

# Healthy Foods from Healthy Farms

## TEACHER GUIDE (Gr 3-5)

### 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 new Food Guide while learning about the farmers who grow the food and the people who process the food.

### TIME:

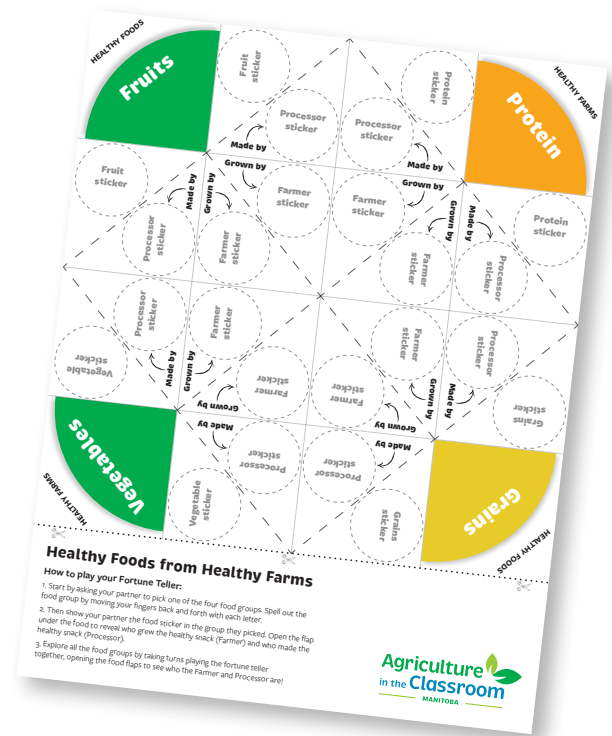
40- 60 minutes; Video-17 min, Activity-10 min, Discussion-10-15 min

### MATERIALS:

- Fortune Teller Activity sheets – 1 sheet/student
- Sticker or cut-out sheets – 1 sheet/student
- Healthy Foods from Healthy Farms 3-Part Video (wheat, dairy, carrot); see AITC-M YouTube channel.
- Fortune Teller instruction video; see AITC-M YouTube channel.
- Canada's new Food Guide mini poster
- Needed: 1 pair of scissors/student

### PREPARATION:

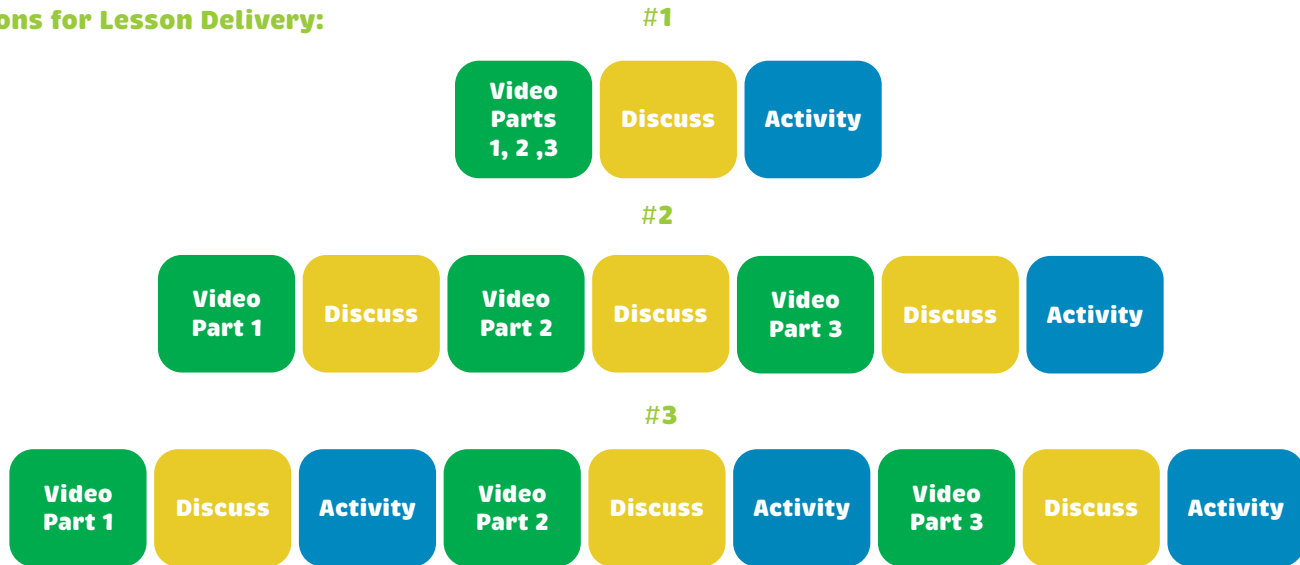
1. Confirm ability to show Healthy Foods from Healthy Farms YouTube video in class.
2. Choose how you want to deliver the lesson. See options below or make up your own!
3. Optional: Encourage students to bring a snack with crackers, cheese and carrots on the celebration day, or dietary restriction equivalents. (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 the new Canada 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.

**ACQUIRE:****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.
- 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.



Canada ranks in the top 10 countries in the world for food quality and safety<sup>1</sup>. 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.

<sup>1</sup>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?**

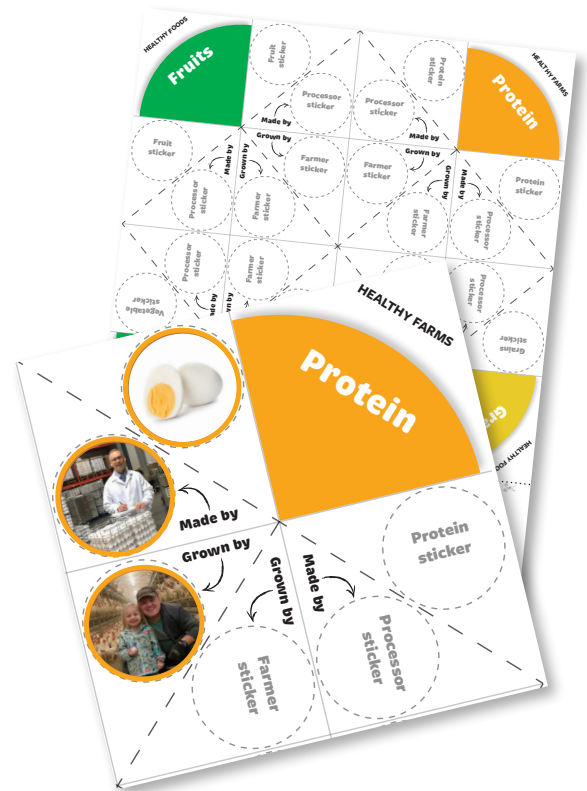
- Safe food is free from pathogens and chemical substances that can make one sick. Healthy food, along with being safe, is also nutritious and is a combination of fruits and vegetables, whole grains and proteins. What food examples can students think of that are safe but not necessarily healthy?



# Fortune Teller Activity (Gr 3+)

## 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 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 or Cut-out Sheet to each student.
- As a class,
  - identify what kinds of food are on the **green** or **dashed border** (fruit/vegetable), **yellow** or **double border** (whole grain), and **orange** or **solid border** (protein) stickers or cut-out squares.
  - then identify the sequence of the stickers/cut-out squares (Food, Processor, Farmer).
- Tell the students to pick a fruit Food sticker/cut-out square and put or glue it on the inside flap of Fruit quadrant on the Fortune Teller.
- Tell the students to open the Fortune Teller flap and put or glue the adjacent Processor and Farmer stickers/cut-out squares inside.
- Tell the students to repeat this process with another set of fruit stickers/cut-out squares (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 food group. Then pick their partner's food choice for that food group and lift the flap 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. Products with germ have a shorter shelf 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 through 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 conservation 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 widely 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 (Gr 3-5)

## GRADE 3 OUTCOMES

Science	
<b>3-1-14</b>	Describe ways plants are important to the environment. Examples: improve soil, air, and water quality; reduce erosion
<b>3-1-15</b>	Identify and describe hobbies and jobs involving plants.
<b>3-1-18</b>	Explain how humans replenish the plants they use and the consequences if plants are not replenished. Examples: after loggers harvest trees, new ones should be planted to ensure a future lumber supply
<b>3-4-08</b>	Explain the importance of understanding the characteristics of different soils. Examples: enables farmers to determine which crops can be grown in a particular area, enables gardeners to improve plant growth, enables engineers to know what types of foundations to set for structures
<b>3-4-10</b>	Describe ways to return organic matter to the soil. Examples: composting, spreading manure on fields
Social Studies	
<b>KL-018</b>	Give examples of the use of natural resources in communities studied.
<b>KE-035</b>	Give examples of work, goods, and technologies in communities studied.
<b>KE-036</b>	Give examples of how the natural environment influences work, goods, technologies, and trade in communities studied.
<b>KE-037</b>	Describe diverse ways in which communities meet their members' needs.
<b>VE-012</b>	Value the contributions individuals make to their communities

## ADDITIONAL RECOMMENDED LESSONS AND ACTIVITIES FOR GRADE 3: GO TO: [www.aitc.mb.ca/](http://www.aitc.mb.ca/)

- **MANITOBA SOIL EXPLORATION: Digging deep into how soil is formed** – a series of worksheets
- **POTATO POWER! EXPLORING THE WORLD OF POTATOES** – GRADE 3 Teacher Guide
- **FARM HELP WANTED** – Free on Teachers Pay Teachers (created by MB teacher)

## GRADE 4 OUTCOMES

Health	
<b>K.5.4.C.1a</b>	Demonstrate an understanding of food groups, serving sizes and serving numbers that support good health.
Science	
<b>4-1-02</b>	Recognize that each plant and animal depends on a specific habitat to meet its needs.
<b>4-1-03</b>	Identify the components of an animal habitat. Include: food, water, living space, cover/shelter.
<b>4-1-10</b>	Recognize that the food chain is a system in which some of the energy from the Sun is transferred eventually to animals.
<b>4-1-11</b>	Construct food chains and food webs, and classify organisms according to their roles. Include: producer, consumer, herbivore, omnivore, carnivore, predator, prey, scavenger
<b>4-1-16</b>	Describe how specific technological developments have enabled humans to increase their knowledge about plant and animal populations.
<b>4-4-12</b>	Investigate and describe ways in which soil erosion is controlled or minimized in their community and in communities around the world. Examples: windbreaks, retaining walls, terracing, cover crops, reforestation
<b>4-4-14</b>	Describe effects of wind, water, and ice on the landscape. Examples: ice breaking rocks into soil, wind shaping sand dunes, waves polishing rocks on the shoreline
<b>4-4-15</b>	Identify natural phenomena and human activities that cause significant changes in the landscape. Examples: floods, avalanches, mud slides, hydroelectric dams, clearing land for agriculture, clear-cut forestry, forest fires
Social Studies	
<b>4-KL-023</b>	Identify issues related to environmental stewardship and sustainability in Manitoba.

**ADDITIONAL RECOMMENDED LESSONS AND ACTIVITIES FOR GRADE 4:** GO TO: [www.aitc.mb.ca/](http://www.aitc.mb.ca/)

- **GOT MILK? EXPLORING MANITOBA'S DAIRY INDUSTRY** – GRADE 4 Teacher Guide
- **WORD SEARCH** – Agriculture Jobs
- **FORTUNE TELLER** – Agriculture Careers
- **FARM HELP WANTED** – Free on Teachers Pay Teachers (created by a MB teacher)

**GRADE 5 OUTCOMES**

Science	
<b>5-1-01</b>	Use appropriate vocabulary related to their investigations of human health. Include: nutri-ents; carbohydrates; proteins; fats; vitamins; minerals; Canada's Food Guide to Healthy Eating; food group; serving size; terms related to the digestive, skeletal, muscular, nervous, integu-mentory, respiratory, and circulatory systems
<b>5-1-03</b>	Describe the types of nutrients in foods and their function in maintaining a healthy body. Include: carbohydrates, proteins, fats, vitamins, minerals
<b>5-2-14</b>	Research and describe how raw materials are transformed into useful products. Examples: food processing, oil refining, paper milling, plastic moulding, gold smelting
<b>5-4-02</b>	Describe how weather conditions may affect the activities of humans and other ani-mals. Examples: heavy rainfall may cause roads to wash out; stormy conditions may prevent a space shuttle launching; in excessive heat, cattle may produce less milk

**ADDITIONAL RECOMMENDED LESSONS AND ACTIVITIES FOR GRADE 5:** GO TO: [www.aitc.mb.ca/](http://www.aitc.mb.ca/)

- **EAT WELL: Exploring Canada's Food Guide**
- **FROM WHEAT TO BREAD** - Teacher guide
- **LET'S TALK EGGS! EXPLORING MANITOBA'S EGG INDUSTRY** – GRADE 5 Teacher Guide
- **SIMPLE MACHINES ARE EVERYWHERE ON THE FARM** – worksheet
- **AGRICULTURE REPORTER** – Free on Teachers Pay Teachers

# 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/cut-out squares.

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