Finding Alberta Beef

Places, Spaces and Stories about Beef Cattle Farming and Ranching in Alberta for Elementary Classrooms

Grade 4

TEACHING RESOURCE

Making Contributions to Environments and Communities

Alberta Beef Producers
SINCE 1969

The **Finding Alberta 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 **Finding Alberta Beef** resources for teachers and students in Kindergarten to Grade 5 Social Studies, Science and Health/Wellness programs.

The **Finding Alberta Beef** elementary resources were conceptualized and developed for Alberta Beef Producers by the education experts and design team at **InPraxis Learning**, led by:

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Alberta Beef thanks our teacher reviewers, who provided valuable suggestions and feedback during the development of the **Finding Alberta Beef** program resources.

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

contents

Find an overview of the general outcomes supported by this resource on page 6 or by clicking here.

Find out about features in this resource that include meeting diverse student needs, building competencies and assessment strategies on page 7 or by clicking here.

Find advance preparation suggestions on page 8 or by clicking here.

Click here or go to page 12 to find charts for tracking specific learning outcomes supported by the activities for the guiding question, How do Alberta communities benefit from the contributions of farmers and ranchers?

Click here or go to page 14 to find charts for tracking specific learning outcomes supported by the activities for the guiding question, Where are ecosystems found on farms and ranches?

Finding Alberta Beef provides a mini-unit that can be integrated into Alberta Social Studies, Science and Health/Wellness curriculum. This resource is focused on the cattle farming and ranching industry in Alberta.

Those students who do not eat beef or other meats for personal, cultural or religious reasons can be asked to focus on examples of plant-based agriculture as a point of comparison. Students can be asked to consider how all types of agriculture are important human activities. Consider student and family sensitivities when making decisions about using or adapting these activities.

introduction

Over the course of the school year and across different subject areas, students explore topics and concepts that are connected in one way or another to agriculture. The food production system and its implications for nutritional health and well being, rural communities and ways of life, and the use of resources and industries that produce, move and trade products are all part of daily lives.

For generations, Canadians have had access to a nutritious, safe and affordable food supply and consumer products. These products have their roots on Alberta's farms and ranches and are a result of the vitality and importance of agriculture. Agriculture involves food production, research, transportation infrastructure, government policy and sound environmental practices.

The **Finding Alberta Beef** resources provide integrated mini units that centre on the importance of agriculture, specifically the impact that beef production has on Canadian and Alberta communities, individuals and quality of life. These resources are designed to support the competencies and specific learning outcomes in Alberta's **elementary Social Studies**, **Science** and **Health/Wellness** programs of study. Many activities also reinforce **literacy** and **numeracy** skills. This resource supports learning in **Grade 4 Social Studies**, **Science** and **Health/Wellness**.
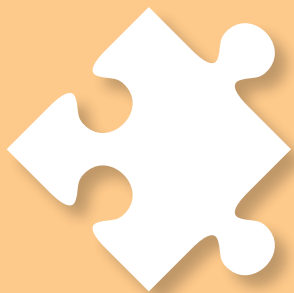
COMPONENTS

Finding Alberta Beef for Grade 4 includes the following components:

- **Finding Alberta Beef** Grade 4 Teaching Resource

- **Making Contributions to Environments and Communities** Grade 4 Student Learning Pages

- **Finding Alberta Beef** Grade 4 Infographic

This **Finding Alberta Beef** **Grade 4** resource meets **general outcomes and benchmark skills** in Social Studies, Science and Health/Wellness programs of study, the competencies and literacy and numeracy. These resources also have been developed to provide support to learning outcomes identified in the Alberta Education Draft K-4 curriculum and will be updated as this curriculum progresses. Find a full curriculum and competencies correlation in **meeting curriculum needs** on **pages 11 to 16**.

Grade 4

Social Studies 4.1: Alberta: A Sense of the Land

Students will demonstrate an understanding and appreciation of how elements of physical geography, climate, geology and paleontology are integral to the landscapes and environment of Alberta.

Social Studies 4.3: Alberta: Celebrations and Challenges

Students will demonstrate an understanding and appreciation of how Alberta has grown and changed culturally, economically and socially since 1905.

Science Topic A: Waste and Our World

4–5 Recognize that human activity can lead to the production of wastes, and identify alternatives for the responsible use and disposal of materials

Topic E: Plant Growth and Changes

4–10 Demonstrate knowledge and skills for the study, interpretation, propagation and enhancement of plant growth

Health/Wellness

W–4.5 Analyze the need for variety and moderation in a balanced diet; e.g., role of protein, fats, carbohydrates, minerals, water, vitamins

L– 4.5 Relate personal interests to various occupations

Grade 4

Grade 4 Social Studies Benchmark Skills

Critical thinking and creative thinking	Assess significant local and current affairs from a variety of sources, with a focus on examining bias and distinguishing fact from opinion
Historical thinking	Use primary sources to broaden understanding of historical events and issues
Geographic thinking	Construct and interpret various types of maps (i.e., historical, physical, political maps) to broaden understanding of topics being studied
Decision making and problem solving	Propose and apply new ideas, strategies and options, supported with facts and reasons, to contribute to decision making and problem solving
Research and information	Determine the reliability of information, filtering for point of view and bias
Oral, written and visual literacy	Express opinions and present perspectives and information in a variety of forms, such as oral or written presentations, speeches or debates
Media literacy	Detect bias present in the media

Grade 4 **Science Inquiry**

4–1 Investigate the nature of things, demonstrating purposeful action that leads to inferences supported by observations

4–2 Identify patterns and order in objects and events studied; and record observations, using pictures, words and charts, with guidance in the construction of charts; and make predictions and generalizations, based on observations

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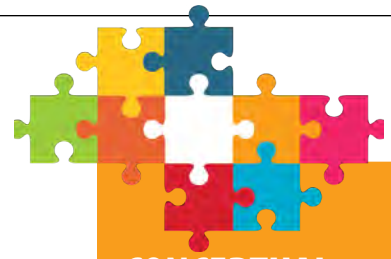
how to use this resource

This **Finding Alberta Beef** **Grade 4** Teaching Resource encourages students to explore and build understandings around three guiding questions:

- **HOW DO ALBERTA COMMUNITIES BENEFIT FROM THE CONTRIBUTIONS OF FARMERS AND RANCHERS?**

- **WHERE ARE ECOSYSTEMS FOUND ON FARMS AND RANCHES?**

- **WHAT CONTRIBUTES TO A HEALTHY EATING PLAN?**

Teaching and learning activities provide students with the opportunity to learn more about agriculture, and the cattle and beef production industry, in a context that is curriculum-relevant and connected to their daily lives.

Student learning sources are organized around conceptual knowledge and understandings. Each learning source is focused on one of the twelve conceptual learnings, and provides illustrative examples and individual, group or whole class learning activities.

Teaching and learning activities support learning outcomes in Social Studies, Science and Wellness curriculum as well as the competencies, literacy and numeracy. A **curriculum overview** is provided on **pages 11 to 16**.

using the Finding Alberta Beef features

The teaching and learning activities in this resource are supported by the **Finding Alberta Beef** **Learning Pages** and **Infographic**.

Learning Pages provide suggestions and active learning strategies to reinforce, connect, extend and focus learning on cattle and beef production in Alberta communities, beef as a nutritious food choice and the ways that agriculture is part of people's daily lives.

The following features are found throughout the teaching activities in this resource.

CONCEPTUAL LEARNING

ONE
Some Alberta communities have been shaped by farmers and ranchers.

TWO
All communities are connected to agriculture.

THREE
Relationships to the land shape decisions about caring for the environment.

FOUR
Farms and ranches are ecosystems.

FIVE
Energy flows through agricultural ecosystems.

SIX
Cattle farms and ranches contribute to sustainability.

SEVEN
Farmers and ranchers make balanced decisions about land and quality of life.

EIGHT
Healthy foods come from Alberta farms and ranches.

NINE
Food choices and nutrition information contributes to healthy choices.

TEN
Healthy food choices are planned.

FINDING ALBERTA BEEF INFOGRAPHIC

The **Finding Alberta Beef Infographic** provides a series of puzzle pieces with images, words, phrases and sentences. These puzzle pieces connect to the activities in the **Learning Pages**.

USING DIGITAL FORMATS

Some sections in this teaching guide and many student learning pages include fillable fields. These fillable fields allow learning pages to be completed digitally and saved in shared classroom folders. To use fillable PDFs, students will need PDF readers on their computers or devices. A**dobe Reader** is a free download or app. PDF files stored in **Google Drive** folders provide an option to open the PDF and use the fillable fields with **Lumin PDF**. Go to **www.luminpdf.com** for more information.

BUILD COMPETENCIES sidebars highlight opportunities to reinforce the competencies, literacy and numeracy in the context of subject-centred learning activities.

Suggestions for meeting the different learning needs of students are provided in the **MEET DIVERSE LEARNING NEEDS** feature. These suggestions include approaches that can be used to meet different grade level learning outcomes.

The **ASSESS LEARNING** features provide strategies for formative and summative assessment of student learning. These strategies can be used with the **Finding Alberta Beef** Learning Checklists provided in the **assessing student learning** section on **pages 17 to 19**.

TEACHER NOTES are also provided throughout the teaching and learning activities section of this resource. These include references to additional sources, background notes and teaching tips.

TEACHER BACKGROUND on cattle ranching and beef production is provided on **pages 37 to 45** of this resource. The background information provides additional support for implementing the learning activities throughout this resource.

preparing to integrate this mini unit

Consider the following suggestions for integrating the **Finding Alberta Beef Learning Pages** and **Infographic** into the learning process.

- Display the PDF version of the **Learning Pages** and **Infographic** on an interactive whiteboard or with a document camera.

- Provide small groups of students with a group copy of the **Learning Pages** and **Infographic**.

- Work with the class in circle time using a print copy of the **Learning Pages** and **Infographic**.

- Provide the **Learning Pages** and **Infographic** as a learning centre activity.

Review the teaching and learning activities that follow and select or adapt those that best meet the needs of your students.

Select and prepare the **Finding Alberta Beef** **Learning Pages** for students. The **Learning Pages** can be printed or copied for individual, partner or small group learning. They have been designed for use with Grade 4 students.

Some of the **Learning Pages** include cards that can be cut out and laminated in advance for students. These cards can be prepared as a permanent class set.

Start a picture collection of visuals, photographs and illustrations that represent urban and rural communities, cattle farms and ranches, beef production and food products. Include different types of illustrations related to healthy activities and food choices from **Canada's Food Guide**, collected from magazines, advertisements or Internet sources, including vegetables and fruits, protein foods and whole grain foods.

SUPPORTING RESOURCES

Additional information and resources on **Canada's Food Guide** can be found on the **Health Canada** website at **https://food-guide.canada.ca/en/**.

Some education websites can provide clip art of different types of foods. For example, **Pics4Learning** provides a section containing free food images at **www.pics4learning.com**.

A variety of authentic photos from Alberta cattle farms and ranches are provided throughout all **Finding Alberta Beef** resources, including many **photo cards** that can be cut out and shared with and by students. All grade levels can be accessed on the **Alberta Beef** website at **www.albertabeef.org/consumers/resources**.

preparing the infographic and template

The **Finding Alberta Beef** **Infographic** is provided in formats that allow you to print it double or single-sided on 8.5 x 11 paper or on 11 x 17 paper.

Please see the **Alberta Beef** website at **www.albertabeef.org/consumers/resources** to find PDF versions of letter and tabloid sized infographics. You may also choose to shrink and print the tabloid version in landscape format on 8.5 x 11 paper. Both formats can be printed and folded in half to create a mini-booklet for students.

The **Finding Alberta Beef** **Infographic** template can be used by students to create illustrations or use the fillable fields to write their own text. Blank areas in the template, as well as individual puzzle pieces, include these fillable fields.

Alternatively, students can be encouraged to create infographics with their own illustrations or by cutting and pasting photos they find from various sources.

The template can be printed on 11 x 17 paper or on two 8.5 x 11 pages. Please see the **Alberta Beef** website at **www.albertabeef.org/consumers/resources** to find a PDF version of the infographic template.

meeting curriculum needs

This section provides an overview of the guiding questions and activity focus supported by this resource. Guiding questions and the activities support specific learning outcomes in **Social Studies**, **Science** and **Health/Wellness** programs of study. Outcomes from **Alberta's Literacy and Numeracy Progressions** are also identified with each guiding question. The checklist format allows you to monitor and identify those learning outcomes you cover with the activities you select.

It is important to note that cattle are raised to provide food for people. They are not pets. Consider ways to address questions that students may have:

- In the activities that students do, ensure that time is provided to discuss the differences between raising animals and plants for human consumption and those kept as pets.

- Discuss ways to respect the different choices that people make about their food sources. For example, people from some cultures consume foods that other cultures may not find appealing.

- Explore the ways that people who raise animals for human consumption ensure that the animals are well cared for and respected for their importance in providing nutritious and safe food sources. Explore ways that farmers also protect the environment.

Please use caution with students who are not ready to make the connection that beef comes from cattle. Be respectful of student's food choices and their dietary preferences, needs, cultural and family traditions.

We encourage you to review and select teaching activities most suitable for your students. We also suggest you integrate sources of information that also reflect alternative dietary choices, such as vegetarian or vegan, or that respect cultural choices and traditions that avoid meat if appropriate for your students.

Specific learning outcomes from Grade 4 Alberta programs of study are supported by the activities for each of the three guiding questions in this resource.

1 HOW DO ALBERTA COMMUNITIES BENEFIT FROM THE CONTRIBUTIONS OF FARMERS AND RANCHERS?

COMPETENCIES

In this guiding question, students **manage information** to build understandings of land and the environment and apply **critical thinking** to make comparisons between past and present events and ways of life. They focus on **personal growth and well-being** by developing opinions about the importance of the environment and develop **collaboration** and **communication** skills by working and sharing in groups.

- Students explore contributions that early and current cattle farms and ranches have made to the development of communities and ways of life in Alberta.

- Students develop understandings of perspectives that shape the use of the land, care of the environment and the use of resources.

- Students share ideas about and demonstrate responsibility for natural and human-made environments.

CONCEPTUAL KNOWLEDGE	PROCEDURAL KNOWLEDGE	LITERACY AND NUMERACY
GRADE 4 Social Studies	**GRADE 4** Social Studies	**DIVISION II LITERACY**
4.1.1 Value Alberta's physical geography and natural environment:	**4.S.1 Develop skills of critical thinking and creative thinking:**	**Access**
Appreciate how land sustains communities and quality of life (ER, LPP)	Evaluate, critically, ideas, information and positions from multiple perspectives	Students select, sort and analyze information from a variety of sources to respond to a problem, question or topic. With guidance, students identify areas or gaps to determine further information needs
4.1.4 Analyze how Albertans interact with their environment by exploring and reflecting upon the following questions and issues:	Re-evaluate opinions to broaden understanding of a topic or an issue	**Background Knowledge**
In what ways do the physical geography and natural resources of a region determine the establishment of communities? (LPP)	**4.S.2 Develop skills of historical thinking:**	Students make connections to background knowledge and, with guidance, identify gaps to explore new information
	Use photographs and interviews to make meaning of historical information	**Vocabulary**
How are natural resources used by Albertans (i.e., agriculture, oil and natural gas, forests, coal)? (ER, LPP)	Use historical and community resources to understand and organize the sequence of local historical events	Students acquire and use precise and descriptive vocabulary, general academic vocabulary (e.g., identification, definition) and subject/discipline-specific vocabulary (e.g., pulley, ecosystem) related to learning experiences
How do Albertans deal with competing demands on land use (e.g., conservation, solar and wind power, recreation, agriculture, oil exploration, forestry)? (ER, LPP)	**4.S.3 Develop skills of geographic thinking:**	**Purpose**
	Construct graphs, tables, charts and maps to interpret information	Students organize texts according to their purpose or intent
	Use cardinal and intermediate directions to locate places on maps and globes	

CONCEPTUAL KNOWLEDGE	PROCEDURAL KNOWLEDGE	LITERACY AND NUMERACY
GRADE 4 Social Studies	**GRADE 4** Social Studies	**DIVISION II NUMERACY**

CONCEPTUAL KNOWLEDGE

GRADE 4 Social Studies

4.2.2 Assess, critically, how the cultural and linguistic heritage and diversity of Alberta has evolved over time by exploring and reflecting upon the following questions and issues:

How are agriculture and the establishment of communities interconnected? (ER, LPP)

4.3.1 Appreciate the factors contributing to quality of life in Alberta:

Appreciate the influence of the natural environment and resources on the growth and development of Alberta (ER, LPP)

4.3.2 Assess, critically, the challenges and opportunities that Alberta has faced in its growth and development by exploring and reflecting upon the following questions and issues:

In what ways have occupations and commerce been affected by geography, climate and natural resources in Alberta (i.e., forestry, agriculture, aviation, seasonal activities, tourism)? (ER, LPP, TCC)

4.3.3 Examine, critically, Alberta's changing cultural and social dynamics by exploring and reflecting upon the following questions and issues:

In what ways have Aboriginal peoples and communities changed over time? (CC, I, TCC)

How does living in a particular community, region or province help shape individual and collective identity? (CC, I, LPP)

PROCEDURAL KNOWLEDGE

GRADE 4 Social Studies

4.S.7 Apply the research process:

Organize and synthesize information gathered from a variety of sources

Use graphic organizers, such as webbing or Venn diagrams, to make meaning of information

Draw and support conclusions, based on information gathered, to answer a research question

4.S.8 Demonstrate skills of oral, written and visual literacy:

Organize and present information, taking particular audiences and purposes into consideration

4.S.9 Develop skills of media literacy:

Compare information on the same topic or issue from print media, television, photographs and the Internet

LITERACY AND NUMERACY

DIVISION II NUMERACY

Magnitude

Students interpret, compare and use quantities expressed as whole numbers, and as percentages, fractions and decimals that are commonly used in real-life situations

Patterns and Relationships

Students analyze and use patterns, including increasing or decreasing patterns, to make simple predictions in real-life situations

Organization of Data

Students organize objects, ideas or information using a variety of classification systems

Time

Students determine the chronology and duration of events encountered in reallife situations using time and elapsed time

Interpretation and Representation of Quantitative Information

Students create and interpret different representations of quantitative information

Interpretation and Representation of Spatial Information

Students interpret and create models and labelled diagrams to represent spatial concepts (e.g., mind maps, topographical maps, timelines)

*Students are introduced to concepts in the last activity for this guiding question - Environmental Connections - that they will continue to explore in the second guiding question. See the following pages for Science learning outcomes supported with these activities.

2 WHERE ARE ECOSYSTEMS FOUND ON FARMS AND RANCHES?
COMPETENCIES

In this guiding question, students **manage information** to build understandings of sustainability and agriculture and apply **critical thinking** to assess human activity and determine patterns and relationships. They focus on **personal growth and well-being** by considering their own connection to the environment and develop **collaboration** and **communication** skills by working and sharing in groups.

- Students explore the characteristics of natural and agricultural ecosystems, examining the role of plants and the food chain in cattle farms and ranches.

- Students develop understandings of the impact of agriculture on natural environments and ecosystems.

- Students share ideas about and demonstrate responsibility for natural and human-made environments.

CONCEPTUAL KNOWLEDGE	PROCEDURAL KNOWLEDGE	LITERACY AND NUMERACY
GRADE 4 Science	**Grade 4 Science**	**DIVISION II LITERACY**
Topic E: Plant Growth and Changes	**Focus**	**Access**
4–10 Demonstrate knowledge and skills for the study, interpretation, propagation and enhancement of plant growth	Ask questions that lead to exploration and investigation	Students select, sort and analyze information from a variety of sources to respond to a problem, question or topic. With guidance, students identify areas or gaps to determine further information needs
1. Describe the importance of plants to humans and their importance to the natural environment. Students who meet this expectation should be able to give examples of plants being used as a source of food or shelter, and be aware of the role plants play in the environment; e.g., preventing erosion, maintaining oxygen.	**Explore and Investigate** Identify, with guidance, sources of information and ideas and access information and ideas from those sources	**Background Knowledge** Students make connections to background knowledge and, with guidance, identify gaps to explore new information
6. Recognize that a variety of plant communities can be found within the local area and that differences in plant communities are related to variations in the amount of light, water and other conditions.	**Reflect and Interpret** Record observations and measurements accurately, using captioned pictures and charts, with guidance in the construction of charts	**Vocabulary** Students acquire and use precise and descriptive vocabulary, general academic vocabulary (e.g., identification, definition) and subject/discipline-specific vocabulary (e.g., pulley, ecosystem) related to learning experiences
Topic A: Waste and Our World	State an inference, based on observations	**Purpose**
4–5 Recognize that human activity can lead to the production of wastes, and identify alternatives for the responsible use and disposal of materials.	Identify possible applications of what was learned	Students organize texts according to their purpose or intent
1. Identify plant and animal wastes, and describe how they are recycled in nature. For example, plant leaves serve as a source of food for soil insects, worms and other creatures. The wastes of these animals may then be further broken down by molds, fungi and bacteria.		
2. Identify and classify wastes that result from human activity.		

CONCEPTUAL KNOWLEDGE

GRADE 4 Social Studies

4.1.1 Value Alberta's physical geography and natural environment:

Appreciate how land sustains communities and quality of life (ER, LPP)

4.1.4 Analyze how Albertans interact with their environment by exploring and reflecting upon the following questions and issues:

How are natural resources used by Albertans (i.e., agriculture, oil and natural gas, forests, coal)? (ER, LPP)

How do Albertans deal with competing demands on land use (e.g., conservation, solar and wind power, recreation, agriculture, oil exploration, forestry)? (ER, LPP)

4.3.1 Appreciate the factors contributing to quality of life in Alberta:

Appreciate the influence of the natural environment and resources on the growth and development of Alberta (ER, LPP)

PROCEDURAL KNOWLEDGE

Grade 4 Social Studies

4.S.1 Develop skills of critical thinking and creative thinking:

Evaluate, critically, ideas, information and positions from multiple perspectives

Re-evaluate opinions to broaden understanding of a topic or an issue

4.S.7 Apply the research process:

Organize and synthesize information gathered from a variety of sources

Use graphic organizers, such as webbing or Venn diagrams, to make meaning of information

Draw and support conclusions, based on information gathered, to answer a research question

LITERACY AND NUMERACY

DIVISION II NUMERACY

Magnitude

Students interpret, compare and use quantities expressed as whole numbers, and as percentages, fractions and decimals that are commonly used in real-life situations

Patterns and Relationships

Students analyze and use patterns, including increasing or decreasing patterns, to make simple predictions in real-life situations

Organization of Data

Students organize objects, ideas or information using a variety of classification systems

Interpretation and Representation of Quantitative Information

Students create and interpret different representations of quantitative information

Interpretation and Representation of Spatial Information

Students interpret and create models and labelled diagrams to represent spatial concepts (e.g., mind maps, topographical maps, timelines)

3 WHAT CONTRIBUTES TO A HEALTHY EATING PLAN?
COMPETENCIES

In this guiding question, students **manage information** to build understandings of nutrition and food choices and apply **critical thinking** to make comparisons. They focus on **personal growth and well-being** by considering their own food choices and develop **collaboration** and **communication** skills by working and sharing in groups.

- Students select foods that contribute to healthy meals, considering nutritional benefits of the three types of foods in Canada's Food Guide.
- Students analyze nutrition information and make comparisons of different foods.

CONCEPTUAL & PROCEDURAL KNOWLEDGE	LITERACY AND NUMERACY
Grade 4 Health/Wellness **W-4.5** analyze the need for variety and moderation in a balanced diet; e.g., role of protein, fats, carbohydrates, minerals, water, vitamins	**DIVISION II LITERACY** **Background Knowledge** Students make connections to background knowledge and, with guidance, identify gaps to explore new information **Vocabulary** Students acquire and use precise and descriptive vocabulary, general academic vocabulary (e.g., identification, definition) and subject/discipline-specific vocabulary (e.g., pulley, ecosystem) related to learning experiences **DIVISION II NUMERACY** **Magnitude** Students interpret, compare and use quantities expressed as whole numbers, and as percentages, fractions and decimals that are commonly used in real-life situations **Organization of Data** Students organize objects, ideas or information using a variety of classification systems **Interpretation and Representation of Quantitative Information** Students create and interpret different representations of quantitative information

assessing student learning

The assessment checklists that follow can be used to assess students' understandings and skill development as they engage in the learning activities in each inquiry. The criteria statements can provide a basis for diagnostic, formative and summative assessment of students. These checklists can be applied in a number of different contexts.

- All specific learning outcomes from Alberta programs of study identified in the **meeting curriculum needs** section on **pages 11 to 16** correlate to the checklists provided in this resource.

- Criteria statements can be recombined and reorganized to create focused checklists or rubrics to evaluate student attainment of specific outcomes.

- Criteria statements can be used as a starting point or guideline for student self-assessment, can support students in creating their own checklists or rubrics and can be used to provide feedback to students. Criteria statements can be developed as "I can" statements.

- The statements can be used to communicate student learning to parents.

- The checklists can be photocopied for each student, and their learning progress tracked as they complete each inquiry. Alternatively, checklists can be selected as an area of assessment focus and used specifically to monitor and record student growth.

Finding Alberta Beef checklists reflect learning outcomes from the Alberta Social Studies, Science and Wellness/Health programs of study. Four checklists are included:

- **Building Understandings**
- **Researching and Creating**
- **Expressing and Sharing**
- **Working Together**

Criteria statements reinforce the Alberta competencies as well as literacy and numeracy progressions.
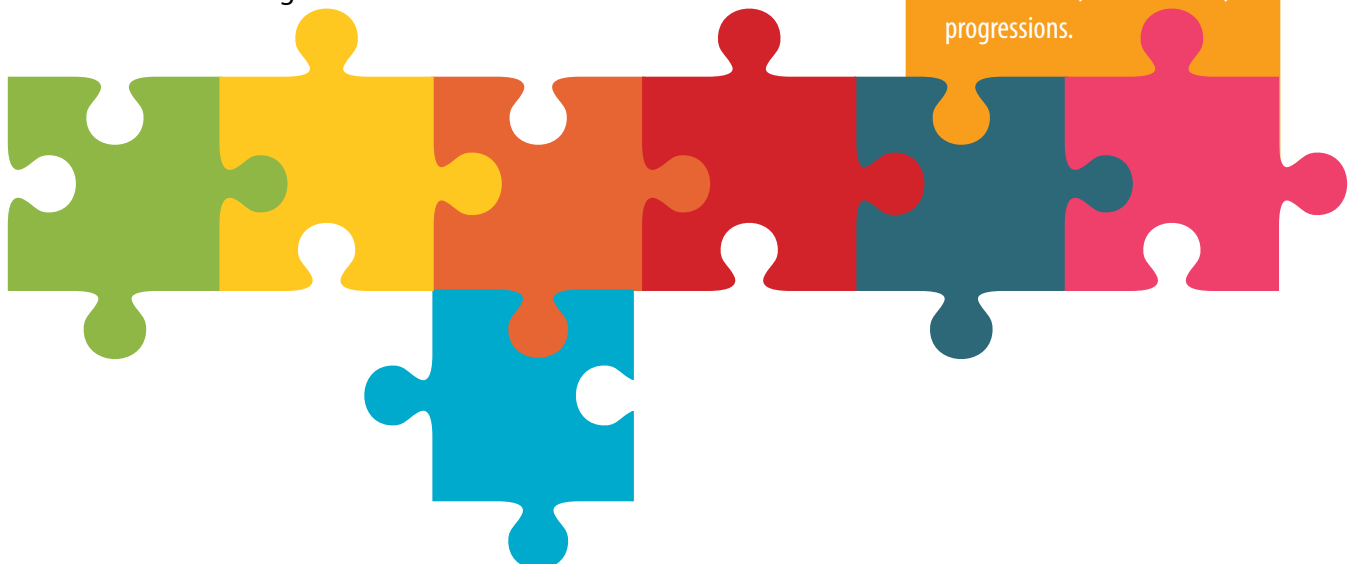
checklist 1: Building Understandings

CRITICAL THINKING   PROBLEM SOLVING   CULTURAL AND GLOBAL CITIZENSHIP

LEARNING CRITERIA	Yes	Often	Sometimes	Not yet
Describes ways that human activities contribute to ways of life in Alberta communities				
Makes connections between human activities, the land and its natural resources				
Identifies the uses, effects and benefits of using natural resources				
Identifies competing demands on building quality of life, the use of natural resources and the land				
Describes the cycle of energy in an ecosystem on a cattle ranch, including the role of plants, cattle and waste				
Compares practices used in sustainable agriculture				
Makes connections between agriculture and food production and personal decision-making				
Identifies nutritious choices that provide a balanced diet				

checklist 2: Researching and Creating

MANAGING INFORMATION   CREATIVITY AND INNOVATION

LEARNING CRITERIA	Yes	Often	Sometimes	Not yet
Finds and combines information and examples from a variety of sources				
Identifies points of view and perspectives that influence decision-making				
Applies and uses graphic organizers to gather and organize ideas and information				
Summarizes important ideas to construct relevant and meaningful messages				
Applies examples to support ideas and information				
Identifies a conclusion from information provided				

checklist 3: Expressing and Sharing

CREATIVITY AND INNOVATION   COMMUNICATION   PERSONAL GROWTH AND WELLBEING

LEARNING CRITERIA	Yes	Often	Sometimes	Not yet
Shares personal understandings and new learnings about human activities and the environment with others				
Provides examples to support ideas and opinions				
Selects appropriate media and means of communication to effectively share knowledge of information, ideas and concepts				
Shares knowledge and understandings clearly and with a purposeful message				

checklist 4: Working Together

COMMUNICATION   COLLABORATION

LEARNING CRITERIA	Yes	Often	Sometimes	Not yet
Contributes own ideas to group activities and encourages contributions from others				
Works effectively in groups by fulfilling responsibilities and completing tasks				

teaching and learning activities

The activities that follow are organized around three guiding questions and include suggestions for exploring the contributions of agriculture to Alberta communities in the past and present, agriculture and ecosystems, care of the environment and nutritional food choices with individual, small group and whole class learning.

- **HOW DO ALBERTA COMMUNITIES BENEFIT FROM THE CONTRIBUTIONS OF FARMERS AND RANCHERS?**

- **WHY CAN FARMS AND RANCHES BE DESCRIBED AS ECOSYSTEMS?**

- **WHAT CONTRIBUTES TO A HEALTHY EATING PLAN?**

Watch for suggestions for using the **Student Learning Pages** and integrating the **Finding Alberta Beef Infographic** into teaching and learning activities.

Additional sources and weblinks are included in the activities as well as in the **Teacher Background Notes** on **pages 37 to 45**.

Plan to highlight the photos of Alberta cattle farmers and ranchers, land and environments found throughout the learning pages. Additional photos, including photo cards, are included in other grade level resources, all provided on the Alberta Beef website at www.albertabeef.org/consumers/resources.

HOW DO ALBERTA COMMUNITIES BENEFIT FROM THE CONTRIBUTIONS OF FARMERS AND RANCHERS?

THIS GUIDING QUESTION ENCOURAGES STUDENTS TO FOCUS ON THE CONTRIBUTIONS THAT AGRICULTURE HAS MADE TO THE DEVELOPMENT AND VITALITY OF ALBERTA COMMUNITIES.

snapshots

SOCIAL STUDIES

Ask students to brainstorm features of their community, recording descriptive words and phrases on the board. Encourage them to add descriptions of natural and human-made features. Use their descriptive words and phrases to pose and discuss questions such as the following:

- Do you think these features have always been part of your community? Why do you think this?

- How do you think natural features have changed over time? (*Encourage students to consider natural features in communities that have been changed by human activities. How have human made features changed the natural landscape? What are some examples of human made features that are part of the community's past; which features are more recent? How do old and new human made features shape the growth and development of the community?*)

- What impact do you think different types of human activities have on the development of communities? (*Encourage students to make a general, broad connection between the range of different types of human activities – like agriculture, forestry, oil and gas, industries – and the growth of a community.*)

- To what extent do you think agriculture – farming and ranching – are important to any type of community? (*Revisit the differences between urban and rural communities, asking students to make connections to agriculture in both urban and rural areas.*)

Provide students with **Learning Page 1: Alberta's communities have grown over time**. This learning page provides **snapshots** of cattle farms and ranches that have shaped some Alberta communities. Activities in the learning page ask students to find and locate farms and ranches in each snapshot and use a **t-chart** to identify natural and human made features in the photo sources. Encourage students to consider similarities and differences between past and present natural and human-made features.

MEET DIVERSE LEARNING NEEDS

Students can be asked to extend their learning by using apps such as **Google Maps** to locate and use maps to identify and describe features of their communities. Depending on their contexts, ask student to make comparisons between the school community, where they live and where they have visited.

Explore **Learning Page 1** as a whole class, doing read alouds of the snapshots and discussing the photo sources. Have students compete the activities individually or with partners.

Alternatively organize students into groups. Assign each snapshot example in **Learning Page 1** to a different group. Ask students to work together to read aloud the snapshot, respond to the questions and complete the activity.

Make connections to what students have learned about the growth of Alberta communities.

Challenge students to do some of their own research into their community. Ask them to find and build a **photo library** of some of the features in their communities. If feasible, have students ask their families to help them take photos on smartphones or tablets and send them to a shared online folder.

Use an online source such as **Prairie Towns** at **www.prairie-towns. com/alta-towns-qr.html** to compare past and present photo sources of the community. This site provides archival photos of different Alberta towns. With help and support, students could also use the **Glenbow Archives** and **Edmonton Archives** to search for archival photos of a neighbourhood in their city. The **Glenbow Archive** digital collection can be accessed at **https://glenbow.ucalgary.ca/digital/#**. The **Edmonton Archives** can be accessed at **https://cityarchives. edmonton.ca**.

Alberta Beef: A Day On The Ranch is a video that shares some perspectives on ranching in the past and can be accessed at **www. youtube.com/watch?v=LrnJzlz7Jtl** as well as in the **Supporting Resources** section of the **Alberta Beef** website at **www.albertabeef. org/consumers/resources**.

Find an infographic that provides an overview of **150 Years of Canadian Agriculture** on the **Statistics Canada** website at **www150. statcan.gc.ca/n1/pub/11-627-m/11-627-m2017018-eng.htm**.

Make comparisons between urban and rural areas of the community and focus on its connection to agriculture. Have students create their own **photo snapshot** of one aspect of their community that is connected to agriculture, comparing the past and the present and using the snapshots in the learning page as a model. Provide time for students to share their snapshots.

The history of First Nations people is also connected to agriculture and the environment. The **Blackfoot Crossing** website provides perspectives on the treaties and some information on the role that agriculture played at **www.blackfootcrossing.ca/survival.html**. An additional resource for exploring First Nations' relationship with the land and its resources, **Niisitapisinni: Our Way of Life**, can be accessed at **www.glenbow.org/blackfoot**.

BUILD COMPETENCIES

CRITICAL THINKING

MANAGING INFORMATION

Focus on critical thinking as students analyze the photos in **Learning Page 1** and sort their observations into natural and human made features. Encourage students to revisit what they've learned about these features from previous grade levels.

Students can search for photos online and collect photos in an online folder or on a **Padlet** board.

Padlet, found at **https:// padlet.com**, is an online bulletin board that encourages collaboration and can be used to sort and organize images, links, videos and other information.

Focus on managing information and critical thinking. Do a **think aloud** that models the process of finding information from photos. Ask students to talk about different types of information they can get from a photo.

ASSESS

After exploring the Infographic, ask students to respond verbally or in writing to sentence stems such as those below:

- People make contributions to their communities when…

- When I compare past and present human activities, I learn…

- Cattle farmers and ranchers contribute to the vitality of communities by…

MEET DIVERSE LEARNING NEEDS

Have this initial discussion as a class, using a **Venn** graphic organizer to explore agricultural connections between urban and rural communities.

FINDING ALBERTA BEEF INFOGRAPHIC

Challenge students to identify the natural and human made features represented in the **Finding Alberta Beef** **Infographic**. Ask students to talk about different human activities they might expect to find on these different types of land. Challenge students further by asking them to find and identify different types of resources, including natural resources like trees, grassland, soil and water and those that farmers and ranchers depend on, like crops and animals.

mapping agriculture

SOCIAL STUDIES

Organize students into small groups. Provide each group with **Learning Page 2: All communities are shaped by agriculture**. As a class or in small groups, read aloud the statistics and discuss what each statement tells them about the importance of agriculture and specifically, cattle farming and ranching to Alberta communities.

Challenge students to further discuss ways that the human activity of agriculture, and specifically cattle farming and ranching, can be connected to **all** communities. (*For example, people in urban communities depend on goods and services provided by people in rural communities. People who live and work in rural communities depend on people in urban communities as consumers of those goods and services.*)

Have students explore and discuss the information about cattle farming and ranching in Alberta. Ask them to highlight or underline examples that show the role and importance of this human activity to communities. Additional questions are also embedded in the learning page. Then, have them use the **bubble map** in the learning page to identify and **map** the connections they see.

Use the bubble map questions to encourage students to develop statements that reflect the connections that farms and ranches have to both urban and rural communities.

The bubble map questions include:

- How do ways of life on farms and ranches depend on the land?

- Why is the land important to all communities?

- In what ways do people in urban communities depend on the work that farmers and ranchers do?

- What does the range of activities involved in making beef tell you about connections between urban and rural communities?

Have students share their bubble maps with a partner and then discuss the questions as a class. Encourage students to add examples of other types of farming they may be aware of or have experience with.

BUILD COMPETENCIES

NUMERACY

Reinforce numeracy skills by having students select one of the statistic statement to represent in a **graph** or **pictograph**. Provide support for students as they interpret percentages mentioned in some of the statistics statements.

environmental connections

SOCIAL STUDIES, SCIENCE

Challenge student thinking by asking them to share examples of how the way we do things is different in the present than it was in the past. Tell students they will explore some information and examples from past and present agriculture. Provide students with **Learning Page 3: Relationships to the land shape decisions about caring for the environment**. Ask students to use the learning page to explore examples of ways that the land and its resources shaped agriculture in the past as well as actions that cattle farmers and ranchers take in the present to manage the land and its natural resources.

Activities in the learning page ask students to select five events from a description of past events related to cattle farming and ranching in Alberta to create a simple **timeline**; and identify four actions that Alberta cattle farmers and ranchers have taken to care for the environment to create **action examples**. Students can make connections back to the snapshot stories in **Learning Page 1**. Have students summarize what they have learned about six environmental factors, using the **environment wheel** at the end of the learning page. The following six environmental factors are listed on the wheel:

- Land and soil
- Water sources
- Energy sources
- Climate and weather
- Plants and feed for animals
- Wildlife

As learning progresses, responses can continue to be added to the wheel.

Share ideas as a class and use their examples and learning to introduce them to the concept of sustainable agriculture. What does the word "sustainable" mean? What does it mean to practice **sustainable agriculture**? (*Sustainable agriculture raises food that is healthy for people and animals and does not harm the environment.*)

Ask students to make connections between farming and ranching and the production of wastes by discussing questions such as:

- What types of waste do you think are produced by the beef production industry?
- How do you think these wastes should be managed?

Cattle ranches represent some of the strongest and healthiest ecosystems in the world. They are compatible with many wildlife, landscapes and habitats. Cattle use land that is not suitable for growing crops because it is too dry, wet, rocky, cold or hilly. Keeping this land as grassland is good for the soil and water quality.

Cattle are ruminant animals and have four stomachs, which enables them to convert coarse vegetation into high quality protein. Cattle also produce manure, which is a natural fertilizer for growing crops. Feeding grain to cattle does not deprive anyone of an adequate diet. Cattle are typically only fed grain for a short period to produce more tender and flavourful beef. Much of the grain eaten by cattle is coarse grain that cannot be used for human consumption.

The **Nature Conservancy of Canada (NCC)** is a national land conservation organization that partners with individuals, corporations, foundations, Indigenous communities and other non-profit organizations and governments to protect natural areas. This organization is referenced in the snapshot stories in **Learning Page 1**. Find an additional story about an Alberta cattle ranch that partners with the NCC at **www.natureconservancy.ca/en/where-we-work/alberta/news/hansen-ranch.html**.

Other organizations that partner with Alberta cattle farmers and ranchers include **Ducks Unlimited** and **Cows and Fish**. Find information on **Ducks Unlimited** initiatives and their relationship with cattle farmers and ranchers on their website at **www.ducks.ca/places/alberta/**. Find a story about an Alberta cattle ranch that can provide some background at **www.ducks.ca/stories/landowners/natural-habitat-improves-grazing-land-for-cattle-ranchers/#**.

Cows and Fish can provide additional perspectives on the contribution that cattle farmers and ranchers make to sustainability and conservation efforts in communities at **http://cowsandfish.org/**.

FINDING ALBERTA BEEF INFOGRAPHIC

Ask students to use the **Finding Alberta Beef Infographic** to add information to their **class wheel charts**. Work with students to use both the photos and text to identify environmental factors that they think influence decisions about land and resources in Alberta.

MEET DIVERSE LEARNING NEEDS

Extend learning by working with students to investigate past and more current examples of flood, drought and/or other natural disasters that can impact farming land. Use the example of the drought of the 1930s to focus on and discuss impact on farmers and agriculture.

There are many additional resources that deal with the concept of sustainability and food production that can provide you with background information. Go to the **Best Food Facts** website at **www.bestfoodfacts.org** and search for articles on sustainability. One example to explore is the article, **Sustainability: What are the True Impacts of Your Food Choices?** at **www.bestfoodfacts.org/sustainability-what-are-the-true-impacts-of-your-food-choices/**. Find another article, **Are Cows Bad for the Environment?** at **www.bestfoodfacts.org/are-cows-bad-for-the-environment/**.

THIS GUIDING QUESTION ASKS STUDENTS TO INVESTIGATE THE FEATURES OF AGRICULTURAL ECOSYSTEMS. STUDENTS CONSIDER HOW SUSTAINABLE ENVIRONMENTS ARE BALANCED WITH WAYS AND QUALITY OF LIFE.

features of ecosystems

SCIENCE

Tell students that we all live in ecosystems, no matter what type of community we are part of. Review the concept of ecosystems with students. Provide them with **Learning Page 4: Farms and ranches are ecosystems**. The learning page provides a series of photos that do – and do not – represent ecosystems.

Depending on students' prior learning about ecosystems, use the learning page as a class activity or organize students into groups to complete it.

Reinforce the features of an ecosystem by have students do a **card sort**. Have them use the **retrieval chart** at the end of the learning page or reproduce the chart below on the board or an interactive whiteboard. Encourage students to use farm or ranch photos in their charts.

Features of an ecosystem	Photo 1	Photo 2	Why I selected these photos
Ecosystems are communities of living things.			
Ecosystems include living things and their environments.			
Ecosystems are communities of living things that interact with their environment.			

video ranch tour

SCIENCE

Share a video with students as the opener for this activity. Preview the following videos as an option for this opener. These videos are provided n the **Supporting Resources** section of the **Alberta Beef** website at **www.albertabeef.org/consumers/resources**.

- A video about beef cattle farming, with a winter perspective, is provided by **Alberta Farmers** at **www.youtube.com/watch?v=Pjwh0Ki_PhA**.

- **Ducks Unlimited** has shared a video about connections that cattle ranchers have to the land at **www.youtube.com/watch?time_continue=179&v=N2QeDm3nra8&feature=emb_title**.

- A **Canada Beef** video about Tom Thompson, featured in **Learning Page 2**, can be found at **www.youtube.com/watch?v=3Cu4a3GQVNQ&feature=youtu.be**.

As students watch any of these videos, ask them to look for different ecosystems – grassland, pasture, grain field, shelterbelt of trees, forested areas, ponds. Ask them to think about how these different types of ecosystems are important to cattle ranchers and the environment. Have students record point form notes or write down keywords that they hear and see.

Students can also be asked if they see any evidence of habitats in the videos. A **habitat** is the physical area – or actual place – in which a species lives. Discuss the definition of a habitat and ask students to identify the difference between a habitat and ecosystem.

After watching the videos, organize students into small groups and provide them with **Learning Page 5: Energy flows though agricultural ecosystems**. The description of ecosystems is provided either as a review of concepts students may have covered or as a general introduction. If students require additional supports, provide time to explore the elements in food chains and food webs.

Scholastic Study Jams provide short animated videos of ecosystems concepts. Find the ecosystem video at **http://studyjams.scholastic.com/studyjams/jams/science/ecosystems/ecosystems.htm**. Find a video about food chains at **http://studyjams.scholastic.com/studyjams/jams/science/ecosystems/food-chains.htm**. Find a video about food webs at **http://studyjams.scholastic.com/studyjams/jams/science/ecosystems/aquatic-ecosystems.htm**.

MEET DIVERSE LEARNING NEEDS

There are a number of videos provided on the **Canada Beef** website at **https://canadabeef.ca/whycanadianbeef/**, many dealing with influences on ecosystems. Students may need some support with the vocabulary and information provided in some of these videos.

BUILD COMPETENCIES
PROBLEM SOLVING

Have students make connections between plant and animal agriculture. Many cattle farmers and ranchers grow crops on their land. Cattle graze on pastures for food. How is an understanding of plant growth an important aspect of these farms and ranches? How are these plants and cattle elements of a farm or ranch ecosystem?

To get students thinking more about how energy works in ecosystems, have them write down how different animals, plants, and even fungi might be connected. (*For example, ask students whether they have observed a coyote hunting a mouse, birds finding straw to make a nest or farm animals grazing on pasture grass. Urban students may be asked if they have observed bees pollinating flowers or mushrooms growing in a garden. Students may also be asked to draw on examples from movies or books.*)

Ask them if they use animal manure to make soil in the garden healthier. Encourage students to imagine what a day in the life of an animal would look like. What do they eat? Where do those plants or animals get their energy? What kinds of predators do they need to watch out for?

Have students brainstorm and record examples of these connections and then share with the class by writing them on the board. Use their ideas to lead into the next activity.

ASSESS

After exploring the **Infographic**, ask students to respond verbally or in writing to sentence stems such as those below:

- Natural and agricultural ecosystems are connected because…

- Plants are essential to cattle farming and ranching because…

FINDING ALBERTA BEEF INFOGRAPHIC

Challenge students to identify elements of farm and ranch ecosystems that are represented on the **Finding Alberta Beef Infographic**.
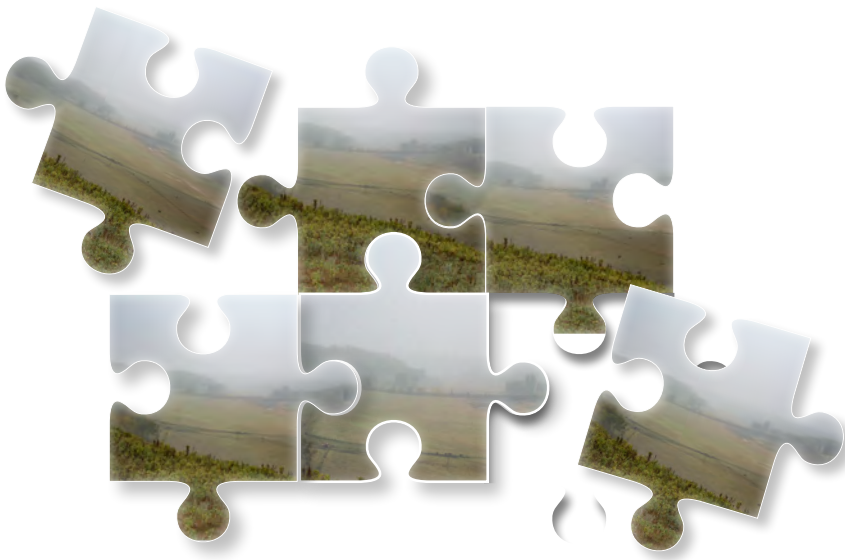
a question of balance

SOCIAL STUDIES, SCIENCE

Discuss the concept of **balance** with students and invite them to share examples. Tell them that sustainable agriculture involves balancing different factors, including and such as:

● The environment

● Family and community ways of life and quality of life

● Animal well being and safety

● The people who buy and consume the food they ultimately produce

How do these factors influence decisions that are made by farmers and ranchers? What has to be balanced? (*Encourage students to consider questions that bring up competing demands on decision-making, such as: What type of feed should be used? Which is best for the environment and which is best for the animals? How should cattle access water while protecting the plant and animal life around a stream? How can we increase our cattle herd to make a better living? What does this mean for the environment?*)

Use **Learning Page 6: Cattle farms and ranches contribute to sustainability** to provide perspectives about sustainability from farmers and ranchers. As a starting point to the balance activity, have students individually complete the **cause and effect chart**.

Students may also be interested in some of the partner organizations that Alberta and Canadian beef organizations work with, some of which were referenced in previous activities. How do these organizations support sustainable practices?

- **Guardians of the Grasslands** is an organization that works to protect prairie grasslands. Preview the documentary file produced by this organization and Canadian ranchers, found at **https://guardiansofthegrasslands.ca/#about**.

- **Ducks Unlimited Canada** work with cattle farmers and ranchers to conserve and protect wetlands. An example of this relationship can be found at **www.ducks.ca/stories/grasslands/grazing-land-helps-ducks-cattle/**.

- Cattle farmers and ranchers also have a unique and innovative partnership with **Bird Studies Canada**, a national bird conservation organization. Find their website at **www.birdscanada.org**.

- **Cows and Fish** is a website from the **Alberta Riparian Habitat Management Society**. It provides a number of resources and can be accessed at **http://cowsandfish.org/index.html**.

Create five posters illustrated with a **balance scale**. (*Have students help draw these on the posters*).
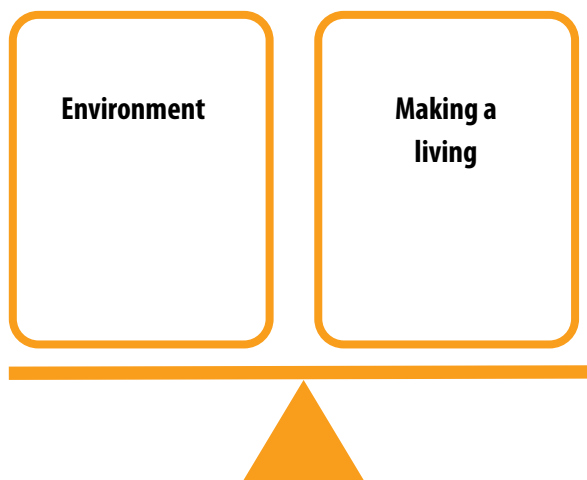
On one side of each scale, place the heading "Environment." On the other side, place the heading "Making a Living." Discuss what each one of these headings means. (*Considering the environment can mean spending additional money to protect the environment. This can affect how farmers and ranchers make a living.*)

Write the following phrases on each poster:

- Increasing the herd size

- Choosing to buy or grow crops for cattle feed

- Protecting water sources and the plant and animal life around them

- Moving cattle around different grazing fields

- Recycling waste by collecting and using manure to fertilize fields

Display the posters around the classroom. Organize students into **carousel sharing** groups. Have groups visit each topic poster and add considerations, ideas, facts or questions involved with each side of the balance scale.

Ask students to reflect on and discuss the facts and questions that may "tip" the balance when making decisions. Ask students to point out examples from their posters and pose question such as:

- When can waste from agricultural activities provide food for an ecosystem? When can waste result in problems for the environment? Quality of life?

- What could push a healthy pasture out of balance?

- How are farms and ranches important to ways of life in communities?

- How do values and perspectives influence decision making?

- How do balanced decisions affect quality of life?

Find comprehensive background information on the **Environmental Footprint of Beef Production**, including information on the carbon footprint of beef on the **Beef Cattle Research Council** website at **www.beefresearch.ca/research-topic.cfm/environmental-footprint-of-beef-production-6**.

FINDING ALBERTA BEEF INFOGRAPHIC

Ask students to identify information on the **Finding Alberta Beef Infographic** that they can add to their balance scale posters. Look for examples that students think can reflect the role of the environment in cattle farmer and ranchers' ways of life.

MEET DIVERSE LEARNING NEEDS

In a **carousel sharing strategy**, groups visit stations or posters to each contribute their ideas to different topics or focus questions. Each group is given an equal amount of time at each station or poster and then asked to move on to the next one.

ASSESS

Extend and assess learning by having students create dioramas or illustrated posters that demonstrate what they have learned about farm and ranch ecosystems and decisions that cattle farmers and ranchers make to balance environmental sustainability and maintain their ways of life in Alberta communities.

Connect to Science learning outcomes by focusing on the role of plants in farming and cattle ranching.

WHAT CONTRIBUTES TO A HEALTHY EATING PLAN?

THIS GUIDING QUESTION ASKS STUDENTS TO APPLY NUTRITIONAL INFORMATION TO MAKE HEALTHY FOOD CHOICES.

gauging healthy food choices

HEALTH/WELLNESS

Challenge students to identify foods that come from the food groups in **Canada's Food Guide**:

- Fruits and vegetables

- Protein foods

- Whole grain foods

Provide students with **Learning Page 8: Healthy foods come from Alberta farms and ranches**. The learning page starts with an overview of the factors that can influence food choices. Have students individually complete the **influence scales** under each factor.

Ask students to brainstorm foods that come from farming and ranching. Make the point that **all** foods come from agriculture.

Review the benefits that beef can provide in a healthy diet. Have students add foods that balance the examples to the **grid** of beef food photos on the learning page. Encourage students to note the range of foods that are combined with beef in these examples. Make connections to the food groups in **Canada's Food Guide**.

Agriculture and Agri-Food Canada provides an overview of Canadian food products in **We Grow a Lot More than You May Think**, found at **www.agr.gc.ca/eng/canadian-agri-food-sector/we-grow-a-lot-more-than-you-may-think/?id=1251899760841**. Find the PDF version at **www.agr.gc.ca/resources/prod/doc/info/pdf/aafc-aac_brochure_mar2013_eng.pdf**.

Canada's Food Guide provides a summary of suggestions for making healthy food choices at **https://food-guide.canada.ca/en/healthy-food-choices/**.

planning healthy choices

HEALTH/WELLNESS

Provide students with a collection of grocery flyers. Organize them into groups and ask them to identify and cut out pictures of nutritious food choices that could be used to make up a balanced meal. Remind students to identify food choices from **Canada's Food Guide** categories.

Encourage students to choose food items that represent each type of food choice as well as products that they think are local Alberta foods to create their **photo collections**. In addition to, or alternatively, provide students with the photo cards in **Learning Page 9: Food choices and nutrition information contributes to healthy choices**.

Some of these photo cards include nutrition labels. Before students use the photo cards in the next part of this activity, revisit and review the type of nutrition information that is provided on nutrition labels. Ask students to use these and other nutrition labels to illustrate why food choices are healthy choices.

The food labels in the learning page provide a sampling of a few different food products. The six labels displayed include:

Peanut butter (orange)	Olive oil (yellow)
Frozen fruit (pink)	Hamburger – extra lean (red)
Milk 2% (blue)	Vegetable juice – low sodium (green

MEET DIVERSE LEARNING NEEDS

Depending on the learning support that individual students need, organize them to work with a partner or in a small group to create their grocery stores.

Students can be asked to extend their learning by creating an "Alberta grown and raised" logo. Have them identify local foods in their **photo collections**.

ASSESS

Have students use an individual copy of the grocery store charts in **Learning Page 10** to select their personal food choices. Ask students to consider what contribute to a healthy food choice plan with questions such as the following:

- Why is it important to "stock" all the shelves in your own personal store?

- How can **Canada's Food Guide** help you select portions of the different types of foods?

- How does nutrition information help you select healthy foods?

- What can you do personally to address influences that affect your food choices?

- How do activity items add to a healthy lifestyle?

Have students use **I Can** statements to describe the steps they take to make healthy food choices.

- I can make healthy food choices because…

- I can use balance in the food choices I make when…

Canada's Food Guide provides information on using food labels at **https://food-guide.canada.ca/en/healthy-eating-recommendations/using-food-labels/**, including links to additional information for making informed choices about healthy and safe foods.

Provide students with **Learning Page 10: Healthy food choices are planned**. This learning page provides **food shelf charts** that students can use to create a "healthy choices only" Alberta grocery store.

Have students work in small groups to stock the Alberta "healthy choices only" grocery store. Use the photo collections they have assembled from grocery flyers or online sources for ideas. Students can also use the photo cards from **Learning Page 9**. The food shelf charts can also be reproduced on **poster paper** to provide room for groups or the class to cut and paste larger photos and illustrations.

Share student **grocery store collections** and discuss how these collections address some of the influences on food choices, such as making "healthy only" food choices available, avoiding convenience or prepackaged foods and junk food. Challenge students to also identify what may be missing from their grocery stores.

FINDING ALBERTA BEEF INFOGRAPHIC

The **Finding Alberta Beef Infographic** can provide a starting point for the creation of a student project. Ask students how they can "put the puzzle pieces together" to share their learning. Provide the blank puzzle template at the end of the **Student Learning Pages** to students. Challenge them to create their own infographic with pictures, words or phrases that illustrate their learning.
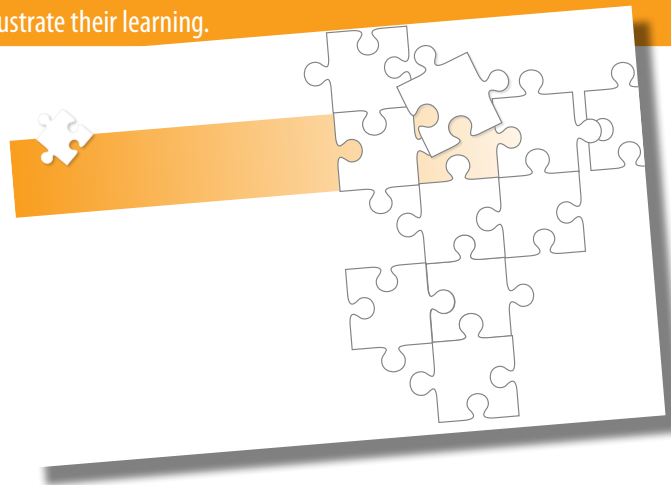
teacher background notes

Beef animals are ruminants and like all ruminants they have four compartments to their "stomach." When ruminants swallow grass or other vegetation the feed goes into the first section of the "stomach," called the rumen. Here it is broken down by billions of micro-organisms.

It is this feature that allows ruminants to digest tough cellulose and convert it to usable food. When the rumen is full, the animal will lie down to rest. During this time it will burp up portions of food from the rumen. These portions, called "cud," are brought back up into the mouth, chewed into a pulp and swallowed again. The chewed food goes on through the other three "stomachs" where it is digested. Other ruminant animals are dairy cattle, sheep, goats and bison.
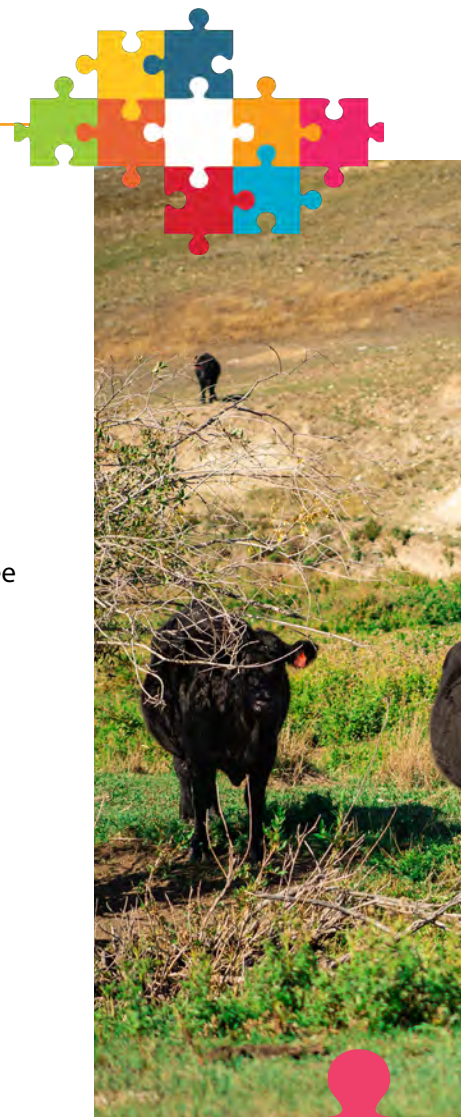
the cattle industry in Alberta

The Alberta cattle industry began in the late 1800s with English and American settlers discovering the many advantages that make Alberta an ideal location to raise cattle. These frontier producers found ways to prosper in the Canadian climate by using progressive management practices and by being early adapters of technology.

With more than five million head of cattle, Alberta is the largest cattle producing province in Canada and has the fourth largest cattle herd of all provinces or states in North America, just behind Texas, Kansas, and Nebraska.
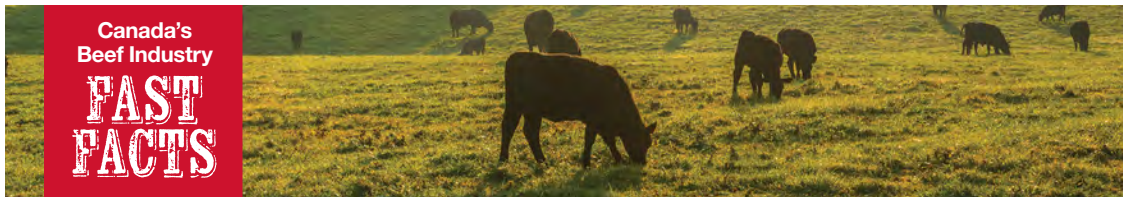
Canada's Beef Industry

FAST FACTS

June 2019

CANADIAN BEEF

59,784

Farms and Ranches with Beef Cattle
2016 Agriculture Census

11.45 million

Total Cattle and Calves Down 1% from 2018
(includes 1.4 million dairy cattle)
Statistics Canada

3.66 million

Beef Cows Down 1% from 2018
Statistics Canada

PRODUCTION

Average # of Beef Cattle per Farm
May 10, 2016

Region	# of Head
Canada	169
BC	117
Alberta	255
Sask	191
Manitoba	167
Ontario	74
Quebec	91
Atlantic	55

# of Head
Census of Agriculture

Beef Cows by Province
January 1, 2019 (beef cows = 3.66 million)
All inventories in 1,000 head

6% — 208
41% — 1,514
30% — 1,100
11% — 412
7% — 242
4% — 147
1% — 40

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

•••• Price $/cwt   — EST. Total Costs per cwt

$3.10
$2.60
$2.10
$1.60
$1.10
$0.60

90 92 94 96 98 00 02 04 06 08 10 12 14 16 18

Canfax Research

Did you know…

The average beef cow herd size in Canada is 69.
2016 Agriculture Cencus

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 Agriculture Census
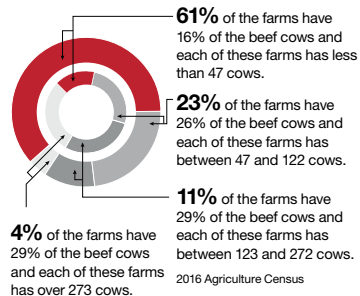
Canada fed **2.9 million cattle** in 2018 (finished to market weight) **up 1%** from 2017.
Canfax, Statistics Canada, AAFC

Western Canada finishes 76% of all fed cattle in Canada. Canfax

In 2018, Canada produced **3.08 billion pounds of beef,** up 2.7% from 2017.

3 Billion Pounds
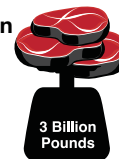
Canfax, Statistics Canada

Cattle and calf cash receipts in 2018 totaled **$9.07 billion,** steady with 2017. Statistics Canada

Beef production contributed **$18 billion to Canada's GDP** (2014-2018 average).
Canfax, Statistics Canada

Alberta is one of the world's most successful beef exporters, shipping a yearly average of $1.5 billion of beef all over the globe. Of Alberta's 2018 beef exports, 73 percent was sold to the United States, 7 percent to Hong Kong, 7 percent to Japan and 13 percent to other countries. These countries or regions included Mexico, Mainland China and South Korea.

Alberta Beef provides information and infographics on beef production at **www.albertabeef.org/consumers/industry-info**.

WHERE CANADA TRADES

Beef Exports – 2018
879 million pounds (399 million kg)

74% United States
5.1% Hong Kong/Macau
8.1% Japan
6.4% Other
3.9% Mexico
2.6% China

StatCan
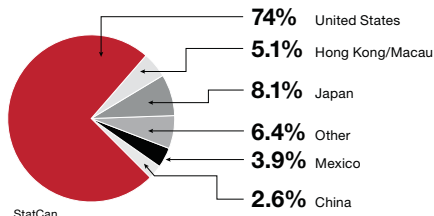
Beef Imports – 2018
391 million pounds (177 million kg)

63.2% United States
10.7% New Zealand
5.2% Uruguay
12.9% Australia
7.9% Other

StatCan
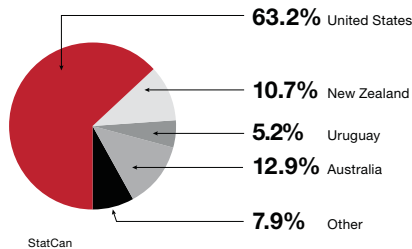
In 2018, Canada exported **44.6%** of total beef and cattle produced in Canada.
Statistics Canada, Canfax, AAFC

On a net basis (subtracting out imports), **Canada exported 30%** of its beef and cattle production in 2018.
Statistics Canada, Canfax, AAFC

Canadian beef exports were valued at **$2.75 billion** in 2018, up 14% from $2.41 billion in 2017.
Statistics Canada

CANADIAN BEEF CONSUMPTION
What are we really eating?

39.8 lbs (18.1 kg) per person yearly

Up 0.8% versus last year.
1 metric tonne = 2,204.6 lbs.
Statistics Canada, Retail weight, 2018
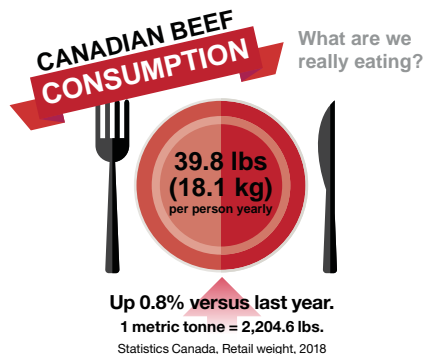
WHERE CANADA FITS

Top 12 Beef Producing Nations – 2019f

Nation	%
US	19.9%
Brazil	16.3%
EU	12.5%
China	10.5%
India	6.9%
Argentina	4.8%
Australia	3.5%
Mexico	3.2%
Pakistan	2.9%
Turkey	2.2%
Russia	2.1%
Canada	2.0%

Canada has 2% of the world's 996.4 million cattle.
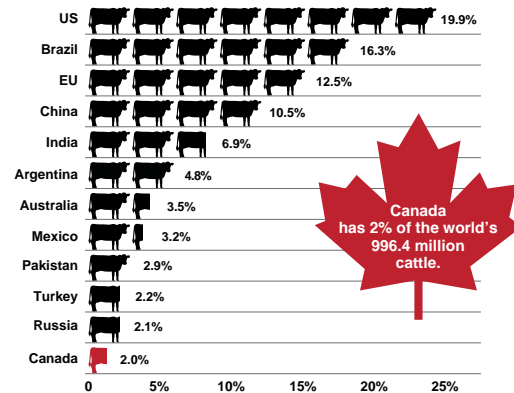
Canada produces 2% of the world's beef supply. Worldwide Beef Production is projected at 63 million metric tonnes in 2019. USDA

Top 10 Beef Exporting Nations 2019f
(excludes live slaughter exports)

Nation	%
Brazil	20.4%
India	15.7%
Australia	14.5%
US	13.6%
New Zealand	5.4%
Argentina	5.4%
Canada	4.8%
Uruguay	4.1%
EU	3.3%
Paraguay	3.3%
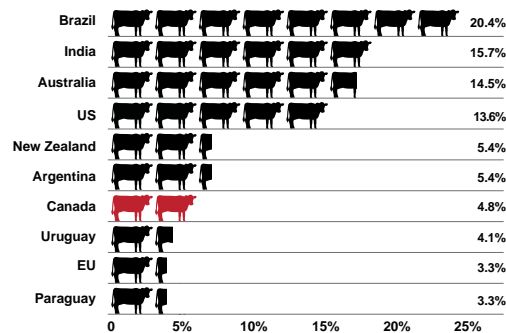
Total world exports in 2019 are projected at 10.8 million metric tonne and Canada is projected to be the 7th largest beef exporter in the world (excluding live cattle exports). USDA

Canadian Beef Consumption

■ Domestic ■ Imports
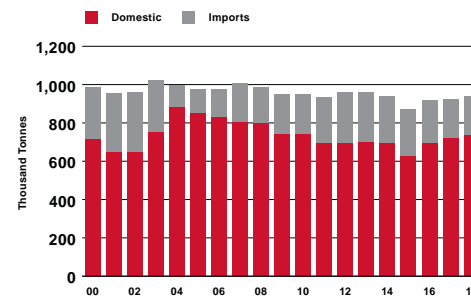
Canadian's consumed 941,280 tonnes of beef in 2018   Statistics Canada

Infographics provided by **Canada Beef**:
www.canadabeef.ca

producing beef

Beef cattle production is Alberta's largest agricultural sector, providing $4.9 billion in farm cash receipts annually or 36 percent of Alberta's farm production income.

- 46 percent (18 638) of Alberta farms have beef cattle

- Alberta cattle and calf numbers – 5 207 000 head (42 percent of Canadian total)

- Canada cattle and calves – 12 531 000

- Alberta has 1 866 000 breeding beef cows and heifers (42 percent of Canadian total)

- Alberta feeds nearly 2 000 000 cattle each year with total annual beef production of over 900 000 tonnes

- Alberta averages 93 beef cows per cattle farm

- Alberta has 21 127 243 hectares of farmland

- 30 percent of all Alberta farmland is natural land for pasture

- 10 percent of all Alberta farmland is tame or seeded pasture land

- Alberta federal and provincial inspected plants processed 2 365 000 head of cattle or roughly 74 percent of Canadian total in 2018

Infographic excerpt from Statistics Canada: *Livestock in Canada*. **www150. statcan.gc.ca/n1/ pub/11-627-m/11- 627-m2017011-eng. htm**

Alberta had more feeder beef cattle than all other provinces combined in 2016, with almost 1.5 million head.

Alberta leads in beef

Feeder beef cattle across Canada (in number of head)

B.C. (55,995)
Alta. (1,476,673)
Sask. (256,850)
Man. (132,203)
Ont. (428,943)
Que. (100,983)
N.L. (235)
P.E.I. (13,595)
N.B. (5,832)
N.S. (5,664)
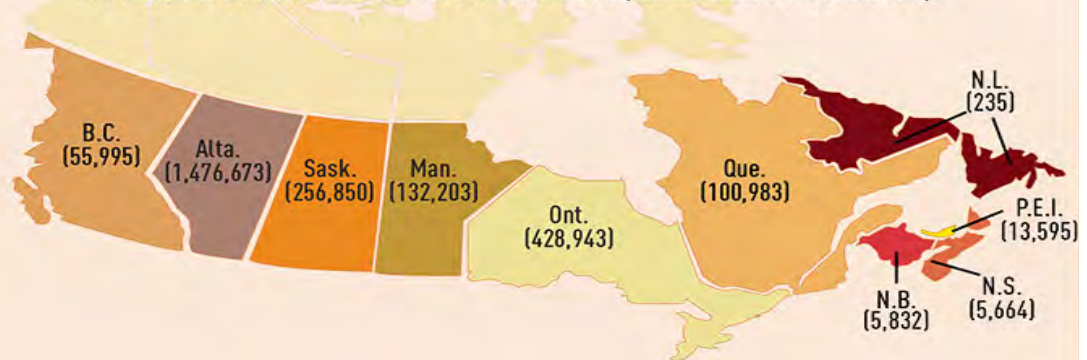
For every milk-producing cow in Canada there were 4 beef cows.
milk =

There are many different people and jobs involved in beef production. Some examples include:

- Ranchers (cow/calf operators)
- Backgrounding operators
- Feedlot operators
- Veterinarians
- Machinery dealers
- Feed and fertilizer sales persons
- Auctioneers
- Truckers
- Packing plant workers
- Meat graders, inspectors and butchers

The **Alberta Cattle Feeders Association** provides background information on the seven stages of beef cattle production at **https://cattlefeeders.ca/the-7-stages-of-beef-cattle-production/**, including descriptions of the different roles involved in each stage.

Image from Alberta Cattle Feeders Association.
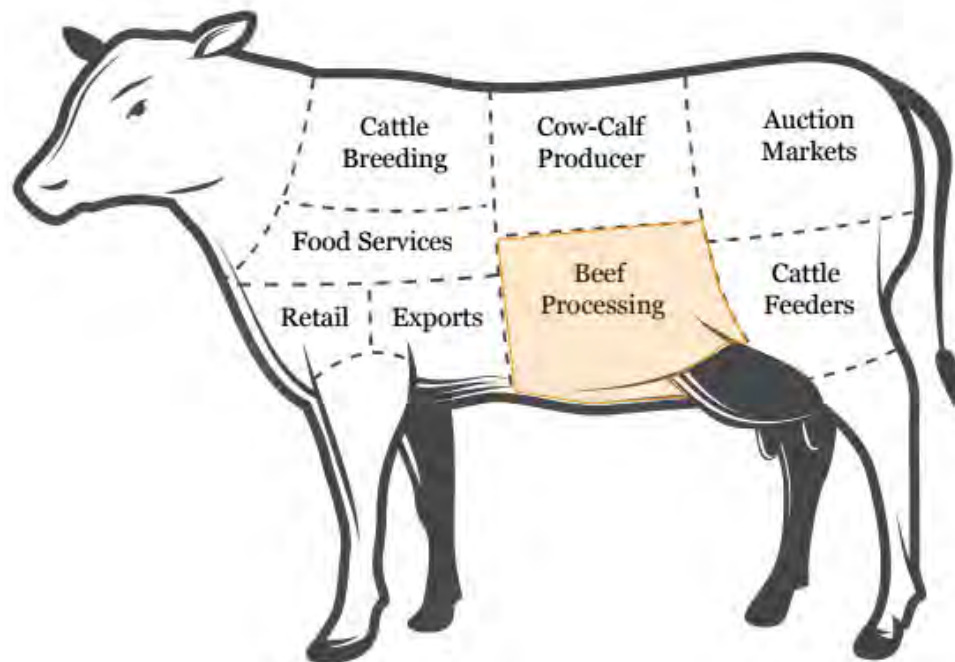
sustainability and environment

The beef production industry has a strong commitment to protection and sustainability of the environment. The beef industry uses practices for forage, grazing and beef production that can benefit the environment including maintaining plant and wildlife habitats, reducing soil erosion and protecting watersheds.

Every living organism produces greenhouse gases (GHG), but cattle produce more than some other livestock because rumen bacteria produce methane as they digest feed. Additional greenhouse gases come from manure and fossil fuel use. However, beef production in Canada accounts for only .04 percent of global greenhouse gas emissions.

Pastureland removes greenhouse gases from the air and stores them in the soil. Removing cattle from these lands would put the land at risk for conversion to other land uses that could release more GHGs.

Cultivating land can release up to 59 percent of carbon previously stored in the soil. Grasslands and pastures also store carbon, protect marginal lands from tillage and erosion, provide habitat for wildlife and promote biodiversity.

Alberta beef farmers and ranchers are committed to producing beef in an environmentally sustainable manner. Alberta Beef supports policies, programs and educational efforts that uphold this vision. They also formally recognize beef producers who have incorporated environmental protection into their management strategies.

Find the full infographic on the **Alberta Beef** website at **www.albertabeef.org/consumers/resources**.

Canada Beef provides information and resources, including videos, about cattle and the environment at **https://canadabe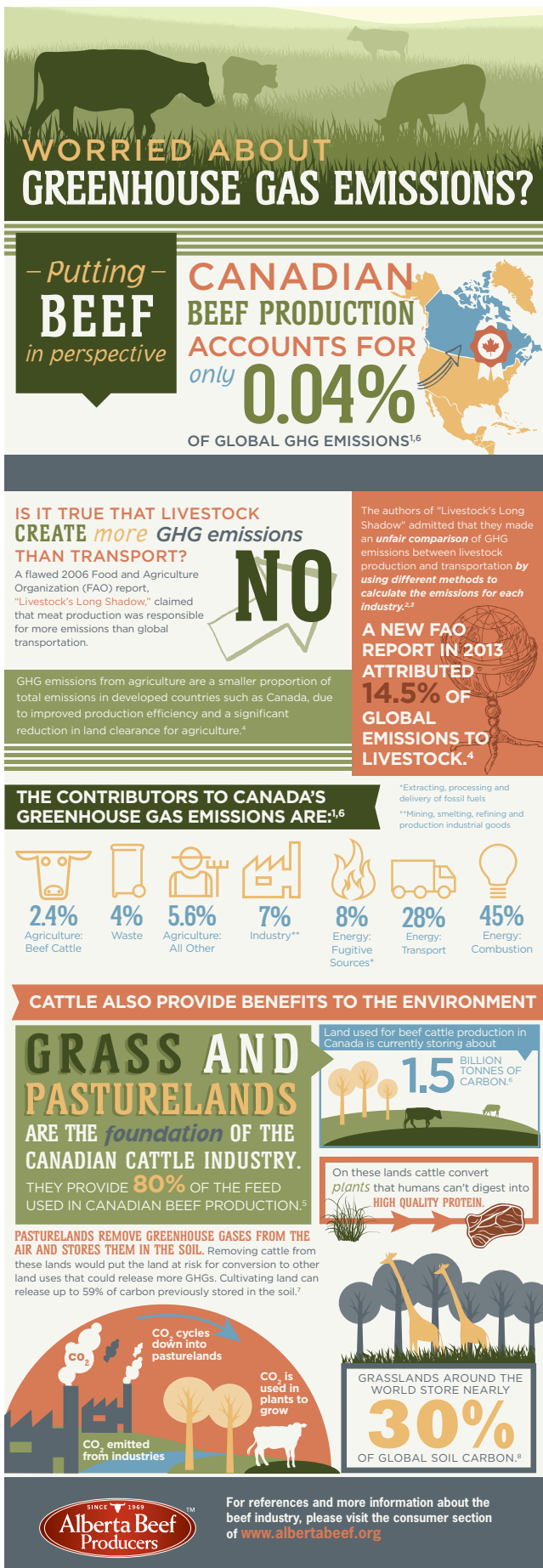ef.ca/whycanadianbeef/**. This source is suitable for teacher background. **Canada Beef** also provides an infographic that provides environmental and nutritional information about beef at **https://canadabeef.ca/wp-content/uploads/2019/10/RS9895_CB_Environment.Nutrition-Infographic-Sheet_REV.pdf**.

Canadian Cattlemen's Association provides a number of resources on environmental issues and nutrition, suitable for teacher background, at **www.cattle.ca/cca-resources/**.

WORRIED ABOUT GREENHOUSE GAS EMISSIONS?

– Putting – BEEF in perspective

CANADIAN BEEF PRODUCTION ACCOUNTS FOR only **0.04%** OF GLOBAL GHG EMISSIONS[1,6]

IS IT TRUE THAT LIVESTOCK CREATE more GHG emissions THAN TRANSPORT?

A flawed 2006 Food and Agriculture Organization (FAO) report, "Livestock's Long Shadow," claimed that meat production was responsible for more emissions than global transportation.

NO

GHG emissions from agriculture are a smaller proportion of total emissions in developed countries such as Canada, due to improved production efficiency and a significant reduction in land clearance for agriculture.[4]

The authors of "Livestock's Long Shadow" admitted that they made an **unfair comparison** of GHG emissions between livestock production and transportation **by using different methods to calculate the emissions for each industry.**[2,3]

A NEW FAO REPORT IN 2013 ATTRIBUTED 14.5% OF GLOBAL EMISSIONS TO LIVESTOCK.[4]

*Extracting, processing and delivery of fossil fuels
**Mining, smelting, refining and production industrial goods

THE CONTRIBUTORS TO CANADA'S GREENHOUSE GAS EMISSIONS ARE:[1,6]

2.4%	4%	5.6%	7%	8%	28%	45%
Agriculture: Beef Cattle	Waste	Agriculture: All Other	Industry**	Energy: Fugitive Sources*	Energy: Transport	Energy: Combustion

CATTLE ALSO PROVIDE BENEFITS TO THE ENVIRONMENT

GRASS AND PASTURELANDS ARE THE *foundation* OF THE CANADIAN CATTLE INDUSTRY. THEY PROVIDE **80%** OF THE FEED USED IN CANADIAN BEEF PRODUCTION.[5]

PASTURELANDS REMOVE GREENHOUSE GASES FROM THE AIR AND STORES THEM IN THE SOIL. Removing cattle from these lands would put the land at risk for conversion to other land uses that could release more GHGs. Cultivating land can release up to 59% of carbon previously stored in the soil.[7]

Land used for beef cattle production in Canada is currently storing about **1.5** BILLION TONNES OF CARBON.[6]

On these lands cattle convert *plants* that humans can't digest into **HIGH QUALITY PROTEIN.**

CO_2 cycles down into pasturelands

CO_2 is used in plants to grow

CO_2 emitted from industries

GRASSLANDS AROUND THE WORLD STORE NEARLY **30%** OF GLOBAL SOIL CARBON.[8]

Alberta Beef Producers — SINCE 1969

For references and more information about the beef industry, please visit the consumer section of **www.albertabeef.org**

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nutrition

Meat products contain nutrients that are essential for health. Lean meats, including beef, help you meet your needs for protein, vitamins, and minerals. **Canada's Food Guide** includes leaner meats as a protein choice in a healthy diet. Other healthy choices include grains, vegetables and fruits and milk products.

Beef is a complete protein. This means that the all essential protein building blocks, called amino acids, are found in beef.

Beef also provides a healthy source of dietary fats. Fat is an important nutrient for normal body functions and energy. Fat helps our body absorb fat-soluble vitamins such as A, D, E and K. Some fats are essential, because our body cannot make these fats. It is recommended that an adult's diet have 20 to 35 percent of total calories from fat.

Beef provides nutrients important to the body. One serving of cooked lean beef provides:

- About half of the protein requirements for a teen
- Enough vitamin B^{12} to exceed requirements
- An excellent source of zinc and niacin
- A source of iron, thiamine and riboflavin

Nutritional values of foods can be affected by different factors, including geographic location, season and the soil used to grow plants and feed to raise animals. For example, cows fed mostly on pasture in the summer produce butterfat higher in Vitamin A than in the winter.

Nutritional values can also be affected by the ways in which foods are manufactured or processed, including the use of heat, light, oxygen, enzymes or microorganisms.

Find the full infographic on the **Alberta Beef** website at **www.albertabeef.org/consumers/resources**.

The **Think Beef** website provides a series of resources, including nutritional information, infographics and recipe booklets suitable for children at **https://thinkbeef.ca/resources/**.

cattle byproducts

If appropriate for your students, you may want to share some examples of the byproducts that come from beef cattle. When discussing byproducts with students, it is also important to note that, in some cases, technology has been developed that also allows for synthetic substitutes to be used in products that traditionally contained animal byproducts.

Edible beef byproducts are products that can be consumed. The majority of edible beef byproducts contain gelatin. Gelatin is made from cartilage, tendons and bones and can be found in products like:

- Hard cheese
- Jello
- Canned meats
- Ice cream
- Gummi bears
- Marshmallows
- Mayonnaise
- Gum
- Yogurt

Variety meats are edible organs and glands of a beef animal, and can include heart, tongue, liver, kidney, tripe (stomach walls), and testicles (Rocky Mountain or Prairie Oysters). Variety meats are edible byproducts.

Inedible beef byproducts are made from the hide, fat, bones and entrails. Products from the hide can include leather boots, luggage and shoes.

Products made from fat include:

- Deodorants
- Fabric softeners
- Plastics
- Shaving cream
- Detergent
- Floor wax
- Shampoo
- Candles
- Crayons

Byproducts made from the bones include toothpaste and bone china. Byproducts made from entrails include violin strings.

Additionally, beef byproducts can be made from leftover meat portions, including pet foods.

The medical world also relies on the byproducts from cattle to produce a number of medications and treatments. Prior to the 1980s, people with diabetes relied totally on insulin supplies extracted from beef and pork pancreases.

Byproducts from cattle also assist in the treatment of anemia, allergies, parathyroid deficiencies, respiratory diseases, jaundice, rheumatoid arthritis and leukemia.