

Challenge BEEF

RESILIENCE

How does globalization affect the resilience of our food system?



Activity-Based Challenges for Learning about Farming, the Food System and the Environment in Alberta Junior and Senior High Science and Social Studies

The **Challenge BEEF** teaching resources provide curriculum-based activities and supports for a mini-unit that focuses on the contributions and vitality of agriculture in Alberta. Activities encourage students to explore cattle farming and ranching in Alberta. From family farms and ranches, passed down through generations, to new, state-of-the-art feeding and breeding operations, Alberta's farmers and ranchers are proud of their industry.

The many authentic photos and stories used in these learning resources share the land, resources, experiences and stewardship that are part of Alberta cattle farming and ranching families.

It is our hope that students develop understandings of the ways of life involved in raising cattle and contributing to Alberta's and Canada's food system while respecting the different choices that people make about their food. Alberta Beef Producers is proud to support education and provide the **Challenge BEEF** resources for teachers and students in junior and senior high Social Studies and Science programs, with potential support for other areas of Alberta curriculum as well.

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Alberta Beef Producers also thanks the cattle farmers and ranchers who have shared stories and photos that are used in these resources.

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Readers should be aware that Internet websites offered as citations and/or sources for further information may have changed or disappeared between the time this was written and when it is read. Teachers are cautioned that all websites listed in this resource should be checked for appropriateness and suitability before being provided to, or used with, students.

Every effort has been made to acknowledge sources used in the **Challenge BEEF** resources. In the event of questions arising as to the use of any material, we will be pleased to make the necessary corrections in future versions.



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TOPIC: RESILIENCE

How does globalization affect the resilience of our food system?



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The **Challenge BEEF** resources provide activities that encourage students to translate their learning into experiences that are personally meaningful and that can make a difference to their own understandings and decision-making.



The Challenge BEEF Series

The **Challenge BEEF** resources provided by Alberta Beef Producers are organized around a series of challenges for student learning. These challenge resources provide activities that are structured so they can be implemented in **one to three** junior or senior high classes, and support Alberta Science and Social Studies curriculum. Suggestions are also provided for possible integration into other subject areas, including English Language Arts and Career and Technology Studies AGR courses.

Three Challenge BEEF resources encourage students to explore agriculture through current issues connected to three big idea topics. Each of the three resources are organized around an essential question:

- This **RESILIENCE** resource is focused on the essential question: **How does globalization affect the resilience of our food system?**
- The **SUSTAINABILITY** resource is focused on the essential question: **How does sustainability affect my food choices?**
- The **MEDIA MESSAGES** resource is focused on the essential question: **How can media messages contribute to misinformation about food choices?**

The essential question provides a focus for student research and for building understandings. However, you and your students are also encouraged to adapt, revise or develop your own essential question for a topic.

Each resource topic is focused on an **essential question** and includes a **culminating topic challenge**. The topic challenge turns the essential question into a call to action by asking students to create a solution or response applicable to local and/or personal contexts. The topic challenge can provide a focus for a student project or simply for the implementation of any or all of the guiding activities.



Adapting Challenge Based Learning to Activity-Centred Learning



“Challenge Based Learning mirrors the 21st century workplace. Students work in collaborative groups and use technology to tackle real-world issues in the context of their school, family, or local community. For teachers, the task is to work with students to take multidisciplinary standards-based content, connect it to what is happening in the world today, and translate it into an experience in which students make a difference in their community.”

SOURCE: Apple Inc. (2010). Challenge-Based Learning: A Classroom Guide. https://images.apple.com/education/docs/CBL_Classroom_Guide_Jan_2011.pdf

This approach mirrors and supports the development of Alberta Education’s competencies. “Competencies are combinations of attitudes, skills and knowledge that students develop and apply for successful learning, living and working.”

SOURCE: Alberta Education online. What are competencies? <https://education.alberta.ca/competencies/student-competencies/>

EACH TOPIC RESOURCE INCLUDES THE SAME ELEMENTS, AS ILLUSTRATED IN THE ORGANIZATION FLOWCHART ON THIS PAGE.



The **Challenge BEEF** resources are designed so they can be implemented as a series of lessons that culminate in a challenge **OR** so that each guiding activity could be implemented as a single, discrete lesson and integrated into existing units.

Although the three topics are targeted at specific curricular areas, there are many opportunities to mix and match the activities found in each and integrate them into other grade levels and subject areas. Tips for making additional curriculum links are provided in the teaching suggestions for each activity.

PREVIEW THE THREE Challenge BEEF TOPICS ON THE FOLLOWING PAGES.

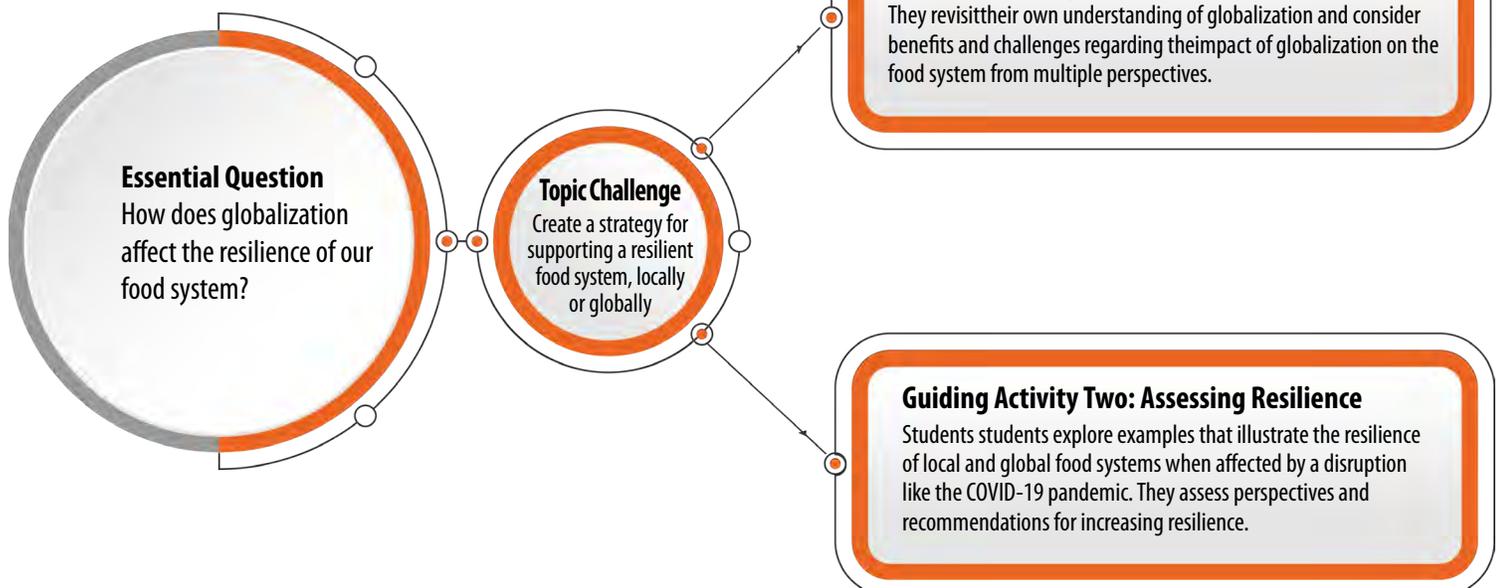
Topics – and the essential question – are developed through **guiding activities**. The guiding activities in each topic can be selected, broadened and/or expanded to be implemented as a single-class activity or as a whole challenge-based mini-unit. The guiding activities include suggestions for **guiding questions** and **guiding resources**, which can provide support for the essential question.

Guiding questions are questions that are posed to students. They can be shared in writing, as part of class discussions or posted on an online bulletin board. Guiding questions support students' work on their learning tasks by calling their attention to concepts and details that will help them complete a task. Guiding questions should encourage students to move to higher levels of thinking. **Guiding resources** include the student handouts as well as suggestions for other online sources, including websites and videos.

The guiding activities also include **mini challenge activities** to facilitate implementation choices and flexibility – if you choose to implement only one or two of the guiding activities in this topic, the mini challenge in each can reinforce application of students' learning to local and/or personal contexts. Mini challenges are tasks that students can complete for formative or summative assessment.

Each guiding activity also includes suggestions for implementation in in-class, remote learning, individual, paired or small group contexts. All student handouts provide **fillable fields**, which can facilitate independent, online and remote learning.

This flowchart provides an overview of the organization of the **RESILIENCE** topic.



TOPIC: RESILIENCE

ESSENTIAL QUESTION: How does globalization affect the resilience of our food system?



Challenge BEEF: RESILIENCE focuses on the implications of globalization on the food system, in the face of an unforeseen disturbance like the COVID-19 pandemic. It encourages students to explore the balance between global markets and local sourcing in the food supply chain, using examples from the beef production industry. The **two** guiding activities in this topic encourages students to consider how their food choices are affected by both globalization and local responses to issues in the food supply chain.

This topic's cumulative challenge asks students to design, create and/or develop a project that supports a resilient food system, either at a local level – personal, school, community – and/or in response to a globalized food supply. Mini challenges are also included with each guiding activity.

Challenge BEEF: RESILIENCE supports specific learning outcomes in **Grade 10 Social Studies: Related Issues 3 and 4. To what extent does globalization contribute to sustainable prosperity for all people? and To what extent should I, as a citizen, respond to globalization?**

Suggestions for linking learning to **Social Studies 9.2 Issues for Canadians: Economic Systems in the United States and Canada**, **Science 24 Unit C: Disease Defence and Human Health** and **Career and Technology Studies AGR 2010: Introduction to Agriculture** are also provided.

TOPIC: SUSTAINABILITY

ESSENTIAL QUESTION: How does sustainability affect my food options?

Challenge BEEF: SUSTAINABILITY centres on the concept of sustainability. It asks students to consider messages that affect understandings of sustainability and shares examples of agricultural practices implemented by cattle ranchers and farmers in Alberta. The **three** guiding activities in this topic encourage students to consider how they can practice sustainability in their personal environments.

This topic's cumulative challenge asks students to design, create and/or develop a project that addresses the extent to which the food system provides sustainable food options, considering the impact of food production on natural ecosystems. Mini challenges are also included with each guiding activity.

Challenge BEEF: SUSTAINABILITY supports specific learning outcomes in **Grade 7 Science Topic A: Interactions and Ecosystems**.

Suggestions for linking learning to **Grade 8 Science Unit E: Freshwater and Saltwater Systems**; **Grade 9 Science Topic C: Environmental Chemistry** and **Career and Technology Studies AGR 2010: Introduction to Agriculture** are also provided.

TOPIC: MEDIA MESSAGES

ESSENTIAL QUESTION: How can media messages contribute to misinformation about food choices?

Challenge BEEF: MEDIA MESSAGES centres on examples of media messages that can intentionally and/or unintentionally promote misinformation, myths and misconceptions about the food system. The **three** guiding activities in this topic encourage students to apply evidence and critically assess the credibility of messages found in social and news media about climate change and consumer food trends.

This topic's cumulative challenge asks students to design, create and/or develop a project that fact checks misconceptions and misinformation about an aspect of the food system. Mini challenges are also included with each guiding activity.

Challenge BEEF: MEDIA MESSAGES supports specific learning outcomes in **Science 10 Unit D: Energy Flow in Global Systems** and **Social Studies 9.2 Issues for Canadians: Economic Systems in the United States and Canada**.

Suggestions for linking learning to **Grade 10 Social Studies: To what extent should we embrace globalization?** and **Grade 9 Language Arts and English 10-1 or 10-2** as well as **Grade 9 Math and Math 10C** are also provided.

FOCUS ON RESILIENCE



Introduction to the RESILIENCE Topic

The world continues to become more connected and challenges experienced in one part of the world can quickly spread across borders and affect the entire world. Our world is strongly connected through our food system. Global markets are dependent on the resilience of local suppliers, including ranchers and farmers in Alberta.

The COVID-19 pandemic highlighted the interrelatedness of global health, the food system and the environment. COVID-19 started locally, but it quickly spread globally – affecting nearly every country in the world and almost every industry. It exposed the risks to local and global supply chains and underscored the need for resilience.



Resilience refers to the capacity to deal with change and recover quickly from difficulties. This concept can be defined as the ability to withstand, recover from and adapt to a disruptive event. A resilient food system, therefore, can provide enough accessible and safe food even in the face of crisis.

Challenge BEEF: RESILIENCE builds understandings of the concept of resilience as it relates to sustainable food systems, globalization and trade.

Implementing a Mini-Unit or Selecting Individual Activities

This topic is developed through two guiding activities, all focused on the essential question: **How does globalization affect the resilience of our food system?** An overview and curriculum correlation for each guiding activity is provided on pages 12 to 15.

Guiding Activity 1: Mapping the Food System (pages 16 to 20)

Guiding Activity 2: Assessing Resilience (pages 21 to 26)

- Additional definitions of the concept of resilience are shared in **STUDENT RESOURCE 1**, provided on pages 31 to 38.

- These two guiding activities can be implemented in sequence as a mini-unit, focused on the big idea of resilience.
- Alternatively, individual guiding activities can be selected and implemented in one-to-two class settings to supplement and enrich existing lessons. Students may also have ideas for additional investigations that connect to other areas of their learning.



Teaching approaches and strategies in each guiding activity support the development of the essential question with suggestions for strategies, sequencing and levelled alternatives. Look for additional curriculum links and guiding resource weblinks that can supplement learning tasks in the student handouts.

The topic challenge responds to the essential question by asking students to create a personal response; a storyboard or video message, public service announcement, social media post or other products that communicate their findings and conclusions.

Each guiding activity includes:

- Teaching approaches and strategies
- Scaffolding and assessment tips
- Guiding questions and guiding resource suggestions for inquiry and research
- A student learning resource handout
- A mini-challenge

The following guiding questions are provided in the guiding activities and are supported with suggestions for additional guiding resources that can be used for student inquiry and research. These questions include the following:

- How does the global food system provide diversity in our food system?
- What foods are provided by local ranchers, farmers and food processors?
- How can resilience be developed in the food system?
- What does globalization look like in Alberta's food system? How does it affect our food choices?
- What challenges and opportunities does a global food system provide in local communities?
- What would a more resilient food system look like?
- How can local ranchers, farmers and food processors be supported?
- How does Alberta beef production illustrate an aspect of a resilient food supply?
- What opportunities and challenges do Alberta ranchers and farmers face with globalization ?
- What opportunities and challenges do Alberta ranchers and farmers face with local food systems?
- What actions or solutions have been proposed to address problems or disruptions to global and/or local food systems? What are the benefits and challenges of these actions or solutions?
- How can social, economic and environmental benefits and challenges of food system or food policy recommendations be assessed?
- How can we assess recommendations about strengthening the resilience of food systems?

The Cumulative Topic Challenge

The cumulative topic challenge involves students in the design, creation and/or development of a strategy for supporting a resilient food system, either at a local level – personal, school, community – and/or in response to a globalized food supply.

Sample project formats and choices can be provided to students, depending on the time that is appropriate for a challenge task. Consider examples such as the following, that may vary from one class or day to a weeklong task.



- Encourage students to brainstorm issues connected to the concept of resilience – and specifically resilience in our food system – that they could be interested in tackling in personal, school or the broader community level.
- Initial brainstorming might involve a whole class discussion, partner or small group brainstorm, or individual home assignments.



The **Challenge Based Learning (CBL)** website provides a number of resources that can support teaching and learning in a challenge based learning format at www.challengebasedlearning.org/toolkit/. The **CBL rubric** provides a starting point to develop personalized resources to guide the learning experience. This rubric can be accessed at www.challengebasedlearning.org/wp-content/uploads/2019/03/CBL_Rubric.pdf.

- Students can be provided with the **CHALLENGE CANVAS**, a template that allows them to track the big idea, essential question, guiding questions on which they are focusing, guiding activities and resources they complete and use as well as a synthesis of their learning and their challenge project idea. This fillable template is found on pages 52 to 53.

Guiding Activity Overview and Curriculum Support

Challenge BEEF: Resilience addresses selected learning outcomes in **Social Studies 10-1: To what extent should we address globalization?** Additional curriculum connections may be identified in some of the guiding activities.



Guiding Activity

Focus

Curriculum Links

This guiding activity supports the following outcomes from **SS 10-1: To what extent should we embrace globalization?:**

1 Mapping the Global Food System

In this activity, students reflect on ways that resilience is associated with food. They revisit their own understanding of globalization and assess how multiple perspectives can reveal benefits and challenges regarding the impact of globalization on the food system.

Related Issue 3 To what extent does globalization contribute to sustainable prosperity for all people?

- 3.1 recognize and appreciate multiple perspectives that exist with respect to the relationships among politics, economics, the environment and globalization (GC, ER, PADM)
- 3.2 recognize and appreciate impacts of globalization on the interdependent relationships among people, the economy and the environment (GC, ER, PADM)
- 3.6 analyze political and economic challenges and opportunities of globalization (trade liberalization, foreign investment, economic growth, privatization, outsourcing, knowledge economy) (ER, PADM, GC)

Skills and Processes

S.1 develop skills of critical thinking and creative thinking:

- evaluate ideas and information from multiple sources
- determine relationships among multiple and varied sources of information
- predict likely outcomes based on factual information
- evaluate personal assumptions and opinions to develop an expanded appreciation of a topic or an issue
- assemble seemingly unrelated information to support an idea or to explain an event
- analyze current affairs from a variety of perspectives

S.3 develop skills of geographic thinking:

- make inferences and draw conclusions from maps and other geographical sources
- assess the impact of human activities on the land and the environment

This guiding activity could be adapted to focus on ways that human health is influenced by societal and environmental factors through the food system for **Science 24 Unit C: Disease Defence and Human Health.**

It may also help meet specific learning outcomes relating to the economic, environmental and societal impact of agriculture and the impact of food system disruptions in **CTS: AGR 1010 Introduction to Agriculture.**

Guiding Activity	Focus	Curriculum Links This guiding activity supports the following outcomes from SS 10-1: To what extent should we embrace globalization?:
1 Mapping the Global Food System (continued)		<p>Skills and Processes</p> <p>S.7 apply the research process:</p> <ul style="list-style-type: none"> <input type="checkbox"/> reflect on changes of points of view or opinion based on information gathered and research conducted <input type="checkbox"/> draw pertinent conclusions based on evidence derived from research <input type="checkbox"/> develop, refine and apply questions to address an issue <input type="checkbox"/> generate new understandings of issues by using some form of technology to facilitate the process <p>S.8 demonstrate skills of oral, written and visual literacy:</p> <ul style="list-style-type: none"> <input type="checkbox"/> identify science-related issues (e.g., identify a specific issue regarding human impacts on environments) <input type="checkbox"/> identify questions to investigate arising from practical problems and issues (e.g., identify questions, such as: “What effects would an urban or industrial development have on a nearby forest or farming community?”)
2 Assessing Resilience	<p>In this activity, students explore examples that illustrate the resilience of local and global food systems when affected by a disruption like the COVID-19 pandemic. They assess perspectives and recommendations for increasing resilience.</p>	<p>Related Issue 3 To what extent does globalization contribute to sustainable prosperity for all people?</p> <ul style="list-style-type: none"> <input type="checkbox"/> 3.7 explore multiple perspectives regarding the relationship among people, the land and globalization (spirituality, stewardship, sustainability, resource development) (LPP, CC, ER, GC) <input type="checkbox"/> 3.8 evaluate actions and policies associated with globalization that impact the environment (land and resource use, resource development agreements, environmental legislation) (LPP, ER, GC) <input type="checkbox"/> 3.9 analyze multiple perspectives on sustainability and prosperity in a globalizing world (ER, LPP, GC)

Guiding Activity	Focus	Curriculum Links
<p>2 Assessing Resilience (continued)</p>		<p>This guiding activity supports the following outcomes from SS 10-1: To what extent should we embrace globalization?:</p> <p>Related Issue 4 To what extent should I, as a citizen, respond to globalization?</p> <ul style="list-style-type: none"> <input type="checkbox"/> 4.1 recognize and appreciate the impact of globalization on the quality of life of individuals and communities (GC, C, CC) <input type="checkbox"/> 4.8 analyze how globalization affects individuals and communities (migration, technology, agricultural issues, pandemics, resource issues, contemporary issues) (GC, LPP) <input type="checkbox"/> 4.10 evaluate means by which individuals, governments, organizations and businesses could address opportunities and challenges of globalization (pro-globalization activism, anti-globalization activism, legislation, agreements, consumer activism, corporate responsibility) (GC, C, PADM, ER) <p>Skills and Processes</p> <p>S.1 develop skills of critical thinking and creative thinking:</p> <ul style="list-style-type: none"> <input type="checkbox"/> evaluate ideas and information from multiple sources <input type="checkbox"/> determine relationships among multiple and varied sources of information <input type="checkbox"/> predict likely outcomes based on factual information <input type="checkbox"/> evaluate personal assumptions and opinions to develop an expanded appreciation of a topic or issue <input type="checkbox"/> assemble seemingly unrelated information to support an idea or to explain an event <input type="checkbox"/> analyze current affairs from a variety of perspectives <p>S.4 demonstrate skills of decision making and problem solving:</p> <ul style="list-style-type: none"> <input type="checkbox"/> develop inquiry strategies to make decisions and solve problems <input type="checkbox"/> generate and apply new ideas and strategies to contribute to decision making and problem solving

This guiding activity could be expanded for **Science 24 Unit C: Disease Defence and Human Health** by focusing on the social and economic impact of the COVID-19 pandemic on agriculture and the food supply, including implications for human health and public perceptions of food safety.

It may also help meet specific learning outcomes relating to the impact of globalization on agricultural trade in **CTS: AGR 1010 Introduction to Agriculture**.

Guiding Activity	Focus	Curriculum Links This guiding activity supports the following outcomes from SS 10-1: To what extent should we embrace globalization?:
2 Assessing Resilience (continued)		<p>S.6 develop age-appropriate behaviour for social involvement as responsible citizens contributing to their community:</p> <ul style="list-style-type: none"> <input type="checkbox"/> acknowledge the importance of multiple perspectives in a variety of situations <p>S.7 apply the research process:</p> <ul style="list-style-type: none"> <input type="checkbox"/> reflect on changes of points of view or opinion based on information gathered and research conducted <input type="checkbox"/> draw pertinent conclusions based on evidence derived from research <input type="checkbox"/> consult a wide variety of sources, including oral histories, that reflect varied perspectives on particular issues <input type="checkbox"/> integrate and synthesize argumentation and evidence to provide an informed opinion on a research question or an issue of inquiry <input type="checkbox"/> develop, refine and apply questions to address an issue <input type="checkbox"/> generate new understandings of issues by using some form of technology to facilitate the process <p>S.8 demonstrate skills of oral, written and visual literacy:</p> <ul style="list-style-type: none"> <input type="checkbox"/> communicate effectively to express a point of view in a variety of situations <input type="checkbox"/> use skills of formal and informal discussion and/or debate to persuasively express informed viewpoints on an issue <input type="checkbox"/> ask respectful and relevant questions of others to clarify viewpoints <input type="checkbox"/> use a variety of oral, written and visual sources to present informed positions on issues <p>S.9 develop skills of media literacy:</p> <ul style="list-style-type: none"> <input type="checkbox"/> assess the authority, reliability and validity of electronically accessed information <input type="checkbox"/> evaluate the validity of various points of view presented in the media

This guiding activity could also be adapted for **Grade 9 Social Studies 9.2: Economic Systems in Canada and the United States** by focusing on the impact that a resilient or vulnerable food system can have on consumers when they are faced with challenges or disruptions to the food system. The concepts of supply and demand and scarcity can be explored and reinforced.

Challenge BEEF: RESILIENCE

How does globalization affect the resilience of our food system?

MAPPING THE GLOBAL FOOD SYSTEM



Social Studies 10-1:
To what extent should we embrace globalization?

In this guiding activity, students reflect on ways that resilience is associated with food. They revisit their own understanding of globalization and consider benefits and challenges regarding the impact of globalization on the food system from multiple perspectives.

ASSESSMENT

Formative assessment can involve determining the extent to which students identify multiple perspectives that exist with respect to relationships among economic, social and environmental aspects of globalization as it relates to the food supply.

- Track questions for further research and inquiry that students pose, having them identify how interdependencies, challenges and opportunities as they relate to globalization and the food system are reflected in their questions.
- Collect examples of students' application of the concept of resilience to multiple contexts, including ways that a resilient food system benefits or provides challenges for individuals, communities and society as a whole.
- Assess the validity, sources and creativity that students use and apply to create the world maps of the global food system completed in HANDOUT 1: GLOBAL FOOD SYSTEMS.

ADDITIONAL CURRICULUM LINKS

- Science 24 Unit C: Disease Defence and Human Health
- Career and Technology Studies: AGR 1010 Introduction to Agriculture

KEY CONCEPTS

- Globalization
- Resilience
- Food
- Food system
- Consumer
- Producer

TIMING

- 1 to 2 hours

GUIDING ACTIVITY 1: Mapping the Food System

THIS GUIDING ACTIVITY INTRODUCES AND/OR REVISITS CONCEPTS RELATED TO GLOBALIZATION, INCLUDING THE CONCEPT OF RESILIENCE. ENCOURAGE STUDENTS TO CONSIDER THE IMPLICATIONS THAT GLOBALIZATION AND RESILIENCE CAN HAVE ON OUR FOOD SYSTEM, AND THE FOOD THAT IS AVAILABLE TO PEOPLE AND COMMUNITIES IN EVERYDAY CONTEXTS.

Start the activity by sharing or writing the term *RESILIENCE* on a classroom or digital board. Challenge students to share ideas about its meaning. Encourage students to consider how resilience applies to:

- Individuals
- Communities – local implications
- Society – global implications



Use a discussion board strategy to have students share their ideas. Have students brainstorm on sticky notes and post them on a classroom whiteboard. Alternatively, use a digital board like **Google Jamboard**, **Padlet** or **Kialo Edu** to share ideas.

Next, write the term *FOOD* on a classroom or digital board. Ask students to think about issues and/or challenges they think are connected with food. Students can be asked to brainstorm words and phrases, images and characteristics, and may identify ideas associated with:

- Healthy vs. junk foods/fad diets
- Poverty or food security/insecurity
- Food costs
- Climate
- Disease
- Globalization
- Sustainability
- Farms/family farms
- Societal or global health-related concerns, such as zoonoses or pandemics (**Zoonotic diseases** are diseases that are transmissible between animals and humans. Salmonella is an example of a zoonotic disease that can be transmitted from animals to humans through food.

Digital and Remote Discussion



Google Jamboard is Google's cloud-based interactive whiteboard that works on Chromebooks as well as on the web. It can be used for interactive remote lessons. It can be used for both synchronous and asynchronous learning. Find information from Google at https://edu.google.com/products/jamboard/?modal_active=none.

Padlet at <https://padlet.com> is a web app that lets users post notes on a digital wall. Students can post text, videos and images from a mobile device or a desktop. Use Padlet also for reflection boards that encourage students to post comments and thoughts about their learning.

Flipgrid at <https://info.flipgrid.com/> is a website that allows teachers to create "grids" to facilitate video discussions. Each grid is like a message board where teachers can pose questions, called "topics," and their students can post video responses that appear in a tiled grid display. Teachers set up an account and create grids, which act as communities for students to work in. Within each grid, you can create prompts called topics, and students can post video responses to the prompts and replies to each other's videos.

Kialo Edu at www.kialo-edu.com allows teachers to organize discussions and debates on a topic. Students can use Kialo to organize and visualize their ideas and arguments for essays, presentations, projects, and live debates. Find a review of this app and its features at **Common Sense Education** at www.common sense.org/education/website/kialo-edu.



Connecting Challenge Topics

COVID-19 has highlighted some of the vulnerabilities in our food system, including that of climate change. This activity can be connected to the **Challenge BEEF: Media Messages** topic activities.

A video suitable as teacher background – **How COVID-19 changed the food system** – discusses some of these connections and can be found at www.tv.o.org/video/how-covid-19-changed-the-food-system.

Ranchers and farmers follow strict biosecurity protocols to avoid zoonotic disease transmission. A **pandemic** is the worldwide spread of a new disease. There are many examples in history, the most recent being the COVID-19 pandemic. SARS CoV-2, the virus that causes COVID-19, is zoonotic. Its origins were in animals, though now the primary mode of spread is human to human transmission. Ensure that students understand that there is currently no evidence that COVID-19 is transmitted or caught through food.)

Provide students with **HANDOUT 1: GLOBAL FOOD SYSTEMS**. The opening question in the handout asks students to consider how resilience can be associated with food and can be used to reinforce the two “think and brainstorm” discussions just completed.



Students can be asked to use the two “think and brainstorm” steps to generate questions they have about resilience and food. Sample guiding questions are also provided at the end of this activity.

This handout then guides students through a discussion of ways that resilience applies to our food system, provides “starting point” examples about the importance of the beef industry and the global implications of trade in this industry, and prompts them to consider the effect of disruptions to the food system.



SOME BACKGROUND INFO

Resilience is defined as the ability to withstand, recover from and adapt to a disruptive event. A resilient food system, therefore, can provide enough accessible and safe food even in the face of crisis.

The **Arrell Food Institute** at the **University of Guelph** provides a feature webpage on **Food Systems in a Time of Disruption: Impacts of COVID-19 on Agri-Food**. This webpage includes a video – more suitable for teacher background information – and links to articles, other websites, additional videos and other related topics. Find this webpage at <https://arrellfoodinstitute.ca/food-systems-in-a-time-of-disruption/>.

Preview the **Food and Agriculture Organization of the United Nations** video **The State of Food Security and Nutrition in the World 2020** at <https://bit.ly/37N9Y0X> to determine fit to ideas that students bring up related to resilience in global contexts. This video mentions the impact of the COVID-19 pandemic.

Growing Resilience: What could a secure food system look like? Provides some interesting background information and perspectives on the global food system. This article can be accessed on **CBC Online** at www.cbc.ca/news/canada/calgary/covid-19-food-security-1.5574439.

The creation of the **World Trade Organization (WTO)** in 1996 influenced the development of our current food system. Access to global markets has shaped how Alberta beef, for example, is processed and sold.

The WTO is an intergovernmental organization that creates global trade rules and settles disputes between countries that might disagree on how the rules apply. Each WTO agreement is meant to uphold five basic principles. The WTO states that trade should be:

1. Non-discriminatory between foreign and domestic products and between different countries
2. Predictable and transparent
3. More competitive
4. More beneficial for less developed countries
5. Better for the environment



Students can be asked to investigate further, looking at the extent to which they think agricultural trade is balanced between countries.

The WTO also provides an overview of the concept of “distortion” in trade, which could be discussed with students in the context of the food supply and agricultural production. Challenge students to explore the connection between the concept of distortion and resilience. How might societal disruptions, such as conflict or pandemics, affect agricultural production and trade?

What is “distortion?”

This is a key issue. Trade is **distorted** if prices are higher or lower than normal, and if quantities produced, bought, and sold are also higher or lower than normal — i.e. than the levels that would usually exist in a competitive market.

For example, import barriers and domestic subsidies can make crops more expensive in a country’s internal market. The higher prices can encourage over-production. If the surplus is to be sold on world markets, where prices are lower, then export subsidies are needed. As a result, the subsidizing countries can be producing and exporting considerably more than they normally would.

Governments usually give three reasons for supporting and protecting their farmers, even if this distorts agricultural trade:

- To make sure that enough food is produced to meet the country’s needs
- To shield farmers from the effects of the weather and swings in world prices
- To preserve rural society.

Additional Curriculum Links



Adapt this activity to **Science 24 Unit C: Disease Defence and Human Health** by focusing on ways that human health is influenced by societal and environmental factors through the food system. Encourage students to address the impact of the COVID-19 pandemic on issues related to the resilience of the global and local food supply.

This activity could also be used to explore understandings of the economic, environmental and social importance of agriculture in **CTS AGR 1010** and to assess the impact of food system disruptions on quality of life factors.

SOURCE: World Trade Organization online: Agriculture: Fairer markets for farmers. www.wto.org/english/thewto_e/whatis_e/tif_e/agrm3_e.htm

But the policies have often been expensive, and they have created [excesses] leading to export subsidy wars. Countries with less money for subsidies have suffered. The debate in the negotiations is whether these objectives can be met without distorting trade.

Have students work either individually or with a partner to visualize what the global food system “looks like” - either what it involves currently or what it could involve in the future. Use the activity in the handout to brainstorm ideas, images, places and characteristics that come to mind. Students can be encouraged to discuss the extent to which they think global trade adheres to the guidelines established by the WTO.

Ask students to then use the infographics and world map template in the handout to create a **map tour of globalization** in the beef production industry. Tips for creating the map are provided in the handout.

Have students use their understanding to identify guiding questions that can help build understandings of resilience and the balance between the global and a more localized food system. These guiding questions can form a focus for the subsequent activity and cumulative challenge in this topic.

- How does the global food system provide diversity in our food system?
- What foods are provided by local ranchers, farmers and food processors?
- How can resilience be developed in the food system?
- What does globalization look like in Alberta’s food system? How does it affect our food choices?
- What challenges and opportunities does a global food system provide in local communities?
- What would a more resilient food system look like?
- How can local ranchers, farmers and food processors be supported?
- How does Alberta beef production illustrate an aspect of a resilient food supply?
- What opportunities and challenges do Alberta ranchers and farmers face with globalization?
- What opportunities and challenges do Alberta ranchers and farmers face with local food systems?



MINI CHALLENGE

Implement this activity as a mini challenge that asks students to map or illustrate their own food system.

- Where do the foods they and their families eat come from?
- How do they depend on the global food supply?
- How do they depend on localized food sources?
- How resilient do they think their own food system is?

Encourage students to apply their learning to the key issue: To what extent should we embrace globalization?

Challenge BEEF: RESILIENCE

How does globalization affect the resilience of our food system?

ASSESSING RESILIENCE



Social Studies 10-1:
To what extent
should we embrace
globalization?

In this guiding activity, students explore examples that illustrate the resilience of local and global food systems when affected by a disruption like the COVID-19 pandemic. They assess perspectives and recommendations for increasing resilience.

ASSESSMENT

Formative assessment can focus on critical thinking skills and students' ability to identify the validity, quality and sources of opposing points of view regarding the balance between globalization and local food systems.

- Assess students' reasoning and the validity of examples they provide in responses to questions that ask them to compare opportunities and challenges involved in the resilience of local and global food systems.
- Look for evidence of understanding of relationships involved and potential actions that can be implemented to build resilience in local and global food systems.
- Assess for the use of valid and accurate sources in examples and explanations used in the Venns completed as part of **HANDOUT 2: RESILIENCE IN FOOD SYSTEMS**.
- Look for evidence of informed decision-making in students' rankings and justifications in the charts completed as part of **HANDOUT 2: RESILIENCE IN FOOD SYSTEMS**.

ADDITIONAL CURRICULUM LINKS

- Social Studies GO 9.2: Issues for Canadians: Economic Systems in Canada and the United States
- Science 24 Unit C: Disease Defence and Human Health
- Career and Technology Studies: AGR 1010

KEY CONCEPTS

- Global food supply
- Local food systems
- Pandemic
- Resilience

TIMING

- 2 to 4 hours



Connecting Challenge Topics

“The COVID-19 pandemic has exposed the fragility of our globalized food systems. Many families are experiencing food insecurity, there is pressure on the well-being of food industry workers as indoor farming and processing facilities have experienced some of Canada’s largest COVID-19 outbreaks, and just-in-time food chains are vulnerable to disruptions. These struggles point to ways we could pivot our infrastructure to build sustainable food system resilience that not only improves health but also benefits biodiversity and ecosystems.”

SOURCE: Building Back Better Post COVID-19 Task Force (July 15, 2020) iPOLITICS online: Now is the time to build sustainable food system resilience. <https://ipolitics.ca/2020/07/15/now-is-the-time-to-build-sustainable-food-system-resilience/>

There are opportunities to integrate this activity with the **Challenge BEEF: Sustainability** topic activities.

GUIDING ACTIVITY 2: **Assessing Resilience**

THIS GUIDING ACTIVITY ASKS STUDENTS TO EXPLORE WHAT IS MEANT BY A LOCAL FOOD SYSTEM AND EXAMPLES OF THE IMPACT OF THE COVID-19 PANDEMIC ON THE RESILIENCE OF LOCAL AND GLOBAL FOOD SYSTEMS.

Introduce this activity by revisiting what students have learned about the global food system and then, asking students to describe and compare what they think a local food system looks like, considering questions such as the following.

- How does a local food system differ geographically from the global food system? Think about the influence of the land, resources and climate.
- Could a local food system replace the global food system? In what ways? Could the global food system replace local food systems? To what extent?
- What terminology, slogans or media messages would you most associate with local food systems? Buy local? 100-mile diet? Organic? Sustainability? How trustworthy or reliable are these messages?
- What different meanings could be associated with the term “local” and how might these affect the way local food systems are defined? (Regionally, provincially, nationally?)



Students can be provided with the opportunity to dig deeper into some of the trends and policies that influence local food systems. Continue to encourage students to compare what they learn about local food systems to the impact of globalization and global food systems.

- **Food Secure Canada** provides the article **What is behind the trend of local food?** at <https://foodsecurecanada.org/resources-news/news-media/buying-local-food-products>.
- **Alberta Agriculture and Forestry** produced a report on **Local Food – A Rural Opportunity**. Although this was researched in 2010, it explores examples of concepts, Impacts, issues and existing research on local food systems and the impact of globalization. Find this report at [https://www1.agric.gov.ab.ca/\\$Department/deptdocs.nsf/all/csi13484/\\$FILE/Local-Food-A-Rural-Opp.pdf](https://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/csi13484/$FILE/Local-Food-A-Rural-Opp.pdf).

A **CBC News** broadcast focused on early effects of COVID-19 on Canadian farmers and issues involved in the local food system can be viewed at <https://bit.ly/3bDgyc6>. This broadcast discusses the impact on foreign worker availability and the food supply. An interesting question posed in this broadcast is: How can Canadians overwhelmingly support our farmers without causing international trade issues?

Provide students with **HANDOUT 2: RESILIENCE IN FOOD SYSTEMS**. Have students explore perspectives related to the resilience of local and global food systems in the handout, watching for examples that represent challenges and benefits to local and global food systems.

Students can be asked to work through the sources and challenge questions provided in the handout individually, with a partner or in a small group. Use the **Venn** graphic organizer provided at the end of **HANDOUT 2** to assess how these examples may reflect strengths and weaknesses of our current food system, and from the perspective of ranchers/farmers and consumers.



The **Venn** activity in **HANDOUT 2: RESILIENCE IN FOOD SYSTEMS** can be expanded to include additional research opportunities for students. Encourage them to focus on identifying various perspectives related to the balance between globalized and local food sourcing.

- The **iPOLITICS** website provides a discussion of food system resilience in **Now is the time to build sustainable food system resilience** by the Canadian Commission for UNESCO and UNESCO Chair on Food, Biodiversity, and Sustainability Studies at <https://ipolitics.ca/2020/07/15/now-is-the-time-to-build-sustainable-food-system-resilience/>.

This brief is one of a series produced by the **Building Back Better Post-COVID-19 Task Force**, a group of experts affiliated to the Canadian Commission for UNESCO and its UNESCO Chairs Network. Their goal is to bring together sustainable economic recovery ideas to make our communities stronger in a post-COVID-19 world. It includes recommendations for building resilience in the food system and may provide insights that can be shared with students.



Plan to work with students to identify vocabulary that they need additional support if you have them access and use these additional sources. Encourage them to connect terms such as biodiversity and sustainability to their learning in Science. Create a list of these terms and assign students to investigate their meaning and post definitions on a classroom or online bulletin board.

Additional Curriculum Links



Expand this guiding activity for **Science 24 Unit B: Disease Defence and Human Health** by asking students to focus their investigations into social and economic impact of the COVID-19 pandemic on agriculture and the food supply. Differentiate between local and global food choices and implications for human health, including issues of public perceptions on food safety.

This activity could also be used to explore understandings of – and assess – the economic and social impact of globalization on agricultural trade in **CTS AGR 1010**.

Adapt this guiding activity for **Grade 9 Social Studies General Outcome 9.2: Issues for Canadians: Economic Systems in Canada and the United States** by focusing on the values that underly decision-making in Canada's economic system when faced with a challenge or disruption to the food system, as well as the impact that a resilient or vulnerable food system can have on consumers. Students can also be encouraged to assess the impact that consumers can have on the resilience or vulnerability of the food system. Use the examples in this guiding activities to explore the concepts of scarcity and supply and demand from an agricultural lens.

- The **Canadian Cattlemen's Magazine** provides links to two news articles that discuss the balance between global and local food systems.

Greater understanding, support required to strengthen Canada's food system (October 7, 2020) can be accessed at www.canadiancattlemen.ca/news/greater-understanding-support-required-to-strengthen-canadas-food-system/.

Food system transparency essential in a post-pandemic world (August 24, 2020) can be accessed at www.canadiancattlemen.ca/features/food-system-transparency-vital-in-post-pandemic-world/.

SOME BACKGROUND INFO

The **Food and Agriculture Organization of the United Nations** provides a detailed analysis of factors that are involved in the process of globalization and their effect on food and agriculture. The following quotation is from the concluding remarks and can be discussed with students as they assess the opportunities and challenges that globalization provides for Canada's food system.

Globalization – the growing integration of economies and societies around the world – is a complex process that affects the world's food and agricultural economy in numerous ways. Cheaper and faster transportation, easier communication and the development of the Internet are important drivers. Also important are a growing number of international agreements that have codified and liberalized the flow of goods and capital.

These factors have resulted in a rapid expansion of trade and **FDI [Foreign Direct Investment - when a company or individual from one country invests in another country]** but also in the rise and growing influence of transnational companies. The impacts of these new factors have been very positive overall, even though the benefits are distributed unevenly. For example, globalization has helped to fight poverty and undernourishment in China, Viet Nam and Thailand, but has done little so far to integrate the poorest in sub-Saharan Africa, to improve their food security, or to enable the region's farmers to make significant inroads into markets abroad.

The following excerpt is from **Farm Credit Canada** and can also provide some initial context for discussion with students about global trade in the agricultural sector. Find more information about some implications of agricultural trade in the full version of this article.

Canada is a trading nation, especially in agriculture and food, where we grow and produce more than we can consume domestically. In 2019, Canada ranked 5th among global agriculture commodity exporters.

SOURCE: Food and Agriculture Organization: Globalization in Food and Agriculture: page 294. www.fao.org/3/y4252e/y4252e10.pdf

SOURCE: Farm Credit Canada website: Understanding agriculture and food trade: An overview. www.fcc-fac.ca/en/knowledge/economics/understanding-trade-overview.html

Agriculture and food exports combined totalled \$67 billion.

Overall, [the Agriculture and Agri-Food System report] estimates that over 50% of Canadian agricultural production is exported directly or processed to be exported. Some commodities such as red meat, cereal grains and pulse crops are very trade dependent. While others, particularly in the supply-managed industries of dairy and poultry, serve the domestic market predominately.

Canada is a major exporter and importer of agriculture and food products. In 2019, we had a surplus in agricultural and food trade of \$14.9 billion (food surplus was around \$741 million). However, in previous years the food trade was in a deficit when considered in isolation.

Why Canada stands out as an agriculture and food exporter

Our dominant export position is due to our competitiveness and ability to sell high-quality products at an attractive price to foreign buyers. Our endowment in natural resources (water and land) and overall productivity are key drivers of export performance and success.

For example, we can increase export volumes using more production factors (planting more acres, hiring more labour, changing feed rations, etc.). And each option means we can warrant higher expenditures if this output value grows faster than costs. Increasing productivity raises our ability to find success in export markets.

Provide students with the opportunity to develop and explore guiding questions that can focus on recommendations and solutions for food system issues, such as:

- What actions or solutions have been proposed to address problems or disruptions to global and/or local food systems? What are the benefits and challenges of these actions or solutions?
- How can social, economic and environmental benefits and challenges of food system or food policy recommendations be assessed?
- How can we assess recommendations about strengthening the resilience of food systems?

Have students revisit the sources in **HANDOUT 2** and any additional sources to identify responses, recommendations and solutions that are proposed by farm organizations, researchers, consumer groups and individuals. Create a class list – either in the classroom or on a digital bulletin board – and organize them into social, economic and environmental themes.

Some Background Resources



Alberta Beef Producers share a video thank you created for processing plant workers. Find this video on Twitter at <https://twitter.com/i/status/1260268698641657856>.

Students can also be asked to explore messages and videos about Canadian food production by finding #wefeedtogether on Twitter.

How are these videos and messages examples of support for local food systems?

The Laurier Centre for Sustainable Food Systems provides an article that includes links to a number of organizations that are involved in improving the food system. Some of these may be appropriate to share with students. Find the article **COVID 19 Reveals Gaps in our Food Systems**, by Alison Blay-Palmer, UNESCO Chair on Food, Biodiversity and Sustainability Studies, at <https://researchcentres.wlu.ca/centre-for-sustainable-food-systems/news/2020/notes-from-the-chair-COVID-19-reveals-gaps-in-our-food-systems.html>.

Access additional background information on the Wiley Online Library in **COVID-19 and the Canadian cattle/beef sector: Some preliminary analysis** (April 2020) at <https://onlinelibrary.wiley.com/doi/10.1111/cjag.12228>.

Students could also be asked to start with the **Food Secure Canada** recommendations provided on the last page of **HANDOUT 2** as a way of organizing responses, recommendations and solutions that they identify in various sources:

- Shorten and diversify food chains
- Revitalize communities
- Ensure greater access to healthy and fresh foods
- Support lower-emissions food systems
- Build greater resiliency to shocks
- Reduce food loss and waste

Students are asked to indicate which of these recommendations they think would be most effective or important. Use this as a starting point for additional research – have students work individually or with a partner or small group to do further research focused on the recommendation they select. Encourage students to critically assess the sources they find by addressing factors such as:

- Sources that are identified and cited
- Data used
- Appropriate tone and language
- Recognition of diverse perspectives
- Credible author



Challenge students to discuss and share ideas for involvement and support for a healthy, accessible and resilient food system. Share the three actions suggested by **Food Secure Canada** for individuals and/or organizations to become involved in food movements:

- Read more
- Tell your MP
- Spread the word



Revisit the question posed in one of the referenced sources in this activity, *HOW CAN CANADIANS OVERWHELMINGLY SUPPORT OUR FARMERS WITHOUT CAUSING INTERNATIONAL TRADE ISSUES?*

Have student draw on the responses, recommendations and solutions identified to develop their own response to this question.



MINI CHALLENGE

Implement this activity as a mini challenge that asks students to reflect and respond to one of the following questions:

What is visible to you in the food system? What is invisible?

How much transparency do you think there should be in the food system? Think about the connections between farmers, processors, transporters and consumers. How might more transparency increase resilience?

How can you grow resilience in the food system?

Students can be asked to respond to their question in the form of a video message to Canadian farmers or food producers, similar to those shared at #wefeetogether.

Challenge BEEF: RESILIENCE

How does globalization affect the resilience of our food system?

TOPIC CHALLENGE



Social Studies 10-1:
To what extent
should we embrace
globalization?

The topic challenge asks students to design, create and/or develop a strategy for supporting a resilient food system, either at a local level – personal, school, community – and/or in response to a globalized food supply. Have students work individually, with a partner or in a group. Students can also be organized to work in a classroom or through a digital setting. Their challenge response can focus on:

- The balance between global and local sources of food and food choices
- How the availability of foods is affected by global events, including the disruption of the COVID-19 pandemic
- How quality of life is impacted by the food system and disruptions in the food system
- How local ranchers and farmers contribute to global and local food systems; and the benefits and challenges they face
- How food system resilience is connected to community resilience
- Other related topics that students are interested in

Students can organize and format their solution response to the challenge in a variety of formats, including as a personal response; a storyboard or video message, public service announcement, social media post or other product idea that they have.

For the product that students create, have them contextualize the challenge, addressing:

- The big idea
- The essential question
- A statement that discusses the significance and importance of the topic
- Local and/or personalized examples of the significance and importance
- An engaging statement that summarizes the challenge

As students develop their product, ask them to include:

- The challenge that they are tackling
- A summary of how the challenge was explored
- Their conclusions or solution
- How the conclusion or solution could be implemented or was implemented
- Authentic, local and/or personalized examples
- Lessons learned



Student HANDOUTS

RESILIENCE

How does globalization affect the resilience of our food system?



Global Food Systems

When you hear the word resilient, do you associate it with food?

Resilience refers to the capacity to deal with change and recover quickly from difficulties. Natural ecosystems show resilience when they recover from natural disasters like floods, hurricanes or

droughts. Local farmers face the same challenges. They build resilience in farm ecosystems by implementing strategies such as planting trees as shelters, using no till to slow water erosion and managing grazing to protect natural water sources.

Resilient food systems have effective and efficient food supply chains. A food supply chain consists of farmers and food producers, food processors, transportation, science and research information that use raw materials, transform them into finished food products and deliver the products to consumers.

A resilient food system has the capacity to provide sufficient, appropriate and accessible food for everyone, in the face of various and even unforeseen disturbances. These include multiple processes of global change (e.g. climate change, rapid urbanization, population ageing), unexpected shocks (e.g. natural disasters, financial and political crises), and unexpected responses of food systems themselves to these processes and events.

A resilient and economically healthy global food system is important to Canadians. Canada exports more than it imports. Therefore, the health of the global economy matters to Canadian agriculture.

What's the connection? Why do you think the global economy matters to local producers – the ranchers, farmers and processors that produce our food – in Alberta and Canada?

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Consider the following sources focused on the example of beef production in Canada. The first is a list of fast facts and the second is an infographic from **Canada Beef**. Check the source weblink provided for the most current version of the infographic.



SOURCE: Science Direct (2015): Food system resilience: Defining the concept. Global Food Security. www.sciencedirect.com/science/article/abs/pii/S2211912415300031



Beef Fast Facts

Canada is one of the largest exporters of red meat and livestock in the world, exporting around 45 percent of Canadian beef and cattle production each year.

Canada produces approximately 1.55 million tonnes of beef annually. In 2019, Canada's beef industry exported \$3.1 billion (409,967 tonnes) of beef, representing 41 percent of domestic production. This is a new record high in beef export value. Canada exported 679,600 tonnes of beef and cattle valued at \$4.4 billion in 2019, representing 47 percent of beef production (including live slaughter cattle exported).

The Canadian beef industry ships to 62 countries but is reliant on the U.S. for 72 percent of all beef exports. The next largest export markets are Japan (11 percent), mainland China & Hong Kong (6.6 percent), Mexico (3.8 percent), South Korea (1.3 percent) and Southeast Asia (0.7 percent) accounting for 95.4 percent of total export volumes. All other markets together represent the remaining 4.6 percent of Canadian beef exports.

Canada's beef consumption was up 1.6 percent to 958,000 tonnes in 2019. Canadian consumers purchase about 18 kilograms (retail weight) of beef per person per year.

Canadian beef industry fast facts

In 2019 the cattle industry generated \$9.4 billion in farm cash receipts. Over the period 2015-19, cattle and calves have been the largest revenue maker for farms.

The 2016 Ag Census identified 60,000 farms in Canada that derive more than half their income from beef production, with 84,740 operators.

SOURCE: Canadian Cattlemen's Association (September 2020): Industry Stats. Online. www.cattle.ca/cca-resources/industry-stats/



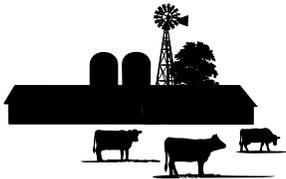
Canada's
Beef Industry

FAST FACTS

June 2020



59,784



**Farms and Ranches
with Beef Cattle**
2016 Census of Agriculture

**12.24
million**



**Total Cattle and Calves
Down 0.5% from 2019**
(includes 1.87 million dairy cattle)
Statistics Canada

**3.62
million**

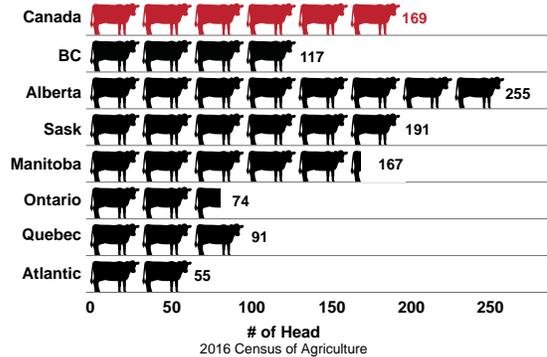


**Beef Cows
Down 1.4% from 2019**
Statistics Canada



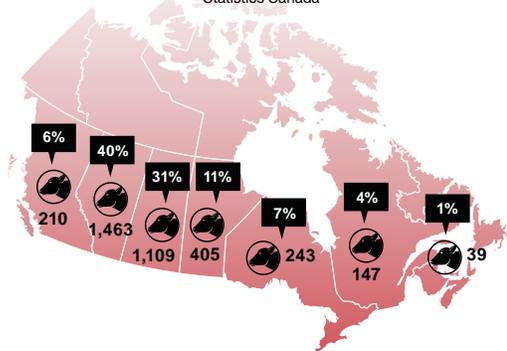
PRODUCTION

Average # of Beef Cattle per Farm May 10, 2016

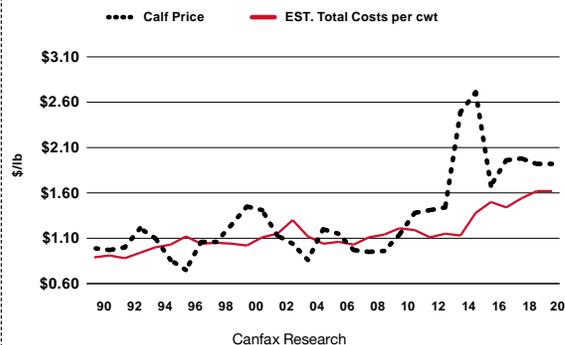


Beef Cows by Province

July 1, 2020 (beef cows=3.62 million)
All inventories in 1,000 head
Statistics Canada



Average Cost of Production vs. Average Returns on an Alberta 550 lb Calf

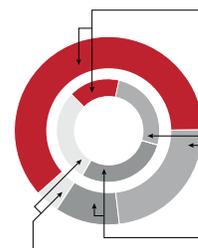


Did you know...

The average beef cow herd size in Canada is 69.

2016 Census of Agriculture

There are a lot of small cattle farms...



61% of the farms have 16% of the beef cows and each of these farms has less than 47 cows.

23% of the farms have 26% of the beef cows and each of these farms has between 47 and 122 cows.

11% of the farms have 29% of the beef cows and each of these farms has between 123 and 272 cows.

4% of the farms have 29% of the beef cows and each of these farms has over 273 cows.

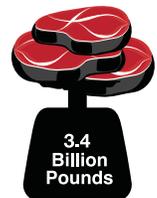
2016 Census of Agriculture

Canada fed **3.1 million cattle** in 2019 (finished to market weight) **up 8%** from 2018.

Canfax, Statistics Canada, AAFC

Western Canada finishes 78% of all fed cattle in Canada. Canfax

In 2019, Canada produced **3.4 billion pounds of beef**, up 7.9% from 2018.



Canfax Research Services

Cattle and calf cash receipts in 2019 totaled **\$9.4 billion**, up 3.6% from 2018. Statistics Canada

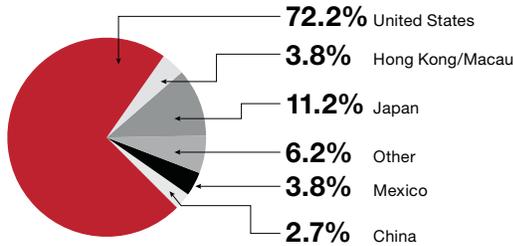
Beef production contributed **\$18 billion to Canada's GDP** (2015-2019 average).

Canfax, Statistics Canada

WHERE CANADA TRADES

Beef Exports – 2019

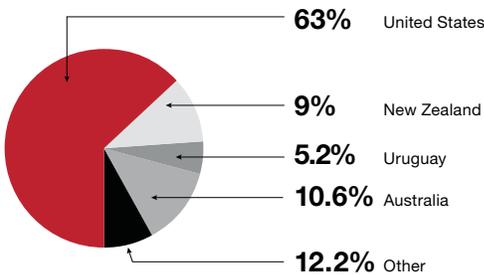
966 million pounds (438 million kg)



Statistics Canada

Beef Imports – 2019

340 million pounds (154 million kg)



Statistics Canada

In 2019, Canada exported **47.5%** of total beef and cattle produced in Canada.

Statistics Canada, Canfax, AAFC

On a net basis (subtracting out imports), **Canada exported 35.9%** of its beef and cattle production in 2019.

Statistics Canada, Canfax, AAFC

Canadian beef exports were valued at **\$3.22 billion** in 2019, up 17% from \$2.75 billion in 2018.

Statistics Canada

CANADIAN BEEF CONSUMPTION

What are we really eating?



Up 0.2% from last year.

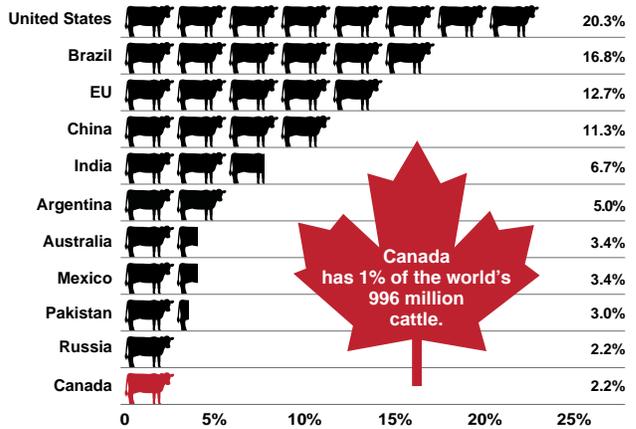
1 metric tonne = 2,204.6 lbs.

Statistics Canada, Retail weight, 2019

SOURCE: Canada Beef (June 2020): Industry Fast Facts. Online. <https://canadabeef.ca/canadian-beef-industry-fast-facts/>

WHERE CANADA FITS

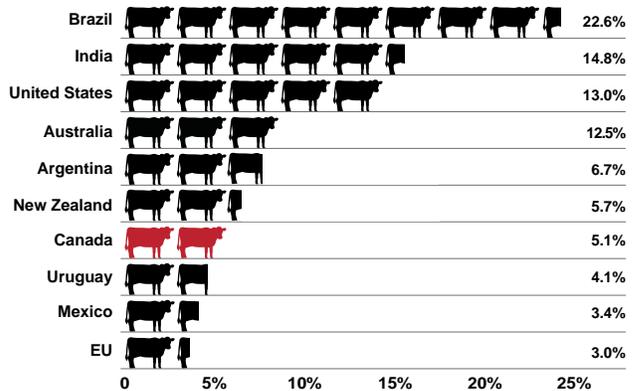
Top 11 Beef Producing Nations – 2020f



Canada produces 2% of the world's beef supply. Worldwide beef production is projected at 61.5 million metric tonnes for 2020. USDA

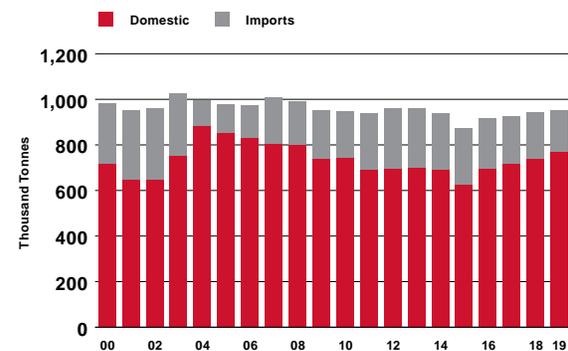
Top 10 Beef Exporting Nations – 2020f

(excludes live slaughter exports)



Total world exports for 2020 are projected at 11.5 million metric tonnes and Canada is projected to be the 7th largest beef exporter in the world (excluding live cattle exports). USDA

Canadian Beef Consumption



Canadian's consumed 957,949 tonnes of beef in 2019.

Statistics Canada



What would happen to the global beef supply and Canadian beef cattle ranchers and farmers if exports were disrupted?

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What ripple effects do you think this export disruption could have on the resilience of the Canadian economy?

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Understanding Globalization

SOURCE: World Health Organization Health Topics: Globalization. Online. www.who.int/topics/globalization/en/

According to the World Health Organization, globalization can be defined as “the increased interconnectedness and interdependence of peoples and countries. It is generally understood to include two inter-related elements: the opening of international borders to increasingly fast flows of goods, services, finance, people and ideas; and the changes in institutions and policies at national and international levels that facilitate or promote such flows. Globalization has the potential for both positive and negative effects on development and health.”

Globalization touches every part of our lives; from the products we buy to the food we eat to the ways we communicate with one another. Globalization is also tied to some of the other biggest issues we face in the modern era, including climate change, trade, terrorism, and the spread of deadly diseases.

SOURCE: World Health Organization: What is Globalization? World 101. Online. <https://world101.cfr.org/global-era-issues/globalization/what-globalization>

Globalization means that people, ideas, money, goods – like food – and more move around and across the planet every day. As COVID-19 has revealed, what happens in one part of the world can move very quickly and have an impact on other parts of the world.

Consider the food we depend on. Our food system is a global system. This means that food produced in one part of the world may end up on grocery store shelves in a completely different part of the world. Even though food trends like eating local are popular, globalization still has an important influence on the food that consumers expect to find in those grocery stores.



If the global food system could be represented on a world map, what do you think it would look like? What images, places and characteristics would you include?

Brainstorm some ideas below.

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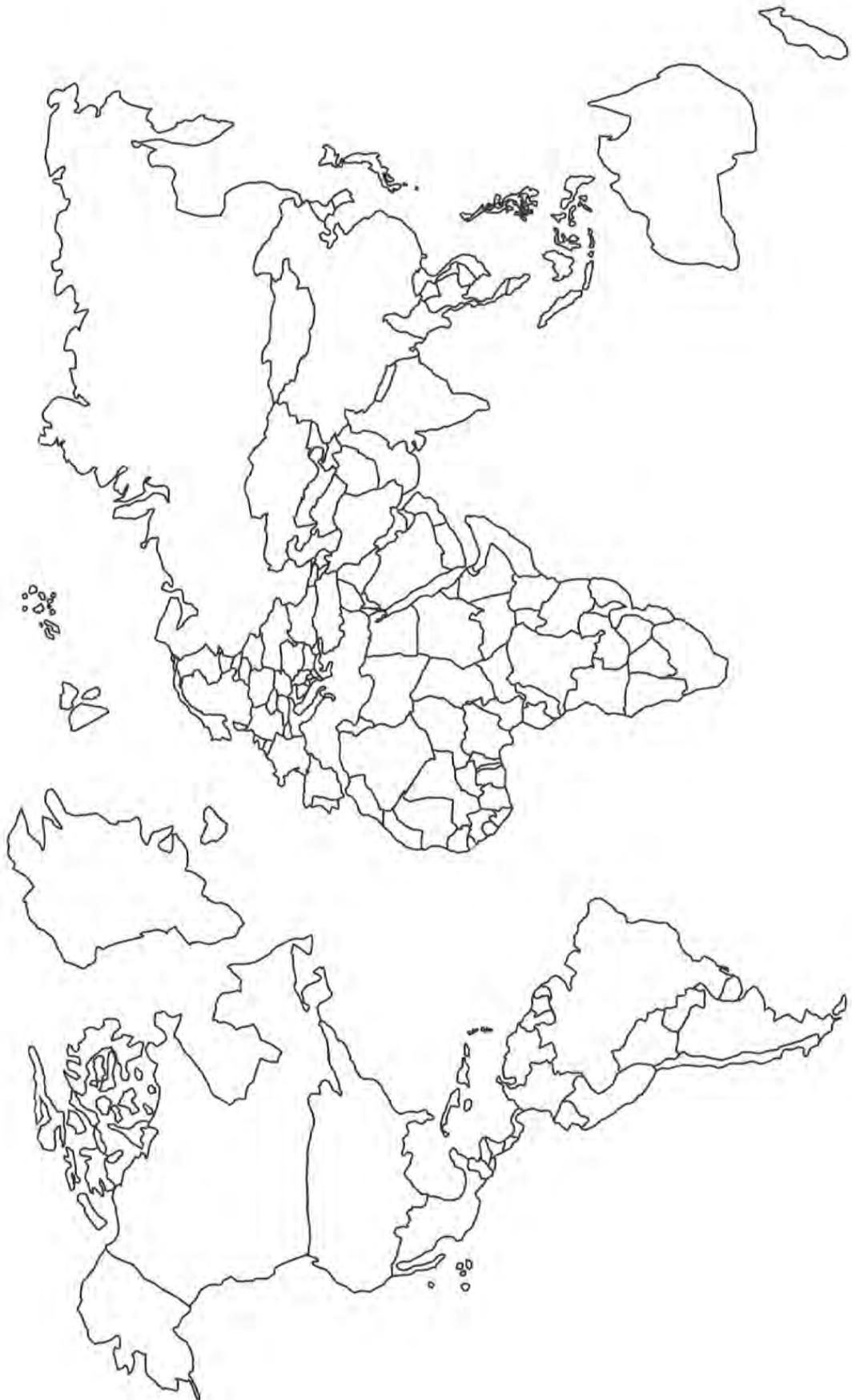
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Map the global food system using beef production as an example. What story would beef tell about globalization?

- Use the information on the Fast Facts infographic provided in this handout. Highlight or list the information that can be represented visually or displayed on a map.
- Identify some statistics and facts that illustrate Canada's place in the global food market. For example, statistics about the number of beef cattle per farm could be illustrated on selected Canadian provinces. General Canadian statistics could be displayed somewhere on Canada.
- Identify places that are connected through global trade on the map. Create a way to represent the top beef producing and exporting nations in the world.
- Create a way to represent Canada's connections with other nations through global trade. For example, countries that Canada trades with could be identified with colours or symbols. Arrows or lines can show connections between countries. Be creative!





Resilience in Food Systems

The COVID-19 pandemic has affected the global food supply chain. Added restrictions have limited or changed the usual movement of people and goods and put a strain on the availability of workers in some areas.

The pandemic is magnifying the structural inequalities in our food systems, the insufficiencies of our social protection programs, and the challenges with the dominant food supply chains. Food insecurity in Canada is expected to double from the most recent statistics of 4.4 million people, before the end of the year.

A disruption to the food system like the COVID-19 pandemic also raises questions about the extent to which more local food sources should be supported. Think about the following statement from an Alberta blogger. Although this statement is focused on the beef cattle industry, to what extent do you think it should apply to other farmers and food producers in Alberta?

You can support ranchers by buying local and being educated on where your products are coming from and how they are being produced. Shop local and support the people in your area.

Alberta cattle ranchers and farmers are a well-established part of Canadian and Albertan local food systems and have been as early as the 1860s – when the Canadian government encouraged individuals and ranch companies to lease land for cattle herds. These early settlers found fertile grasslands and Chinook winds that tempered the effects of winter. They depended on the ability of their cattle to naturally survive in these grassland environments.

In the late 1800s and early 1900s, after some very harsh winters, ranchers innovated with winter shelters and irrigation systems to increase the resilience of their production systems.



HANDOUT 2

SOURCE: Food Secure Canada: Growing Resilience and Equity. Online. <https://foodsecurecanada.org/2020-growing-resilience-equity>

SOURCE: DashingDad (June 18, 2020): Support Local with Alberta Beef. Online. <https://dashingdad.ca/support-local-with-alberta-beef/>



In what ways do you think COVID-19 challenges the resilience of local food systems?
In what ways do you think it may provide opportunities?

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Consider how the following sources provide additional insights into challenges and opportunities to local Canadian food systems when disruptions like COVID-19 occur.

OPINIONS

What COVID-19 means for food systems and meat packing

By Evan Fraser and Mike Von Massow

As the global pandemic has unfolded over the last month, people have become concerned about the security and resilience of our food systems. For instance, on both sides of the Canada-U.S. border enormous meat-packing plants have closed as workers test positive for COVID-19. This even provoked a comment by the Prime Minister who said that the federal government is monitoring the situation “very, very carefully.”

The impact of the virus on the meat processing industry is significant for two reasons. The first reason relates to how the plants are physically configured to optimize efficiency and this means it is very difficult to physically isolate plant workers without seriously compromising the output capacity of the plant. Not only are these plants difficult to reconfigure for social isolation, these plants often bus workers from urban centres and so while the plants need to be built outside of the city, they also need a lot of workers from within the city.

The second key point is that over the past two decades, many of North America’s smaller meat-packing plants, which traditionally would have fed regional markets, have closed in favour of much larger, more centralized, operations that operate at much higher economies of scale. These plants concentrate in areas of significant production. Hence, we see this industry coalescing into a couple of key locations that, if they close, can send major ripples throughout the industry. These two factors – their centralization and the difficulty of social isolation in the plants – means that this part of the food system is a real bottle neck in case of disruption.

Evan Fraser is the director of the Arrell Food Institute at the University of Guelph. Mike Von Massow is the chair in food system leadership with the University of Guelph’s Department of Food and Agricultural Resource Economics.

The most immediate impact of these plants shutting down will be on the farmers who depend on these plants as their primary way of accessing markets. In some cases, producers can divert their animals to other processing plants, but this increases costs and might also decrease returns. If they are unable to sell into the meat-packing industry, beef and pork farmers will quickly run out of space to hold animals and could eventually face an extremely difficult decision of needing to euthanize parts of their herd. With that said, culls are more likely in the pork industry given the higher volume and shorter production cycle of hogs and the continuous flow process that means new animals are coming through the system to use the space as animals are shipped for processing. Beef farmers will be able to hold animals for a while longer, but, of course, this will cost money and hurt farm income.

There is also likely to be knock on effects for consumers further down the line as lower capacity in the meat processing industry translates into lower inventories, lower supplies, and higher prices. Food price inflation, therefore, is a potential outcome of the current situation if plant closures are long term and more plants are closed. If this problem persists it could result in higher meat prices for many months to come. With that said, consumers should not panic by racing to the grocery stores to stock up on meat. As witnessed early in the pandemic, a race on grocery stores' inventory can empty shelves very quickly and, thus far, our food system has proven remarkably adaptable to the disruptions caused by COVID-19.

For low income Canadians, however, the double blow of unemployment and lost wages in combination with higher food prices may be particularly problematic. Food bank use has skyrocketed around the country and we are expecting unemployment to reach historic highs. And Canada already had a major food security problem with 4.4 million Canadians having experienced food insecurity in the past year. When these points are taken together, food price inflation caused by COVID-19-related disruptions plus soaring unemployment could exacerbate Canada's already existing food security crisis.

Over the next few months, therefore, disruptions in the food supply chain is likely to primarily hurt farm incomes and lead to food price inflation that affects lower income Canadians, and folks who have seen wages decline, the most. In the longer term, one of the pandemic's legacies may be to provoke a more critical conversation about the nature of our food system. COVID-19 has exposed a number of vulnerabilities in our system. With that said, the system we've enjoyed is highly efficient and in some ways it is this very efficiency that makes it vulnerable. So maybe one legacy of the pandemic will be to provoke a conversation about our food system that focuses on the best way of balancing efficiency and resilience.

SOURCE: Fraser, E. & Von Massow, M. (April, 2020): What COVID-19 means for food systems and meat packing. iPolitics Online. <https://ipolitics.ca/2020/04/24/what-COVID-19-means-for-food-systems-and-meatpacking/>

Federally inspected plants under the jurisdiction of Canadian Food Inspection Agency are the only establishments that are currently allowed to export or ship beef and beef products across provincial borders or internationally. Provincially inspected processing plants may only sell beef products within provincial borders.



What impact do you think the shutdown at the Cargill processing plant had on your local food supply? Share at least one example, then read on.

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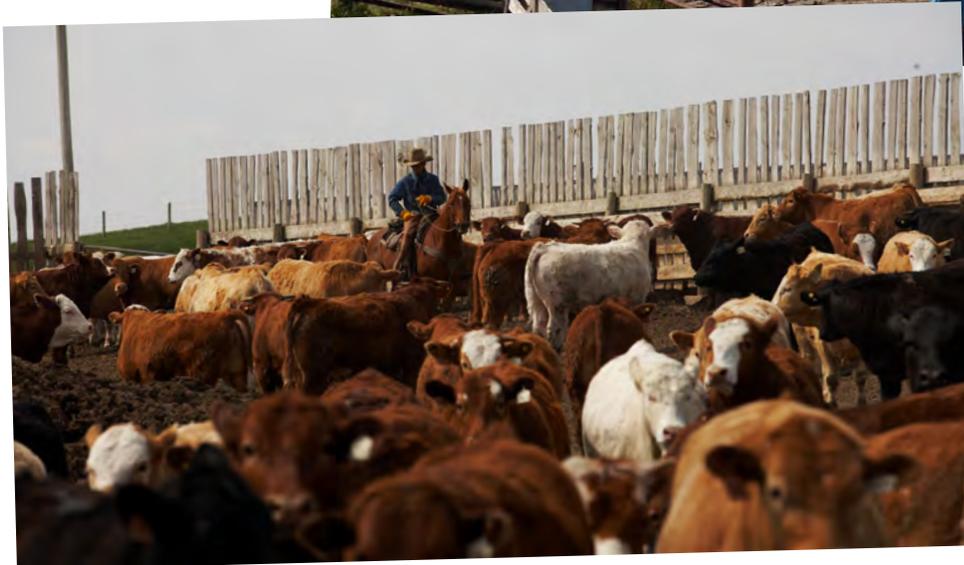
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What are some other examples of meat processing plants and what they do? How do you think smaller, more regional processing plants could increase resilience in the food system?

Check out what Canadian Premium Meats do on their website at www.cpmeats.com/.



COVID-19: Temporary Change to Imported Beef

At McDonald's Canada, we are proud of our long-standing commitment to serve 100 percent Canadian beef and plan to continue our Canadian beef sourcing long-term. However, due to unprecedented COVID-19 impacts on the Canadian beef supply chain, we are temporarily adjusting our supply to incorporate beef from outside Canada – from pre-approved McDonald's suppliers and facilities globally – in order to meet the current demand, effective immediately. Until Canada's beef supply stabilizes, we will source as much Canadian beef as we can and then supplement with imported beef. Tapping into the strength of our global supply chain will allow McDonald's Canada to continue to serve our communities, without interruption.

As of June 29, 2020, Canadian beef accounts for 81 percent of total beef used in the production of all beef burger patties since adjusting our beef supply, on average.

Sourcing imported beef is an interim shift and directly related to current processing capacity limitations with our Canadian beef raw material suppliers, including the temporary closure of Cargill's High River, Alberta processing facility.

We are working closely with Cargill and other McDonald's suppliers globally to meet our current demand for beef, and ensure our restaurants are not impacted. We know our guests depend on their local McDonald's and we are committed to doing our part to continue serving our communities during this time.

As part of the simplification of our menu, we are temporarily removing Angus burgers from the McDonald's Canadian menu nationally, effective immediately. Restaurants may continue to sell through product, while current supply lasts.

McDonald's is committed to supporting Canadian ranchers and farmers, and we look forward to returning to sourcing 100 percent Canadian beef as quickly as possible.

– McDonald's Canada Press Release

SOURCE: From McDonald's website (June 29, 2020). <https://news.mcdonalds.ca/COVID-19-temporary-change-imported-beef>

Some believe that opportunities can counter the challenges that have resulted from the pandemic. Think about the role of resilience in the food system as you read the following sources and watch the suggested videos.

Agriculture leads Alberta's economic recovery

Record crops and strengthened cattle prices are leading Alberta's economic recovery after a difficult start to 2020 due to COVID-19 and low energy prices

Crop yields are estimated to hit a new record high in Alberta with farmers harvesting more than seven percent above what is normal.

Livestock market sales are estimated to also reach a new record high of \$6.9 billion.

The food processing sector in the province is also expected to hit a new record with products totalling \$14.8 billion.

"Alberta has a proud history of resilient, innovative farmers, food processors and ranchers who have overcome some of the toughest conditions. From our world-famous Alberta beef to high-quality hard red spring wheat, Alberta's agriculture sector is an economic highlight during these tough times. They are well-positioned to compete internationally and to feed the world. Regardless of the challenges thrown at our farmers and ranchers, they will persevere."

Devin Dreeshen, Minister of Agriculture and Forestry

"We continue to see stable cattle markets following the disruption earlier this year due to COVID-19, and hope to see prices hold steady through the fall. Alberta's processing sector continues to see consistent flow of production and strong capacity, due in large part to the hard-working plant employees. This pandemic has reminded us that Alberta's beef industry never fails to demonstrate strength and resilience through challenging times."

Kelly Smith-Fraser, chair, Alberta Beef Producers

Alberta producers are global leaders in sustainable practices. Thanks to a thriving agriculture industry, Alberta agriculture is well-positioned to be a major contributor to post-COVID-19 economic recovery and growth....Despite a rough spring for livestock producers, prices and the province's food processing capacity have rebounded and have shown that it is a secure, resilient and safe supply chain.

Quick facts

- Alberta accounts for more than 21 percent of all Canadian goods exported internationally.
- Alberta's agri-food sector is an important part of the Alberta economy, contributing \$9.2 billion in gross domestic product (GDP) and employing more than 77,000 Albertans.
- With sales of \$15.8 billion in 2019, food and beverage manufacturing was the second largest manufacturing industry in Alberta (20.8 percent of provincial manufacturing sales) after petroleum and coal product manufacturing. It is the largest manufacturing employer in the province, employing 28,000 Albertans.



View a video that presents the perspective of farmers during the COVID-19 pandemic at <https://bit.ly/3uujDE1>.

View a video that presents the perspective of beef processors during the COVID-19 pandemic at <https://bit.ly/3q4N1NL>.

SOURCE: Alberta Beef (September 28, 2020): Grass Routes News. Online. <https://us5.campaign-archive.com/?u=c-1f6a7e3d460ed7f2ff6e92fc&id=6b93fa2a05>

Agriculture can lead Alberta out of pandemic woes, say leaders

“One of the burning questions about the recovery from COVID-19 is, ‘Which sectors of the Alberta economy will lead the way?’ Tom Steve wrote in the most recent edition of Alberta Wheat and Alberta Barley’s newsletter.

“Oil and gas? Unlikely. The airline industry in the home province of WestJet? Doubtful. Tourism? Not so much.”

But agriculture “can help Alberta emerge from the economic doldrums,” Steve wrote.

“In my opinion, we have a tremendous opportunity in front of us to re-establish agriculture and agri-food as a leading driver of economic growth. No other province in Canada has the combination of productivity and geographical access to markets that Alberta has to capitalize on this.”

The panel identified six ‘planks’ that offer the most potential for growth – all of them aligned “with two significant global drivers: the heightened importance of a trusted and reliable source for food security; and the consumer’s demand for a sustainable economy.”

The six recommendations are:

- Make Alberta the home of the world’s carbon offset market. The group said companies and governments around the world “have ambitious sustainability goals, and if Alberta moves quickly and defines its position, there is substantial potential in technology development, generating measurement and traceability protocols, and the creation of a global carbon credit and offset market.” It says the initiative would both attract investment to the province and provide revenue for farmers for carbon sequestration.
- Encourage investment (both public and private) in “an energy and transportation corridor from Alberta to the coast and a container port in Prince Rupert” to increase exports of both commodities and value-added products.” Such an initiative would allow the province to capture a share of the growing global demand for high-quality food, which the panel says is expected to grow by 50 percent over the next 30 years.
- Increase valued-added food production by providing “wellhead-priced natural gas and access to water for new agri-food investments like greenhouses, processing plants, making your own electricity, and establishing new industries and products from production and food waste.”
- Create “a competitive pool of risk capital” to stimulate and leverage investment in agri-food opportunities. It recommends the government put in \$100 million into the fund, which “would only match Alberta-based, private sector equity.”

- Give the province’s producers better risk management tools by eliminating the reference margin limits in AgriStability and “bring some new insurance and risk mitigation partners and programs to Alberta farmers and ranchers.”
- “Champion” the agriculture and agri-food sectors to raise awareness – both at home and abroad – of their strengths and the opportunities they offer.

SOURCE: Cheater, D. (July 13, 2020): Agriculture can lead Alberta out of pandemic woes, say leaders. Alberta Farmer Express Online. www.albertafarmexpress.ca/news/agriculture-can-lead-alberta-out-of-pandemic-woes-say-leaders/



McDonald’s Canada Will Return to Sourcing 100 Percent Canadian Beef in September

McDonald’s Canada will return to sourcing 100 percent Canadian beef in September 2020, ending the temporary sourcing adjustments announced in late April due to industry constraints. Since that time, McDonald’s Canada has been sourcing as much Canadian beef as possible, maintaining over 80 percent of supply from Canadian sources on average and supplementing with imported beef from pre-approved McDonald’s suppliers...

McDonald’s Canada has used 100 percent Canadian beef since 2003. The company has also been a long-time proponent and advocate of sustainable practices in the Canadian beef industry...

McDonald’s Canada sources 100 percent of the beef for its hamburger patties from Canadian ranches and farms, primarily in Alberta and Saskatchewan.

– McDonald’s Canada Press Release

SOURCE: Excerpt from McDonald’s website (August 13, 2020): McDonald’s Canada Will Return to Sourcing 100 Percent Canadian Beef in September. <https://news.mcdonalds.ca/press-releases-stories/mcdonalds-canada-will-return-sourcing-100-cent-canadian-beef-september>



How resilient do you think the global food system is considering the pandemic?
Why do you think this?

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Where can you identify specific examples of resilience in the sources? Describe three or four examples and describe whether they indicate resilience in local or global food systems.

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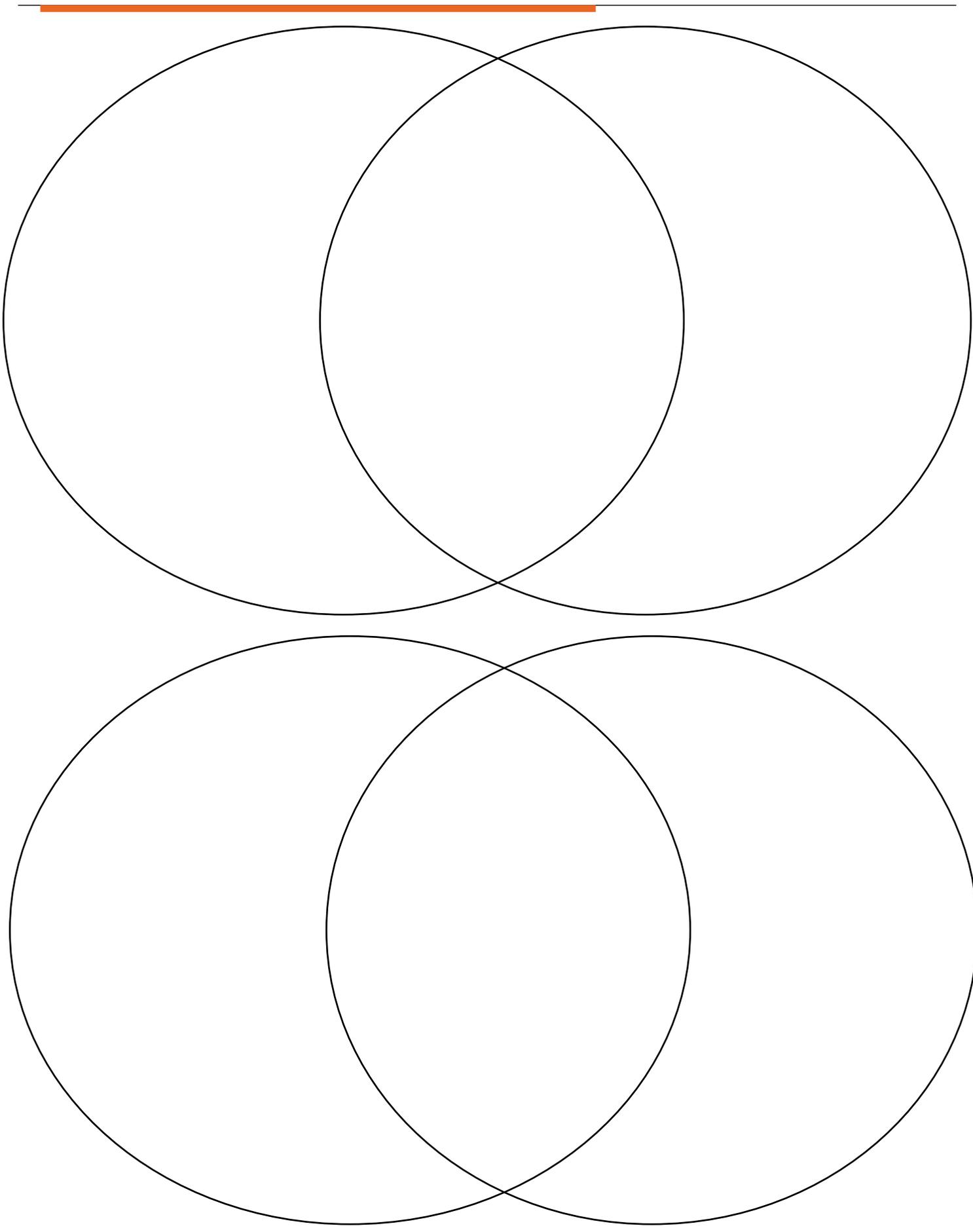
Exploring Perspectives

Think about what you have learned about the benefits and challenges of globalization and specifically, the global food system.

How would you assess the benefits and challenges of globalization from the perspective of farmers and consumers during the COVID-19 pandemic? Consider how the resilience of local food systems can support or compete with globalization.

Complete the Venns on the next page.

- Describe the BENEFITS of globalization in the first Venn and the CHALLENGES in the second.
- Identify rancher/farmer perspectives on one side of each Venn and consumers on the other.





Where do the perspectives of ranchers/farmers and the perspectives of consumers intersect? Explain the reasoning for your choice.

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Increasing Resilience

Food Secure Canada believes that a resilient food system should be local and ecological.

- Shorten and diversify food chains
- Revitalize communities
- Ensure greater access to healthy and fresh foods
- Support lower-emissions food systems
- Build greater resiliency to shocks
- Reduce food loss and waste



How important are each of the strategies identified by Food Secure Canada? Rank them from one to six in the chart on the next page. Explain why you ranked each strategy in the order you did.

What additional evidence can you find to support the need for the TOP TWO strategies you identified? Support your reasons with examples.

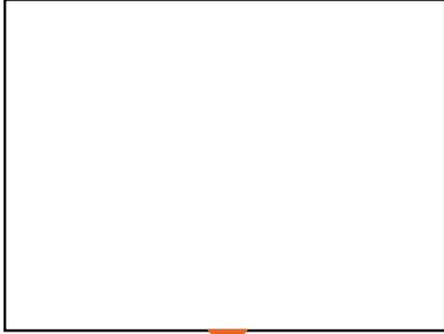
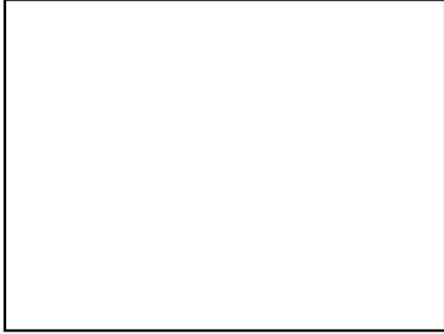
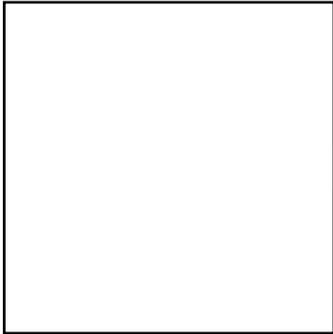
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RESILIENT FOOD SYSTEMS

RANKING	STRATEGY	WHY I RANKED THIS STRATEGY IN THIS ORDER
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2		
3		
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5		
6		

CHALLENGE CANVAS

BIG IDEA ESSENTIAL QUESTION CHALLENGE



GUIDING QUESTIONS (WHAT WE NEED TO LEARN) GUIDING ACTIVITIES AND RESOURCES (WHAT WE DID AND WHAT WE USED TO LEARN)



SYNTHESIS (WHAT WE LEARNED)

SOLUTION (CONCEPT & IDEAS FOR THE CHALLENGE TASK)





<https://allforthebeef.com/classroom>