Healthy Foods from Healthy Farms (HFHF)
Des aliments sains provenant de fermes saines (ASFS)
TEACHER GUIDE (Grades 3 to 6)

GOAL:

To make connections between the food we eat and the people in our community who grow it and process it.

OBJECT OF THE ACTIVITY:

To create a healthy snack using Canada's Food Guide while learning about the farmers who grow the food and the people who process the food.

TIME:

40-60 minutes; Video - 18 minutes, Activity - 10 minutes, Discussion - 10-15 minutes.

MATERIALS:

- Fortune Teller activity sheets (FR/EN) – 1 sheet/student
- Sticker sheets (FR/EN) – 1 sheet/student
- Healthy Foods from Healthy Farms 3-Part Video (wheat, dairy, carrot); visit www.aitc.sk.ca/resources/calm
- Fortune Teller instruction video; visit www.aitc.sk.ca/resources/calm
- Needed: Canada's Food Guide; view online or download PDF at www.aitc.sk.ca/resources/calm
- Needed: 1 pair of scissors/student

PREPARATION:

1. Confirm ability to show Healthy Foods from Healthy Farms YouTube video in class.
2. Choose how you want to deliver the lesson. See options below or make up your own!
3. Optional: Encourage students to bring a snack with crackers, cheese and carrots on the learning day, or dietary restriction equivalents. (The video highlights wheat, dairy and vegetable farmers and processors). The snack can be eaten before, in between video sections or at the end of the video.

LESSON PLAN:

ACTIVATE:

1. Show students a visual of Canada's Food Guide (poster, smart board…) and ask them to identify the three sections on the plate.
2. Ask students if they know anyone who is a farmer (and what they grow/raise) or a food processor (and what foods they help make).
3. Tell students they are going to go on a journey behind the scenes of their food to meet some of the people who grow and process their food.

Agriculture in the Classroom
SASKATCHEWAN

AQUIRE:

Options for Lesson Delivery:

#1

Video Parts 1, 2 ,3 | Discuss | Activity

#2

Video Part 1 | Discuss | Video Part 2 | Discuss | Video Part 3 | Discuss | Activity

#3

Video Part 1 | Discuss | Activity | Video Part 2 | Discuss | Activity | Video Part 3 | Discuss | Activity

SUGGESTED DISCUSSION QUESTIONS:

(Teacher discussion points)

1. How do farmers look after their land, water and animals?

- Soil – conservation techniques to build organic matter in the soil (limit tillage/plowing; rotate crops), put nutrients (fertilizer/manure) when it is needed and only the amount needed by the crops.
- Water – conservation techniques to limit erosion (limit tillage/plowing); protect areas near rivers, streams and ditches.
- Animals – safety from predators (fences, barns), protection from bad weather (barns, straw for bedding), nutritious food.

2. What machinery or technology do farmers use to grow healthy crops and raise healthy animals?

- GPS (Global Positioning System) + software – identifies and provides detailed field maps for nutrient (fertilizer/manure) application, pest control application, and yield.
- Electronic transponder (Cow "FitBit") - tracks the health and milk production of individual cows.
- Robotic packer - picks up bags of vegetables and stacks them gently on pallets.
- Irrigation machine - overhead watering of carrots using a programmable rolling sprinkler system.

3. What machinery or technology do processors use to ensure food is safe and healthy?

- Pasteurization – Removes harmful bacteria in milk.
- Light meter (Near infrared) - Measures protein, fat and sugar (lactose) in milk.
- Metal detector - Removes any metal that might have gotten mixed in with the vegetables at the farm.
- Colour sorter – Identifies and removes discoloured grains.
- Robotic packer - picks up bags of vegetables and stacks them gently on pallets.

DID YOU KNOW?

Canada ranks in the top 10 countries in the world for food quality and safety[1]. The *Canadian Food Inspection Agency* regulates how food is produced and processed to ensure it is safe for us to eat and safe for the animals, plants and environment.

[1]*Global Food Security Index (2019)*

4. Where does each food from the video belong on the Canada Food Guide eat well plate?

If doing Lesson Delivery #2 or #3, this can be asked after each video segment, as to what part of the plate the farmer and processor are part of?

- Cracker/Bread (Wheat) – Whole Grain
- Cheese (Dairy)– Protein
- Carrots – Fruit and Vegetables

5. What is nutritious about the food product?

- Cracker/bread (Wheat) – carbohydrates, fibre, vitamins (Bs - niacin, thiamin, pantothenic) and minerals (manganese).
- Cheese (Dairy) – protein, vitamins (D) and minerals (calcium, potassium).
- Carrots – vitamins (A – beta-carotene, B6 – pyridoxine, K), fibre.

SUGGESTED QUESTIONS FOR FURTHER INQUIRY:

1. What surprised you about how your snack was grown or processed (and tell us too!)?

- Students can think about how they previously thought certain foods came to be on their plates and what they learned from the videos.

2. How do you think technology and safe food are connected?

- Students might be able to come up with examples of ways in which technology has and is improving food safety (refrigerators, canning, flash freezing, best before date stamps, electronic traceability of food…). Students might even have their own ideas on something that could be invented to make food safer.

3. Why do farmers look after their land, water and animals?

- Students can think about whether farmers look after their land, water and animals because they want to (enjoy their work), need to (to ensure their business is productive and profitable) and have to (regulations).
- Some students might have direct connections to farms or to the land and be able to reflect on the nature of that relationship. Farms are often shared and passed down within families. How might this impact why farmers look after their land, water and animals?

4. Why do processors care if their food is safe?

- Students can think about processors from the videos or people they know in processing. Processors want to produce safe food (pride in their work), need to (to ensure they stay in business) and have to (regulations). Do processors eat the food they process? What might happen if food from their processing facility made someone sick?

5. What is the difference between safe and healthy food?

- Safe food is free from pathogens and chemical substances that can make one sick. Healthy food, along with being safe, is also nutritious and is a combination of fruits and vegetables, whole grains and proteins. What food examples can students think of that are safe but not necessarily healthy?

Fortune Teller Activity (Grades 3 to 6)

INSTRUCTIONS:

- Tell students that they are going to make a healthy snack of fruits, vegetables, whole grains and proteins with their Fortune Teller.
- Hand out 1 Fortune Teller activity sheet to each student.
- Tell the students to cut the lower portion of the Fortune Teller paper off. Either verbally explain how to fold a Fortune Teller or show the Fortune Teller video to demonstrate how to fold it.
- Hand out one Sticker Sheet to each student.
- As a class,
  - identify what kinds of food are on the **green** (fruit/vegetable), **yellow** (whole grain), and **orange** (protein) stickers.
  - then identify the sequence of the stickers (Food, Processor, Farmer).
- Note: if you have printed this activity in black and white, for the following steps students can match the outline of the stickers to the outline of the quadrants.
- Tell the students to pick a fruit Food sticker and put it on the inside flap of Fruit quadrant on the Fortune Teller.
- Tell the students to open the Fortune Teller flap and put the adjacent Processor and Farmer stickers inside.
- Tell the students to repeat this process with another set of fruit stickers (Food, Processor and Farmer).
- Once the students have completed the fruit quadrant, tell the students to complete the rest of the Fortune Teller (Vegetable, Whole Grains, Proteins) in the same manner.
- Once the Fortune Tellers are finished, have students play their Fortune Teller with another classmate, having them pick and spell out a snack food their partner chose, to learn who processed it and who grew it.

DID YOU KNOW?

Farmers and processors in this lesson are largely from MB and SK and include those highlighted in the video.

(see farmer and processor thank you on page 8)

Video Glossary

Bran - The outer protective layer of a kernel of grain. Bran is rich in fibre, iron and vitamin Bs. Whole wheat flour contains the whole grain (endosperm, bran and germ).

Combine - A farm machine that harvests a variety of crops. It cuts the stem of the plant and feeds the plants into a threshing mechanism that separates the seed from the rest of the plant. The seeds are kept in the tank of the combine and the rest of the plant material is chopped up ejected from the back of the combine and spread out over the soil.

Cow "Fitbit"- An electronic activity monitoring necklace or bracelet that cows wear to help farmers monitor their health and milk production. Farmers can track each cow individually to know how often she is going to eat, how often she is up walking, and how much milk she is producing. If a cow is not feeling well (not eating or walking as much as she normally does), an alert is sent to the farmer so they can go check on her. The "Fitbit" also helps farmers know when the cow is going to ovulate so she can be bred (which is much more accurate than traditional visual guessing).

Endosperm - The inside of a kernel of grain. The grain is mostly comprised of endosperm and is largely carbohydrates. White flour only contains the endosperm. Whole wheat flour contains the whole grain (endosperm, bran and germ).

Forage - Plants that are cut (harvested), while they are actively growing, and fed to livestock. These can be grasses (timothy, ryegrasses, orchard), legumes (alfalfa, clovers, trefoil) and silage crops (corn, alfalfa, oats)

Germ - The embryo inside a kernel of grain. Germ is rich in polyunsaturated fats. Prod-ucts with germ have a shorter self life on account of the oil from the germ which can go rancid. Whole wheat flour contains the whole grain (endosperm, bran and germ).

Global Positioning System (GPS) - A navigation system that uses satellites to determine location. Combined with mapping technology, GPS allows farmers to implement site-specific/ precision farming. ie) Field maps can be created by combining soil nutrient tests (nitrogen , phosphorus, potassium…) and crop yields to show variability in a field. The farmer uses this map and information to be able to apply variable rates of nutrients (fertilizer/manure) to the field. The nutrients can be applied at the right time, in the right place and in the right amount.

Legume - A type of plant that can be used for human consumption (seeds – pulses like beans, peas, soybeans) or livestock feed (green plant material - forage). Most legumes are able to make their own nitrogen though a symbiotic relationship with soil bacteria. The bacteria are able to take nitrogen out of the air and turn it into a plant available form.

Minimum tillage - A soil conversation system that minimizes the cultivation of soil. Plant residue is left on the soil surface from harvest, and seeding is done into the plant stubble. Minimum tillage reduces wind and water erosion and helps build soil organic matter.

Near-infrared spectroscopy (NIR) *(dairy)* - A low-cost, rapid method for measuring the fat, protein and sugar content of milk. Near-infrared light (long wavelengths that the human eye cannot see) is passed through the milk to determine its composition. NIR spectroscopy is wide-ly used in other sectors in agriculture.

Palletize - To put goods on a pallet for transport. Pallets allow for bulk, safe manoeuvring of goods on a stable structure. The majority of agricultural produce is transported on pallets.

Pasteurization *(dairy)* - A process in which food (milk from the farm) is heated up to kill certain bacteria and deactivate certain enzymes that can cause the food to spoil. Pasteurization also extends the shelf life of food.

Retention Pond - A water holding pond that is created on a farm to reduce water loss from the land and protect natural waterways from farmland erosion.

Silage - Preserved grasses and legumes that are fed to livestock. The plants are cut in the summer and tightly packed into upright or concrete bunker silos, or baled and wrapped in plastic to eliminate oxygen. The fermented greens are fed to live-stock during winter months.

Total Mixed Ration (TMR) - A system for feeding dairy cattle based on their nutritional needs. The ration, or diet, is made up of a mixture of forages, grains, protein supplements, vitamins, and minerals. Cows are grouped according to their nutritional needs (ie not-pregnant, pregnant, lactating).

Curriculum Connections (Grades 3 to 6)

GRADE 3 OUTCOMES

Science	
ES3.2	Analyze the interdependence between soil and living things, including the importance of soil for individuals, society, and all components of the environment. [CP, DM]
PL3.2	Analyze the interdependence among plants, individuals, society, and the environment. [CP, DM, SI]
Social Studies	
RW3.1	Appraise the ways communities meet their members' needs and wants.
RW3.3	Evaluate the ways in which technologies have impacted daily life.
Health	
AP3.1	Use the understandings, skills, and confidences related to healthy foods and physical activity, one's "inner self", helpful and harmful substances, healthy family and home, safety at home, and impact of violence.
DM3.1	Demonstrate the importance of investigating information for making informed decisions related to healthy foods and physical activity, one's "inner self", helpful and harmful substances, healthy family and home, safety at home, and impact of violence.
USC3.1	Determine the role of a variety of healthy foods and physical activity on the health and development of the mind, body, and immune system.

ADDITIONAL RECOMMENDED LESSONS AND ACTIVITIES FOR GRADE 3, VISIT: www.aitc.sk.ca

GRADE 4 OUTCOMES

Health	
USC4.1	Assess what healthy eating and physical activity mean for pre/adolescence.
Science	
HC4.1	Investigate the interdependence of plants and animals, including humans, within habitats and communities. [CP, SI]
HC4.2	Analyze the structures and behaviours of plants and animals that enable them to exist in various habitats. [SI]
HC4.3	Assess the effects of natural and human activities on habitats and communities, and propose actions to maintain or restore habitats. [CP, DM]
RM4.3	Analyze how weathering, erosion, and fossils provide evidence to support human understanding of the formation of landforms on Earth. [CP, SI, TPS]
Social Studies	
RW4.1	Analyze the strategies Saskatchewan people have developed to meet the challenges presented by the natural environment.
RW4.2	Investigate the importance of agriculture to the economy and culture of Saskatchewan.
RW4.3	Assess the impact of Saskatchewan resources and technological innovations on the provincial, national, and global communities.

ADDITIONAL RECOMMENDED LESSONS AND ACTIVITIES FOR GRADE 4, VISIT: www.aitc.sk.ca

GRADE 5 OUTCOMES

Health	
USC5.1	Analyze personal eating practices.
Science	
FM5.3	FM5.3 Assess how natural and man-made forces and simple machines affect individuals, society, and the environment. [CP, DM, SI]
MC5.3	Assess how the production, use, and disposal of raw materials and manufactured products affects self, society, and the environment. [DM, SI]
WE5.3	Analyze the impact of weather on society and the environment, including technologies that help humans address weather conditions. [DM]
Social Studies	
RW5.1	Explain the importance of sustainable management of the environment to Canada's future.
RW5.2	Hypothesize about economic changes that Canada may experience in the future. d. Give examples of possible changes in Canada's principal industries (e.g., large agricultural companies replacing family farms; the importance of technological industries).

ADDITIONAL RECOMMENDED LESSONS AND ACTIVITIES FOR GRADE 5, VISIT: www.aitc.sk.ca

GRADE 6 OUTCOMES

Career Exploration	
CC6.1	Investigate various aspects of careers and their requirements.
Health	
DM6.9	Examine health opportunities and challenges to establish personal goal statements related to healthy relationships, non-curable infections, stress management, body image, safety, and health promotions.
Science	
DL6.1	Recognize, describe, and appreciate the diversity of living things in local and other ecosystems, and explore related careers. [CP, SI]
DL6.5	Assess effects of micro-organisms on past and present society, and contributions of science and technology to human understanding of microorganisms. [CP, DM, SI]
Social Studies	
DR6.2	Analyze ways in which the land affects human settlement patterns and social organization, and ways in which human habitation affects land.

ADDITIONAL RECOMMENDED LESSONS AND ACTIVITIES FOR GRADE 6, VISIT: www.aitc.sk.ca

Thank You!!!

A special thanks to our farmers and processors for welcoming us to their farms and businesses to bring you their story of *Healthy Foods from Healthy Farms* with videos, and photos for your stickers.

Vegetables	**Carrots**	**Connery's Riverdale Farm** Portage la Prairie, MB **Peak of the Market** Winnipeg, MB (Carrots and Broccoli) https://www.peakmarket.com/ (click on Crops for nutritional information on vegetables)
	Broccoli	**Robertson Valley Farm** Saskatoon, SK
	Cucumbers	**Schriemer's Family Farm** Otterburne, MB
	Tomatoes	**Robertson Valley Farm** Saskatoon, SK (Cucumbers and Tomatoes)
Fruits	**Strawberries**	**Connery's Riverdale Berry Farm** Portage la Prairie, MB **Hodgson Farms** Melfort, SK
	Saskatoons	**Prairie Berries** Keeler, SK https://vimeo.com/prairieberries (videos on growing and processing at their farm)
	Cherries	**Creekside Orchard** Melfort, SK
	Apples	**Dorenberg Orchards Ltd** Lake Country, BC https://youtu.be/6_ebhwoKtYg (Madeleine's orchard) **BC Tree Fruits Cooperative** Winfield, BC
Grains	**Wheat**	**Ellis Seeds** Wawanesa, MB **Canadian International Grains Institute** Winnipeg, MB
	Oats	**Grain Millers** Yorkton, SK **Lindgren Farms** Norquay, SK
	Wild Rice	**Northern Lights Food** La Ronge, SK https://youtu.be/pnRY3oDs9nE (video of harvest) **La Ronge Wild Rice Processing Plant** La Ronge, SK https://education.usask.ca/ccstu/units/wildriceappendixb/nosound/intro.htm
	Popcorn	**Uncle Bob's** Walsingham, ON
Proteins	**Hummus**	**Three Farmers** Midale, SK **Summer Fresh** Toronto, ON
	Cheese	**Rosser Holsteins** Rosser, MB **Saputo** Brandon, MB
	Eggs	**Siemens Farms** Rosenort, MB **Star Egg** Saskatoon, SK https://staregg.ca/egg-grading/ (mini videos of each processing step)
	Beef Jerky	**Tee Two Land and Cattle** Kelliher, SK **Harvest Meats** Yorkton, SK