



# How can diverse **food systems** meet the needs of a growing population?

## food systems and beyond

The food choices people are faced with and the choices they make are strongly influenced by the food system of which they are part. And food systems can be different.

A **food system** includes how and where food is grown, the materials needed to grow the food, how it is processed and distributed and how it is consumed. It also includes the waste that is created by all these activities.

Ultimately, food systems exist for the purpose of producing and obtaining nutrients – in other words, food.

However, food systems are complex. The actions involved in a food system affects the health and well being of people everywhere. They affect the natural environment. Food systems are affected by the access that people have to not just nutritious food, but to agricultural activities that allow them to make a living.

Other systems can exist within a food system – farming systems, agricultural ecosystems, water systems, financing systems, transportation systems and many others.

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In what ways do you think food systems can be different?

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Food systems are increasingly affected by challenges. Some of these challenges are identified by the United Nations.

- There is a greater availability of “cheap” calories. What does this mean? In some places, nutritious food choices can cost, on average, five times more than food that just does not provide enough calories or nutrients.
- The availability of ultra-processed foods and beverages has dramatically increased. There is poor nutritional value in many of these foods and beverages. At the same time, there is not always better availability of a diversity of nutritious foods.
- Factors that contribute to poor health include diets that are low in fibre, fruits, vegetables, legumes (pulses), whole grains, nuts and seeds, milk, seafood, calcium and healthy fats.
- Cheaper food has led to an increase in food waste as a result of factors such as the larger quantities and variety of food that is more easily available to consumers. For example, the amount of food available per person in stores and restaurants has increased over the last few decades.

Globally, one third of all food is now lost or wasted between the farm and the plate. For example, some foods that are not thought to have a “desirable” shape, size or colour can be discarded. Foods that are close to or beyond the “best-before” date and edible food that is unused or left over can be discarded by retailers and consumers.

United Nations Food Systems Summit 2021. Action Track Discussion Starter. United Nations: Online: [www.un.org/sites/un2.un.org/files/unfss-at2-discussion\\_starter-dec2020.pdf](http://www.un.org/sites/un2.un.org/files/unfss-at2-discussion_starter-dec2020.pdf)

## diversity of food systems

One way that people are starting to address these and other challenges with the food system is to look at alternatives for producing and obtaining food.

### ORGANIC FOOD SYSTEMS

Farmers - whether they use conventional or organic farming practices - focus on protecting soil health, promoting animal welfare and preserving ecosystems and the environment.



Cells need food in order to perform the functions that keep organisms alive. Healthy organisms function as a balanced system within life-supporting environments. Energy flows and matter is recycled through these environments. In what ways do you think a food system can provide a life-supporting environment? Give one example.

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In what way do you think the challenges affecting food systems can affect the balance in a life-supporting environment? Give one example.

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The term **organic** refers to a method of agricultural production that uses no synthetic fertilizers, synthetic pesticides or genetically modified organisms. Organic farming can, however, use organic fertilizers, pesticides and herbicides.

Organic foods and livestock feed are regulated across Canada under the Canadian Organic Regulation. They must meet all requirements as set out in the Canadian Organic Standard. Like all food products in Canada, organic foods are regulated by Health Canada.

Highwood Crossing is an organic grain farm and processor. Their flours, grains and oils are used across Alberta by some of the top chefs in the province.

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### Organic grains

When we switched to sustainable organic farming methods in 1989, we were actually returning to agricultural practices that were similar in many ways, to those used on this same farm by my great-grandfather nearly 100 years earlier. This meant no toxic chemicals or pesticides; a small carbon footprint; crop rotations to help control weeds and pests; and growing our own “green-manure” legume crops that fix nitrogen and are then ploughed-down to improve soil health and fertility.

The world has changed in many ways since the days when my great-grandfather and grandfather lived on and worked this land, yet our commitment to growing good, clean food remains the same.

## LOCAL FOOD SYSTEMS

The idea of a **local food system** can be based on different criteria. Local food systems can refer to foods grown and prepared in a geographic region, within a specific area generally close to where it is consumed.

The Canadian Food Inspection Agency defined local food as food produced within 50 km of where it's sold or food originating within or adjacent to the same **municipality** – an area governed by a local government unit.

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What should you know about organic pesticides? Think about this information from the University of New Hampshire.

Organic pesticides generally come from things in nature that can be used to control pests. This includes substances derived from plants, minerals, and microorganisms. Many organic pesticides are less toxic than their synthetic counterparts, but that doesn't mean they are safe or won't cause environmental harm. Just like synthetic pesticides, organic pesticides are formulated to kill. Even if the active ingredients come from a natural source, they are at much higher concentrations than they would ever be found in nature.



Quote from Are organic pesticides safer for my garden? (July 19, 2019). University of New Hampshire: Online. <https://extension.unh.edu/blog/2019/07/are-organic-pesticides-safer-my-garden>

Story from Meet a Producer (August 2, 2020). Tony Marshall – Highwood Crossing. Alberta on the Plate: Online. [www.albertaontheplate.com/producers/highwood-crossing/](http://www.albertaontheplate.com/producers/highwood-crossing/)

In 2013, a new interim policy expanded that definition to include food produced within the province in which it is sold, or within 50 km of the province of origin.

Allison Ammeter, and her husband of 35 years, Michael, operate a third-generation grain farm near Sylvan Lake, Alberta, cropping a rotation of canola, wheat, barley, faba beans and yellow field peas, practicing minimum tillage and using variable rate seeding technology. Due to the location close to the Rocky Mountains, the farm experiences an extremely short growing season every year.

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### Growing local

We grow wheat, barley, canola, peas, and faba beans in a four-year crop rotation. We practice no till farming (we do not disturb the soil with cultivation), which is very good for water filtration, organic matter increase and soil health.

I have been part of a number of pulse promoting organizations, and actively promote adding value here in Alberta to our crops. Our products are sold as bulk commodities (wheat, peas, barley, faba beans, canola), and quite often they are used in the province. For example, our barley may go to livestock production or a malt plant, our peas or faba beans may be fractionated, our wheat may go to a flour mill, our canola may go to a crusher.

If you buy pulse products that are labeled “Product of Canada”, you are supporting local and Canadian pulse farmers.

### TRADITIONAL FOOD SYSTEMS

Indigenous peoples use knowledge of their environments and traditional food systems to survive off the land. Traditional food systems were and are central to ways of life, health and well-being.

The concept of a **traditional food system** includes all the food species – plant and animal life – that are available from local natural resources and the ways that those species are used.

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How would the food system diagram look different if it was focused on a local food system? If it was focused on a traditional food system?

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From Meet a Producer (December 30, 2021). Allison Ammeter, Pulse Grower, Sylvan Lake AB. Alberta on the Plate: Online. [www.albertaontheplate.com/producers/allison-ammeter/](http://www.albertaontheplate.com/producers/allison-ammeter/)



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## Black Duck Wild Rice: A case study

Black Duck Wild Rice, located in Curve Lake First Nation is a social enterprise involved with seeding, harvesting, processing and educating about manoomin or wild rice – a traditional food of the Nishnaabe people. Black Duck Wild Rice is enacting their Indigenous rights and is working to restore Indigenous food sovereignty for their community and within their traditional territory. Food sovereignty refers to the right to healthy and culturally appropriate food that is produced with sustainable practices.

The revival of manoomin is an important step in the process of the reconciliation.



Story and image from Anderson, P. and Whetung, J. 2018. Black Duck Wild Rice: A Case Study. Centre for Sustainable Food Systems, Wilfrid Laurier University. Nourishing Ontario: Online. <http://nourishingontario.ca/black-duck-wild-rice-a-case-study/>

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## Canada's northern food system

The traditional food systems of Canada's Arctic Indigenous peoples have changed considerably over the years. Traditionally, they relied on animal fat and protein harvested from the land and sea – like fish, caribou and seal. Indigenous peoples now depend on a mix of traditional foods and imports from southern Canada.

This has caused challenges. The quality of the food is affected by the length of time and distances involved in transporting it. Perishable foods, like fresh produce, can be ruined by the time it gets to communities. Some of the foods that are transported to these communities – like beef, chicken and pork – are not the types of foods that Canada's northern Indigenous peoples traditionally eat.

Arctic World Wildlife Fund (June 7, 2018). Rethinking Canada's Northern Food System. The Circle: Sustainable Development Goals Online. <https://arcticwwf.org/newsroom/the-circle/sustainable-development-goals/rethinking-canadas-northern-food-systems/>

## Manoomin knowledge sources

Manoomin means the good seed or sacred seed in Anishinaabemowin (Ojibway language). The Anishinaabeg have maintained a relationship with manoomin, caring for it, harvesting it, eating it, trading it, honoring it for generations upon generations. It is considered one of the central lifeways of the Anishinaabeg and in essence has defined who they are for millennia. Their intimate reciprocal relationship with this plant is affirmed in their ceremonies, songs and stories and integrated into their practices.

## SUSTAINABLE FOOD SYSTEMS

According to the Food and Agriculture Organization (FAO) of the United Nations, a **sustainable food system** can be understood as “a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised” (FAO, 2018).

According to the Canadian Centre for Food Integrity, sustainability is also an important area of concern for Canadians.

‘Sustainable food’ means different things to different people, but there are certainly commonalities across definitions.

- ◆ Almost half (45 percent) of Canadians believe sustainable food has a positive impact on the environment.
- ◆ Three in ten (31 percent) of Canadians say that sustainable food means that it is grown/raised locally.
- ◆ Roughly a quarter to one in five Canadians say that ‘sustainable food’ means that food is safe for themselves and their family (25 percent), provides a healthy standard of living for farmers (22 percent) and is nutritious for themselves and their family (20 percent).

According to Dietitians of Canada, the way food is produced, distributed and eaten forms an important link between health and social and environmental systems.

This means that ecosystems are protected, and all species are respected. Sustainable food systems support equal and just access to food as well as a healthy relationship with food, such that Canadians value food, its origin and quality, and express identity and culture through foods.

Dietitians Support Sustainable Food Systems. Dietitians of Canada: Online. [www.dietitians.ca/Advocacy/Priority-Issues-\(1\)/Food-Policy/Sustainable-Food-System](http://www.dietitians.ca/Advocacy/Priority-Issues-(1)/Food-Policy/Sustainable-Food-System)

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### Growing sustainably

Brian Otto and his wife Carolyn have operated Provident Farm Ltd. for 43 years. Near Warner, AB with a view of the Sweet Grass Hills in the SE, they grow 4 300 acres of pulses, safflower, yellow mustard, winter, durum and spring wheat with 1000 acres dedicated to malt barley.

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What common goals do you see in local, traditional and sustainable food systems?

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The Canadian Centre for Food Integrity (CCFI) is a non-profit organization made up of farmers, ranchers, people interested in food and food companies as well as universities, non-governmental organizations, restaurants, retailers and food processors. The CCFI conducts research surveys every year.

Dietitians of Canada (DC) represent regulated health professionals who are a credible and trustworthy source of food and nutrition expertise.

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In what ways does nutrition play a role in a food system? Brainstorm as many ideas as you can?

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"Barley is a natural rotational crop to break the cycle between oil seeds and pulses," he says. "It grows well in southern Alberta and we are able harvest it early, often an advantage for malt companies. The other advantage is its reliable financial return. On our farm it fits exceptionally well with all our crops."

Established in 1907, the Otto farm has always operated with an eye to progression and preservation of the land for its future generations. Brian adopted direct-seeding techniques over 25 years ago. He has also cooperated with the Lethbridge Research Center for over 30 years, setting aside plots of land for winter wheat variety trials.

"Agriculture has always been on the forefront of implementing new technologies and techniques to improve production and sustainability," Brian says. "We've always embraced building our operation, maintaining soil quality and the health of our farm. Good land stewardship has always been our focus."

