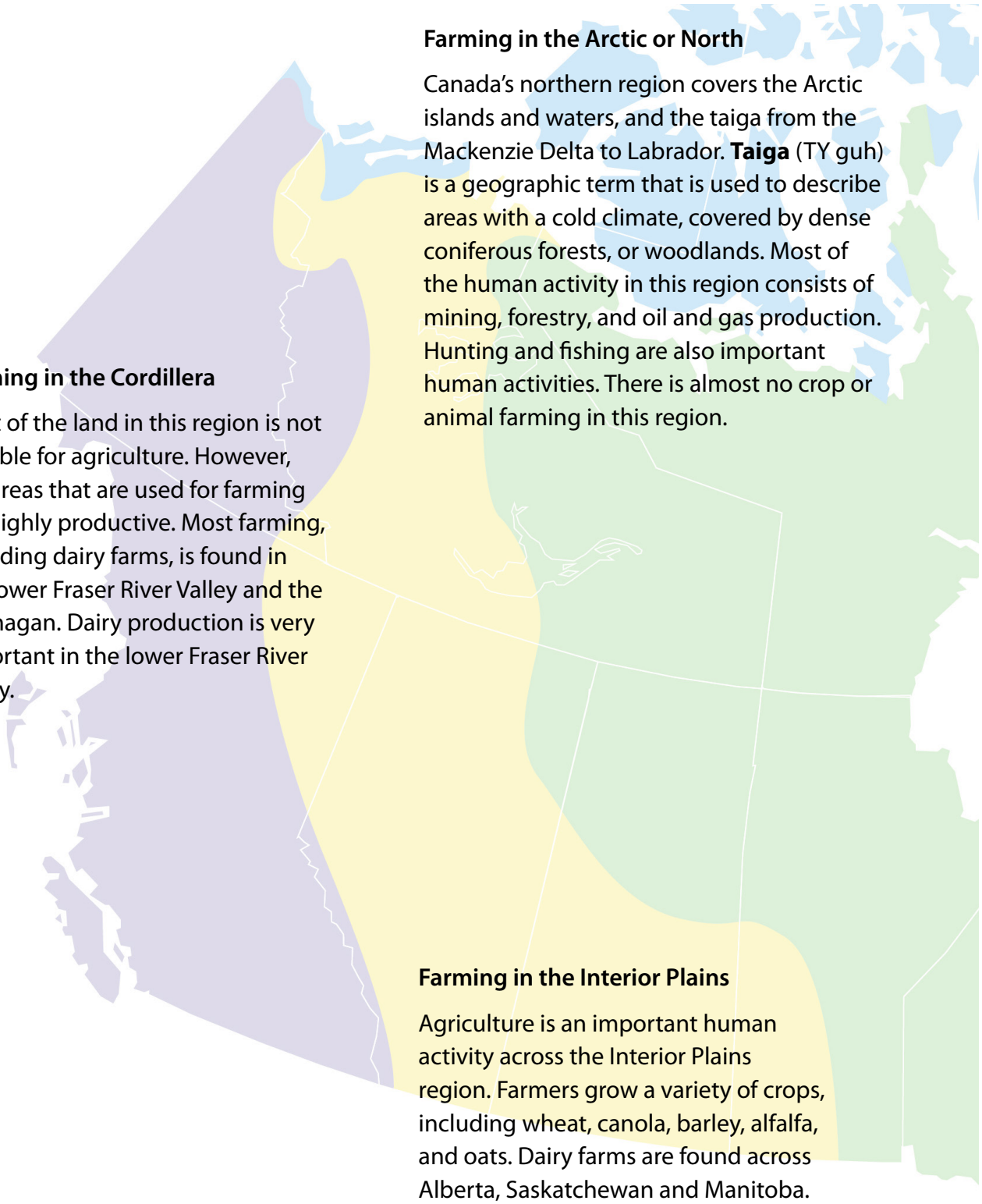


Communities that strongly depend on agriculture are found in areas of farmland. Most of these communities are smaller towns or cities with fewer than 20 000 people living in them. Some have fewer than 5 000 people living in them.

The Farm and Land Connection

All farms are part of the natural landscape. Farmers depend on and use natural resources like the land, sunlight, water and soil. Every region and ecozone has these basic natural resources. However, the quality and availability of resources like water and soil can be different in each region. The land may be flat and gently rolling, or it can be rugged and mountainous. These differences affect what types of farms are found in each region and where they are located.

Natural and Human-Made Resources



Farming in the Arctic or North

Canada's northern region covers the Arctic islands and waters, and the taiga from the Mackenzie Delta to Labrador. **Taiga** (TY guh) is a geographic term that is used to describe areas with a cold climate, covered by dense coniferous forests, or woodlands. Most of the human activity in this region consists of mining, forestry, and oil and gas production. Hunting and fishing are also important human activities. There is almost no crop or animal farming in this region.

Farming in the Cordillera

Most of the land in this region is not suitable for agriculture. However, the areas that are used for farming are highly productive. Most farming, including dairy farms, is found in the lower Fraser River Valley and the Okanagan. Dairy production is very important in the lower Fraser River Valley.

Farming in the Interior Plains

Agriculture is an important human activity across the Interior Plains region. Farmers grow a variety of crops, including wheat, canola, barley, alfalfa, and oats. Dairy farms are found across Alberta, Saskatchewan and Manitoba.

Farming in the Canadian Shield

The Canadian Shield extends from northern Saskatchewan to Newfoundland and Labrador, and is most commonly known for human activities such as forestry and mining. This region has long, cold winters and short, warm summers. Most animal farms raise beef cattle. However, dairy farms can be found in the southern areas of this region.

Farming in the Atlantic or Appalachian

Most agricultural activity in this region takes place in Prince Edward Island, along New Brunswick's Saint John River valley, and around the Bay of Fundy and Northumberland Strait in Nova Scotia. The land in other areas throughout the Atlantic region is too rough, rocky or uneven for agriculture and farming communities to develop and grow. Dairy farms are found mainly in Prince Edward Island and along the Northumberland Strait.

Farming in the Great Lakes and St. Lawrence Lowlands

This region has a high population and most of Canada's largest cities are found here. Much of the land is used for crop and animal farms. This region has the highest total number of dairy farms, with most of them concentrated in the St. Lawrence River Valley of southern Ontario and Quebec.

1. _____

2. _____

3. _____

Rank the top three natural resources that you think are most important to dairy farmers.

_____

_____

_____

_____

Explained why you ranked them in this way.

Dairy Farms Across Canada

Dairy farms are found in every province of Canada. Quebec has the most dairy farms of any province. Newfoundland has the fewest.

_____

_____

_____

_____

Why do you think there are no dairy farms in the Canadian territories of Yukon, Nunavut and the Northwest Territories?

Finding Farms

Agriculture is important to both urban and rural communities across Canada. Agricultural activities can be found across many of Canada's diverse landscapes and regions.

The natural resources found in Canada's regions influence ways of life and activities of the people who live in Canada's communities. Agriculture is one of those activities.

Natural resources include the land, air, soil and water. They also include wildlife, plants and minerals.

Finding a Burger

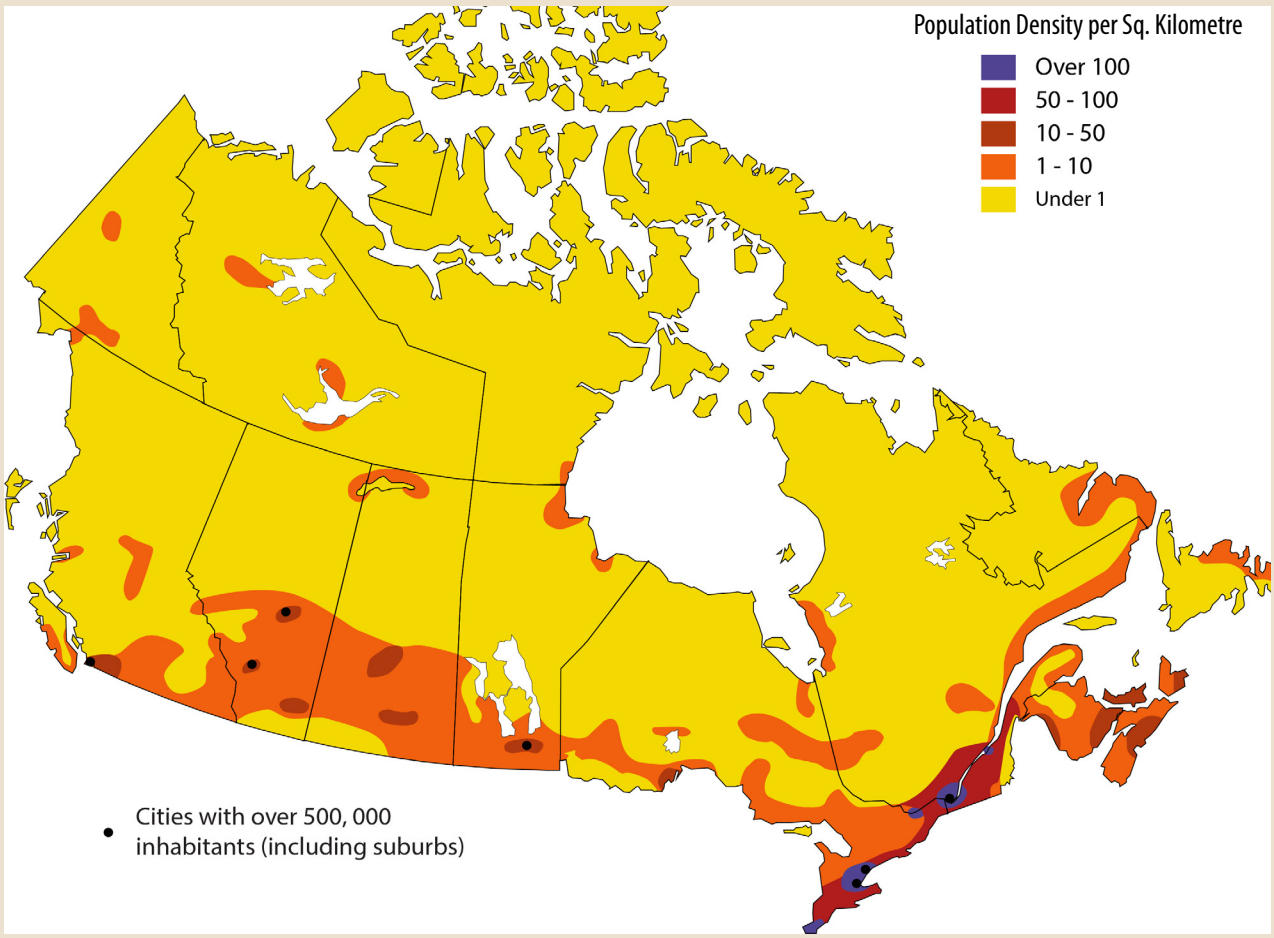
Infographic used with permission from Agriculture More Than Ever. www.agriculturemorethanever.ca/resources/ag-proud-photos/

What conclusion can you make from the burger poster?

Think about agriculture as both a natural resource and a human activity. Agriculture is closely connected to natural resources like soil and water. That is why Canadian farmers' ways of life are closely connected to the land. The choices they make about where to farm are based on the resources that are available.

The location of many farms is also connected to **centres of population**, which refer to the number of people living in surrounding or nearby communities.

Canada's Population Centres



Population density refers to the number of people living in an area. For example, the population density of all of Canada averages about 5 people per square kilometre.

Where Ag's At

Human activities in communities that are found across Canada's different regions can vary greatly. Most human activities are found in more than one region. For example, animal and crop farming is found in in a number of different places across Canada. People grow and raise animals and plants for food on different types of land and in different climates.

Agricultural commodities, shown in this map, are natural resources that are used for food products. What can you find out about each of the commodities in this map? For example, did you know that **oilseeds** refer to crops like canola, soybean and sunflowers? Or that **horticulture** involves growing and caring for plants like vegetables, fruits and flowers? Did you know that **forage** means crops, like hay and grass, that are grown to provide food for cattle and horses?

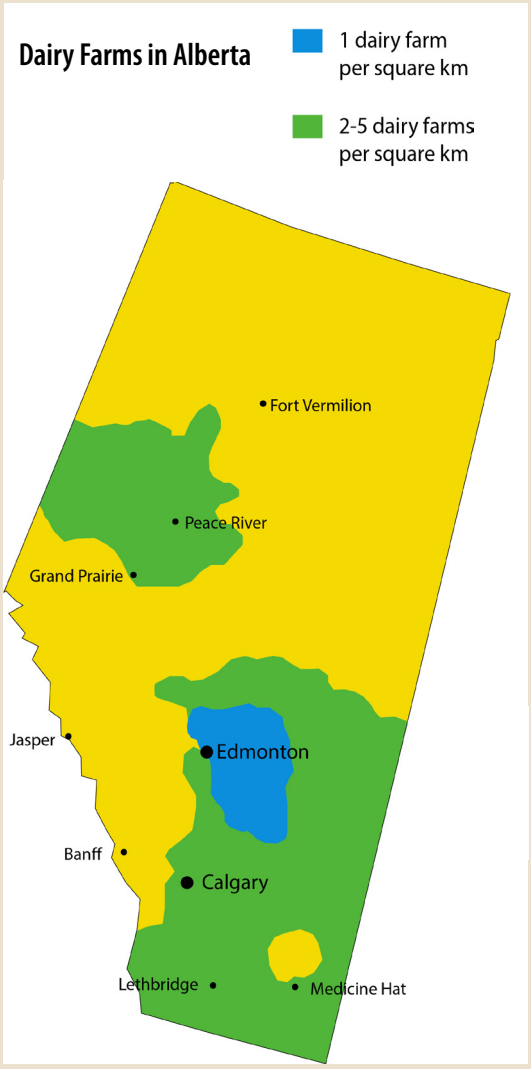
Agriculture and Agri-Food Canada (2017). Discover Agriculture. Online www.agr.gc.ca/eng/about-us/publications/discover-agriculture/?id=1411999466585

Regional Roundup

Province	Farms	Farm Type
Prince Edward Island	1495	Horticulture, dairy
Nova Scotia	3905	Horticulture, dairy
Newfoundland and Labrador	510	Dairy, poultry
New Brunswick	2611	Horticulture, dairy
Quebec	29 437	Dairy, pork
Ontario	51 950	Grains and oilseeds, dairy
Manitoba	15 877	Grains and oilseeds, pork
Saskatchewan	36 952	Grains and oilseeds, beef
Alberta	43 234	Beef, grains and oilseeds
British Columbia	19 759	Horticulture, dairy

Canada has one of the most diverse farming sectors in the world. This chart shows the number of farms and the main types of farms in each province.

The map shows dairy farms in Alberta.



What similar and different types of information can you see in the *Where Ag's At* map and the *Regional Roundup* chart and map?

Which Came First?

Have you ever heard the question, "Which came first – the chicken or the egg? "Which do you think came first? Cities or farms? Although farming was the basis of many of Canada's early settlements and communities, modern-day cities and farms may have a closer connection than you might think.

Cattle were brought to Canada in the 1500s and early 1600s, along with the practice of using cows to provide milk. Dairy cows were part of early European settlements in Acadia and New France in the 1600s. They were also brought west in the 1800s as western Canada was settled by Europeans. A cow was often part of a farming family and was their source of milk. Extra milk was made into butter and cheese for the family's use.

Canadian Cows

A Canadian cow is a breed of dairy cow that came from the cows of New France in about 1610. Canadian cows are black or brown. Their milk has high amounts of protein and is excellent for making cheese.

Early settlements and trading posts also had farms nearby that provided food.

In this way, farms were an important influence on the early beginnings of many of Canada's future cities and towns.

Today, Canada is becoming more and more **urbanized**. This means that more people are living in urban centres, such as towns and cities. A large **urban area** has a high population with many buildings, roads and facilities that support the people who live there. Statistics Canada calls these large cities and the towns, villages or land areas close to them, **metropolitan areas**. There are 33 metropolitan areas in Canada.

About 83 percent of Canadians live in an urban area that has at least 10 000 people and about 40 percent live in one of Canada's biggest cities.

When we think of a large city, we most likely do not think about farms. However, in 2006, more than 35 000 of the 229 373 farms in Canada were located in or near a large metropolitan area. Almost half of all dairy farms in Canada were located in or near a large metropolitan area.

Farms that are located close to cities are close to people who buy their products. Farmers have access to workers for their farms.

How do you think a dairy farm would benefit if it was located by a large city?

What is the benefit to the people who live in the large city?

What do you think is the most important benefit of a dairy farm that is located near a large city? Why do you think this?

Farms that grow fruits and vegetables, greenhouses and poultry and egg farms tend to be the ones that locate close to cities because they sell their products directly to people.

These types of products can be **perishable**, which means they can spoil quickly. Farming in a location that is close to people helps to make sure that the products are fresh.

Made in Canada

Infographic used with permission from Agriculture More Than Ever. www.agriculturemorethanever.ca/resources/fact-photos/page/3/

The land that is needed for farms can be more expensive. Farms that need large areas of land can also be more difficult to establish near large metropolitan area as this land is not always available. For example, beef cattle ranches and dairy farms often need additional land for grazing and are not usually found close to large cities.

Urban sprawl, or the expansion of city areas, is an important issue today. Urban sprawl can "eat up" land that is suitable for agriculture.

Resource Cycles

If you had something to eat today, you depended on agriculture and Canada's natural resources. Consider the example of dairy farms. A dairy farmer depends on natural resources to produce milk. The milk is then used to make products that people **consume**, or eat.

Dairy production involves a cycle of natural resources and human activities:

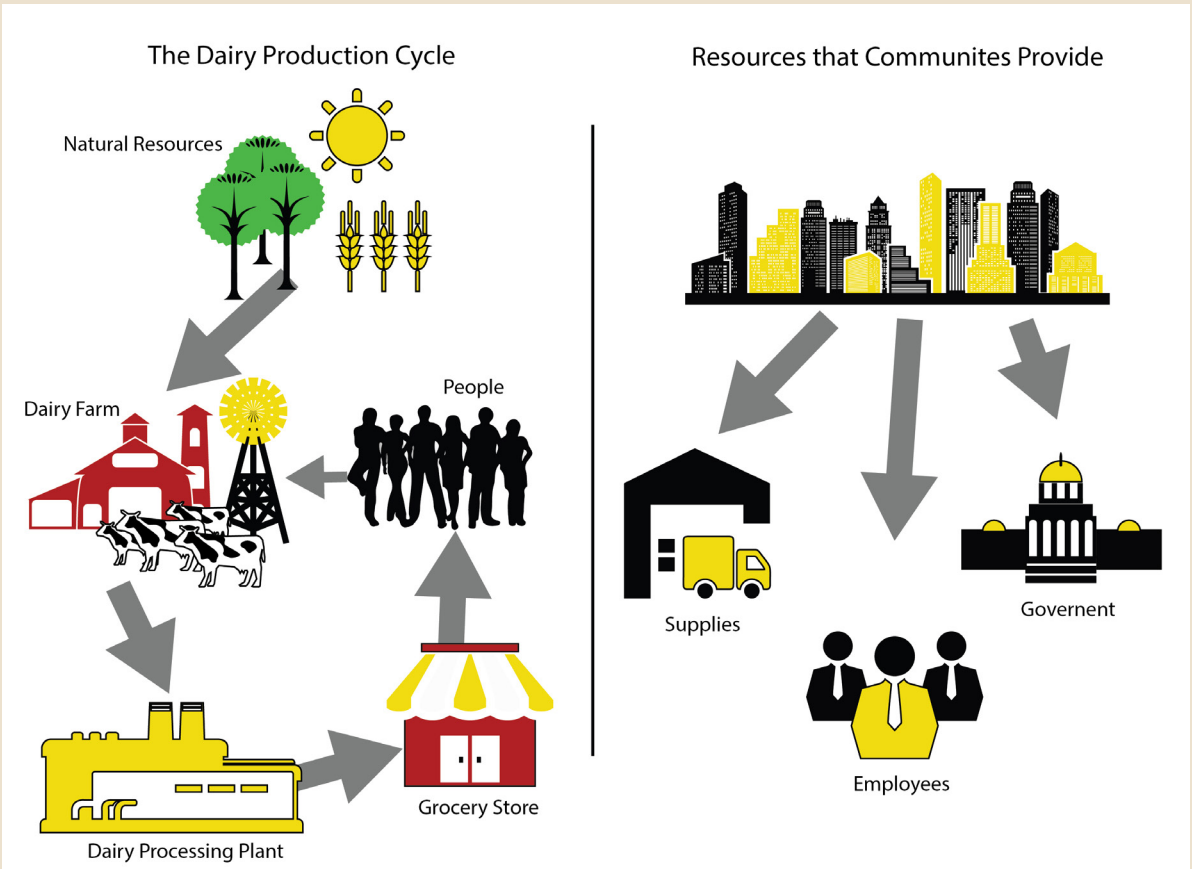
- Dairy farmers depend on natural resources to feed their cows and produce raw milk.
- The milk is stored in a refrigerated tank and then transported in an insulated tanker to a **dairy processing plant**, which is where milk is made into various products.

These products include bottled milk, buttermilk, ice cream, yogurt, cheese, butter and sour cream. Some Alberta farms also do their own processing. Some dairies specialize in making their own cheese or yogurt.

- Whether products are made at the processing plant or on the dairy farm, they are then transported to stores across Alberta and Canada.
- People in communities buy these dairy products. This creates a **demand**, the desire that people have to buy a product, for the milk that cows make. Dairy farmers continue to raise and milk their cows to meet this demand. Some other factors affect the cycle of dairy production:
- Dairy farms hire employees and buy supplies from nearby communities.
- The dairy industry is connected to other industries. Dairy farms and processing plants need energy to run their equipment and transport their products.

- The dairy industry is connected to the government. All dairies must have **licenses**, which give them official permission from the government to operate. Dairies follow rules and laws to make sure milk is safe and healthy.

Dairy Production and Resources Cycle



Why do you think dairy production is described as a cycle? Explain why you think this.

An Alberta Dairy Story

We started Bles-Wold Dairy in 1994, on a fine location near Lacombe, in Central Alberta's Parkland. The black soil is very fertile and excellent for growing feed crops for the cows.

In August 1994, we started building a new dairy building and by February 1995, we were ready to milk cows.

In 1996, we started to produce yogurt as a hobby and it soon turned into a business. At that point, we changed the barn into a licensed processing dairy.

Currently, 270 cows are producing 2.7 million kilograms of milk per year. The majority of the animals are purebred Holsteins. The herd is milked three times per day.

During the summer, our cows are kept outside on a daily basis. They are fed a mixture of hay, barley, **silage** (crops that are harvested while they are still green, packed into a silo, and covered with plastic to remove the oxygen from the crop plant), **haylage** (grass that is grown and cut the same as hay but left to dry for less time), rolled barley, ground corn, and sunflower seed. Most of the ingredients are grown on the farm.

Adapted with permission from the **Bles-Wold Dairy Products**.

How do you think this dairy's production cycle would vary from the one pictured in the cycle illustration?

Adding Value to Natural Resources

Agricultural activities produce agricultural commodities. A **commodity** is an item or material that is bought and sold. However, many of these commodities have to be processed in some way before they are used.

Food processing is a method used to change food ingredients into a product. For example, grains are processed into flour and made into many different foods, such as bread, cereals, crackers, and pasta. Timber is processed when it is made into woods that are used for furniture and floors. Milk is also processed into many different dairy products.

Dairy farming is called a **primary industry**, as it changes natural resources into an ingredient or material that is used to make other products. Dairy farming starts with natural resources because cows need land, soil, water, and sunlight to produce milk.

Green Grass to Milk

Did you know that it takes about 50 to 70 hours for cows to turn grass into milk?

Water Use

Agriculture uses a small proportion of Canada's water use. Much of the water used by agricultural activities does not go back to its original source. Original sources of water can include lakes, rivers, streams and ponds.

When milk is transported to a dairy processing plant, it is made into many different products. Dairy processing adds value to Canada's natural resources because farmers use these resources to raise cows and produce milk. Jobs are also created by the dairy industry.

Industry Connections

Many of the **expenses**, or costs, that dairy farmers have to pay when they are raising dairy cows are connected to the price of oil and gas. These expenses include:

- Transportation
- Fuel and oil to heat and cool buildings
- Fertilizer and herbicides
- Purchased feed

The production of food products is an important part of Canada's secondary industries. A **secondary industry** uses materials or ingredients made by primary industries. Secondary industries change these materials or ingredients into products.

When milk is transported to the dairies, it is pasteurized. **Pasteurization** is the process of heating a food to a high temperature and then cooling it quickly. The heating process kills any harmful bacteria.

Milk is also **homogenized**, which means breaking up the fat into very small particles, so that the fat and milk can then be blended together in a smooth mixture.

After it is homogenized, milk is quickly chilled. It is then transferred into bags, cartons, jugs or bottles. These containers are stamped with the date and sealed. They are then ready to ship to stores and restaurants.

How could you compare the production of milk products to another agricultural commodity?