



TEACHER'S GUIDE

Just what is biosecurity and biotechnology? How much water is consumed by our animals and plants? Are growth hormones given to animals? What sounds do pigs make? How is technology used on farms today? What must farmers do to keep food safe? This resource provides answers for these and many other questions related to farming and agriculture.

Farming happens 365 days a year and one Canadian farmer feeds over 120 people. Just like humans, plants and animals require nutrients and water in order to be healthy. Farmers work hard to protect the environment for their plants and animals and to sustain it for future generations. Farmers provide healthy environments for their plants and animals in order to produce high quality food for people. Food produced on farms is also used to feed animals and for the generation of other food products, by-products and bioproducts. By using Virtual Farm Tours, students get the opportunity to visit 23 real and fascinating Canadian farms without leaving the classroom.

Virtual Farm Tours can be used across all grade levels. It can also be used for a family fun night at the computer to encourage families to learn more about the production of the food they eat and use in their daily lives. Young children will enjoy the animal sounds and can investigate and compare the basic needs of humans and other living things. Older students can be challenged to complete in-depth exploration of all aspects of farming and agriculture. The following is a list of some of the many topics explored in the Virtual Farm Tours:

- Animal and plant welfare
- Agriculture's place in the global economy
- Biodiversity
- Bioproducts and by-products created by agriculture
- Biotechnology
- Careers
- Conventional and organic farming
- Farming practices and the environment
- Food and nutrition for plants and animals and the relationship to humans
- Identification and classification of plants and animals
- Life cycle
- On-farm food safety
- Technology on the farm
- Water usage and protection



www.virtualfarmtours.ca
visitesvirtuellesdesfermes.ca

CURRICULUM CONNECTIONS

This resource is connected to both the Ontario Elementary and Secondary School Curriculum in many subject areas. Links to Health and Physical Education, 2010 (revised); Science and Technology, 2007 (revised); Social Studies, Grades 1-6; History and Geography Grades 7-8, 2004 (revised) may be made in the Elementary School Curriculum. In the Secondary Curriculum, links may be made to Technological Education, 2009 (revised); Science, 2008 (revised); Social Sciences and Humanities, 1999 and 2000; Business Studies, 2006 (revised); Guidance and Career Education, 2006 (revised); and Canadian and World Studies, 2005 (revised).

Teachers are also encouraged to refer to “*Acting Today, Shaping Tomorrow: A Policy Framework for Environmental Education in Ontario Schools*” while using Virtual Farm Tours. Teachers may wish to integrate expectations from Language, Mathematics, and/or the Arts curriculum across all grade levels. For example, students could watch one of the videos in any of the farm tours and prepare a written, oral or graphic presentation about what they learned.

Elementary Curriculum Connections

Science and Technology

Understanding Life Systems:

Grade 1 – Needs and Characteristics of Living Things

Grade 2 – Growth and Changes in Animals

Grade 3 – Growth and Changes in Plants

Grade 4 – Habitats and Communities

Grade 6 – Biodiversity

Grade 7 – Interactions in the Environment

Understanding Earth and Space Systems:

Grade 1 – Daily and Seasonal Changes

Grade 2 – Air and Water in the Environment

Grade 3 – Soils in the Environment

Grade 5 – Conservation of Energy and Resources

Grade 8 – Water Systems

Social Studies

Canada and World Connections:

Grade 3 – Urban and Rural Communities

Grade 6 – Canada’s Links to the World

Secondary Curriculum Connections

Introduction to Business, Grade 9 or 10 Open

Functions of a Business

Entrepreneurship

Business Fundamentals

Entrepreneurship: The Enterprising Person, Grade 11, Open

Entrepreneurship and the Enterprising Person

International Business Fundamentals, Grade 12, University/College

Business Trade and the Economy

The Global Environment for Business

International Business Fundamentals, Grade 12, Workplace

Canada in the Global Marketplace

Entrepreneurship, Grade 11, College

Ideas and Opportunities for New Ventures

Biology, Grade 11, University

Plants: Anatomy, Growth and Function

Evolution

Diversity of Living Things

Biology, Grade 11, College

Microbiology, Genetics

Plants in the Natural Environment

Biology, Grade 12, University

Molecular Genetics

Environmental Science, Grade 11, University/College

Sustainable Agriculture and Forestry

Food and Nutrition, Grade 9 or 10, Open

Self and others

Personal and Social Responsibilities

Diversity, Interdependence, and Global Connections

Social Science Skills

Food and Nutrition Sciences, Grade 12, University/College

Diversity, Interdependence and Global Connections

Green Industries, Grade 11 and 12 University/College and Workplace

Technology, The Environment and Society

Green Industries Fundamentals

Physical Geography: Patterns, Processes and Interactions, Grade 11, University/College

Human-Environment Interactions



Virtual Farm Tours

This Teacher's Guide includes:

1. *General questions* – are provided to stimulate interest and agricultural awareness. Use these as a springboard for further investigation and discussion.
2. *Curriculum Connections* – examples of connections to specific Ontario curriculum have been provided along with suggested classroom activities.

HOW TO USE THIS RESOURCE:

Virtual Farm Tours is available as a DVD or online at www.virtualfarmtours.ca or www.visitesvirtuellesdesfermes.ca

The Tours

Each Canadian farm depicted in the tours is a real and working farm – and is the home to the family you will meet in the video clips. At the beginning of each tour, you can click to watch videos or check out the farm dictionary to understand farm terminology. As you visit each farm, you will see question marks at various farm locations. By clicking on the question marks, you will get more information on that part of the farm.



GENERAL QUESTIONS



The Beef Cattle Farm

This tour includes tours to both a Beef Feedlot and a Cow/Calf Farm.

- Why are ear tags used in cattle?
- What do farmers provide to keep their herds healthy and safe?
- Why can cattle, like sheep and goats, eat food that would not be suitable for human consumption?
- What is a feedlot and what do cows eat at this farm?
- Why do farmers have a responsibility to manage manure? How is manure used on the farm?

The Chicken Farm

- Why do most Canadian chickens live in barns?
- Why do many farmers have generators for their farms?
- What makes up more than half of a chicken's body weight?
- What happens when a chicken gets sick? When can the chicken be used for food after it has had medication?
- What do chickens eat?

The Dairy Farm

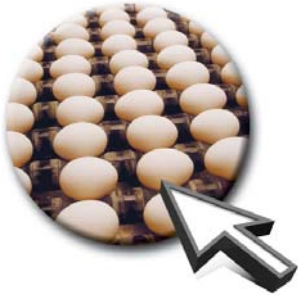
This tour includes tours to two types of dairy farms – A Tie Stall farm and a Free Stall farm

- How is the care of the animals affected by the use of tie-stalls or free-stalls?
- About 30% of Canadian agricultural land is too hilly, rocky, cold or wet but can support grazing. Why is grazing good for the land?
- What is Herd Health all about?
- Explain the life cycle of dairy cows.
- What is the most popular dairy breed in Canada? Describe their appearance.



The Deer/Elk Farm

- Why do farmers raise elk?
- What is velvet, and why is it harvested?
- Some animals have signals in case of danger. What signals does the White Tail deer use?
- Compare the gestation period of the elk and deer.
- Listen to the elk bugle. What does it sound like?



The Egg Farm

You will view three types of egg farms: conventional, free range and free run.

- What is the difference between these three types of egg farming?
- Is there a nutritional difference between brown-shelled and white-shelled eggs?
- How long do the lights stay on in the barn and why?
- How is technology used on these egg farms?
- What are omega 3 eggs?
- Explain the stages of egg production.



The Fruit Farm

- What is pollination and why is it so necessary on a fruit farm?
- Why must farmers prune their trees and thin their fruit?
- Why have farmers found it necessary to use methods of crop protection? What are some of these methods?
- Why must fruit be handled carefully during harvesting?
- What is the difference between conventional and organic farming?



The Goat Farm

You will tour two types of goat farms: market goat and milking goat.

- For what purposes are goats raised?
- What makes goats easier to raise than some other animals?
- On a worldwide basis, which do people drink more of: goat milk or cow's milk?
- What is the most frequently consumed meat in the world?
- How are goats similar to deer?



The Grain Farm

- What are grains and how are they used by farmers and consumers?
- What crops may be used to make biodiesel?
- Why should crop rotation be practiced when growing crops?
- Why do farmers create buffer strips near bodies of water?
- Why do plants need fertilizer? How do farmers know how much fertilizer to use?



The Greenhouse

- Why are greenhouses used in Ontario?
- How is technology used in the greenhouse?
- What are the advantages of hydroponic production?
- Why is water so important to a greenhouse?
- How do greenhouse vegetables get from the greenhouse to markets across North America?



The Pig Farm

Tour two types of pig farms: farrowing and market hog.

- What does Farmer John do to protect his newborn piglets?
- How old are pigs when they are ready for market? How does this compare with beef, veal, chicken and turkey?
- Colostrum is the first milk a mother produces after giving birth. Why is this so important to young animals?
- What is a nutrient management plan?
- Manure is what is left over after digestion. Why is manure from mammals smelly?



Ratite - Ostrich, Emu and Rhea

- What products come from the ostrich, rhea and emu?
- What do you know about the history of ostriches, emus or rheas?
- What do these ratites eat?
- How do they protect themselves?
- Identify three fun facts about any type of ratite.



The Sheep Farm

- For what products are sheep raised?
- What is lanolin?
- Why do young lambs often have their tails shortened?
- View the videos of the farmer shearing the sheep and a lamb being born. Write a report about either.
- How do farmers protect sheep from predators?



The Turkey Farm

- What is a biosecurity program and why is it so important in farming?
- Can turkey farmers in Canada raise as many turkeys as they want? Explain.
- Turkeys live in environmentally-controlled barns. What does this mean?
- What do farmers do to protect poults (young turkeys) from other turkeys?
- Can turkeys be given hormones?



The Veal Farm

Tour two types of veal farms: milk fed and grain fed.

- What is veal?
- What are the differences between grain-fed veal and milk-fed veal calves?
- What are the advantages and disadvantages of veal calves being raised in group housing?
- What is milk replacer?
- Why are electronic ear tags used on the calves?



The Vegetable Farm

- What are examples of vegetable crops that grow on plants above the ground; under the ground?
- How are farmers protecting their sources of water?
- How has GPS technology helped farmers?
- What best management practices do today's farmers use to protect their crops? Explain two methods of crop protection.
- Give two examples of new vegetable varieties created by plant breeding.

Suggested Student Activities - Elementary

Needs of Living Things: Animals and Plants (Grades 1-3)

- Create a picture wall to show that humans and other living things have requirements for air, water, food, warmth and space. View some of the farm tours together with the class to illustrate some of these needs.
- Farmers raise many different animals for food. Arrange students into small groups and have each group watch an animal farm tour to learn about the care of that animal. Students prepare a collage, write a short story, or do an article for their local newspaper, which explains the “how’s” and “why’s” of animal care.
- Plants need light, air, water, soil and nutrients to grow. Students plant seeds (e.g., tomato, lettuce, beans, beets and radishes) and track their observations of the growth. (Optional: Have students plant a second group of plants, which are planted in poor soil, do not get the proper nutrients, do not get enough water and/or do not get enough light.) Describe the basic needs of plants. How are a plant’s needs met in a greenhouse?

We Are All Connected (Grade 4)

- Watch the farm tour on greenhouses. Individually, in small groups or as a class, build a greenhouse. Describe what takes place in this particular habitat. Explain hydroponics.
- Have students watch one of the following videos: beef cattle, dairy cattle, goat, elk and deer, or sheep to discover what an herbivore eats. Research other sources to find out what the difference is between herbivores and carnivores. Select one animal and draw the food chain. Where do humans fit?
- What factors do farmers need to consider when setting up the environment (habitat) for their animals or plants?

Harnessing Our Natural Resources (Grade 5)

- Students view the free run egg video. Luke and Sandra are using solar energy on their farm. How does this benefit their farm? Invite students to find articles in newspapers, magazines or online to discover how 21st century farmers are harnessing solar and wind energy to support their farming operation.

Feeding the World (Grade 6)

- Farming in Canada is linked to markets in other parts of the world. View the grain farm tour. Explain how the grain market impacts on the Ontario/Canadian farmer.
- Define biodiversity. Thousands of products come from plants and animals. What benefits do humans have from biodiversity?

Best Practices (Grade 8)

- Seventy percent of all the earth’s surface is covered in water, but only 2.5% of that is fresh water. Only about .5% of the fresh water is available for consumption. One strategy farmers use to protect water supplies is a nutrient management plan. How does this help? View the tours to determine other farm practices, which help maintain water quality and supply.

General Activities:

“Farm-ology”

Invite students to create a word wall, a crossword puzzle, and/or design a word game.

Suggested terms include the following: biodiesel, biodiversity, buffer strips, conventional farming, crop protection, crop rotation, ear tags, fertilizer, free range egg farm, free run egg farm, free stalls, GPS technology, grains, grazing, greenhouse, harvest, Herd Health Program, hydroponics, lanolin, nutrient management plan, omnivores, organic farming, pollination, poults, ratites, tender fruit, tie stalls, and velvet (deer/elk farm tour).

Virtual Pizza

Invite students to “visit” several *Virtual Farm Tours*. After their tours, students create a “Virtual Pizza” using food grown/produced in Ontario.

“A Day in the Life of a Farmer”

Students select one of the farm tours to view and then writes a story explaining what is involved in a career as a (specify name/type of) farmer.

Ontario Agriculture

After viewing a variety of the *Virtual Farm Tours*, students discuss what they have discovered about farming in Ontario. Record the information on chart paper. Invite students to create a media presentation (e.g., pictograph or collage; poster; ad for radio, T.V., magazine, or newspaper; article for school or local newspaper; display for school or local shopping centre, etc.) using the information discussed to depict Ontario agriculture.

Farms are Ecosystems

After viewing several of the *Virtual Farm Tours*, select one. Using examples from the farm tour explain how it has become its own ecosystem.

Suggested Student Activities – Secondary

Topics: Biodiversity; conventional and organic farming; farming practices and the environment; water usage and protection

Subjects: Biology, Environmental Science, Green Industries, Physical Geography

- Certain agricultural practices may have an impact on the environment. What practices have farmers put in place today to protect biodiversity and the environment?
- Investigate the difference between organic and conventional farming. Where possible, invite organic and conventional farmers to share their practices with the students. Create a chart with definitions for sustainable agriculture terms such as cover crops, EFP (environmental farm plan), etc.
- Explain why stewardship and sustainability are partners. Discuss the implications for agriculture and the environment.

Topics: Food and nutrition for plants and animals and the relationship to humans; on-farm food safety

Subjects: Food and Nutrition, Food and Nutrition Sciences

- In small groups, students review the nutritional requirements of Canada's Food Guide. Note the needs of humans at various ages. Students create a chart with the four food groups as headings, and list where the products found in the farm tours fit into Canada's Food Guide? Using three of the farm tours, make a comparison of the changes in nutritional requirements of animals as they grow.
- Using the vegetable farm tour and the greenhouse farm tour, describe how to identify fresh, ripe produce.
- In pairs, students select a food, e.g. eggs. Have them investigate all the uses for that food in food products sold.
- Crop protection has helped save up to 40 percent of all crops from insects, weeds, and diseases. However, the use of crop protection products is a concern to some consumers. Examine this and other food related issues. The student will make a presentation to class on his/her topic.
- Each student would be assigned an appropriate farm tour. Review the tour to determine what steps the farmer takes to make certain that the food supply is safe. Prepare an article to share with other students.
- Identify the policies and regulations that are used to protect food at the farm level.

Topics: Agriculture's place in the global economy; technology on the farm

Subjects: Introduction to Business, International Business Fundamentals, Entrepreneurship

- View one of the videos to determine how the farmer has utilized the "4 P's" (product, price, place and promotion) to get his product to market.
- View the Greenhouse or Vegetable farm videos and design an advertisement to assist the farmer with the marketing of his/her products.
- Owning and operating a farm is an example of entrepreneurship. Examine the Ostrich Farm Tour or the Vegetable Farm Tour to determine how these farmers have expanded their market.
- Farmers have used technology to improve production methods. The use of GPS technology is just one example. Identify at least five other examples of technology and determine the skill set which would be needed to operate this technology.
- What is supply management, and how does it affect the farmer and the consumer? Which of these farms does supply management regulate? Investigate other products that have similar supply and demand requirements.

Topics: Bioproducts and by-products created by agriculture; biotechnology and genetic engineering

Subjects: Entrepreneurship, International Business Fundamentals, Biology, Food and Nutrition Sciences

- The production of Omega 3 eggs is an example of changes to farm products to meet changing consumer demand, health concerns and renewable energy. Identify other food products and bioproducts that have been developed, and the need that they are meeting. What are the impacts on our society, our environment, and our economy? What is the role of biotechnology?
- From the tours, identify examples where biotechnology is used.





Virtual Farm Tours



For more information on farming in Canada visit the websites below:



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