



farm AND climate PATTERNS

Farms and food

Farms across Canada – as well as in Alberta – are as diverse as the landscapes they are found in.

The production of the food you find on your table and in grocery stores depends on weather and climate. For example, without enough rain or warm temperatures that allow plants to grow, crops and pastures for livestock like cattle would not exist.

However, the opposite is also true. Weather and climate can be influenced by agriculture. As farmers plant crops and raise animals, they interact with the Earth's surface and atmosphere. This affects the temperature and precipitation.



DID YOU KNOW? Alberta has the second highest number of farms in Canada. Ontario has the highest number of farms. Alberta also has the second largest farmed area. Saskatchewan has the largest farmed area.



What have you already learned about landforms and natural resources found in different regions or areas of Alberta?

What similarities do you think farms that grow different crops or raise different animals have? What differences do you think they have?

Climate patterns

Agriculture in Alberta is located in **three general climate zones**.

These climate zones influence the types of vegetation, agricultural practices and land use patterns found across Alberta's diverse landscape.

The northernmost parts of Alberta, particularly in the far north, have a **subarctic** climate. This zone has extremely cold winters and short, mild summers.

Agriculture in the subarctic regions of northern Alberta is limited because of the extremely cold temperatures and short growing seasons.

The southeastern corner of Alberta falls within the **semi-arid** climate zone. This zone can have hot, dry summers and cold, dry winters, with low precipitation throughout the year.

Agriculture in the semi-arid regions of southeastern Alberta can be challenging. This is because the area has hot, dry summers and not very much precipitation.

Farmers in these areas often rely on irrigation to grow crops such as wheat, barley, canola, pulses (lentils, chickpeas, dry beans and peas) and potatoes.

Livestock farming, including cattle ranching, can also be found.



Parts of central and northern Alberta have a **humid continental** climate. This climate zone has warm summers and cold winters, with moderate precipitation throughout the year.

Agriculture in the humid continental climate zones of central and northern Alberta benefits from warmer summers and more moderate precipitation levels.

Farmers in these areas grow a wider variety of crops, including grains (wheat, barley, oats), oilseeds (canola), pulses and specialty crops, like potatoes and vegetables. Dairy, egg and poultry farms are also common.



DID YOU KNOW? The climate areas on this map use the Koppen climate classification.

This system divides climate around the world into five main climate groups. These groups are based on patterns of precipitation and temperature during the seasons.

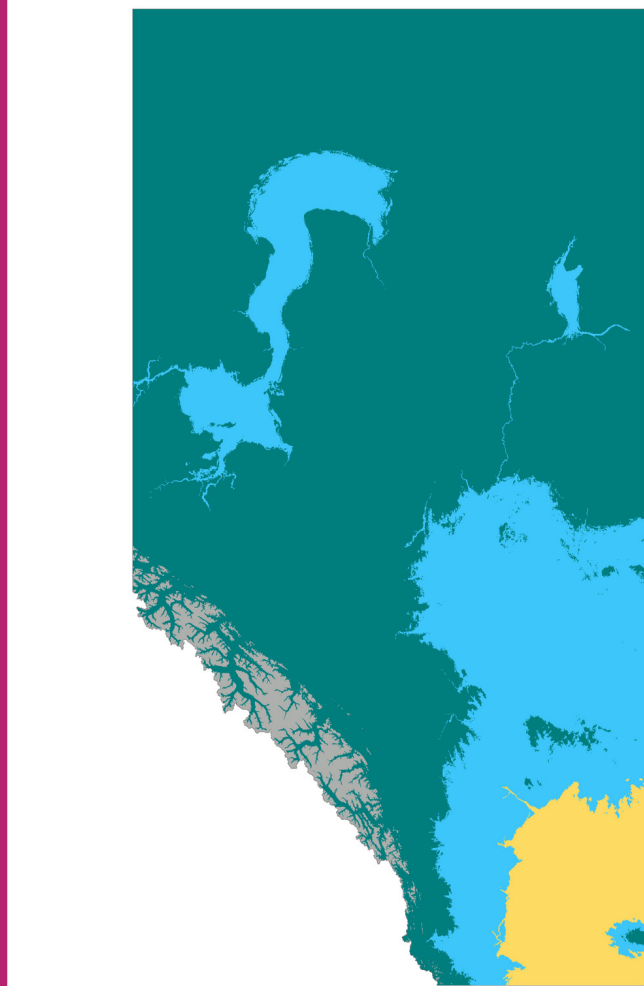
Alberta has four different climate groups.

The Koppen classification system was originally developed by a German-Russian climatologist named Wladimir Koppen.

A **climatologist** is a scientist who studies the Earth's climate. They look at patterns in weather over long periods of time, like how temperatures change over years or how much rain falls in different seasons.

Climatologists help us understand how the climate is changing and how it might affect things like farming, the land, wildlife and plants.

In what climate group do you live?



Koppen Climate Types

Tundra

Subarctic

Warm-summer Humid Continental

Cold Semi-Arid

Climate influences

The climate affects the types of crops that can be grown and how livestock is raised. It also influences the farming practices that farmers use.

Different crops and livestock need specific **temperature** ranges. The planting, growing and harvesting of crops depends on the right amount of heat at the right time. Livestock depend on the feed and water and temperature ranges that are comfortable for them.

Adequate rainfall or irrigation is important for crop growth and as a source of water for livestock. Farmers must adapt their practices to variations in **precipitation** levels across different areas of the province.

The length of the **growing season** varies with climate conditions, affecting planting and harvesting times for crops. Some regions have longer growing seasons, which allows farmers to plant different or multiple crops in a year.

Climate also influences which pests and diseases will spread, and so how much time, effort, and money farmers must spend on herbicides, insecticides and other practices to protect their crops and livestock.



Alberta's growing zones

Growing zones are areas on the earth that have similar climates and weather patterns that identify how suitable they are for certain plants.

The zones are usually numbered and lettered, and they use many different factors that can affect how well a plant grows or survives the winter. A zone is based on the temperatures of the coldest month, the frost free period, the amount of rainfall, the temperatures of the warmest month, maximum snow depth, and the strongest wind gusts. The harshest zone is 0 up in the Arctic and the mildest zone found in Canada is 8 along the West Coast.

Alberta's growing zones range from 0a to 4b, with each zone having distinct characteristics:

Zone 0a to 1b: These are the coldest zones, found in high-altitude areas. Suitable crops include hardy root vegetables and cold-tolerant grains.

Zone 2a to 3b: This zone covers much of Alberta and support a wider variety of crops, including cereals, canola and pulses.

Zone 4a to 4b: These are the warmest zones in Alberta, located in the southern part of the province. This zone allows more diverse farming, including fruits and vegetables.

Information and map is from **Natural Resources Canada: Plant Hardiness Zone Maps.**



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In what growing zone do you live? How do you think your growing zone affects the types of plants you see in your community?



If the average temperatures, precipitation and winds change over time, how do you think growing zone areas might be affected?



DID YOU KNOW? Microclimates apply to agriculture too.

Microclimates are small spots within a space that differ in their conditions from the surrounding area. These smaller areas are affected by elevation, nearness to bodies of water and urban areas. Plants that grow in a microclimate can be different than those that can survive in the larger growing zone.

Microclimates can be affected by living and non-living factors. They can be very small, like a rock that affects the frost in the ground. They can also be really large, like a shelterbelt of trees that provides shade and shelter from the wind. Microclimates in Alberta are often affected by exposure to the sun and heat, the amount of snow cover and the frost in the ground or air.

