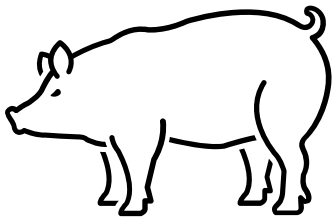
AgScape®

AN EXPLORATION OF PIG FARMING IN ONTARIO



TEACHER'S GUIDE
GRADES 5-10

About This Resource

This Teacher Guide was designed with the support of and in collaboration with Ontario Pork.

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AgScape
8560 Tremaine Road
P.O. Box 460
Milton, ON L9T 4Z1

T: (905)878-1510
E: info@agscape.ca
Twitter: @AgScapeON
Facebook: AgScapeON
Instagram: @AgScape_ON
www.agscape.ca

Original Development:

Cassi Brunsveld, OCT, Program Assistant, AgScape
Mercedes Unwin, OCT, Program & Resource Manager, AgScape

Contributors:

Jordan Sloggett, Marketing & Communications Manager, AgScape
Sheri Budhram, Digital Data & Content Administrator, AgScape
Shaunna MacQuarrie, OCT, Project Assistant, AgScape
Jennifer Davidson, Senior Communications Lead, Ontario Pork
Stacey Ash, Manager of Communications & Consumer Marketing, Ontario Pork

Table of Contents

AN OVERVIEW OF PIG FARMING

Grade 5-10

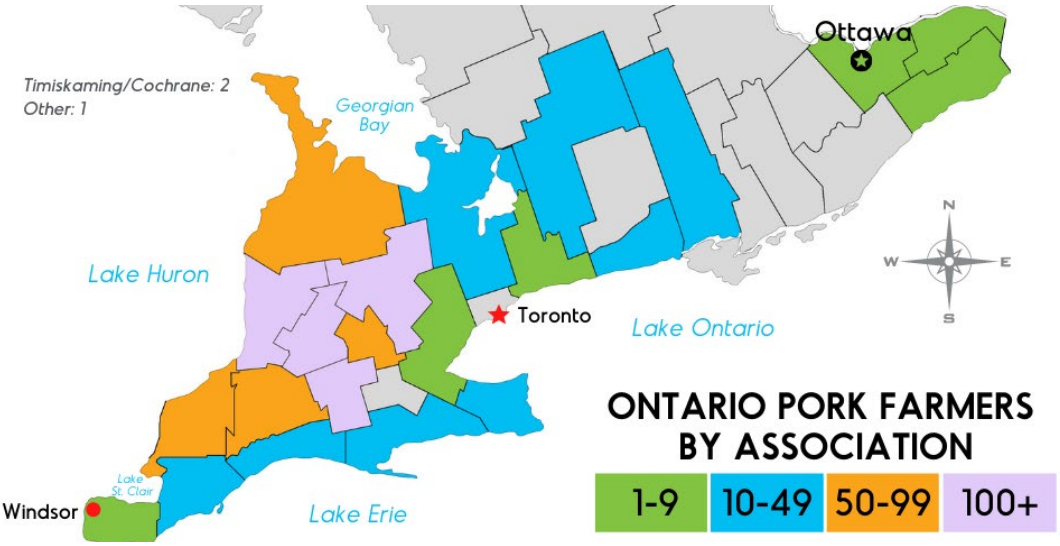
THE HISTORY OF PIG FARMING

The domestic pigs' (Latin name*: sus domesticus*) genetic ancestry stems back to the domestication of a sub-species of the wild boar (Latin name*: sus scrofa)* that were native to Europe and Asia. This would eventually lead to two major forms of the species: the European (sus scrofa) and the Asian form (sus indicus). It is theorized that these two forms separated from their ancestral line some 500,000 years ago, well before domestication of the pig which is projected to have occurred approximately 9,000 years ago.

The arrival of the domestic pig or hog in Canada stems back to the late 16th century when the French first brought pigs to Canada from Europe and began settling. Over the years and especially in the past century, pig or hog farming in Canada has grown to be an international contender in pork production with it being one of the top 10 producers next to Russia, European Union, United States of America, and Brazil, among others.

WHERE ARE THE PORK FARMS IN ONTARIO?

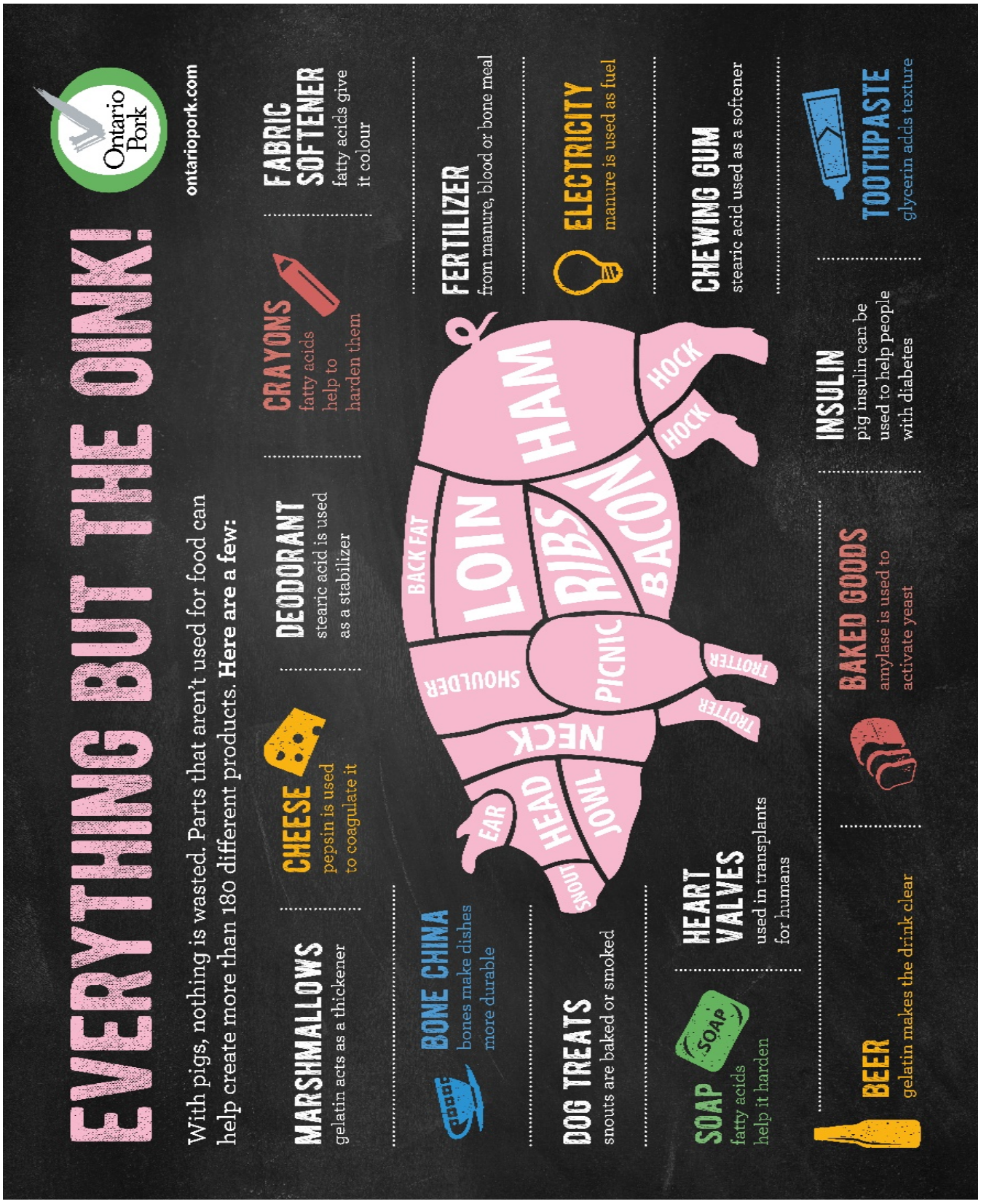
Ontario has the most hog farms of any Canadian province and, second to Quebec has the largest swine herd in Canada. In 2020, Ontario's 1,143 farmers brought to market 5.8 million hogs. Ontario pork farms are located all throughout Ontario, but most pork farms in the province are located in Southwestern Ontario.



Ontario Pig Farmers by County, 2021

To see a breakdown of the location of pig farms in Ontario, go to:
https://www.ontariopork.on.ca/Portals/0/CountyHogYearCompare.pdf

PARTS OF A PIG AND WHAT THEY ARE USED FOR



Everything But the Oink, Ontario Pork, 2021

WHY IS PIG FARMING IMPORTANT?

The swine industry brings a lot of benefits to Ontario, as well as across Canada. These benefits include added nutrition for humans, job opportunities, economic development for the province and nation, as well as contributing to overall food security.

ECONOMY

In Canada, the pork industry employs 134,000 individuals. There are more than 7,000 pig farms across the country producing more than 25.5 million animals a year. With direct farm gate annual sales equaling to approximately $4.1 billion, the pork sector is the fourth-largest source of farm cash receipts of any Canadian agricultural commodity. In 2020, the Ontario pork industry alone supported 15,339 full-time equivalent jobs, had an economic output of $2.74B and contributed $1B to the GDP.

HUMAN NUTRITION & HEALTH

Pork is a rich source of certain vitamins and minerals your body needs to function, like iron and zinc. It is also an excellent source of high-quality protein. In addition to all these vitamins and nutrients, it is important to note that there are no hormones or steroids added to Canadian pork products.

Nutrients in Pork:

Thiamin (Vitamin B1)	• Builds and repairs nerves & muscles • Maintains an appetite • Releases energy from carbohydrates.
Riboflavin	• Releases energy from proteins • Maintains the nervous system • Builds and repairs body tissue • Maintains healthy skin and eyes
Niacin (Vitamin B3)	• Releases energy from foods • Maintains healthy skin • Maintains the digestive tract • Protects the nervous system
Vitamin B6	• Releases energy from proteins • Helps transport amino acids • Helps form niacin (Vitamin B3) • Aids functioning of the nervous system
Iron	• Builds hemoglobin in red blood cells • Prevents nutritional anemia • Helps with energy production
Vitamin B12	• Helps protect against heart disease.
Protein	• Builds & repairs body tissues • Regulates body processes • Forms antibodies to fight off infection
Fat	• Supplies energy • Protects & insulates body parts • Nourishes skin • Promotes normal growth • Transports vitamins A, D, E & K • Supplies essential fatty acids
Zinc	• Enhances and protects bones • Improves resistance to infection • Helps form hormones & enzymes • Develops & maintains immune system
Pantothenic Acid	• Releases energy from foods • Forms cholesterol, hormones and hemoglobin

ENVIRONMENT

Canadian pork producers are stewards of the land. This involves preserving ecosystems and resources, such as soil and water as well as minimizing the environmental impacts of their activities through the implementation of beneficial agricultural practices. Farmers rely on clean water and healthy soil to grow crops that feed people and animals, so it is in their best interest to ensure the environment is protected. A Life Cycle Assessment of Canadian Pork Production was completed in 2018 and it shows that the carbon footprint of Canadian pork farms is among the lowest in the world. Read all about Ontario Pork's Social Responsibility here: https://www.ontariopork.on.ca/Social-Responsibility

FOOD SAFETY

To ensure the quality of Canadian pork products, pork producers are accredited through the Canadian Pork Excellence Program (CPE), formally known as the Canadian Quality Assurance | Animal Care Assessment (CQA|ACA) program, which is an auditable program based on Hazard Analysis and Critical Control Points (HACCP) principles and Code of Practice for the Care and Handling of Pigs requirements, respectively. CPE promotes and ensures best on-farm practices to reduce or eliminate potential safety and meat quality hazards.

The Canadian Food Inspection Agency (CFIA) safeguards Canada's food supply through the enforcement of Canada's Meat Inspection Act under federal law.

HOW IS PORK PRODUCED?

While there are fewer farms, there are more people to feed than ever before. 98% of farms in Canada are family farms. Like other Canadians, farmers have embraced technology to improve animal care and food quality allowing them to specialize and increase the size of their operations. From 1990 to 2005, the total number of pig farms in Ontario declined by 64% and from 2005-present (2021) there was a 32% decline. Despite the declining number of farms, the number of hogs that have been sent to market increased which illustrates that farms are now larger than before and almost half of the pig farms in Ontario are marketing 3,000 pigs/year. Farms are businesses and have modernized and made changes over time allowing them to grow and improve efficiencies. Regardless of size, most hog farms are family-operated.

There are several contributing factors to what has led to the success of the swine industry, with many of these successes being attributed to farm management, research and development, food safety and industry enhancements. There is a massive amount of work that goes into livestock care and production and Ontario Pork has been a governing body of pork production in Ontario for the past 75 years. Despite the many changes in the farming industry, the commitment farmers have when caring for their animals, their land and the people who depend on them has not.

Most pigs raised in Ontario are crossbred including various breeds such as Landrace, Yorkshire and Duroc while some farmers raise heritage breeds which include Berkshire, Tamworth and Mangalitsa. Pigs can be raised using different programs such as conventional, antibiotic-free or organic. Each of these programs has different practices put into place, but all produce safe and nutritious pork products for consumers.

The majority of pork farmers in Canada raise their pigs in well ventilated and temperature regulated barns. These barns are designed to provide the pigs with the ideal environment, protecting them from disease, predators, and extreme weather. There are some pork farms in Ontario where the pigs have outside access as well as others who specialize in pasture raising their pigs.

Pig Barn, Ontario Pork

A sow (female pig) has a gestation period that lasts three months, three weeks and three days. On average, they will have 10-14 piglets in a litter and will give birth twice a year. Sows will give birth in a farrowing pen which is designed to keep the piglets safe while they nurse, and the piglets will stay on milk for 2-4 weeks. Once the piglets are weaned from the sow, they are grouped by size and move into a warm nursery area where they are fed creep feed (grain-based pellets). When the piglets reach 25 kilograms, they are called grower-finishers and are fed a specific diet until they reach 110 kilograms. These are the pigs that supply us with pork! Grower-finishers are divided into two groups — breeding stock and market pigs. For breeding stock, farmers select the pigs with the best genetics and most desirable traits to stay on the farm to add to their herd or replace existing pigs. On the farm, farmer work with veterinarians and nutritionists to help care for their animals and are subject to animal care requirements. When pigs head to market, they are inspected at the processing plant. Provincial and federal inspectors at processing plants check animals for any signs of injury, illness or food safety concerns, including ensuring that no antibiotics remain in the system of animals sent to slaughter.

There are strict government guidelines for processing and handling animals that must be followed by all workers. These guidelines are created by the National Farm Animal Care Council which is an organization made up of animal welfare groups, enforcement, government, and farmers. It is the only organization in the world of its kind.

TYPES OF PIGS

There are many different breeds of pigs raised for food around the world. Pigs are bred to emphasize different traits, such as their suitability to the local environment, meat quality, leanness, litter size, health, and temperament.

In Ontario, commercial pig producers usually raise pigs that are a hybrid of York, Landrace and Duroc pigs. These are hardy animals that produce a leaner meat in response to consumer interest. A few small farmers raise specialty breeds, such as Berkshire or Mangalitsa, which may take longer to grow, but produce meats with a higher fat content, favoured by chefs for its more intense flavour.

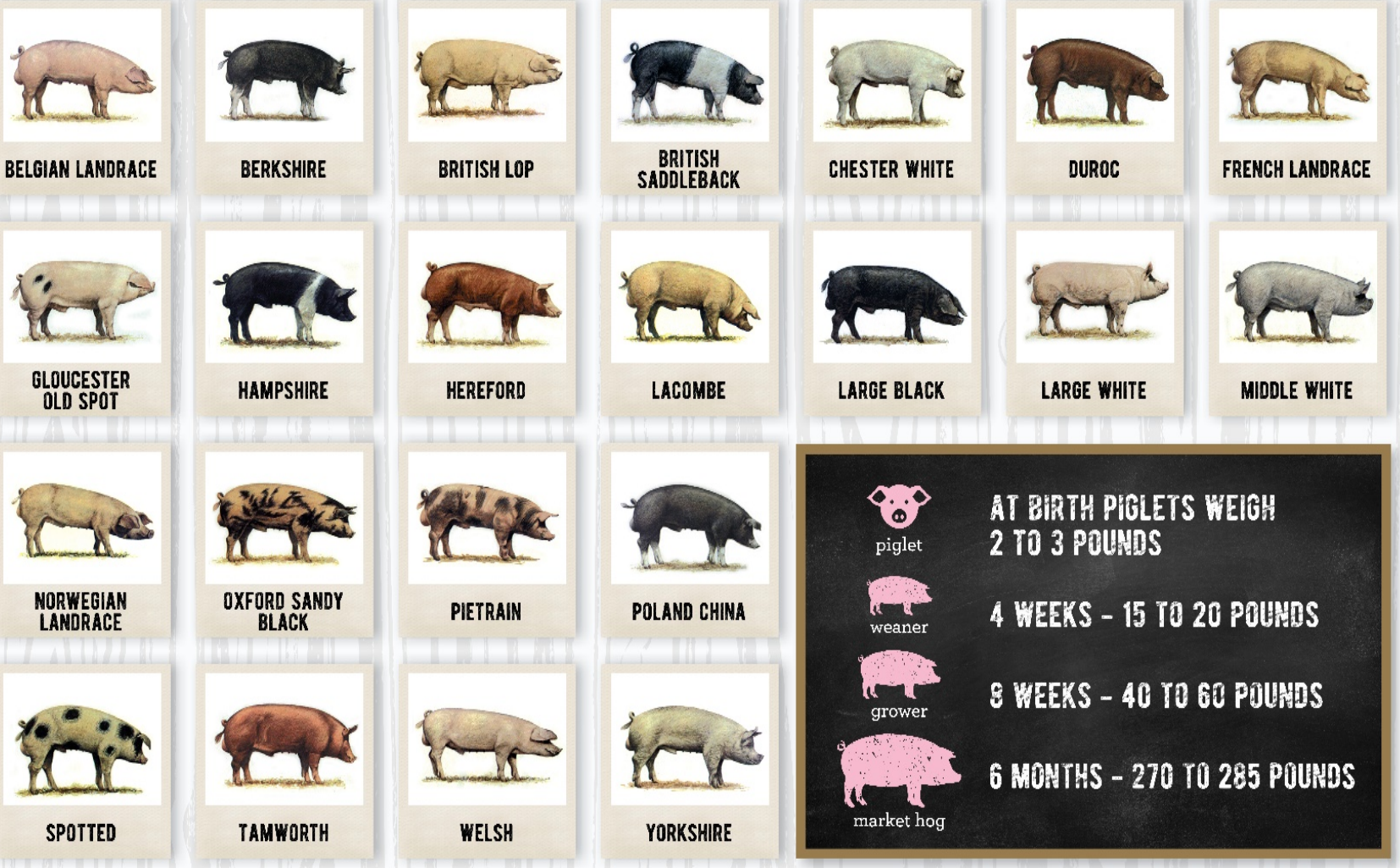
Eurasian wild boar have been raised domestically by smaller farms, but in 2021, Ontario's Ministry of Natural Resources and Forestry (MNRF) introduced changes to the Invasive Species Act, 2015, that would classify wild boar as an invasive species in Ontario. Eurasian wild board are not native to Canada or North America but have characteristics that make them highly adaptable to survive in the wild. Escaped or released animals have caused significant damage to crops and farmland in other jurisdictions, including the United States, where wild boar damage and control costs an estimated $1.5 billion each year.

PIGS AROUND THE WORLD

There are more than 29 different breeds of pigs that are raised for pork. Yorkshire, Landrace, Duroc and Hampshire are popular breeds on Canadian farms.

Ontario Pork

ontariopork.com



Pigs Around the World, Ontario Pork

SWINE CARE

Swine care is of the highest priority to the industry as well as to consumers. Ontario pork producers, as well as all Canadian pork producers, are held to what is considered one of the highest global standards of care for their animals as outlined by the Canadian Food Inspection Agency (CFIA), all levels of government, the National Farm Animal Care Council (NFACC), producers, consumers, and all areas of the swine industry.

When caring for pigs, farmers must ensure that they have met all the requirements for shelter, hydration and nutrition. These requirements are constantly monitored and adapted for the age of the pig throughout its various life stages. For example, Canada's Pig Code guidelines state that barns that have been renovated or newly built must provide loose housing for sows. When pigs are in the nursery and grower-finisher stage, they are also raised in loose housing. This type of housing allows for freedom of movement, increased exercise, and social interactions.

Pig Feed, Ontario Pork

Farmers feed pigs a high-quality, grain-based diet consisting mainly of crops such as barley, wheat, and corn, which provide pigs with energy, and soybeans and canola meal for protein. Farmers add vitamins and minerals to the feed of newly weaned pigs for optimum nutrition. In addition to this, clean, fresh water is an essential part of a pig's diet. It is important to note that pigs should not be fed human food scraps as they can have a negative impact on pig health, and risk spreading foreign diseases like African Swine Fever and Foot and Mouth Disease. Because of the risk to animal health and the larger pork sector, it is illegal to feed pigs any meat products, or products that have come into contact with meat.

Enrichment Activity, Ontario Pork

Another required practice across Canadian pig farms is the use of enrichment activities. According to the code of practice, pigs must be provided "continual access to a range of novel suspended toys such as cloth strips or rubber, or straw dispensers, along with free toys on the pen floor in housing where the use of substrates may impede manure management systems. They also must be provided with some type of physical enrichment such as straw, hay, wood, sawdust, mushroom compost, peat or a mixture of such that does not adversely affect the health of the animals when it can be safely used."

Enrichment activities enhance the animals' physical and social environment which in turn improves animal welfare. The goals of enrichment activities are:

- Increasing the number and range of normal behaviours
- Preventing the development of abnormal behaviours, or reducing the frequency or severity
- Increasing positive utilization of the environment
- Increasing the animals' ability to cope with behavioural and physiological challenges

Farmers and other industry stakeholders are well trained in swine management. There are frequent inspections, audits and training courses which ensure that all the guidelines are being followed. Many farmers are college and/or university educated and frequently participate in training courses, workshops, conferences, and other industry events to maintain the most recent and highest standards of animal care and welfare available which allows for the production of high-quality, safe and nutritious pork throughout the country.

ON-FARM MANAGEMENT

When caring for swine, there are numerous on-farm management practices that are put into place including programs such as PigCARE, and PigSAFE.

PigCARE is the animal care component of the Canadian Pork Excellence platform. When it comes to livestock husbandry, Canada's pork producers are among the best. Herd health and performance records prove it. There is a step-by-step guide for producers to complete a welfare assessment for their farm that can then be used to monitor, manage and document animal husbandry practices. Items in the guide include:

- Animal based measures
  - Assessments are completed on body condition, injuries and lameness.
- Size of farrowing crates/gestation stalls & boar stalls
  - All stalls must be sized according to the Code of Practice requirements for pigs.
- Space Allowance: Nursery-Grow/Finish
  - Nursery and grow/finish pigs must be provided with sufficient space according to the Code of Practice requirements and a space allowance record must be completed for all nursery pens and grow/finish pens.
- Group sow housing conversion
  - Newly built or rebuilt facilities for bred gilts and sows must meet the Group Sow Housing Certification requirements and boars must be provided with sufficient space so that they can turn around.
- Lighting
  - Adequate lighting must be provided at all stages of production.
- Enrichment
  - Two or more enrichment options must be provided to pigs at all stages of production.
- Farrowing room/newly weaned piglets + elective husbandry procedures + transportation
  - Producers must develop and follow standard operating procedures. Templates are provided.

The program components were developed by experts and the program is administered by the Canadian Pork Council.

PigSAFE is the food safety component of the Canadian Pork Excellence platform. Through this program, registered producers demonstrate compliance with the national standards for food safety and animal care. The PigSAFE manual is continually updated and presents requirements and good production practices based on the internationally recognized Hazard Analysis Critical Control Point (HACCP) model. The requirements include:

- Water Quality
    - Water testing must be preformed annually.
- Bedding
    - Written assurance that the bedding is free of wood preservatives. For bedded production, pens must be kept dry and the bedding removed at least once a year and stored away from the pigs.
- Edible Residual Material
    - Need a letter of guarantee from the supplier of recycled food products and/or distillers' grains, demonstrating that the CFIA Feeds Regulations have been met
- Feed Delivery Slip
    - Feed delivery slips (electronic or paper copy) must be verified and kept on file
- Domesticated Animals/Multiple Species
    - Barns/buildings and on-farm feed mills must be free from domesticated animals (other than pigs). If other domesticated animals are kept in the same barn the Multiple Species Certification must be completed.
- Outdoor Access Production
    - The Outdoor Access Production Certification must be completed if pigs have access to the outdoors.
- Vaccine & Drug Use Policy
    - Producers must follow the Vaccine and Drug Use Policy that reflects Health Canada regulations. A Veterinarian-Client-Patient-Relationship (VCPR) must be in place.

TRACEBILITY

Traceability is the ability to trace all processes from procurement of raw materials to production, consumption, and disposal. PigTRACE is an industry-led, national swine traceability initiative delivered by the Canadian Pork Council (CPC). The goal of PigTRACE is to be able to track the movement of animals within the supply chain and improve emergency response. It is a proactive measure to safeguard our industry from foreign animal disease, protect market access and uphold food safety quality. In addition to pork farmers, pet pig owners must also register their pig(s) with PigTRACE and record any movements outside of their municipality.

PigTRACE is mandatory by law through the federal *Health of Animals Regulations* which is enforced by the Canadian Food Inspection Agency (CFIA). The CFIA can issue non-compliance letters and fines (up to $50,000) to those who do not comply with the PigTRACE requirements.

MARKET

Approximately 1,200 Ontario farmers raise hogs for both domestic and international markets. In Ontario, 5.5 million hogs are marketed each year, with more than half of pork destined for international consumers.

Some farmers operate farrow-to-finish farms, where pigs are born and raised to market weight. Others specialize in a single area of growth, such as sow barns where piglets are born and weaner, nursery barns for older piglets, and finishing barns to prepare animals for market. Some larger farms contract smaller farms to care for animals through certain growth stages.

Market Hogs, Ontario Pork

Pigs grow very quickly. When they are ready for market at around six months, hogs are sent to either provincially or federally inspected plants to be processed. Pork destined for the export market must be processed at federally inspected plants in Canada.

Hog production is not supply managed, making farmers "price-takers" where prices are determined based on supply and demand by processors. Farmers make money when the price paid by processors is higher than the cost of raising the animals. Processors then sell pork to their customers, including grocery stores and restaurants, with additional profit margins built in at each step.

TRANSPORTATION

Market-ready hogs are usually transported from farms to provincial or federal processing plants in transport trucks. Training and certification programs, such as the Canadian Livestock Training certification program, ensure that animals are transported safely and comfortably. Truckers are trained to watch animals and not load any that show signs of serious injury or illness. They are responsible for the well-being of animals from the farm or assembly yard to the processing plant.

Pig Transportation, Ontario Pork

Most large trucks are passively ventilated, meaning that animals are cooled by air movement through vents in warm weather. Vents are covered to keep heat in during colder weather. Weather conditions also determine the number of animals that can be carried on a truck. Canadian Food Inspection Agency transport regulations set clear rules for how long animals can be on a truck, and how they should be cared for.

PROCESSING

To help ensure a safe food supply for consumers and high standards of animal care, all meat offered for sale or distributed in Ontario must be inspected, according to the Food Safety and Quality Act, 2001 Meat Regulation 31/05.

Ontario Meat Inspection Stamp, Government of Ontario

The Act ensures that all meat products that reach consumers come from livestock or poultry that are fit for slaughter, humanely handled, and processed under sanitary conditions. Any meat destined for export markets must be processed at a federally licensed plant inspected by Canadian Food Inspection Agency staff.

There are two major federal plants in Ontario, located in Halton and Waterloo regions. A smaller organic federal plant is located near London. There are dozens of smaller abattoirs in Ontario inspected by provincial meat inspectors.

Federal Meat Inspection Stamp, Government of Canada

Federal and provincial inspectors are at each plant and inspect arriving animals and carcasses for any signs of injury or illness. Traceability programs allow inspectors to trace any concerns back to the farm, helping to ensure the wellbeing of animals and safety of our food supply.

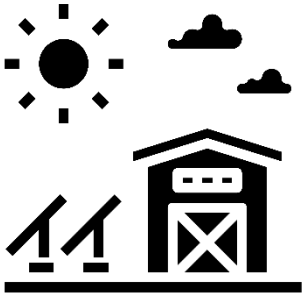
QUALITY ASSURANCE

Canadian pork producers are dedicated to the highest quality standards. Through the national Canadian Pork Excellence program, registered producers demonstrate their compliance with national standards for food safety and animal care. Refer to the On-Farm Management Practices listed above for additional information.

WHAT CHALLENGES DO ONTARIO PORK PRODUCERS FACE?

ENVIRONMENT

Most pork farmers in Ontario call their farms home and depend on healthy soil and water for their families and for the animals they raise. Environmentally sustainable practices are essential to the wellbeing of their homes and businesses.



Over time pork producers in Ontario have improved their farming practices and realized production efficiencies to reduce the amount of water and resources used to raise pork. One area where hog farmers are leaders in recycling is through using the nutrients found in manure as fertilizer for feed crops.

Research done by institutions including the University of Guelph, helps farmers find new ways to reduce their environmental footprint.
Here are some of the factors that contributed to increasing pig and crop productivity while reducing the impact of swine production on the surrounding environment seen through a

reduced carbon footprint, less water usage, and better utilization of nutrients to ensure long-run sustainability:

Phosphorus Reduction:
Too much phosphorus can negatively impact a water system's ecological balance. Therefore, Ontario pork producers adopt phosphorus reduction strategies:
Up to 50% less phosphorus excreted — 95% of farmers add phytase enzyme to pig diets to improve digestibility. **Precision feeding reduces phosphorus intake by 25%** in grow-finish pigs.

Water Reduction:
More than half of Ontario pig farmers say they found ways to reduce water usage, including using water bowls, meters and drinking nipples, as well as using wet/dry feeders and adjusting height and flow rates of drinkers, which help reduce volume of manure to be managed.

Feed Efficiency & Land Use:
Improvements in feed efficiency mean less land is needed to raise a pig herd. Pork production became three times more efficient in 40 years, from 613 kg pork produced/ha in 1981 to 2,080 kg/ha in 2020. Precision feeding of pigs at all stages of growth means less land and water is required to grow feed – and reduces our environmental footprint. Canadian pork farms have seen a 43% improvement in feed conversion (number of kg of feed needed to produce 1 kg of weight gain) since 1951.

Greenhouse Gas Emissions:
In 2017, a life cycle analysis of the Canadian pork sector found that 1 kg of pork after processing produces 4.43 kg CO_2E (carbon dioxide equivalent). This considers all emissions produced from growing crops to feed pigs to processing pigs into pork.
75% of pig farmers in Ontario say they have made environmental improvements – planting trees, using new energy sources and increasing water conservation.

Productivity Improvements:
Overall, productivity and animal welfare improvements have resulted in close to 1,400 kg more pork produced per sow in 2020 compared to 40 years ago. There is a **47% increase** in number of piglets born per sow per litter over the last 40 years due to **improvements in productivity, genetics, health, feed, housing and care.** Barn design innovation has also helped advance animal welfare, resulting in reduced piglet mortality and improved sow well-being.

ECONOMIC

Being a major exporter makes Canada more vulnerable to demand changes around the world. The Canadian pork market is closely tied to the United States pork market, and fluctuations in US prices and supply are generally felt in Canada. Since the market is not supply managed, pork farmers are subject to increased volatility in prices, and since there is such a strong global demand for pork, Canada exports close to 70% of the pork that is raised here. Prices are influenced by multiple factors including supply and demand both domestically and internationally, trade disputes, export challenges, supply chain disruptions or disease outbreaks.

MYTHS AND FACTS

There are many different opinions and misconceptions about pork including the treatment of animals, the purpose of pork farming and the nutritional value. Here are some examples:

Myth: Nearly all pork is produced on “factory farms.”
Truth: 98% of Canadian farms are owned and operated by families or family-owned businesses. Just 2% of farms and ranches are owned by non-family corporations.

Myth: Only pork with a “raised without antibiotics” label is antibiotic-free.
Truth: All meat in the grocery store is antibiotic-free. An animal treated with antibiotics cannot be slaughtered until the drugs have cleared its system. The label “no antibiotics added” or “raised without antibiotics” means that an animal was raised without receiving any antibiotics ever. Farmers work with veterinarians to determine when antibiotics are needed to treat sick or injured animals. Ontario’s swine industry reduced antibiotics and antibacterial medicines use per pig for all classes of pigs from 2014 to 2018 by 34%. The reductions ranged from 13% lower for sows to 53% lower for weaner pigs. Class 1 antibiotics have been a significant issue because of concerns about human antibiotic resistance. Farmers have been able to significantly reduce use of antibiotics through better producer-veterinarian relationships, and improvements to biosecurity, genetics, and animal health. Class 1 antibiotics are only used as a last resort to treat sick or injured animals.

Myth: Added hormones in meat are a health risk to consumers.
Truth: Hormones are NOT allowed in raising hogs. Therefore, the claim “no hormones added” can be used on the labels of pork raised in Canada.

Myth: Livestock production is the largest contributor to global warming.
Truth: Greenhouse gas emissions from animal production in Ontario has decreased by 14% since 1990. Overall, livestock production, including beef and dairy cattle, pork, poultry, sheep, goats, represents about 3.8% of total GHG emissions in Ontario.

Myth: Pig farming is a low-skilled job
Truth: Pig farms require staff and managers with many different skills such as financial management, record keeping, human resource management, health and animal care, nutrition, mechanical, engineering, and agronomy to name a few. With computerized feeding and ventilation, and new crop management technologies, the need for high-skilled labour continues. Under the Canadian Pork Excellence program, farms are required to have trained site managers, and continuing education is expected for both farm owners and employees.

LABOUR SUPPLY

Pork farming is not a 9am-5pm job. It is a 24/7 job, and most pork farmers live on a farm where their pigs are located. Farmers need to constantly be available to care for their livestock, both day and night and this can pose a challenge to finding employees who are willing and able to work those hours alongside them. Farms are equipped with alarm systems that let farmers know about potential concerns such as power outages or equipment breakdowns.

Many Ontario pork farms employ temporary foreign workers to help them manage the farm. Temporary foreign workers have been part of Canadian agriculture for more than 50 years and there is a great deal of competition internationally to be hired to work on a Canadian farm.

Canada's Temporary Foreign Worker program allows Canadian farmers to fill critical jobs on their farm in order to raise and produce food for consumers. Workers have meaningful jobs and earn more money than they would be ale to at home, while receiving the same employment standards and occupational health and safety protections as Canadian farm workers. In addition to this, employing temporary foreign workers adds multicultural diversity to rural communities that typically are not overly diverse. Many grocery stores will clear some aisles to stock food and produce that would be regularly consumed by the temporary foreign workers if they were at home to help them feel welcome. There are also pathways to citizenship that allow some workers to make Canada their permanent home, where they can continue to build their careers in the pork industry.

BIOSECURITY

Ontario pork farms must have strict biosecurity measures to ensure the health and safety of their pigs, farmers, and farm workers. There is a great deal of planning that goes into keeping the pigs safe and healthy. Pork farmers do health, food and water checks throughout the day and each time they enter and exit the barn, there are strict biosecurity protocols that must be followed to avoid introducing potentially harmful pathogens into the pig population. These measures include (but are not limited to), showering in and out, changing into barn-only clothing and footware, in-barn laundry facilities for barn clothing ("street clothes" do not enter the barn), controlled access points onto the farm and into the barn, regular disinfecting of buildings and equipment etc.

Biosecurity Sign, Ontario Pork

Pathogens and disease such as African Swine Fever, Porcine Reproductive and Respiratory Syndrom (PRRS), Porcine Epidemic Diarrhea (PED) or Food and Mouth Disease can be transmitted from sources including people or vehicles that have visited infected farms, wild pig populations and contaminated food. Disease outbreaks in a barn can have serious impacts on the health of animals, well-being of workers and on the supply chain. Costs of treating and containing disease can have a significant impact on the farm business.

Proven biosecurity protocols help Ontario's pork industry track and contain disease outbreaks and provide reassurance about food safety.

WHO IS INVOLVED IN THE PORK SUPPLY CHAIN?

From the pork farmer to the consumer, there are many people involved in bringing nutritional pork to your table. Along with all three levels of government, there are graders, processors, transportation operators, wholesalers/brokers, tradespeople, retailers and more who are involved every step of the way.

Here are just a few of the key roles in bringing pork from farm to table in Ontario:

FARMERS

Pork farmers are required to have a diverse skill set and knowledge, whether it be understanding machinery, reading data trends, knowing the health and welfare needs of their herd, following biosecurity practices and much more. Farmers rely on a network of experts to raise their animals and run their farms. These experts include veterinarians, animal nutritionists, technicians, skilled trades and more.

Meet Amy Cronin and Doug Ahrens, Pork Producers: https://www.youtube.com/watch?v=YNpx73-plGM.

VETERINARIANS & ANIMAL NUTRITIONISTS

Specialized swine veterinarians and nutritionists play a key role in the care of Canadian pigs. These professionals provide support and guidance to pork farmers to ensure the pigs are being fed a nutritionally balanced diet and receive high-quality care. They also play a key role in terms in ensuring quality assurance of the product, which helps to protect the consumer. Pigs' health can be affected by injury or disease. There are a list of more serious diseases that must be reported to provincial or federal health officials.

Meet Mike DeGroot, Swine Veterinarian: https://youtu.be/3DYH6FkFAtk.

What are pigs fed?: https://www.youtube.com/watch?v=19Fq9hu-ATw.

BUTCHERS

Butchers help play a key role in the distribution of locally produced pork. Farmers can send their pigs to a local (provincially inspected) butcher to be properly slaughtered and prepare the meat for consumers. While the minimum requirement to be a butcher is a high school diploma, with on the job training, individuals are encouraged to pursue a certificate related to meat processing, or meat science and are required to have their safe food handling certificate as well as licensing provided by the Ontario government.

Meet Butcher Jamie Waldron: https://www.youtube.com/watch?v=cARJCX6OtDg

GOVERNMENT OFFICIALS

Government officials who work with Ontario farmers put rules, regulations, and laws in place to keep both people and animals healthy and safe. In 2019 and 2020, Ontario's government introduced two complementary pieces of legislation designed to protect animals and keep farms safe from trespassing and harassment.

The Provincial Animal Welfare Services Act, 2019, includes the toughest penalties in Canada for animal abuse, with dedicated enforcement and clear processes for reporting and inspection. The law has fines of up to $260,000 for individuals convicted of abusing animals, and up to $1 million for corporations. This was strongly supported by agriculture groups, and also applies to pets and animal displays such as zoos.

At the same time, in response to farm break-ins, threats, thefts and harassment of animals and truck drivers, Ontario introduced the Security from Trespass and Protecting Food Safety Act, 2020. The Act protects animals and the food supply from biosecurity breeches and the

introduction of unknown substances or disease by creating animal protection zones at farms, processing plants and assembly yards to reduce trespassing and harassment.

TRANSPORTERS

The individuals that transport pigs across the province and country play a very important role in the pork industry. They are responsible for the health and safety of the pigs as well as meeting the requirements for livestock transportation that have been developed by the NFACC while bringing the pigs to their proper destination.

https://thinkag.ca/en-ca/students/build/career/truck-driver

FEED SALE REPRESENTATIVES

Livestock feed sales representatives sell feed products to retailers as well as directly to the farmer. It is important that they constantly educate themselves about about animal nutrition and dietary requirements, the livestock feed industry, and their company's product line so that they can help their customers make the best decisions possible with up-to-date information. In addition to the sale of feed, representatives must give ongoing customer service as well as provide training for retail locations who sell the product.

https://thinkag.ca/en-ca/students/persuade/career/sales-representative

REGISTERED DIETITIANS, NUTRITIONISTS, & HOME ECONOMIST

Registered dietitians, nutritionists and home economists are frontline workers who have specialized training in understanding the nutritional components of food and how nutrients work in the human body. These professionals help provide the public with important recommendations to foods that should be consumed based on a person's unique health profile.

Meet Ann Binnie, Home Economist: *Is Pork Healthy?:* https://youtu.be/HcwLI5ja9Tc

ECOLOGISTS/RESEARCHERS/UNIVERSITIES

While pork farmers are committed to investing in research that invests back into growing the sustainability of the industry, they are also committed to investing in the overall betterment of humankind. The Ontario Swine Research Centre is a partnership between the University of Guelph, the Government of Ontario and the Ontario Swine Industry and upon completion, will implement state of the art technology to meet advanced training and research needs of the swine sector. U of G researchers will use the facility for wide-ranging studies, including animal health, nutrition, and welfare; consumer-oriented research; environmental factors; genetics and genomics; nutrient management; and reproduction. This research centre will replace the current Arkell Swine Research Facility.

Examples of recent research can be found here:
https://www.ontariopork.on.ca/Research/Recently-Funded

FOODSERVICE/RETAILERS & CONSUMERS

There are many people who play a role in the foodservice industry, whether it be cashiers at grocery stores, store clerks, restaurant owners, servers, or chefs, to the consumers. Pork grown

in Ontario can usually be identified by the "Ontario Pork" logo or by asking your butcher or store owner. Look for the Logo: https://www.youtube.com/watch?v=nrDwqmmIIp8

TRY COOKING WITH PORK!

Pork is an extremely versatile choice of meat that can be dressed up, or down, is used in a variety of ethnic dishes and can be served at breakfast, lunch, and dinner! Check out these recipes to give you an idea of all the tasty things you can make with pork!

BREAKFAST

Poached Eggs with Peameal Bacon:
This breakfast option is GREAT for a quick and easy breakfast Ready in 15 minutes or less, meal is packed with nutrients, easy to make, and so delicious!

https://www.ontariopork.on.ca/recipes/poached-eggs-with-peameal-bacon

Ham & Egg Breakfast Casserole:
This irresistible breakfast fast and can feed a bunch all at once! Combine eggs, peppers, milk, cheese and ham for what is sure to be a family favourite!

https://www.ontariopork.on.ca/recipes/ham-egg-casserole-and-the-perfect-way-to-start-the-day

Breakfast Sausage Hash:
Add some flare to regular breakfast hash browns with eggs and pork sausages!

https://www.ontariopork.on.ca/recipes/breakfast-sausage-hash-and-a-solution-to-leftovers

LUNCH/DINNER

Potato Chip Pork Strips
Step aside chicken strips, pork is where it's at!

https://www.ontariopork.on.ca/recipes/potato-chip-pork-strips

Molasses Mustard Ribs:
They might take all day to cook, but we promise they will be WORTH IT!

https://www.ontariopork.on.ca/recipes/molasses-mustard-ribs

Saigon Pork Rice Bowl
This one bowl meal is a simple way to bring Vietnamese cooking into your home in a colourful and healthy way.

https://www.ontariopork.on.ca/recipes/saigon-pork-rice-bowl

Hickory Pulled Pork
Turn Ontario pork roast shoulder or butt into a tasty meal that everyone will love!

https://www.ontariopork.on.ca/recipes/hickory-pulled-pork

Skillet Pork Chops with Cider:
Turn Ontario pork loin chops into a delectable meal that will be sure to be a crowd pleaser!

https://www.ontariopork.on.ca/recipes/skillet-pork-chops-with-cider

LINKS

CANADIAN PORK COUNCIL

Canadian Pork Council --Sustainability
https://www.cpc-ccp.com/sustainability#:~:text=Economic%20Sustainability,of%20any%20Canadian%20agricultural%20commodity.

Canadian Pork Council -- Our Commitments: https://www.cpc-ccp.com/our-commitments

Canadian Pork Council – PigCARE**:** https://www.cpc-ccp.com/pigcare

Canadian Pork Council – PigSAFE**:** https://www.cpc-ccp.com/food-safety

Canadian Pork Council – PigTRACE**:** https://www.cpc-ccp.com/traceability

ONTARIO PORK

Ontario Pork – 2020 Corporate Profile: 75 Years of Progress and Resilience
https://www.ontariopork.on.ca/Portals/0/Ontario%20Pork_Corp%20Profile%202020_FINAL%20-%20Digital%20%281%29.pdf

Ontario Pork – Location of Farms in Ontario Counties
https://www.ontariopork.on.ca/Portals/0/CountyHogYearCompare.pdf

http://www.eggfarmers.ca/wp-content/uploads/2018/02/2018_Egg-Farmers-of-Canada_Sustainability-Story.pdf

An Era of Change & Accountability – Ontario Pork Social Responsibility**:**
https://www.youtube.com/watch?v=CMzeVOQN7zU&t=11s

2020 Corporate Profile: https://www.ontariopork.on.ca/Portals/0/20-ONP-0005%20-%20Corporate%20Profile%202020_Industry%20Profile%20-%20Digital%20%281%29.pdf

The Life of a Pig:
https://www.ontariopork.on.ca/Portals/0/Docs/Communications/Public%20Education%20Resources/LifeCycle.pdf?ver=2018-07-05-172519-027

Experience Pork https://www.experienceontariopork.com/

FARM & FOOD CARE

Being a Pig Farm Family: https://www.youtube.com/watch?v=88PcJWfcy2g

Biosecurity on a Canadian Pig Farm: https://www.youtube.com/watch?v=u-tVBHrHI8g

Caring for Pigs https://youtu.be/bNcQuH0cQhA

Safety in Farrowing https://youtu.be/rVtBfhdZjJk

AGSCAPE

Temporary Foreign Workers Educator Resource: http://bit.ly/TFWCanada

OTHER LINKS

Canada Pork – Nutrients in Canadian Pork**:**
http://www.canadapork.com/documents/file/files/nutrient_value_of_canadian_pork-e.pdf

Streamlined Environmental Life Cycle Assessment of Canadian Pork Production: https://www.cpc-ccp.com/uploads/userfiles/files/GroupeAGECO_LCApork_FINAL%20updated%20report.pdf

National Farm Animal Care Council: https://www.nfacc.ca/

Enrichment for Pigs: http://www.omafra.gov.on.ca/english/livestock/swine/facts/info_enrichment.htm

Canada's Food Guide Snapshot: https://food-guide.canada.ca/en/food-guide-snapshot/

Canadian Food Focus – Raising Heritage Pigs & Wild Boar in Canada:
https://canadianfoodfocus.org/on-the-farm/raising-heritage-pigs-and-wildboar-in-canada/

Canadian Food Focus – Raising Heritage Pigs & Wild Boar in Canada (Video):
https://www.youtube.com/watch?v=YfSSWEErJvY

Ontario Ministry of Agriculture, Food & Rural Affairs (OMAFRA) – Your Responsibilities Under the Meat Regulation: http://www.omafra.gov.on.ca/english/food/inspection/meatinsp/resp-under-meat.htm

Better Farming Magazine – Pork Producers Protect the Environment:
https://www.betterfarming.com/featured-articles/better-pork/pork-producers-protect-the-environment

Statistics Canada – An Analysis of Recent Issues Faced by the Canadian Pork Industry**:**
https://www150.statcan.gc.ca/n1/pub/62f0014m/62f0014m2020014-eng.htm

National Hog Farmer – Canada Faces Packer, Production Challenges:
https://www.nationalhogfarmer.com/mag/canada_packer_production_challenges

Government of Canada – Swine Biosecurity: https://inspection.canada.ca/animal-health/terrestrial-animals/biosecurity/standards-and-principles/swine/eng/1344746044066/1344746179549

Agriculture & Agri-Food Canada – Improving Hog Wellbeing: https://youtu.be/GWyjz7GrRP0

The Canadian Encyclopedia -- Pig Farming: https://www.thecanadianencyclopedia.ca/en/article/pig-farming

Genetics – The Origin of the Domestic Pig:
https://www.genetics.org/content/154/4/1785#:~:text=The%20domestic%20pig%20originates%20from,wild%20boar%20(Sus%20scrofa).&text=Clear%20evidence%20was%20obtained%20for,before%20domestication%20~9%2C000%20years%20ago

ADDITIONAL RESOURCES: WEBSITES FOR TEACHERS & STUDENTS

Ontario Pork ..... https://www.ontariopork.on.ca/

Canadian Pork Council ..... https://www.cpc-ccp.com/default

AgScape ..... www.agscape.ca

National Animal Care Council ..... https://www.nfacc.ca/

Canada's Food Guide ..... https://food-guide.canada.ca/en/

Farm Food 360º www.farmfood360.ca

The Real Dirt on Farming ..... https://www.realdirtonfarming.ca/

Agriculture and Agri-Food Canada ..... www.agr.gc.ca

Foodland Ontario ..... https://www.ontario.ca/foodland-ontario

Health Canada ..... www.hc-sc.gc.ca

Ontario Ministry of Agriculture, Food and Rural Affairs ..... www.omafra.gov.on.ca

Careers in Food ..... www.careersinfood.com

Ag Careers ..... www.agcareers.com

Agricultural Employment ..... www.agemploy.com

Ontario Agricultural College ..... www.uoguelph.ca/oac

Verified Canadian Pork ..... http://www.verifiedcanadianpork.com/about-us.html

Swine Health Ontario ..... http://www.swinehealthontario.ca/

Conestoga Meats ..... https://www.conestogameats.com/

Sofina ..... https://www.sofinafoods.com/

Olymel ..... https://www.olymel.ca/en/

thinkAG ..... https://thinkag.ca/en-ca/

ADDITIONAL RESOURCES:

Farm Food 360-Canadian Pig Farm: https://www.youtube.com/watch?v=E7SijUQBGfM

7 Delicious Ideas to Enjoy Fresh Canadian Pork: https://www.youtube.com/watch?v=qe6sROb8fUM

LESSON PLAN:

Animal Health & Welfare: Nutrition & Careers

ABOUT THIS LESSON

This lesson gives students the opportunity to explore the different life stages of pigs and their nutritional needs as well as related careers through a variety of interactive, engaging, research and scenario-based activities. The activities can be utilized over several days as an exploration unit and adapted for online instruction.

MATERIALS NEEDED

Activity #1 Materials:

- **Appendix 1.1 Organizational Chart**

Activity #2 Materials:

- **Appendix 1.2 Scenarios**

CURRICULUM EXPECTATIONS

THE ARTS

- **Grade 5 – Visual**
  - **D1. Creating & Presenting**
    By the end of Grade 5, students will:
    D1.3 use elements of design in art works to communicate ideas, messages, and understandings
    D1.4 use a variety of materials, tools, and techniques to determine solutions to design challenges

- **Grade 6 – Visual**
  - **D1. Creating & Presenting**
    By the end of Grade 6, students will:
    D1.3 use elements of design in art works to communicate ideas, messages, and understandings
    D1.4 use a variety of materials, tools, techniques, and technologies to determine solutions to design challenges

HEALTH & PHYSICAL EDUCATION

- **Grade 5 – Healthy Living**
  - **D2. Making Healthy Choices**
    By the end of Grade 5, students will:
    D2.1 explain how to use nutrition fact tables and ingredient lists on food labels to make informed choices about healthy and safe foods.

- **D3. Making Connections for Healthy Living**
  By the end of Grade 5, students will:
  - **D3.1** describe how advertising, food marketing, and media affect food choices and explain how these influences can be evaluated to help people make healthier choices

- **Grade 6 – Healthy Living**
  - **D2. Making Healthy Choices**
    By the end of Grade 6, students will:
    - **D2.1** apply their knowledge of medical, emotional, practical, and societal factors that influence eating habits and food choices to develop personal guidelines for healthier eating

SCIENCE

- **Grade 6 – Understanding Life Systems-Biodiversity**
  By the end of Grade 6, students will:
  - **2.3** use scientific inquiry/research skills to compare the characteristics of organisms within the plant or animal kingdoms
  - **2.4** use appropriate science and technology vocabulary, including classification, biodiversity, natural community, interrelationships, vertebrate, invertebrate, stability, characteristics, and organism, in oral and written communication
  - **2.5** use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., use a graphic organizer to show comparisons between organisms in various communities)
  - **3.6** identify everyday products that come from a diversity of organisms

LANGUAGE ARTS

- **Grade 5 – Oral Communication**
  - **1. Listening to Understand**
    By the end of Grade 5, students will:
    - **1.2** demonstrate an understanding of appropriate listening behaviour by adapting active listening strategies to suit a range of situations, including work in groups
    - **1.4** demonstrate an understanding of the information and ideas in oral texts by summarizing important ideas and citing a variety of supporting details
    - **1.5** make inferences about oral texts using stated and implied ideas in the texts as evidence
    - **1.6** extend understanding of oral texts by connecting the ideas in them to their own knowledge, experience, and insights; to other texts, including print and visual texts; and to the world around them
  - **2. Speaking to Communicate**
    By the end of Grade 5, students will:
    - **2.2** demonstrate an understanding of appropriate speaking behaviour in a variety of situations, including paired sharing, dialogue, and small and large group discussions
    - **2.3** communicate orally in a clear, coherent manner, presenting ideas, opinions, and information in a readily understandable form
    - **2.7** use a variety of appropriate visual aids to support or enhance oral presentations

- **Grade 5 – Reading**
  - **1. Reading for Meaning**

    By the end of Grade 5, students will:
    - **1.1** read a variety of texts from diverse cultures, including literary texts, graphic texts and informational texts.
    - **1.2** identify a variety of purposes for reading and choose reading materials appropriate for those purposes.
    - **1.4** demonstrate understanding of a variety of texts by summarizing important ideas and citing supporting details.
    - **1.6** extend understanding of texts by connecting the ideas in them to their own knowledge, experience, and insights, to other familiar texts, and to the world around them.
    - **1.8** make judgements and draw conclusions about the ideas and information in texts and cite stated or implied evidence from the text to support their views

- **Grade 5 – Writing**
  - **1. Developing & Organizing Content**

    By the end of Grade 5, students will:
    - **1.1** identify the topic, purpose, and audience for a variety of writing forms
    - **1.3** gather information to support ideas for writing, using a variety of strategies and a range of print and electronic resources
    - **1.4** sort and classify ideas and information for their writing in a variety of ways
    - **1.6** determine whether the ideas and information they have gathered are relevant, appropriate, and adequate for the purpose, and do more research if necessary
  - **2. Using Knowledge of Form & Style in Writing**

    By the end of Grade 5, students will:
    - **2.5** identify their point of view and other possible points of view, and determine, when appropriate, if their own view is balanced and supported by evidence
    - **2.8** produce revised, draft pieces of writing to meet identified criteria based on the expectations related to content, organization, style, and use of conventions

- **Grade 6 – Oral Communication**
  - **2. Speaking to Communicate**

    By the end of Grade 6, students will:
    - **2.3** communicate orally in a clear, coherent manner, using appropriate organizing strategies and formats to link and sequence ideas and information
    - **2.4** use appropriate words and phrases from the full range of their vocabulary including inclusive and non-discriminatory language, and stylistic devices appropriate to the purpose and context, to communicate their meaning accurately and engage the interest of their intended audience
    - **2.7** use a variety of appropriate visual aids to support or enhance oral presentations

- **Grade 6 – Reading**
  - **Reading for Meaning**

    By the end of Grade 6, students will:
    - **1.1** read a variety of texts from diverse cultures, including literary texts, graphic texts and informational texts.
    - **1.2** identify a variety of purposes for reading and choose reading materials appropriate for those purposes.

- **1.4** demonstrate understanding of a variety of texts by summarizing important ideas and citing relevant supporting details.
- **1.6** extend understanding of texts by connecting, comparing, and contrasting the ideas in them to their own knowledge, experience, and insights, to other familiar texts, and to the world around them.

- **Grade 6 – Writing**
  - **Developing and Organizing Content**

    By the end of Grade 6, students will:
    - **1.3** gather information to support ideas for writing, using a variety of strategies and a range of print and electronic resources
    - **1.5** identify and order main ideas and supporting details and group them into units that could be used to develop a structured, multi-paragraph piece of writing, using a variety of strategies and organizational patterns.
    - **1.6** determine whether the ideas and information they have gathered are relevant, appropriate, and adequate for the purpose, and do more research if necessary

TEACHING & LEARNING STRATEGIES

Activity #1: Life Stages of a Pig (Research-Based)

1. **Watch:** 360 A Canadian Pig Farm Tour: https://www.youtube.com/watch?v=E7SijUQBGfM

2. **Table Talk**: After viewing this video, ask students to share what they learned using prompts such as: “Name some things that surprised you about pig farming in Canada.” or “How is what you seen in the video different from what you had previously thought about pig farming?”

3. **Research:** Pigs require different types of housing, care, and nutritional needs at every life stage. In this activity, students are going to research their assigned “life stage” in groups and design the optimal environment for that stage. Refer students to ***Appendix 1.1: Organizational Chart*** to assist in the planning process and document information they gather.

   Pig Life Stages:
   - Piglet
     - A pig up to the time it is weaned from the sow.
   - Weaner/Weanling
     - A pig after it has been weaned from the sow, up until approximately 30-40kg in live weight. Also referred to as a nursery pig.
   - Grower/Feeder
     - Pigs generally with live weights of between 30-40kg and 70kg. The same meaning can apply for pigs referred to as “Growing”.
   - Finisher
     - Pigs that are generally above 70kgs live weight, until they are marketed or retained for breeding. The same meaning applies to pigs referred to as “finishing”
   - Boar
     - A sexually mature male intended for use in breeding over the weight of 153kg.
   - Sow
     - An adult female pig, which has had one or more litters.

THE LIFE OF A PIG

Ontario Pork

ontariopork.com

Pigs have a very unique lifestyle compared to many other farm animals raised in Canada.

BIRTH

A sow's gestation (pregnancy) lasts three months, three weeks and three days. On average a sow will have 8 to 12 piglets in a litter and give birth twice a year.

NURSERY

When piglets are weaned from the sow, they are grouped by size and move to the warm nursery area. They are fed a grain-based pellet and can play with enrichment toys.

FARROWING PEN

This setup is designed to keep the piglets safe while they nurse from the sow. Piglets stay on milk for two to four weeks.

BREEDING STOCK

Farmers select the pigs with the best genetics and most desirable traits to stay on the farm to add to their herd or replace existing pigs.

GROWER-FINISHER

Pigs move into another area when they reach 25 kg. They are fed a specific diet and are raised until they reach 110 kg. These are the pigs that supply us with pork.

MARKET

Each animal is inspected at the processing plant. Workers follow strict government guidelines for processing and handling animals.

TRUCKING

Market hogs are sent to processing plants on trucks designed just for pigs. There are rules and regulations for transporting pigs in Canada, including how many pigs can go on each truck.

HOUSES OF STRAW, STICK OR BRICKS?

Unlike what you see in the movies, most pigs in Canada live in barns, not outside in the mud. Barns are designed to provide an ideal environment, protecting pigs from extreme weather, predators and disease. Some farms in Ontario provide outside access and others specialize in pasture raising their pigs.

The Life of a Pig, Ontario Pork

4. **Create:** Using the information they gathered throughout the research process, students can showcase what they learned in a variety of methods including 3-D creation/diorama, PowerPoint, video presentation, Minecraft Education (coding) etc.

5. **Show & Share:** Invite students to share their findings and the environments they have designed with the class. When complete, students can discuss similarities and differences amongst each life stage.

6. **Dig Deeper**: Have students pose a minimum of 3 questions to each group about their life stage. Example: What is the importance of having enrichment activities for pigs? What is the importance of feeding a pig _____ at their specific life stage? Example: sows milk, creep feed (transitional feed to support weaning), soy for protein, corn for calories etc.

Activity #2: What is the Problem? (Teacher-Directed/Scenario-Based)

1. **Table Talk**: *Ask the students: What do you think happens if a pig does not have the proper nutrients? Why is it important to ensure that pigs are fed the proper diet and amount of food? Why do pigs eat different types of feeds at different life stages? What are some things that a farmer looks for when caring for their pigs?* Write down students' answers and ideas on a white board.

2. **Watch**: Show students this video of a swine veterinarian and what their job entails (watch from 3:58-5:40): https://www.youtube.com/watch?v=vgYEvFHrdaU

3. **Table Talk:** *Besides farmers and veterinarians, what other people/careers would assist with the care of pigs?* Add student's ideas to the white board. Encourage them to think about supporting careers such as tradespeople, professional services, feed representatives, nutritionists, inspectors and auditors, engineers etc.
4. Using ***Appendix 1.2: Scenarios*** provide students with the following information for each pig life stage. Invite students to break out into small groups, stay together as a class group, or work individually to come up with the solution for each scenario and share their responses with the class.

Piglet:
During a routine barn check, a farmer checks in on a new litter of piglets that was born the evening before. He/she notices that there is a piglet much smaller in size than the others, that is off by itself, away from the mother, other piglets, and the heat lamp. The famer picks up the piglet and can feel that it is cool to the touch but is alive and breathing.
Q1: What could be the problem?
Q2: What should the farmer do?
Q3: What careers could be involved with caring for the health of this piglet?


Piglets, Ontario Pork

Weaner/Weanling:
The transition to the nursery can be stressful for pigs during the weaning stage due to many different factors. While in the nursery barn, the farmer notices that there is more feed in the feeder than there should be.
Q1: What could be the problem?
Q2: What should the farmer do?
Q3: What careers could be involved with creating a solution to the problem?


Weaner/Weanling Pigs, Ontario Pork

Grower/Feeder:
Grower/feeder pigs grow a lot in a short amount of time and water intake is very important to their growth and health. Water controls metabolic functions, adjusts body temperature, transports nutrients to body tissues and removes metabolic waste.
Q1: During routine barn checks, what are some things that the farmer should look for in relation to pigs and water intake?
Q2: What types of careers would be involved with creating/maintaining a water system for pigs?


Grower/Feeder Pigs, Ontario Pork

Finisher:
Twice a day, the finisher pigs are fed a blend of feed that includes corn, soybeans and added vitamins and minerals. While the farmer is doing a routine check, he/she notices that some of the pigs are fighting for a position at the feeder. Over the course of the next few days, the farmer continues to monitor this behavior and notes that it is continuing.
Q1: How can the farmer address this problem?
Q2: What are some other things the farmer should look for?
Q3: What careers would be involved in creating a solution to this problem?


Finishing Pigs, Ontario Pork

Boar:
Boars may be kept on their own, in small groups or with a group of breeding gilts, or sows; however, boars are usually housed individually. It is important for boars to be healthy and in strong physical condition as they have a strong influence on the entire herd.
Q1: What are some things that the farmer can do to ensure the boar stays in top physical condition?
Q2: What kinds of careers would be related to managing/affecting the boars' nutritional intake and overall health?


Boar, Ontario Pork

Farrowing Sow:
When a sow is close to having its litter of piglets, she gets moved into a farrowing crate or stall which helps to keep both the mother and her babies safe from injury. These crates and stalls often have automatic feeders, individual waterspouts (for both the sow and piglets), floor heating pads (for the newborn piglets) and/or a heat lamp. Some farmers also include nesting or enrichment materials such as burlap strips.
Q1: What careers are involved in creating the different elements of this pig's environment?
Q2: Is there anything else you think should be added to pig's environment to make her more comfortable while keeping her and her piglets safe?


Crate Farrowing Sow, Ontario Pork


Stall Farrowing Sow, Ontario Pork

ASSESSMENT & EVALUATION

Formative Assessment: Through discussions, question/answer and participation in the various activities, teachers can collect valuable anecdotal information and notes to assess students' growth and learning.

Summative Assessment: The completed handouts (Appendix 1.1 Organizational Chart) as well as the resulting researched-based pig environment activity, student participation and skill demonstration teachers can effectively assess understanding against curriculum expectations.

ENRICHMENT

- **Try This:** Have students identify various pork advertisements and explain how advertising, food marketing and the media affect food choices
- **Try This:** Have students design recipes including drawings that include pork products as part of a healthy diet

DIVE DEEPER INTO CANADIAN PORK PRODUCTION

See Teacher's Guide for more videos and links to specific content to encourage discussion and understanding pig farming.

Additional Resources

- **Canadian Pork Council**
  https://www.cpc-ccp.com/resources
- **Ontario Pork**
  https://www.ontariopork.on.ca/
- **Canada Pork**
  http://www.canadapork.com/en-ca/index.html
- **Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)**
  http://www.omafra.gov.on.ca/english/livestock/index.html#swine
- **Farm and Food Care-Ontario**
  https://www.farmfoodcareon.org/resources/
- **National Farm Animal Care Council**
  https://www.nfacc.ca/
- **Alltech**
  https://www.alltech.com/animal-nutrition/pig
- **Ontario Pork- Being a Pig Farm Family**
- https://www.youtube.com/watch?v=88PcJWfcy2g&t=2s
- **Ontario Pork-Farm Visit**
  https://www.youtube.com/watch?v=O-1X7a6Jk90
- **Safety in Farrowing**
  https://www.youtube.com/watch?v=rVtBfhdZjJk&t=10s
- **Caring for Pigs**
  https://www.youtube.com/watch?v=bNcQuH0cQhA&t=6s

LESSON PLAN:

Animal Health & Welfare: Technology & Careers

ABOUT THIS LESSON

This lesson gives students the opportunity to explore different technologies used in pork production and how it has changed over the years including the different careers associated with technology. Students will learn through a variety of interactive, engaging, research-based activities and the activities can be utilized over several days as an exploration unit and adapted for online instruction.

MATERIALS NEEDED

Technologies in Pork Farming

- **Appendix 2.1 KWL Chart**
- **Appendix 2.2: Animal Health & Welfare-Technology & Careers Peer Review**
- **National Farm Animal Care Council (NFACC) Code of Practice: Pigs**
    - https://www.nfacc.ca/codes-of-practice/pigs

CURRICULUM EXPECTATIONS

MATHEMATICS

- **Grade 7 – F: Financial Literacy**
    - **Financial Management**

      By the end of Grade 7, students will:
        - **1.2** identify and describe various reliable sources of information that can help with planning for and reaching a financial goal.
        - **1.3** create, track, and adjust sample budgets designed to meet longer-term financial goals for various scenarios.
        - **1.4** identify various social and personal factors that may influence financial decision making, and describe the effects that each might have.

- **Grade 8 – F: Financial Literacy**
    - **Financial Management**

      By the end of Grade 8, students will:
        - **1.2** create a financial plan to reach a long-term financial goal, accounting for income, expenses, and tax implications.
        - **1.3** identify different ways to maintain a balanced budget, and use appropriate tools to track all income and spending, for several different scenarios.
        - describe ways in which people use the natural environment, including specific elements within it, to meet their needs and wants.

LANGUAGE ARTS

- **Grade 7 – Oral Communication**
  - **Listening to Understand**
    By the end of Grade 7, students will:
    - **1.2** demonstrate an understanding of appropriate listening behaviour by adapting active listening strategies to suit a wide variety of situations, including work in groups.
    - **1.9** identify a wide variety of presentation strategies used in oral texts and evaluate their effectiveness.
  - **Speaking to Communicate**
    By the end of Grade 7, students will:
    - **2.3** communicate orally in a clear, coherent manner, using a structure and style appropriate to both the topic and the intended audience.
  - **Reflecting on Oral Communication Skills & Strategies**
    By the end of Grade 7, students will:
    - **2.3** identify what strategies they found most helpful before, during, and after listening and speaking and what steps they can take to improve their oral communication skills.

- **Grade 8 – Oral Communication**
  - **Listening to Understand**
    By the end of Grade 8, students will:
    - **1.2** demonstrate an understanding of appropriate listening behaviour by adapting active listening strategies to suit a wide variety of situations, including work in groups.
    - **1.9** identify a wide variety of presentation strategies used in oral texts, evaluate their effectiveness, and suggest other strategies that might have been as effective or more so.
  - **Speaking to Communicate**
    By the end of Grade 8, students will:
    - **2.3** communicate in a clear, coherent manner, using a structure and style appropriate to the purpose, the subject matter, and the intended audience.
  - **Reflecting on Oral Communication Skills & Strategies**
    By the end of Grade 8, students will:
    - **2.3** identify what strategies they found most helpful before, during, and after listening and speaking and what steps they can take to improve their oral communication skills.

- **Grade 7 – Media Literacy**
  - **Understanding Media Texts**
    By the end of Grade 7, students will:
    - **1.1** explain how various media texts address their intended purpose and audience.
    - **1.3** evaluate the effectiveness of the presentation and treatment of ideas, information, themes, opinions, issues, and/or experiences in media texts.
    - **1.4** explain why different audiences might have different responses to a variety of media texts.
  - **Understanding Media Forms, Conventions & Techniques**
    By the end of Grade 7, students will:
    - **2.1** explain how individual elements of various media forms combine to create, reinforce, and/or enhance meaning.

        - **2.2** identify the conventions and techniques used in a variety of media forms and explain how they help convey meaning and influence or engage the audience.
    - **Creating Media Texts**
      By the end of Grade 7, students will:
        - **3.1** explain why they have chosen the topic for a media text they plan to create and identify challenges they may face in engaging and/or influencing their audience.
        - **3.2** identify an appropriate form to suit the specific purpose and audience for a media text they plan to and explain why it is an appropriate choice.
        - **3.4** produce a variety of media texts of some technical complexity for specific purposes and audiences, using appropriate forms, conventions, and techniques.
    - **Reflecting on Media Literacy Skills & Strategies**
      By the end of Grade 7, students will:
        - **4.1** identify what strategies they found most helpful in making sense of and creating media texts, and explain how these and other strategies can help them improve as media viewers/ listeners/producers.

- **Grade 8 – Media Literacy**
    - **Understanding Media Texts**
      By the end of Grade 8, students will:
        - **1.1** explain how various media texts address their intended purpose and audience.
        - **1.3** evaluate the effectiveness of the presentation and treatment of ideas, information, themes, opinions, issues, and/or experiences in media texts.
        - **1.4** explain why different audiences might have different responses to a variety of media texts.
    - **Understanding Media Forms, Conventions & Techniques**
      By the end of Grade 8, students will:
        - **2.1** explain how individual elements of various media forms combine to create, reinforce, and/or enhance meaning.
        - **2.2** identify the conventions and techniques used in a variety of media forms and explain how they help convey meaning and influence or engage the audience.
    - **Creating Media Texts**
      By the end of Grade 8, students will:
        - **3.1** explain why they have chosen the topic for a media text they plan to create and identify challenges they may face in engaging and/or influencing their audience.
        - **3.2** identify an appropriate form to suit the specific purpose and audience for a media text they plan to and explain why it is an appropriate choice.
        - **3.4** produce a variety of media texts of some technical complexity for specific purposes and audiences, using appropriate forms, conventions, and techniques.
    - **Reflecting on Media Literacy Skills & Strategies**
      By the end of Grade 8, students will:
        - **4.1** identify what strategies they found most helpful in making sense of and creating media texts and explain how these and other strategies can help them improve as media viewers/ listeners/producers.

THE ARTS

- **Grade 7 – B: Drama**
  - **Creating & Presenting**
    By the end of Grade 7, students will:
    - **B1.4:** communicate feelings, thoughts, and abstract ideas through drama works, using audio, visual, and/or technological aids to heighten the dramatic experience

- **Grade 8 – B: Drama**
  - **Creating & Presenting**
    By the end of Grade 8, students will:
    - **B1.2** demonstrate an understanding of the elements of drama by selecting and manipulating multiple elements and conventions to create and enhance a variety of drama works and shared drama experiences

- **Grade 7 – D: Visual Arts**
  - **Creating & Presenting**
    By the end of Grade 7, students will:
    - **D1.4** use a variety of materials, tools, techniques, and technologies to determine solutions to increasingly complex design challenges

- **Grade 8 – D: Visual Arts**
  - **Creating & Presenting**
    By the end of Grade 8, students will:
    - **D1.4** use a variety of materials, tools, techniques, and technologies to determine solutions to increasingly complex design challenges

SCIENCE & TECHNOLOGY

- **Grade 7 – Understanding Structures & Mechanisms: Form & Function**
  - **Relating Science & Technology to Society & the Environment**
    By the end of Grade 7, students will:
    - **1.1** evaluate the importance for individuals, society, the economy, and the environment of factors that should be considered in designing and building structures and devices to meet specific needs
    - **1.2** evaluate the impact of ergonomic design on the safety and efficiency of workplaces, tools, and everyday objects, and describe changes that could be made in personal spaces and activities on the basis of this information
  - **Developing Investigation & Communication Skills**
    By the end of Grade 7, students will:
    - **2.6** use appropriate science and technology vocabulary, in oral and written communication
    - **2.7** use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes
  - **Understanding Basic Concepts**
    By the end of Grade 7, students will:
    - **3.7** identify the factors (e.g., properties of the material as they relate to the product, availability, costs of shipping, aesthetic appeal, disposal) that determine the suitability of materials for use in manufacturing a product

- **Grade 8 – Understanding Structures & Mechanisms: Systems in Action**
  - **Relating Science & Technology to Society & the Environment**
    By the end of Grade 8, students will:
    - **1.1** assess the social, economic, and environmental impacts of automating systems
    - **1.2** assess the impact on individuals, society, and the environment of alternative ways of meeting needs that are currently met by existing systems, taking different points of view into consideration

  - **Developing Investigation & Communication Skills**
    By the end of Grade 8, students will:
    - **2.3** use scientific inquiry/experimentation skills (see page 12) to investigate mechanical advantage in a variety of mechanisms and simple machines
    - **2.4** use technological problem-solving skills (see page 16) to investigate a system that performs a function or meets a need
    - **2.6** use appropriate science and technology vocabulary, in oral and written communication
    - **2.7** use a variety of forms to communicate with different audiences and for a variety of purposes
  - **Understanding Basic Concepts**
    By the end of Grade 8, students will:
    - **3.1** identify various types of systems
    - **3.3** identify the various processes and components of a system that allow it to perform its function efficiently and safely
    - **3.8** describe systems that have improved the productivity of various industries
    - **3.9** identify social factors that influence the evolution of a system

TEACHING & LEARNING STRATEGIES

Technologies in Pork Farming

1. Discuss with the students that they will be exploring the various technologies and related careers in pork farming. Provide students with ***Appendix 2.1 KWL Chart*** and have them complete the first two sections (Know and Want to Know).

2. **Watch:** Watch the following video clips that showcase some of the different technologies used on pig farms.

   Robotic Pressure Washer: https://www.youtube.com/watch?v=tz7YVhUdl8g
   Wireless Ultrasound Machine: https://www.imv-imaging.com/products/veterinary-ultrasounds/duo-scango-plus/
   Automatic Feeding System: https://www.youtube.com/watch?v=o7iRmpLk9AM
   BarnTalk Technology: https://www.youtube.com/watch?v=LG4OFWFzWHM&t=237s

3. **Table Talk**: After viewing this video, have students record what they learned in ***Appendix 2.1 KWL Chart*** "Learned" section. Once students have completed this section, ask students to share what they learned about the use of technology in pork farming using prompts such as: "Name some things that surprised you about the technologies you seen." or "Do you think that there is opportunity for more/different technologies in pork farming?" or "What do you think is the most important area to focus on implementing a new technology in pork farming? Why?" Allow students to update ***Appendix 2.1 KWL Chart*** throughout the class discussion. Some other technologies to consider are: artificial insemination, composters and digesters to convert waste into electricity,

   
   Washing Robot, Ontario Pork

   Explain and summarize to students that livestock farming utilizes various advanced technologies to manage livestock more precisely on an individual or group level. This can, amongst other things, be used to optimize individual feeding rates, monitor weight and health, or to observe behaviour. The type of applied technology widely varies and is partly dependent on the animal. In the pork industry, systems are constantly developing for precision group management as well as highly individualized recordings. Various systems have already made their way into farms, and it is a common place to see electronic feeders and automatic weighing and sorting systems for pigs on larger farms. Unique ear tag systems are also popular for continuous recording and monitoring of pig movement, feeding duration, frequency, and amount; or whether the animal has been located into a new pen. Artificial insemination, composters and anaerobic digesters are also found on pig farms across the country.

4. **Research:** The National Farm Animal Care Council (NFACC) is the only organization in the world that brings together animal welfare groups, enforcement, government, and farmers under a collective decision-making model for advancing farm animal welfare. The Canada Pork Excellence (CPE) validation program is based on these Codes of Practice. Show students the following video clip that provides a brief overview of the organization: https://www.youtube.com/watch?v=m7wL97n-YNY When raising

livestock and applying various technologies, it is important to make sure that they meet the "Codes of Practice" as outlined by the NFACC. There are different codes of practice for different types of livestock. Share with students the Code of Practice for Pigs which can be found here: https://www.nfacc.ca/codes-of-practice/pigs

5. **Create:** Break students up into 5 or 6 groups (depending on teacher discretion) and assign each group a section of the NFACC Code of Practice for Pigs:

    - Housing & Handling
    - Feed & Water
    - Animal Health
    - Husbandry Practices
    - Transportation
    - Euthanasia (based on teacher discretion)

    After assigning each group on of the topics listed above, have students research what current protocols are in place and come up with a new technology to help assist in their specific area. Students can also identify different types of careers needed to manufacture this new technology (example: engineers, robotics technicians, electricians, programmers, scientists, etc.)

6. **Show & Share:** Invite students to share the technology they have designed as a group with the class. Provide students with ***Appendix 2.2: Animal Health & Welfare-Technology & Careers Peer Review*** and fill in for each group presentation. When complete, students can discuss various pros and cons of each technology, suggest possible improvements etc. that they had documented.

- **Dig Deeper**: Have students create a commercial/infomercial to promote their new technology. Students can utilize video technology if it is available to them.

ASSESSMENT & EVALUATION

Formative Assessment: Through discussions, question/answer and participation in the various activities, teachers can collect valuable anecdotal information and notes to assess students' growth and learning.

Summative Assessment: Using the research-based technology creation activity, student participation and skill demonstration teachers can effectively assess understanding against curriculum expectations.

ENRICHMENT

- **Try This:** Have students present their new technology designs to local industry professionals (example: pork farmers, swine veterinarians, swine equipment manufacturers, swine feed suppliers, agriculture education institutions etc.). The industry professionals can share their feedback from a unique career perspective.
- **Try This:** Have students create a budget for their proposed technology and determine the approximate total cost it would take to produce/manufacture and bring to market.

DIVE DEEPER INTO CANADIAN PORK PRODUCTION

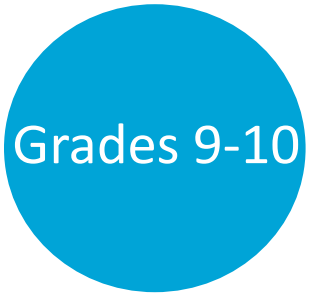
See Teacher's Guide for more videos and links to specific content to encourage discussion and understanding pig farming.

Additional Resources

- **Canadian Pork Council**
  https://www.cpc-ccp.com/resources
- **Ontario Pork**
  https://www.ontariopork.on.ca/
- **Canada Pork**
- http://www.canadapork.com/en-ca/index.html
- **Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)**
  http://www.omafra.gov.on.ca/english/livestock/index.html#swine
- **Farm and Food Care-Ontario**
  https://www.farmfoodcareon.org/resources/
- **National Farm Animal Care Council**
  https://www.nfacc.ca/
- **Better Pork Magazine**
- https://www.betterfarming.com/search-betterpork-magazine-archive
- **Alltech**
  https://www.alltech.com/animal-nutrition/pig

LESSON PLAN:

Animal Health & Welfare: Sustainability & Careers



ABOUT THIS LESSON

This lesson gives students the opportunity to research, explore and create a pig farm that focuses on social, economic, and environmental sustainability. Throughout the learning processing, students will create a working definition of each sustainability, discover the various careers involved in each area as well as create a mock-up design of a pig farm along with action plans to help run a successful and sustainable business. This activity can be utilized over several days as an exploration unit and is adaptable for online instruction.

MATERIALS NEEDED

Activity #1 Materials:

- **Appendix 3.1 Mind Map**

Activity #2 Materials:

- **Appendix 3.2 Guiding Questions**
- **Appendix 3.3 Action Plan Template**

CURRICULUM EXPECTATIONS

GUIDANCE & CAREERS EDUCATION – (GLC2O)

B2: Preparing for Future Opportunities
By the end of this course, Grade 10 students will:

- B2.1 investigate their own interests, values, skills (including transferable skills), strengths, and areas that require further development, documenting their insights in a personal profile.
- B2.2 identify factors and conditions other than an individual's strengths, interests, and needs that inform education and career/life choices and explain which of these factors may be influencing their own decisions.
- B2.3 explain how digital media use and a social media presence can influence their education and career/life opportunities, while at the same time demonstrating an understanding of the importance of managing their personal information and protecting their privacy online.
- B2.4 analyze the role of networking, including traditional and online social networking, in exploring and securing education and career/life opportunities.

B3: Identifying Possible Destination and Pathways
By the end of this course, Grade 10 students will:

- B3.1 use a research process to identify and compare a few postsecondary options that suit their aspiration, skills, interests, values and personal circumstances.

- B3.2 identify the pathways towards their preferred destinations, including the courses and/or specialized programs that lead to the destination and meet the requirements for a secondary school certificate or diploma, as well as the supports available at school and in the community that can enhance their secondary education.

LANGUAGE ARTS – GRADE 9 ACADEMIC (ENG1D)

Oral Communication

By the end of this course, Grade 9 students will:

- 1.2 identify and use several different active listening strategies when participating in a variety of classroom interactions.
- 1.9 explain how several different presentation strategies are used in oral texts to inform, persuade, or entertain.
- 2.1 communicate orally for several different purposes, using language suitable for the intended audience.
- 2.3 communicate in a clear, coherent manner appropriate to the purpose, subject matter, and intended audience.
- 2.7 use several different audio-visual aids to support and enhance oral presentations.

Writing

By the end of this course, Grade 9 students will:

- 1.2 generate and focus ideas for potential writing tasks, using several different strategies and print, electronic, and other resources, as appropriate
- 1.3 locate and select information to support ideas for writing, using several different strategies and print, electronic, and other resources, as appropriate
- 1.4 identify, sort, and order main ideas and supporting details for writing tasks, using several different strategies and organizational patterns suited to the content and purpose for writing
- 1.5 determine whether the ideas and information gathered are relevant to the topic, sufficient for the purpose, and meet the requirements of the writing task
- 2.2 establish an identifiable voice in their writing, modifying language and tone to suit the form, audience, and purpose for writing
- 2.3 use appropriate descriptive and evocative words, phrases, and expressions to make their writing clear and vivid for their intended audience
- 2.6 revise drafts to improve the content, organization, clarity, and style of their written work, using a variety of teacher-modelled strategies
- 2.7 produce revised drafts of both simple and complex texts written to meet criteria identified by the teacher, based on the curriculum expectations
- 3.1 use knowledge of spelling rules and patterns, several different types of resources, and appropriate strategies to spell familiar and new words correctly
- 3.2 build vocabulary for writing by confirming word meaning(s) and reviewing word choice, using several different types of resources and strategies, as appropriate for the purpose
- 3.3 use punctuation correctly to communicate their intended meaning
- 3.4 use grammar conventions correctly to communicate their intended meaning clearly
- 3.5 proofread and correct their writing, using guidelines developed with the teacher and peers

- 3.6 use several different presentation features, including print and script, fonts, graphics, and layout, to improve the clarity and coherence of their written work and to engage their audience

LANGUAGE ARTS – Grade 9 APPLIED (ENG1P)

Oral Communication

By the end of this course, Grade 9 students will:

- 1.2 identify and use a few different active listening strategies when participating in classroom interactions.
- 1.9 identify how a few different presentation strategies are used in oral texts to inform, persuade, or entertain.
- 2.1 communicate orally for a few different purposes and audiences.
- 2.3 communicate in a clear, coherent manner for a few different purposes..
- 2.7 use a few different audio-visual aids to support oral presentations.

Writing

By the end of this course, Grade 9 students will:

- 1.2 generate and focus ideas for potential writing tasks, using several different strategies and print, electronic, and other resources, as appropriate
- 1.3 locate and select information to support ideas for writing, using several different strategies and print, electronic, and other resources, as appropriate
- 1.4 identify, sort, and order main ideas and supporting details for writing tasks, using several different strategies and organizational patterns suited to the content and purpose for writing
- 1.5 determine whether the ideas and information gathered are relevant to the topic and meet the requirements of the writing task
- 2.2 establish an identifiable voice in their writing, modifying language and tone to suit the form, audience, and purpose for writing
- 2.3 use appropriate descriptive words, phrases, and expressions to make their writing clear for their intended audience
- 2.6 revise drafts to improve the content, organization, and clarity of their written work, using a variety of teacher-modelled strategies
- 2.7 produce revised drafts of texts written to meet criteria identified by the teacher, based on the curriculum expectations
- 3.1 use knowledge of basic spelling rules and patterns, a few different resources, and appropriate strategies to spell familiar and new words correctly
- 3.2 build vocabulary for writing by confirming word meaning(s) and reviewing word choice, using a few different types of resources and strategies
- 3.3 use punctuation correctly to communicate their intended meaning
- 3.4 use grammar conventions correctly to communicate their intended meaning clearly
- 3.5 proofread and correct their writing, using guidelines developed with the teacher and peers
- 3.6 use several different presentation features, including print and script, fonts, graphics, and layout, to improve the clarity and coherence of their written work and to engage their audience

LANGUAGE ARTS – GRADE 10 ACADEMIC (ENG2D)

Oral Communication
By the end of this course, Grade 10 students will:

- 1.2 select and use appropriate active listening strategies when participating in a variety of classroom interactions.
- 1.9 evaluate the effectiveness of a variety of presentation strategies used in oral texts, including increasingly complex texts, and suggest other strategies that could be used effectively.
- 2.1 communicate orally for a variety of purposes, using language appropriate for the intended audience.
- 2.3 communicate in a clear, coherent manner, using a structure and style appropriate to the purpose, subject matter, and intended audience.
- 2.7 use a variety of audio-visual aids appropriately to support and enhance oral presentations and to engage an audience.

Writing
By the end of this course, Grade 10 students will:

- 1.3 locate and select information to appropriately support ideas for writing, using a variety of strategies and print, electronic, and other resources, as appropriate
- 1.4 identify, sort, and order main ideas and supporting details for writing tasks, using a variety of strategies and organizational patterns suited to the content and the purpose for writing
- 2.3 use appropriate descriptive and evocative words, phrases, and expressions to make their writing clear, vivid, and interesting for their intended audience
- 2.4 write complete sentences that communicate their meaning clearly and accurately, varying sentence type, structure, and length to suit different purposes and making smooth and logical transitions between ideas
- 2.6 revise drafts to improve the content, organization, clarity, and style of their written work, using a variety of teacher-modelled strategies
- 3.1 use knowledge of spelling rules and patterns, a variety of resources, and appropriate strategies to recognize and correct their own and others' spelling errors
- 3.2 build vocabulary for writing by confirming word meaning(s) and reviewing and refining word choice, using a variety of resources and strategies, as appropriate for the purpose
- 3.3 use punctuation correctly and appropriately to communicate their intended meaning
- 3.4 use grammar conventions correctly and appropriately to communicate their intended meaning clearly and fluently
- 3.6 use a variety of presentation features, including print and script, fonts, graphics, and layout, to improve the clarity and coherence of their work and to heighten its appeal for their audience

LANGUAGE ARTS – GRADE 10 APPLIED (ENG2P)

Oral Communication
By the end of this course, Grade 10 students will:

- 1.2 identify and use several different active listening strategies when participating in a variety of classroom interactions.
- 1.9 explain how several different presentation strategies are used in oral texts to inform, persuade, or entertain.

- 2.1 communicate orally for several different purposes, using language suitable for the intended audience.
- 2.3 communicate in a clear, coherent manner appropriate to the purpose, subject matter, and intended audience.
- 2.7 use several different audio-visual aids to support and enhance oral presentations.

Writing
By the end of this course, Grade 10 students will:

- 1.3 locate and select information to support ideas for writing, using several different strategies and print, electronic, and other resources, as appropriate
- 1.4 identify, sort, and order main ideas and supporting details for writing tasks, using several different strategies and organizational patterns suited to the content and the purpose for writing
- 2.3 use appropriate descriptive and evocative words, phrases, and expressions to make their writing clear and vivid for their intended audience
- 2.4 write complete sentences that communicate their meaning clearly and accurately, varying sentence type, structure, and length to suit different purposes and making logical transitions between ideas
- 2.6 revise drafts to improve the content, organization, clarity, and style of their written work, using a variety of teacher-modelled strategies
- 3.1 use knowledge of spelling rules and patterns, several different types of resources, and appropriate strategies to spell familiar and new words correctly
- 3.2 build vocabulary for writing by confirming word meaning(s) and reviewing word choice, using several different types of resources and strategies, as appropriate for the purpose
- 3.3 use punctuation correctly to communicate their intended meaning
- 3.4 use grammar conventions correctly to communicate their intended meaning clearly
- 3.6 6 use several different presentation features, including print and script, fonts, graphics, and layout, to improve the clarity and coherence of their written work and to engage their audience

THE ARTS (MEDIA) – GRADE 10 OPEN (ASM2O)

Media Arts
By the end of this course, Grade 10 students will:

- A1.1 use a variety of strategies to generate ideas, individually and/or collaboratively, for solutions to creative challenges
- A1.2 develop plans, individually and/or collaboratively, that address a variety of creative challenges
- A1.3 produce and refine media art works, using experimentation, peer and/or teacher input, and personal reflection
- A1.4 present media art works, individually and/or collaboratively, using a variety of methods that are appropriate for their work
- A2.2 design and produce original media art works on a specific theme by combining one or more of the principles of media arts and a variety of elements from the contributing arts
- A3.1 explore a variety of traditional and emerging technologies, tools, and techniques, and use them to produce effective media art works

- A3.2 use appropriate technologies, tools, and techniques to create and present media art works for a variety of audiences

THE ARTS (VISUAL) – GRADE 9 OPEN (AVI1O)

Visual Arts
By the end of this course, Grade 9 students will:

- A1.1 use a variety of strategies, individually and/or collaboratively, to generate ideas and to develop plans for the creation of art works
- A2.2 apply elements and principles of design to create art works that communicate ideas and information
- A3.1 explore and experiment with a variety of media/materials and traditional and/or emerging technologies, tools, and techniques, and apply them to produce art works

THE ARTS (VISUAL) – GRADE 10 OPEN (AVI2O)

Visual Arts
By the end of this course, Grade 10 students will:

- A1.1 use a variety of strategies, individually and/or collaboratively, to generate ideas and to develop plans for the creation of art works
- A2.2 apply elements and principles of design as well as art-making conventions to create art works that communicate ideas, information, or messages, and/or that convey a point of view on an issue
- A3.1 explore and experiment with a variety of materials/media, including alternative media, and traditional and/or emerging technologies, tools, and techniques, and apply them to create art works

SCIENCE – GRADE 9 ACADEMIC (SNC1D)

A: Scientific Investigation Skills & Career Exploration
By the end of this course, Grade 9 students will:

- A2.1 identify and describe a variety of careers related to the fields of science under study (e.g., astrophysicist, geophysicist, conservation officer, park warden, fire protection engineer, hydrologist, electrician) and the education and training necessary for these careers.

SCIENCE – GRADE 9 APPLIED (SNC1P)

A: Scientific Investigation Skills & Career Exploration
By the end of this course, Grade 9 students will:

- A2.1 identify and describe a variety of careers related to the fields of science under study (e.g., radar satellite technician, fish and wildlife technologist, ceramicist, electrician) and the education and training necessary for these careers.

SCIENCE – GRADE 10 ACADEMIC (SNC2D)

A: Scientific Investigation Skills & Career Exploration
By the end of this course, Grade 10 students will:

- A2.1 identify and describe a variety of careers related to the fields of science under study (e.g., meteorologist, medical illustrator, geochemist, optical physicist) and the education and training necessary for these careers

SCIENCE – GRADE 10 APPLIED (SNC2P)

A: Scientific Investigation Skills & Career Exploration
By the end of this course, Grade 10 students will:

- A2.1 identify and describe a variety of careers related to the fields of science under study (e.g., veterinarian assistant, quality control technician, conservation officer, sound and light technician) and the education and training necessary for these careers.

ISSUES IN CANADIAN GEOGRAPHY – GRADE 9 ACADEMIC (CGC1D)

B: Interactions in the Physical Environment
By the end of this course, Grade 10 students will:

- B1.1 analyze environmental, economic, social and/or political implications of different ideas and beliefs about the value of Canada's natural environment and explain how these ideas/beliefs affect the use and protection of Canada's natural assets.
- B1.2 analyze interrelationships between Canada's physical characteristics and various human activities that they support.
- B2.1 analyze interrelationships between physical processes, phenomena, and events in Canada and their interaction with global physical systems.

C: Managing Canada's Resources & Industries
By the end of this course, Grade 10 students will:

- C1.2 describe strategies that industries and governments have implemented to increase the sustainability of Canada's natural resources.
- C1.2 assess the impact of Canada's participation in international trade agreements and of globalization on the development and management of human and natural resources in Canada.
- C1.3 analyze the influence of governments, advocacy groups, and industries on the sustainable development and use of selected Canadian resources.
- C3.1 compare the economic importance of different sectors of the Canadian economy.
- C3.4 analyze the main factors that need to be considered when determining the location of sites for different types of industries.

D: Changing Populations
By the end of this course, Grade 10 students will:

- D1.2 identify global demographic disparities that are of concern to people living in Canada, and assess the roles of individuals, organizations and governments in Canada addressing them.

E. Livable Communities
By the end of this course, Grade 10 students will:

- E1.1 analyze the effects of food production practices, distribution methods, and consumer choices on the sustainability of Canada's food system.
- E2.1 assess the impact of urban growth on natural systems.
- E2.2 analyze various economic, social and political impacts of urban growth.

- E3.1 analyze the characteristics of different land uses in a community.

ISSUES IN CANADIAN GEOGRAPHY – GRADE 9 APPLIED (CGC1P)

B: Interactions in the Physical Environment
By the end of this course, Grade 9 students will:

- B1.3 analyse some environmental, economic, and social impacts of changes in Canada's climate.
- B1.4 explain how human activities in their local region can have an impact on natural processes.
- B2.1 explain how the natural characteristics of an area in Canada influence human activities.
- B2.2 explain the influence of Canada's natural characteristics (e.g., climate, soils, topography, proximity to water, natural resources) on the spatial distribution of its population.

C: Managing Canada's Resources & Industries
By the end of this course, Grade 9 students will:

- C1.1 identify major sources of energy used in Canada (e.g., fossil fuels, nuclear, hydro), and assess the viability of alternative energy options for various communities across Canada.
- C1.2 assess the impact of different types of food production on resource use and the environment in Canada.
- C2.2 describe Canada's major exports and imports, and assess some of the environmental, economic, social, and political implications of Canada's current export and import patterns.
- C2.3 assess the economic, environmental, social, and political significance of a specific industry for their local area or another area of their choice.
- C3.1 identify the natural resources needed to produce and distribute a product that is used in the everyday lives of people living in Canada

D: Changing Populations
By the end of this course, Grade 9 students will:

- D1.1 assess economic, social, and environmental impacts of major population trends in Canada today.
- D1.3 describe ways in which Canadian society can respond to the needs of a changing population.

E. Liveable Communities
By the end of this course, Grade 9 students will:

- E1.3 describe ways in which communities can improve their environmental sustainability.
- E1.4 identify actions that individuals can take to live more sustainably and explain the benefits for their local community.
- E2.1 analyse interrelationships between the built and natural environments.
- E2.2 assess the compatibility of different types of land uses with each other within their local community.
- E2.3 explain how changes in land use can affect the growth or decline of different parts of a community.
- E3.1 describe different types of land use within their community.

GREEN INDUSTRIES – GRADE 10 (THJ2O)

A: Green Industry Fundamentals
By the end of this course, Grade 10 students will:

- A2.1 describe environmental factors that affect growth and post-harvest quality.
- A2.2 describe biological factors that affect growth and post-harvest quality.
- A3.2 identify a variety of design concepts and production processes and systems used in the green industries.
- A3.3 demonstrate an understanding of a variety of processes used in plant and/or animal care.
- A3.4 identify and describe a variety of structural or mechanical systems used within the green industries.
- A4.1 demonstrate an understanding of terminology used in the green industries and use it correctly in oral and written communication.
- A4.2 identify sources of information about techniques and best practices in the green industries.

C: Technology, The Environment & Society
By the end of this course, Grade 10 students will:

- C1.1 identify ways in which green industry activities affect the environment.
- C1.2 identify best management practices, environmentally sustainable practices, and technologies that can be used to reduce the harmful effects of green industry operations.
- C2.1 describe the societal and economic implications of recent innovations and trends in the green industries.
- C2.2 identify ethical issues related to the green industries.
- C3.1 identify local green industries and describe their activities or products within a specific region.
- C3.3 describe the effects of local green industries on the community.

D: Professional Practice & Career Opportunities
By the end of this course, Grade 10 students will:

- D2.1 describe career opportunities in a variety of sectors in the green industries and the education, training, and certification required for employment in green industry occupations.
- D2.2 identify ways of acquiring knowledge and experience in green industry occupations.
- D2.3 identify groups and programs that are available to support students who are interested in pursuing non-traditional career choices in the green industries.
- D2.4 demonstrate an understanding of the Essential Skills that are important for success in the green industries, as identified in the Ontario Skills Passport.
- D2.5 demonstrate an understanding of the work habits that are important for success in the green industries, as identified in the Ontario Skills Passport.

TEACHING & LEARNING STRATEGIES

Activity #1: What Does Sustainability Mean to You?

1. **Minds On:** Provide students with ***Appendix 3.1: Mind Map*** which contains the following phrase: "Sustainability and Pork Production". Have them write down as many things that they can think of when the hear/see those words in 1-2 minutes.

2. **Table Talk**: After students have individually documented their thoughts, have them share with the class. Organize/categorize student responses under the following three headings and as a class, come up with a working definition of each:
    a. Environmental Sustainability
    b. Economic Sustainability
    c. Social Sustainability

3. **Watch:** Show students the following video clips showcasing some of the pork famers in Ontario sharing their story of sustainability.
    a. Environmental Sustainability: https://www.youtube.com/watch?v=g0r1JkVxEjQ&list=PLJWBCA3xtDb8_SW-ZsyWXrnvY-zS8j5CF&index=10
    b. Social Sustainability https://www.youtube.com/watch?v=_MLBKv9PtOU&list=PLJWBCA3xtDb8_SW-ZsyWXrnvY-zS8j5CF&index=11
    c. Economic Sustainability https://www.youtube.com/watch?v=TUFk3mhJ8QU&list=PLJWBCA3xtDb8_SW-ZsyWXrnvY-zS8j5CF&index=8

4. **Table Talk:** After viewing the 3 video clips listed above, discuss with students their thoughts about what they seen and heard. Ask them thought provoking questions such as "What do you think about what each farmer is doing in relation to the sustainability they spotlighted?" "What are some things you think could be added to enhance the plans that these farms have in place?" "What sustainability do you think should be the first one to focus on or is the most important? Why?" After having an open discussion, show students Ontario Pork's Social Responsibility plan https://www.ontariopork.on.ca/Social-Responsibility. They can use this resource as a tool for the second part of this lesson.

5. Have students break themselves up into groups of 3 and have everyone within the group select which sustainability topic they are going to focus on: environmental, social, or economic based on their strengths and interests. There will be 1 person representing each sustainability in the group.

Activity #2: Building a Sustainable Pig Farm Operation

1. **Table Talk**: Provide students with the following scenario:

    You are to design a pig farm that you own an equal share of with your group members. Your farm must promote environmental, economic, and social sustainability practices. As a group, identify the following questions:
    a. Where is your pig farm located?
        i. Be sure to include details about size, style, type (finishing, farrow-to-finish etc.)

Pig Farm. Ontario Pork

b. Who will be impacted by your pig farm?
c. How are they going to be affected?
d. Why should you as citizens and business owners care?
e. Keeping animals healthy means restricting who has access to your barns and animals. What protocols, programs and tools can you put into place to ensure strong security and biosecurity?
f. There are many different environmental rules and regulations regarding farm set up and distance to other dwellings, waterways etc. (visit the Ontario Ministry of Agriculture, Food & Rural Affairs (OMAFRA) website here to view the rules and regulations). Create a list of the pros and cons of the regulations that are set in place and brainstorm any additional information you feel should be included with the regulations.

2. **Research & Create**: Students will also have to complete the following tasks:

Solar Panels, Ontario Pork

   a. Using various methods of your choice (3-D (Tinkercad), digital, visual drawing etc.) create a mock-up design of your pig farm. Use the document Pork & Pigs as well as the Small Scale Pig Farming in Ontario document as reference points for information. Be sure to include the following:
      i. housing style and land base
      ii. biosecurity measures
      iii. feeding & watering system design
      iv. manure management
         1. Refer to the Ontario Pork website for an example of the manure cycle here.
         2. Refer to the OMAFRA website for information about liquid manure storage here.
   b. Using ***Appendix 3.3: Action Plan Template*** create a proposed action plan for reducing your environmental footprint in relation to your pig farm. This can include where you send your pigs to get processed, business goals, technology used etc.
   c. Using ***Appendix 3.3: Action Plan Template*** create an action plan that promotes social sustainability among your community and business. This can include programs for your employees, their housing, wages etc. as well as the relationship with the local community.
   d. Using ***Appendix 3.3: Action Plan Template*** create an action plan that promotes economic sustainability for your business. This can include who/where are you selling your product (farm gate, large processing plant, local processing plant/butcher, transportation company etc.), employees needed, cost to hire, input costs (feed, technology, equipment etc.)
   e. Identify who would be involved in making these decisions/changes for the three action plans listed above (think about different careers)
   f. Describe some of the potential barriers to creating these changes.

3. **Show & Share:** Role-play and have students present their pig farms with action plans to the class while in "character" as the pig farmers/business owners. Allow their classmates to ask questions from the viewpoint of local community members and industry professionals affected by this farm (example: butchers, electricians, plumbers, swine veterinarians, feed salesperson, bank account manager etc.)

ASSESSMENT & EVALUATION

Formative Assessment: Through discussions, question/answer and participation in the various activities, teachers can collect valuable anecdotal information and notes to assess students' growth and learning.

Summative Assessment: The completed handouts ***(Appendix 3.1 Mind Map & Appendix 3.3 Action Plan Template)*** as well as the resulting researched-based sustainable pig farm design, student participation and skill demonstration teachers can effectively assess understanding against curriculum expectations.

ENRICHMENT

- **Try This:** Have students participate in an in-class career fair where they can role-play as farm owners looking to hire various individuals who can perform the tasks needed to implement their action plans. Students can practice resume writing, participate in mock interviews etc.
- **Try This:** Have students create a budget for their proposed pig farm designs and action plans.

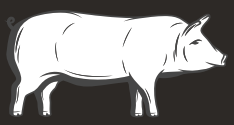
DIVE DEEPER INTO CANADIAN PORK PRODUCTION

See Teacher's Guide for more videos and links to specific content to encourage discussion and understanding pig farming.

Additional Resources

- **Canadian Pork Council**
  https://www.cpc-ccp.com/resources
- **Ontario Pork**
  https://www.ontariopork.on.ca/
- **Canada Pork**
  http://www.canadapork.com/en-ca/index.html
- **Agriculture & Agri Food Canada**
  www.agr.gc.ca
- **Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)**
  http://www.omafra.gov.on.ca/english/livestock/index.html#swine
- **Farm and Food Care-Ontario**
  https://www.farmfoodcareon.org/resources/
- **National Farm Animal Care Council**
  https://www.nfacc.ca/
- **Careers in Food**
  www.careersinfood.com
- **Ag Careers**
  www.agcareers.com
- **Agricultural Employment**
  www.agemploy.com
- **The Real Dirt on Farming**
  https://www.realdirtonfarming.ca/
- **Crop Life Canada**
  https://croplife.ca/

- **Food & Agriculture Organization of the United Nations**
  http://www.fao.org/sustainability/en/
- **National Geographic – Sustainability Resources**
  https://www.nationalgeographic.org/topics/sustainability/?q=&page=1&per_page=25
- **National Geographic – Fossil Fuels:**
  https://www.nationalgeographic.org/media/fossil-fuels-and-carbon/
- **National Geographic – The Carbon Cycle:**
  https://www.nationalgeographic.org/encyclopedia/carbon-cycle/
- **Better Farming**
  https://www.betterfarming.com/



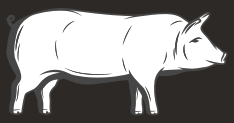
NAME: _____ DATE: _____

Organizational Chart

Using this chart, document any relevant information to your assigned life stage.

Life Stage: _____

Housing	Food/Nutrition	Additional/Special Care



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Pig Scenarios

Working together, read through the following scenarios, discuss the questions and share your response with the group/class.

Piglet:

During a routine barn check, a farmer checks in on a new litter of piglets that was born the evening before. He/she notices that there is a piglet much smaller in size than the others, that is off by itself, away from the mother, other piglets, and the heat lamp. The famer picks up the piglet and can feel that it is cool to the touch but is alive and breathing.

Q1: What could be the problem?

Q2: What should the farmer do?

Q3: What careers could be involved with caring for the health of this piglet?

Weaner/Weanling:

The transition to the nursery can be stressful for pigs during the weaning stage due to many different factors. While in the nursery barn, the farmer notices that there is more feed in the feeder than there should be.

Q1: What could be the problem?

Q2: What should the farmer do?

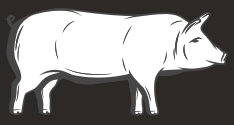
Q3: What careers could be involved with creating a solution to the problem?

Grower/Feeder:

Grower/feeder pigs grow a lot in a short amount of time and water intake is very important to their growth and health. Water controls metabolic functions, adjusts body temperature, transports nutrients to body tissues and removes metabolic waste.

Q1: During routine barn checks, what are some things that the farmer should look for in relation to pigs and water intake?

Q2: What types of careers would be involved with creating/maintaining a water system for pigs?



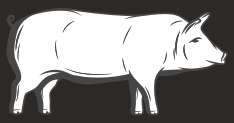
NAME: DATE:

Pig Scenarios Continued

Finisher:
Twice a day, the finisher pigs are fed a blend of feed that includes corn, soybeans and added vitamins and minerals. While the farmer is doing a routine check, he/she notices that some of the pigs are fighting for a position at the feeder. Over the course of the next few days, the farmer continues to monitor this behavior and notes that it is continuing.
Q1: How can the farmer address this problem?
Q2: What are some other things the farmer should look for?
Q3: What careers would be involved in creating a solution to this problem?

Boar:
Boars may be kept on their own, in small groups or with a group of breeding guilts, or sows; however boars are usually housed individually. It is important for boars to be healthy and in strong physical condition as they have a strong influence on the entire herd.
Q1: What are some things that the farmer can do to ensure the boar stays in top physical condition?
Q2: What kinds of careers would be related to managing/affecting the boars' nutritional intake and overall health?

Farrowing Sow:
When a sow is close to having its litter of piglets, she gets moved into a farrowing crate or stall which helps to keep both the mother and her babies safe from injury. These crates and stalls often have automatic feeders, individual waterspouts (for both the sow and piglets), floor heating pads (for the newborn piglets) and/or a heat lamp. Some farmers also include nesting or enrichment materials such as burlap strips.
Q1: What careers are involved in creating the different elements of this pig's environment?
Q2: Is there anything else you think should be added to pig's environment to make her more comfortable while keeping her and her piglets safe?

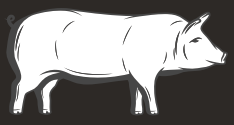


NAME: _____ DATE: _____

Animal Health & Welfare: Technology & Careers KWL Chart

Prior to watching the video clip, invite students to fill in the "Know" and "Want to Know" sections of the KWL chart. After viewing the video clip, prompt students with questions to complete the "Learn" section.

Know
Want to Know
Learned



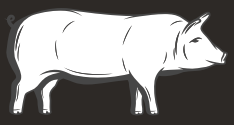
NAME: _____ DATE: _____

Animal Health & Welfare: Technology & Careers Peer Review

What are the pros and cons to each group's newly designed technology. Provide any suggestions you feel might be beneficial.

Topic: Housing & Handling

Pros
Cons
Suggestions/Improvements



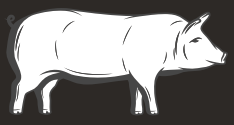
NAME: _____ DATE: _____

Animal Health & Welfare: Technology & Careers Peer Review

What are the pros and cons to each group's newly designed technology. Provide any suggestions you feel might be beneficial.

Topic: Feed & Water

Pros
Cons
Suggestions/Improvements



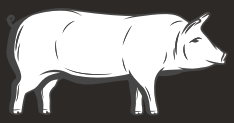
NAME: _____ DATE: _____

Animal Health & Welfare: Technology & Careers Peer Review

What are the pros and cons to each group's newly designed technology. Provide any suggestions you feel might be beneficial.

Topic: Animal Health

Pros
Cons
Suggestions/Improvements



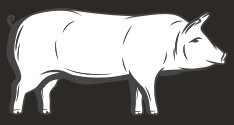
NAME: _____ DATE: _____

Animal Health & Welfare: Technology & Careers Peer Review

What are the pros and cons to each group's newly designed technology. Provide any suggestions you feel might be beneficial.

Topic: Husbandry Practices

Pros
Cons
Suggestions/Improvements



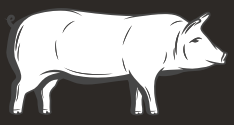
NAME: _____ DATE: _____

Animal Health & Welfare: Technology & Careers Peer Review

What are the pros and cons to each group's newly designed technology. Provide any suggestions you feel might be beneficial.

Topic: Transportation

Pros
Cons
Suggestions/Improvements



NAME: _____ DATE: _____

Animal Health & Welfare: Technology & Careers Peer Review

What are the pros and cons to each group's newly designed technology. Provide any suggestions you feel might be beneficial.

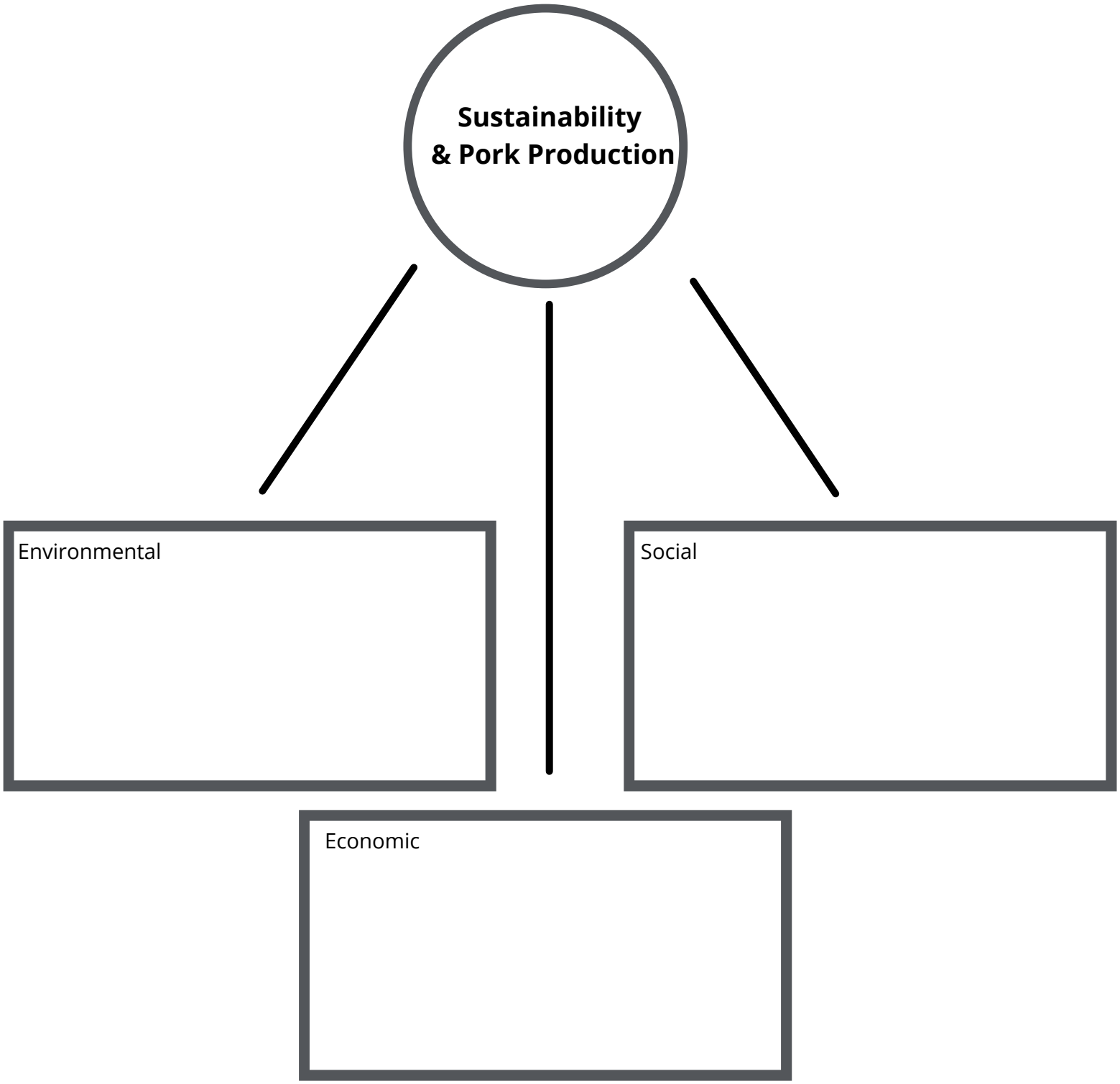
Topic: Euthanasia

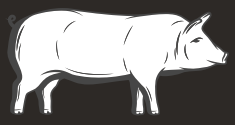
Pros
Cons
Suggestions/Improvements

NAME: DATE:

Animal Health & Welfare: Sustainability & Careers-Mind Map

Using this mind map, document your responses to the phrase " Sustainability & Pork Production".





NAME: _____ DATE: _____

Animal Health & Welfare: Sustainability & Careers-Guiding Questions

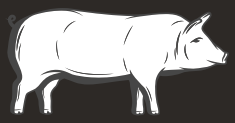
For your group research project, answer and complete these guiding questions.

Part 1:

1. Where is your pig farm located?
   a. Be sure to include details about size, style, type (finishing, farrow-to-finish etc.)
2. Who will be impacted by your pig farm?
3. How are they going to be affected?
4. Why should you as citizens and business owners care?

Part 2:

1. Students will also have to complete the following tasks:
   a. Using various methods of your choice (3-D, digital, visual drawing etc.) create a mock-up design of your pig farm. Be sure to include the following:
   b. housing style and land base
   c. biosecurity measures
   d. feeding & watering system design
2. Using Appendix **3.3**: Action Plan Template create a proposed action plan for reducing your environmental footprint in relation to your pig farm. This can include where you send your pigs to get processed, business goals, technology used etc.
3. Using Appendix **3.3**: Action Plan Template create an action plan that promotes social sustainability among your community and business. This can include programs for your employees, their housing, wages etc. as well as the relationship with the local community.
4. Using Appendix **3.3**: Action Plan Template create an action plan that promotes economic sustainability for your business. This can include who/where are you selling your product (farm gate, marketing board etc.), employees needed, cost to hire, input costs (feed, technology, equipment etc.)
5. Identify who would be involved in making these decisions/changes for the three action plans listed above (think about different careers)
6. Describe some of the potential barriers to creating these changes.



NAME: _____ DATE: _____

Animal Health & Welfare: Sustainability & Careers-Action Plan

Using this action plan template as a guide, document the steps you will be implementing for your assigned sustainability (i.e. environmental, social or economic).

Goal:					
Action Description	Individuals Responsible	StartDate	End Date	Resources Required	Outcome