SPARK questions about **food** DIVERSITY

project **AGRICULTURE**

How does **crop diversity** ensure **food diversity?**

The science of crop production contributes to food diversity.

- [ ] **I will use information and INVESTIGATE FURTHER questions to help me identify a project question I want to investigate for an food DIVERSITY project.**
- [ ] **I will identify what I need to know more about.**

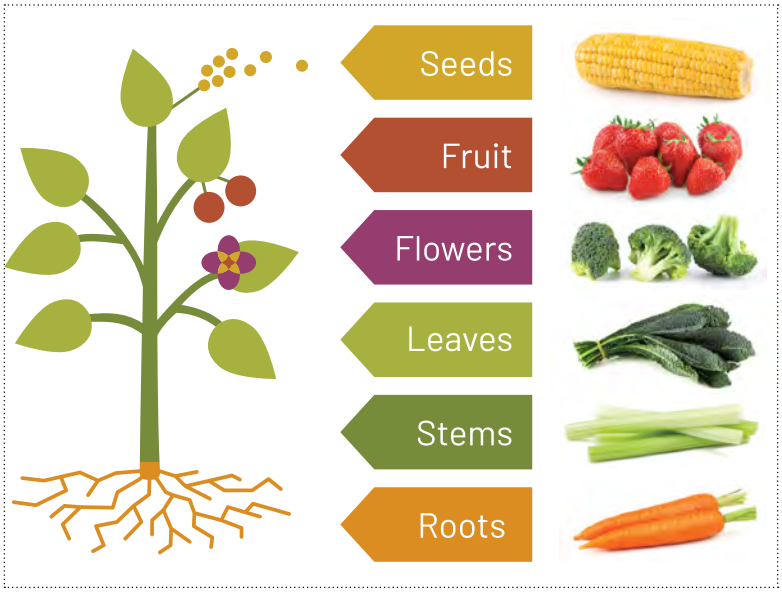
plants provide nutrients

All of our food comes from choices provided by a diversity of plant and animal food sources. Nutrients that people need are provided by this diversity – from both domesticated plants and animals that are grown and raised for food as well as wild sources that include fish, game, plants, insects and fungi. Wildlife from water-based and land-based ecosystems is important source of nutrients for more than a billion people.

Plants provide nutrients – carbohydrates, protein and fats – as well as vitamins, minerals, fibre and water. Additionally, many meat and dairy products that people eat come from farm animals that were fed with plants. This means that even when animal-based foods are part of a diet, they still depend on plants.

Plants provide nutrients and the energy that results from consuming them in two ways – from the seeds of a plant or from parts of the mature plant.

Many of the crops grown in Alberta fall under the "seeds" category.



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For example, **pulses** are the dry edible seeds of pod plants in the legume family. A legume is a plant from the *Fabaceae* family and includes about 18 000 different species.

The word "pulse" comes from the Latin word *puls*, which means potage or thick soup. Pulses include dry peas, beans, lentils and chickpeas and are high in protein and fibre and low in fat. Pulses are an important part of plant-based protein food sources.

The heads of wheat plants are the only part that provide a human food source. You may be familiar with whole grain foods. All grains – including wheat and barley, start as whole grains. The "whole grain" is the entire seed of the plant. It is made up of three edible parts - the bran, the germ and the endosperm.

Canola is a bit different. Canola oil is pressed from tiny canola seeds. Canola oil is rich in important dietary fats.

INVESTIGATE FURTHER

What is the variety of domesticated and natural plant and animal species that provide food and other products that people depend upon?

What is the variety of food products that come from Canadian crop plants?

plants and people need similar nutrients

Did you know that there are some similarities between the nutrients that humans need to the nutrients that plants need?

Nutrients for plants mainly come from the soil.

Nutrients for humans primarily come from food, often food grown in the soil.

Consider the comparisons in the chart below.

INVESTIGATE FURTHER

How are similar nutrients required and accessed by both people and plants?

Nutrients for Plants	Nutrients for People
Plants need carbon, oxygen and hydrogen to grow.	People need carbon, oxygen and hydrogen.
Potassium helps people with muscle control and supports a healthy heart rhythm.	Potassium helps plants use water efficiently.
Nitrogen helps plants grow strong stalks. Calcium supports cell division and cell wall structure in plants.	Nitrogen is needed by people for normal growth, cell replacement and tissue repair. Calcium builds strong bones.
Plants need phosphorus for root and flower growth. Phosphorus is required for photosynthesis and the storage and transportation of nutrients. Plants also need iron for photosynthesis. Iron helps move oxygen throughout the roots, leaves, and other parts of the plant.	Phosphorus is used in bones and teeth and helps the body use and store energy. Iron works in a similar way in people as phosphorus does in plants. It helps the body make hemoglobin which is essential for the transportation of oxygen in the blood.

a diversity of environments provides a diversity of Indigenous traditional plant foods

Indigenous peoples use over a thousand different plants for food, medicine, materials and cultural activities. These plant species range from algae to evergreens to flowering plants.

This knowledge of plants and their uses supports traditional Indigenous food systems and contributes to contemporary plant knowledge.

For example, Indigenous peoples in central south and eastern environments cultivate plants such as maize, beans and squash and harvest maple sap and wild rice. Indigenous peoples who live in west coast environments add a variety of berries, roots and green plant foods to fish and game. Peoples living in northern environments use seaweeds, berries and tundra greens.

The quantity and variety of plant foods and plant knowledge is balanced with animal and fish foods to make nutritionally complete diets.

Food for the future: How Canada's seed bank is protecting crop plants for tomorrow

For over 10,000 years, we humans have had a hand in the evolution of the plants we eat. By selecting plants with desirable traits and replanting their seeds, our ancestors shaped the crops we know today. The initial domestication of plants was an immense cultural achievement, and today's crop biodiversity represents a rich, common heritage. These days, advanced breeding techniques and technologies allow us to fine tune these cultivated plants, by creating new crop varieties targeted to our needs.

Find the full article with this quotation in Goulet, R-C. (January 19, 2021). Food for the future: How Canada's seed bank is protecting crop plants for tomorrow. Ingenium Canada: Online. https://ingeniumcanada.org/channel/articles/food-for-the-future-how-canadas-seed-bank-is-protecting-crop-plants-for-tomorrow

INVESTIGATE FURTHER

Seed banks is a place where seeds are stored to preserve crop and food diversity for the future. One of the biggest seed banks is found in Svalbard, Sweden. It has nearly 1 million seed samples.

To what extent should the diversity of seeds that people depend on be protected?

crop diversity provides nutritional diversity

Crop diversity – the variety of crops that are grown and harvested for food – provides the food that gives people the energy and nutrients they need.

Different foods provide different nutrients . A variety of nutritious food choices also provides a balance of the protein, carbohydrates, healthy fats, vitamins and minerals that are required for human health. This is called **nutritional diversity**.

Science and research – conducted by both farmers and scientists – have increased crop yields and quality. It's also contributed to improvements in the nutritional value of the food products made from these crops - such as higher levels of vitamins and better quality protein.

INVESTIGATE FURTHER

How does plant science support the diversity of plant species used for food?

How does plant science provide benefits for human health?

INVESTIGATE FURTHER

How can the production of a variety of crops contribute to the diversity of nutritional food choices?