



Teacher's TOOL KIT...



Food & Farming Resources



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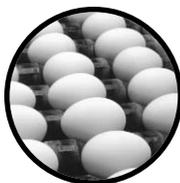
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Who to Call About Farming and Food



TOPIC	AGENCY	CONTACT INFORMATION
Agriculture in General	Ontario Ministry of Agriculture, Food and Rural Affairs	(888) 466-2372 www.omafr.gov.on.ca
	Ontario Federation of Agriculture	(800) 668-3276 www.ofa.on.ca
	Agriculture & Agri-Food Canada	(613) 759-1000 www.agr.gc.ca
Aquaculture	Canadian Aquaculture Industry Alliance	(613) 239-0612 www.aquaculture.ca
Beef Cattle	Ontario Cattlemen's Association	(519) 824-0334 www.cattle.guelph.on.ca
Broiler Chickens	Chicken Farmers of Ontario	(905) 637-0025 www.cfo.on.ca
Crops, Pesticides	AGCare, Coalition of Crop / Horticulture Growers	(519) 837-1326 www.agcare.org
Dairy	Dairy Farmers of Ontario	(905) 821-8970 www.milk.org
Deer and Elk	Ontario Deer and Elk Farmers Association	(905) 957-2497 www.ontariodeerelkfarmers.com
Educational Resources	Ontario Agri-Food Education (OAFE)	(905) 878-1510 www.oafe.org
Eggs	Ontario Egg Producers	(905) 858-9790 www.eggsite.com
Farm Animal Welfare	Ontario Farm Animal Council (OFAC)	(519) 837-1326 www.ofac.org
Food Safety	Food Safety Network	(866) 503-7638 www.foodsafetynetwork.ca
Goats	Ontario Goat Breeders Association	(866) 311-6422 www.ogba.ca
Pigs	Ontario Pork	(519) 767-4600 www.ontariopork.on.ca
Professionals in Agriculture	Ontario Institute of Agrologists	(519) 826-4226 www.oia.on.ca
Sheep	Ontario Sheep Marketing Association	(519) 836-0043 www.ontariosheep.org
Turkey	Ontario Turkey Producers' Marketing Board	(519) 748-9636 www.ont-turkey.on.ca
Veal	Ontario Veal Association	(519) 824-2942 www.ontarioveal.on.ca

Agri-Food Facts

DID YOU KNOW...

The Farms

- ✪ There are nearly 60,000 farms in Ontario and each farmer produces enough food to feed 120 people for a year!
- ✪ Today's farms are larger than in the past, but are still operated with the same core values as farm families work together.
- ✪ Farmers make up 2.4% of all Canadians. In Ontario, farmers make up only 1.6% of the province's total population. (Stats Canada, 2001)
- ✪ Over 39% of farmers in Ontario use computers regularly to operate their businesses.

The Products

- ✪ More than 200 commodities are produced in Ontario, including fruits, vegetables, livestock, dairy, poultry, grains and oilseeds.
- ✪ Agriculture is more than food to eat. Cloth and textiles begin in the barnyard as wool and in the field with hemp. Corn is processed into road de-icers, windshield washer fluid, ethanol fuel, soap, toothpaste, paint, varnish and sparkplugs to name a few.
- ✪ Growing flowers and ornamental plants - from roses to poinsettias - in greenhouses is a thriving industry in Ontario. In 2003, the value of greenhouse plant production was approximately \$950 million.

The Environment

- ✪ Canada has a rich land base with 168 million acres of farmland: 2/3 suitable for growing crops and 1/3 suitable only for grazing livestock.
- ✪ Over 26,000 Ontario farmers have completed Environmental Farm Plans since 1993.
- ✪ Ontario farmers must be trained and certified to purchase and use pesticides under Ontario's Pesticides Act - they have reduced their use of pesticides by over 52% since 1983.

The Economy

- ✪ Ontario's agri-food industry contributes more than \$30 billion annually to the provincial economy, and employs more than 650,000 people.
- ✪ In 2005, Canadians will spend 10.6% of disposable income on food. In Canada, we have one of the lowest food costs in the world.
- ✪ Approximately 1,700 food and beverage processors are located in Ontario - almost half of all food and beverage processors in Canada.
- ✪ Canadian production of turkey, chicken, eggs, and milk is run under a system of supply management. This quota system ensures that Ontario's farmers produce the required volume. Supply management balances supply with demand and prevents overproduction, flooded markets and depressed prices for farmers. It allows production in Ontario to remain a sustainable industry that is profitable for farmers.
- ✪ Ontario leads the country in agri-food exports. In 2003, we shipped \$8.4 billion in agri-food products around the world. Exports to the U.S. totaled \$7.2 billion in 2003.

Commodity Group	Exports	Imports	Balance
Live Animals	301,970,000	34,076,000	267,894,000
Red Meats	896,477,000	530,373,000	366,104,000
Fish and products	90,221,000	634,216,000	-543,996,000
Poultry and eggs	167,008,000	397,927,000	-230,918,000
Dairy Products	153,126,000	308,145,000	-155,020,000
Other Animal Products	313,565,000	228,399,000	85,165,000
TOTAL	1,922,367,000	2,133,136,000	-210,771,000

Sources: Ontario Ministry of Agriculture & Food and Stats Canada, Census of Agriculture



Agriculture and the Environment

Farmers have always been practicing conservationists – whether they are working to control soil erosion, or recycling plant and animal wastes. To ensure the sustainability of farming for future generations, farmers have developed numerous proactive initiatives to protect and improve the environment. These are a few of those initiatives:

Environmental Farm Plans

Protection of the environment, in particular the protection of the nation's water quality, is important to the agriculture and food sector. Animals produce manure, which is spread on the land to grow crops. Animals eat the crops, and the cycle continues. A farmer's goal is to manage that cycle responsibly and match nutrients to their crop requirements. Farmers and other members of the agriculture and food industry are committed to protecting the environment and to being good neighbours and citizens. Many farmers in Ontario have implemented environmental farm plans. The Ontario Farm Environmental Coalition, which is made up of farm groups, formed this plan to help ensure healthy water quality, soil and nutrient management. The plan helps the farmer identify areas of the farm operation that benefits the environment and where changes may be required. There are also environmental laws and regulations in place which farmers must obey.

Responsible Use of Pesticides

Throughout the world, billions of dollars worth of foodstuffs are lost each year to pests, through reduced productivity, contamination or direct consumption of the product by the pest. Severe infestations of some pests can result in the complete loss of a crop or death of animals. In most cases, though, pests damage a portion of the crops, reducing yields and/or product quality. Without some form of pest control, these losses would be even greater and could result in shortages of some types of foods and higher prices to the consumer. Furthermore, without pest control, the contamination of crop products caused by some pests could pose a hazard to the health of humans or animals. When necessary, farmers carefully apply pesticides on their land at regulated concentrations. In Ontario, farmers requested and helped develop the Grower Pesticide Safety Course and Certification Program to learn about the safe handling and application of agricultural chemicals. Certification is now mandatory and is required to buy pesticides or apply them to land.



Integrated Pest Management (IPM)

A system of managing pests (weeds, insects, disease, fungus, nematodes, rodents) that involves more than one control method – mechanical (e.g. tillage) cultural (e.g. using certified seed), biological (e.g. use of a pest's natural enemies), or chemical (e.g. pesticides) – in a program that is both economically and environmentally sound.

Reduced, Conservation or No-till farming

Reducing or eliminating tillage minimizes soil disturbance and maintains as much crop residue cover as possible. This leads to better protection of soil from wind or water erosion, less fuel consumption, and better carbon sequestration.

Source: www.agcare.org



Biotechnology

Biotechnology:

- 1) bio = life, technology = practical application of knowledge
- 2) the application of science and engineering in the direct and indirect use of living organisms, or parts or products of living organisms, in their natural or modified forms (e.g. using micro organisms to make wine or cheese)

So what is the difference between genetic engineering and biotechnology?

The popular press usually uses these terms interchangeably, but in fact, genetic engineering is just one kind of biotechnology. Biotechnology is the application to industry of organisms and biological substances. Some common products of biotechnology are yogurt, cheese, wine, and beer. These food products are made with the help of bacteria or yeast which convert milk, grape juice and barley hops into something we consider more desirable.

Genetic engineering on the other hand, refers to the alteration of an organism's genetic make-up with the addition or removal of specific genes. For example, genes from one plant can be inserted into another. The result of the process is what is called a "transgenic" or "genetically modified organism" (GMO). Some GMO products include crops genetically engineered for insect, pesticide, or disease resistance - which provides farmers with another tool for more environmentally friendly practices - and tomatoes that ripen more slowly to lengthen their shelf-life. When thinking about genetic engineering, consider that the exchange of genetic material between different species also happens naturally in the environment. It is through evolution, the (lengthy) process of natural selection, and traditional breeding methods that scientists have produced organisms (bacteria, animals, plants, etc.) with desired characteristics. Modern breakthroughs in genetic engineering have just provided a means for reaping the benefits of these traditional practices in a shorter amount of time. Genetic engineering gives faster and specific results because it deals with organisms directly at the genetic level.

(Adapted from www.agcare.org)

Assessing the Safety of Agricultural Products

The principles of regulating the safety of agricultural products are the same whether the product is developed using biotechnology or through conventional production methods. The emphasis is on the characteristics of the product, not on the means by which it is produced. The government is required to review a new agricultural product if:

- there is potential risk to human, animal or environmental safety
- the product contains novel traits and the risk is not known
- the method of production has created intrinsic novelty (i.e., something that has not existed in that crop before) although the traits of the product are the same as those already commercially available.

Regulation of these products is governed jointly by the Canadian Food Inspection Agency (CFIA) and Health Canada under the Food and Drugs Act. Health Canada is responsible for setting standards for safety of the food supply. The CFIA is responsible for inspection and constant monitoring of products to ensure that these standards are met.

Prevalence of Genetically Modified Crops

It is estimated that 50-55% of soybeans and corn and 90% of canola grown in Ontario is genetically modified.



Farm Animal Care

Most farmers raise livestock because they like working with animals. Most know too that properly cared for animals are more productive which means a better income for them and their families. Nevertheless, there are controls in place to help ensure that farm animals are raised responsibly. There are "3 H's" of responsible animal care.

Husbandry

Agriculture and food production is not exempt from laws and regulations governing animal treatment. Ontario farmers are subject to laws outlined in the Criminal Code of Canada, as well as the provincial Society for the Prevention of Cruelty to Animals (SPCA) Act. Provisions included in these pieces of legislation protect animals from "unnecessary pain, injury, suffering or neglect". Offences are punishable by law. Recommended Codes of Practice are currently in place for poultry, hogs, veal, dairy cattle, beef cattle, deer, horses, sheep, animals raised on farms for their fur, and livestock transportation. These codes have been designed to guide farmers, handlers, transporters, and processors in their practices. The codes have been drafted through close consultation with producers, government researchers, industry and the Canadian Federation of Humane Societies and have been well received and adopted by mainstream agriculture.

Housing

Controlled or confinement housing is defined as a method where relatively large numbers of animals are kept in relatively small areas and where varying degrees of shelter from the elements are provided. Some confinement methods allow the animals access to the outside, but generally little of their food is derived from that source. With the exception of cow-calf beef farms, deer, elk, bison and some sheep farming, all commercial livestock and poultry production in Canada is carried out using controlled or confinement housing methods. These methods vary from confining animals to a particular yard, building, stall or cage.

Livestock and poultry housing systems have been adopted in Canada for a variety of reasons. They remain in use because of the advantages they provide. These systems offer protection from weather, predators, accidental injuries, and many diseases that are carried by wild animals and microorganisms. These housing systems also allow larger numbers of animals to be more easily handled; to receive proper nutrition and clean water; as well as individual and consistent care by farmers. From a hygienic and animal health standpoint, these housing systems are superior to husbandry methods of the past. Efficient housing and handling systems allow a higher quality, consistent product to be produced, at a lower price to consumers.

Health

Farmers use animal health and other regulated products to treat animals that are ill or to enhance the efficiency of livestock and poultry production. Farmers consult veterinarians in cases of disease outbreak and in developing herd health programs. This allows farmers to provide the public with safe food at reasonable prices.

Medication is a poor substitute to proper management. Many health problems and production requirements can be more effectively met through sound husbandry practices, selective breeding; and proper nutrition. Just as many people are moving towards preventative medicine, so too is agriculture. As a result, less pharmaceuticals are used today than even five years ago, and as advances are made in veterinary science and animal husbandry, future requirements will continue to decline.

Animal health products have an important and much needed role to play in the production of wholesome, high quality meat, milk, and eggs. Much animal suffering and mortality has been made unnecessary and obsolete because of the existence of products to prevent and treat disease. In addition, much human suffering caused by transmittable diseases (i.e. tuberculosis, rabies, etc.) has also been eliminated or reduced. The responsible and appropriate use of these products is justified and warranted.



Alternative Agriculture in Ontario

When someone thinks of livestock, it is usually cows, pigs, sheep or chickens that first spring into mind. However, taking a closer look at the alternative livestock industry in Ontario reveals a great deal of diversity. Everything from ratites to alpacas can be found in Ontario, and the numbers are growing.

Wild Boar

The national wild boar industry was eight times larger in 1996 than it was in 1991. In Ontario, there were 2,007 boars being farmed in 1996. Wild boar is lean and nutritious, and the demand for this product is increasing.

For more information contact:

Western Canada Wild Boar Association (306) 653-1733

Bison

In Canada, there are approximately 130,000 bison. Bison are desirable animals to raise as they can graze on less land than cattle; they can live outdoors all year without shelter and are generally very hardy. Bison meat sells for up to three times the price of beef, and about two-thirds of Canadian bison meat is exported to Europe. In 1996, there were 2,300 bison raised on farms in Ontario.

For more information contact:

Ontario Bison Association (877) 619-7886
www.gov.on.ca/OMAFRA/english/livestock/alternat/facts/buffalo.htm

Camelids

Camelids (Llamas and Alpacas) can also be seen on Ontario farms, with 1,100 Llamas counted in 1996. Currently, Llama breeding stock and wool are the two main reasons for the interest in raising these animals. Other uses for llamas include predator control in sheep flocks, pets and even as pack animals and for pulling carts. Mature llamas weigh an average of 280 – 350 kilograms and have a life span of 15 – 20 years. The Alpaca is a smaller, heavier-fleeced relative of the Llama. They weigh between 40 – 80 kilograms. The Alpaca has been selectively bred for its quality of fibre and is a superior fibre producer compared to the multipurpose Llama. Their fleece is sheared once a year and comes in variations of eight basic colours; from black to silver, caramel to fawn, and piebald (more than one colour on the blanket). Alpacas were brought to Canada in 1985 from South America.

For more information contact:

Ontario Camelid Association (705) 458-4057
www.ontariocamelids.org

Ratites

Ratites are a family of flightless birds. Ostriches, Emus and Rheas are members of this family. The Kiwi and Cassowary are also members of this family. Emus have small wings, but Rheas and Ostriches have large wings that cover their bodies. Ratites have flat breastbones with no keel. In flight birds, the keel is where the breast muscles of flight attach. Ratites have been around for at least 80 million years. They probably flew in the past, but today have adapted to running rather than flying. These birds are used for several things such as meat, leather, feathers, oil, eggshells and eggs.

For more information contact:

Ontario Ratite Association (519) 579-0188 www.ontario-ratite.com

Aquaculture (Fish Farming)

Aquaculture is the production, through artificial cultivation techniques, of any aquatic plant or animal, including algae, mollusk, crustacean, and fish species, and embodies the primary objectives of increasing biomass and ensuring successful reproduction. Aquaculture also implies some form of private property ownership over the species being cultured.

For more information contact:

Canadian Aquaculture Industry Alliance (613) 239-0612
www.aquaculture.ca

Horses

For information contact:

Ontario Equine Federation (905) 709-6545 www.horse.on.ca



Beef Cattle Farming in Ontario

Beef Terminology

- ✦ *To Calve*: To give birth.
- ✦ *Bull*: An adult male animal that is kept for breeding purposes.
- ✦ *Steer*: An adult male animal that has been castrated.
- ✦ *Heifer*: An adult female animal that has not had a calf.
- ✦ *Cow*: An adult female animal kept for breeding purposes.
- ✦ *Calf*: A newborn animal – usually weighs about 40 to 45 kgs.
- ✦ *Beef producer*: A farmer that raises beef cattle.

Housing: Where Do Beef Cattle live?

Cows and calves spend the spring, summer and fall living and grazing on pasture. Often such pastureland is unsuitable for any other cropping practices. During the winter, various methods of protection are provided such as natural shelter areas or barns. The hardiness of the animals allows them to comfortably adapt to our climate.

After the calves are weaned, they become known as backgrounders or stockers. These weanling calves will be kept grazing on pasture or in feedlots eating a forage (hay-based) diet until they are moved to specialized feedlots.

Today the majority of cattle in Canada are brought to a finished market weight in feedlots. In these specialized facilities, cattle are able to socialize and have free access to feed and water. Feedlot housing practices are very diverse from farm to farm, ranging from open dry yards, where protection is provided from inclement weather, to indoor confinement housing. The barns may have any one or a combination of concrete slatted floor systems, straw bedding, or open yards. Ontario feedlots vary in size but have an average capacity of 175 animals.

Nutrition: What Do Beef Cattle Eat?

The first meal the calf receives from its mother is thick, sticky milk called colostrum. This milk contains antibodies that provide them with immunity to disease. After two to three days, the colostrum changes to milk. The calf will nurse for about five to six months with its diet gradually changing from about two kg of milk every day to one that includes forages and water as it matures.

From weaning at five months until about 15 months of age, calves will be kept on pasture eating grass, or in feedlots, eating forage diets depending on the season, field conditions and farm facilities. Cattle will also have free access to mineral supplements and fresh water.

Once they are moved to feedlots at fifteen months of age, the cattle are fed a nutritionally balanced mixture of forages such as grasses, alfalfa, or clover, fed either dry or as silage. This silage is supplemented with grain rations that are typically based on corn, barley, wheat or oats. It all looks very similar to your breakfast bowl of granola (without the milk!) with vitamins and minerals added to balance the animals' nutritional needs.

Each mature beef animal will drink between 35 and 65 litres of water every day depending on their feed source and the outside temperature.

Facts & Figures About the Beef Industry

- There are about 21,000 beef farms in Ontario.
- Of these, about 18,000 are cow/calf farms and 3,000 are feedlots.
- Ontario beef farmers produce about 17 per cent of Canada's market-ready cattle and contribute about \$4 billion annually to the Ontario economy.



Cattle

What is the difference between beef cattle and dairy cattle?

There are several differences between dairy and beef cattle. Beef animals are well-muscled animals with powerfully built legs. They are bred and fed to produce high quality lean meat, with a minimum of bone or fat waste. Dairy animals are more angular in shape than beef animals. Dairy cows are bred and fed to produce milk, not meat. The udders (the bag between the cows' rear legs where milk is stored – the mammary system) of dairy cows are often larger and may hang lower than the udders on beef cows.

What are ruminants?

Cattle are ruminants; they can digest fibrous plants that are not edible by humans. All ruminants such as cattle, sheep and goats have a four-chambered stomach. The animal does not chew its food completely. It goes down into the large rumen (first section of stomach) where it is stored and broken down into balls of cud. When the animal has eaten its fill, it rests and “chews its cud.” The balls of cud (feed) are brought back into the mouth, chewed into pulp and swallowed again. The chewed feed then goes through three more stomach chambers, where it is digested further.

The whole digestive process takes a while. A cow will spend approximately six hours a day eating and approximately eight hours a day chewing its cud: regurgitating boluses of feed from the rumen (the first stomach), masticating (chewing) them, and re-swallowing them to be further digested in the next three stomach chambers called the reticulum, omasum and abomasum. This lengthy process allows them to efficiently digest low-grade, fibre-based food.

How many cattle are there in Canada?

There are approximately 12.6 million cattle in Canada. This includes approximately 4.2 million beef cows, 4.3 million beef calves and 200,000 beef bulls on pasture, and 1 million dairy cows. Almost all dairy and beef cattle farms in Canada are family-owned and operated.

Cattle and the Environment

- Cattle eat weather-damaged grain and feed grain that people will not eat. For example, corn grown for corn flakes only uses the kernels. The cobs, stalks (stems) and leaves can then be eaten by farm animals.
- Cattle make use of millions of acres of Canadian grazing land that will not grow crops because it is too dry, wet, rocky, cold or hilly.
- Cattle are recyclers. As plants grow, they take carbon dioxide out of the atmosphere. When cattle eat the grass, they burp the gases back into the air. Some of this gas is carbon dioxide that is then recycled by the plants. Ruminants also produce methane gas.
- One landfill site in the Vancouver area creates more methane gas emissions each year than all the cattle in B.C.

How is manure from cattle production managed?

Manure is a natural by-product of cattle production and is a natural fertilizer. When on pasture free range cattle randomly distribute manure, which breaks down naturally and recycles nutrients to the soil.

Both beef cattle feedlots and dairy farms are required to construct manure containment facilities away from water sources. Manure may be temporarily stockpiled or composted. It is then spread on agricultural lands and incorporated into the soil to act as a natural fertilizer. Regulations currently in place in most provinces provide legal repercussions to prevent deliberate contamination of water sources.



Chicken Farming in Ontario

Chicktionary

- ✦ *Chick*: A baby chicken (male or female) to about three weeks of age.
- ✦ *Pullet*: A young female chicken.
- ✦ *Cockerel*: A young male chicken.
- ✦ *Cornish Hen*: A small meat chicken.
- ✦ *Broiler*: A meat chicken raised to the weight of 2.65kg or under.
- ✦ *Roaster*: A larger meat chicken raised to the weight of over 2.65kg.
- ✦ *Flock*: A group of birds that is raised by the farmer. There are an average of 30,000 birds in a flock.
- ✦ *Chicken producer*: farmers, the people that raise chickens.
- ✦ *Bedding*: Straw or wood chips, covering the floor of the barn.
- ✦ *Drinkers*: Automated water lines.
- ✦ *Feeders*: Automated feed pans which dispense chicken feed (they allow the birds 24-hour access to feed).

Housing: Where Do Chickens Live?

Chickens raised for meat are called “broiler” chickens (or “broilers”). They are not kept in cages and do not lay eggs. The birds are kept in climate-controlled barns to protect them against hot summers, cold winters, predators and disease.

In these barns, the broiler chicks roam free on a floor that is covered with a bed of straw or wood chips. They have access to food and water through automatic feed and water lines. As the chickens grow, the farmer will continually adjust the height of the lines to accommodate the height of the birds. This allows maximum comfort and access to feed and water at all times.

Nutrition: What Do Chickens Eat?

Chickens are omnivores; in the natural state a chicken will dine on plants but it will also snack on bugs and slugs and other meat protein sources. In commercial production the feed will mimic the composition of a natural diet as closely as possible while providing all of the essential nutrients for growth and good health. A typical feed is usually based on corn or wheat and a supplemental protein source such as soybean meal. The feed is nutritionally balanced with a government approved mineral supplement.

Facts & Figures About the Chicken Industry

- ✦ Ontario production has grown at a steady and manageable pace, averaging 5-7% growth per year, over the last 10 years which is an increase of 58% from 193 million kilograms in 1992 to nearly 304 million kilograms in 2002.
- ✦ Ontario is the largest producer and processor of chicken in the country, growing one-third of all the chicken produced in Canada.
- ✦ That is nearly 304 million kilograms of chicken meat yearly, worth close to 500 million dollars annually, at the farm level.
- ✦ Per capita consumption has risen by more than 37% to 30.6 million kilograms in 2002 from just 22.3 million kilograms in 1992. This makes Ontario the largest consumer of chicken in Canada, as well.
- ✦ As more and more Canadians turn to chicken, there has been a 21% increase in the chicken industry's share of Canadian meat consumption – up to 32%.
- ✦ From 1992 to 2002, the number of chicken farmers in Ontario has increased from 970 to 1123.
- ✦ There are about 2800 chicken farms across Canada.
- ✦ The Canadian chicken industry directly employs more than 15,000 people who work on chicken farms or in related areas such as processing.



Crops and Produce in Ontario

Terminology

- ✦ **Hectare (ha):** A hectare is 100 metres x 100 metres. It is equal to 2.5 acres. A hectare is about the size of two soccer fields.
- ✦ **Acre:** an acre is slightly smaller than a soccer field.
- ✦ **Soil type:** the texture of the soil – based on the percentage of sand, silt, and clay – sandy soils drain water quickly; clay soils hold water and often require tile drainage.
- ✦ **Tile Drainage:** porous drain pipe is buried 0.75 to 1 metre down in the soil – water moves to the pipe and is drained away quickly, allowing farmers to get on their fields quicker in the spring because the excess water is drained away, and yields are increased.
- ✦ **Hybrid:** plants produced by crossing two or more inbred lines of plants that are genetically quite different.
- ✦ **Tillage:** cultivating the soil to prepare for planting or to reduce weeds.
- ✦ **Pesticide Resistance:** see: www.agcare.org/uploadattachments/PesticideResistance.pdf.
- ✦ **Active Ingredient:** the compound within a pesticide that controls its target pest(s) – pesticides also contain compounds that help disperse the active ingredient or otherwise aid it in reaching its target.
- ✦ **Marginal Land:** land that is too hilly, wet, or contains soils that are fragile and of lower quality for crop production.
- ✦ **Crop Rotation:** the practice of planting different crops on a field year after year to minimize pest population build up, improve soil health, avoid pesticide resistance issues, and diversify (e.g. a common rotation in Ontario is soybeans, wheat, and corn repeated every 3 years or with hay included for livestock farms).

Facts & Figures About the Crop Industry

- ✦ There are over 3.5 million hectares of field crops grown in Ontario.
- ✦ These 3.5 million hectares are generally made up of:
 - 25% grain corn (for livestock feed, ethanol, corn starch, syrups, and glucose)
 - 25% soybeans
 - 25% hay
 - Barley, oats, rye, mixed grain, canola, beans, and tobacco make up the rest.
- ✦ Soybeans and corn are generally higher value field crops grown on good quality agricultural land; more marginal land can be used to grow hay and for pasture land.

For further stats on Ontario field crops visit: www.gov.on.ca/OMAFRA/english/stats/crops/index.html

Facts & Figures About the Fruit and Vegetable Industry

- ✦ There are nearly 21,000 hectares (ha) of fruits, 61,000 ha of vegetables, and over 17,000 ha of potatoes grown in Ontario.
- ✦ Ontario's most commonly grown fruits include apples (over 7,000 ha), grapes (over 6,000 ha), and peaches (over 2,000 ha).
- ✦ Other fruit grown in Ontario include apricots, blueberries, melons, cherries, nectarines, pears, plums, raspberries, and strawberries.
- ✦ Grape and tender fruit (peaches, plums, apricots, and cherries) production is focussed in the Niagara Peninsula.
- ✦ Apple production is largely within the Greater Toronto Area (GTA), the Collingwood/Thornbury area, and Haldimand-Norfolk County.
- ✦ Ontario's most commonly grown vegetables include sweet corn (over 17,000 ha), peas (over 9,000 ha), and field tomatoes (over 7,000 ha).
- ✦ Other vegetables grown in Ontario include asparagus, beans, beets, broccoli, brussels sprouts, cabbage, carrots, cauliflower, celery, cucumbers, leeks, lettuce, onions, parsnips, peppers, pumpkins, squash, radishes, rhubarb, rutabagas, spinach, and zucchini.
- ✦ Ontario farmers also grow a significant amount of mushrooms, garlic, and parsley.
- ✦ Mushrooms, greenhouse-grown cucumbers and greenhouse-grown tomatoes rank highest in farm value.
- ✦ Vegetable production in Ontario is focussed within the GTA (including the Holland Marsh), and the warmer southwestern area of the province – Kent, Essex, and Haldimand-Norfolk.
- ✦ Large areas of potatoes are grown on the sandy soils of the Alliston and Shelburne areas.

For further stats on Ontario fruit and vegetable production and value see www.gov.on.ca/OMAFRA/english/stats/hort/index.html



Dairy Dictionary

Here are a few terms you need to know to get around a barn:

- ✦ *Calf*: a newborn bovine or dairy animal; usually weigh 40 kg at birth
- ✦ *Heifer*: a young female that has not yet had a calf and begun to milk.
- ✦ *Cow*: a mature female bovine or dairy animal; must give birth to a calf in order to produce milk
- ✦ *Bull*: a mature male bovine or dairy animal.
- ✦ *Pipeline milking system*: the cows are tied in their stalls, the udders washed and a milking machine attached to all four teats on the cow's udder. A hose runs from the milking machine to a stainless steel pipeline located over the cow's head. The pipeline runs the length of the barn and is connected to a big bulk tank in the milkhouse
- ✦ *Milking parlour*: the cows walk onto a raised platform with gates. The gates keep the cow from moving while she is being milked. When milking is over, she walks out the other side. The milk goes directly through a pipeline to the bulk tank in the milkhouse.
- ✦ *Robotic milking system*: similar to a parlour system, except that the entire milking system is automated. Cows can enter the robot at anytime during the day to be milked. A warning system alerts the farmer if there is a problem with a cow or the milking system.

Housing: Where Do Dairy Cattle Live?

There are a couple of basic variations in dairy cattle housing – the tie-stall or free stall setup. Size of herd and the farmer's preferences for management and milking all play a part in housing decisions.

In a traditional tie-stall operation the cow stays in her own stall where she has ample room to stand up and lie down comfortably. Her bed is made of straw, wood shavings or synthetic mats that ensure her comfort. She has free access to water at all times and feed is available in her manger. She is kept beside her herd mates in aisles that allow the farmer to keep her clean and content while allowing her to be milked efficiently. The milk travels through a pipeline that runs through the barn to a bulk storage tank in the milk house.

Farm managers of larger herds may prefer large, open barns known as free-stall barns. Twice a day, or more, the cows will enter a milking parlour, an area designed specifically for ease and efficiency of milking, and the rest of the time they spend lounging around indoors in adjoining barns where they eat, rest and move around as they choose. Bedded stalls are provided for the cows to lie down. Barn aisles are often cement or slatted floors that allow easy clean up of manure. Cows have free choice feed and some farms use a computerized transponder tag that identifies them when they access feed.

Nutrition: What Do Dairy Cattle Eat?

The average dairy cow eats about 25 kg of feed every day. Her diet is scientifically formulated to keep her in good condition while maximizing her milk production. The feed may include clover and alfalfa hay, ground oats, barley, corn, and soybeans, combined with a balance of vitamin and mineral supplements. She may drink between 80 and 160 litres of water a day.

Facts & Figures About the Dairy Industry

- ✦ Provincial milk production in 2003 was 2.5 billion litres of milk.
- ✦ The farmgate value of milk from Ontario's dairy farms is about \$1.4 billion annually and accounts for about 19 per cent of the province's agricultural production.
- ✦ Licensed dairy farms in Ontario as of May 2004: 5,340
- ✦ Average age of operator: 47
- ✦ Average number of cows in milking herd: 54
- ✦ Number of dairy cows in Ontario in 2003: 360,000 milking cows plus 206,000 heifers over one year old
- ✦ The average dairy cow produces 27 litres of milk per day from 2-3 milkings.



Deer and Elk Farming in Ontario

Deer and elk make good farm animals; as they can graze on less land than cattle; they can survive outdoors all year without shelter and are generally very hardy. Elk and deer production is driven by the demand generated by Asian countries for antler velvet. Elk and deer bulls produce antlers every year. These antlers are removed before they become hard and the velvet is processed into capsules. Asian countries have been using velvet and its products to treat many ailments for thousands of years. In addition to velvet, another important product from elk and deer is meat, called venison. In Ontario, in 1996, there were 14,300 deer and 1,360 elk raised on farms.

Elk

Mature bulls (male elk) average between 360 kg – 500 kgs. They stand 1.5 – 1.7 metres at the shoulder. The primary purpose for raising elk is for the velvet that grows from their antlers. Antlers naturally fall off in March and regrow every year. The velvet is harvested in May or June, and a mature bull should yield 9 kg – 13.6 kg of Grade A velvet. Mature cows (female elk) average 250kg to 270kg and stand 1.2 – 1.5 metres at the shoulder. They do not grow antlers. Calves (young elk) are born in May or June and spend the first week of their lives hiding in tall grass, usually getting up only to nurse. They are spotted when born and develop brown coats in about 6 months. Cows' gestation (pregnancy) is approximately 246 days (8 months), plus or minus 10 days.

Elk Nutrition

Elk are predominantly grazers. They drink water, eat grasses, legumes (alfalfa hay) and grains (corn and oats) and are also provided with vitamins and minerals in their feed.

Elk Housing

Elk are raised on farms, outside on pasture all year round.

Deer

There are several breeds of deer that are farmed in Ontario such as the Fallow deer, White-tailed deer and Reindeer. Fallow deer are the most common deer to be farmed in Ontario. The coat of Fallow deer varies, however there are four main colours such as white, light brown with white spots, ginger and black. Bucks (male deer) weigh 110 – 150 kg and have antlers that are flat ended and palmated with numerous points. Does (female deer) do not grow antlers and they weigh 40 – 75 kg. Young deer (fawns) weigh 4 – 6.5 kg when they are born. Does gestation length is about 233 days (7-8 months) and fawns are born in May and June.

Deer Nutrition

When it comes to feed, nutrition and housing, deer are quite similar to elk. They drink water and eat grasses, legumes (alfalfa hay), grain (corn and oats) and are also provided with vitamins, minerals and salt in their feed.

Deer Housing

Deer are typically raised outdoors on pastures. Deer farmers also provide the animals with natural shelters or barns for protection against poor weather conditions.



Egg Farming in Ontario

What's the difference between chickens raised for meat and chickens raised for eggs?

Chickens produced for meat are not the same breed as those that are raised for their eggs. Typically, strains of a breed called White Rocks are used for meat, whereas White Leghorns (white eggs) and strains of reddish-brown feathered chickens such as Rhode Island Reds (brown eggs) are used in the egg industry.

Eggsplanations

- ✦ *Breeder farms:* Hens (mature female chickens) are kept with roosters (mature males) and lay about 300 eggs a year. Hens lay eggs about each day, which are collected, cleaned and carefully stored, to be sent to the hatchery.
- ✦ *Hatchery:* Fertilized eggs are incubated and hatch in 21 days. The newborn chicks are vaccinated and beak-trimmed with a laser by trained professionals who work in the hatchery.
- ✦ *Pullet:* a young hen.
- ✦ *Pullet farms:* Chicks are transported to pullet farms within 24 hours of being hatched.
- ✦ *Layer:* Hens start laying eggs at 18-20 weeks of age. These eggs are not fertilized and will not hatch. They are produced specifically for consumption.
- ✦ *Candling:* a process where the egg is passed over a strong light to make the interior of the egg visible; this allows the grader to see the condition of the shell, the size of the air cell and whether the yolk is well-centered.
- ✦ *Grading:* at the grading station eggs are divided into three grades; Canada Grade A eggs are sold in retail stores for household use and are the most commonly bought consumer egg.

Housing: Where Do Laying Hens Live?

The cage system is the preferred housing system for today's egg production, ensuring the highest possible food safety and egg quality standards. Well over 90% of the eggs produced in Canada are produced using this system. The reason for its popularity is the high degree of environmental control and production efficiencies that can be achieved. It also allows the mechanization of routine chores such as feeding and watering, egg collection, and the regular removal of manure – management advantages that often favour laying cages over floor-raised flocks. Keeping four to eight birds together in a cage supports their natural instinct to cluster together for security and makes for a calmer, less aggressive environment for the hens. Cages provide a safe, healthy environment for hens by maintaining a comfortable group size and keeping them safe from predators. Cages are designed to keep manure separate from the hens and the eggs, which is important for food safety because certain bacteria can pass through the thousands of pores in the shell into the egg.

Nutrition: What Do Laying Hens Eat?

The hens' diet does not contain hormones or antibiotics, but plenty of grains, proteins, vitamins and minerals. A hen will consume approximately 100 g of feed per day. Food and fresh water are constantly available.

Colour...What's the Difference?

The most common laying hen in Canada is the White Leghorn – a small bird that lays white eggs. The Rhode Island Red hen, which lays brown eggs, is another common breed. There are no nutritional differences between white and brown eggs.

Facts & Figures About the Egg Industry

- ✦ There are 420 egg farms in Ontario.
- ✦ 8,218,375 birds are owned by 380 egg producers; while 9,392,292 birds are held by 139 pullet growers.
- ✦ The economic value of farm gate sales is approximately \$244 million.
- ✦ Total economic value to the province is \$403 million in total cash receipts.
- ✦ The average number of birds per egg producer in Ontario is approximately 20,377, the average number of birds per Pullet Producer in Ontario is 65,583.



Goat Farming in Ontario

Goat Glossary

Doe: female goat

Buck: male goat

Kid: young goat

Housing: Where Do Goats Live?

They are well adapted to the Canadian climate, but they do require shelter for shade in the summer and a dry, draft-free barn in the winter. Goats, like sheep, may be easy prey to predators and they must be kept guarded from harm.

Dairy goats and their offspring are housed and cared for just like dairy cows, with indoor accommodations for the twice-daily milking routine. Commercial dairy goat farms range in size from 150 goats to over 400 goats. Most farmers that are serious about commercial dairy goat farming are growing their herd to upwards of 400-500 goats, and the largest herd in Ontario is approximately 1200 goats.

Nutrition: What Do Goats Eat?

Goats are herbivores, which means that their diet consists of plant matter. Like sheep and cows they are also known as ruminants: instead of having just one stomach like humans they have four separate stomachs that allow specialized digestion of different components of the feed.

In more intensive husbandry situations goats, like all farm animals, are catered to with a diet balanced for energy, protein, calcium and other essential nutrients from a mixture of sources including pasture, hay and commercial feeds to support their increased production requirements.

About the Life Cycle of Goats...

Dairy kids are removed from their mothers after birth following production practices similar to dairy cows: the kids will be raised on milk replacement formula until they can be weaned at five to seven weeks of age, leaving the doe's milk to be used for human consumption.

Dairy goats are given a 60-day rest from milking just before they give birth in order to provide enough nutrition for the developing kid(s) during the final weeks of gestation.

Dairy goats are milked twice a day, usually at 12-hour intervals, by machine or by hand. Unlike a cow, goats (and sheep) only have two teats. Goat milk is produced in modern dairy operations under the same hygienic requirements and conditions as cow's milk.

Kids raised for meat production will nurse their dam for ten to twelve weeks.

The kids will then be weaned from milk to be fed hay, grain and pasture until they reach market weight, which can range between 35 and 90 lb depending on the breed of goat and farm management practices.

Goats naturally have horns with only the occasional goat being polled (naturally hornless). Most farmers remove the horns at an early age (disbudding) for the sake of safety for both people and other animals.

Did you know...

To most people, the term milk is synonymous with cow milk; but on a worldwide basis, more people drink goats' milk than milk from cows.



Pig Farming in Ontario

Pigtionary

- ✦ *Barrow*: male pig that has been neutered.
- ✦ *Boar*: adult male pig kept for breeding purposes.
- ✦ *Farrow*: to give birth.
- ✦ *Feeder pig*: piglet after it's weaned from the sow, also known as 'weaner' pig.
- ✦ *Gilt*: female pig that has never farrowed.
- ✦ *Litter*: group of piglets born at one time from the same sow.
- ✦ *Market hog*: barrow or gilt raised for meat production, weighs up to 110 kg.
- ✦ *Piglet*: newborn pig, weighs 1-2 kilograms.
- ✦ *Pork producers*: farmers, the people that raise pigs.
- ✦ *Runt*: smallest piglet in the litter.
- ✦ *Sow*: adult female pig (Note that 'sow' rhymes with 'cow!').

Housing: Where Do Pigs Live?

Most pigs in Ontario are kept in barns to provide protection from predators, extreme weather, parasites and disease. All the pigs in Canada are kept in barns in the winter. Barns maintain an optimal environment with ventilation systems that control humidity and temperature. Strict sanitation and restricted farm entry programs are designed to help farmers maintain optimal animal health and biosecurity.

Nutrition: What Do Pigs Eat?

Pigs are omnivores (they eat a diet of animal and plant origin) and they were originally kept on the farm to make good use of the feed scraps from the household, barnyard and fields.

Today's commercially raised pigs are fed grain-based, nutritionally balanced rations that are often in a pelleted form, similar to dog kibble. These complete rations are typically based on corn, soybean and barley with vitamins and minerals added to balance dietary requirements for each stage of growth and reproduction. Mechanized feeding systems are used on most farms.

Fresh water is always available for pigs to drink. The average water requirement for a market hog varies from five to eight litres per day. (We use eight litres of water to brush our teeth with the tap running.)

Animal Health & Biosecurity

Some farmers might ask you to take a shower or put on plastic boots over your shoes before you go into their barn. Other farms do not allow any visitors at all, people or animals. These protocols are part of what is called 'biosecurity', and it's one part of a herd health program that helps to keep pigs healthy. Not allowing visitors into the barn helps to keep germs or sickness out. Farmers do treat animals with medications when they are sick, but prefer prevention over treatment.

Did you know...

Pigs don't sweat! Pig barns have lots of fans to circulate air and even water sprinklers to help keep pigs cool and comfortable.

Facts & Figures About the Pork Industry

- ✦ There are 3,600 hog farms in Ontario.
- ✦ The pork industry in Ontario accounts for 30,000 jobs.
- ✦ The estimated total industry output from farm gate sales is worth \$6.1 billion to the Ontario economy.



Sheep Farming in Ontario

Sheep Shots Dictionary

- ✦ *Ewe*: a female sheep that has had a lamb.
- ✦ *Ewe lamb*: a female sheep that has not yet given birth to a lamb.
- ✦ *Fleece*: a sheep's wool after it has been shorn off, in one piece.
- ✦ *Flock*: a group of sheep.
- ✦ *Hogget*: same as ewe lamb.
- ✦ *Lamb*: a sheep under one year old, or the meat that comes from a youthful sheep under one year old.
- ✦ *Lambing*: the time when lambs are born.
- ✦ *Mutton*: meat from mature sheep (not lamb).
- ✦ *Ram*: a male sheep.
- ✦ *Ruminant*: a four stomached animal that chews its cud; includes cattle, sheep, goats, and deer.
- ✦ *Shepherd*: a farmer who cares for sheep.
- ✦ *Wether*: a neutered male sheep.

Housing: Where do Sheep Live?

Some shepherds prefer to keep their flock in the barn year round where nutrition, lighting and lambing can be closely monitored and to offer protection from predators such as coyotes, wolves, bears, and even their neighbours' pet dogs. Sheep are kept together in group pens in the barn.

Others prefer to leave the sheep in the field all year, depending on pastures to graze for their food and offering hay and grain when the snow gets too deep. Even though sheep have wool, they still need barns or treed windbreaks for shelter in the winter.

Most farms use elements of both systems.

Nutrition: What do Sheep Eat?

Sheep are ruminant herbivores. The majority of a sheep's diet is forages - pasture and hay that can include grasses, alfalfa, and clover. Sheep often graze on land that can't be cultivated for human food production.

At certain times in the production cycle shepherds may also feed grains, such as corn, barley, oats, and roasted soybeans, which are mixed with supplemental vitamins and minerals as needed. Grain supplementation is an important part of a balanced diet for fast-growing lambs, ewes in late gestation (within weeks of giving birth), or ewes with high milk production.

A mature sheep will eat approximately 3 kg of hay and grass per day. Weaned lambs will eat about one kg of grain and one kg of hay or grass every day.

Facts & Figures About the Sheep Industry

- ✦ In Ontario there are approximately 3,978 sheep farms caring for 337,334 sheep and lambs.
- ✦ The average flock size in Ontario is 84.8 animals. (Stats Canada, May 2001)
- ✦ A sheep may give up to two litres of milk per day, which is mostly used to make specialty cheeses.
- ✦ Some of the most popular breeds of sheep in Canada include: Suffolk, Dorset, and Arcott.



Turkey Farming in Ontario

Housing: Where Do Turkeys Live?

Most turkeys are raised in specially designed, environmentally-controlled barns that provide protection from predators, disease and bad weather. Turkeys are not raised in cages; they roam freely around the barn, similar to broiler chickens, on a floor that is covered with a bed of straw or wood shavings.

Nutrition: What Do Turkeys Eat?

Turkeys are fed a mixture of corn, wheat and soybeans that are ground up to look like granola. The birds grow quickly so farmers spend a lot of time adjusting feeding rations to match the growth stages of the birds to reach the required market weight. Young turkeys (poults) are fed a “starter” mixture; then as they grow the feed is changed to a “grower” mixture. Each type of feed includes protein, energy, fibre, fat and other elements such as calcium, phosphorous, magnesium and vitamins. Water is always provided throughout the barns so they may drink freely. Turkeys drink two litres of water for every kilogram of feed they eat.

	Weight (kg)	Age when marketed (weeks)	Amount of feed needed to produce 1 kg of turkey	Total feed consumed in lifetime (kg)
Broiler	5.38	11	2.1	7.48
Hens (females)	7.86	14	2.36	18.40
Toms (males)	14.5	17	2.60	35.07

Facts & Figures About Turkey

- ✦ There are 550 turkey farmers in Canada. 181 of those are in Ontario.
- ✦ In Ontario, the average flock size is about 10,000 turkeys.
- ✦ Canadian Turkey Exports (2003): 20,575,000 kg
- ✦ Turkey Sales (Farm Cash Receipts) 2003:
 - Canada: \$260,667,000
 - Ontario: \$117,893,000
- ✦ Total Turkey Production (2003):
 - Canada: 148,124,000 kg in Canada.
 - Ontario: 67,235,000 kg or 45% of the Canadian production.
- ✦ In 2003, Canadian households consumed a total of 9.7 million whole turkeys.
- ✦ Canadians consumed 129.2 million kg of turkey in the year 2003.
 - Consumption per capita was 4.1 kg.
- ✦ Thanksgiving and Christmas account for 74% of annual whole turkey sales.
- ✦ In 2004, Ontario will produce approximately 61.7 million kg, or about 6.5 million head, of turkey in various weight ranges:
 - Broiler turkeys up to 6.2 kg
 - Hen turkeys 6.2 - 10.8 kg
 - Tom turkeys 10.8 kg and up



Veal Farming in Ontario

What is Veal?

Veal is produced from male dairy calves (bulls). On a dairy farm, these bull calves are not needed for replenishing the milking herd because they cannot produce milk. As a result, bull calves are used by the veal industry to create a quality food product. There are two types of veal produced in Canada: grain-fed and milk-fed veal.

The market weight of the calves under either feeding program is dictated by market demands. Milk-fed veal calves are raised to approximately 205 to 224 kg (450-500 lbs), which is achieved at approximately five months of age. Grain-fed veal calves are raised to 292 to 319 kg (650-700 lbs), achieved at approximately seven months of age.

Nutrition: What Do Veal Calves Eat?

Veal calves are fed balanced diets with added iron, vitamins and minerals. Milk-based diets are balanced rations that involve commercial milk replacers, which utilize surplus skim milk powder and whey – both by-products of the dairy industry – in their production. These commercial milk replacers are of equal or greater nutritional value than milk straight from the dairy cow.

Grain-based diets are usually a balanced corn-based feed that contains supplemental protein, vitamins and minerals, and it becomes the calves' exclusive diet after weaning. Feed is usually available on a free choice basis. A market weight grain-fed calf will consume seven kilograms of feed per day.

Contrary to former belief, the white hue of the veal meat does not reflect a lack of iron in the diet: calves receive enough iron to meet their growth requirements and maintain optimum health. Many farms will routinely blood test the calves to make sure they are healthy and receiving adequate nutrition.

There are approximately 500 veal farms in Ontario and they bring an estimated value of \$450 million to the provincial economy.

Housing: Where Do Veal Calves Live?

In general, calves may be raised individually or in groups. Canadian veal calves are raised indoors in barns that protect the calves from harsh weather, predators and parasites. The barns are well lit, using either natural or artificial lighting, temperature controlled, and well-ventilated to provide clean, fresh air on a continuous basis. Housing methods have no effect on the tenderness or colour of veal, nor does the amount of exercise a calf receives affect the meat characteristics. Meat quality and colour are a result of diet – whether the calf is fed grain or milk – and the market age of the calf.

For the first six to eight weeks of their lives, until they are old enough to be weaned, many veal calves are kept in individual pens known as hutches. Hutches are similar to incubators in that they isolate the calves from each other until they have built their individual immunity levels high enough to protect against disease challenges. Hutches also allow the farmer to give individual attention to each of the calves and to monitor feed intake.

Approximately 30% of Ontario veal calves are raised as milk-fed veal, while the remaining 70% will be raised as grain-fed. In Ontario, approximately 65% of milk-fed veal is raised in individual hutches or stalls. Canadian standards of care dictate that individual stalls or hutches are among the largest in the world, allowing the calves to lie down, stand up, and groom themselves; the hutches are designed so that the calves do not need to be tethered (tied up). Individual housing, such as this, allows the calves to behave like most young animals, which normally spend 75-80% of their time lying down or resting.

The remaining 35% of the milk-fed veal calves are raised in group pens known as loose housing. Both hutches and loose housing have pros and cons: while it may appear that loose housing may be more advantageous to the calf in terms of exercise, research shows that calves in groups may also be subject to greater stress from bullying and that any individual health problem may be more difficult to manage. It is also unclear how important the additional space provided by the loose housing is to the calves, which tend to take only limited advantage of this freedom of movement. Computerized feeding systems and different housing designs are continually being tested and developed to optimize calf comfort.

Grain-fed veal calves, once weaned from milk replacer, are moved into larger group pens (loose housing). These pens vary in size and may hold as few as five calves to as many as fifty calves depending on the farm size. The typical barn floor may be made from wooden slats, allowing urine and solid manure to drop between the slats and leaving the calf with a dry and comfortable place to lie down. Calves are also provided a bed of clean, dry and fresh straw.



Teacher Resources Available

Agriculture and the Environment

	Title	Source	Year	Contact
Grades 4-6	We Are All Connected	Ontario	2000	www.oafe.org
Grades 4-12	All About Food: Agri-Food Facts	Agri-Food	2005	(905) 878-1510
Grade 7	Food Production and Soil Management	Education	2004	
Grades 7-10	The Challenge of Change		2001	
Grades 7-12	From Both Sides		1997	
Grades 10-12	Using Your Brain: The Urban Use of Pesticides		2000	
Grades 11-12	Food Biotechnology		2002	
Grades 11-12	Issues: Complex Issues in Agriculture and Food Production		1999	

Farm Animal Care

	Title	Source	Year	Contact
Grades 11-12	Issues: Complex Issues in Agriculture and Food Production	Ontario Agri-Food Education	1999	www.oafe.org (905) 878-1510

Food Safety

	Title	Source	Year	Contact
Grades K-3	Food Safety Activity Booklet	Ontario	2004	www.oafe.org
Grades 4-6	Labelling Literacy	Agri-Food	2002	(905) 878-1510
Grades 4-12	All About Food: Agri-Food Facts	Education	2005	
Grades 7-10	Food Safety Can Be Fun! (video and teacher's guide)		1999	
Grades 9-10	Eat Right		2002	
Grades 11-12	Issues: Complex Issues in Agriculture and Food Production		1999	

Beef Cattle Farming in Ontario

	Title	Source	Year	Contact
Grades 1-2	Animals and Me	Ontario	1999	www.oafe.org
Grades 3-4	Pizza Perfect	Agri-Food	2004	(905) 878-1510
Grades 4-6	Beef: Everywhere, Everyday	Education	1998	
Grades 11-12	Issues: Complex Issues in Agriculture and Food Production		1998	

Dairy Farming in Ontario

	Title	Source	Year	Contact
Grades K-3	Wow! Milk from a Cow	Ontario	1998	www.oafe.org
Grades K-2	Breakfast Bonanza	Agri-Food	1999	(905) 878-1510
Grades 1-2	Animals and Me	Education	1999	
Grades 3-4	Pizza Perfect		2004	
Grades 7-10	Achieving Balanced Choices		2002	
Grades 7-12	Mapping Your Future: Careers in the Agri-Food Industry		1999	

Veal Farming in Ontario

	Title	Source	Year	Contact
Grade 2, 6-12	The Real Veal Story	Ontario	1999	www.oafe.org
Grades 11-12	Issues: Complex Issues in Agriculture and Food Production	Agri-Food Education	1998	(905) 878-1510

Chicken Farming in Ontario

	Title	Source	Year	Contact
Grades 1-2	Animals and Me	Ontario	1999	www.oafe.org
Grades 11-12	Managing the Supply	Agri-Food Education	2004	(905) 878-1510

Egg Farming in Ontario

	Title	Source	Year	Contact
Preschool – K	E is for Eggs	Ontario	2004	www.oafe.org
Grades 1-2	Animals and Me	Agri-Food	1999	(905) 878-1510
Grades 1-3	Eggs Activity Book	Education	2004	
Grades 4-6	Eggtivities		2004	
Grades 4-12	All About Food: Agri-Food Facts		2005	
Grades 7-12	The Extraordinary Egg		2004	
Grades 11-12	Issues: Complex Issues in Agriculture and Food Production		1998	

Turkey Farming in Ontario

	Title	Source	Year	Contact
Grades K-3	Talking Turkey	Ontario	1999	www.oafe.org
Grades 1-2	Animals and Me	Agri-Food	1999	(905) 878-1510
Grades 4-6	More Than Special Occasions	Education	1998	
Grades 6-8	The Lean Machine		1998	
Grades 9-12	Don't Fowl It Up!		2002	

Pig Farming in Ontario

	Title	Source	Year	Contact
Grades K-2	All About Pigs	Ontario	2003	www.oafe.org
Grades 1-2	Animals and Me	Agri-Food	1999	(905) 878-1510
Grades 3-4	Pizza Perfect	Education	2004	
Grades 11-12	Issues: Complex Issues in Agriculture and Food Production		1998	

Goat Farming in Ontario

	Title	Source	Year	Contact
Grades 1-2	Animals and Me	Ontario	1999	www.oafe.org
Grades 9-12	The Natural Choice: Ontario Goat Milk	Agri-Food Education	2001	(905) 878-1510

Sheep Farming in Ontario

	Title	Source	Year	Contact
Grades 1-2	Animals and Me	Ontario Agri-Food Education	1999	www.oafe.org (905) 878-1510

Alternative Agriculture in Ontario

	Title	Source	Year	Contact
Grades 1-2	Animals and Me	Ontario	1999	www.oafe.org
Grades 1-4	Rappin' About Ratites	Agri-Food	1999	(905) 878-1510
Grades 4-10	Better Together	Education	1999	

Field Crops

	Title	Source	Year	Contact
Grades 3-7	Bean Bonanza	Ontario	1999	www.oafe.org
Grades 4-6	Soyfoods for You!	Agri-Food	2004	(905) 878-1510
Grades 4-6	Canola: Canada's Oil	Education	2005	
Grades 7-8	Wheat's New!		1999	

Fruits and Vegetables

	Title	Source	Year	Contact
Grade 3	Pump Up with Pumpkins	Ontario	2005	www.oafe.org
Grades 3-5	From Grower to Market	Agri-Food	2000	(905) 878-1510
Grades 4-6	Marvellous Mushrooms	Education	1999	
Grades K-6	Ontario Apples: Nature's Fast Food		2005	
Grades 7-8	Greenhouse Vegetables		2005	

Ontario Agri-Food Education Inc.

Resources Connected to the Ontario Curriculum Grade 1 to 8

Subject	GRADE ONE: Ontario Curriculum Specific Expectations met by OAFE Resources	OAFE Resources
Science and Technology: Life Systems: <i>Characteristics and Needs of Living Things</i>	<ul style="list-style-type: none"> - identify major parts of the human body and describe their functions; - identify the location and functions of each sense organ; - classify characteristics of animals and plants by using the senses; - describe the different ways in which animals move to meet their needs; - identify and describe common characteristics of humans and other animals that they have observed, and identify variations in these characteristics; - describe some basic changes in humans as they grow, and compare changes in humans with changes in other living things; - describe patterns that they have observed in living things; - select and use appropriate tools to increase their capacity to observe; - ask questions about and identify some needs of living things, and explore possible answers to those questions and ways of meeting these needs; - plan investigations to answer some of these questions or find ways of meeting these needs; - use appropriate vocabulary in describing, explorations, and observations; - record relevant observations, findings, and measurements, using written language, drawings, charts, and concrete materials; - communicate the procedures and results of investigations for specific purposes, using demonstrations, drawings, and oral and written descriptions; - compare the basic needs of humans with the needs of other living things; - describe a balanced diet using the four basic food groups outlined in Canada's Food Guide to Healthy Eating, and demonstrate awareness of the natural sources of items in the food groups; - identify ways in which individuals can maintain a healthy environment for themselves and for other living things. 	<ul style="list-style-type: none"> • <i>Animals and Me</i> • <i>Breakfast Bonanza</i> • <i>Wow! Milk From A Cow</i> <p>Supplemental Resources</p> <ul style="list-style-type: none"> • <i>All About Pigs</i> • <i>Bean Bonanza</i> • <i>Horses, Horses, Horses</i> • <i>Marvellous Mushrooms</i> • <i>Rappin' about Ratites</i> • <i>Talking Turkey</i> • <i>Veal: The Real Story</i> • <i>Food Safety Booklet</i> • <i>Eggs</i> • <i>Ontario Apples: Nature's Fast Food</i>
Mathematics: <i>Measurement</i>	<ul style="list-style-type: none"> - represent the results of measurement activities using concrete materials and drawings; 	
<i>Patterning and Algebra</i>	<ul style="list-style-type: none"> - recognize similarities and differences in a variety of attributes; 	
<i>Data Management and Probability</i>	<ul style="list-style-type: none"> - conduct an inquiry using appropriate methods; - compare, sort, and classify concrete objects according to a specific attribute; - collect first-hand data by counting objects, conducting surveys, measuring, and performing simple experiments; - read and discuss data from graphs made with concrete materials and express understanding in a variety of informal ways. 	
Health and Physical Education: <i>Healthy Living</i>	<ul style="list-style-type: none"> - identify the food groups and give examples of foods in each group; - suggest occasions when they can choose healthy food snacks, and describe the factors affecting their choices; - recognize that rest, food, and exercise affect growth. 	
Social Studies: Canada and World Connections: <i>The Local Community</i>	<ul style="list-style-type: none"> - demonstrate an understanding of basic personal and family needs; - identify how their basic needs are met; - identify the occupations of some people in the community; - show an understanding of how these people are important to meeting their needs and ensuring their safety; - identify the buildings in which these people work and describe the tools and vehicles they use. 	
Language: <i>Writing</i>	<ul style="list-style-type: none"> - write simple but complete sentences; - correctly spell words identified by teacher; - use words from their oral vocabulary as well as less familiar words from class-displayed word lists. 	

Subject	GRADE TWO: Ontario Curriculum Specific Expectations met by OAFE Resources	OAFE Resources
Science and Technology: Life Systems: <i>Growth and Changes in Animals</i>	<ul style="list-style-type: none"> - identify and describe the major physical characteristics of different types of animals; - classify a variety of animals using observable characteristics; - compare ways in which animals eat their food, move, and use their environment to meet their needs; - describe changes in the appearance and activity of an animal as it goes through a complete life cycle; - compare the life cycles of some animals that have similar life cycles and some that have different life cycles; - identify constant traits and changing traits in animals as they grow, and compare the appearance of young and mature animals of the same species; - describe ways in which animals respond and adapt to their environment; - ask questions about and identify some needs of different animals with which they are familiar, and explore possible answers to these questions and ways of meeting these needs; - plan investigations to answer some of these questions or find ways of meeting these needs and describe the steps involved; - use appropriate vocabulary in describing their investigations, explorations, and observations; - record relevant observations, findings, and measurements, using written language, drawings, and concrete materials; - communicate the procedures and results of investigations for specific purposes, using drawings, and concrete materials; - describe ways in which humans can help or harm other living things; - demonstrate awareness of ways of caring for animals properly; - describe how humans produce food by raising livestock. 	<ul style="list-style-type: none"> • <i>Animals and Me</i> • <i>Breakfast Bonanza</i> • <i>Wow! Milk From A Cow</i> Supplemental Resource <ul style="list-style-type: none"> • <i>All About Pigs</i> • <i>Bean Bonanza</i> • <i>Horses, Horses, Horses</i> • <i>Marvellous Mushrooms</i> • <i>Rappin' about Ratites</i> • <i>Talking Turkey</i> • <i>Veal: The Real Story</i> • <i>History of Plowing</i> • <i>Food Safety Booklet</i> • <i>Ontario Apples: Nature's Fast Food</i>
Matter and Materials: <i>Properties of liquids and solids</i>	<ul style="list-style-type: none"> - describe the properties of liquids and solids using their observations; - recognize that the states of liquids and solids remain constant in some circumstances, but may change in other circumstances. 	
Mathematics: <i>Number Sense and Numeration</i>	<ul style="list-style-type: none"> - explain a variety of strategies to find sums and differences of 2 two-digit numbers; - mentally add and subtract one-digit numbers; - add and subtract two-digit numbers with and without regrouping, with sums less than 101, using concrete materials; - use a calculator to solve problems with numbers larger than 50 in real-life situations; - pose and solve number problems with at least one operation; - select and use appropriate strategies to solve number problems involving addition and subtraction; 	
<i>Measurement</i>	<ul style="list-style-type: none"> - record the results of measurement activities in a variety of ways; - demonstrate an understanding of the relationship between days and weeks, months and years, minutes and hours, hours and days; - use mathematical language to describe relative times, sizes, temperatures, amounts of money, areas, masses, and capacities. 	
<i>Patterning and Algebra</i>	<ul style="list-style-type: none"> - identify patterns. 	
<i>Data Management and Probability</i>	<ul style="list-style-type: none"> - pose questions about meanings derived from the data on graphs; - sort and classify concrete objects, pictures, and symbols according to two specific attributes; - identify the basic parts of a graph, labels, scales, title, data; - organize data using graphic organizers and various recording methods; - construct and label simple concrete graphs, bar graphs, and pictographs using one-to-one correspondence. 	
Health and Physical Education: <i>Healthy Living</i>	<ul style="list-style-type: none"> - identify a balanced diet and apply decision-making skills to create menus for healthy meals; - describe the importance of food to the body. 	
Social Studies: Heritage and Citizenship: <i>Traditions and Celebrations</i>	<ul style="list-style-type: none"> - demonstrate an understanding that communities may be made up of many cultures; - demonstrate an understanding that traditions are passed down from parents and grandparents; - identify ways in which heritage and traditions are passed on; - identify the significant features of various family cultures; - use appropriate vocabulary; - identify the contributions that various cultures have made to the community. 	
Language: <i>Writing</i>	<ul style="list-style-type: none"> - use a variety of sentence types; - correctly spell words identified by the teacher; - use words from their oral vocabulary, personal word lists, and class lists compiled through brainstorming; - print legibly; 	
<i>Reading</i>	<ul style="list-style-type: none"> - express their thoughts and feelings about ideas in a piece of writing; - understand that the same sounds may be represented by different spellings. 	

Subject	GRADE THREE: Ontario Curriculum Specific Expectations met by OAFE Resources	OAFE Resources
Science and Technology: Life Systems: <i>Growth and Changes in Plants</i>	<ul style="list-style-type: none"> - identify the major parts of plants and describe their basic functions; - classify plants according to visible characteristics; - describe, using their observations, the changes that plants undergo in a complete life cycle - describe, using their observations, the effects of seasons on plants - describe, using their observations, how the growth of plants is affected by changes in environmental conditions; - design and conduct a hands-on inquiry into seed germination or plant growth; - ask questions about and identify some needs of plants, and explore possible answers to those questions and ways of meeting these needs; - plan investigations to answer some of these questions or find ways of meeting these needs, and explain the steps involved; - use appropriate vocabulary in describing their investigations, explorations, and observations; - record relevant observations, findings, and measurements, using written language, drawings, charts, and graphs; - describe ways in which humans use plants for food, shelter, and clothing.; - identify the parts of a plant that are used to produce specific products for humans; describe various plants used in food preparation and identify places where they can be grown; - describe various settings in which plant crops are grown; - compare the requirements of some plants and animals, identify the requirements that are common to all living things; - demonstrate awareness of ways of caring for plants properly; 	<ul style="list-style-type: none"> • <i>Community Connections: From Rural to Urban</i> • <i>Lunch Box for Plants</i> • <i>Tasting the Trees</i> • <i>Pizza Perfect</i> • <i>Native Foods: The Native Way</i> <p>Supplemental Resource</p> <ul style="list-style-type: none"> • <i>All About Food: Agri-Food Facts</i> • <i>Bean Bonanza</i> • <i>Marvellous Mushrooms</i> • <i>Pump Up With Pumpkins</i> • <i>History of Plowing</i> • <i>Grower To Market</i> • <i>Food Safety Booklet</i> • <i>Eggs</i> • <i>Ontario Apples: Nature's Fast Food</i> • <i>Canola: Canada's Oil</i>
Earth and Space Systems: <i>Soils in the Environment</i>	<ul style="list-style-type: none"> - describe, using their observations, the various components within a sample of soil; - describe, using their observations, the differences between sand, clay, humus, and other soil components, and compare and describe soil samples from different locations; - compare the absorption of water by different earth materials, and describe the effects of moisture on characteristics of the materials; - compare different ways in which plant roots grow through the soil; - describe through experimentation how soil can be separated into different components; - record relevant observations, findings, and measurements, using written language, charts, and drawings; - identify living things found in the soil; - recognize the importance of understanding different types of soil and their characteristics; - describe how the use of different soils affects the growth of indoor plants. 	
Social Studies: Canada and World Connections: <i>Urban and Rural Communities</i>	<ul style="list-style-type: none"> - demonstrate an understanding of the characteristics of urban communities; - demonstrate an understanding of the characteristics of rural communities; - describe the interaction between people and the environment; demonstrate an understanding of why people live where they do; - use appropriate vocabulary; - locate key information about urban and rural communities from primary sources and secondary sources; - sort and classify information about communities to identify issues, solve problems, and make decisions; - construct and read graphs, charts, diagrams, maps, and models for specific purposes; - communicate information, using media works, oral presentations, written notes and descriptions, drawings, tables, charts, maps, and graphs; - make and use large maps of rural and urban communities, using familiar units of measure; - consult map legends when looking for selected features; - recognize that different colours on maps indicate different things; - describe ways in which they and their families use the natural environment; - compare the characteristics of their community to those of a different community; - describe the ways in which people interact with other communities; - identify some products that Ontario sells to other provinces or territories and buys from them. 	
Mathematics: <i>Number Sense and Numeration</i>	<ul style="list-style-type: none"> -select the most appropriate unit of measure to measure length; -estimate, measure, and record linear dimensions of objects; -compare and order objects by their linear dimensions of objects. 	
Language: <i>Writing</i>	<ul style="list-style-type: none"> - communicate ideas and information for specific purpose and to specific audiences; [overall expectation] - organize information into short paragraphs that contain a main idea and related details; [overall expectation] - introduce new words from their reading into their writing. 	
<i>Reading</i>	<ul style="list-style-type: none"> - identify and restate the main idea in a piece of writing, and cite supporting details; - identify and describe some elements of stories; - begin to make inferences while reading; - use familiar vocabulary and the context to determine the meaning of a passage containing unfamiliar words. 	
<i>Oral and Visual Communication</i>	<ul style="list-style-type: none"> - listen to discussions and ask questions to clarify meaning; [overall expectation] - apply the rules for working with others; [overall expectation] - contribute ideas appropriate to the topic in group discussion and listen to the ideas of others. 	

Subject	GRADE FOUR: Ontario Curriculum Specific Expectations met by OAFE Resources	OAFE Resources
Science: Life Systems: Habitats and Communities	<ul style="list-style-type: none"> - describe ways in which humans are dependent on plants and animals; - describe ways in which humans can affect the natural world; - construct food chains that include different plant and animal species and humans; - identify, through observation, various factors that affect plants and animals in a specific habitat; - show the effects on plants and animals of the loss of their natural habitat; - investigate ways in which the extinction of a plant or animal species; affects the rest of the natural community and humans; - recognize that animals and plants live in specific habitats because they are dependent on those habitats and have adapted to them; - classify plants and animals that they have observed in local habitats according to similarities and differences; - formulate questions about and identify the needs of animals and plants in a particular habitat, and explore possible answers to these questions and ways of meeting these needs; - classify organisms according to their role in the food chain; - demonstrate an understanding of a food chain as a system in which energy from the sun is transferred eventually to animals, construct food chains of different plant and animal species, and classify animals as omnivore, carnivore and herbivore; - compile data gathered through investigations in order to record and present results using tally charts, tables and labelled graphs produced by hand or with a computer; 	<ul style="list-style-type: none"> • <i>All About Food: Agri-Food Facts</i> • <i>Pizza Perfect</i> • <i>Beef – Everywhere, Everyday</i> • <i>Nature's Sweet Mystery: Exploring Food Energy</i> • <i>Tasting the Trees</i> • <i>Turkeys – More than Special Occasions</i> • <i>We Are All Connected</i> • <i>Labelling Literacy</i>
Structures and Mechanisms: Pulleys and Gears	<ul style="list-style-type: none"> - demonstrate an awareness of the concept of mechanical advantage by using a variety of pulleys and gears; - identify common devices and systems that incorporate pulleys and/or gears. 	Supplemental Resources <ul style="list-style-type: none"> • <i>Bean Bonanza</i> • <i>Marvellous Mushrooms</i> • <i>Eggivities</i> • <i>Soyfoods For You!</i> • <i>Ontario Apples: Nature's Fast Food</i> • <i>Canola: Canada's Oil</i>
Health and Physical Education: Healthy Living	<ul style="list-style-type: none"> - analyze, over a period of time, their own food selections, including food purchase, and determine whether or not they are healthy choices; - explain the role of healthy eating practices; - outline the factors that influence body shape and size. 	
Social Studies: Canada and World Connections: The Provinces and Territories of Canada	<ul style="list-style-type: none"> - identify Ontario's major natural resources and their uses; - demonstrate an understanding of the exchanges that occur between the regions of Ontario; - identify the natural resources necessary to create Canadian products and the provinces from which they originate; - demonstrate an understanding of the exchanges that occur between provinces; - use pictorial symbols to represent natural resources on a map. 	
Language: Reading	<ul style="list-style-type: none"> - understand specialized terms in different subject areas; - identify and describe the elements of stories; - make inferences while reading; - make judgements about what they read on the basis of evidence; - retell a story by adapting it for presentation in another way; - use a dictionary to expand vocabulary; - understand specialized terms in a different subject area; - use various conventions of formal texts to reinforce understanding of ideas; 	
<i>Oral and Visual Communication</i>	<ul style="list-style-type: none"> - contribute and work constructively in groups; [overall expectation] - create media works; [overall expectation] - use appropriate strategies to organize and carry out group projects; - identify and describe the different types of advertising that they encounter in their surroundings. 	
Mathematics: Number sense and Numeration	<ul style="list-style-type: none"> - represent, and explore the relationships between, decimals, mixed numbers, and fractions using concrete materials and drawings; [overall expectation] - develop proficiency in adding and subtracting decimal numbers to tenths; [overall expectation] - select the appropriate operation and solve one-step problems involving whole numbers and decimals with and without a calculator; 	
<i>Measurement</i>	<ul style="list-style-type: none"> - use linear dimensions and perimeter and area measures with precisions to measure length, perimeter and area; - estimate, measure and record the mass of objects using standard units; 	
<i>Data Management and Probability</i>	<ul style="list-style-type: none"> - collect and organize data and identify their use; [overall expectation] - predict the results of data collected; [overall expectation] - conduct surveys and record data on tally charts; - explain how data were collected and describe the results of a survey; - use conventional symbols, titled and labels when displaying data; - construct labelled graphs both by hand and by using computer applications, and create intervals suited to the range and distribution of the data gathered. 	
The Arts: Visual Arts	<ul style="list-style-type: none"> - solve artistic problems in their art work, using the elements of design specified for this grade; - produce two and three dimensional works of art that communicate thoughts, feelings and ideas for specific purposes and to specific audiences; - plan a work of art, identifying the artistic problem and a proposed solution; - identify strengths and areas for improvement in their own work and that of others; - state their preference for a specific work chosen from among several on a similar theme and defend their choice with reference to their own interests and experience and to the artist's use of the various elements of design; 	
<i>Drama and Dance</i>	<ul style="list-style-type: none"> - enact or create, rehearse and present drama and dance works based on novels, stories, poems, and plays. 	

Subject	GRADE FIVE: Ontario Curriculum Specific Expectations met by OAFE Resources	OAFE Resources
Science: Life Systems: <i>Human Organ Systems</i>	<ul style="list-style-type: none"> - describe the basic structure and function of the major organs in the respiratory, circulatory, digestive, excretory and nervous systems; - formulate questions about and identify the needs of humans, and explore possible answers to these questions and ways of meeting these needs; - plan investigations for some of these answers and solutions, identifying variables that need to be held constant to ensure a fair test and identifying criteria for assessing solutions; - use appropriate terminology, including correct science and technology terminology, in describing their investigations, explorations and observations; - compile data gathered through investigations in order to present results, using tally charts, tables, and labelled graphs produced by hand or with a computer; - communicate the procedures and results of investigations for specific purposes and to specific audiences, using media works, oral presentations, written notes and descriptions, drawings and charts; - describe the types of nutrients in foods and their function in maintaining a healthy body; - identify a balanced diet as one containing carbohydrates, proteins, fats, minerals, vitamins, fibre, and water, and design a diet that contains all of these; - interpret nutritional information to make healthy food choices - identify types of industries involved in the processing and preserving of foods; - identify food sources from which people in various societies obtain nutrients; - demonstrate awareness that some disorders can be affected by diet; 	<ul style="list-style-type: none"> • <i>All About Food: Agri-Food Facts</i> • <i>Labelling Literacy</i> • <i>Grower To Market</i> • <i>Beef – Everywhere, Everyday</i> • <i>Nature’s Sweet Mystery: Exploring Food Energy</i> • <i>Tasting the Trees</i> • <i>Turkeys – More than Special Occasions</i>
Earth and Space Systems: <i>Weather</i>	<ul style="list-style-type: none"> -describe ways in which weather conditions affect the activities of humans and other animals; -understand and explain the importance of weather forecasts for people in certain occupations; 	Supplemental Resources <ul style="list-style-type: none"> • <i>Bean Bonanza</i> • <i>Soyfoods For You!</i> • <i>Eggivities</i> • <i>Ontario Apples: Nature’s Fast Food</i> • <i>Canola: Canada’s Oil</i>
Structures and Mechanisms: <i>Forces Acting on Structures and Mechanisms</i>	<ul style="list-style-type: none"> - compare the force needed to lift a load manually with the force required to lift the load with a simple machine; - describe how different mechanisms are designed for a specific purpose or function; - recognize the advantages and disadvantages of using various mechanisms with respect to the amount of energy they require to move or lift a given load. 	
Health and Physical Education: <i>Healthy Living</i>	<ul style="list-style-type: none"> - explain the purpose and function of calories and the major food nutrients; - identify critical content information on food labels; - explain how changes in our bodies sometimes affect our eating habits; 	
Social Studies: Heritage and Citizenship: <i>Early Civilizations</i>	<ul style="list-style-type: none"> - compare design and technology in early civilizations with those in modern Canada. 	
Language: <i>Reading</i>	<ul style="list-style-type: none"> - use research skills. 	
Mathematics: <i>Number Sense and Numeration</i>	<ul style="list-style-type: none"> - select operations and solve two-step problems involving whole numbers and decimals with and without a calculator. 	
<i>Data Management and Probability</i>	<ul style="list-style-type: none"> - predict the validity of the results of data collected; [overall expectations] - design surveys, collect data, and record the results on given spreadsheets or tally charts; - display data on graphs by hand and by using computer applications; - recognize that graphs, tables and charts can present data with accuracy or bias; - construct labelled graphs both by hand and by using computer applications. 	

GRADE SIX:		
Science: Life Systems: <i>Diversity of Living Things</i>	<ul style="list-style-type: none"> - describe specific characteristics or adaptations that enable each group of vertebrates to live in its particular habitat and explain the importance of maintaining that habitat for the survival of the species. 	<ul style="list-style-type: none"> • <i>All About Food: Agri-Food Facts</i> • <i>Labelling Literacy</i> • <i>Beef – Everywhere, Everyday</i> • <i>Nature’s Sweet Mystery: Exploring Food Energy</i> • <i>Tasting the Trees</i> • <i>Turkeys – More than Special Occasions</i>
Mathematics: <i>Data Management and Probability</i>	<ul style="list-style-type: none"> - systematically collect, organize, and analyse data; [overall expectation] - evaluate data and make conclusions from the analysis of data; [overall expectation] - compare experimental probability results with theoretical results. [overall expectation] 	
Health and Physical Education: <i>Healthy Living</i>	<ul style="list-style-type: none"> - determine the influence of various factors on personal food choices, body image, and self esteem; - analyze personal eating habits in a variety of situations; - describe the benefits of healthy eating for active living; 	
Social Studies: Canada and World Connections: <i>Canada and Its Trading Partners</i>	<ul style="list-style-type: none"> - identify products which Canada imports and exports; - identify the countries to which Canada exports goods; - identify the countries from which Canada imports goods; - identify Canada’s connections to the United States through trade, culture, technology; - describe how sharing of goods and culture between Canada and other countries can influence the lifestyles of Canadians; - create sketch maps to show the relative positions of places. 	
Heritage and Citizenship: <i>Aboriginal Peoples and European Explorers</i>	<ul style="list-style-type: none"> - describe the relationship between Aboriginal peoples and their environment; - locate relevant information about the relationship between the environment and Aboriginal lifestyles using primary and secondary sources. 	

- Supplemental Resource**
- *Bean Bonanza*
 - *Marvellous Mushrooms*
 - *Soyfoods For You!*
 - *Eggivities*
 - *Native Foods: The Native Way*
 - *Ontario Apples: Nature’s Fast Food*
 - *Canola: Canada’s Oil*

Subject	GRADE SEVEN: Ontario Curriculum Specific Expectations met by OAFE Resources	OAFE Resources
Science and Technology: Life Systems: <i>Interactions Within Ecosystems</i>	<ul style="list-style-type: none"> - demonstrate an understanding of the effects of human activities and technological innovations, as well as the effects of changes that take place naturally, on the sustainability of ecosystems. [OE] - identify living (biotic) and non-living (abiotic) elements in an ecosystem; - investigate the impact of the use of technology on the environment; - describe the conditions in an ecosystem that are essential to the growth and reproduction of plants and micro-organisms and show the connection between these conditions and various aspects of the food supply for humans. 	<ul style="list-style-type: none"> • <i>Better Together</i> • <i>From Both Sides</i> • <i>Outstanding Ontarians</i> • <i>Tasting the Trees: Maple Syrup Production in Ontario</i> • <i>The Challenge of Change</i> • <i>Food Production and Soil Management</i> <p>Supplemental Resources</p> <ul style="list-style-type: none"> • <i>All About Food: Agri-Food Facts</i> • <i>Bean Bonanza</i> • <i>Greenhouse Vegetables</i> • <i>Marvellous Mushrooms</i> • <i>Wheat's New</i>
Matter and Materials: <i>Pure Substances and Mixtures</i>	<ul style="list-style-type: none"> - identify human uses of mixtures and solutions in everyday life, and evaluate the environmental impact of some of these uses. [OE] - describe the concentration of a solution in qualitative terms and in quantitative terms; - describe, through observation, the difference between saturated and unsaturated solutions. 	
Earth and Space Systems: <i>The Earth's Crust</i>	<ul style="list-style-type: none"> - identify the factors that must be considered in making informed decisions about land use and explain their importance. [OE] - describe the process of soil formation by relating the various meteorological, geological, and biological processes involved; - identify the factors that must be considered in making informed decisions about land use; - explain how the characteristics of soil determine its use; - assess the importance of soil conservation. 	
Health and Physical Education: <i>Healthy Living</i>	<ul style="list-style-type: none"> - examine the effects of healthy eating and regular physical activity on body size and shape, and on self-esteem; - describe how our body image influences our food choices; - identify factors affecting healthy body weight. 	
History and Geography: Geography: <i>The Themes of Geographic Inquiry</i>	<ul style="list-style-type: none"> - demonstrate an understanding of geographic inquiry. [OE] - demonstrate an understanding of the movement theme; - produce a report on current environmental events in the news; - communicate an understanding that various individuals and groups have different opinions on environmental issues. 	
<i>Natural Resources</i>	<ul style="list-style-type: none"> - identify the pattern that exists in the distribution and use of natural resources throughout the world; - demonstrate an understanding of how technology has affected natural resources; - produce a report on the factors that affect the availability of natural resources in the future; - present and defend a point of view on how a resource should be used. 	

GRADE EIGHT:		
Science and Technology: Earth and Space Systems: <i>Water Systems</i>	<ul style="list-style-type: none"> - examine how humans use resources from the earth's different water systems and identify the factors involved in managing these resources for sustainability. [OE] - describe factors that affect glaciers and polar ice-caps, and describe the effects of glaciers and polar ice-caps on the environment. 	<ul style="list-style-type: none"> • <i>Better Together</i> • <i>From Both Sides</i> • <i>Outstanding Ontarians</i> • <i>Tasting the Trees: Maple Syrup Production in Ontario</i> • <i>The Challenge of Change</i> <p>Supplemental Resources</p> <ul style="list-style-type: none"> • <i>All About Food: Agri-Food Facts</i> • <i>Greenhouse Vegetables</i> • <i>Marvellous Mushrooms</i> • <i>Wheat's New</i>
Matter and Materials: <i>Fluids</i>	<ul style="list-style-type: none"> - compare various liquids in terms of their viscosity; - predict how the flow rate of different liquids is affected by temperature. 	
Health and Physical Education: <i>Healthy Living</i>	<ul style="list-style-type: none"> - analyse the effects of undereating and overeating on health and well-being; - identify ways to maintain a healthy body weight; - adopt personal food plans, based on nutritional needs and personal goals, to improve or maintain eating practices. 	
History and Geography: History: <i>Canada: A Changing Society</i>	<ul style="list-style-type: none"> - demonstrate an understanding of factors contributing to change in a society; - demonstrate an understanding of how the industrial revolution changed Canadian society; - identify and describe the achievements of Canadians who have contributed significantly to the development of Canada and the world; - identify major developments and personalities in the women's rights movement, and demonstrate an understanding of the changing role of women in Canadian society. 	
History and Geography: Geography: <i>Patterns in Human Geography</i>	<ul style="list-style-type: none"> - demonstrate an understanding of the factors affecting population distribution; - identify and describe the types of land use; - demonstrate an understanding of the factors affecting urbanization, industrialization, transportation, and improvements in agriculture; - research job trends and predict the skills needed to meet the challenges of the future. 	
<i>Economic Systems</i>	<ul style="list-style-type: none"> - demonstrate an understanding of economic systems and the factors that influence them. [OE] - demonstrate an awareness of the fundamental elements of an economic system; what goods are produced; how they are produced; for whom they are produced; and how they are distributed; 	

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Pigs

1. Pigs are fed:

- a) Nutritious grains such as corn, soybean meal, and barley.
- b) Chocolate bars.
- c) Hamburgers and French fries.

Answer: A. Pigs eat balanced diets of feeds such as corn, soybean meal and barley. Most animals have a more balanced diet than most humans!

2. Why don't many pig farmers allow visitors in their barns?

- a) Because the pigs don't have good manners.
- b) They keep their money in the barn.
- c) To help keep the pigs healthy.

Answer: C. Only allowing certain people in the barn helps prevent sickness in the pigs and reduces the need for medicines. Some farmers ask visitors to shower BEFORE they go into the barn to prevent germs from coming in.

3. How many piglets does an average sow (mother pig) raise at one time?

- a) 20
- b) 10
- c) None, since they all went "wee wee wee" all the way home.

Answer: B. The average sow raises 8-12 piglets at any one time. They can have two litters of piglets in one year.

4. Pigs are transported:

- a) In wheelbarrows.
- b) In police cars.
- c) In specially designed trucks.

Answer: C. Pigs travel in specially designed livestock trucks. Truck drivers and farmers follow guidelines to make sure animals are transported safely.

5. Sows (mother pigs) are placed in special pens during farrowing (giving birth) and nursing so:

- a) They won't have mud fights with other mother pigs.
- b) They won't injure or crush their piglets when they lie down.
- c) The farmer can pet the pig.

Answer: B. Individual attention and care can be given to each sow and piglets. Sows can stand up, lie down, and move back and forth. Piglets can move around freely and safely!

6. Most pigs live:

- a) In the mud.
- b) In houses of straw, sticks, or bricks.
- c) In clean barns.

Answer: C. No, pigs do not live in the mud. (They would be very cold in the winter!) Pigs are naturally clean animals that prefer the clean, dry environment provided by barns in Ontario today.

7. What do you call a male pig?

- a) Wilbur.
- b) Babe.
- c) A boar.

Answer: C. A male pig is called a boar. A mother pig is called a sow.

8. Pigs are used to make:

- a) Make-up.
- b) Bacon.
- c) Fertilizer.
- d) All of the above.

Answer: D. More than just bacon and ham come from pigs! Cosmetics, tires, medicines, crayons, and glues all contain products that come from pigs.



Crops

1. In what season, do farmers plant their crops?

- a) Spring.
- b) Fall.
- c) Winter.

Answer: A. Crops like corn and wheat as well as vegetables and fruits are usually planted in the springtime. Most of these crops are harvested in the fall around Thanksgiving.

2. What do farmers use to plant their crops?

- a) A wheelbarrow.
- b) Special equipment behind a tractor.
- c) Their hands.

Answer: B. Farmers pull special planting machines behind their tractors to put seeds into the ground. In Canada, there are 89.9 million acres of crops – that's almost 90 million soccer fields. Imagine planting that much land by hand!

3. Which of these fruits are grown in Ontario?

- a) Pineapples.
- b) Coconuts.
- c) Apples.

Answer: C. There are 7,000 hectares (that's 14,000 soccer fields!) of apples grown in Ontario. Pineapples and coconuts cannot survive the weather in Ontario.

4. What is crop rotation?

- a) When farmers plant different crops in different fields each year.
- b) When seeds blow from one field to another.
- c) When corn and wheat square dance.

Answer: A. Farmers plant different crops in different fields each year to help keep the soil healthy and cut down on the amount of field sprays.

5. Why do farmers like to see worms in the soil?

- a) Farmers can use them as fishing bait.
- b) Worms are a sign that the soil is healthy.
- c) Worms help carry the vegetables to the barn.

Answer: B. Worms show that soil is healthy and ready to grow crops. They also help to compost manure into rich fertilizer for the land.

6. Which of these is made from corn?

- a) Corn flakes.
- b) Fireworks.
- c) Corn chips.
- d) All of the above.

Answer: D. All of these products come from corn. Cornstarch (a white powder that comes from corn) is used to make fireworks. Farming is not just about food!

7. Why do farmers work hard to take care of the environment?

- a) So their neighbours don't complain.
- b) Because they need healthy air, water, and soil for their farms to be successful.
- c) So their animals don't run away.

Answer: B. Farms rely on healthy soil, water, and air to be successful. Farmers also want a healthy environment to raise their families in.

8. Which of the following are products of biotechnology?

- a) Yogurt.
- b) Wine.
- c) Soybeans.
- d) All of the above.



Answer: D. It is estimated that 50-55% of soybeans in Ontario have been genetically modified. Biotechnology is far broader than just genetic modification -- it is the application of biological substances to industry, such as using bacteria to make yogurt or selective breeding, which has been used for thousands of years.

Dairy

1. What do most dairy farmers use to milk their cows?

- a) Milking machines.
- b) Vacuum cleaners.
- c) Their hands.

Answer: A. Farmers use milking machines to gently and efficiently milk the cows. It takes about five minutes to milk each cow by machine.

2. What do cows eat?

- a) Hay, grasses, & grains.
- b) Jersey milk chocolate bars.
- c) Cheesies.

Answer: A. Dairy cows are fed a nutritionally balanced ration of roughage such as hay and silage, and grains such as oats and corn. Dairy cows are fed different diets depending on their age.

3. How often do farmers milk their cows?

- a) Once a week.
- b) Once a month.
- c) Twice a day.

Answer: C. Most dairy farmers milk their cows twice a day, 12 hours apart. This means they usually wake up at five or six o'clock in the morning to milk their cows!

4. Most cows have tags in their ears so:

- a) The farmer can identify the animal.
- b) They can't join the circus.
- c) They look fashionable.

Answer: A. Each cattle animal in Canada has its own unique number contained in a barcode on its ear tag. This is part of the Canadian Cattle Identification Program. Since no two animals have the same number, in the rare case of a food safety problem, farmers can trace their animals to make sure that the food you eat is safe.

5. What could a farmer do to find out how big to make an individual cow stall?

- a) Watch a "mooo"vie.
- b) Read the Recommended Code of Practice for the Care and Handling of Dairy Cattle.
- c) Ask the cows how big they would like them to be.

Answer: B. The Recommended Codes have been set up for most farm animals as guidelines for animal care. They include information about housing, care, handling, and transporting animals.

6. What is a milk house?

- a) A separate part of the barn where milk is stored and milking equipment is kept.
- b) The building where they add cocoa to the milk to make chocolate milk.
- c) Where the cows have coffee break.
- d) Where the farmer lives.

Answer: A. A milk house is a separate room where milk is kept in a giant refrigerator. Every other day, a milk truck transports milk from the farm to the processing plant. At the processing plant, they make sure that the milk is safe for you to drink.

7. Dairy cows are giving bedding to keep them clean and dry. What is bedding?

- a) Fluffy feather pillows to have pillow fights with.
- b) Black-spotted quilts.
- c) Straw.

Answer: C. Bedding for dairy cows could be straw, wood shavings, or synthetic mats. Research is being done about using shredded phone books or shredded rubber for bedding.

8. A heifer is:

- a) An adult pig.
- b) A young female dairy or beef animal.
- c) What cows say when they sneeze.



Answer: B. Although heifers will grow into cows, they cannot officially be called cows until they are full-grown and have had a calf. A cow is full-grown when it is two years old!

Beef

1. What is a herd?

- a) A song played by the beef brass band.
- b) A group of cattle.
- c) The bully beef animal.

Answer: A. A group of cattle is called a herd. There are 21,000 beef farms in Ontario.

2. Many beef cattle live outside because:

- a) It's healthy for them.
- b) They are too chicken to go inside.
- c) Farmers like to show off their cattle to the neighbours.

Answer: A. Beef cattle have a protective hair coat, which allows them to live outdoors quite comfortably.

3. Which of the following come from beef cattle?

- a) Baseball gloves.
- b) Steaks.
- c) Tires.
- d) All of the above.

Answer: D. 98% of every beef animal is used to make products and they are not all food! Did you know, that one and a half baseball gloves can be made from each hide?

4. How do beef cattle travel?

- a) By helicopter.
- b) In special trucks.
- c) In tractors.

Answer: B. Beef cattle are shipped in specially designed trucks that are made just for moving farm animals and follow transportation guidelines.

5. What do beef cattle eat?

- a) Whatever the pigs leave behind.
- b) Grains with added vitamins and minerals.
- c) Beef jerky.

Answer: B. Cattle eat forage diets, which include grasses, alfalfa, vitamins, minerals, and grains such as corn and oats. It looks similar to a breakfast bowl of granola without the milk!

6. The land that beef cattle graze on:

- a) Should be changed into a subdivision.
- b) Is wasting land that could grow cereal crops like corn and wheat.
- c) Is not suitable for other farming purposes.

Answer: C. Much of the land used for grazing cattle cannot be used to grow crops.

7. Cattle re-chew their feed (called "cud") many times before it is digested. How much time do they spend doing this?

- a) Eight hours per day.
- b) Five minutes after every time they eat.
- c) One hour after their bedtime snack.

Answer: A. A cow spends approximately eight hours each day chewing cud. Imagine if it took you eight hours to eat -- you wouldn't have time for anything else!

8. How much does a newborn calf weigh?

- a) 1kg
- b) 40 kg
- c) 200 kg

Answer: B. A newborn calf weighs about 40-45 kg.



Poultry

1. What do you call a group of chickens?

- a) A gaggle.
- b) A flock.
- c) Wings 'r us.

Answer: B. A group of chickens is called a flock. The average flock is 30,000 birds!

2. What do chickens eat?

- a) Chocolate eggs.
- b) Table scraps.
- c) Grains and minerals.

Answer: C. Chickens are fed a series of grain mixtures with mineral supplements. Most farms have feeders that automatically dispense feed to the chickens like a vending machine, except they don't have to pay!

3. Most turkeys in Canada are raised:

- a) In secret because they are very shy.
- b) In cages.
- c) In group pens in a barn.
- d) In a grassy field.

Answer: C. Turkeys are kept in group pens in barns. The barns protect the turkeys from predators, disease, and bad weather.

4. True or False: Brown eggs are healthier than white eggs.

False: There is NO difference in nutrition between brown and white eggs. Brown chickens produce brown eggs and white chickens produce white eggs.

5. What is candling?

- a) A process used by egg graders to test the quality of eggs.
- b) When farmers light scented candles in their barns.
- c) Turning off the lights in the barn.

Answer: A. By using a very strong light, graders are able to see the condition of the shell, the size of the air cell, and whether the yolk is well-centred.

6. Why do many poultry farmers only allow certain people into their barns?

- a) It prevents the birds from escaping.
- b) It helps keep birds healthy.
- c) The birds are very shy and they are too "chicken" to meet new people.

Answer: B. By only letting certain people into barns, farmers reduce the chance that sickness will enter their facilities. This is called biosecurity.

7. What do you call a young female chicken?

- a) Chicken Little.
- b) A rooster
- c) A pullet.

Answer: C. A young female chicken is called a pullet. A young male chicken is called a cockerel.

8. How many eggs does a chicken lay in one year?

- a) 10
- b) 500
- c) 300

Answer: C. An average hen will lay 300 eggs per year.



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Miscellaneous

1. What percentage of Canadians are farmers?

- a) 2.4%
- b) 50%
- c) None – all food is grown by machines.

Answer: A. Farmers make up 2.4% of all Canadians.

2. What percentage of Canada's farms are family owned and operated?

- a) 5%
- b) 98%
- c) Old MacDonald is the only one left.

Answer: B. Over 98% of Canadian farms are family owned and operated. The family is an important part of farming.

3. One farmer produces enough food to feed how many people each year?

- a) Your family.
- b) One hockey team.
- c) Over 100 people.

Answer: C. On average, each Ontario farm family produces enough food to feed over 120 people.

4. What do you call a male goat?

- a) Doe.
- b) Buck.
- c) Billy.

Answer: B. A male goat is called a buck. A female goat is called a doe.

5. Where do sheep live?

- a) In barns or pastures.
- b) In yarn stores.
- c) In hot-air "Baaa"loons.

Answer: A. Some shepherds (farmers that care for sheep) keep their sheep in barns and some keep them outside in pastures. Even though sheep have wool, they need barns or trees for protection.

6. What do you call the doctors that care for farm animals?

- b) Veterinarians or vets.
- c) Zookeepers.
- d) Farmacologists.

Answer: A. Veterinarians are doctors for farm animals as well as pets! Veterinarians work together with farmers to keep animals healthy.

7. Why are most farm animals raised indoors?

- a) To keep them protected from sickness, predators, and the weather.
- b) So they don't run away to the circus.
- c) Because they are afraid the sky is falling.

Answer: A. When animals are indoors, they are well protected and farmers can provide them with the best possible care.

8. How do you tell the age of a horse?

- a) By the length of its tail.
- b) By the length of its teeth.
- c) By looking at its hooves (feet).
- d) By the height of its shoulders.



Answer: B. Veterinarians and horse owners use teeth as a guide to age. The expression "long in the tooth" means old age because as a horse ages its teeth get longer.

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