Healthy Foods from Healthy Farms (HFHF)

Des aliments sains provenant de fermes saines (ASFS)

TEACHER GUIDE (Grades K-3)

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:

- Folding Plate 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.
- 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:

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?

Folding Plate Activity (Grades K to 3)

INSTRUCTIONS:

- Tell students that they are going to make a healthy snack on their folded plate with one fruit, one vegetable, one whole grain and one protein.
- Hand out one Folding Plate activity sheet to each student.
- Follow the instructions on the back of the 8.5x14 paper to create a 4-flap, folded sheet with a coloured plate on top.
- 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.
- Ask the students to pick a Fruit food sticker and put it on top of the coloured plate in the Fruit quadrant.
- Ask the students to identify the adjacent Processor sticker and put it on the inside flap of the folding plate. Then have the students put the Farmer sticker on the inside plate.
- Tell students to repeat this process with the other three quadrants to complete their healthy snack. Optional: Repeat the process with more snack foods.
- Encourage the students to trace the word Farmer on the inside plate.

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 K to 3)

KINDERGARTEN OUTCOMES

Health	
DMK.1	Establish that being curious about health and well-being is important for developing healthy habits, establishing healthy relationships, supporting safety, and exploring "self".
Science	
LTK.1	Examine observable characteristics of plants, animals, and people in their local environment.
MOK.1	Investigate observable characteristics of familiar objects and materials in their environment.
Social Studies	
RWK.2	Develop and demonstrate stewardship of the environment in daily actions, in an effort to promote balance and harmony.

ADDITIONAL RECOMMENDED LESSONS AND ACTIVITIES FOR GRADE 1, VISIT: www.aitc.sk.ca

GRADE 1 OUTCOMES

Science	
LT1.2	Analyze different ways in which plants, animals, and humans interact with various natural and constructed environments to meet their basic needs. [CP, DM, SI]
Social Studies	
DR1.3	Demonstrate awareness of humans' reliance on the natural environment to meet needs, and how location affects families in meeting needs and wants.
Health	
USC1.1	Examine healthy behaviours and opportunities and begin to determine how these behaviours and opportunities may affect personal well-being.
USC1.5	Explore the association between a healthy sense of "self" and one's positive connection with others and the environment.

ADDITIONAL RECOMMENDED LESSONS AND ACTIVITIES FOR GRADE 1, VISIT: www.aitc.sk.ca

GRADE 2 OUTCOMES

Science	
AW2.2	Assess the importance of air and water for the health and survival of living things, including self, and the environment. [CP, DM]
Social Studies	
DR2.2	Analyze the influence of the natural environment on the local community.
Health	
USC2.1	Demonstrate a basic understanding of how thoughts, feelings, and actions influence health and wellbeing.
USC2.2	Determine how healthy snacking practices influence personal health.

ADDITIONAL RECOMMENDED LESSONS AND ACTIVITIES FOR GRADE 2, VISIT: www.aitc.sk.ca

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

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