



SPARK AND ENGAGE

start with a stance

Customize this project process by creating your own HyperDocs, using the links from this guide and selecting those activities you think are most appropriate for your students.

Information that these statements are based on can be found in The future of food: a Canadian perspective – The conflicted consumer 2021 food consumer survey, from Deloitte Canada, at https://www2.deloitte.com/content/dam/Deloitte/ca/Documents/consumer-business/ca_futureoffood_pov_en_AODA.pdf. The thumbnail infographic image samples below come from this report and can be downloaded to share with students.

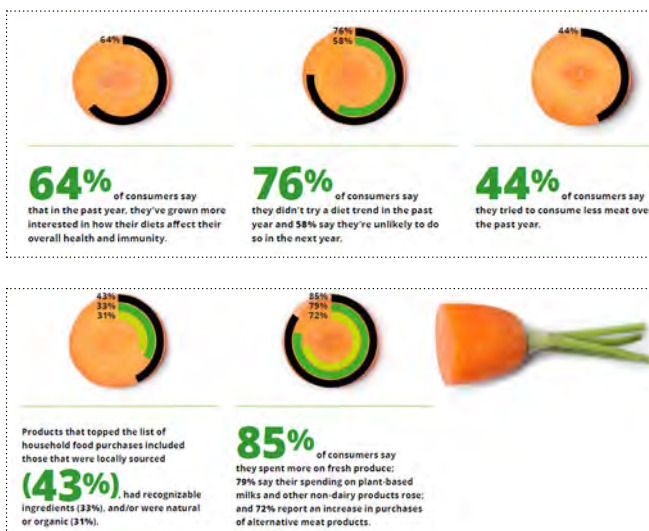
As an introduction, ask students to first brainstorm what they think about or associate with the idea of “food diversity.” Encourage students to consider food diversity from different viewpoints, such as:

- Food choices that they see in daily contexts or common environments – types of food that are available in markets and grocery stores
- Foods associated with cultures and family traditions
- Foods that come from different types of agricultural activities – types of foods that students think come from agriculture; differences between plants grown for food and livestock used as a food source
- Foods that come from different locations and/or environments – the difference between local and global foods; where across the world that foods come from

Students can also be encouraged to consider how they think the COVID-19 pandemic has changed how people perceive and use food. Do students think that the pandemic has affected food diversity – possibly through the choices available or food preferences? Have they seen any evidence that perceptions or preferences for plant-based foods have changed? Record students’ initial ideas on **Padlet** or **Jamboard**.

Tell students that there are several organizations that monitor and survey Canadians’ opinions about food and agriculture – including government organizations like Statistics Canada, non-profit organizations like the Canadian Centre for Food Integrity (CCFI) as well as private survey organizations, like Ipsos Reid.

In a 2020-2021 research study by Deloitte in Canada, interviews were conducted with people involved in food manufacturing and grocery stores as well as adult Canadians to look at the future of food and groceries.



Dig deeper by exploring students’ opinions about findings identified by the Deloitte study focused on health and wellness. Identify opposite sides of the classroom as “agree” and “disagree” sides; simple posters can also be put up in advance to identify each side.

Select from statements such as the following. Share each statement, one at a time, out loud with students. Alternatively display them on a board or screen.

As each statement is displayed, have students move to the side of the classroom that represents their opinion. Students can stand anywhere between the two sides of the classroom to indicate the extent of their agreement or disagreement; those who are undecided can stand in the middle of the two sides.

- ◆ **Canadians are more interested in how their food choices affect their overall health and immunity.**

The Deloitte study found that nearly two-thirds – 64 percent – of consumers surveyed said that they have grown more interested in how their diets affect their health.

The 2020 CCFI survey also found that most (65 percent) Canadians say they have sought information about nutrition and healthy eating; it also found that nearly nine in ten – or 87 percent – of Canadians trust that the food system will ensure the availability of healthy food for Canadians.

- ◆ **An increased interest in wellness influences people to try new diet fads or trends.**

The Deloitte study found that 76 percent of the people surveyed said they did not try a dietary trend in the past year and 58 percent said they were unlikely to do so in the next year.

Encourage students to identify some of the dietary trends or fad diets they are aware of. Ensure that students differentiate between the idea of a dietary trend and a fad diet. **Fad diets** are often gimmicky and remove one or more of the food/nutrient categories, such as carbohydrates or fats. **Dietary trends** can involve changing preferences, such as increasing preferences for locally grown or plant-based foods.

A simple article that could provide talking points for discussing the risks of fad diets can be found in Get the Facts on Fad Diets from the UnlockFood.ca website at www.unlockfood.ca/en/Articles/Weight-and-Health/Get-the-Facts-on-Fad-Diets.aspx, and 4 Reasons Why Fad Diets are Bad for You in Readers Digest Canada, at www.readersdigest.ca/health/weight-loss/4-reasons-why-fad-diets-are-bad-you/.

- ◆ **The most popular food products are locally produced.**

The Deloitte study found that the products that topped the list of household purchases included those that were locally sourced (43 percent), had recognizable ingredients (33 percent), were natural or organic (31 percent) and offered sugar-reduced versions (35 percent). 85 percent of consumers said they spent more on fresh produce; 79 percent say their spending on plant-based milks and other non-dairy products rose and 72 percent reported an increase in purchases of alternative meat products.

- ◆ **Canadians are not really concerned about where their food comes from.**

The Deloitte study found that 71 percent of Canadians say it's important for them to understand where their food comes from.

Ask students to volunteer why they agree or disagree. Encourage students to consider the extent to which they think agriculture and food are important to learn more about.

Adapt this activity to a **horseshoe debate** format. Share one statement at a time and have students arrange themselves around a horseshoe shaped spectrum with five points that range from strongly agree, agree, neutral, disagree and strongly disagree. As each statement is shared, have students stand at the point of the spectrum that reflects their opinion. As students are asked to explain their opinion, all have the option to change their position. Find a video that describes this process at www.youtube.com/watch?v=8z_gEwJKAbA.

The Canadian Centre for Food Integrity conducts public trust research every year. Reports can be downloaded by providing contact information at www.foodintegrity.ca/research/. Students may find it interesting to explore public perception around agriculture, food choices and sources of information about the food system.

A Census of Agriculture is conducted every five years, with the latest survey occurring in 2021. The 2016 Census of Agriculture website provides links to statistical information at www.statcan.gc.ca/eng/ca2016. Students can be guided through an exploration of the type of statistics shared on this page and identify where plants as sources of food are reflected.

Alternatively, online apps such as Google Forms can be used to set up a simple digital survey or a Padlet board to collect students' reasons for their stance.

Work with students to draw out connections between some of the food preferences and priorities reflected in surveys like the Deloitte survey and those conducted by the Canadian Centre for Food Integrity and the use of plants as a food source. To what extent is it important to understand more about the ways food is produced from plants? How do the characteristics, life cycles, structures and functions influence the production of plant-based foods?

exploring diversity

Students may have previously explored the concept of diversity in terms of the natural world, ecosystems and/or cellular systems. Have students focus on how they think they would find "diversity" in the food system.



Students will encounter the food system infographic in many of the **project AGRICULTURE** resources. 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. Ensure that students have a basic understanding of what a food system is and encourage them to think about where plants for food fit into the overall system.

Have students work with a partner or small group to brainstorm words, phrases, images, symbols that represent the "big idea" of diversity as it applies to the food system. Students can explore how diversity is represented in food choices that are part of their daily lives and in the plants they are aware of that are used as food.

> SCAFFOLD AND DIFFERENTIATE

Prompt students to share ideas related to the range and variety of foods that they use - for example, canola, wheat, barley, pulses (dry beans, field peas, etc.) as well as foods that come from livestock, like chicken or beef. Ensure that students have the opportunity to share without making judgments.

Use images or sketches, words, descriptive phrases and sentences to create an **illustrated word splash** on the board or on a poster.

> CONNECT TO PRIOR LEARNING

Ask students to explore what they think agriculture involves – place, activities, practices, issues, values and beliefs. Discuss and create a definition of agriculture on the board before students start brainstorming.

Agriculture refers to the practices involved in growing crops and feeding and raising livestock for food and other products. Encourage students to make connections between agriculture and the food they eat.

> CONNECT TO EXPERIENCES

Encourage students to share stories about connections to agricultural places, events and activities that they have experienced. Identify and discuss the characteristics of agricultural communities that students live in or have visited. Set up a **Jamboard** or other digital bulletin board for students to post word or image snapshots of their experiences connected to agriculture.

connect to prior knowledge

Share the essential understandings that provide a focus for the three **Spark Questions** learning resources. Essential understandings 1, 2 and 3 can all be focused on concepts in **Grade 7 Unit B: Plants for Food and Fibre / Science Unit A: Interactions and Ecosystems/**, while 3 also focuses on concepts in **Grade 8 Science Unit B: Cells and Systems**.

As you share and discuss these with students, use evidence-focused questions such as the following to encourage their thinking about what they already know and how they know it:

- What terms are you familiar with in this statement? What are the important ideas in the statement?
- What do you envision when you think about this statement? What do you know?
- What do you envision, have you imagined or know that makes you say that?

Ask individual students to use a **KWLH chart** to jot down their resulting ideas in the “What I **Know**” and “What I **Want to Know**” columns. Use the “**How** I will find out” and “What I **Learned**” columns as students investigate and research.



A KWLH Chart is provided in the **food DIVERSITY Project Tools** booklet and on the **PROJECT GUIDES** webpage at www.projectagriculture.ca/share/project-guides/.



Consider creating a class version of a KWLH chart, collecting information on what students know, what they want to know, how they think they will find out, and then, completing what they learned after sharing their projects. Monitor class understandings and provide support in areas that students need.

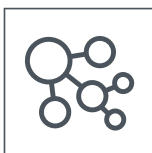
> SCAFFOLD AND DIFFERENTIATE

Use this evidence-focused questioning strategy as a whole class first, teaching students how to examine their understandings and conceptions. Students can then discuss these or other statements in small groups, using these questioning strategies with each other.

Keep a chart or ongoing list of students' thoughts and ideas in the classroom as a reference to students' initial thinking and ideas. Invite students to use and add to these lists as they develop their projects.

reflect on connections

Create a **mind map** on the board or with a digital app with the whole class to reflect on connections to what students may have learned about concepts related to – and that connect to – sustainability to natural environments, ecosystems, agriculture, farming, food, identities, innovation, traditional knowledge, mechanization and technologies.



A **Mind Map** is provided in the **food DIVERSITY Project Tools** booklet and on the **PROJECT GUIDES** webpage at www.projectagriculture.ca/share/project-guides/.

> EXTEND LEARNING

Encourage students to consider what they have previously learned about Indigenous perspectives and beliefs regarding the land and resources. To what extent could these perspectives inform current practices, values and beliefs about sustainability, the food system, agriculture, ecosystems, mechanization and/or technologies?



The three essential understandings from the previous activity are shared with students in the **Spark Questions** PDF sources.



The **INVESTIGATE MORE** questions in the **Spark** handouts are intended as starting points for student investigation and research. They can be used to identify areas for inquiry or as a focus for the development of a project question.

spark inquiry with an AGRICULTURE cafe

Have students further explore perspectives and concepts related to all or some of the three essential understandings in a **world cafe**, using the **Spark Questions** handouts.

Start student exploration by sharing the **project AGRICULTURE** website on an interactive whiteboard. Go to the **food DIVERSITY** topic in the **TOPIC VIEWER** on the **LEARN** webpage of the **project AGRICULTURE** website and click on the “spark” icons to access and explore the **Spark Questions** sources.

Preview the information and questions. Then, provide in digital or print form for students to explore individually.

Several starting points for further inquiry are provided as questions throughout the **Spark Questions** handouts. **Select** from these questions to create a project focus. These questions are found in **INVESTIGATE MORE** sidebars in each handout and include:

- What plants are the most commonly used sources of food? Why are these plants most commonly used?
- How does agricultural diversity strengthen food systems?
- What role do plants – both cultivated crops and wild plants – play in the world’s food supply?
- How do crop plants contribute to biodiversity?
- How can crop diversity and variety reduce pests and diseases?
- How does soil quality affect the growth of healthy crops?
- How do plants interact with animal life and microorganisms in agricultural environments? Why is this interaction important?
- How does the location and environments in which crop plants are grown affect decisions farmers make as they grow crops? In what ways do the differences between weather and climate need to be considered by farmers?
- How do environmental factors that affect natural plant growth apply to crop plants?
- In what ways can farmers modify or control natural environments and conditions to maximize crop yields and quality?
- How can disruptions in growing environments – like those caused by climate change – affect the growth rate, yield and quality of crop plants?
- How are growing environments modified and adapted for crop production? What are the benefits and risks to plants as well as the environment?
- 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?
- How are nutrients required and accessed by both people and plants?
- To what extent should the diversity of seeds that people depend on be protected?
- How does plant science support the diversity of plant species used for food?
- How does plant science provide benefits for human health?
- How can the production of a variety of crops contribute to the diversity of nutritional food choices?



Specific curriculum outcomes for each of the three Spark Questions handouts, correlated to each, are provided in the **LEARNING OUTCOMES AND COMPETENCY MAP** on page 31.

Click on each guiding question in the map to go directly to the downloadable source on the website.



Consult *Teamwork Skills: Being an Effective Group Member* from the University of Waterloo at <https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/tips-students/being-part-team/teamwork-skills-being-effective-group-member> for group and teamwork skills that can be shared with students.

Tell students that they will be asked to hold group conversations, focused on one of the **Spark Questions** sources. Organize students into groups of three or four at a table, cluster of desks or at a class computer, loaded with a **Google Doc**. Select a leader for each group. The leader will record the major points of the group conversation and be prepared to summarize them.

Share questions such as the following with students as the focus for their group conversations:

- ◆ What information and examples can you find in this source to support the essential understanding?
- ◆ What additional information do you need to better understand the essential understanding?
- ◆ What would you most like to find out more about? Why?

Have groups discuss the questions for an established period of time.

Once the time is up, have the leader stay but the other group members rotate to a different table. Ask the leader to summarize the main points of the conversation they had with their former group for their new group members.

Have each new group select a new group leader. Repeat the process to provide multiple students with the opportunity to lead a group.



SPARK QUESTIONS: LEARNING OUTCOMES AND COMPETENCY MAP

SPARK AND INQUIRY FOCUS	GRADE 7 SCIENCE UNIT B and GRADE 8 SCIENCE UNIT B	
	CONCEPTUAL KNOWLEDGE	PROCEDURAL KNOWLEDGE
SPARK LEARNING SOURCE How does crop diversity feed the world? Crop diversity is central to the production of food around the world.	Grade 7 Unit B: Plants for Food and Fibre 1. Investigate plant uses; and identify links among needs, technologies, products and impacts - describe human uses of plants as sources of food and raw materials, and give examples of other uses (e.g., identify uses of plants as herbs or medicines; describe plant products, and identify plant sources on which they depend) - investigate practical problems and issues in maintaining productive plants within sustainable environments, and identify questions for further study (e.g., investigate the long-term effects of irrigation practices or fertilizer use)	Grade 7 Unit B: Plants for Food and Fibre Ask questions about the relationships between and among observable variables, and plan investigations to address those questions - define practical problems (e.g., identify problems in growing plants under dry conditions) - identify questions to investigate arising from practical problems and issues (e.g., What methods will help limit moisture loss from plants and soil? What reduction in the loss of soil moisture can be achieved through the use of a plastic ground sheet or through the use of a plastic canopy?)
SPARK LEARNING SOURCE What factors are required for sustainable growing environments? Food diversity depends on healthy growing environments.	Grade 7 Unit B: Plants for Food and Fibre 1. Investigate plant uses; and identify links among needs, technologies, products and impacts - illustrate and explain the essential role of plants within the environment - investigate practical problems and issues in maintaining productive plants within sustainable environments, and identify questions for further study (e.g., investigate the long-term effects of irrigation practices or fertilizer use) 3. Analyze plant environments, and identify impacts of specific factors and controls	Show interest in science-related questions and issues, and pursue personal interests and career possibilities within science-related fields (e.g., observe plants in the local community, and ask questions about plants with unusual characteristics; pursue a hobby related to the study of living things; express an interest in science-related/technology-related careers)
SPARK LEARNING SOURCE How does crop diversity ensure food diversity? The science of crop production contributes to food diversity.	Grade 7 Unit B: Plants for Food and Fibre 1. Investigate plant uses; and identify links among needs, technologies, products and impacts - illustrate and explain the essential role of plants within the environment - describe human uses of plants as sources of food and raw materials, and give examples of other uses (e.g., identify uses of plants as herbs or medicines; describe plant products, and identify plant sources on which they depend) - investigate practical problems and issues in maintaining productive plants within sustainable environments, and identify questions for further study (e.g., investigate the long-term effects of irrigation practices or fertilizer use)	
	Grade 8 Unit B: Cells and Systems 1. Investigate living things; and identify and apply scientific ideas used to interpret their general structure, function and organization - apply the concept of system in describing familiar organisms and analyzing their general structure and function - illustrate and explain how different organisms have similar functions that are met in a variety of ways (e.g., recognize food gathering as a common function of animals, and note a variety of food-gathering structures)	Grade 8 Unit B: Cells and Systems Ask questions about the relationships between and among observable variables, and plan investigations to address those questions identify questions to investigate (e.g., identify questions that arise from their own observations of plant and animal diversity) Show interest in science-related questions and issues, and pursue personal interests and career possibilities within science-related fields (e.g., select and explore media on topics related to the diversity of living things and the maintenance of health; express interest in science-related/technology-related careers that contribute to the welfare of living things)