CANADA
4-H Ontario

www.4-hontario.ca

4-H ONTARIO PROJECT

SWINE

REFERENCE MANUAL

Credits

The 4-H Pledge

I pledge my Head to clearer thinking,
my Heart to greater loyalty,
my Hands to larger service,
my Health to better living, for my club, my community,
my country, and my world.

The 4-H Motto

Learn To Do By Doing

CANADA
4-H Ontario

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4-H Inclusion Statement

4-H in Canada is open to all* without discrimination based on race, national or ethnic origin, colour, religion, sex, age or, mental or physical disability.**

4-H is dedicated to providing a safe and inclusive environment that allows for universal access and participation. Where barriers to participation are identified, 4-H will, with reasonable accommodation, adapt programs, rules, policies, or expectations to reduce or remove the barriers.

Any accommodations, changes or exceptions will be assessed on an individual basis, taking into account the individual experience of the member and their family. The physical safety and emotional well-being of members, leaders, staff and volunteers is 4-H's highest priority, and is the ultimate consideration in final decisions.

4-H Canada and local 4-H organizations consider inclusion a priority. Leaders are encouraged to work with individuals and their families to identify and discuss accommodations as required, and to reach out to provincial or national office staff for help with unresolved concerns.

**This applies to youth members (ages 6 to 21), volunteers, leaders, staff and professionals.*
***Definition of discrimination as per Canadian Charter of Rights and Freedoms.*

Déclaration sur l'inclusion des 4-H

L'adhésion aux 4-H au Canada est ouverte à tous les jeunes* sans discrimination fondée sur la race, l'origine nationale ou ethnique, la couleur de la peau, la religion, le sexe, l'âge ou le handicap mental ou physique. **

Les 4-H ont pour mission d'offrir un environnement sécuritaire et inclusif qui permet l'accès et la participation de tous. Lorsque des obstacles à la participation sont décelés, les 4-H adapteront, à l'aide de mesures d'adaptation raisonnables, les programmes, les règles, les politiques ou les attentes afin de réduire ou d'éliminer ces obstacles.

Toute mesure d'adaptation, modification ou exception sera évaluée au cas par cas, en tenant compte de l'expérience personnelle du membre et de sa famille. La sécurité physique et le bien-être émotionnel des membres, des animateurs et des animatrices, des membres du personnel et des bénévoles sont la priorité absolue des 4-H et constituent le facteur ultime à considérer lors de la prise des décisions définitives.

Les 4-H du Canada et les organisations locales des 4-H considèrent l'inclusion comme étant une priorité. Les animateurs et les animatrices sont encouragés à collaborer avec les personnes et leurs familles afin de définir et d'examiner les mesures d'adaptation, selon les besoins, et de communiquer avec le personnel du bureau provincial ou national pour obtenir de l'aide en cas de préoccupations non résolues.

**Ceci s'applique aux jeunes membres (âgés de 6 à 21 ans), aux bénévoles, aux animateurs, aux membres du personnel et aux professionnels.*
***Selon la définition de discrimination en vertu de la Charte canadienne des droits et libertés*

Swine References/Resources

- Alberta Pork www.albertapork.com
- Agriculture and Agri-Food Canada https://www.agr.gc.ca/
- AgScape https://agscape.ca/
- Big Dutchman www.bigdutchmanusa.com
- Canadian Centre for Swine Improvement www.ccsi.ca
- Canadian Food Inspection Agency www.inspection.canada.ca
- Canadian Pork Council www.cpc.cpc-ccp.com
- CANARM AgSystems www.Canarm.com
- Farm and Food Care Ontario www.farmfoodcare.org
- Farm Credit Canada www.fcc-fac.ca
- HFH Inc www.hfhinc.ca
- Hog Slat www.hogslat.ca
- Manitoba Pork www.manitobapork.com
- Meat News Network www.youtube.com/meatnewsnetwork
- Merck Vet Manual www.merckvetmanual.com
- North Carolina State University www. / https://swine.ces.ncsu.edu/
- Oklahoma State University – it's Farrowing Season www.news.okstate.edu
- Ontario Ministry of Agriculture Food & Rural Affairs http://www.omafra.gov.on.ca
- Ontario Pork www.ontariopork.on.ca
- National Farm Animal Care Council – Codes of Practice for the Care and Handling of Pigs www.nfacc.ca
- Temple Grandin www.grandin.com
- The Pig Site www.thepigsite.com
- Trusscore Trusscore.com
- University of Guelph https://www.uoguelph.ca/

Welcome to 4-H Ontario Swine Project!

The purpose of the Swine Project is to provide you with general knowledge on swine production.

Objectives

1. To understand the swine industry
2. To increase knowledge levels about the husbandry of swine on small farms and commercial operations
3. To learn how to safely work with and around pigs
4. To learn about proper animal welfare and to be able to identify swine related issues
5. To learn how to properly transport swine
6. To increase knowledge about marketing and the financial viability of the swine industry
7. To engage youth to be advocates of a healthy swine industry
8. To learn about the elements of judging and public speaking
9. To learn the proper use of parliamentary procedure

How To Use This Manual

The Reference Manual and Activity Guide:

The reference book is laid out into 9 meetings:

There is more information in this project than what can be covered in 12 hours of a typical 4-H project. A member could take this project for multiple years and learn different content each year.

Each unit contains Setting Objectives, Suggested Learning Outcomes, Roll Call questions, a suggested agenda, Topic Information, Activities and a Digging Deeper section. Activities should be used in combination with the discussion of topic information to teach members in a hands-on, interactive learning environment.

What Is Stem And Why Is It Important?

Since 1915, 4-H in Ontario has engaged youth in science, technology, engineering, and math (STEM). This has traditionally meant a solid focus on agricultural science, mechanics, entrepreneurship, natural sciences and household science. Today, 4-H has grown to include rocketry, robotics, computer science, environmental sciences, and more. 4-H provides hands-on learning experiences to encourage learning about the world around us. Our lives are completely immersed in science and technology.

Understanding how science, engineering, and technology impact our lives, solve problems and create new ones makes it easier to navigate our modern world.

In school, science classes need to cover a broad range of topics in a limited amount of time while STEM in 4-H allows members and leaders time to dig deeper into ideas and concepts and to spend as much time as desired to work on projects based on personal interests, questions, and skills.

STEM in 4-H allows a person to work on their own questions, design their own tests, create their own models, build their understanding, and share their work with others – learn to do by doing. That's what science and engineering are, trying to understand the natural universe and develop solutions to the problems faced in our world today. Science is inquiry that uses specific approaches and skills. But all learning is an inquiry process so working with science helps develop your learning muscles.

Planning A Meeting

Plan your meetings well. Review all the information well in advance so you are prepared and ready!

Before Each Meeting

- Read the topic information and activities and photocopy any relevant resources for the members' Record Books.
- Be familiar with the topic information for each meeting. Think of imaginative ways to present the information to the members. Do not rely on just reading the information out loud. Review available resources, plan the meetings and choose activities and themes that complement the ages and interests of your members. Gather any equipment and/or resources that will be needed to complete the meeting.
- At least 12 hours of club meeting time is required for every project; including club business, specific project information and social recreation. The delivery format for that material is left to the discretion of the leaders. Before each meeting, create a timeline to ensure that you are providing an adequate amount of instructional time for club completion. **Note:** the best practice recommendation is that a club have multiple meeting times for each project. Included on the following page is a Leader's Planning Chart to help with the planning of meetings. In addition to the chart, keep track of what went well and what could be changed next time. That way, each time this project is run, the content of the meetings can be different!

When planning each meeting, a typical 4-H meeting agenda should include the following:

- Welcome & Call to Order
- 4-H Pledge
- Roll Call
- Parliamentary Procedure:
  - Secretary's Report
  - Treasurer's Report (if any)
  - Press Report
  - New Business: local and provincial 4-H activities/opportunities, upcoming club activities
- Meeting content and activities
- Clean-up
- Social Recreation and/or refreshments
- Adjournment

Judging And Communications

Each meeting must include either a judging or public speaking activity.

- Judging gives the members an opportunity to use judging techniques as part of the learning process. Through judging, members learn to evaluate, make decisions and communicate with others. They also develop critical thinking skills, confidence and self-esteem. Many examples are used in this reference manual but use your imagination! As long as members are setting criteria and critically thinking about where items fit within that set of criteria, they are learning the basic skills of judging!
- A communications activity has been provided for each meeting but can be included in the Roll Call or social recreation time. These activities do not need to involve the topic of swine as the outcome is more about understanding the concepts of effective communication.

Electing Your Executive

Elections can be chaired by a youth leader, senior member or club leader. The person chairing the elections is not eligible for any positions.

Procedure:

1. All positions are declared vacant by the chairperson, who indicates this by saying "I'd like to declare all positions vacant."
2. The group decides on the method of voting (i.e. show of hands, ballot or standing).
3. The chairperson accepts nomination from members for each position being filled. Nominations do not require a seconder. Nominations are closed by motion or declaration by the chairperson.
4. Each member nominated is asked if he/she will stand for the position. Names of members who decline are crossed off.
5. Voting takes place by selected method and majority rules (i.e. member with most votes).
6. Announce the name of the successful member. Offer congratulations and thank all others that ran for the position.
7. If ballots are used, a motion to destroy the ballots is required and voted on.

Steps In Making A Motion

The motion is a very important key to having good meetings. Motions are a way of introducing topics for discussion and allowing each member to speak and vote. Any member can make a motion.

Steps In Making A Motion:

1. Address the chairperson (i.e. raise your hand).
2. Wait for the chairperson to acknowledge you.
3. Make the motion: "I move that…"
4. Another person seconds the motion: "I second the motion."
5. Chairperson states the motion.
6. Chairperson calls for discussion of the motion.
7. Chairperson restates the motion.
8. Chairperson calls the vote: "All in favour? Opposed?"
9. Chairperson announces the result of the vote: "Motion carried" or "Motion defeated."

Leader's Planning Chart

Mtg. #	Date/Place	Topics Covered	Activities	Materials Needed

As A Club Volunteer Your Responsibilities Are To:

- Be a Volunteer in Good Standing by completing the volunteer screening process, attend a volunteer training session and adhere to the 4-H Code of Conduct.
- Notify the local association of the club, arrange a meeting schedule and participate in club meetings, activities and the Achievement program, assuring that all meetings and activities are accessible and inclusive for all participants.
- Review the project material in the Reference Guide to familiarize yourself with the information and adapt it to fit your group. Be well organized and teach the material based on your group's age, interest and experience level.
- Organize the club so members gain parliamentary procedure, judging and communication skills.
- Ensure that members are registered for the club using the online registration system.
- Review the Participant Agreement Form (PAF) that members will have completed when registering online. Ensure that all members, leaders and parent helpers know the appropriate actions during any emergency. Check with members for any food allergies or dietary restrictions and plan snacks accordingly.

As A Club Member Your Responsibilities Are To:

- Participate in at least 2/3 of his/her own club meeting time. Clubs must have a minimum of 12 hours of meeting time.
- Complete the project requirement to the satisfaction of the club leaders.
- Take part in the project Achievement Program.
- Fill in and complete the Record Book.
- Complete any other project as required by the club leaders.
- Adhere to the 4-H Code of Conduct at all times.

Achievement Program Ideas/Suggestions

- Show an animal
- Have members create an exhibit or enter a float in the parade at a local fair/show.
- Have members make a presentation at school about the Swine Project and/or the industry in general.
- Have members make a presentation at school or a community event about how important Biosecurity is on the farm and why it is important to respect the rules of a farm.
- Create a skit about pigs and farming and perform it at school, at a senior's home, at another organization's meeting, etc.
- Have members build a detailed, to scale barn for display at local fairs, plowing matches, etc.

Special Projects

These projects are done outside of meeting time and are for members interested in doing more – often senior members. Its up to you as the leader to decide if you will require members to complete a Special Project for club completion. Some ideas include:

- Create a display about a topic related to pigs and display at a local fair or community event.
- Create a video about a topic related to pigs. Post on YouTube.
- Interview a farmer or someone who works in the swine industry. Write a blog or an article for your local newspaper about them.
- Create Tic Tok videos with interesting facts about the industry.

Tour & Guest Speaker Ideas

- Visit a pig barn open house.
- Have guest speakers attend meetings to supplement the material in the Reference Guide. Speakers could include a veterinarian, farmer, AI sales representative, a nutritionist, a truck driver, a barn contractor, Farm and Food Care representative, a director from your local pork committee, Canadian Food Inspection Agency staff, Animal Welfare Inspector, etc.
- Tour an abattoir or butcher shop
- Tour a Feed Mill

The 4-H Pledge

I pledge
My head to clearer thinking,
My heart to greater loyalty,
My hands to larger service,
My health to better living,
For my club, my community,
my country, and my world.

CANADA
4-H Ontario

Intro

Meeting 1 – Intro

Setting Objectives:

To create an understanding of the swine industry in Ontario and Canada.

Suggested Lesson Outcomes:

- To understand the swine industry on both small and large scale farms.
- To start to understand and appreciate the raising and marketing of pigs.
- To get an introduction to biosecurity.
- To understand the importance of animal welfare and use of handling tools.
- To learn parts of a pig and important terminology.
- To learn the key points from the Codes of Practice for pigs.

Suggested Roll Call Questions:

- Name your favourite pork product.
- Name a breed of pig.

SAMPLE MEETING AGENDA Time: 2 hours plus activities

Welcome, Call To order, Pledge Review 4-H Code of Conduct		10 minutes
Roll Call		5 minutes
Parliamentary Procedure	Introductions, Elections And Business	30 minutes
Topic Information, Discussion	Topic Information • The Hog Industry In Ontario • Handling Pigs • National Code Of Practice For The Care And Handling Of Pigs **Activity #1** External Anatomy Of A Pig **Activity #2** Pig Lingo Word Search **Activity #3** Demonstrating Sorting Tools On A Box **Activity #4** Moving Pigs Demonstration	60 minutes + activities
At Home Activity	Build A Sorting Board Or Flag	5 minutes
Wrap Up, Social Time And Adjournment		10 minutes

The Hog Industry In Ontario

Whether you are raising a big barn full of hogs or a few to fill your freezer, raising healthy pigs is the end goal. This project will provide members with an opportunity to learn about all aspects of the swine industry.

In 2021, there were over 1,200 farms raising and selling pigs in Ontario. These farms range in size from a small producer, raising a few pigs to sell to family and friends, to commercial producers who raise hundreds or thousands of pigs at a time.

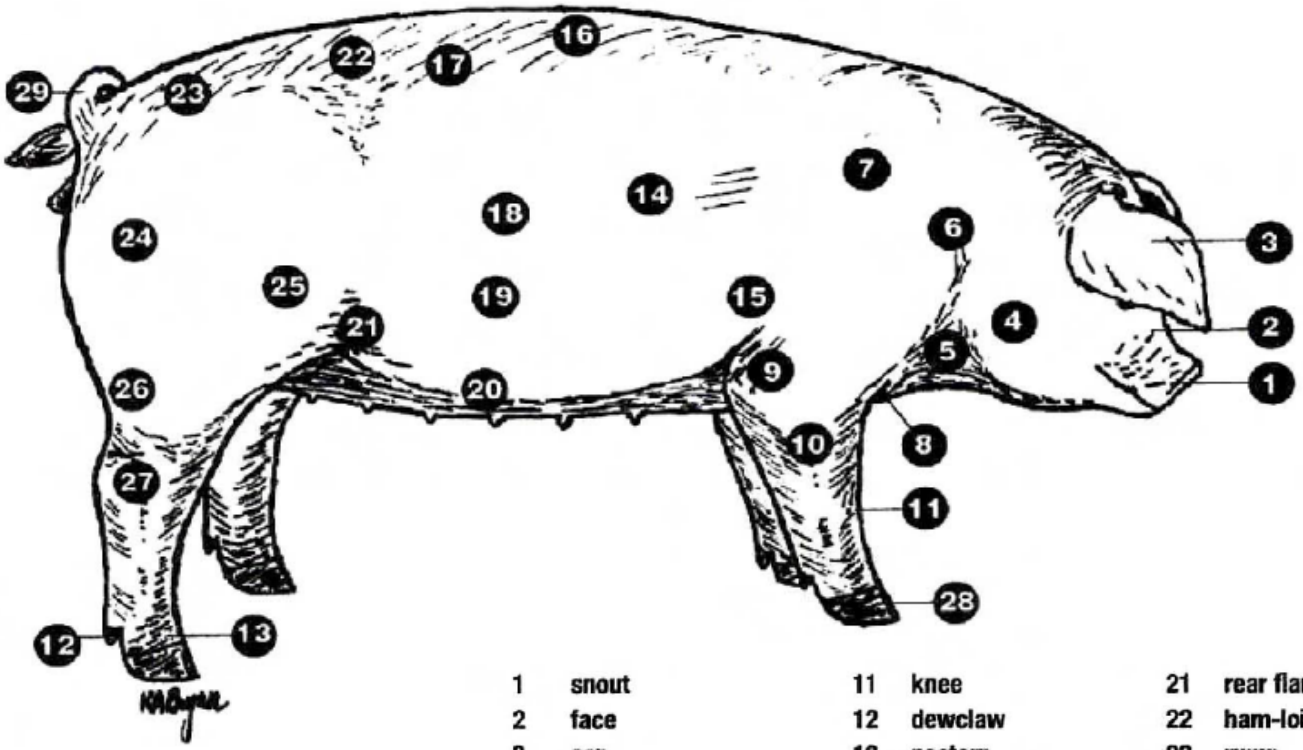
Raising livestock isn't something a farmer can do alone. A farmer works with many other people to make the necessary decisions on how to best raise their animals. They work closely with their barn staff, veterinarians, nutritionists, genetics companies, truck drivers, meat packing plants, trades people and other farmers.

In some cases, farmers are contracted by processors to raise pigs following the company's specific instructions on how the animals are raised, what feed they eat, health protocols, etc.

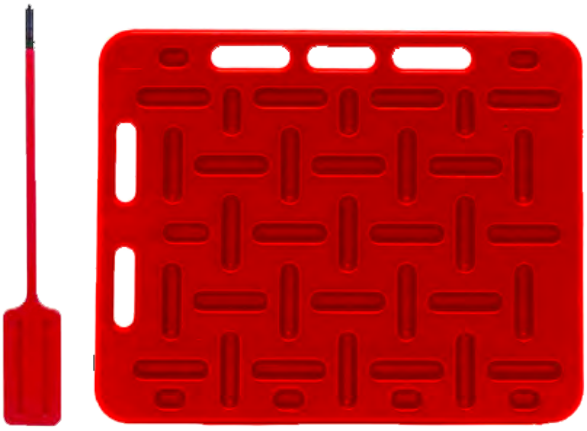
The scale on which this farming takes place is very different but the capacity to raise healthy pigs is pretty much the same. As a farmer, we are obligated to provide safe housing, clean water, nutritious food and to treat our animals appropriately.

To learn about the care and raising of pigs, we need to begin by learning about the pig and how they behave.

Let's start with learning about the anatomy of the pig. Knowing the basics of the pig's anatomy is important.



Handling Pigs



If you are going to raise pigs, you need to learn how to handle them safely for both handler and animal. Pigs will have to be moved between pens, onto trailers and depending on your achievement project, possibly to a fair and around a show ring.

Main methods for moving animals are:

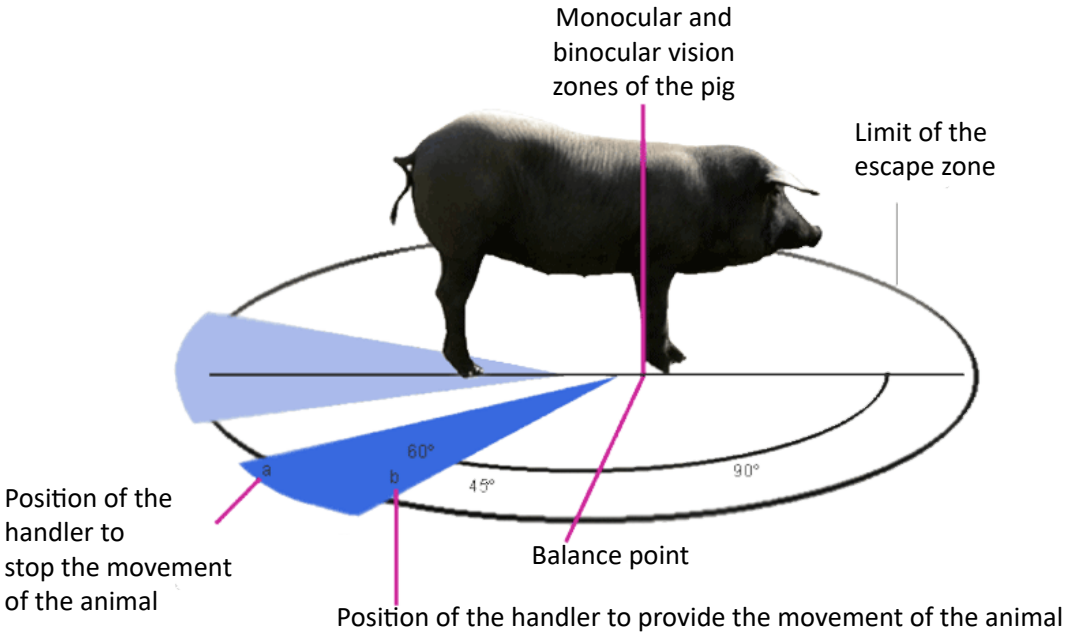
1. Physical barriers – use of a pig board or even your body
2. Visual barriers – witches capes, flags, trash bags
3. Auditory stimulus – rattle paddles, crackling bags, whiffle bat, cans with beans, pebbles or beads
4. Visual stimulus – ribbons on a stick, sorting whips (for waving, do not use on the animal)

Calm pigs are easier to work with. Reduce whistling, yelling and screaming around pigs to move them.

It's important to recognize the signs of scared pig when being handled:

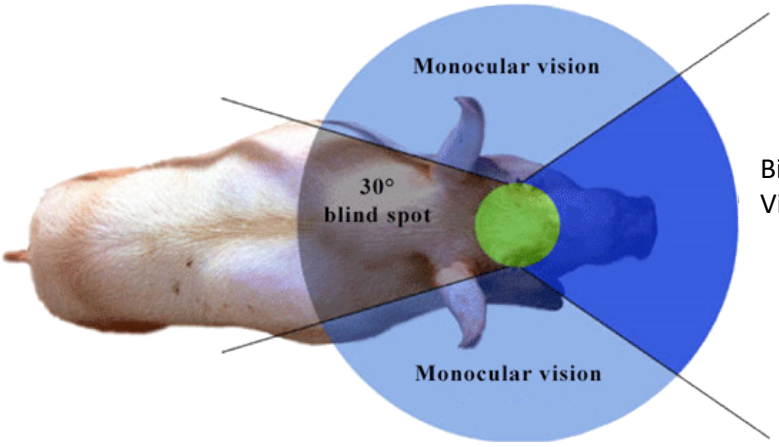
- Raised head and ears
- Attention on the handler
- Vocalization
- Bunching up, if in a group
- Rapid escape movements

To begin to understand how to move your pig, examine the diagrams below.



Pigs have 310 degree peripheral (to the sides) vision and 35-50 degree binocular vision (to the front) which means they have a great ability to detect things around them but don't have a great ability to differentiate changes to the floor or shadows vs light. They may see a painted line or shadow on the floor as a physical barrier. Their peripheral vision is what helps them see things we often don't notice or think is an issue – like that small gap between the trailer and the barn wall. Pigs will naturally head towards bright areas and are hard to move into darker ones. Moving pigs from one barn to the next can be made easier by ensuring the way is well-lit with consistent flooring and few shadows.

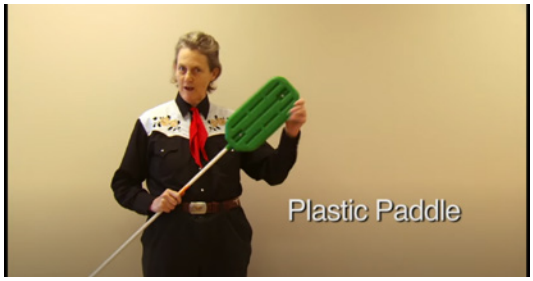
The 2nd picture illustrates the pig's blind spot and balance point. The circle around the pig is the flight zone. This is the area where the pig is uncomfortable with your presence and will try to escape if you get too close. The size of this zone depends on the animal. A pig not used to being handled will usually have a very large flight zone but a quiet animal like a former 4-H project, a pet pig or sometimes even a bottle-raised pig will have little to no flight zone because they don't consider humans to be a threat to them. To move the pig(s), simply step into this area and they will move away from you, if able. If you want to move the pig(s) forward, you need to approach the pig behind the balance point (roughly the shoulder) but in front of the blind spot. To move the pig backwards, approach the pig from in front of the balance point. Doing this slowly and quietly will help make moving the animals less stressful for everyone involved.



Binocular Vision 50°

In order to direct the pigs, you may need to use tools like the ones listed above. Light contact is permitted but NEVER use excessive force on the pig.

Watch youtu.be/d8mdhUqsi9s for a demonstration by Temple Grandin on moving pigs



Code Of Practice For The Care And Handling Of Pigs

The Codes of Practice are nationally developed guidelines for the care and handling of farm animals. They serve as Canada's national understanding of animal care requirements and recommended practices. Codes promote sound management and welfare practices for housing, care, transportation and other animal husbandry practices. In this section, members will learn about the Code of Practice that is specific to the care and handling of pigs.

The Code of Practice for the Care and Handling of Pigs was released in 2014. It can be found online at: http://www.nfacc.ca/codes-of-practice and then by choosing 'Pigs'.

The Code Development Committee and the Scientific Committee have worked together to develop a science- and consensus-based Code. The result is a Code that is scientifically informed, practical and reflects societal expectations for responsible farm animal care. The stakeholders that made up the Code Development Committee included farmers/producers, transporters, veterinarians, animal welfare and enforcement agencies, retail and food service organizations, processors, governments and researchers.

Codes of Practice are intended to promote sound management and welfare practices through recommendations and requirements for housing, care, transportation, processing and other animal husbandry practices. Codes serve as educational tools, reference materials for regulations, and the foundation for animal care assessment programs.

There are two aspects to the Code of Practice that have been created for many different types of livestock:

Requirements

These refer to either a regulatory requirement, or an industry imposed expectation outlining acceptable and unacceptable practices and are fundamental obligations relating to the care of animals. Requirements represent a consensus position that these measures, at minimum, are to be implemented by all persons responsible for farm animal care. When included as part of an assessment program, those who fail to implement the requirements may be compelled by industry associations to undertake corrective measures or risk a loss of market options. Requirements also may be enforceable under federal and provincial regulations.

Recommended Practices

Code Recommended Practices may complement a Code's Requirements, promote producer education and can encourage adoption of practices for continuous improvement in animal welfare outcomes. Recommended Practices are those which are generally expected to enhance animal welfare outcomes, but failure to implement them does not imply that acceptable standards of animal care are not met.

What's In The Code Of Practice For Pigs?

In addition to an introduction, the Code of Practice for PIGS contains the following sections:

Section 1 Housing and Handling Facilities
Section 2 Feed and Water
Section 3 Animal Health
Section 4 Animal Husbandry
Section 5 Transportation
Section 6 On-Farm Euthanasia

Section 1: Housing and Handling Facilities

Desired Outcomes:
Housing systems need to provide adequate space, good ventilation and appropriate temperature, all of which are interrelated. Housing for pigs needs to provide for their comfort at all times. Facilities need to allow for the safe, efficient and humane movement of pigs.

Requirements
Housing systems and their components must be designed, constructed and regularly inspected and maintained in a manner that reduces the potential for injury, provides suitable temperatures (refer to Table 1.1), fresh air, and clean conditions, and allows for inspection of all pigs. Emergency plans must be developed to ensure that alternative means of temperature regulation, ventilation, feeding, and watering of pigs are available in the event of a power failure, mechanical breakdown, or other emergency situation. Pigs must not be tethered as part of their normal housing systems.

Table 1.1 – Optimum temperatures for housed swine of all ages as measured at pig level (7)

Animal	Optimum Temperature* °C (°F)	Desirable Limits* °C (°F)
Creep areas for newborn piglets	35 (95)	32-38 (89-100)
Creep areas for older suckling piglets (2-5kg [4-11lbs])	30 (85)	27-32 (81-89)
Young pigs (4-5 days post-weaning)1	35 (95)	33-37 (91-99)
Young pigs (5-20kg [11-44lbs]) in weaned pens	27 (80)	24-30 (75-86)
Growing pigs (20-55kg [44-121lbs])	21 (70)	16-27 (61-81)
Finishing pigs (55-110kg [121-243lbs])	18 (65)	10-24 (50-75)
Gestating sows	18 (65)	10-27 (50-81)
Lactating sows	18 (65)	13-27 (55-81)
Boars	18 (65)	10-27 (50-81)
** Stated temperatures reflect the desired temperature in the environment directly around the pig, and not necessarily the overall temperature of the barn. Supplementary heat sources (e.g. heated mats) can be used to achieve desired temperatures.*		

Section 2: Feed and Water

Correct feed management is necessary to ensure pigs' varying nutritional needs are met throughout the production process (i.e. maintenance, growth, reproduction or lactation).

Nutritionists can provide specific information on the appropriate types of feed ingredients to include in diets based on availability, price, and feeding value. Measures to satisfy appetite as well as nutritional needs are important for pig welfare.

Section 3: Animal Health

Animal health is a key component of animal welfare. Factors that can affect animal health are nutrition, ventilation, housing, genetics and management practices. Pain and discomfort caused by health issues impact an animal's well-being such that good animal welfare requires good animal health.

Herd Health Management Program

An effective Herd Health Management Program contributes to animal well-being by providing a strategy for disease prevention, rapid diagnosis and effective treatment. Prevention of disease rather than treatment of disease is better for animal welfare and is more economical for the producer. Many outbreaks of disease in swine herds can be avoided by using management practices that include strict sanitation and immunization programs.

A Herd Health Management Program should include:

- Vaccination protocols
- Observation of all animals for injury or signs of disease
- Complete, accurate and reliable record keeping
- Protocols for the prevention, detection and treatment of disease or injury, including setting targets for measuring incidences of disease and injuries
- Protocols for pest control
- Protocols for individual animal or group identification and treatment records
- Training programs and protocols for animal handlers
- Protocols for introducing new arrivals to the herd
- Protocols for managing sick and injured pigs
- Protocols for culling animals at the end of their production cycles
- A record of deaths that occur on-farm for purposes of tracking mortality rates
- Protocols for on-farm biosecurity.

Veterinarians play a key role in helping producers to meet these animal health obligations. Having a good working relationship and a valid Veterinarian/Client/Patient Relationship (VCPR) with a swine veterinarian improves the health and welfare of pigs.

Section 4: Animal Husbandry

Positive human contact is an important factor in animal well-being and productivity. Pigs with previous handling and moving experiences are easier to move. Using pig behaviour is an effective way to move pigs. An important concept in handling all livestock is the "flight zone" (the distance from an animal at which it will choose to move away from an approaching handler) and the "point of balance".

Pigs move best when handled in a group, and when they are following a leader or at least walking side-by-side with other pigs. Overcrowded pigs cannot easily turn around. Pigs may balk and refuse to move if they encounter shadows, puddles, bright spots, a change in flooring type or texture, drains, metal grates, or flapping objects. Moving people also distract pigs.

When prodded, a pig will attempt to get away, either by running forward or by turning back to shelter among the group. Repeated electric prodding causes a pig's heart rate to increase with each successive shock, and excessive prodding can kill pigs. Individual pigs may need to be restrained on a temporary basis for veterinary purposes or other procedures.

Section 5: Transportation

Everyone involved in the transportation of animals in Canada, or arranging for their transport, has a responsibility for ensuring that the entire transportation process (including loading, transit and unloading) does not cause injury or suffering to the animals. Those transporting pigs or arranging for pigs to be transported must follow the most current national and provincial animal transport requirements. The federal requirements for animal transport are covered under the Health of Animals Regulations, Part XII (Transport of Animals).

The scope of the Code of Practice for the Care and Handling of Pigs ends at the farm gate, but includes requirements and considerations that affect the transportation process. A separate Code of Practice for transportation is available on the National Farm Animal Care Council's website.

Section 6: On-Farm Euthanasia

Comprehensive on-farm euthanasia plans provide consistent guidance to stockpersons about when euthanasia should be applied, by whom, and the methods that should be used. It is important that responsible personnel be made aware of and be trained in following the plan.

A euthanasia plan should include:

- Specific aspects of the skills and knowledge required to correctly euthanize an animal including:
  - the appropriate euthanasia method depending on the age and/or size of the pig
  - methods of restraint
  - how to use and maintain the equipment
  - operator safety
- Selection and identification of primary and secondary stockpersons who are trained in the various methods of euthanasia
- Euthanasia equipment maintenance protocols
- Criteria to guide decisions on when to euthanize an animal, including when to stop treating an animal and euthanize, taking the following into account:
  - likelihood of recovery
  - pain and distress of the animal
  - ability to get to feed and water
  - disease risks to other animals
  - ability to walk
  - diagnostic information
  - productivity
- Appropriate euthanasia methods based on the weight of pigs, taking into account:
  - risks to other animals
  - animal handling and restraint
  - impact on stockpersons performing the procedure
- Carcass disposal.

Glossary

Ad Libitum: Allowing pigs to eat an unlimited amount of feed.
Adjustable Crates: Individual farrowing units that allow the height, width and/or length to be adjusted to accommodate sows of various ages/sizes.
All-In/All-Out: A production system whereby animals are moved into and out of facilities and/or between production phases in distinct groups.
Analgesic: An agent that alleviates pain without loss of consciousness.
Anesthetic: An agent that induces loss of feeling or sensation, especially the loss of pain sensation. Used during surgery or a painful procedure (e.g. castration). Examples include lidocaine (local anesthetic), isoflurane (general anesthetic).
Animal Welfare: How an animal is coping physically, physiologically and psychologically with the conditions in which it lives. Physically includes pain and injury; physiologically includes environmental or disease stressors; and psychologically includes stressors that affect the senses, especially those that result in fear, fighting, distress or stereotypic behaviours due to either frustration or boredom. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment.
Anti-Crush Rails: Rails or bars included in farrowing crates that slow the speed at which a sow lies down, allowing the piglets to move and avoid being crushed.
Boar Taint: Unpleasant taste and smell that results from an accumulation of androstenone and skatole in the fat of uncastrated male pigs; it is detected when cooking meat from these pigs.
Boar: Uncastrated male pig.
Body Condition Score (BCS): A five-point scoring system used to classify the condition of pigs, based on the amount of fat and/or muscle.
Captive Bolt: Refer to “Non-Penetrating Captive Bolt” and “Penetrating Captive Bolt”.
Castration: A process which renders a male infertile which may be achieved by various methods depending on the species, including surgical removal of the testes, immune suppression of hormones, or cutting off blood circulation to the testes. (Only surgical or immuno-suppressive methods may be used for pigs.)
Colostrum: Milk secreted by the sow for the first few days after farrowing, characterised by high protein and antibody content.
Compromised Animal: An animal that has a reduced capacity to withstand transport. Transportation with special provisions, such as separation from other animals and/or transporting to the nearest place, other than an assembly centre, will not lead to suffering.
Creep Area: Separate area within a farrowing crate in which piglets are protected from crushing or overlying by the sow, and which is usually heated.
Creep Feed: A highly palatable, nutritious feed fed to piglets while they are suckling the sow.
Cross-Fostering: Permanent removal of piglets from a large litter to a sow with a smaller litter of similar age piglets.
Distressed Pigs: Pigs that are stressed beyond what would be deemed normal for a given situation, as evidenced by any one or a combination of the following signs: difficulty breathing/open-mouth breathing or gasping; patchy skin discolouration; high body temperature; stiffness; reluctance to move (no other visible abnormalities); inability to rise; trembling.
Dynamic Group/Dynamic Mixing: Groups of gestating sows in which animals are added and/or removed at regular intervals.
Effective Temperature: The temperature that pigs feel in their own immediate surroundings. The temperature at pig level may differ several degrees from that measured at higher levels.
Enrichment: A way of changing the environment of pigs to their benefit.
Euthanasia: Greek word meaning “good death”. The process of ending the life of an individual animal in a way that minimizes or eliminates pain and distress, which is considered tantamount to the humane termination of an animal’s life.

Farrowing Crate: An enclosure closely related to the sow's body size, in which sows are kept individually during and after farrowing.
Farrowing: Giving birth to piglets.
Finisher: Pigs that are generally above 70kg (154lbs) live weight, until they are marketed or retained for breeding. The same meaning applies for pigs referred to as "Finishing".
First Parity Sow: A sow that has farrowed once.
Flight Zone: The distance from an animal at which it will choose to move away from an approaching handler.
Foster: Refer to "Cross-Fostering".
Genetic Selection: Intentional breeding for specific traits.
Gestation Stalls: Refer to "Stall".
Gilt: female pig that has not given birth to piglets.
Grouping: The process of combining individual pigs or sows, or smaller groups of established pigs or sows together.
Grower: Pigs generally with live weights of between 30-40kg (66-88lbs) and 70kg (154lbs). The same meaning can apply for pigs referred to as "Growing".
Growing/Finishing, Grower/Finisher: The phase of production between nursery and market.
Husbandry: Care and management practices in pig farming.
Immuno-Castration: A method of castration which is reversible (this is directly from the Codes of Practice) and non-painful. Accomplished by immunizing against sex hormones, with the effect of moderating aggressive behaviours in males, minimizing development of secondary sex characteristics and inhibiting fertility. Antibodies are delivered via a needle given twice during the production phase.
Insensible/Insensibility: The point at which an animal no longer has the ability to feel pain or perceive and respond to its environment (e.g. light).
k – Value: The value derived from a formula that relates body weight to body surface area. When multiplied by a pig's body weight (kg), k-value gives the floor surface area in m2. The formula is:

A = k x BW0.667, where:

- A = floor surface area in m2
- k-value = floor space allowance coefficient
- BW = pig body weight in kg.

Lactating Sow: A sow that has given birth, and is producing milk to feed her piglets.
Lateral Lying Position: A resting position in which pigs lie on their sides with all legs extended. This position uses more floor space than the sternal lying position, which is described as lying upright on the chest.
Mated Gilt: A young female pig that has been mated, but has not had a first litter.
Micro-Climate: The environmental condition (e.g. temperature) that an individual pig feels, which may be different than the environmental conditions in the surrounding area (e.g. pen; barn).
Morbidity: State of being diseased, ill, injured or sick.
Non-Ambulatory: Animals unable to stand without assistance or move without being dragged or carried, regardless of size or age. Also known as "downers".
Non-Penetrating Captive Bolt: A specially designed device that propels a blunt, mushroom-shaped bolt with great force against the forehead of the animal which, when applied in the correct position, causes an immediate loss of sensibility. This procedure may be reversible.
Nursery Pigs: A pig after it has been weaned from the sow, up to approximately between 30-40kg (66-88lbs) in live weight. Also referred to as a "Weaner" or "Weanling".
Nursery: The facility where weaned pigs are housed until they move to the next phase of production.
Pain Control: Alleviating pain, usually through medication (see "Analgesic" and "Anesthetic").
Pathogen: A disease-causing agent of an infectious nature, such as a bacterium or virus.
Pen: An enclosure in which pigs are housed where they can turn around, and which may be used for housing pigs in groups, housing boars individually, management purposes such as mating or farrowing, or for housing pigs individually.

Penetrating Captive Bolt: A specially designed device used for stunning and euthanasia that, when applied in the correct position, causes immediate loss of sensibility and results in irreversible brain injury and death.
Persistent Bullying: Enduring aggression of a pig by one or more other pigs to the extent that it compromises the welfare of the bullied pig.
Piglet: A pig up to the time it is weaned from the sow.
Point of Balance: Located at the animal's shoulder. Used by handlers to control the movement of pigs.
Reproductive Cycle: The period from farrowing to the following farrowing.
Ridgling: A male pig with one or both testes undescended. Also known as cryptorchid.
Rooting: Behaviour of pigs whereby they use their noses to dig in the ground or in any available material.
Sedative: An agent that calms nervousness, irritability and excitement by depressing the central nervous system.
Social Hierarchy: The order whereby individuals establish their dominance position within a group of pigs.
Sow: An adult female pig, which has had one or more litters.
Split Suckling: Removal of the larger piglets in a litter from the dam for a short period within 24 hours after birth to allow the smaller piglets access to the dam. Also referred to as "split nursing".
Static Group: Groups of pigs which have an established social hierarchy (they have been together for some time) with no new pigs being added or removed.
Stall: An enclosure, closely related to the pig's body size, in which gilts, sows and boars are kept individually. Stalls are normally joined together in rows and may be used for total confinement or allow the pig free choice of access.
Stereotypies: Abnormal, repetitive and unvarying behaviours caused by known factors such as frustration, coping attempts, or dysfunction of the central nervous system.
Stockperson: A person who undertakes the immediate day-to-day husbandry tasks associated with looking after pigs.
Tethering: A method of restraining pigs whereby a neck or girth collar is attached to a short length of chain, which is in turn fixed to the floor or the front of a pen.
Thermal Regulation: Maintenance of a constant internal body temperature independent from the environmental temperature.
Unfit Animal: An animal that has a condition that indicates that it cannot be transported without suffering. Unfit animals, if transported, would endure unjustified and unreasonable suffering.
Veterinarian/Client/Patient Relationship (VCPR): A VCPR exists when all of the following conditions have been met:

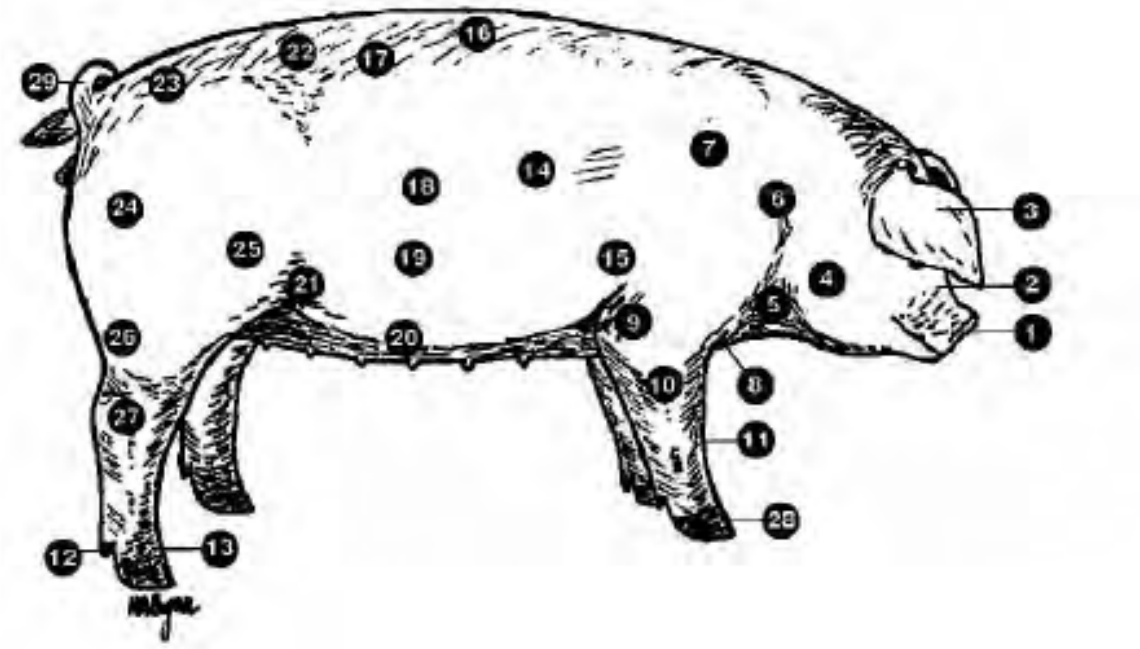
- The veterinarian has assumed the responsibility for making clinical judgments regarding the health of the animal(s) and the need for medical treatment, and the client has agreed to follow the veterinarian's instructions
- The veterinarian has sufficient knowledge of the animal(s) to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s). This means that the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of an examination of the animal(s) or by medically appropriate and timely visits to the premises where the animal(s) are kept
- The veterinarian is readily available for follow-up evaluation, or has arranged for emergency coverage, in the event of adverse reactions or failure of the treatment regimen.

Vices: Persistent behaviour that usually indicates that the well-being of the pigs has been compromised. Vices may result in self-injury or the injury of other animals. Examples include tail and ear biting, belly nosing, snout rubbing.
Weaner/Weanling: A pig after it has been weaned from the sow, up until approximately 30-40kg (66-88lbs) in live weight. Also referred to as a "nursery pig".
Weaning: The act of permanently separating piglets from the sow.

Activity #1: External Anatomy Of A Pig

Do	Time: 20 minutes **Materials needed:** • Anatomy of A Pig Worksheet • Writing utensils **Instructions:** • Give each member an Anatomy of a Pig worksheet • Explain the worksheet and have members fill in the blanks to identify the parts of the animal • Review the worksheet to ensure that all members have the animal labelled correctly
Reflect	**Learning Outcomes:** To allow members to identify and understand the various parts of a pig as they progress in their knowledge of pigs so members are better equipped to learn about topics such as diseases, reproduction and body condition scoring.
Apply	**Discuss The Following Prompts As a Group:** • Why is it important to know and understand the anatomy of a pig? • Are there any other parts of the anatomy that are not labelled on the diagram?

External Anatomy Of A Pig Work Sheet



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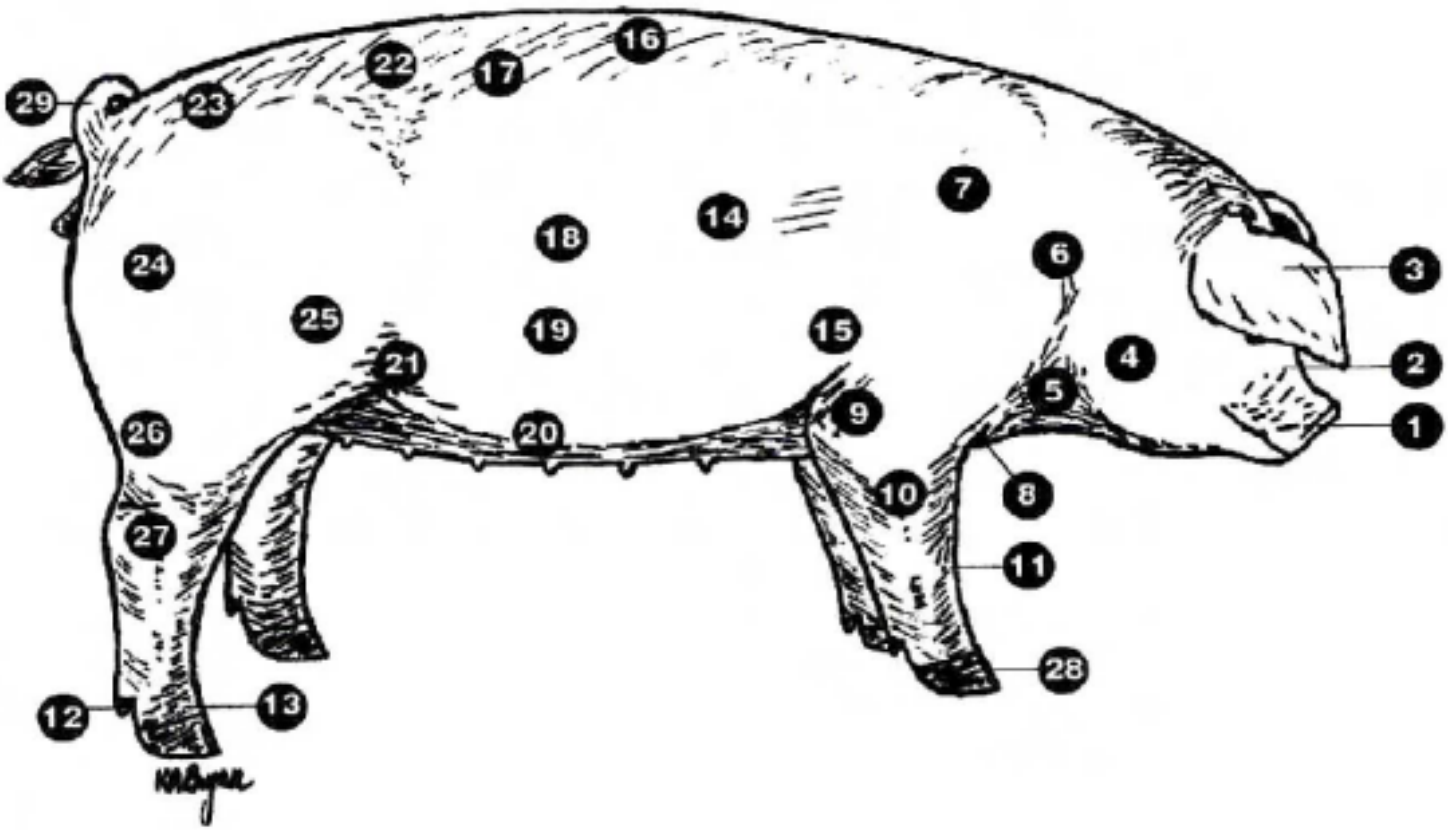
External Anatomy Of A Pig Work Sheet ANSWER KEY



1	snout	11	knee	21	rear flank
2	face	12	dewclaw	22	ham-loin junction
3	ear	13	pastern	23	rump
4	jaw	14	rib	24	ham
5	jowl	15	forerib	25	stifle
6	neck	16	top or topline	26	base of ham
7	shoulder or blade	17	loin	27	hock
8	chest	18	side	28	foot or toes
9	elbow	19	middle	29	tail
10	forearm	20	underline		

Activity #2: Pig Lingo Word Search

Do	Time: 10 minutes **Materials needed:** • Word Search Activity Sheet • Pens or pencils Find the words!
Reflect	**Learning Outcomes:** To learn words commonly used on pig farms

Pig Lingo Word Search

V	P	L	W	F	T	K	Z	O	C	J	R	Y	G	R
G	A	F	I	Y	M	P	S	X	Y	M	W	A	I	E
V	M	C	E	T	P	R	O	T	E	I	N	N	L	A
L	I	K	C	E	T	J	E	F	T	G	E	T	T	O
D	N	D	Q	I	D	E	J	T	B	E	X	I	Y	S
B	E	B	E	M	N	E	R	B	I	S	P	B	V	W
O	R	A	P	W	T	E	R	V	O	T	F	I	I	A
A	A	R	I	P	O	P	T	R	S	A	A	O	T	T
R	L	R	G	W	P	R	W	Y	E	T	R	T	A	E
S	Y	O	L	E	F	O	M	Z	C	I	R	I	M	R
O	W	W	E	A	S	Z	R	E	U	O	O	C	I	E
W	E	C	T	N	E	D	P	K	R	N	W	C	N	R
T	R	A	C	E	A	B	I	L	I	T	Y	M	T	C
A	W	E	Z	R	J	H	W	R	T	K	V	M	Y	D
Z	T	R	O	L	Z	W	D	N	Y	U	F	X	Y	H

Word Bank

Traceability
Antibiotic
Biosecurity
Gestation
Dewormer
Barrow
Protein
Vaccine
Mineral
Litter
Pork
Piglet
Waterer
Feeder
Boar
Vitamin
Sow
Weaner

Activity #3: Demonstrating Sorting Tools On A Box

Do	Time: 10 minutes **Materials needed:** • Empty Boxes • Rattle paddles, • Sorting sticks or whips • Show cane/stick • Flags **Instructions:** Watch the Temple Grandin - youtu.be/d8mdhUqsi9s. Use the handling tools to move the box around, tapping harder and harder until you wreck the box.
Reflect	**Learning Outcomes:** To demonstrate how gently using the tools above has a significantly different outcome than using a lot of force.
Apply	**Processing Prompt:** • Why shouldn't you use these tools harshly on your animal? • What will the result be if you do use them harshly?

Activity #4: Moving Pigs Demonstration

Do	Time: 10 minutes **Materials needed:** • Very quiet, easy to handle pig • Sorting board, rattle paddle, flag, etc. **Instructions:** Demonstrate moving the pig forward and backwards using the point of balance. Demonstrate moving the pig with the aids.
Reflect	**Learning Outcomes:** To learn how to move your pig quietly and easily
Apply	**Processing Prompt:** • Why is it important to be able to move your pig calmly and easily? • Why is it important to know how to use your tools effectively?

At Home Activity

Make a homemade portable sorting board using thin plywood or a large, black plastic flag (plastic pipe and heavy plastic).

Biosecurity

Meeting 2 – Biosecurity

Setting Objectives:
To create an understanding of the importance of biosecurity on the farm.

Suggested Lesson Outcomes:
- To understand how to assess risks on the farm.
- To be able to recommend ways to mitigate those risks.
- To learn how to complete a biosecurity plan.

Suggested Roll Call Questions:
- What is biosecurity?
- Who comes to your farm?

SAMPLE MEETING AGENDA Time: 1 hours 20 minutes plus activities

Welcome, Call To Order, Pledge		10 minutes
Roll Call		5 minutes
Parliamentary Procedure	Minutes And Business	30 minutes
Topic Information, Discussion	Topic Information • What Is Biosecurity? • Assessing The Risks • Transport Biosecurity For Small Farms Or For Members Transporting Their Projects To The Fair • Preparing A Plan **Activity #1** Bacteria Transfer Experiment **Activity #2** Ontario Pork Biosecurity Self-Assessment	30 minutes + activities
At Home Activity	Complete The Plan For Your Farm	5 minutes
Wrap Up, Social Time And Adjournment		10 minutes

What Is Biosecurity?

When people think of biosecurity, they often think of people in secure labs working with fatal viruses, dressed in protective gear. They don't usually think of biosecurity on the farm, yet, it is one of the most important ways to protect our animals from disease. Whether you have a small or large farm, biosecurity needs to be considered.

But, what is it?

The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) defines it as the management practices enabling producers to prevent the movement of disease-causing agents onto and off of agricultural operations. In other words – it's a way to prevent the spread of diseases (viral, bacterial, fungal, parasitic, etc.) from farm-to-farm or even barn-to-barn on the same property by people, animals and things. Keeping disease out of the barn is one of the best ways of keeping pigs healthy.

As we have all experienced during the Covid-19 pandemic, diseases can spread very quickly in populations and can have significant health, social and economic impacts. If diseases spread on a farm, it impacts the health of the animals, requiring costly and time-consuming treatment or could lead to death of the pigs.

In order to stop the spread of disease, farms should implement a biosecurity plan to reduce risk to animals and people.

How do you create a Biosecurity Plan:
The following are the steps to creating a plan.

1. Identify possible risk factors.
2. Identify critical control points for your operation.
3. Set limits or standards for your farm.
4. Set up a monitoring schedule and procedures.
5. Keep effective records.

Check It Out!

https://www.cpc-ccp.com/resources/training-videos for training videos on Biosecurity

It is recommended to work with your veterinarian when creating your biosecurity plan.

For simplicity, this section will focus on having members understand many of the risks on their farm and help them understand how to mitigate those risks. To conduct a complete Biosecurity Assessment, use the Ontario Pork Producer Biosecurity Self-Assessment.

Assessing The Risks

Look around your farm and determine how people, animals and things enter your property and your barn

- How many entrances are there to the property? – The more entrances, the more risks of unknown entry.
- Who comes to your property?
- Is there a lockable gate?
- Are there areas to park that are away from the entrance
- Is manure handled in a way that will prevent cross-contamination?
- Does the barn door lock?
- Where do you source your new pigs from?
- How are pigs transported on and off the farm?
- Can pests get into the barn?
- How do people move within the barn?

Can you think of any others? The next step is controlling the risks and limiting access to the pigs. Below is a list of some ways to limit access to your pigs, some are easy and can be done on most farms, others may be more difficult or costly and are limited to a few operations.

From The Road:

- Display Biosecurity Signage
- Keep gates locked
- Keep manure off laneways
- Sanitize all vehicles entering the property
- Do not permit anyone on the property, visitors and deliveries are conducted off-property

At The Entrance:

- Set up a boot wash station
- Require visitors to wear plastic booties
- All visitors must wear clean clothes
- Keep doors to the barn locked
- Require hand washing both in and out of the barn
- Requests that visitors can't have been on another farm for 24 to 48 hours prior to visiting
- Install a Danish Entrance or a vestibule with Shower-In -Shower-Out Facility 2 (preferred)
- Have a fumigation room for all new equipment
- Allow no one but the farmer/staff to enter.

In The Barn:

- Create a Herd Health Plan
- Quarantine any new pigs
- Screens on openings to keep wildlife out
- Ensure there is good ventilation in the barn
- Ensure feed and water are free from contaminants
- All-in-all-out to avoid cross-contamination of pigs
- Thorough cleaning and sanitizing of the barn/pen upon removal of pigs
- Design the barn so that staff move from highest risk to lowest risk pigs
- Change clothes and sanitize hands after handling sick pigs
- Allocate equipment to each area of the barn (i.e. sorting boards, feed carts, etc.)
- Have separate staff for each area of the barn
- Have separate barns for each growth stage
- Keep a visitors log of who has visited your property

Research It!

For more information: https://news.ontario.ca/en/release/54853/ontario-introduces-legislation-to-protect-ontarios-farmers-farm-animals-and-food-supply

Keep disease out!

STOP

Danish entry is an easy to use biosecurity tool that can greatly help reduce the spread of disease agents like Porcine Reproductive and Respiratory Syndrome virus (PRRSV). A few simple steps each time you go into or come out of a hog barn can help prevent PRRSV from entering or exiting your herd.

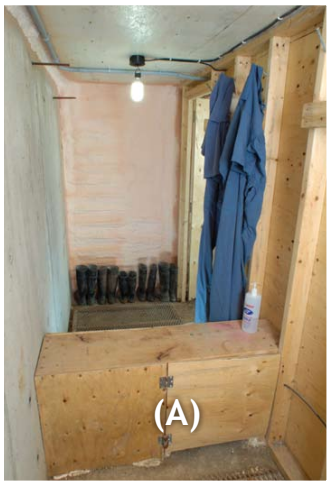
Always enter and leave the barn only through the Danish entry. The system only works if you follow these steps each and every time!

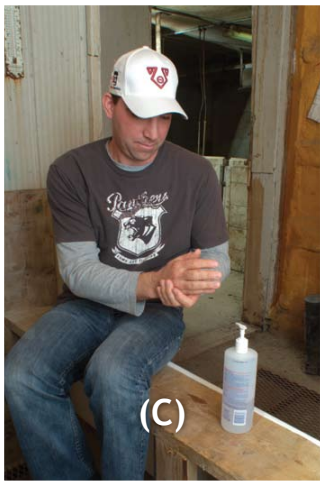
When entering the barn...

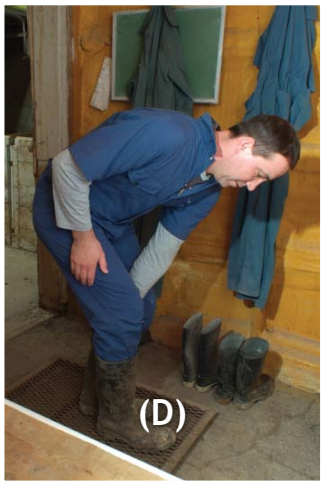
1. **Always enter the barn through the Danish entry**. Stop when you reach the barrier. **(A)**
2. Stand in front of the barrier and remove your outer clothing. Hang on hooks on the dirty side of the Danish entry. **(B)**
3. Remove your outside shoes and leave them on the dirty side of the Danish entry.
4. Disinfect your hands with hand sanitizer or wash them thoroughly with soap and water if available. **(C)**
5. Step over the barrier in your sock feet onto the slatted floor on the clean side.
6. Put on barn coveralls and barn boots kept on the clean side of the entry. **(D)**
7. Enter the production area. **(E)**

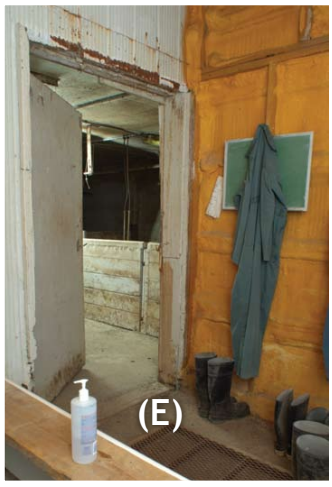
When leaving the barn...

1. Exit the production area into the clean side of the Danish entry.
2. Remove your barn boots and step onto the slatted floor. Store barn boots on the clean side.
3. Remove your barn clothing and hang on hooks on the clean side of the Danish entry.
4. Disinfect your hands with hand sanitizer or wash them thoroughly with soap and water if available.
5. In your sock feet, step over the barrier to the dirty side.
6. Put on your outside clothing and outside shoes.
7. **Exit the barn through the Danish entry**.

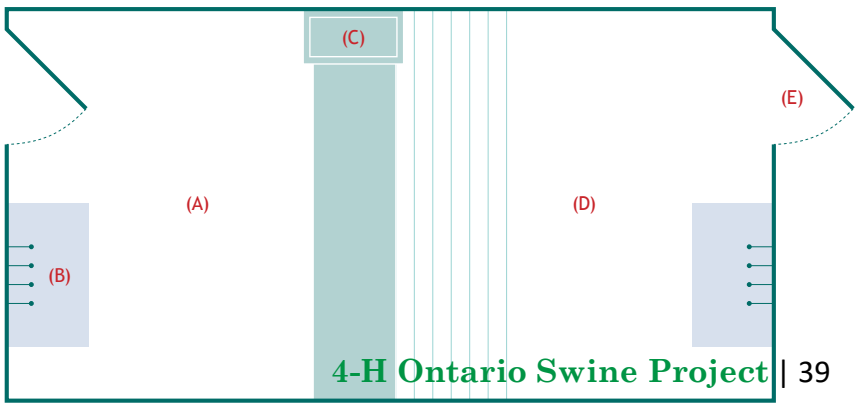


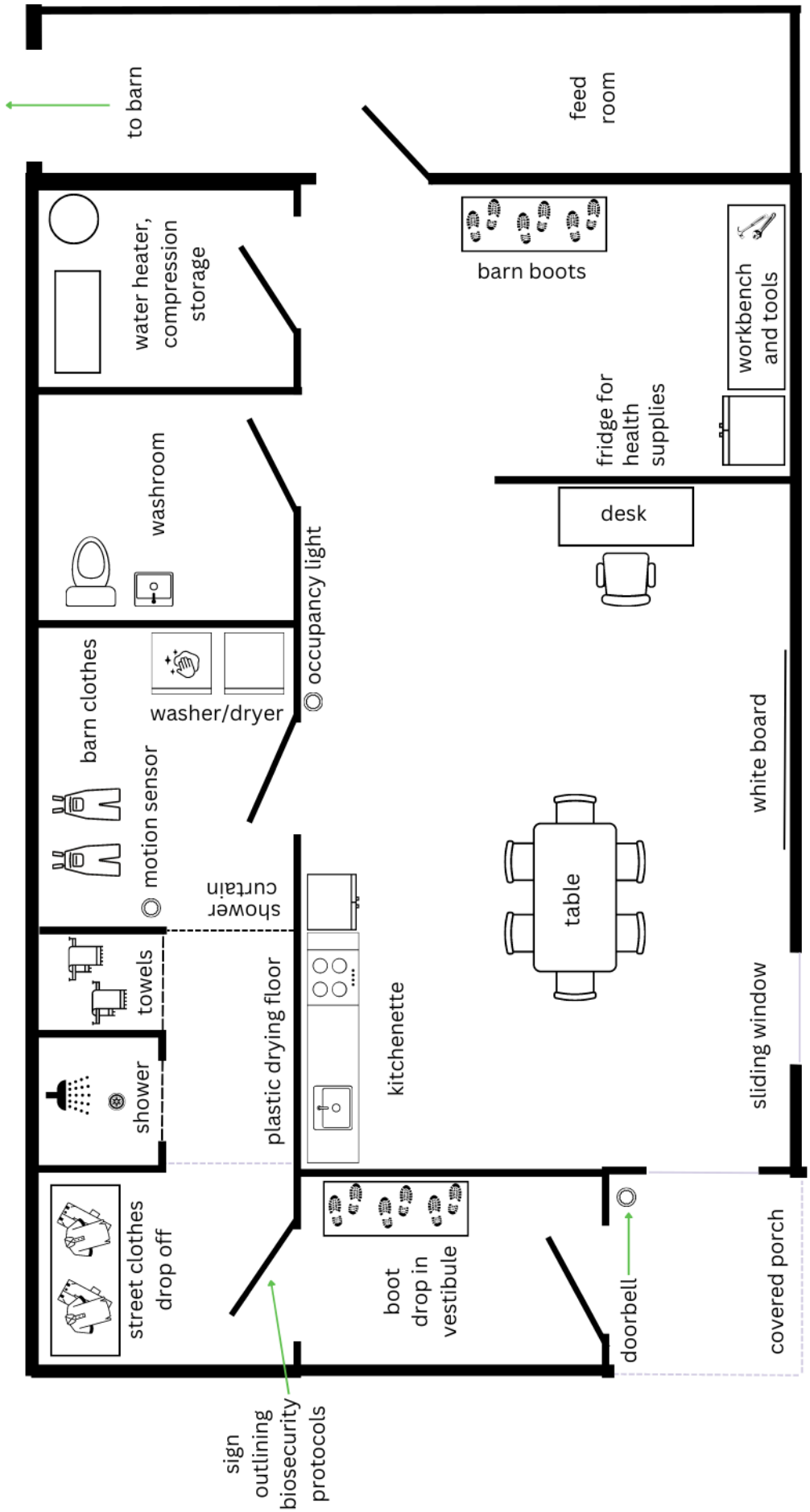






To the hog barn through the Danish entry




to barn
feed room
water heater, compression storage
barn boots
workbench and tools
fridge for health supplies
desk
washroom
occupancy light
barn clothes
washer/dryer
motion sensor
shower curtain
table
white board
towels
plastic drying floor
kitchenette
shower
sliding window
street clothes drop off
boot drop in vestibule
doorbell
covered porch
sign outlining biosecurity protocols

Transport Biosecurity For Small Farms Or For Members Transporting Their Projects To The Fair

Anytime you transport pigs, you are at the risk of spreading disease. When you transport pigs, you are also transporting their manure, urine, and other biologicals that may contain contagious viruses, bacterium, or parasites. High traffic places like auction barns or slaughter facilities are the highest risk.

Imagine bringing something devastating like PED (porcine epidemic diarrhea) home to your farm and losing 100% of your piglets. **You should always consider the disease risk when transporting pigs and take precautions to prevent spreading disease.**

Consider the following:

- Ensure your animals are healthy before transporting them (unless you are taking them to a veterinarian).
- If you are transporting pigs inside your vehicle in a crate:
  - Your vehicle should be clean before arriving at your destination.
  - Get vehicle washed after leaving your destination before returning to your farm.
  - Blankets or towels used as bedding should be washed in the washing machine with a hot water soap wash and dried in the dryer to kill any pathogens.
  - Any straw or shavings used as bedding must be completely scraped out and disposed of before washing.
  - Use a clean crate to transport pigs (crates should be washed with soap and water and disinfected with a bleach solution or with an agricultural disinfectant like Prevail® or Virkon®).
  - Let crates dry completely.
- If you are transporting pigs inside a trailer attached to your vehicle**:**
  a. Your vehicle and trailer should be clean before arriving at your destination.
  b. Blankets or towels used as bedding should be washed in the washing machine with a hot water soap
  c. Any straw or shavings used as bedding must be completely scrapped out and disposed of before washing.
  d. Trailer should have the outside and inside washed and disinfected immediately after use – this can be done at a livestock trailer wash.
  e. Alternatively, the vehicle and trailer can be washed at a regular wash-bay. The trailer should be washed inside and outside of all debris.
  f. Special attention should be paid to the wheels and wheel wells when washing your vehicle and trailer (especially after leaving the slaughter facility). Then, the inside of the trailer can be disinfected with a handheld spray gun. Any panels/partitions used inside the trailer will need to be washed and disinfected as well.
  g. Let the trailer and any panels from inside completely dry after applying disinfectant.
  h. Trailer should be loaded with clean, fresh bedding at the time of the next trip.
- Wear boot covers whenever you walk around high-traffic sites – remove these from your boots as you get back inside your vehicle.
- Keep a disinfectant spray in your vehicle.
- Spray off your mats, foot pedals, and inside of the door with disinfectant after visiting high-traffic sites.
- Keep hand sanitizer in your vehicle.

Avoid:

- Transporting animals in a dirty trailer, container, or crate. It is unsafe for your animals and for the safety of other animals. It also does not look professional and is an easy way to lose credibility amongst other producers and the public.
- If you are buying pigs from someone, they will NOT be happy with you if you show up with a dirty trailer to their farm.
- Making multiple stops (e.g., veterinary clinic, feed store, supply store) in one day after visiting the

slaughterhouse and prior to washing your vehicle.
- Transporting sick animals.
- Cleaning your vehicle/trailer/crates right beside where you house your pigs (if you wash your vehicle at home, have a designated dirty area where you can ensure you are not scraping out your trailer near your pigs).

Biosecurity is just as important on small farms as it is on large farms. While a small farm is not likely going to have the ability for a shower-in-shower-out facility, there are many things from the list above that you can do to reduce the risk of disease spreading to your farm. Take measures such as:

- Restricting who comes into your barn
- Requiring guests to wear plastic boot covers
- Set up a boot bath for guests to walk through
- Hand washing or sanitizing before entering the barn
- Purchasing your pigs from farms that practice good health and biosecurity measures
- Ensuring trucks, trailers, crates, etc. are clean before they enter your farm
- Keeping the entrance way to the barn free from manure
- Keep clothes specifically for your barn, do not wear them to other barns and ask guests to wear clean clothes to your barn
- Keep a visitors log of who has visited your property

Preparing A Plan

Once you have established what your risks are and what steps you will take to mitigate those risks, you need to write it down. Create a document that you can give to staff, your veterinarian or others who have to visit your operation so they are aware.

For more information: https://news.ontario.ca/en/release/54853/ontario-introduces-legislation-to-protect-ontarios-farmers-farm-animals-and-food-supply

Check It Out!

The Canadian Pork Council PigSafe PigCare Biosecurity Section

Activity 1# - Bacteria Transfer Experiment

Do	Time: 15 minutes **Materials:** • Glitter (bacteria) • Flashlight **Instructions:** 1. This experiment is best done outside or you will have glitter all over your house. 2. Sprinkle a small amount of glitter into each member's hands. Continue with the meeting. 3. Near the end of the meeting, have one quarter of the group brush the glitter off their hands into a garbage can until they think they are clean, have a quarter wash theirs with a quick rinse under water, another quarter will use soap and cold water while rinsing for 20 seconds and finally the 4th group will do as the previous group but use warm water. 4. Using the flashlight, start by shining it on their hands to see how well they removed the glitter, continue to shine the flashlight around the area you are working in as well as on the members clothes to show how much has spread, knowingly and unknowingly. 5. Have them then all thoroughly wash their hands to remove all the glitter. If all the glitter wasn't washed off after 20 seconds, time a member to see how many seconds were needed to remove the glitter from their hands completely.
Reflect	**Learning Outcomes:** • To understand how we unknowingly spread bacteria during normal activities. • To be able to understand how easily bacteria spreads and remains on surfaces. • To be able to see the importance of washing hands and surfaces correctly.
Apply	**Discuss The Following Prompts As a Group:** • Where did you discover glitter that surprised you? • How hard was it to remove the glitter from your hands? Was 20 seconds of washing enough?

Activity 2# - Ontario Pork Biosecurity Self-Assessment

Do	Time: 30 minutes **Materials:** • Self-assessment form • Writing Utensils **Instructions:** • Go through the self-assessment form with the members. If possible, do this on a farm and as a group. • Have members take their form home and complete for their own farm.
Reflect	**Learning Outcomes:** • To understand how a biosecurity plan is done
Apply	**Discuss The Following Prompts As a Group:** • How hard was it to assess your farm? • How hard was it to assess someone else's farm?

BIOSECURITY SELF-ASSESSMENT

COMPLETE FORM

ONTARIO PORK

Producer Biosecurity Self-assessment

Date of training: _____	Name of trainer : _____
Location of training: _____	☐ Self-Guided Session

Section 1 . Site identification

Owner/ Responsible of the site/ Site manager : _____

Name of the farm: _____

Address of the site: _____

City/Province: _____ Postal Code: _____

Telephone: _____ Fax: _____

Mailing Address: _____

Premises ID : _____ CQA program N°: _____

Production type or category:

☐ Purebred breeding ☐ Multiplication ☐ Commercial production

Adult pigs on site:

☐ Farrow-to-wean ☐ Farrow-to-feeder

☐ Farrow-feeder-finisher ☐ Farrow-finisher

Juvenile pigs on site:

☐ Nursery ☐ Feeder-finisher ☐ Finisher

Section 2. Self-assessment of the Biosecurity measures in place on the site

	Indicate if you have the listed item on your farm in column 1. If yes, check WP if you have a written biosecurity protocol in place for that item. In column 2 indicate the level of compliance with the protocol.	Column 1. Check one			Column 2. Estimate the compliance of the procedure (s)			Comments / actions for improvement
		Yes If yes, indicate if a written procedure (wp) is available	No	N/A	Low	Acceptable	High	
Module 1	**1.1** Are the access ways and boundaries (gates, posters, signs, etc.) to the CAZ properly defined ?	☐ wp ☐	☐	☐	☐	☐	☐	
	1.2 Is the signage at the entry of the buildings (RAZ) adequate for guiding personnel and visitors?	☐ wp ☐	☐	☐	☐	☐	☐	
Module 2	**2.1** Live pigs from Canadian sources	☐ wp ☐	☐	☐	☐	☐	☐	
	2.2 Semen and embryos from Canadian sources	☐ wp ☐	☐	☐	☐	☐	☐	
	2.3 Live pigs, semen and embryos from foreign sources	☐ wp ☐	☐	☐	☐	☐	☐	
	2.4 Is the health status of all incoming animals verified and recorded?	☐ wp ☐	☐	☐	☐	☐	☐	
Module 3	**3.1** Incoming and outgoing animal transportation	☐ wp ☐	☐	☐	☐	☐	☐	
	3.2 Is the cleanness of the animal transport vehicles systematically verified on their arrival at the farm?	☐ wp ☐						
Module 4	**4.1** Personnel and visitors	☐ wp ☐	☐	☐	☐	☐	☐	

	4.3 Are all barn doors locked to limit access to unauthorized entry?	☐ wp ☐	☐	☐	☐	☐	☐	
	4.4 Do you have a policy for admitting staff and visitors from Canada ?	☐ wp ☐	☐	☐	☐	☐	☐	
	4.5 Do you have a policy for admitting staff or visitors from outside Canada ?	☐ wp ☐	☐	☐	☐	☐	☐	
	4.6 In the case no shower at entrance is required; does the building make it possible to respect a Danish type entrance for personnel and visitors?	☐ wp ☐	☐	☐	☐	☐	☐	
Module 5	**5.1** Rodents, birds and insects	☐ wp ☐	☐	☐	☐	☐	☐	
	5.2 Domestic animals other than pigs	☐ wp ☐	☐	☐	☐	☐	☐	
	5.3 Wild animals	☐ wp ☐	☐	☐	☐	☐	☐	
Module 6	**6.1** Tools, equipment, materials and supplies	☐ wp ☐	☐	☐	☐	☐	☐	
	6.2 Pharmaceutical products and medical equipment	☐ wp ☐	☐	☐	☐	☐	☐	
Module 7	**7.1** Feed	☐ wp ☐	☐	☐	☐	☐	☐	
	7.2 Bedding	☐ wp ☐	☐	☐	☐	☐	☐	
	7.3 Water	☐ wp ☐	☐	☐	☐	☐	☐	

Module 8	**8.1** Solid and liquid manure	☐ **wp** ☐	☐	☐	☐	☐	☐	
Module 9	**9.1** Waste other than manure	☐ **wp** ☐	☐	☐	☐	☐	☐	
	9.2 Dead stock	☐ **wp** ☐	☐	☐	☐	☐	☐	
	9.3 Is the removal of dead animals done through a different access way and outside the CAZ?	☐ **wp** ☐	☐	☐	☐	☐	☐	
Module 10	**10.1** Aerosol contamination	☐ **wp** ☐	☐	☐	☐	☐	☐	
Module 11	**11.1** Diseased stock management	☐ **wp** ☐	☐	☐	☐	☐	☐	
	11.2 Vaccination of pigs	☐ **wp** ☐	☐	☐	☐	☐	☐	
	11.3 Is the cleaning (including clean, wash, disinfect, dry) protocol for the facilities written and applied?	☐ **wp** ☐	☐	☐	☐	☐	☐	
	12 Did you complete all the questions of the self-assessment?	☐	☐	-	-	-	-	

Section 3. Action plan

<table>
<tr><td colspan="2">The action plan is your step-by-step process to getting your farm's biosecurity plan where you want it to be.

List 2 actions of relative importance, according to the self-assessment you just performed, associating cost and practicality within your budget and time constraints.

Assign a priority level (high, medium, low) according to your farm-specific needs, as well as the relative risk each action addresses.</td></tr>
<tr><td rowspan="2">Proposed action 1:</td><td>Date action completed :</td></tr>
<tr><td>Priority ?

High ☐ Medium ☐ Low ☐</td></tr>
<tr><td rowspan="2">Proposed action 2:</td><td>Date action completed :</td></tr>
<tr><td>Priority ?
High ☐ Medium ☐ Low ☐</td></tr>
<tr><td colspan="2">Comments :</td></tr>
<tr><td>Signature :</td><td>Date :</td></tr>
</table>

Section 4 . Veterinarian follow-up visit

Your veterinarian will visit this site and discuss with you this action plan.

Strengthening Biosecurity is a priority among the solutions to minimize the risk of disease spread. Every measures taken at the farm have a preventive impact and enable producers to protect their assets.

If you have any questions, or require further information regarding swine biosecurity resources, please contact the Ontario Pork Industry and Member Services team at memberservices@ontariopork.on.ca or call 1-877-668-7675 ext. 1221.

Canadian Swine Health Board
Conseil canadien de la santé porcine

This project is an initiative of the Canadian Swine Health Board. Financing was made possible by Agriculture and Agri-food Canada.
www.swinehealth.ca

Ce projet est une initiative du Conseil canadien de la santé porcine. Le financement est rendu possible grâce à Agriculture et Agroalimentaire Canada.
www.santeporcine.ca

At Home Activity

Create a biosecurity plan for your farm.

Feeding

Meeting 3 – Feeding

Setting Objectives:
To learn the role nutrition plays in swine production.

Suggested Learning Outcomes:
- Nutritional requirements of pigs at each stage of feeding.
- The importance of working with nutritionists to produce a balanced, cost-effective feeding program.
- Feeding your pig from birth to market or breeding.

Suggested Roll Call Questions:
- What are some reasons your pig might not be eating?
- Name a vitamin required by pigs in their diet.
- Name a mineral required by pigs in their diet.

SAMPLE MEETING AGENDA Time: 1 hour 35 minutes plus activities

Welcome, Call To Order, Pledge		10 minutes
Roll Call		10 minutes
Parliamentary Procedure	Minutes And Business	10-15 minutes
Topic Information, Discussion	Topic Information • Feed • Digestive System • Nutrient Needs • Feeding The Stages **Activity #1** A Pig's Digestive Tract **Activity #2** A Stomach At Work **Activity #3** Judge A Grain Sample	45 min + activities
At Home Activity	Evaluate your feeding program for your project animal and make sure it best meets the needs of it throughout the summer.	5 minutes
Wrap Up, Social Time, And Adjournment		10 minutes

* Leaders may want to do this section over the course of two meetings with a guest speaker or feed elevator tour for one of the meetings.

Feed

Meeting the nutritional needs of pigs properly is essential to their overall health, including reproduction rates for breeding stock and growth for market animals. Feed costs make up 65-70% of the cost of pig production. Selecting the appropriate feed for the stage of growth of the animal is important and can impact how long it takes to get your pig to market or breeding weight. It can also impact meat quality and overall costs.

Pigs have a simple stomach (monogastric) with a digestive system that is very similar to humans. Pigs are omnivores (they eat both plants and animals) but under CFIA's Health of Animals Regulations it is illegal to feed meat to pigs, including any food or food waste (or pet food) that contains meat. Even non-meat scraps that have been in contact with meat could infect pigs with certain diseases, such as African Swine Fever. Modern pig diets are far better balanced than most human diets and farmers work closely with swine nutritionists to create diets for each stage of the pig's lifecycle. The diet of most Canadian pigs is derived from corn, barley and wheat for an energy source and soybeans or canola meal for protein. Feed suppliers often have proprietary feed mixes so diets will vary from one company to another. For the most recent list of items that are not permitted in swine feed, contact the CFIA. For information on medicated feeds, please refer to the Health Section of this Manual.

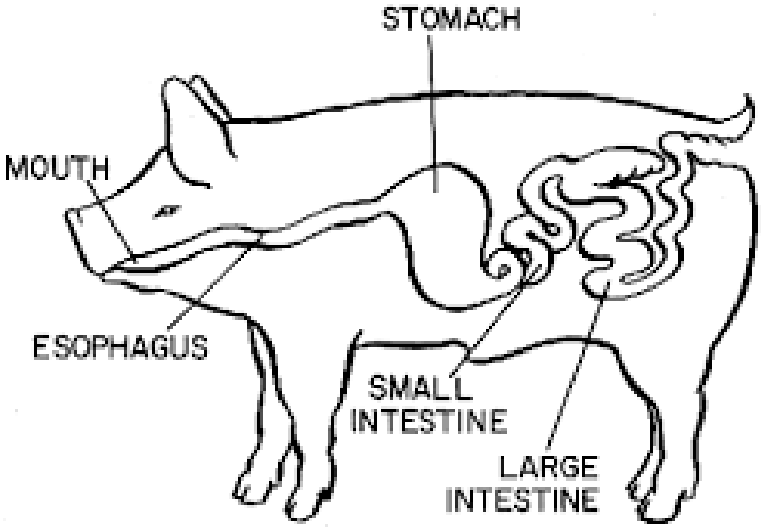
Dry Feed Comes In Four Forms:

Mash is the most cost-effective but also there's a tendency to see more waste and reduced consumption compared to the other three.

Farms may also use a liquid feed. Liquid feeding involves computer-controlled mixing of dry ingredients with water or liquid by-products from food and biofuel manufacturing. Benefits from this feed are reduced costs of feed components, more palatable, better absorption of nutrients and improved gut health to name a few. Challenges include access to a consistent supply, variability of nutrient content, and transportation costs of wet products. Common by-products include whey, buttermilk, sugar syrups, brewers wet yeast, wet distillers grain as well as corn steep water from ethanol production.

Digestive System

As the pig eats, the food travels down the esophagus to the stomach where the digestive juices, comprised of acids and enzymes, break the food down so that the nutrients can be absorbed by the intestines. What isn't absorbed is excreted out the end.



Source: The Digestive Tract of the Pig, University of Florida, https://mysrf.org/pdf/pdf_swine/s9.pdf

A nutrient is a substance that provides nourishment essential for growth and maintenance of life. Nutrients perform specific functions in the body and their deficiency will result in reduction of productivity, health problems and possibly death.

All pigs, require balanced nutrition that provides:

- **Energy** is found in fats and carbohydrates, expressed as kilocalories of digestible energy
- **Protein and Amino Acids** are required for maintenance, muscle growth, development of fetuses and supporting tissues in gestating sows, and milk production in lactating sows. Of the 22 amino acids, 12 are synthesized by the animal; the other 10 must be provided in the diet for normal growth. The 10 dietary essential amino acids for swine are arginine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine. Proteins can be derived from both plant and animal sources. As mentioned above, it is illegal to feed animal protein to your pigs. Pork producers can use both pork meal and bovine meal for swine. However, if a swine farm is on the ractopamine free program, feeding bovine meat and bone meal will disqualify the farm from the program. Virtually all Canadian pork producers do not feed ractopamine to their pigs. Although it poses no danger to human health, certain markets, such as China, demand pork that is exempt from this feed additive.
- **Fiber** is a common constituent of pig feeds. The addition of some types of high-fiber ingredients in the diet may have beneficial effects on satiety, growth performance and overall health of pigs. Fiber also promotes intestinal activity and prevents constipation. This is extremely beneficial in farrowing sows as constipated feces in the colon may physically block the birth canal causing farrowing issues.
- **Minerals** are found in relatively small amounts, essential to the growth and maintenance of teeth and bones.
- **Vitamins** are found in small amounts and needed for growth, reproduction, movement and to stay healthy.
- **Water:** Access to clean water is an essential part of a pig's diet as is vital to all body functions. It accounts for up to 80% of body weight in pigs at birth, declining to about 50% at market weight. Growing pigs can drink upwards of 10 litres of water per day during hot weather. Clean water should be available and easily accessible at all times, whether provided by a drinker nipple or in tubs or troughs.

Not enough or too many vitamins and minerals can cause health and/or production issues. There are many vitamins and each of them is important for specific reasons but some are more necessary than others. If you examine your feed tag (or see the examples below), you will usually find vitamins, A, D and E listed on the tag. You can see that your feed is guaranteed to provide a minimum amount. The amount varies depending on the feeding stage of the pig and their nutritional requirements. Some are found naturally in the feed while others need to be supplemented. It's the equivalent of you taking a multi-vitamin.

DISCUSS IT

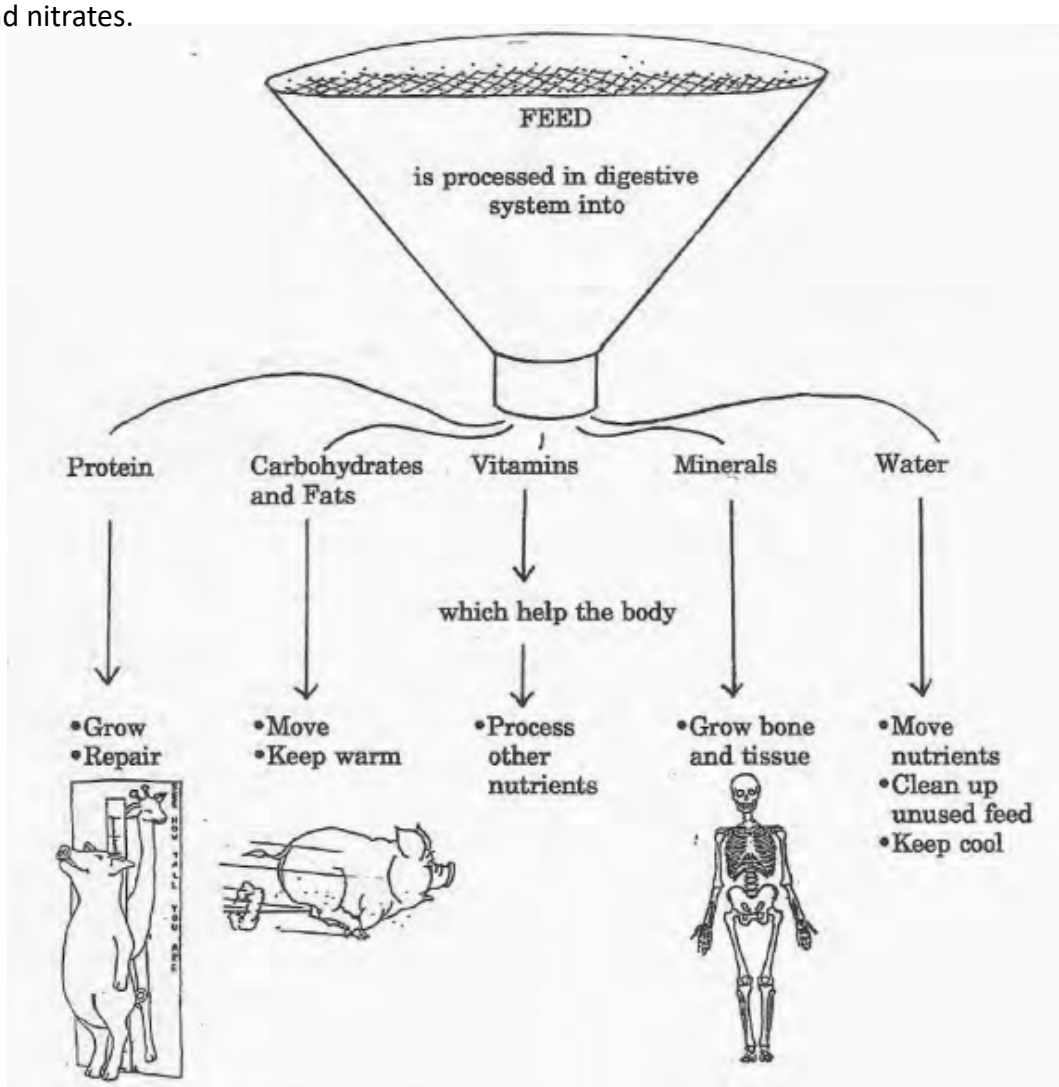
Have a swine nutritionist speak at your meeting!

Chart showing the results of deficiencies of the following vitamins and minerals.

	Poor Growth	Poor Appetite	Poor Hair & Skin Condition	Lameness, Weakness, Stiffness	Impaired Breeding, Gestation	Offspring Weak, Dead at Birth	Anemia
Vitamins							
A	X		X	X	X	X	
D				X			
E							X
K							X
Riboflavin	X		X	X	X	X	
Niacin	X	X	X				
Pantothenic Acid	X		X	X	X		
Choline	X				X		
B12	X				X	X	
Biotin	X		X	X	X		
Minerals							
Calcium				X			
Phosphorus	X			X			
Sodium	X	X					
Chlorine	X						
Iron	X		X				X
Copper				X			X
Zinc	X	X	X				
Iodine							
Manganese				X	X	X	
Selenium							X

Water Intake by Pigs		
Phase	**Weight (kg)**	**Intake (L/day)**
Weaner	7-22	1.0-3.2
Feeder	23-36	3.2-4.5
	36-70	4.5-7.3
	70-110	7.3-10
Gestating Sow/boar		13.6-17.2
Lactating sow		18.1-22.7

The quality of the water should be considered and regular testing is recommended to check for the presence of coliforms and nitrates.



Energy

What is energy?
Energy is the power the animal needs for the body to function. It receives this power from the food it digests, or the "fuel" it "burns". The pig needs energy for many reasons:

- to keep warm
- to grow
- to move around
- to reproduce
- to feed piglets

It receives energy from digesting carbohydrates and fats. Carbohydrates include the sugar, starch and cellulose found in plants. Grains such as corn, barley, wheat and oats as well as the oils of soybean and canola are good sources of energy.

Too Much Energy - How can you tell if your pig is getting enough energy?

- Becomes too fat
- Farrowing is difficult
- Lower resistance to disease

Too Little Energy - How can you tell if your pig is not getting enough energy?

- Slow or stunted growth
- Losing weight
- Lower resistance to disease
- Reproductive problems

Energy requirements are expressed as kilocalories (kcal) of digestible energy (DE), metabolizable energy (ME), or net energy (NE). DE and ME values are used most commonly, but there is a trend in the industry to formulate diets on the basis of NE.

Compare the examples on the next page and see if you can determine which stages they are for.

Each feed company and on-farm feed mill have their own proprietary blend of ingredients to make their feed. As mentioned above, most feeds get their energy from corn, barley, wheat oats and soybean or canola oil but there is a lengthy list of products that can also be used. Vitamins, minerals, herbs, probiotics, enzymes and amino acids are just some of the ingredients that may be added to feeds to increase the nutrient value.

Farms can either purchase a complete feed that is made at a feed mill or they can make their own on-farm and purchase the necessary supplements or premixes to formulate a balanced diet for their animals.

When assessing ingredients for feed formulations, it is important to consider:

- Digestibility
- Quality of protein
- Amino acid profile
- Palatability
- Storage life
- Cost

Below is a table of potential feed ingredients in Canadian swine feed with reasons why it may or may not be used. Where possible, obtain examples of some of these to view at the meeting.

Grand Valley FORTIFIERS
FOR SOUND NUTRITION

BIOFORCE HOG GROWER 1
SWINE MASH FEED

Product Code: 431900
NET WEIGHT - BULK

This feed contains added selenium at 0.3 mg/kg.

GUARANTEED ANALYSIS:

CRUDE PROTEIN	(Min)	16.50	%
CRUDE FIBRE	(Max)	3.50	%
CRUDE FAT	(Min)	3.00	%
CALCIUM	(Act)	0.65	%
PHOSPHORUS	(Act)	0.45	%
SODIUM	(Act)	0.30	%
ZINC	(Act)	170.00	mg/kg
COPPER	(Act)	125.00	mg/kg
VITAMIN A	(Min)	10,685.00	IU/kg
VITAMIN D	(Min)	1500.00	IU/kg
VITAMIN E	(Min)	40.00	IU/kg

INGREDIENTS:
A list of the ingredients used in this feed may be obtained from the manufacturer or registrant.

DIRECTIONS FOR USE:
Feed to growing-finishing pigs between 25-50kg body weight as directed by a Grand Valley Fortifiers Swine Nutritionist.

CAUTION:
Directions for use must be carefully followed.

Manufactured For
GRAND VALLEY FORTIFIERS LTD
P.O. Box 726
Cambridge, Ontario
N1R 5W6

Grand Valley FORTIFIERS
FOR SOUND NUTRITION

BIOFORCE HOG FINISHER 1
SWINE MASH FEED

Product Code: 431920
NET WEIGHT - BULK

This feed contains added selenium at 0.3 mg/kg.

GUARANTEED ANALYSIS:

CRUDE PROTEIN	(Min)	13.65	%
CRUDE FIBRE	(Max)	3.50	%
CRUDE FAT	(Min)	3.25	%
CALCIUM	(Act)	0.60	%
PHOSPHORUS	(Act)	0.35	%
SODIUM	(Act)	0.25	%
ZINC	(Act)	145.00	mg/kg
COPPER	(Act)	30.00	mg/kg
VITAMIN A	(Min)	10,685.00	IU/kg
VITAMIN D	(Min)	1500.00	IU/kg
VITAMIN E	(Min)	30.00	IU/kg

INGREDIENTS:
A list of the ingredients used in this feed may be obtained from the manufacturer or registrant.

DIRECTIONS FOR USE:
Feed to growing-finishing pigs between 75-100kg body weight as directed by a Grand Valley Fortifiers Swine Nutritionist.

CAUTION:
Directions for use must be carefully followed.

Manufactured For
GRAND VALLEY FORTIFIERS LTD
P.O. Box 726
Cambridge, Ontario
N1R 5W6

Grand Valley FORTIFIERS
FOR SOUND NUTRITION

BIOFORCE DRY SOW
SWINE MASH FEED

Product Code: 431880
NET WEIGHT - BULK

This feed contains added selenium at 0.3 mg/kg.

GUARANTEED ANALYSIS:

CRUDE PROTEIN	(Min)	11.85	%
CRUDE FIBRE	(Max)	4.00	%
CRUDE FAT	(Min)	3.50	%
CALCIUM	(Act)	0.90	%
PHOSPHORUS	(Act)	0.60	%
SODIUM	(Act)	0.25	%
ZINC	(Act)	150.00	mg/kg
COPPER	(Act)	30.00	mg/kg
VITAMIN A	(Min)	10,685.00	IU/kg
VITAMIN D	(Min)	1500.00	IU/kg
VITAMIN E	(Min)	50.00	IU/kg

INGREDIENTS:
A list of the ingredients used in this feed may be obtained from the manufacturer or registrant.

DIRECTIONS FOR USE:
Feed to dry sows as directed by a Grand Valley Fortifiers Swine Nutritionist.

CAUTION:
Directions for use must be carefully followed.

Manufactured For
GRAND VALLEY FORTIFIERS LTD
P.O. Box 726
Cambridge, Ontario
N1R 5W6

Grand Valley FORTIFIERS
FOR SOUND NUTRITION

BIOFORCE NURSE SOW
SWINE MASH FEED

Product Code: 431890
NET WEIGHT - BULK

This feed contains added selenium at 0.3 mg/kg.

GUARANTEED ANALYSIS:

CRUDE PROTEIN	(Min)	16.00	%
CRUDE FIBRE	(Max)	3.50	%
CRUDE FAT	(Min)	6.00	%
CALCIUM	(Act)	0.95	%
PHOSPHORUS	(Act)	0.60	%
SODIUM	(Act)	0.25	%
ZINC	(Act)	140.00	mg/kg
COPPER	(Act)	30.00	mg/kg
VITAMIN A	(Min)	10,685.00	IU/kg
VITAMIN D	(Min)	1500.00	IU/kg
VITAMIN E	(Min)	50.00	IU/kg

INGREDIENTS:
A list of the ingredients used in this feed may be obtained from the manufacturer or registrant.

DIRECTIONS FOR USE:
Feed to nurse sows as directed by a Grand Valley Fortifiers Swine Nutritionist.

CAUTION:
Directions for use must be carefully followed.

Manufactured For
GRAND VALLEY FORTIFIERS LTD
P.O. Box 726
Cambridge, Ontario
N1R 5W6

Factors Affecting Inclusion Rate Of Feed Ingredients For Swine	
Feed Ingredient	**Factors Affecting Inclusion Rate**
Alfalfa meal	High fibre content; low energy; good source of carotene and B vitamins; low digestibility; unpalatable to baby pigs, better suited for older pigs
Bakery waste, dried	Variable in nutrient content depending on the proportion of bread, cakes, dough, tarts or pies; high in energy; similar to corn in protein and lysine content; salt content can be high
Barley	Higher fibre and lower digestibility than corn
Beet pulp, dried	High fibre content; low digestibility; acts as a laxative
Brewer's grains, dried	High fibre content; low energy; low lysine; source of B vitamins
Canola meal	Higher fibre than soybean meal; less palatable to younger pigs; primary protein source in Western Canada
Corn	High energy; low lysine; high digestibility; palatable
Corn, high moisture	Higher moisture content (28% vs. 15% for dry); low lysine; diet should be balanced on a dry matter basis
Corn distillers, dried grains with solubles (6–9% oil)	High fibre; high fat; low lysine; bulky; source of B vitamins
Corn distillers, high protein	High protein with moderate lysine content
Corn distillers, dried solubles	Excellent source of B vitamins; better balance of amino acids than other distillers products
Corn gluten feed	Low lysine; high fibre; low energy; variable nutrient content; unpalatable; bulky
Corn gluten meal	Low lysine; low fibre content; variable nutrient content
Corn hominy	Higher fibre and protein than corn; may contain higher energy if fat is not removed
Faba beans	High fibre content; anti-nutritional factors; low vitamin content
Fat	High energy; useful for dust control in feeds; will go rancid if not stabilized with an antioxidant
Fish meal	Variable nutrient content depending on the source; typically used in piglet diets; high in lysine, methionine, calcium and phosphorus; high inclusion can result in fishy flavour in pork
Flaxseed	Rich source of omega-3 fatty acids and lignans
Flaxseed meal	Reasonably high protein with moderate lysine content; total phosphorus is high but digestibility is low; not readily available in North America
Lupins, sweet white	High fibre content; anti-nutritional factors; low availability of lysine
Meat meal	High in lysine, calcium and phosphorus; variable protein quantity and quality; lower digestibility and availability of protein than to soybean meal; typically porcine and bovine meal are not used in pig diets in Canada
Milk, skim or whole (dried)	High quality protein; very palatable; highly digestible; high lysine content; expensive
Oats	High fibre, low energy

Factors Affecting Inclusion Rate Of Feed Ingredients For Swine	
Feed Ingredient	**Factors Affecting Inclusion Rate**
Oats, hulles	Low lysine; palatable; variable protein content; expensive
Field peas	Low levels of anti-nutritional factors; variable protein content; good amino acid profile; low in methionine
Rye	Similar to wheat in nutrient content; susceptible to ergot contamination; anti-nutritional factors; dusty and unpalatable if ground too finely
Soybean meal	With (44%) or without (48%) hulls; good amino acid balance in combination with corn; palatable
Soybeans, roasted	Higher energy and lower protein than soybean meal; can cause undesirable after-taste in pork at high inclusion
Sucrose	Very palatable; very digestible; increases feed intake
Triticale	High protein and lysine content compared to corn; large variation in nutrient content between varieties; some varieties have anti-nutritional factors and poor palatability
Wheat, hard red spring	Lower in energy than corn; similar to corn in digestibility and palatability; higher protein but similar lysine to corn; dusty and unpalatable if ground too finely
Wheat, soft white winter	Higher in energy than corn; similar to corn in digestibility, palatability and protein; dusty and unpalatable if ground too finely
Wheat bran	Variable protein content; high fibre; low energy; low digestibility; acts as a laxative
Wheat middlings and shorts	Compared to corn — higher in protein and lysine; similar in energy; digestible; palatable
Whey, dried or liquid	Good quality protein; dry product can be expensive; feeding liquid whey increases manure volume by 2 to 3 times

Source: OMAFRA Publication: Nutrient composition of feed ingredients for swine

Copper and zinc have been added to feed as growth promotants but concerns about their impact on the environment have been raised and some countries have banned their use at levels above the minimum requirements. Zinc is also used to reduce the incidence of scours in weaned piglets.

Feeding The Stages

Piglets:

Share It!

Have members share their pig feed's ingredient list. They may need to contact their feed supplier for this information.

The first few hours of a piglet's life is critical. Under normal conditions, all piglets should learn to suckle within one hour of their birth, but they MUST have colostrum in the first 6 to 12 hours.

Suckling helps a piglet fight disease. The mother's first milk, called colostrum, is filled with antibodies that will

help the piglet fight some of the diseases it might be exposed to in the barn. It will also supply the piglet with highly concentrated and highly digestive first milk. Colostrum is usually thicker and of a yellowish colour compared to the milk produced in later lactation. The nutrients in the colostrum decline very rapidly, so if a piglet does not receive colostrum within the first 24 hours of life, chances are it will not survive unless supplemented with colostrum from another sow or commercially available colostrum substitute.

To ensure all the piglets get their colostrum, you should take the time to observe litters shortly after farrowing and assist any smaller or weaker piglets to suckle by giving them access to the sow's udder. One way that farmers sometimes do this, especially with large litters, is to "split suckle". Shortly after birth, half the piglets are removed from the sow and are kept in a warm, dry box. The two halves of the litter are rotated on and off the sow to give each individual piglet maximum opportunity to suckle and receive the necessary colostrum.

This is also a good time to check the sow to be sure that all the teats are in working order. You will be handling and observing the piglets, and if there are too many for the sow. You may need (after they have had their first colostrum) to find a foster sow for some of the smaller piglets. This transfer should take place about 3-4 hours after farrowing. Be sure that the piglet to be fostered is masked by a stronger smell than that of its birth mother or you will run the risk of the foster sow rejecting the piglet. One method that is sometimes used is to put a strong smelling substance on the sows nose. and put the same substance on ALL the piglets in her care so that everyone smells the same. Piglets could be fostered to a sow that has had a smaller litter of the same age, or if there is a larger group to be fostered to a sow that is about to have her piglet's weaned from her.

If a sow cannot nurse and fostering is not an option, hand feeding can be done. Pan or syringe feeding is recommended because bottle feeding can lead to aspiration and/or aspiration pneumonia. If sow colostrum is not available, a high-quality bovine colostrum (check the lgG level) can be used in the first days, and swine milk replacer used for continued feeding. Piglets must be fed frequently for success (1- to 2-hour increments to start).

The sow's milk provides enough nutrition (except iron) for maximum growth in the piglets for only the first 2-3 weeks of life. As mentioned in the health section, piglets must receive an iron supplement after birth. A sow's milk production will peak in the third week of farrowing while the need of the piglet continues to increase. In order to continue to meet the needs of the piglets a “creep feed” ration should be introduced as early as a week of age but at minimum a week before weaning. This is a ration that is formulated for young piglets both in nutrients and in texture. A piglet of up to three weeks of age cannot digest the carbohydrates found in cereal, grains. The ration will usually contain skim milk or whey, fish meal, fats (such as ground corn, soy, or canola oils), and cooked cereals (rolled oats, or flaked corn) and this feed would have a protein content of 20-25%. Creep feed is fed in a crumble or small pellet format.

Start by offering it on a flat surface and when the piglets are awake, so they are more likely to investigate it. It should be offered in small amounts and frequently throughout the day, so it is fresh and free from manure. Feeding from a flat tray seems to be preferable than a standard round feeder. Some farms may even switch the piglets to a pre-starter ration to prepare them for the lower protein ration they will have in the nursery. Provide gruel or a liquid creep feed to higher-risk piglets by mixing creep feed with milk replacer or water.

Piglets require water immediately after birth and should be offered water from their first day. Piglet's will start to drink water between two to five days after birth. A nipple drinker or water bowl can be used, but care must be taken to place the water at the correct height so that the piglets can drink easily but aren’t at risk of drowning. When piglets are introduced to drinking from a watering system prior to weaning they experience fewer problems with water intake after being weaned.

Weaners:

Weaning is considered to be one of the most stressful events in a pig's life. They undergo social, environmental, and nutritional stressors at a time when their immune system is not fully developed. These stressors work together to generate an immune response that contributes to the post-weaning growth lag (PWGL). The PWGL is characterized by piglets going off feed, slow weight gain, weight loss and increased susceptibility to pathogens in the first 24-48 hr post-weaning. An already established creep feeding program can lessen or even eliminate the impact on weight gain.

Weaners will eat a starter feed that is 18-20% protein in the nursery. This starter diet can be purchased as a prepared feed with vitamin and mineral premix added, or feed can be produced on the farm by adding home-grown grains to either a commercial supplement or premix.
As they wean off milk, their digestive enzymes will need to adjust to processing their new grain-based diet. Typical feed ingredients for newly weaned pigs are milk and milk -based products and fishmeal combined with ground corn or cereals. They usually transition to a processed corn and soybean meal-based diet combined with added vitamins, minerals, and other supplements. As the pigs begin to consume more of this grain rich diet, they need fresh water available to them at all times.

Feeding Methods:

There are two methods of feeding that are commonly used in group pens in pig barns.

1. Restricted feeding - pigs are fed a measured amount of feed several times a day in a trough or on the floor.
2. Unrestricted or ad-lib feeding - pigs will have feed in front of them all the time.

Unrestricted feeding is most commonly used in the grower and finishing barns as they encourage a faster rate of gain, especially amongst pigs weighing 25 – 50 kg. This system is less labour intensive but can result in more feed waste.

Producers may choose the restricted method if they find they have a high feed wastage problem, have gilts and sows that are too fat prior to breeding, are feeding high moisture corn diets or need to slow down the weight gain of pigs that may be delayed in going for processing – as experienced during the Covid Pandemic when processors were shut down as a result of outbreaks amongst workers. Restricted feeding, properly done, can also result in a carcass with a higher percentage of lean meat.

Common Problems Of Feed Wastage

Continued feed wastage can cost producers thousands of dollars. The amount of feed wasted varies from about 6% to 30%. Some of the causes are:

- Feed too finely ground - pigs will push aside the smallest bits which then become stale and unappealing to eat.
- Poorly designed feeders can result in wastage. If the feed falls through slats onto the floor, it will not be eaten.
- Feeders with poorly adjusted controls that allow too much feed in the trough will lead to wastage. As a pig eats, the feed becomes damp with saliva and soon is unpalatable.
- Broken feeders result in wastage of feed.
- If the feeder is too small, pigs will grab a mouthful of food and step backwards, spilling feed in the process.

Feeding The Grower And Finisher

As the pigs move from the nursery into the grower pens, they will be sorted into groups of similar size and nutritional needs. The grower will be between 10 and 18 weeks of age and weigh between 25 and 70 kg. The feed they consume will contain approximately 16-17% protein.

The finisher pig will be between 18 and 26 weeks of age and weigh between 70 and 130-140 kg. The feed they consume will contain approximately 14-16% protein. At this stage, the goal of the producer is to get the most meat for his/her input dollar. That little piggy better be ready to leave home. All feeder barns should have set objectives for their finishing goals. These objectives may vary depending on a variety of circumstances, including pig genotype, health status, environmental control, and pig density in each pen and diet composition.

For optimal return the grower pig must gain 85 kg from the time it is weaned until the time it is sold. To meet the needs of the pig during its growth, farmers have moved away from one feed for this stage to phase feeding. This means that the farmer uses more than one ration to pigs between the time they arrive in the feeder barn and when they reach market weight. There is also split sex feeding where barrows and gilts are fed different rations. This is done because, once pigs are over 25 kg, we know that barrows eat more feed and grow faster than gilts but they also use their feed less efficiently. On average gilts tend to eat approximately 10% less than the barrow but will gain lean body mass at only a slightly slower rate. By phase and type feeding the farmer has better control on the cost of feeding the grower pig as he can more closely match the nutrient requirement of the pig while limiting excess waste and reducing cost.

Gilts And Sows

Gilts are approximately 175 kg by six and a half months and should be getting 2-3% of their body weight per day in feed with a protein content of 15-16%. They should NOT be fed similar to market hogs as they will have higher nutrient requirements (i.e., calcium and phosphorous) to ensure they develop into healthy sows.

Gestating sows need less feed at about 1.5% of their body weight per day with only 13% protein. It is important to monitor your sow's weight and body condition to ensure they are not too thin or too fat at time of breeding. It can reduce the ability to get pregnant and as they get close to farrowing, it can impair the ability of the pig to deliver her piglets.

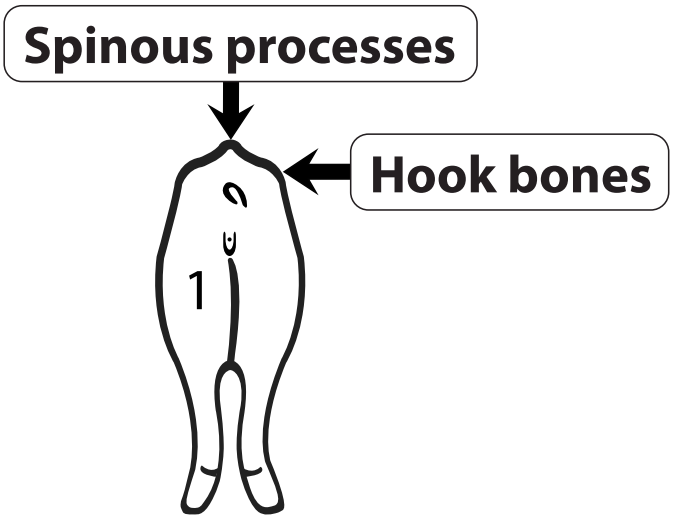
Score your Sows' Shapes

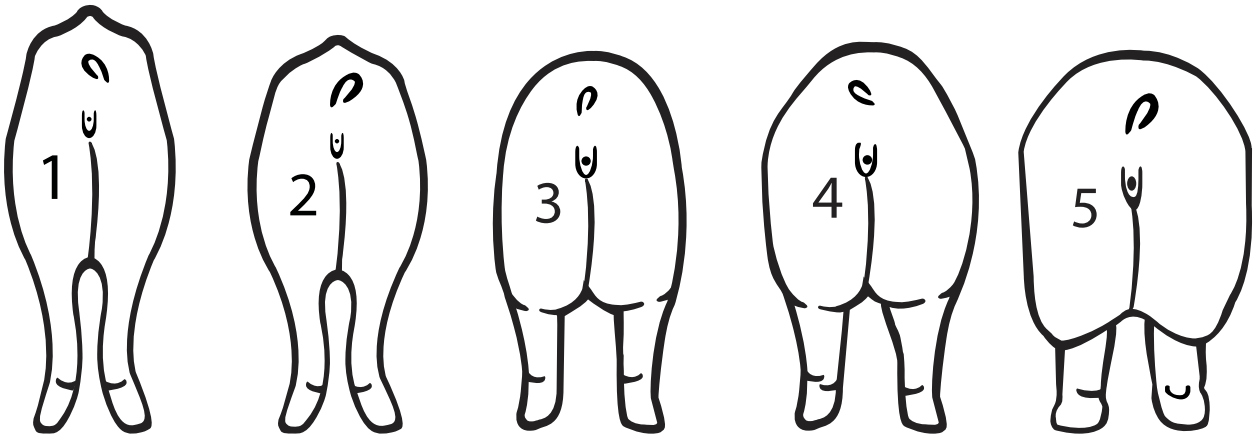
A covering of fat over the "H" bone (hip bone) will show the amount of fat that the sow has in reserve. This is how you can determine the "condition of the sow"

Here is how our body condition scoring stacks up and some feed changes that may need to be made in their diet:

1. Emaciated- Bone structure is apparent- ribs, backbone and hips are visible to the eye. Feed should be increased by 0.60 kg daily.
2. Thin- Hips and backbone are noticeable and can be easily felt. The backbone is also noticeable and easily seen and felt. Feed should be increased by 0.30 kg daily.
3. Ideal- Sow is tube shaped. Hips and backbone can be felt with firm palm pressure. You've got the feeding just right, no need for changes.
4. Fat- Body tends to bulge. Hips and backbone cannot be felt or felt with some difficulty. Decrease feed intake by 0.30 kg daily.
5. Over fat- The sow tends to look bulbous. Hips and backbone are heavily covered and cannot be felt. Decrease feed intake by 0.60 kg daily.

Body Condition Score- Swine





1. Emaciated
Landmark bones are prominent even without palpation. Considered unfit to travel.

2. Thin
Bones can be easily felt with slight pressure.

3. Ideal
The pig's bones are barely felt when palpating with firm pressure.

4. Fat
Bones of the pig are undetectable with palpation.

5. Overly Fat
A body score of 5 has the same palpation characteristics as a body score of 4. However, this animal is excessively overweight.

This information was developed by staff veterinarians at the CFSPH for use as training materials for the USDA APHIS National Veterinary Accreditation Program.

the Center for Food Security & Public Health
Iowa State University®

The Nursing Mom

Farrowing is the hardest work that the sow will ever do as it is very energy consuming. She will strain for between one and five hours and she will lose about 20 kg.

Constipation can be a problem for the sow so a couple of days before farrowing you should add some bran to her ration to help the problem. You can also add mineral oil or a commercial laxative to her feed. Remember to check your contract list for the products that you are allowed to use on your farm.

After farrowing, the sow may not eat for about 12 hours. She should be provided with plenty of water at all times as she can drink over 20 L of water per day at this time.

When she is ready to eat again, feed her a ration with 15-16% protein at a rate of 2.0% of body weight plus 0.5kg per piglet she is nursing. This ration should be higher in energy and amino acids than the gestation ration she was on prior to farrowing. Slowly increase her feed intake until she is eating as much as she will clean up twice a day. Check feeders and adjust to avoid feed wasting. Uneaten food should be removed daily to avoid mold or other contamination.

As all farms move to group housing for gilts and sows, the standard system of group feeding makes controlling their body condition and meeting the nutritional needs at different stages of gestation difficult. One way to control the feed intake of the females is the use of Electronic Sow Feeding. The system uses Radio Frequency Identification (RFID) tags on the pigs and a feeder and/or handling system set up with a reader that is programmed to provide the feed specific to that animal. The system allows farmers to custom blend two different rations, depending on the needs of the pig. It calculates and records how much feed was dispensed that day and if not all is dispensed, that amount is added to the following day's allocation. One station can feed up to 50 sows a day. Animals close to parturition can be directed to an alley that leads to the farrowing area instead of back to the pen she was in. Sensors can be placed near the boar pen to read which females may be coming into heat and spending significant time near the males.

Watch: Inside a Pig Barn – Electronic Sow Feeders: https://www.youtube.com/watch?v=wuhR2l8atpU

DID YOU KNOW?

Flax rations improve sow fertility, allowing sows to be bred more quickly after weaning, and thereby increasing the total number of piglets born over a span of three pregnancies. In addition, piglets born to sows on flax were shown to be heavier and healthier, with a lower mortality rate.

Boars

Boars used for breeding these days are most commonly kept by companies that collect semen for Artificial Insemination (AI). These units maintain a group of top-quality purebred and crossbred boars from which semen is collected and can be purchased by the swine farmer.

Feeding the boar is often a forgotten member of the breeding herd and there is little research done on boars as to their nutritional requirements. This seems to be because most boars are market hogs and are shipped at a specific weight or age.

Boars should receive approximately 2.0% of their body weight in feed each day. At the mature stage, they need a protein level of 13% to maintain their weight, similar to that of a gestating sow.

Young Boars are usually selected to be herd sires according to an index which includes such characteristics as growth rate, appetite, feed efficiency, lean tissue growth rate and carcass quality. As a consequence, young boars need to be fed a high energy ration, with the feed available to them at all times in order to accumulate meaningful performance data for use in a sire selection program. The protein requirements of growing boars are greater than that of barrows or gilts since the boars gain faster, are more efficient and have less back fat. Average daily gain and feed efficiency are maximized for growing boars at levels of 20% protein during the growing period (20-55 kg), and 18% crude protein during the finishing period (55-100 kg).

Nutrition can have a major impact on age of puberty and the rate of sexual development if feed levels are not sufficient for the age and weight of the boar. For example, it has been found that a 30% reduction in feed intake has been shown to cause a 42-day delay in puberty in purebred and crossbred boars. Unless the animal is severely malnourished this restriction does not appear to have any obvious long- term effects on growth and body size of the animal.

Working boar daily energy requirements are looked at from the following components: body maintenance, body gain, semen production. Mating activity and the requirement for extra heat production when kept below their lower critical temperature.

Feeding the working boar is a fine balance. If overweight, they become sluggish, have a low libido, and run the risk of leg and foot problems.

Storage Of Feed

It is important to store feed correctly to avoid spoilage from mold or contamination by rodents.

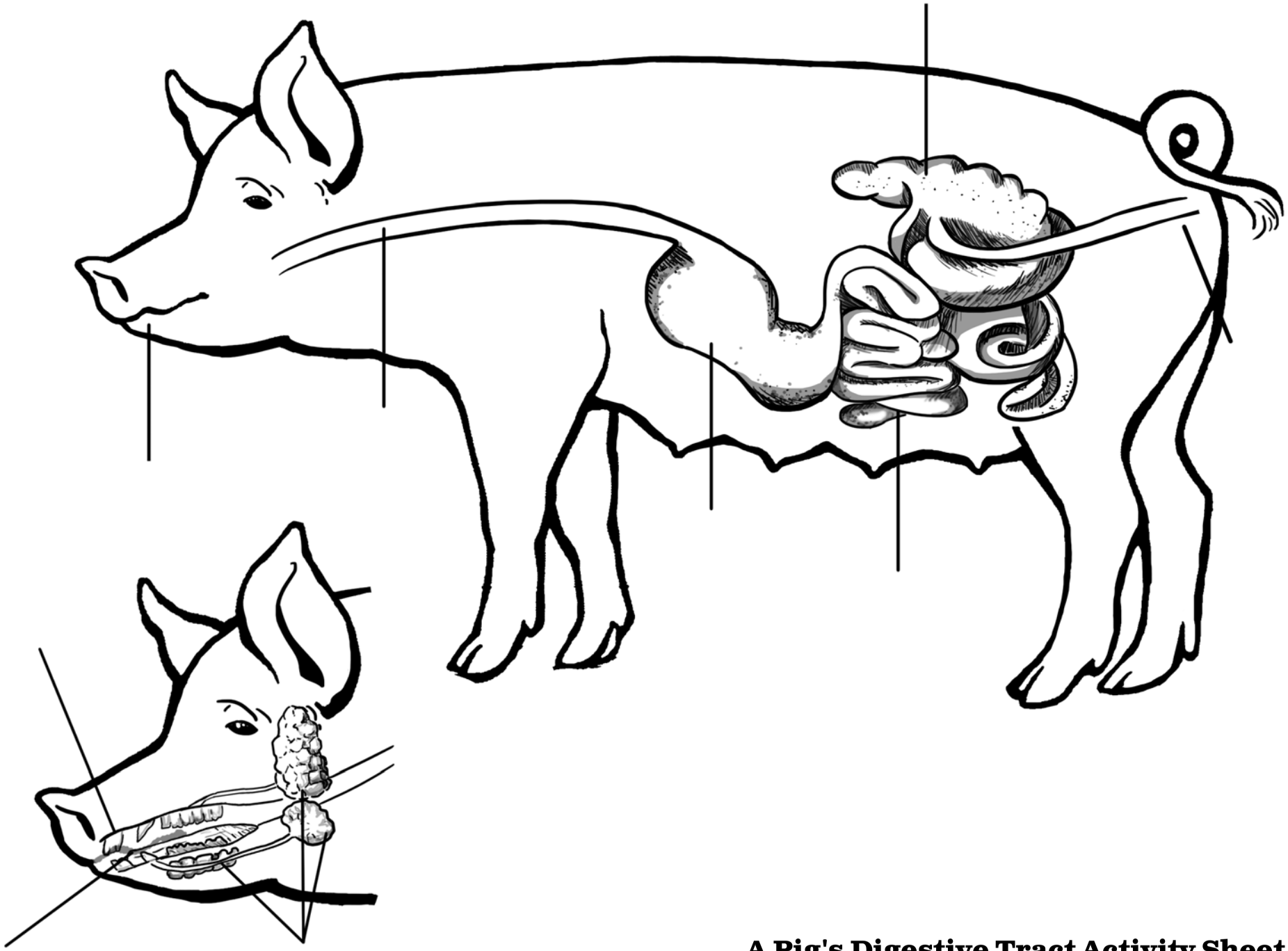
- Store in rodent proof containers
- Maintain low feed moisture - ideally moisture levels should be around 12-15%
- Keep feed fresh - it takes time and the appropriate environment for mold to grow
- Keep mixing equipment and feeders clean - contaminated surfaces or feed can contaminate clean feed
- If you are mixing grain on-farm, keep the grain intact until it is dried

Experience It!

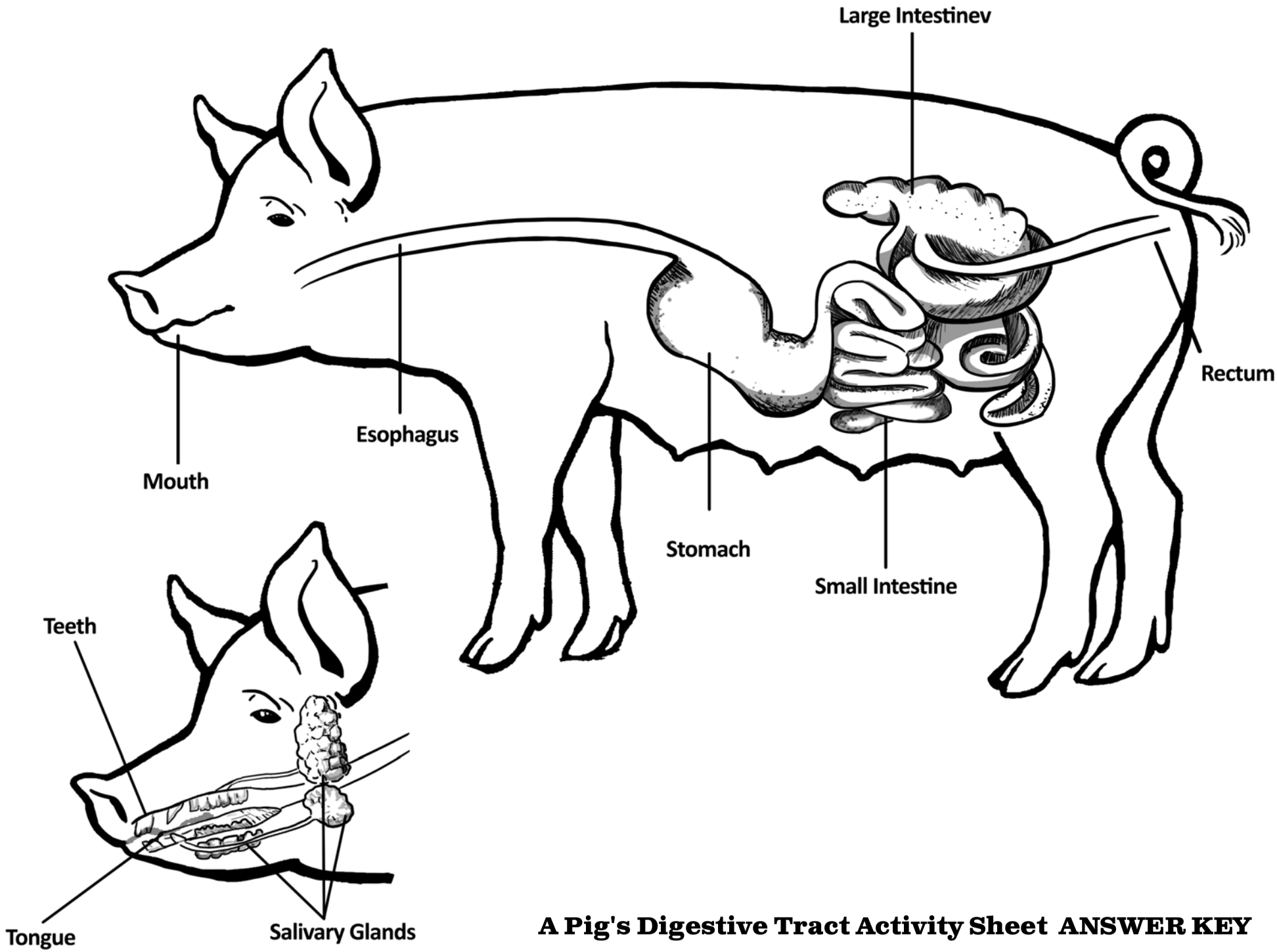
Tour A Feed Mill virtually!
AgScape Hensall Co-op Tour: http://bit.ly/3XQ1LAF
Farm & Food Care 360° Tour: http://bit.ly/3m20oC1

Activity 1# - A Pig's Digestive Tract

Do	Time: 10 minutes **Materials:** • Activity sheet • Writing utensils **Instructions:** 1. Give each member a Digestive Tract worksheet 2. Explain the worksheet and have members fill in the blanks to identify the parts of the digestive tract 3. Review the worksheet and discuss what each part of the digestive tract does
Reflect	**Learning Outcomes:** To allow members to identify and understand the various parts of a pig's digestive tract. This will allow members to better understand swine nutrition as they progress in their knowledge of pigs.
Apply	**Discuss The Following Prompts As a Group:** • Why is it important to know and understand the parts of the digestive system?



A Pig's Digestive Tract Activity Sheet



A Pig's Digestive Tract Activity Sheet ANSWER KEY

Activity 2# - A Stomach At Work

Do	Time: 30 minutes **Materials:** • Bread • Re-sealable plastic sandwich bag • Cola • Ground corn • Paper towels **Instructions:** 1. Place half a slice of bread in a re-sealable plastic sandwich bag. The bag acts like a stomach - a muscle that contains and squeezes the food. 2. Fill the bag with 75mL (1/3 cup) of cola. The liquid acts like the digestive juices in the stomach. The digestive juices are stomach acid and enzymes that react chemically with the food in the stomach. Observe what starts to happen to the bread. 3. Ensure that the plastic bag is tightly sealed. Wrap a piece of paper towel around the bag (the model stomach). 4. Gently squeeze the paper towel covered plastic bag for two minutes. This will act as the muscles for the model stomachs. Be sure to keep the paper towel wrapped around the bag and be gentle when squeezing the bag. 5. Remove the paper towel and, without opening the bag, observe what has happened to the contents. 6. Repeat this activity using grain instead of bread. Observe the difference in how the 'food' broke down in the bag.
Reflect	**Learning Outcomes:** To allow members to witness and experience first-hand what the digestive process looks like in the stomach.
Apply	**Discuss The Following Prompts As a Group:** • Think about how your own pets and/or livestock digest their food. Are they monogastric or ruminant animals? • Was it easy or hard to get the corn to start to break down? • Does the type of feed make a difference for the length of time required for food to start to break down?

Activity 3# - Judge A Grain Sample

Do	Time: 30 minutes **Materials:** • 4 samples of a grain • 4 paper or tinfoil plates • Pens and paper **Instructions:** 1. Place a sample of grain on each plate. 2. If necessary, clean or add to some of the grain samples to create samples that most of the members can judge. 3. Have the members judge the 4 samples using the appropriate scorecard found in the Judging Manual. 4. Have them give their reasons for their selection
Reflect	**Learning Outcomes:** • To allow members to see what good grain samples look like • To teach judging skills
Apply	**Discuss The Following Prompts As a Group:** • How important is it to feed, clean, quality grain to your animals? • How can you use your judging and public speaking skills in everyday life?

Digging Deeper - For Senior Members

Dig deeper into what is being done to lower the output of nutrients in manure. What is precision feeding and how could it benefit hog operations.

From The Farm Office

Meeting 4 – From The Farm Office

Setting Objectives:
To explore some of the business aspects of the swine industry.

Suggest Lesson Outcomes:
- To understand the complexity of the swine industry.
- To explore the cuts of meat available and by-products derived from pigs.
- Gain understanding of the pork Quality Assurance Program (Pig Safe/Pig Care).
- Learn many of the advisory and supporting careers required by farmers.

Suggested Roll Call Questions:
- Name your favourite pork product.
- Name a pork by-product.
- Name a career or trade required by producers to raise healthy pigs.

SAMPLE MEETING AGENDA Time: 1 hour 40 minutes plus activities

Welcome, Call To Order, Pledge		10 minutes
Roll Call		5 minutes
Parliamentary Procedure	Minutes And Business	10-15 minutes
Topic Information, Discussion	Topic Information • The Dollars And Cents of Raising Hogs • Pigs Are Sold In Four Different Ways In Ontario • Where Does Canadian Pork Go? • Quality Assurance Programs • Careers In The Swine Industry **Activity #1** Develop A By-Product Display To Use At The Achievement Day Or Other Local Events **Activity #2** Research A Career That Is Connected To The Swine Industry	60 minutes + activities
At Home Activity	Compare your costs to raise your 4-H project to the costs provided by OMAFRA	5 minutes
Wrap Up, Social Time And Adjournment		10 minutes

The Dollars And Cents of Raising Hogs

An important part of farming is what occurs in the farm office (or at the kitchen table). This covers everything from the marketing of pigs, to dealing with on-farm labour to record keeping. These topics are just as important to raising pigs as the day-to-day operations in the barn.

What does it cost to raise pigs in Ontario? The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) produces a Monthly and Annual Estimated Swine Budget.

OMAFRA Swine Budget - Average 2021

Income ($/pig)	Farrow to Wean	Nursery	Grow-Finish	Farrow to Finish
Market Pig @101% of Base Price $210.46/ckg, 110 index, 107.06 kg plus $2 premium	-	-	-	$252.33

Fixed Costs ($/pig)	Farrow to Wean	Nursery	Grow-Finish	Farrow to Finish
Depreciation	$5.39	$2.31	$8.65	$17.00
Interest	$1.29	$0.55	$2.08	$4.08
Taxes & Insurance	$1.08	$0.46	$1.73	$3.40
Total Fixed Costs	**$7.76**	**$3.32**	**$12.46**	**$24.47**

Summary of Costs ($/pig)	Farrow to Wean	Nursery	Grow-Finish	Farrow to Finish
Feed	$16.11	$19.50	$117.08	$155.30
Other Variable	$19.76	$8.51	$17.79	$48.43
Fixed	$7.76	$3.32	$12.46	$24.47
Total Variable & Fixed Costs	**$43.63**	**$31.33**	**$147.33**	**$228.20**

Variable Costs ($/pig)	Farrow to Wean	Nursery	Grow-Finish	Farrow to Finish
Breeding Herd Feed @ 1,100 kg/sow	$16.11	-	-	$17.67
Nursery Feed @ 33.5 kg/pig	-	$19.50	-	$20.55
Grower-Finisher Feed @ 294 kg/pig	-	-	$117.08	$117.08
Net Replacement Cost for Gilts	$2.44	-	-	$2.68
Health (Vet & Supplies)	$2.16	$2.10	$0.45	$5.03
Breeding (A.I. & Supplies)	$1.80	-	-	$1.98
Marketing, Grading, Trucking	$1.05	$1.75	$6.51	$9.51
Utilities (Hydro, Gas)	$2.64	$1.55	$2.39	$6.92
Miscellaneous	$1.00	$0.10	$0.20	$1.40
Repairs & Maintenance	$1.62	$0.69	$2.60	$5.10
Labour	$6.80	$2.00	$4.50	$14.06
Operating Loan Interest	$0.25	$0.31	$1.15	$1.76
Total Variable Costs	**$35.87**	**$28.01**	**$134.87**	**$203.73**

Summary	Farrow to Wean	Nursery	Grow-Finish	Farrow to Finish
Total Cost ($/pig)	$43.63	$76.75	$180.35	$228.20
Net Return Farrow to Finish ($/pig)	-	-	-	$24.13
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) includes 101% Base Price & $2 Premium	-	-	-	$190.18
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) excludes 101% Base Price & $2 Premium	-	-	-	**$193.78**

Pigs Are Sold In Four Different Ways In Ontario

1. Pigs are sold through the Ontario Pork Marketing Division - pigs from more than one farm are pooled together and sent to a processor. The price paid is based on an average price and varies on which program they are sold through
2. Pigs are sold directly to the processor – the farmer has a contract to ship directly to a processor and the price paid is negotiated between the farmer and processor
3. Pigs are owned by the processor and the farmer is hired (contracted) to raise the pigs
4. Pigs are sold directly to the consumer – the farmer usually sends their pigs to a local abbatoir and their customers select how the pig will be processed

Research It!

Ontario Pork has promotional material available to display and distribute at public events. Check out what's available to help promote pork in your area.

The Ideal Carcass

Weight

The dressed weight of the animal in kilograms (Kg). This is the weight prior to any trims that may occur during processing. The ideal weight is between 90kg and 106kg.

Fat

The depth of fat as measured by the probe in millimeters (mm). The ideal depth range is 11-25mm.

Muscle

The depth of muscle as measured by the probe in millimeters (mm). The ideal carcass has a range of 60 – 75mm.

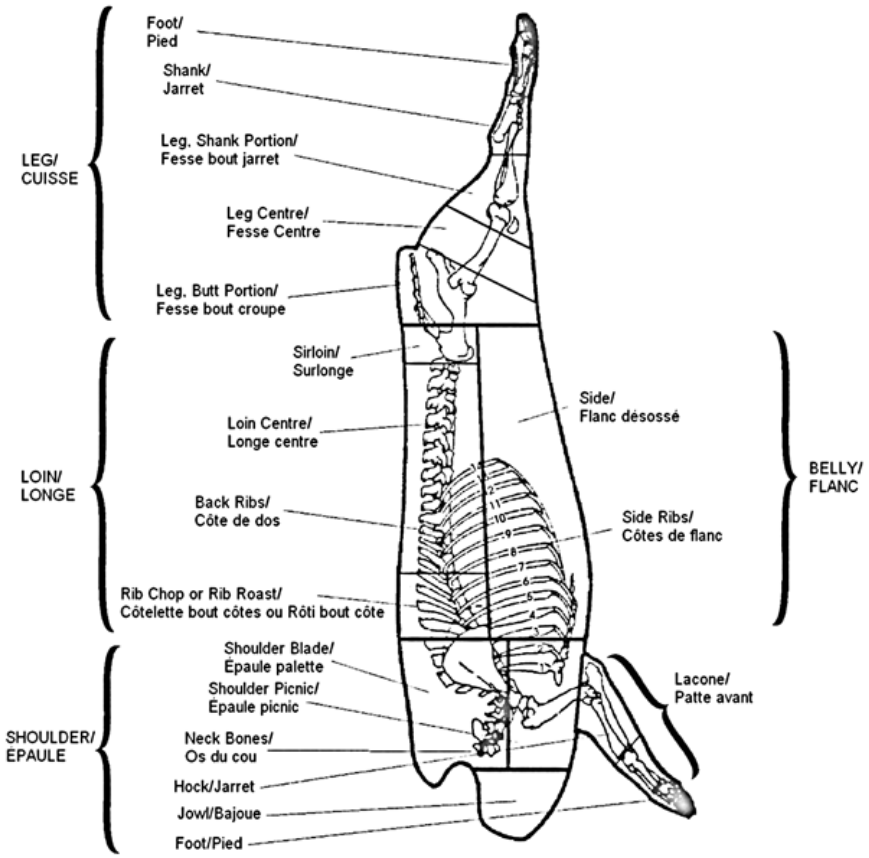
Yield

The dressing percentage of the animal calculated using the fat and muscle measurements. This yield is generally used along with the weight to find an index for the animal on the grading grid. Sixty – 66% is the ideal range.

Meat Cuts

The following diagram to the right illustrates the main cuts of pork.

Each 100 kg live hog produces about 65 kg of meat, including ham, pork chops and sausages, bacon, ribs, ground pork, hocks and stewing meat.



By-products

In addition to the meat we get from the pig, there are approximately 15 kg (per 100 kg live hog) of by-products. Over 150 items are either derived whole or rendered to produce products such as leather, lard, dog treats, bone meal, soap, cosmetics, and most importantly, medicines and medical treatments like heart valves and insulin.

EVERYTHING BUT THE Oink

No other animal provides society with a wider range of products than the hog.

By products from pigs play a vital, though less visible, role in maintaining and improving the quality of human life.

Phonograph records

Bone China

Violin Strings

Drumheads

Porcine Burn Dressings

Hides and skins for leather goods

Pigskin footballs

Cutting oils

Glycerin for explosives and antifreeze

Linoleum

Pet food

Gelatin for marshmallows and photographic film

Industrial lubricants

Fatty acids and glycerin used for matches

Ingredients for surgical sutures

Insulin and ingredients for other medicines

Gelatin for drug capsules

Hearts for xenotransplantation

Rennet for cheese making

Hair for artist brushes

Stearin for making chewing gum and candies

Compiled by Alyssa Auer (2009)

Frobose, D., G. Bowman *et al* (2001) *Swine Resource Handbook*. The Ohio State University Extension.

Where Does Canadian Pork Go?

Canada exports 70% of the pork produced to almost 100 countries around the world.

Top **10 Markets** for Canadian pork in 2019

1. Japan
2. United States
3. China
4. Mexico
5. South Korea
6. Philippines
7. Taiwan
8. Australia
9. New Zealand
10. Hong Kong

Experience It!

Tour A Pig Farm virtually!
http://bit.ly/3XZWE0W

DISCUSS IT

Have someone present their farm's Pig Safe/Pig Care manual and explain about the process.

Quality Assurance Programs

One of the reasons Canada is able to export pork products to so many countries is our commitment to producing high quality pork. By participating in programs like the Canadian Pork Council's Pig Safe and Pig Care, registered producers ensure they are meeting the standards set by the industry to produce high quality pork. The full manual can be downloaded from the Canadian Pork Council webpage.

The program covers all areas of the farm:

- Vaccine and drug use
- Animal welfare
- Personnel training
- Barn maintenance and sanitation
- Feed and water
- Pests, domesticated animals and dead stock
- Biosecurity
- Transportation

DISCUSS IT

OMAFRA and Farm Credit Canada offer excellent resources on succession planning. This might be a good youth leader project to research and present or something for senior members to learn about.

Careers In The Swine Industry

I think we all know that farmers need to be a jack-of-all-trades to run their farm but there are often times that we need additional or expert support. The list of those required to keep the farm running day to day is quite lengthy.

Some of those include:

- Barn staff
- Truck drivers (of pigs, feed, etc.)
- Nutritionists
- Veterinarians
- Semen sales representatives
- Agronomists
- Buyers
- On-farm CQA inspectors
- Bookkeepers
- Electricians
- Plumbers
- Contractors
- HVAC specialists,
- Manure and deadstock removal companies
- Butchers
- Ontario Pork support staff
- Accountants
- Bankers
- Equipment sellers and installers
- IT support
- Insurance sales
- Financial advisors

Experience It!

Tour a butcher shop!

Activity 1# - Develop A By-Product Display To Use At Achievement Day Or Other Local Events

Do	Time: 30 minutes **Materials Needed:** • Have members bring packaging or pictures of by-products • Display board • Markers • Paper • Card stock • Glue • Tape • Binder • Storage container **Instructions:** 1. Give each member the list of by-products in advance and have them bring in some packaging or pictures of the items. 2. Create a display of the items on the board or in front of it. 3. Prepare a document to explain what the by-products are and how they are used.
Reflect	**Learning Outcomes:** To be able to identify how all parts of the pig are used To be able to design an eye-appealing display for educational purposes
Apply	**Discuss The Following Prompts As a Group:** • Why is it important to be use all the parts of the pig? • Why are displays like this important for people to see? • What did you learn while creating this display?

Activity 2# - Research A Career That Is Connected To The Swine Industry

Do	Time: 15 minutes **Materials Needed:** • Internet access **Instructions:** Have each member pick a career associated with the industry and search through job search sites to find: a. Job description b. Education/training required c. Salary range Senior members may want to research how long any educational requirements may take (i.e. how many years of schooling does it take to become a veterinarian?)
Reflect	**Learning Outcomes:** • To be able to identify many different careers associated with the swine industry. • To understand what levels of education are required for different careers.
Apply	**Discuss The Following Prompts As a Group:** • Why did you select the career you did? • Did you learn something about that career you didn't know?

Digging Deeper - For Senior Members

What computer programs exist for pig farmers to keep management records?

Health

Meeting 5 – Health

Setting Objectives:

- To understand and appreciate the importance of good health in pigs.
- To learn how to recognize disease, infections and injuries in pigs and what potential remedies are available.
- To recognize not only the economic importance of good health in a herd but also to provide the best in animal welfare for all of our animals.

Suggested Learning Outcomes:

- Understanding the importance of a vaccination and parasite control program.
- More easily recognize signs of illness, injury, or disease.
- Understand steps to effective disease management: prevention, identification, and treatment.
- Develop effective herd health and disease management protocols with your veterinarian.

Suggested Roll Call Questions:

- Name a parasite that can affect a pig.
- What is one symptom that an animal has a parasite infestation?
- Name one method of parasite treatment.
- Name something a pig (or human if members aren't familiar with pig diseases yet) is vaccinated for.
- Name items that should be in a pig first aid kit.

SAMPLE MEETING AGENDA Time: 2 hours 10 minutes plus activities

Welcome, Call To Order, Pledge		10 minutes
Roll Call		5 minutes
Parliamentary Procedure	Minutes And Business	10 minutes
Topic Information, Discussion	Topic Information • What Is in your First Aid Kit • What Are The Signs Of A Healthy Pig? • Vaccination Program • Deworming • Signs Of A Sick Or Injured Pig • Treating Sick Or Injured Animals • Record Keeping **Activity #1** Pig First Aid Kit **Activity #2** Orange You Glad You Learned How To Give A Needle?	90 minutes + activities
At Home Activity	Develop a Herd Health Plan	5 minutes
Wrap Up, Social Time And Adjournment		10 minutes

First Aid Kit - Medical Supplies And Equipment

As farmers, our job is to keep our animals healthy. We do it for obvious economic reasons but ultimately, it's our responsibility to do our best to protect animals in our care.

A properly supplied medical kit is essential when keeping livestock. Below is a list of recommended items you should have on-farm. Most of these can be purchased through your veterinarian, feed store or even a pharmacy.

- Thermometer (identify for animal use only)
- Medical gloves (e.g., latex or nitrile)
- Lubricant
- Needles (varying gauges and lengths) and syringes (1 mL - 20 mL) of varying sizes
- Sharps Container
- Tail docking pliers
- Ear tagger
- Teeth clippers
- Scalpel
- Hog snare
- Injectable antibiotics (e.g., penicillin)
- Injectable anti-inflammatory (e.g., meloxicam)
- Electrolyte powder
- Kaolin pectin, activated charcoal, and/or starch product
- Needle extension tube (e.g., Slap-Shot®)

Is there anything else you think you may need?

Medical Gloves

Ear Tagger

www.cpc-ccp.com/tags-and-tattoos

Thermometer

www.syrvetcanada.ca/en/thermometers

Sharps Container

What Are The Signs Of A Healthy Pig?

When monitoring your pigs, you want to check to see that they are:

- Bright, alert and active
- Interested in food
- Breathing normally, without coughing and wheezing
- Moist snout
- Not salivating
- Clear and bright eyes
- Straight back and normal, relaxed stance
- Clear skin, no cracks, bruising, discolouration or signs of scratching or rubbing
- Shiny hair

Vital Signs Of A Pig

The vital signs are the rectal temperature, heart rate (beats per minute) and respiration rate (breaths per minute). Knowing these can help you determine if your pig is sick.

The Vital Signs For A Healthy Pig Are:

Temperature	Heart Rate	Respiration Rate
38.5-39.5°C	60-80	10-20

How To Take The Temperature:

Safely restrain the pig. Apply lubricant to the end of thermometer and insert no more than an inch into the rectum of the pig. A digital thermometer is recommended as it is fast and will usually beep once the temperature has been measured.

To calculate the heart rate, it is best to use a stethoscope, if you have one, and count the number of beats in 10 seconds. Multiply that times 6 to get the beats per minute

To calculate the respiration rate, watch the pig and count the number of breaths in 15 seconds and multiply that number by 4 to get the respirations per minute.

Herd Health

As discussed in the Biosecurity section, keeping diseases out of the barn is the best way to keep pigs from getting sick but there is also another step – establishing a herd health protocol. A herd health protocol is done in consultation with your veterinarian and takes a holistic look at your operation. It begins with keeping pigs healthy via vaccinations and parasite control and includes things like piglet protocol (clipping teeth, giving iron, tail docking, castrating, etc.), identifying them, keeping proper supplies of medications and equipment on the farm and keeping records of everything you do.

Maintaining a Veterinarian-Client-Patient-Relationship with a veterinarian is essential to keeping your animals healthy. If you have ever spent time on agricultural social media groups, you will often see people looking for veterinarian recommendations for their livestock in an emergency. This can be time-consuming and costly.

An existing relationship ensures you usually have faster access to medical care for your animals in an emergency situation, may often be able to receive medical advice over the phone without needing a visit, be made aware of health situations in your area and even receive invitations to information sessions organized by the veterinary practice or their suppliers.

Vaccination Program

Vaccination is the administration of a vaccine to increase immunity, or in other words, strengthen the ability to fight-off illness or disease. A vaccination program is a really important part of a Herd Health Plan. Producers and their veterinarians discuss what they're going to vaccinate the herd against. They look at what was an issue last year and anticipate what may be an issue this year. They will also review the proper handling, storage and administration techniques and protocols for the vaccines that they've chosen. These factors, along with the timing of vaccination, can have a huge impact on how effective your vaccination program is.

It's important that the herd's vaccination schedule is in sync with the overall production and management cycle. A veterinarian that is familiar with the herd can help producers to time vaccinations correctly to maximize the benefit in terms of disease prevention and cost effectiveness.

Remember to have a vaccination plan in place ahead of time, use proper cleaning, sanitation and disposal practices, always follow the manufacturer's directions and consult your local veterinarian if you have any questions or concerns when it comes to your vaccination program.

Vaccinations

Regular vaccination of the herd has led to a decrease in diseases like Post Weaning Multisystemic Wasting Syndrome, Blackleg, Tetanus, Leptospirosis and Parvovirus.

Vaccines are typically injected subcutaneously (beneath the skin) or intramuscularly (directly into the muscle). They should be injected under the loose skin of the neck, in front of the shoulder. If a vaccine must be given intramuscularly, inject it into the muscles of the neck, also in front of the shoulder. Never inject in the hip or thigh. There will be further information on this later in the section.

When we vaccinate, we deliberately introduce infectious organisms into the body of the animal. By doing this, we hope that the animal will produce antibodies. Antibodies help the animal fight the disease and become immune to it. If the animal ever comes into contact with the disease, it will be protected against it. Vaccinating sows prior to farrowing to allow her to pass on antibodies in her colostrum and milk is called passive transfer. Piglets are usually vaccinated at weaning and receive a booster three weeks later.

There Are Two Types Of Vaccines:

Live - contains live disease-causing organisms. These organisms have usually been modified in some way so they cannot actually produce the disease.

Killed - contains dead organisms, such as bacteria, which have been added to a liquid carrier.

Always follow the directions for vaccinating. Before using any vaccine, read the label carefully. Check for:

- Dosage or amount to give
- Way to give the vaccine (subcutaneous or intramuscular)
- Expiration date

Handle vaccines with care. Store them under refrigeration, but not frozen. Keep them out of the sunlight. Sometimes animals are allergic to the vaccines we give them. Signs of allergies will usually appear within an hour of vaccination. Watch for some or all of these symptoms of an allergic reaction:

- Difficulty breathing
- Staggering
- Swollen eyes
- Swelling of the vulva

If you see any of these signs, call your veterinarian.

Deworming

Deworming is the process to rid the body of worms or other parasites.

What Is A Parasite?

A parasite is any living organism which survives on or in a host animal. This organism, or parasite, gets all of its support for life from the host animal. This includes its food and shelter. This is a problem for pigs because parasites cause stress to the animal as they feed on them and can lead to death. There are two types of parasites:

- Internal parasite - lives inside the body of the pig, including the kidneys, liver, lungs, bloodstream, and digestive tract.
- External parasite - lives on or in the skin or hair

Examples of some parasites in pigs are: mites, lice, roundworms, threadworms, lungworms, tapeworms, whipworms, roundworms and hookworms

Indoor pigs can come in contact with parasites as a result of parasites in feed, water, transmitted by humans or flies and improperly cleaned barns. Outdoor pigs can also get them from contact with wild animals and grazing, as eggs can remain in the soil for many years.

It is almost impossible to avoid parasites so in order to reduce the impact of parasites, you should clean, disinfect and dry pens thoroughly between use and establish a deworming protocol with your veterinarian to determine which products are best for your operation and when it should be done.

Piglet Protocol

Every farrowing operation has a protocol to follow when piglets are born. It may vary from farm-to-farm but the following are pretty similar for all operations:

- Piglets are given an iron supplement to prevent neonatal iron deficiency anemia from occurring
- Clipping of very sharp milk teeth
- Docking of tails, followed by a pain medication
- Castration, followed by a pain medication
- Ear tagging or identification

In order to minimize stress on the animal (and handler), these procedures are done when the pig is small and as per the Codes of Practice, most now require a pain medication be given at the time of the procedure.

For information on ear-tagging and tag placement, see the Traceability section. As per the National Code of Practice for the Care and Handling of Pigs, ear notching must only be performed on piglets when deemed necessary and when piglets are less than 14 days of age. Analgesics are to be used to control pain when ear tattooing or notching.

For up to date information from the National Code of Practice for the Care and Handling of Pigs visit: https://www.nfacc.ca/pdfs/codes/pig_code_of_practice.pdf

Ear-notching helps identify a pig's litter and which one of the litters it is, giving each pig a unique identity number. Notches are placed in one of five locations in the pig's right ear — to show the litter number — and in one of three locations in the left ear — to show the individual pig number. Correctly notching the pig is key. Each pig must be notched differently. So, to notch pigs properly, you must know the location and associated number of each notch.

As referred to above, ear notching must only be performed when deemed necessary. Some in the industry are moving away from this practice as evidenced by statements such as this:

Maple Leaf Foods Animal Care Performance Report 2021

Physical Alterations

We are committed to reducing the use of physical alterations or replacing them with more humane alternatives wherever possible, provided the changes do not lead to adverse animal welfare outcomes. It is important that pain control is provided whenever relevant and feasible. All pigs raised in Canada must be provided with pain control for physical alterations in accordance with the National Farm Animal Care Council (NFACC) Code of Practice for the Care and Handling of Pigs. We are undergoing a phased implementation of immunocastration in our owned operations to replace surgical castration. Currently, tail docking is a necessary piglet procedure in order to prevent tail injuries from other pigs. We do not ever perform teeth clipping or ear notching on our piglets and tattooing of piglets is limited to genetic replacement animals only. Poultry physical alterations are necessary in broiler breeder chickens and in turkeys for the long-term welfare of the flock to reduce or eliminate injuries that may cause pain. Physical alterations are performed using the most humane methods possible and limited to only essential alterations. All broiler chickens that Maple Leaf Foods sources never undergo physical alterations, including beak treatment, consistent with the NFACC Code of Practice. No physical alterations are performed in Maple Leaf Foods-owned hatcheries.

Signs Of A Sick Or Injured Pig

Your biosecurity program is top-notch, you vaccinate and deworm your animals, your pens are in great condition, but your pig still manages to get sick or injured. Knowing the signs of an unhealthy pig is important as the sooner you notice symptoms, the easier it is to treat them.

- Irregular or noisy breathing
- Persistent cough
- Not eating or drinking
- Weakness/lethargy
- Abnormal laying down or standing position
- Sudden death
- Trembling
- Depression
- Diarrhea

- Weight loss
- Rough hair coat
- Scratching/rubbing
- Skin discolouration
- Pale skin and/or gums
- Head tilt
- Swollen joints
- Lameness
- Unable to get up or stand
- Abscesses, swollen areas
- Open wounds

Check It Out!

Download this Spot The Signs of African Swine Fever poster: https://inspection.canada.ca/DAM/DAM-animals-animaux/STAGING/text-texte/asf_prdcrs_know_the_signs_1610631273623_eng.pdf

Diseases:

Some common or severe swine diseases:

African Swine Fever

ASF is a highly contagious and extremely fatal viral disease that only affects pigs. The only way to stop this disease is to depopulate all affected or exposed swine herds.

This disease has not been found in Canada or the United States as of January 2022 but was found in some Caribbean Islands so there is concern that it will spread. It can be spread by the movement of infected meat, even frozen or processed meat products, or other objects carrying the virus. As a reportable Foreign Animal Disease (FAD), the emergence of ASF in Canada would have devastating effects on the pork industry since our borders would be closed to export of pigs and pork for an indeterminate period. Canada exports most of its production. If AFS is found on your farm, report to the Canadian Food Identification Agency (CFIA) immediately.

Cause(s):
- Virus

Symptoms:
- High fever
- Decreased appetite and weakness
- Red, blotchy skin or skin lesions
- Diarrhea and vomiting
- Coughing and difficulty breathing

Prevention:
- Biosecurity

Treatment:
- None

Porcine Reproductive And Respiratory Syndrome (PRRS)

It impacts the reproductive and respiratory functions of pigs. It is transmissible and affects all ages of pigs. There are new strains being found such as New PRRRS 1-4-4 L1C

Cause(s):
- Virus

Symptoms:

- Sows/gilts:
  - Increase in the number of stillborn piglets
  - Mummified fetuses
  - Weak newborn piglets
  - Premature farrowing
  - Anorexia in lactating sows
  - Fever in lactating sows
  - Blue discolouration of the ears
  - Cough
  - Sterility (short-term or permanently) – can occur in boars as well
- Newborns:
  - Respiratory disease
  - Mouth breathing
  - Weight loss
  - Immuno-compromised
- All others:
  - Nasal discharge
  - Cough
  - Laboured breathing
  - Loss of appetite
  - Immuno-compromised
  - Increased mortality rates
  - Under-sized

Prevention:

- Vaccination
- Biosecurity
- All-in-all-out keeps it from being transmitted to new pigs to the barn

Check It Out!

Download this PED Process and Notficiation poster: http://www.swinehealthontario.ca/Portals/15/PED%20Process%20and%20Notification%20Timeline%20&%20Fact%20Sheet%20(1).pdf

Treatment:

- No available medication to treat viruses – need to treat the secondary infections that may occur.
- Antibiotics to prevent respiratory and enteric (gut) infections
- Extra bedding or heat to provide extra warmth
- Electrolytes for dehydration

Porcine Epidemic Diarrhea (PED)

The disease causes diarrhea and vomiting in pigs. It can be very serious and can kill younger pigs in herds that have not previously been exposed to the virus. PED spreads more prevalently during cooler weather.

Cause(s):

- Viral – alpha coronavirus
- Transmission occurs via the fecal-oral route

Symptoms:

- Sudden onset of watery diarrhea, may last for 7 – 14 days
- Possible vomiting in all ages of pigs
- Diarrhea can last from seven to 14 days, and piglets younger than 8 days of age are susceptible to a high

mortality rate (from 50 to 100 percent of infected piglets).

Prevention:
- Enhanced biosecurity – high levels of environmental contamination

Treatment:
- No real treatment, give electrolytes and keep warm and dry

Scours

Not a specific disease but is a serious health issue, even fatal, especially to young piglets and has a number of different causes.

Cause(s):
- Bacterial (usually E. coli, Salmonella and Campylobacter)
- Viral (Rotavirus, swine fever, Transmissible gastroenteritis, also a symptom in PED and PRRS (as discussed above)
- Parasites
- Dietary or nutritional – changes to feed can cause scours

Symptoms:
- Listless
- Weight loss
- Foul-smelling liquid feces
- Blood in stool

Prevention:
- Vaccination, for some causes
- Ensuring piglets get colostrum shortly after birth to receive antibodies from the sow
- Giving iron to newborns
- Testing water regularly
- Clean, dry bedding

Treatment:
- Isolate sick piglets
- Kaolin pectin
- Keep warm
- Electrolytes
- Antibiotics

Respiratory Disease

Like scours, this isn't one disease, it is a compilation of many, including pneumonia, swine influenza, classic swine fever

Cause(s):
- Virus
- Mycoplasma

Symptoms:
- Coughing

- Sneezing
- Breathing hard (thumping sides)
- Noisy breathing

Prevention:
- Vaccination program
- Proper ventilation
- Don't over-crowd pens
- All-in-all-out

Treatment:
- Consult with your veterinarian
- Anti-inflammatory
- May need antibiotics
- Separate from others and monitor the rest of the herd

Erysipelas "Diamond Skin Disease"

This disease affects pigs over the age of 12 weeks. It is transmissible to humans (zoonotic) and transmission usually occurs through cuts or skin punctures.

Cause(s):
- Bacterium, Erysipelothrix rhusiopathiae33
- Wet dirty pens
- Contaminated water

Symptoms:
- Red to purple discolouration of the ears, snout, and abdomen
- Raised diamond-shaped lesions on skin
- Fever
- Loss of appetite
- Possible lameness

Prevention:
- Vaccinate for erysipelas
- Thorough cleaning between groups

Treatment:
- Requires antibiotics

Clostridial Disease

Clostridia are large rod-shaped bacteria that also form spores and they persist in the environment for long periods. Disease in sows is associated with C. novyi, C. chauvoei and C. septicum. All these organisms produce toxins that may rapidly kill the host in a short period of time. The toxins are the main cause of disease not the bacteria but treatment must be given to prevent multiplication of the bacteria.

Cause(s):
- Bacteria - C. novyi, C. chauvoei and C. septicum
- The organism may enter the body through damage to the skin and underlying tissues and muscles

Symptoms:
- Painful and discoloured swellings – gangrene
- High sow death

Prevention:
- Vaccinate
- Thorough cleaning between groups

Treatment:
- Antibiotics

Septicemia

Cause(s):
- Bacteria – Streptococcus suis

Symptoms:
- Red/purple ears
- Possibly red bellies/udders/hind legs
- Possibly shaking/tremoring
- Not eating

Prevention:
- Good hygiene
- Proper feed/nutrition
- Proper housing/environment
- Not mixing new pigs from unknown health sources

Treatment:
- Consult with veterinarian
- Anti-inflammatories
- Antibiotics
- Separate from others
- Isolate sick piglets

Injuries And Other Problems

Lameness/Swollen Joints

Clinical signs:
- Limping
- Walking on elbows
- Hot or swollen joints

Prevention:
- Hoof trimming when necessary
- Non-slip flooring
- Dry floors or ground (if outdoors)

Treatment:
- Anti-inflammatories
- Possibly antibiotics
- Hoof trimming
- Soft bedding

Cuts, Scrapes And Bruising

Clinical signs:
- Cuts, scrapes or bruising on the animal

Prevention:
- Ensuring pens and equipment are in good condition
- Teeth clipping
- Provide stimulation in the pen to reduce fighting
- Ensure there is sufficient feeder space

Treatment:
- Clean and treat with approved topical medication, if required
- Antibiotics if infected

DISCUSS IT

Find out what the most used vaccines in your area are and what diseases they protect against.

Abscesses

Clinical signs:
- Localized swelling, under the skin
- Soft to touch

Prevention:
- Ensuring pens and equipment are in good condition

Treatment:
- May need to lance and drain
- Clean and treat with approved topical medication
- Antibiotics if infected
- May be indicative of cancer or other diseases if more than one on the animal – consult vet

Allergies

Usually caused by molds and mycotoxins, ammonia in air, biting insects

Clinical signs:
- Sneezing
- Runny eyes

Prevention:
- Clean bedding
- Good ventilation
- Insect control

Treatment:
- Removal of allergen

Treating Sick Or Injured Animals

DISCUSS IT

Have a veterinarian come and speak about pig health.

There was a time that you used to be able to acquire many livestock medications at the local feed store. In 2018, the practice of buying antibiotics this way came to a halt as Canada began working on a national strategy to curb the antibiotic resistance of many pathogens that affect animals and humans. All medically important antimicrobials now require a prescription and are only available from your veterinarian, or pharmacy. A prescription is also required for medicated feed, and it can no longer be identified as a growth promotant on the label.

Commonly used medically important antimicrobial active ingredients used to treat pigs are:

- Apramycin
- Bacitracin
- Erythromycin
- Lincomycin
- Neomycin
- Penicillin G
- Spectinomycin
- Streptomycin-Dihydrostreptomycin
- Sulphonamides
- Tilmicosin
- Tiamulin
- Tylosin-Tylvalosin
- Virginiamycin
- Tetracycline-Chlortetracycline-Oxy-Tetracycline

Have you every given these to an animal or have you ever had to take one yourself?

Medications, including antimicrobials, are as essential to keeping animals healthy as they are to keeping humans healthy.

There are a number of different ways to give medications to animals. They are:

- Injection
- Orally (squirted directly into the mouth via liquid or paste or included in feed and water)
- Topically
- Inhaled

The use of medicated feed and water has dropped in years as on-farm biosecurity has improved, reducing the likelihood of mass illness and farmers focusing more on treating the individual pig and not the entire pen when possible.

Routine use of antibiotics is now banned in the European Union as of January, 2022. Make sure all medications, including antibiotics, are stored correctly on-farm. Store as recommended on the label. Keep medications in a refrigerator separate from food and beverages. Regularly check expiry dates and discard all products that have expired.

Drug Dosage And Withdrawal Periods

All drugs manufactured and sold in Canada are required by law to include specific information on the label. In addition to what is printed on the label, more detailed information on the drug is found on the underside of the label or as an insert in the carton.

The two most important pieces of information on the label is the dosage and the withdrawal time. The dosage will tell you what animals the drug is approved for and how much to give those animals, usually based on weight. The withdrawal time is the number of days that the animal must be held back from the food system. An animal cannot be sent for processing with ANY drugs in their system.

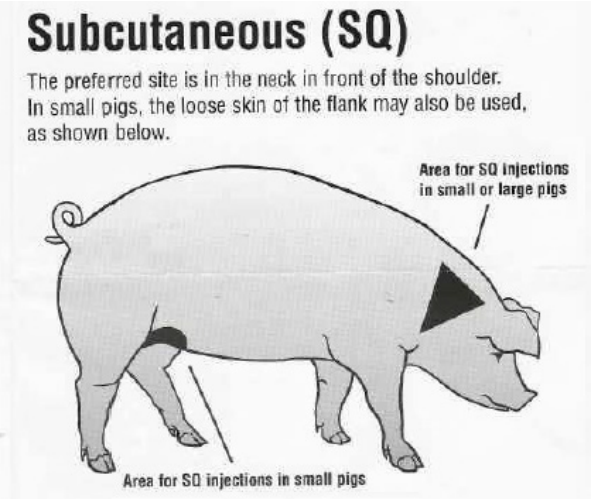
All medications used in pig production have been approved for use by Health Canada. Canada has a stringent meat inspection system that ensures only healthy pigs are processed. The system also routinely samples pork to ensure there are no antibiotic residues present.

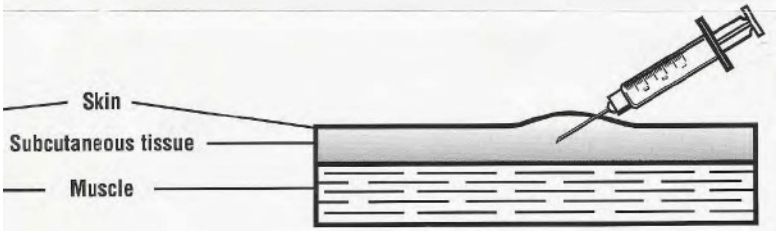
Giving Injections

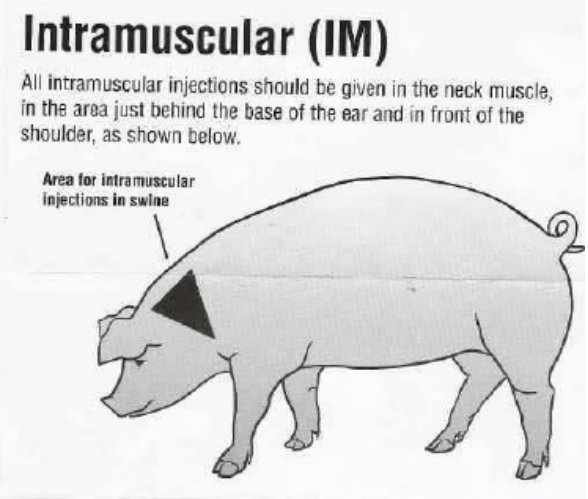
Like most vaccinations, many medicines are given via injection. The three forms of injection are subcutaneous (SQ), intramuscular (IM) and intravenous (IV).

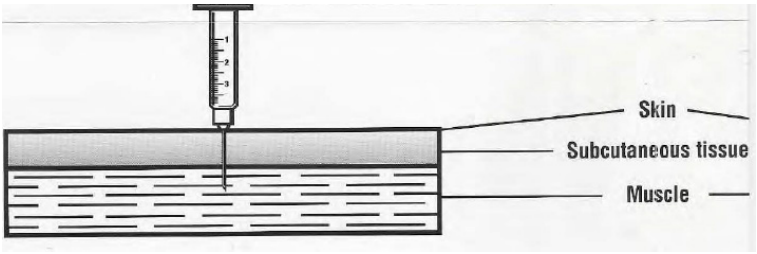
When giving injections, you need to ensure you are using the correct size syringe for the dose and the correct size needles. The gauge of the needle can vary depending on what animal you are injecting, and the medication given. A thick medication may require a lower gauge needle. Needle length can also vary depending on whether it is SQ or IM. You should only use detectable needles to ensure if the needle breaks off in the body, it can be detected by a metal detector during processing.

Size of Pig	Needle Gauge	Needle Length (inches)
Adult (>125 kg)	16	1½
30-125 kg	16	1
20 kg	16 or 18	1 or ¾
10 kg	18	¾
5 kg	18 or 20	5/8 or ¾
Piglet	20	1/2 or 5/8









Record Keeping

Best management practices for all farms recommend keeping a log of any medicines administered to your animals as part of your herd health program. Best case scenario is to record the date, animal medicated (if is has an ID), medication (including vaccines and dewormers), dosage, method of delivery (SQ, IM, IV, topical, orally, etc.) and withdrawal period. If your farm participates in the CPC PigSAFE PigCARE program, you will have additional records to fill out as well. Including any medical procedures done (castration, hernia operation, etc.), injuries, poor milk production in sows, farrowing issues, if any had to be euthanized, etc. is recommended as well.

Your records can be kept in a book, on a calendar, in a spreadsheet or included in a swine management program just to name a few options. Keeping detailed records can help make future management decisions much easier as you will have a record of what happened last summer or during the last breeding cycle.

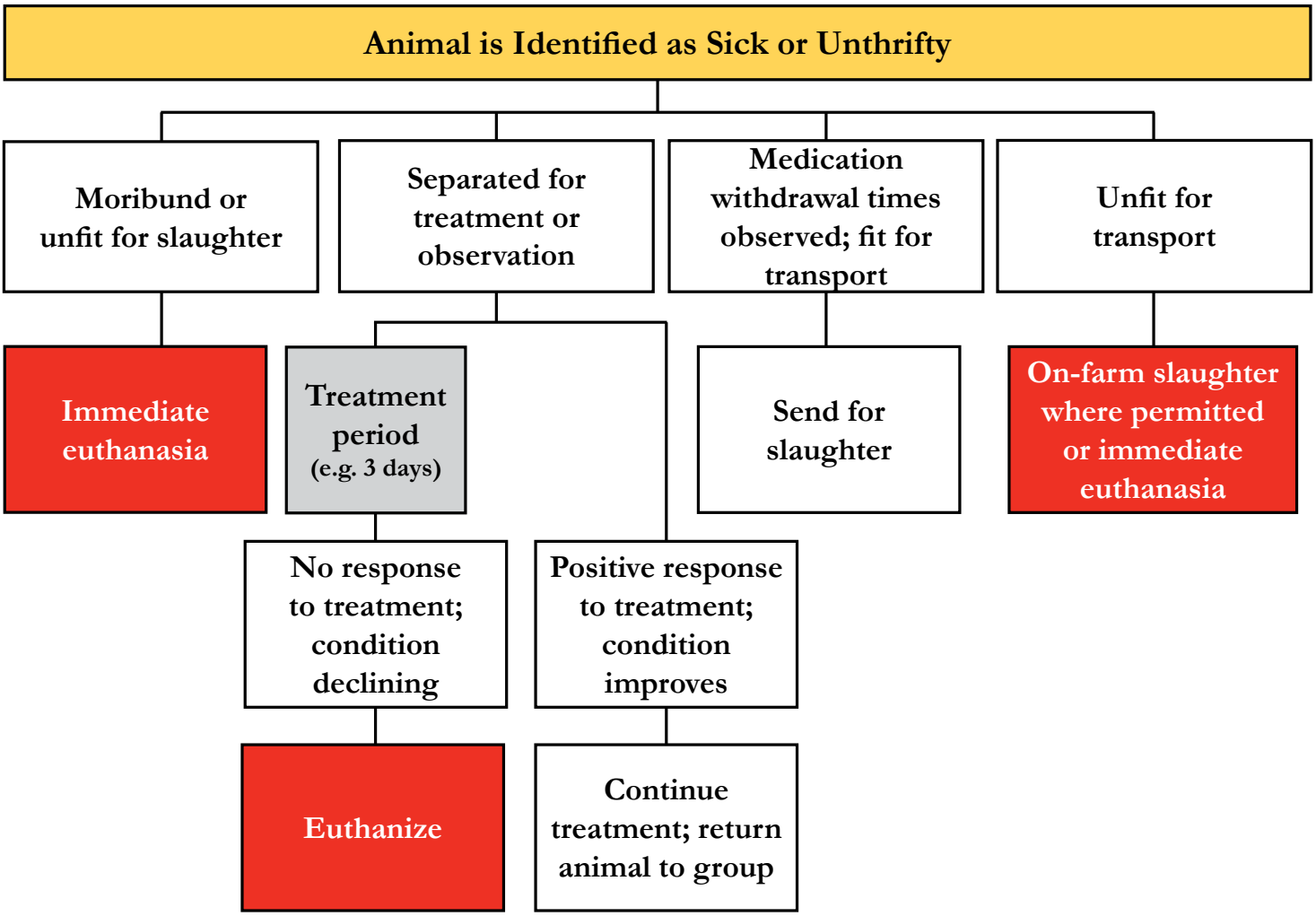
Euthanasia

Sometimes, no matter what we do, our pig is not going to recover and needs to be euthanized.

The following are examples of when euthanasia should be considered:

- Weak, unable to stand
- Unable to eat or drink
- Severe weight loss
- Moderate to severe lameness, including limb fractures and badly injured toes
- Infected tail, ear, or flank bites
- Severe rectal prolapse (protruding or damaged)
- Postnatal development of scrotal, inguinal, or umbilical hernia
- Repaired hernia with abscessation, moderate swelling, or continued drainage
- Severe diarrhea with dehydration (no response to treatment in 2 or more days)
- Respiratory disease with difficult or laboured breathing (no response to treatment in 2 or more days)

Here is a decision tree that you can use to decide whether to euthanize:



Source: Code Of Practice For The Care And Handling Of Pigs - 2014

Activity #1 - Pig First Aid Kit

Do	Time: 10 minutes **Materials:** First Part: • Items you keep in your medical kit **Instructions:** 1. Display the items you have on hand and discuss what they are. Members can either observe them on a table or pass them around for closer inspection. Ask for suggestions for other items to add.
Reflect	**Learning Outcomes:** To be able to identify what should be in a medical kit in the barn.
Apply	**Discuss The Following Prompts As a Group:** • What is in your kit at home or what will you now put in a kit?

Activity #2 - Orange You Glad You Learned How To Give A Needle?

Do	Time: 15 minutes **Materials:** • Oranges • Needles and syringes • Coloured water • Vegetable oil **Instructions:** 1. Attach needles with different gauges to the syringes 2. Demonstrate how to SAFELY handle the syringe and needle. 3. Demonstrate how to draw the coloured water and oil out of their containers. 4. Give each member an orange or pieces of an orange 5. Allow the members to try injecting the orange with the water and oil, using different gauges of needles to: a. learn how to give a needle b. feel the difference in injecting products with different viscosities 6. Have them try to inject just under the skin and into the "muscle" of the fruit. If they managed to get in just under the skin, the pith should change colour, if it's in the muscle, the coloured water will be noticeable.
Reflect	**Learning Outcomes:** • To be able to safely handle a needle and syringe • To be able to safely give an injection
Apply	**Discuss The Following Prompts As a Group:** • Why is it important to know how to safely handle and give a needle?

Digging Deeper - For Senior Members

What other non-surgical ways are there to control boar taint and what are the pros and cons compared to physical castration?

Nutrient Management

Meeting 6 – Nutrient Management

Setting Objectives:
To develop an understanding of the nutrients produced on pig farms and how to manage them. This is a show section and can be added to others.

Suggested Learning Outcomes:
- To understand what nutrients pig manure produces.
- To be able to recommend ways to reduce the environmental risk manure poses.
- Learn how to calculate nutrient units for all your animals.
- To learn what a nutrient management plan is.

Suggested Roll Call Questions:
- What are the three main nutrients needed by plants?

SAMPLE MEETING AGENDA Time: 1 hour 5 minutes plus activities

Welcome, Call To Order, Pledge		10 minutes
Roll Call		5 minutes
Parliamentary Procedure	Minutes And Business	10 minutes
Topic Information, Discussion	Topic Information • What is Nutrient Management • Nutrient Management Plans **Activity #1** Calculate The Nutrient Units Produced By Your Farm	30 minutes + activities
Wrap Up, Social Time And Adjournment		10 minutes

What is Nutrient Management?

The manure from pigs contains valuable nutrients and is often referred to as liquid gold! Fortunately, farmers are able to apply livestock waste to fields as nutrients for crops. It can also add organic matter to soil and provide food to soil organisms.

Food for plants is called fertilizer and manure is usually referred to as an organic fertilizer due to its composition of animal and plant matter. The 3 main components of fertilizer are nitrogen (N), phosphorus (P) and potassium (K). Crops require different amounts of these main nutrients as well as a number of micronutrients.

Liquid swine manure is rich in nitrogen, phosphorus and potassium. It is able to meet all the phosphorus and potassium needs of a crop like corn as well as much of the nitrogen needs.

Liquid Manure (average)	Useable N (kg/1000L)	P (as P2O5) (kg/1000L)	K (K2O) (kg/1000L)
Finisher	3.56	2.76	2.92
Weaners	1.86	1.66	1.62
Dry Sows	2.16	1.84	1.19
Farrow to Finish	2.92	1.84	2.27
Sow to Weaner	1.76	1.47	1.30
SEW	1.65	1.10	1.19

OMAFRA Analysis Results

Nutrient management is the process that involves using nutrients as efficiently as possible to improve soil productivity while protecting the environment, especially water.

As livestock farmers, we are expected to ensure that how we store and use manure is done to protect animals, humans, soil and water. How we do this is covered by the Nutrient Management Act. Livestock farms need to create a Nutrient Management Strategy (NMS). According to OMAFRA, the NMS documents nutrient management matters such as manure generation from livestock, manure type and quantity, adequate storage capacity and acceptable runoff management. A NMS is required for:

- existing farms with more that 300 nutrient units (NU),
- farms that are expanding to more that 300 NU using existing facilities,
- farms with more than 5 nutrient units (NU's) that are constructing or expanding a livestock barn or manure storage facility.

What exactly is a NU? In the Regulation, a NU is defined as "the amount of nutrients that give the fertilizer replacement value of the lower of 43kg of N or 55kg of P as nutrient as established by reference to the Nutrient Management Protocol.

If you own a swine operation and keep no other livestock on your farm, you can use the following chart to easily determine the nutrient units for your farm operation. Go to: OMFRA for NU calculations for other livestock.

Research It!

What are the needs of other crops grown in Canada for pig feed and can those needs be met based on the analysis results?

Table 1: Determine Total Nutrient Units For Your Farm

Type of Swine Operation	# of Animals	NU Conversion Factor	Divide # of Animals by NU Conversion Factor
Feeders		5.25 animals/NU	
Gilts		5 animals/NU	
Sows (dry) and Boars – SEW		3.33 animals/NU	
Sows with litters – SEW		3.33 animals/NU	
Sows (dry) and Boars - non-SEW		3.5 animals/NU	
Sows with litters - non-SEW		3.5 animals/NU	
Weaners		20 animals/NU	
		Total Nutrient Units on Farm	

What does a Nutrient Management Strategy contain:

- Map(s) showing all farm location(s) and specific details about barns, barnyards, generating sites, storage sites and sensitive features such as wells and surface water,
- Amount of manure generated and volumes of other materials such as run-off,
- Agreements with brokers or with other farmers who accept manure (NMP required)
- Number and type of animals
- List of storage facilities and capacities
- Runoff management
- Temporary field storage sites for dry manure
- Limited information on destination (s) for manure (i.e. land base available for application or transferring manure off the farm unit to other operations.

DISCUSS IT

Have a crop farmer talk about how they use manure on their farms

While most pig farms store manure in a liquid form, many (especially small farms) use dry storage and must also ensure that their manure pile isn't contaminating the surrounding soil and water. Liquid storage units must hold enough manure for at least 240 days to avoid risks of over-flow or the need to spread manure in the winter.

Research It!

If you have other animals on your farm, go to OMAFRA web page to see how many NU your animals generate yearly.

How much land do I need for the number of pigs I have?

That question is frequently asked by farmers and the answer isn't simple. It depends on many factors including size of pigs (weaners compared to boars for example), crops grown and crop rotation, current soil nutrient levels, soil type, topography of the landbase, proximity to watercourses or other environmentally sensitive areas, regulations in your area, etc.

What happens if you don't have enough land to spread all of your manure?

Your options are to get more land, whether purchased or rented, add more manure to the land you have, without negatively impacting the environment or the crops, further process the manure (composting, anaerobic digesters, etc.) or you develop a plan to have someone else dispose of the manure, usually applying it to their land. They would need a nutrient management plan that presents how they intend to use your manure. This plan to have others remove the manure would be part of your contingency plan of what to do in the event that a nutrient management strategy or plan cannot be followed. The plans must address what will be done if:

- more nutrients are available than the NMS or NMPs have addressed
- more nutrients are generated than the storage design capacity
- there is a spill and
- weather or equipment conditions impede planned storage or application

Even if you do not have a nutrient management strategy or plan, good planning could reduce the need for winter spreading and lessen any adverse environmental effect.

If Manure Must be Spread in Winter

If winter application of manure or other ASM is required, farms with a NMP must follow the standards outlined in the Regulation. For all other farms, these standards are recommended as best management practices.

The Regulation addresses two time periods that may or may not overlap. The first is based on calendar dates - December 1 to March 31 or "winter". The second period is any other time when the soil is frozen or snow-covered. Frozen soil is any 5 cm layer of frozen moisture in the top 15 cm of soil. Snow-covered soil is soil with a layer of snow on the surface with an average minimum depth of 5 cm.

Nutrient Management Plans

A nutrient management plan matches the nutrients from the soil and those available from manure, cover crops, and commercial fertilizer, to the nutrients required by the crop. Analysis of nutrients contained in the manure, along with soil test results and crop requirements, helps determine the manure application rate and additional commercial fertilizer requirements.

For more information, check out the Field Crops reference manual.

Check It Out!

Take a look at the Field Crops- Species & Management 4-H Project for information on how farmers use and apply the nutrients in manure.

Activity #1 - Calculate Nutrient Units On Your Farm

Do	Time: 15 minutes **Materials:** • Blank Determine Total Nutrient Units for Your Farm Chart (Table 1 in this section) • Pen or Pencil **Instructions:** Fill in the appropriate information to determine the Nutrient Units generated by your farm. If members don't have pigs, they can either make up numbers or use those from another farm.
Reflect	**Learning Outcomes:** To understand how many Nutrient Units are generated on the farm
Apply	**Discuss The Following Prompts As a Group:** • Were you surprised at the number of nutrient units generated by your farm?

Digging Deeper - For Senior Members

Explore the components of a NMP for application of the manure from your animals.

Digging Deeper - For Senior Members 2

Find out what it would cost to remove the manure from your farm and what equipment is needed.

Check It Out!

PED Virus and Considerations for Manure Application - www.omafra.gov.on.ca/english/livestock/swine/facts/pedmanureapplication.htm

Check It Out!

All Ontario Statutes (acts (laws)) can be found online at 'elaws.' Search for the acts that pertain to the spreading of manure and surface water protection.

Reproduction

Meeting 7 – Reproduction

Setting Objectives:
To create an understanding of what is required when breeding pigs in Canada.

Suggested Learning Outcomes:
- Understanding what to look for when breeding pigs.
- Understanding natural breeding versus artificial insemination.
- Learning the reproductive organs of pigs.
- Recognizing signs of farrowing and complications.
- Learn post-farrowing piglet care.

Suggested Roll Call Questions:
- What are some important things to look at when breeding your pigs?
- Why is Artificial Insemination used?

SAMPLE MEETING AGENDA Time: 2 hours 10 minutes plus activities

Welcome, Call To Order, Pledge		10 minutes
Roll Call		5 minutes
Parliamentary Procedure	Minutes And Business	10-15 minutes
Topic Information, Discussion	Topic Information • Ideal Breeding Stock • Breeds Of Pigs • Reproductive Organs • Breeding • What Is An EBV? • Farrowing **Activity #1** Mature Sow Reproductive System - Anatomy **Activity #2** Mature Boar Reproductive System - Anatomy	90 min + activities
At Home Activity	Researching AI Companies	5 minutes
Wrap Up, Social Time And Adjournment		10 minutes

The Ideal Stock

Raising healthy animals begins with using good quality breeding stock. Animals that are bred to meet the needs of the farm will help to increase profit and decrease issues. Understanding how and why farmers select for the traits they do is important for raising pigs, even if you don't breed your own. It can help you to select pigs for your own farm when buying from others.

What makes ideal breeding stock:

- Sow – good maternal ability or instinct, large healthy litters, lots of milk, good udder with lots of well-spaced teats, sound feet and legs and produces offspring that are lean and grow quickly
- Gilt – comes from dams (often purebred) with mothering ability, sound feet and legs, good growth rate, 14 or more well-spaced teats, has reached sexual maturity by 220 days of age
- Boar – intact male that is heavily muscled with a low amount of backfat, good growth and feed efficiency and produces offspring with good carcass muscling.

Now that you know have some idea of what makes a good sow, gilt and boar, how do you decide what breed(s) of pig you want? This isn't a question anyone can answer for you. You need to examine the traits of available species and determine what best fits your operation.

Common Breeds in Ontario

Landrace
Colour: White 33%
Ears: Flopped
Origin: Denmark
Production Features: A maternal breed similar to the Yorkshire

Yorkshire
Colour: White 44%
Ears: Erect
Origin: England
Production Features: A maternal breed. Are good mothers with lots of milk. Market pigs are lean and grow quickly.

Hampshire
Colour: Black with white belt 7%
Ears: Erect
Origin: United States
Production Features: A sire breed. Heavily muscled with low backfat.

Duroc
Colour: Sandy red 14%
Ears: Flopped
Origin: United States
Production Features: A sire breed. Good growth and feed efficiency, Good carcass muscling.

The four breeds to the left are most commonly used in Ontario. Some are used as pure bred, while others are crossed with a different breed. There are pros and cons for crossing breeds.

Each breed has important reasons for use within swine herds in Ontario. The white breeds produce large litters of piglets, are good mothers and milk well which leads to optimal litter growth. These traits are referred to as reproductive traits. Unfortunately, reproductive traits are not passed on from one generation (sow and boar) to the next (piglets). These traits are considered to have low heritability. Crossbreeding may breed improve this situation. Crossing of different breeds results in performance called heterosis or hybrid vigor. Traits such as growth rate and feed efficiency are of medium heritability also improve when breeds are crossed.

Images Source: https://ingeniumcanada.org/agriculture/pigs

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

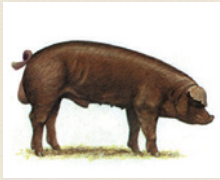

BELGIAN LANDRACE


BERKSHIRE


BRITISH LOP


BRITISH SADDLEBACK

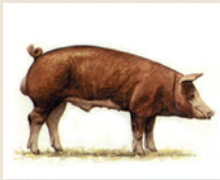

CHESTER WHITE


DUROC


FRENCH LANDRACE


GLOUCESTER OLD SPOT


HAMPSHIRE


HEREFORD


LACOMBE


LARGE BLACK


LARGE WHITE


MIDDLE WHITE

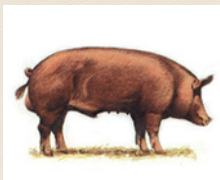

NORWEGIAN LANDRACE

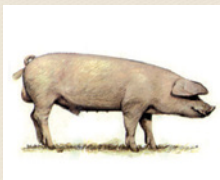

OXFORD SANDY BLACK


PIETRAIN


POLAND CHINA


SPOTTED


TAMWORTH


WELSH


YORKSHIRE


piglet

AT BIRTH PIGLETS WEIGH 2 TO 3 POUNDS


weaner

4 WEEKS – 15 TO 20 POUNDS


grower

8 WEEKS – 40 TO 60 POUNDS


market hog

6 MONTHS – 270 TO 285 POUNDS

These are breeds of pigs commonly found on small farms that are appropriate for indoor/outdoor pen and pasture raising:

1.5 BREEDS

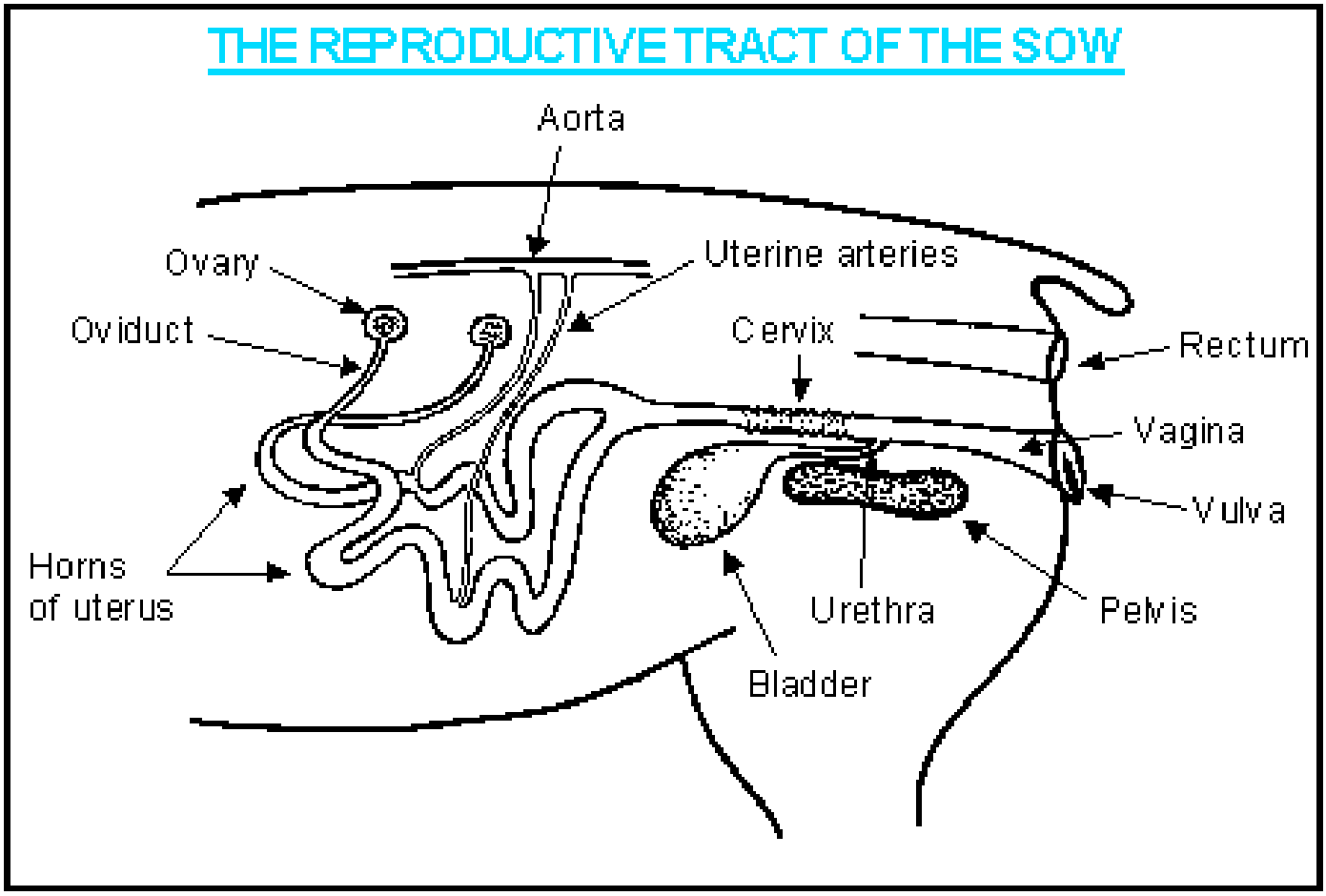
There are numerous breeds of pigs. However, there are several that may be more suited for production in an outdoor environment. The most common breeds include:

BREED		CHARACTERISTICS	
Kunekune		• Small • Hairy • Docile • True pasture pigs	• Colours range from black and white, to ginger, cream, gold-tip, black, brown, tri-coloured, or any combination of the above.
Berkshire		• Average to large in size • Upright ears • Good disposition • Hardy outside	• Black with white points (legs, face and tail) and pink skin.
Tamworth		• Thick and coarse hair (moult in summer) • Hardy outside • Work well on pasture • Moderate size	• Red to ginger colour
Hereford		• Medium to large size • Grow relatively fast • Good disposition • Hardy • Suited for outdoor and indoor systems	• Red-brown and white colouration
Hampshire		• Medium to large size • Good temperament • Suited for outdoor and indoor systems • Good growth	• Black body, with a white band around the middle, covering the front legs.
Red Wattle		• Medium to large size • Grow relatively fast • Good temperament • Hardy • Work well on pasture	• Red-brown colouration
Mangalitsa/ Mangalica		• Thick and curly hair • Hardy outside • Work well on pasture • Medium to large size	• Colours range from blond, to red-brown, to a combination of black and blond
White pigs		• Large size • Large litters • Can be used for cross breeding • Grow quickly	• White to pink in colour

Source: CPC Canadian Small Scale Pig Farming Manual

Reproductive Organs

Let's have a look at the reproductive system of female and male pigs to learn the terminology and understand how the process occurs.

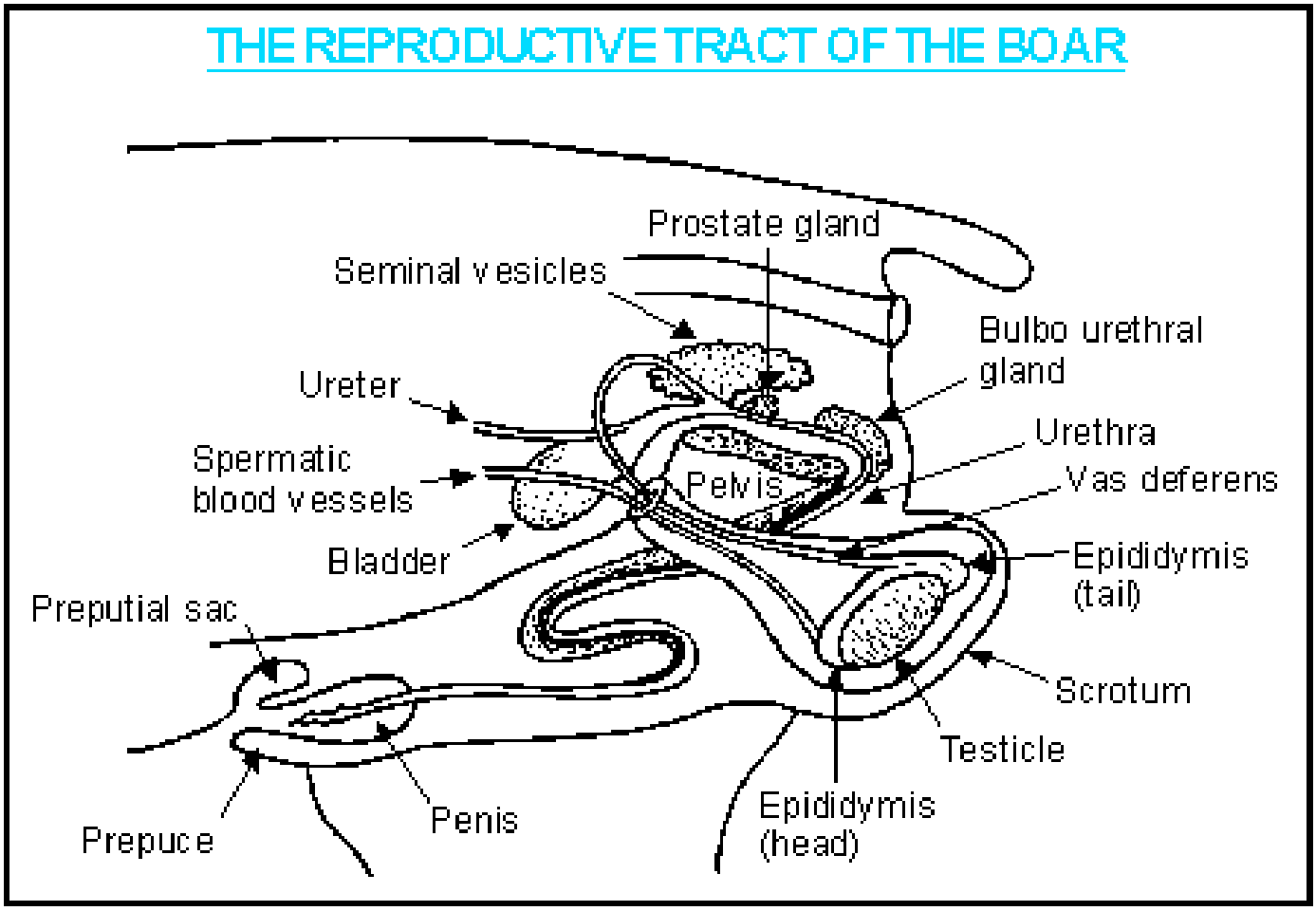


(Fig.1-5)

Photos of reproductive systems from https://www.thepigsite.com/anatomy-and-physiology/reproductive-system

The Sow:

- The **ovaries** produce eggs or ovum as well as hormones essential for reproduction.
- The **oviducts** are the funnel-shaped tubes where fertilization will occur if both an egg and viable sperm are present at the same time.
- There are two **uterine horns**. Each is 2-3 feet in length in the non-pregnant sow. They act as a passageway for sperm to reach the oviduct and are the site of fetal development.
- The **cervix**'s thick walls and opening to the uterus relax only to create a passageway for sperm to enter and for the piglets to travel through during birth. The cervix remains tightly closed during pregnancy.
- The **vagina** is the passageway that connects the cervix to the outer opening of the reproductive tract called the **vulva**.
- Two of the essential organs for reproduction are located in the animal's brain – the hypothalamus and the pituitary gland.



(Fig.1-6)

The Boar:

- The **scrotum** provides protection to the testicles and also helps to regulate the temperature for optimum sperm development.
- The two **testes** produce sperm, as well as the hormone that gives the mature male his masculine characteristics and appearance.
- The **epididymis** stores viable sperm and carries it from the testicles to the **vas deferens**. The vas deferens unite into a single tube that is called the urethra.
- The **urethra** contains the **accessory glands** that secrete fluids that add volume to the sperm, activate them to be mobile as well as flush and cleanse the reproductive tract.
- The semen travels out of the body through the **penis**.

DID YOU KNOW?

The tip of a boar penis is shaped like a corkscrew?

Breeding

For breeding to occur, the sow or gilt must be "in heat" or in estrus.

Estrus, or standing heat, is the time period when a sow or gilt will accept mounting of the male. The best way to detect standing heat is to observe cycling females for changes in their behaviour.

Females should be checked twice a day where possible, once daily if not. Observe them 2-3 times a day, without disrupting their normal behaviour, for approximately 30 minutes.

The following are signs she is in heat:

- Stands to be mounted if a boar is present
- Vulva is swollen, and bright red in color
- Mounting other females
- Ears are erect in breeds such as the Yorkshire
- Will stand when pressure is placed on the back by a handler
- Different grunt

DID YOU KNOW?

Pigs are pregnant for 3 months, 3 weeks and 3 days (approx. 115 days).

Estrus or heat detection is of utmost importance for successful breeding management. This is due to the fact that ovulation occurs not long after the beginning of a period of estrus or standing heat, and is the optimal time for natural service or artificial insemination to occur for successful fertilization. Estrus lasts 36-48 hours for gilts and 48 – 72 hours for sows.

An estrous cycle is a series of changes in a mature female animal's reproductive system that happen in response to hormonal and physiological changes also happening in the animal's body. The length of the cycle is measured as the time between two consecutive estrus or heat periods. The average length of a cycle for a sow is 21 days, but a cycle that lasts between 18 to 24 days is still considered normal.

The beginning of the cycle is signaled by the mature female showing signs of being in estrus, or standing heat. The sow usually comes back into heat within a week following weaning.

A second breeding should take place 12 to 24 hours after the first breeding to increase the chances of a successful breeding.

If the animal was bred, and fertilization did occur:

- The hormone progesterone will prepare the uterus for pregnancy and the animal will produce chemical signals for the animal's body not to return to estrus.

If the animal was not bred, and fertilization did not occur:

- The hormone prostaglandin will be produced and bring the animal back into estrus or standing heat in the next two to three weeks, when the cycle will begin again.

The estrous cycle will repeat over and over until the sexually mature female animal becomes pregnant.

Natural or Artificial Insemination (AI)

Experience It!

Have a rep from an AI company speak at a meeting.

Breeding occurs in 2 ways – natural or artificial insemination.

With natural breeding, a boar is introduced to a female or group of females that are in estrus and allowed to mount and breed. He should be removed once breeding is completed to avoid injury to the females. Boars should be limited to the number of females in a group to avoid undue stress on him. The ratio is roughly 1 boar to 20 females. Too many females can cause the boar to miss some that are cycling at the same time or cause him to lose condition from trying to service the females. Can you see any issues with this method of breeding? (injury to boar, sow or gilt, transmission of disease, adequate housing to keep them separate, costs of keeping him, etc.)

Most commercial swine farms breed their females using Artificial insemination (AI). Artificial insemination is the collection of semen from a boar that is then inserted into the reproductive organs of the female when she is in estrus.

There are many advantages to using AI on farm:

- Access to a larger genetic pool if purchasing semen from a genetics company
- Reduced exposure to disease
- Safer – farms don't have to keep multiple boars on-farm. Boars can be dangerous to handle
- Less stress on the sow
- Sperm is tested for quality and quantity

How Is Semen Collected From Boars?

Once boars have reached sexual maturity at 6-7 months of age, they are trained to use a mounting dummy where collection is conducted. The semen is then mixed with an extender that dilutes the sample, allowing more sows to be bred from one collection and preserves the sample for up to 14 days post-collection. The semen is tested for motility (the ability of sperm to move efficiently), morphology (shape of the sperm) and concentration of sperm cells.

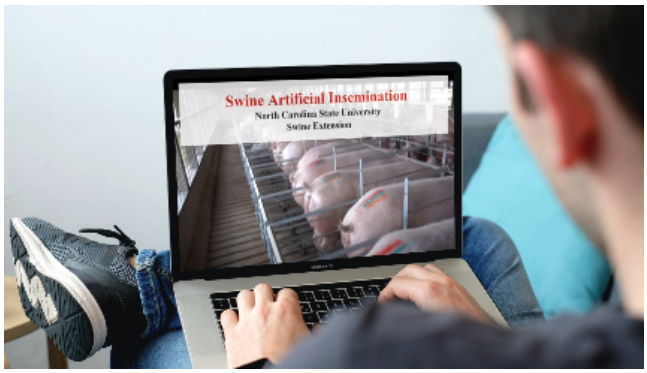
BoarMatic Collection System

Semen should be stored between 15 and 18oC, including while in transport from the AI company. Failure to store and handle the semen correctly can significantly reduce the chances your sow will get bred. Ordering and delivery of semen should be done to closely coincide with estrus. Semen can be prepared and frozen for later use but studies have shown it isn't as viable as fresh semen, has lower conception rates and isn't used on the majority of farms.

How To Do AI Breeding?

Most pig farms have trained staff to do their own artificial insemination. Why do you think this is? (cost, biosecurity, timing, etc.)

Watch the following video for a demonstration on AI breeding from North Carolina State: https://www.youtube.com/watch?v=yjY0gl1KUvo



Boar Selection

If you decide to breed via AI, there are a number of companies in Ontario that sell semen from a wide variety of boars. Producers have access to selected sires for breeding herds or pooled semen for commercial herds. When looking at boar profiles, you will see a reference to EBV's.

What Is An EBV?

An Estimated Breeding Value (EBV) is the estimation of the genetic value of an animal. In other words, they are a numerical way to determine if that pig is going to produce off-spring with traits better or worse than the group that animal is compared with. Individuals with a higher value for a given trait have a higher probability of producing off-spring with that trait. EBV takes into account the heritability of the trait, the genetic level of the herd the pig was from, genetic trends in the breed, the amount of information available for the boar and sow and non-genetic factors such as herd management. They are based not only on the animal being assessed but the performance of any known related animals. They are expressed in the same units as they are measured in.

EBV's are available for a number of traits that are found in the animal. All of the numbers together help the producers and AI units select the best quality animals for their breeding program.
The traits are:

- Backfat measurement (mm)
- Days to 100kg of weight
- Lean Depth (mm)
- Loin eye area on measurement (cm2)
- Lean Yield (% of yield)
- Feed conversion (kg of feed/kg of weight gain)
- Total born (pigs per litter)
- Farrowing interval (day)
- Number of piglets weaned (piglets/litter)
- Number of functional teats (number of teats)

Check It Out!

For more information on EBVS's go to Canadian Centre for Swine Improvement at www.ccsi.ca

The way these numbers are assessed can also vary depending on whether they are part of the Sire Line Index (SLI) or Dam Line Index (DLI). The SLI was designed to maximize economic returns to farmers who are selecting for leaner, faster growing pigs. It is based on several EBV's such as growth, feed efficiency and carcass composition. The DLI places emphasis on sow productivity traits while still including growth and carcass traits.

Have a look at the EBV's on Boar CROD 4505G.
Name: AGC 4505G
Birth Date: May-08-2019
CLRC Registration: 2986026

Performance Record	
Age Adjusted to 100 kg	144 days
Fat Adjusted to 100 kg	8.5 mm
Estimated Loin Eye Area	42.0 cm^2
Estimated Lean Yield	64.6%
	EBVs Adjusted to 100kg
Sire Line Index	156 pts
Lean Yield	0.99%
Loin Eye Area	-0.26 sq cm
Backfat	-2.40 mm
Lean Depth	-2.42 mm
Age	-12.5 days
Feed Conversion	-0.177 kg/kg

This boar is of a terminal line that should produce piglets that reach 100kg in less time than others on less feed, producing less back fat but with a smaller loin eye area.

How do I use EBV's?

Before selecting a boar, determine whether are you breeding that sow to produce market hogs or replacement gilts. Then you need to assess your sow to determine what traits need to be improved on, what any contracts may require and what you need to do to improve her offspring. If raising market hogs, you will likely be looking at boars with a high sire line index that will produce a hog that meets the market demand. If your goal is replacement gilts, you would look for a boar the ranks higher in maternal traits.

Confirming Pregnancy

- If possible, walk your boar past the group of gilts or sows 3 weeks after being bred. If a sow shows significant interest in the boar and stands still when pressure is applied to her lower back, she is likely not pregnant.
- If not possible to use a boar, watch for mounting behaviour (riding), a swollen/engorged vulva, and/or clear vaginal discharge.
- Ultrasounds to confirm pregnancy can be performed as early as 25-28 days after breeding

Gestation Issues

- Infections - typically result in a thick, white vaginal discharge. Treatment will be required. Contact your veterinarian. Sow/gilt most likely not pregnant.
- Abortions – often have unknown reasons for occurring. Record when they occur, consult your veterinarian if you experience multiple abortions.

Farrowing

Proper planning and being prepared are key to a successful farrowing.

Farrowing Preparation

- Thoroughly wash, disinfect, and dry farrowing area
- Check to make sure everything is in good condition
- Provide adequate bedding material in pens
- Move sows into the farrowing area approximately one week prior to their estimated farrowing date. Sows need to acclimatize to their surroundings prior to farrowing.
- Keep the farrowing area clean and remove manure daily.
- Check additional heat sources (heat lamps, heat pads)
- Ensure the room is warm, dry and draft free with adequate ventilation

Farrowing Supplies

In some cases, you will be required to assist in the farrowing process.
To do so effectively without compromising the health of the sow and piglets, specific supplies will be required:

- Obstetric gloves (large animal)
- Lubricant
- Bucket and access to clean, warm water
- Soap
- Disinfectant (e.g. iodine)
- Clean towels
- Pharmaceuticals as recommended by your veterinarian.

What To Expect When She's Expecting

- Restlessness
- Nesting behaviour
- Sows/gilts can lose their appetite close to farrowing.
- Respiratory rate increases
- Mammary glands develop
- Vulva swells
- Farrowing takes approximately one to six hours. Gilts tend to take longer to farrow than sows.
- Piglets should be born approximately 15–20 minutes apart, head or feet first.
- Afterbirth typically appears after the last piglet.

Farrowing Complications

Identifying complications early can mean the difference between life and death for the piglets or sow. Check sows every 30 minutes once farrowing starts or, even better, monitor them throughout farrowing and consult your veterinarian for assistance if difficulties arise.

Signs of issues:

- Gestation lasts more than 120 days
- Blood tinged fluid and meconium are discharged with no signs of straining
- Interval between piglets lasts more than half an hour
- Foul discharge
- Straining with a failure to deliver
- Weakness in the piglets
- Reddening of the sows eyes
- Extreme exhaustion of the sow

Common Farrowing Problems

- Very large litter and the uterus is unable to contract
- Large piglets, small pelvis
- Sick or poor condition sow
- Dead or mummified piglets in the womb
- More than one piglet trying to come at the same time
- Distressed sow
- Vaginal, uterine or bladder prolapse

Post-farrowing Sow Checklist

- Feed
  - Provide fresh feed shortly after farrowing.
  - Remove spoiled or stale feed.
  - Sows/gilts should begin eating within one day of farrowing.
  - Feed intake is crucial during lactation for adequate milk production, while not losing body condition.
  - Sows that lose excessive body condition may have difficulty rebreeding in a timely manner and should have piglets weaned early to prevent further health issues.
  - Provide clean, fresh water at all times. If provided in a bowl or tub that the piglets access, make sure to manage the water depth to avoid drowning
- Piglet Care
  - Monitor temperature under heat lamp or on heat pad - ensure piglets do not get too hot or cold. Newborn piglets prefer a temperature of 35°C (the sow prefers it around 18°C).
  - Dry off newborn piglets with a CLEAN towel.

- If not breathing – try sticking clean straw up a nostril
- Assist piglets by moving them to the udder, ensuring they receive colostrum and start suckling immediately.
- Move shivering piglets under the heat lamp.
- Sows with piglets can be aggressive and unpredictable - ensure it is safe to handle the piglets.
- Provide clean, fresh water at all times. If provided in a bowl or tub that the piglets access, make sure to manage the water depth to prevent drowning.

Week One Piglet Care

- All piglets MUST have an iron injection before four days of age
- Iron can be administered orally or via injection in the neck.
- The earlier you can castrate piglets after the farrowing, the less stressful it is to piglet (e.g. 2 to 3 days of age).
  - Castration performed at any age requires pain control medication
  - Castration after 10 days of age requires anesthetic (numbing or sensation removal) and analgesic (pain control).
  - A scalpel is the preferred instrument to perform castration.

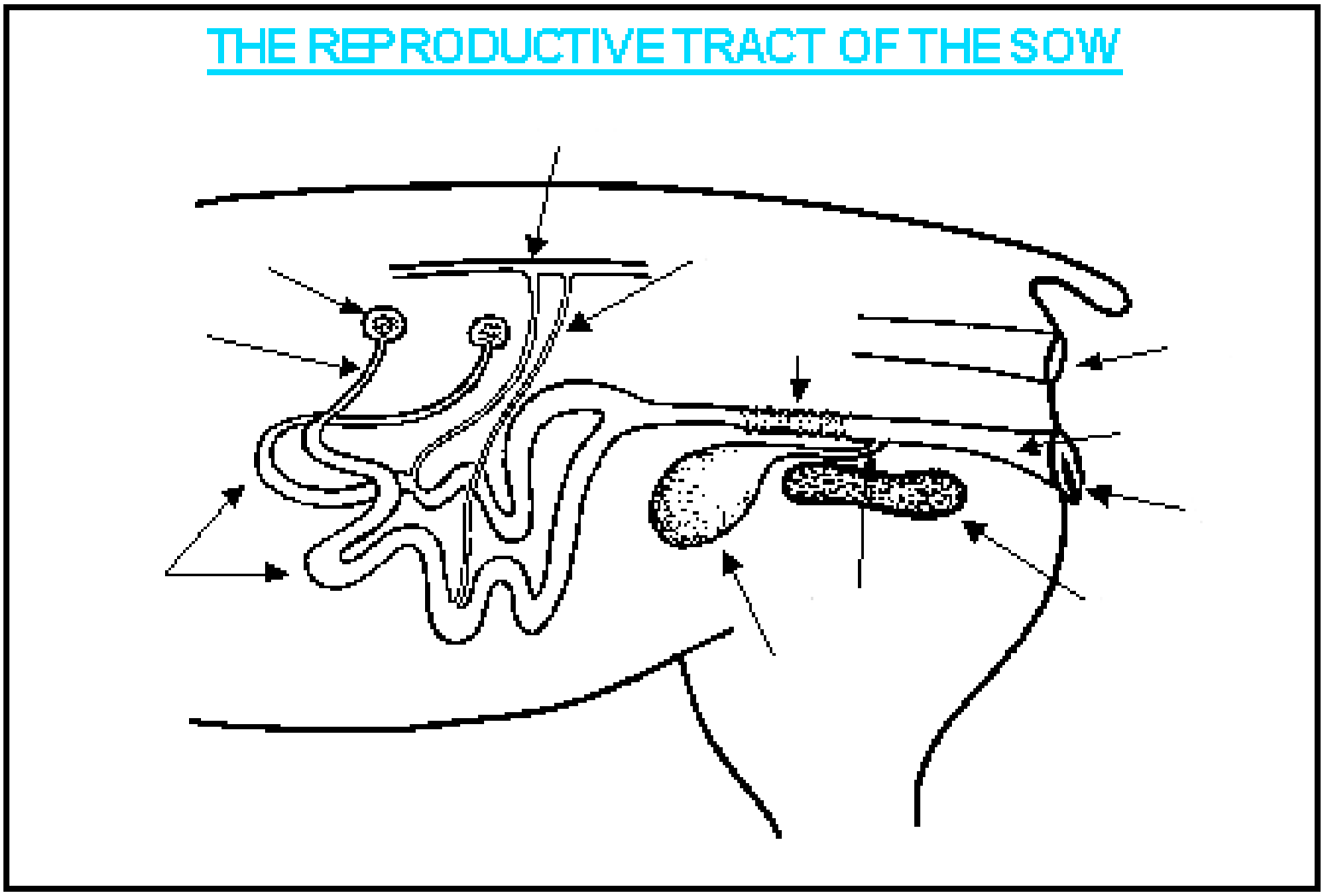
JUDGE IT!

Judge a class of gilts or market hogs.

Activity #1 - Mature Sow Reproductive System - Anatomy

Do	Time: 15 minutes **Materials:** • Mature Female Reproductive System - Anatomy worksheet • Writing utensil **Instructions:** 1. Give each member a Mature Sow Reproductive System - Anatomy worksheet 2. Explain the worksheet and have members label the diagram to identify the parts of the female reproductive system. 3. Review the worksheet and discuss what each part of the reproductive system does
Reflect	**Learning Outcomes:** To be able to identify all parts of the female pig reproductive system. This will allow members to better understand female reproduction as they progress in their knowledge of swine management
Apply	**Discuss The Following Prompts As a Group:** • Why is it important to be able to identify the parts of the reproductive system of the female pig? • How do parts of the reproductive system work with each other? • Was it easy or hard to fill out the worksheet?

Mature Sow Reproductive System - Anatomy Work Sheet

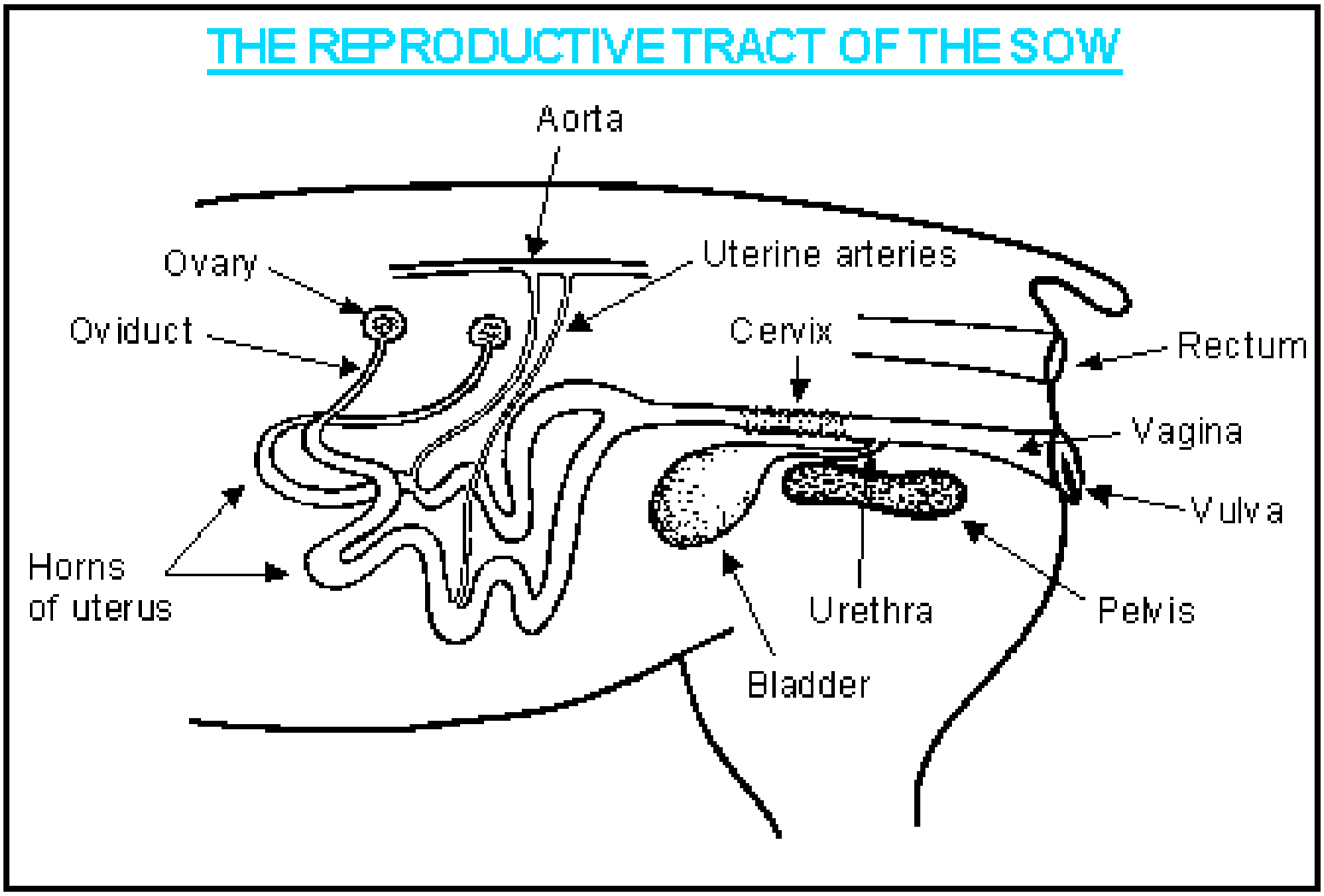


(Fig.1-5)

Word Bank

Aorta
Uterine Arteries
Cervix
Bladder
Pelvis
Vulva
Vagina
Rectum
Ovary
Oviduct
Horns of uterus
Urethra

Mature Sow Reproductive System - Anatomy Work Sheet
ANSWER KEY

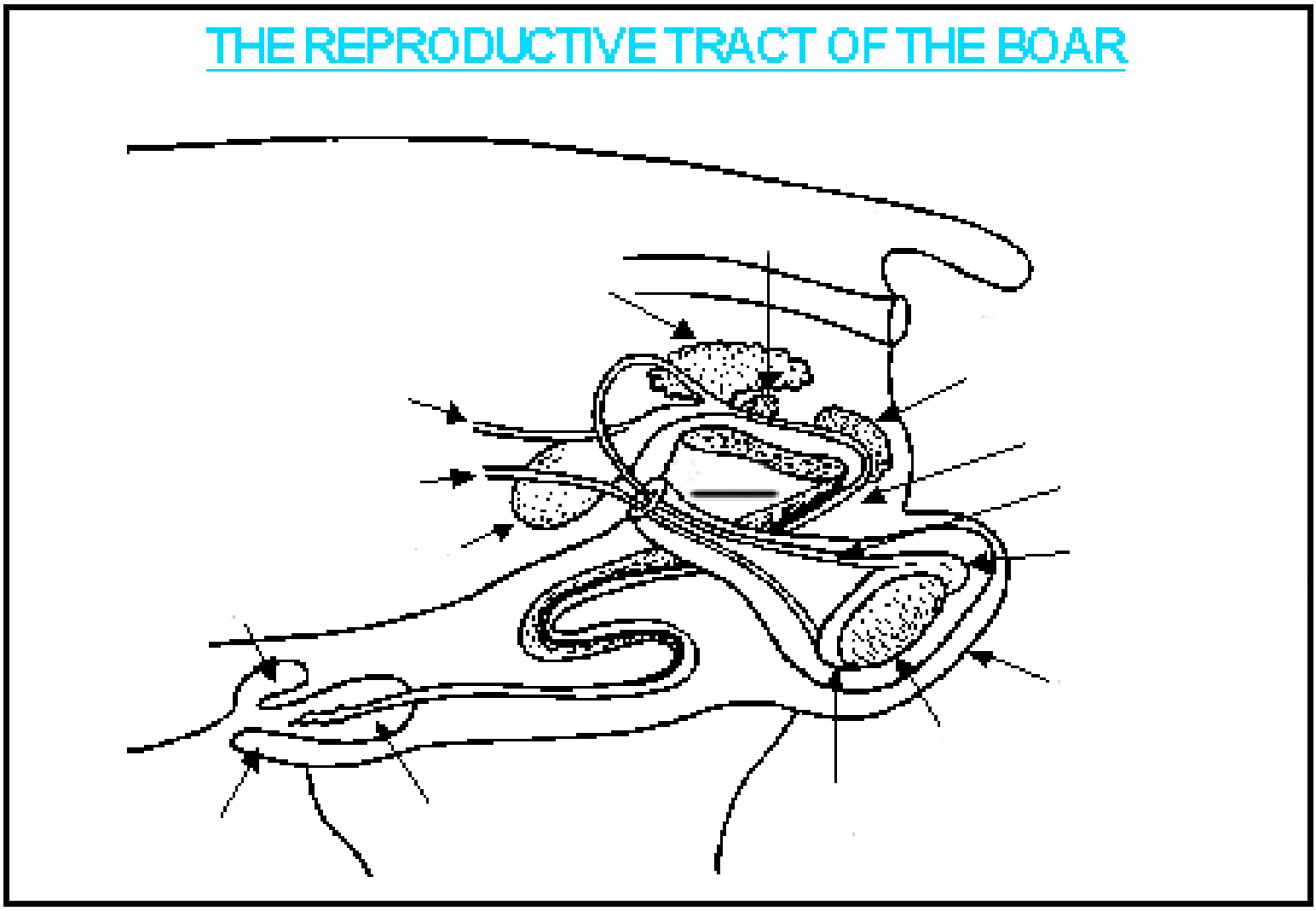


(Fig.1-5)

Activity #2 - Mature Boar Reproductive System - Anatomy

Do	Time: 15 minutes **Materials:** • Mature Boar Reproductive System - Anatomy worksheet • Writing utensil **Instructions:** 1. Give each member a Mature Boar Reproductive System - Anatomy worksheet 2. Explain the worksheet and have members label the diagram to identify the parts of the male reproductive system. 3. Review the worksheet and discuss what each part of the reproductive system does
Reflect	**Learning Outcomes:** To be able to identify all parts of the male pig reproductive system. This will allow members to better understand male reproduction as they progress in their knowledge of swine management
Apply	**Discuss The Following Prompts As a Group:** • Why is it important to be able to identify the parts of the reproductive system of the male pig? • How do parts of the reproductive system work with each other? • Was it easy or hard to fill out the worksheet?

Mature Boar Reproductive System - Anatomy Work Sheet

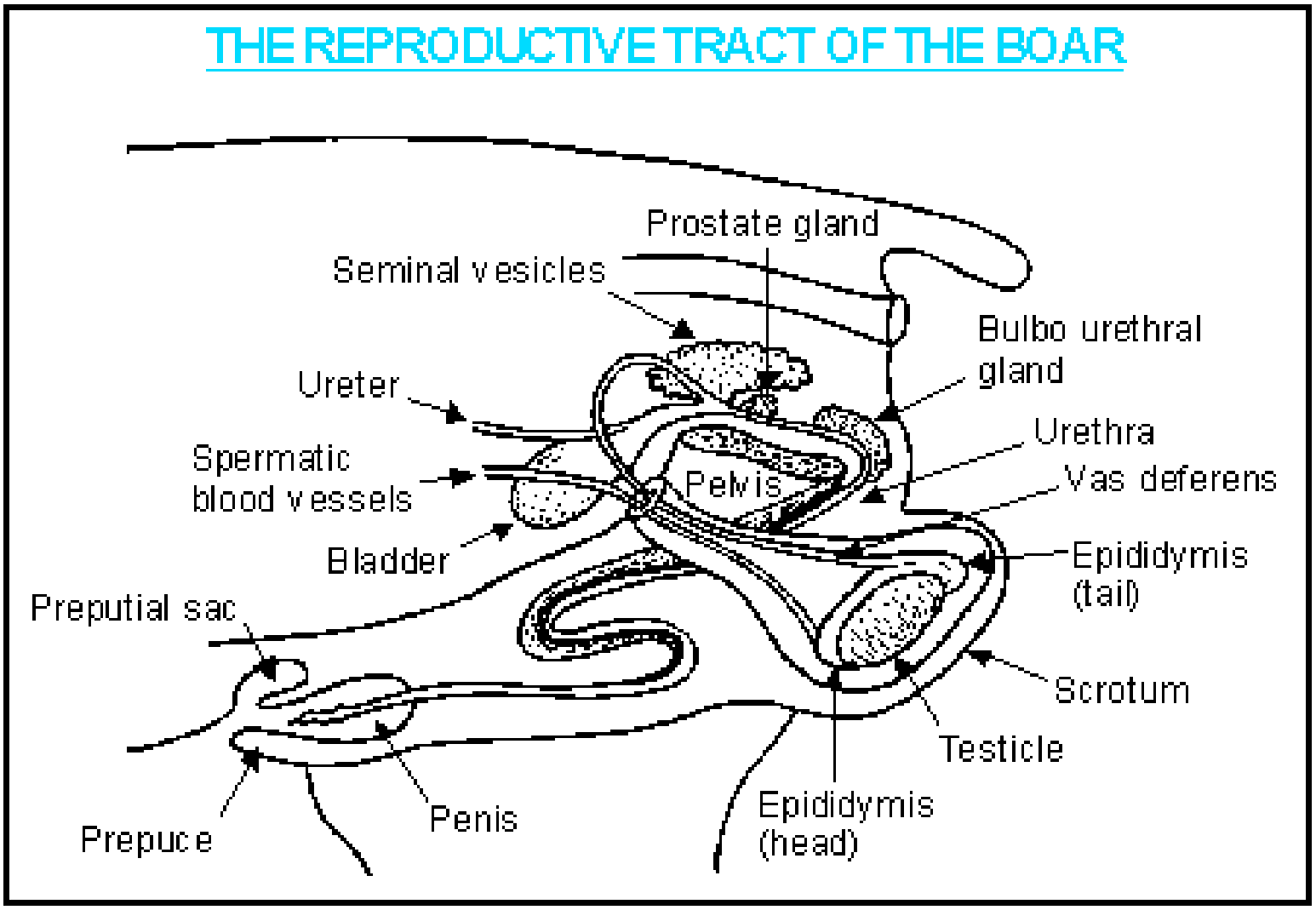


(Fig.1-6)

Word Bank

Prostate gland
Seminal vesicles
Ureter
Spermatic blood vessels
Bladder
Pelvis
Preputial sac
Prepuce
Penis
Epididymis (head)
Testicle
Scrotum
Epididymis (tail)
Vas deferens
Urethra
Bulbo urethral

Mature Boar Reproductive System - Anatomy Work Sheet
ANSWER KEY



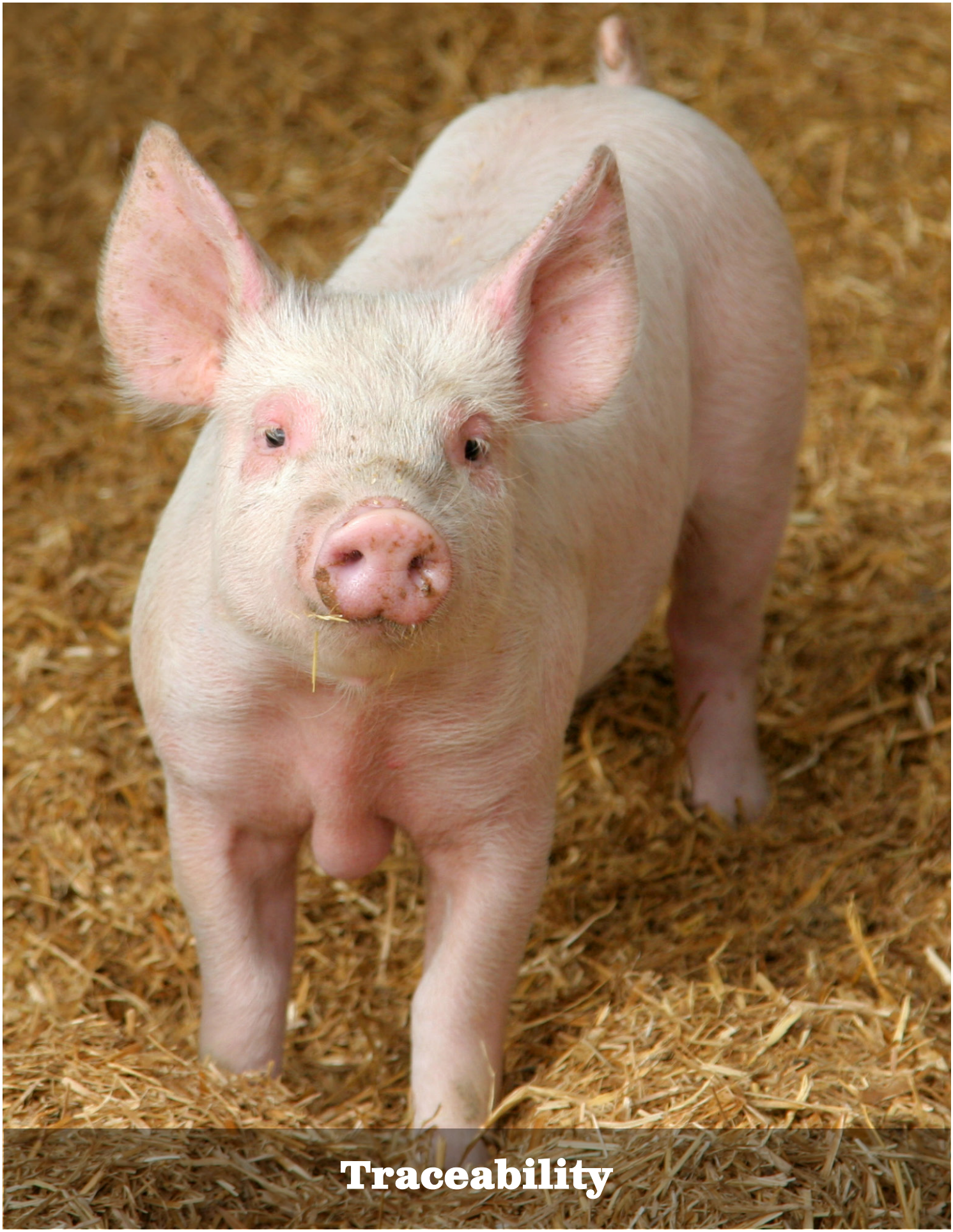
(Fig.1-6)

At Home Activity

Check out AI Companies and find boars to breed with your own sows. Determine if you are breeding for replacement gilts or market hogs and assess your sows as best you can. Then search out boars that would complement the sow or sows.

Digging Deeper - For Senior Members

Research what the term “heritability” means and compose a list of highly heritable traits and low heritability traits. Realize that selecting for some traits may be counterproductive, meaning by choosing some traits you sacrifice others. This is sometimes referred to a “negative correlation” between traits.



Traceability

Meeting 8 – Traceability

Setting Objectives:

Agriculture is a global industry and with that comes the chance for animal diseases to spread quicker and to locations where the disease has not been seen before. Traceability systems need to be in place to be able to quickly contain disease outbreaks to ensure the health of our Canadian food system.

Suggested Learning Outcomes:

- To understand what RFID tags are and their importance
- To be able to know how to properly apply tags in the ear of pigs and/or tattoo pigs
- To understand what Premise ID (PID) is and how this affects those in the swine industry
- To learn the procedure and importance of proper pig movement reporting

Suggested Roll Call Questions:

- Why do we need a traceability system in Canada?
- What do you know about traceability in swine?
- Name an acceptable method of identifying pigs in Canada.
- Does your family's farm have a PigTrace account? If so, who does the reporting on your farm to Ontario Pork and how do they report it (online, phone, fax, etc.)?

SAMPLE MEETING AGENDA Time: 1 hours 50 minutes plus activities

Welcome, Call To Order, Pledge		10 minutes
Roll Call		5 minutes
Parliamentary Procedure	Minutes And Business	10 minutes
Topic Information, Discussion	Topic Information • Why Traceability? • Premise Identification • Traceability in the Canadian Pork Industry • Tips for Making Sure Ear Tags Stay in Place • Reporting Animal Movement **Activity #1** History of Traceability Of Pigs In Canada	70 minutes + activities
At Home Activities	• Traceability on Your Farm • Cost of Ear Tags	5 minutes
Wrap Up, Social Time And Adjournment		10 minutes

Why Traceability?

Traceability is the ability of the livestock industry to track the movement of animals from their place of origin and throughout their lives. It includes all movement to and from the farm.

Traceability in Canada is regulated under the Health of Animals Act and is enforced by the Canadian Food Identification Agency (CFIA). As of early 2022, cattle, bison, sheep and pigs are the only livestock in Canada mandated under this identification program.

The program was created to allow the industry to:

- Identifying a specific animal or herd (if using a herd mark tag or tattoo)
- Identifying premises with livestock
- Track movement of animals on and off the farm

Identification of pigs is done by using an ear tag with a 15-digit number or a five-digit herd number or a 5-digit herd tattoo. Any animal being shipped from Ontario will end in a 5 or 7.

Premise Identification

Premises (farms) in Ontario are registered through the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA). A premises identification number (PID) is a unique number assigned to a parcel of land where animals may be located.

The purpose of the program is:

- Protect animal health
- Protect public health
- Protect food safety

DID YOU KNOW?

Want to learn more about what PigTrace is? Check out Ontario Pork's PigTrace Program Fact Sheet! http://bit.ly/3SmgORA

Tracking animals and premises in the event of an emergency or outbreak situation can reduce the economic, environmental and social impacts of disease outbreaks, food safety issues and natural disasters. In the event of a food safety issue or animal disease outbreak, traceability gives animal health officials and food safety officials the ability to quickly and effectively contain and deal with the situation because they already have a record of where the animals are located.

Traceability In The Canadian Pork Industry

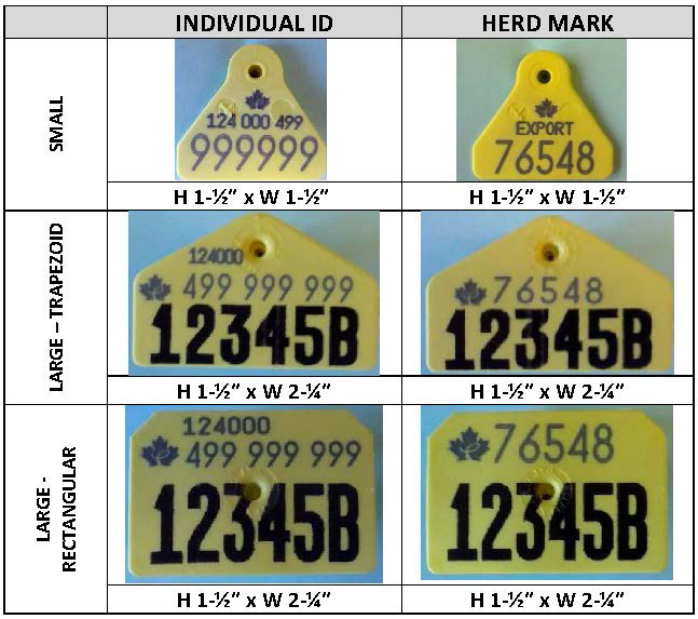
Traceability also gives the Canadian pork industry a competitive advantage over many other countries by ensuring a thorough understanding of the movement of our pigs and assuring buyers that the meat is easily traced and safe. Identifying and possibly containing disease or food safety issues to a region or even a farm can reduce the likelihood that market disruptions will occur. Being able to track our animals and quickly determine where outbreaks occur, means we are less likely to see a complete shutdown of all of our processors because officials can track those animals from the farm to the processing plant. Canada is a world leader in traceability and one of a handful of countries in the world that has a national program. The program is similar to bar codes on items you buy in the store.

In addition to tracking pigs, the use of individual ear tags with RFID technology, can allow pigs to be fed and managed individually rather than as a group, as discussed in Feeding.

In Canada, pigs are tracked through an on-line database program called **PigTrace**, administered by the Canadian Pork Council. In Ontario, the program is coordinated by Ontario Pork. Commercial and small-scale producers register directly with Ontario Pork and can even purchase their tags from them. The program is mandatory under the Health of Animals Regulations and failure to register and comply with PigTrace could lead to significant fines.

To find out the latest about the PigTrace program visit Canada Pork Council at https://www.cpc-ccp.com/traceability and Ontario Pork at https://www.ontariopork.on.ca/Producers/PigTrace

All producers must create a PigTrace account. Once registered, purchased tags and herd marks are assigned to a farmer. Any movement must be reported via the site. If producers are unable to report animal movement on-line, forms can be emailed, faxed, or mailed to Ontario Pork or can be reported via phone.



Tips for Making Sure Tags Stay In Place

- Properly restrain the animal so it cannot move its head while you are applying the tag.
- Use the recommended tag applicator and pin for the specific tag type and brand and follow the manufacturer's directions.
- Make sure the tags and applicators are clean.
- Wipe clean and disinfect both sides of the animal's ear before applying the tag.
- Apply antiseptic to tags and tag applicator between tagging different animals. This will help to control infection.
- Do not apply a new tag in a hole from a previous tag.
- If possible, tag animals in moderate temperatures.
- When applying a tag, ensure the male portion of the tag is on the back of the animal's ear.
- Store tags correctly, out of direct sunlight.

When And How Do Pigs Need To Be Identified:

Situation	Ear Tag (individual)	Ear Tag (Herd mark)	Herd Tattoo	No Tag Necessary
Pig Going To Slaughter	X *	X	X	
Pig Going To A Fair	X		(for unweaned piglets only)	
Breeding Stock	X			
Pig Going To An Auction Or Assembly Yard	X			
Farm-To-Farm (Non-Breeding Stock)				X
Deadstock Removal				X

* If pigs are not identified via herd mark or herd tattoo

Movement of animals need to be reported within seven days and must include the following information:

Reporting Animal Movement

RECORD OF LIVESTOCK MOVEMENT

ONTARIO PORK

Ontario Livestock Transporters' Alliance

SHIPPER

Name:_____ Producer #: _____

Departure Premises Identification number (PID) and name:

PID:_____ Name: _____

Address: _____

TRANSPORTER

Driver(s) Name(s): _____ Trailer province and license plate number:_____

Name and address of the transport company: _____

_____ TQA number: _____

Conveyance last cleaned: Date:_____ Time:_____ Location: _____

ANIMALS LOADED INTO THE VEHICLE (add more on second sheet if necessary)

Date and time of last access to feed, water and rest (FWR) prior to loading: Date:_____ Time:_____

Date of loading (dd/mm/yyyy): _____ Time of loading:_____ ❑ AM ❑ PM

Animal(s) description (species, age, purpose, tattoo number)	# of animals	Approx. weight

All animals have been determined to be fit for transport: ❑ YES ❑ NO Number of compromised animals loaded:_____

Compromised animal(s) description and measures taken: _____

_____

Animal(s) with special needs and measures taken:_____

_____

Area - Floor or container area available to animals (m^2 or ft^2):_____

If FWR was provided during transport: Date:_____ Time:_____ Place:_____

❑ Animals unloaded ❑ Provided on board

CONSIGNEE

Name:_____ Establishment number (Optional):

Scheduled delivery time: _____ _____

Destination Premises Identification number (PID): _____Name:_____

Address: _____

Date of unloading (dd/mm/yyyy):_____ Time of unloading:_____ ❑ AM ❑ PM

Arrival: All animals arrived in good condition ❑ YES ❑ NO If no, please complete the information below.

Description of transport related conditions and actions taken to address prior to arrival: _____

_____

Shipper Signature:_____ Transporter Signature:_____

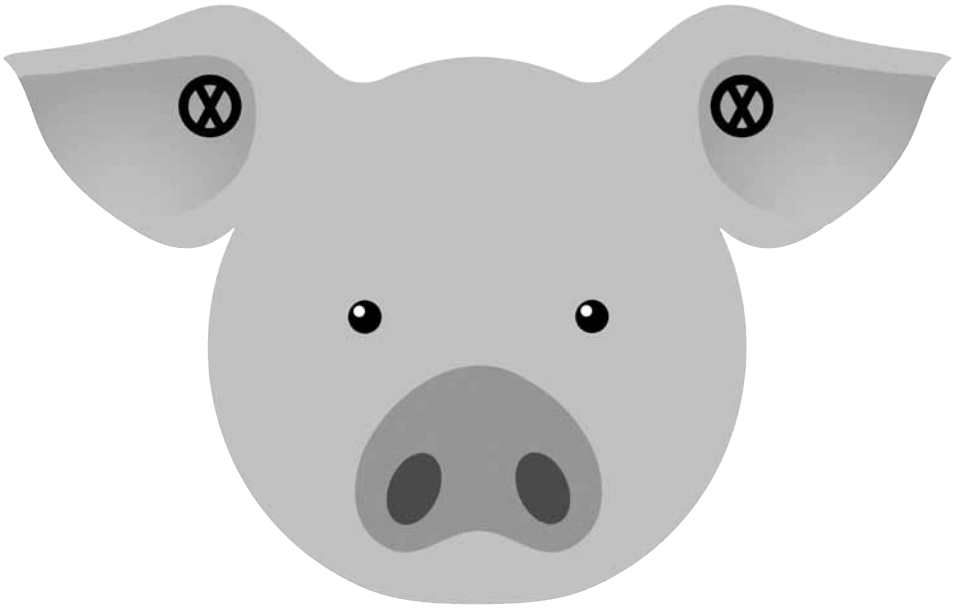
Consignee Signature:_____

The transfer of care from the transporter to the receiver occurs immediately upon acknowledgement of the shipment and the accompanying documentation by the receiver.

FOR PORK

Lot #	Yard	Trucker Number	Trucker Charge	Assembler #	Assembly Fee
☐☐☐	☐☐☐	☐☐☐☐			

WHITE COPY: TRANSPORTER **YELLOW COPY: CONSIGNEE** **PINK COPY: SHIPPER**



The national ear tag is for animal identification purposes on swine destined for auction or fairs, all bred pigs being shipped from one farm to another farm and all pigs being imported into Canada.

STEP 1: Depress spring clip and inster the female part of the tag.

STEP 2: Slip the male part completely onto the applicator pin.

STEP 3: Dip jaws of the tag applicator holding tag into antiseptic or disinfectant solution.

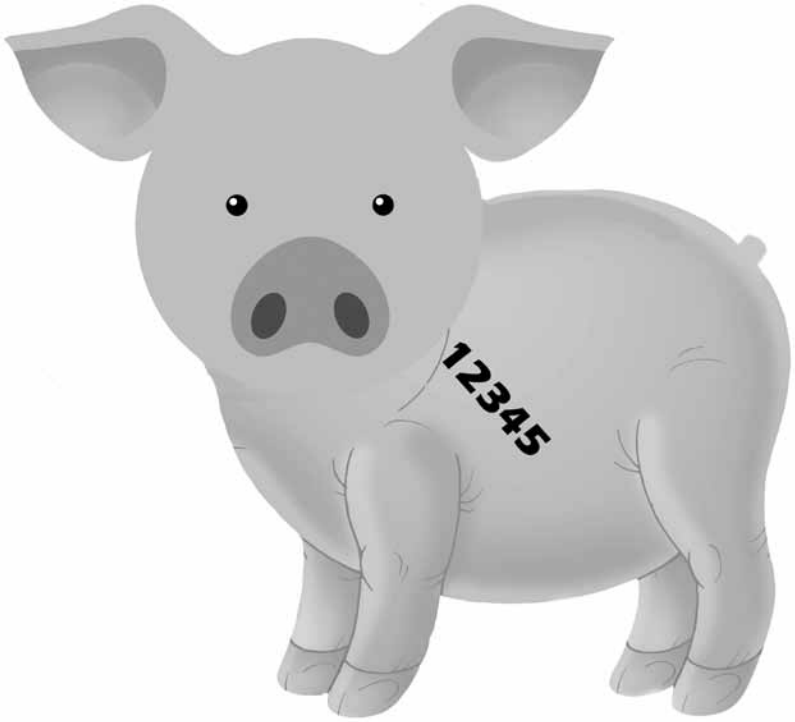
STEP 4: When the correct position is located on the ear, apply the tag firmly. The male section should always be placed on the back (outside) of the ear.

REMEMBER :

The correct position is between the two veins of the ear, near head

Apply the tag to one ear only

This project was made possible by funding from Agriculture and Agri-Food Canada



Under proposed federal traceability laws, slap tattoos will be an acceptable method of identification on hogs sent for slaughter. Please make sure that tattoos are 100% readable.

STEP 1: MATERIAL PREPARATION
- Use permanent ink (accredited by CFIA)
- Keep your hammer in good condition with clean numbers
- Never clean equipment with alcohol or gas
- Always replace broken or bent numbers

STEP 2: THE TATTOO
- Use the number(s) that are officially assigned to the premises where hogs are shipped from (contact your provincial pork organization to obtain official numbers)
- Ensure that the numbers are in the correct order
- Tattoo close to shipping time
- Aim for the shoulder
- Dip the hammer in the ink often

STEP 3: MONITORING
- Train and follow up with employees
- RECORD ALL INFORMATION AT *www.pigtrace.ca*

REMEMBER :

Proper tattooing is key to effective traceability and helps to **ensure you get paid properly for your hogs**

CFIA General Requirements Of The Program That Relate To The Swine Industry:

- The identification numbers printed on approved tags are unique and correspond to a species. It is illegal to apply approved tags meant for a given species to animals of a different species.
- Approved tags must be applied on animals at the site for which the tag identification number was issued. Producers shall not purchase approved tags for their operation then sell or give them to another operation.
- No person shall make, sell or provide a tag that so closely resembles an approved tag that it is likely to be mistaken for one.
- Tagging sites do not apply to sheep or pigs and may not be abattoirs or any site that disposes of carcasses.
- It is prohibited to send, transport or receive animals not bearing an approved tag or otherwise identified as required under the Regulations.
- With the exception of operators of abattoirs, it is prohibited for someone to remove an approved tag or an approved tag that has been revoked from an animal.
- An approved tag or an approved tag that has been revoked may be removed from a disposed carcass.
- In the event an animal loses its approved tag, the person who has care or control of the animal must replace it with another approved tag and record the new and, if known, the former identification of the approved tags.
- In the event a new approved tag is applied to an animal or a carcass bearing a revoked tag, the identification number of the new tag and of the revoked tag must be reported.

Explore It!

Does your farm have a Premise ID number? If not, work with your parents/farm owner to obtain a Premise ID. If you have a Premise ID number already, make sure you know where it is stored so it can be easily accessed.

Activity #1 - History Of Traceability Of Pigs In Canada

Do	Time: 15 minutes **Materials:** • Access to the Internet - Laptops, cell phones **Instructions:** 1. Have members search through the Canadian Pork Council website to research the history of traceability in the swine industry in Canada. 2. Have members present to the group: o An interesting fact they learned o A fact they didn't know before reading the website
Reflect	**Learning Outcomes:** • To learn about the history and methodology behind Canada's traceability system for pigs. • To be able to understand the importance of a traceability system in Canada and what might happen if it's not in place. • To understand the role the Canadian Pork Council plays in Canada's swine traceability system.
Apply	**Discuss The Following Prompts As a Group:** • Were there any facts or history about Canada's Swine Traceability system that surprised you? • On a scale of 1 to 10, how important do you think Canada's traceability system is for the livestock industry? Explain your reasoning.

At Home Activity #1

Take a look at how traceability affects your farm. Do you have a system for recording tag numbers when piglets are born, or when pigs arrive on your farm? Be prepared to share your farm's system of recording at an upcoming meeting so that everyone can see that there are different ways of recording information.

At Home Activity #2

Find out what it costs to purchase one RFID tag and if there is a discount for purchasing larger quantities of tags. Additionally, find out what it costs to purchase the applicator needed for inserting the tags in the ears of pigs.

Digging Deeper - For Senior Members

In the case of a disease outbreak in Canada, what would be the course of action that would be taken? Which government agencies would be involved and what would the process be to track and try to contain the spread of the disease? Why is it important that this process happen quickly?

Are there any steps in this process that could be changed to make traceability more efficient and effective?

Transportation

Meeting 9 – Transportation

Setting Objectives:

- To understand the importance of knowing how to properly move and transport pigs.
- To understand the ramifications of not properly transporting pigs (or any other farm animal).
- To appreciate why there are requirements for the transportation of pigs.

Suggested Learning Outcomes:

- To understand the federal requirements for transporting pigs.
- To be able to identify what a compromised animal is.
- To understand what can and cannot be done in regard to transportation of compromised pigs.
- To understand what practices are acceptable for transporting pigs.

Suggested Roll Call Questions:

- Name one reason you cannot transport an animal.
- Name one practice that helps to minimize stress when loading, unloading and/or transporting pigs?
- If transporting a compromised animal that is deemed okay for transport for a short distance, what can be done to help make the animal more comfortable?

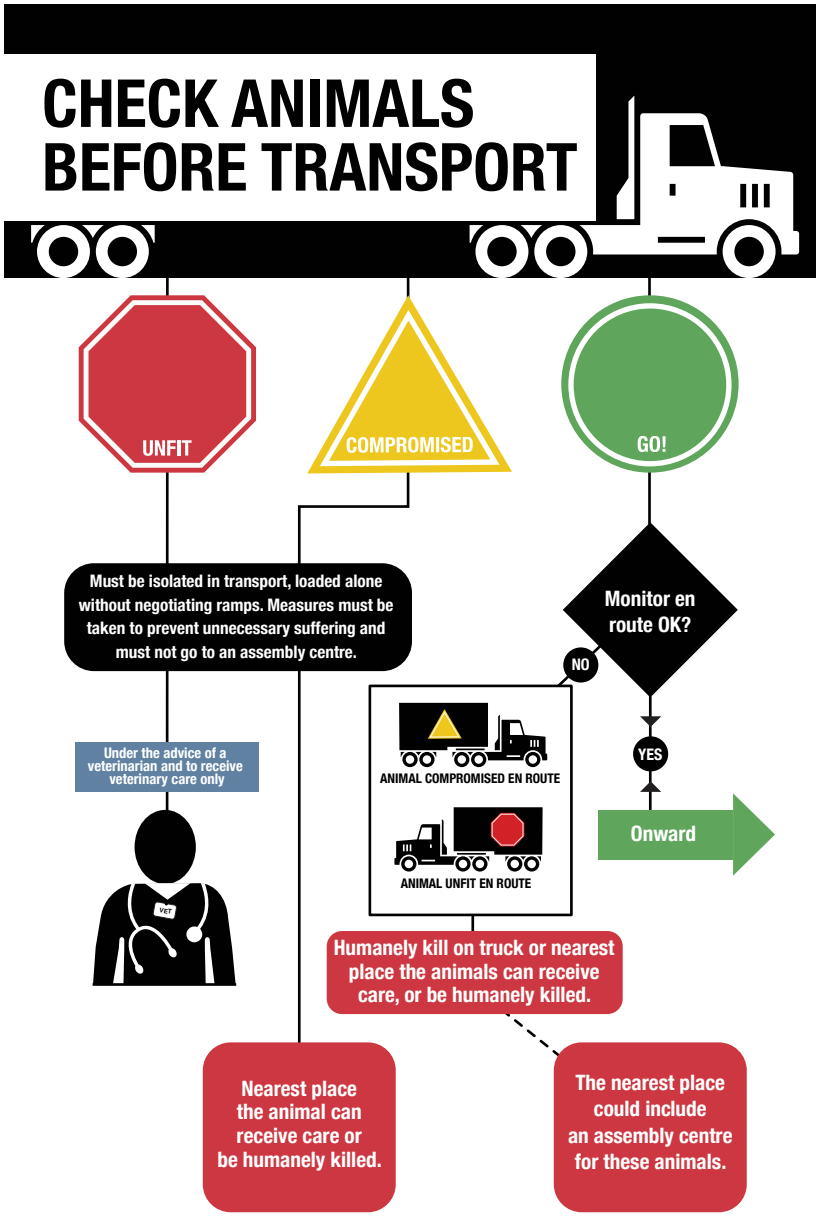
SAMPLE MEETING AGENDA Time: 1 hour 15 minutes plus activities

Welcome, Call To Order, Pledge		10 minutes
Roll Call		5 minutes
Parliamentary Procedure	Minutes And Business	10-15 minutes
Topic Information, Discussion	Topic Information • Transporting Swine • Compromised Animals • Transportation Practices	30 minutes + activities
At Home Activity	Driver License Requirements for Livestock Truckers in Ontario	10 minutes
Wrap Up, Social Time And Adjournment		10 minutes

Transporting Swine

Whether pigs are being moved from farm to farm, to fairs or to processing ensuring they are moved in a safe and humane way is essential. It can be extremely stressful due to the unfamiliar surroundings, noises, vibrations and movements, the exposure to strange humans, handling and unfamiliar animals, exposure to adverse conditions, and the lack of access to feed and water. A compromised animal can deteriorate quickly in these circumstances.

Every person responsible for transporting animals in Canada must ensure that the entire process including loading, transit and unloading, does not cause injury or undue suffering. They must assess animals for fitness, then select, prepare and load only animals that are fit for travel. They also must be familiar with, and follow, Canada's transport of animals regulations. In 2020, CFIA introduced new regulations for the transport of all livestock.



The federal requirements for animal transport are covered under the Health of Animals Regulations, Part XII (https://inspection.canada.ca/animal-health/terrestrial-animals/humane-transport/health-of-animals-regulations-part-xii/eng/1582126008181/1582126616914). These requirements are enforced by the Canadian Food Inspection Agency (CFIA) with the assistance of other federal, provincial and territorial authorities.

These federal requirements regulate the transport of pets, livestock, and exotic animals by all modes of transport - land, air and sea. Some provinces also have additional regulations related to animal transport.

Federal requirements for transporting livestock define:
- The conditions under which an animal is considered unfit for travel
- The transportation practices to be used during loading, transit and unloading

It is the responsibility of both the transporter and any person having livestock transported to ensure all animals being shipped are fit for the trip. This should be done by someone familiar with the animals or a veterinarian.

CFIA describes Fit to Travel as:
Animals are fit for transport when there are no signs of illness or poor health. This means:
- Animals are bright, alert, moving and breathing normally
- Animals are in good body condition
- Animals are able to bear weight evenly on all limbs
- No inside body parts outside
- Animals are free from signs of disease (for example, normal feces, normal breathing, normal nasal discharges, no unhealed injuries, lesions or wounds)
- Not likely to give birth during the journey or be affected by metabolic conditions associated with late pregnancy or birth

Compromised Animals

Compromised animals are already in a fragile condition and are unlikely to handle the stress of transportation very well, due to such causes as injury, fatigue, poor health, distress, or very young or old age. Depending on their condition, compromised animals fall into two categories - those that can't be transported and those that can only be transported with special provisions.

The transporter and/or the person having livestock transported must determine which category a compromised animal falls into. Never transport an animal unless you are sure it is healthy enough to handle the stress of transportation. If you are not sure, seek the advice of a veterinarian or contact the CFIA before preparing the animal for loading.

Compromised Animals: Do Not Transport

Some animals are completely unfit for transport. In this case, you must delay transport until the animal is fit for the trip if it is humane to do so (for example, when an animal has recently given birth). If delaying transport could result in undue suffering and if the animal is unlikely to get better on its own, the animal must either be treated or euthanized on site.

Some examples of conditions where animals must not be transported include (but are not limited to):
- An inability to stand without assistance or to move without being dragged or carried
- A fracture that considerably hampers mobility or is likely to cause severe pain when the animal is being loaded or transported
- Dehydration

- Exhaustion
- Shock or impending death
- A suspected or confirmed nervous system disorder
- Fever
- Uterine prolapse
- Has laboured breathing
- Has a navel with delayed healing or infection
- Has a gangrenous udder
- Has severe squamous cell carcinoma of the eye
- Is bloated to the extent that it exhibits signs of pain or weakness
- Is in the last 10% of pregnancy or has given birth during the last 48 hours
- Is a trembling pig, with difficulty breathing and discoloured skin
- Has a hernia that:
  - Impedes its movement, including when a hind limb touches the hernia as the animal is walking
  - Causes the animal to show signs of pain or suffering
  - Touches the ground when the animal is standing in its natural position or
  - Has an open wound, ulceration or obvious infection
- Shows any other signs of infirmity, illness, injury or a condition that indicates that it cannot be transported without suffering

Reach Out!

Invite the owner of a livestock transportation company or a pig trucker to a meeting to discuss their experiences and how regulations have changed and are continuing to change in regards to livestock transportation in Ontario.

Compromised Animals: Transport Only with Special Provisions

If you can take steps to prevent additional injury or undue suffering, you can move some compromised animals. Transport these animals for immediate slaughter directly to the nearest appropriate slaughter establishment, keeping transport time to a minimum. On the advice of a veterinarian, you can transport a compromised animal to a veterinary clinic for treatment or diagnosis.

Check It Out! Visit the CFIA website to make sure you have the most up-to-date information about transporting pigs.

Some examples of conditions where animals may only be transported with special provisions include (but are not limited to):

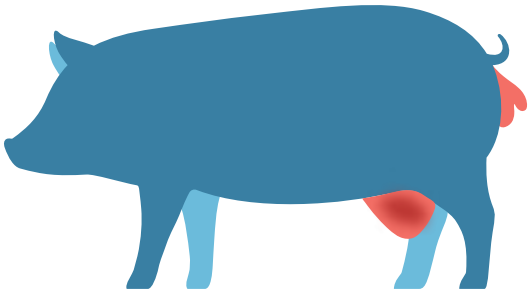
- Frostbite
- Bloat (if not weak or already down)
- Laboured breathing
- Penis injury
- Blindness in both eyes
- An amputated or missing limb
- Rectal or vaginal prolapse
- A recent operation such as dehorning or castration that has not fully healed
- A recent birth (the animal has delivered in the past 48 hours)
- An open wound with bleeding and/or exposed bone

Check It Out!

Visit the CFIA website to make sure you have the most up-to-date information about transporting pigs.

If you are not sure what special provisions to take when moving a compromised animal, always ask a veterinarian. He or she may suggest, for example:

- Emergency veterinary care prior to transport
- Providing extra bedding
- Loading the animal last and unloading it first
- Separating it from other animals in the shipment
- Transporting it with a familiar animal to help it remain calm



- is a trembling pig, with difficulty breathing and discoloured skin
- shows signs of exhaustion
- shows any other signs of infirmity, illness, injury or a condition that indicates that it cannot be transported without suffering

Compromised animals: transport only with special provisions

Compromised animals **do not handle** the stress of transportation well.

Take steps to prevent additional injury or suffering caused by transportation. Transporting a compromised animal without meeting the regulatory requirements violates *Part XII of the Health of Animals Regulations.*
For example:

- transport only short distances to get care, treatment, to be humanely killed or slaughtered
- transport to the closest slaughter facility or consider on-site humane killing
- compromised animals cannot be transported to assembly centres (for example, auction markets and assembly yards)

An animal is considered compromised if it:

- is lame other than in a way that is described in unfit
- has its mobility limited by a device, including hobbles, other than those applied for treatment
- is bloated – but is showing no signs of discomfort or weakness
- has acute frostbite
- is blind in both eyes
- is not fully healed after a procedure, including dehorning, detusking or castration
- has a deformity or fully-healed amputation without signs of pain
- has an injured penis (unhealed or acute)
- has a minor rectal or vaginal prolapse
- is/are a wet bird(s)
- is in peak lactation period and cannot be milked to prevent engorgement
- has any other signs of infirmity, illness, injury or of a condition that indicates that it has a reduced capacity to withstand transport

Transportation Practices

It is illegal to cause undue suffering to an animal at any point in the transportation process. Practices that can help protect animals during transportation include:

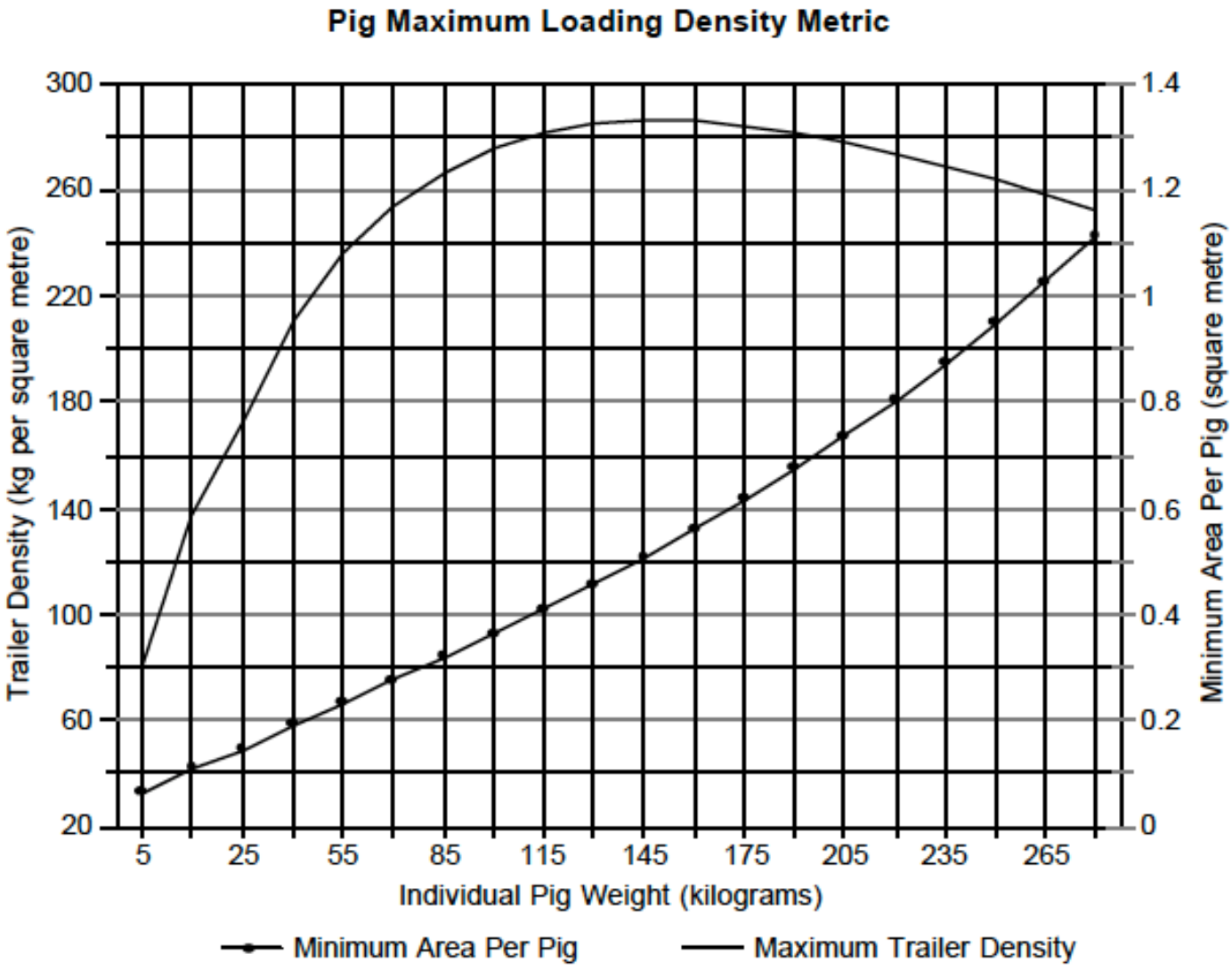
- Having the knowledge, skills and training to transport the specific species
- Having contingency plans in place to manage:
  - Unforeseen delays or circumstances
  - Animals that become compromised or unfit during transport
- Completing required records for each load of animals (date, time, when and place where animals were last fed, watered and rested, condition of animals, etc.)
- Using loading and unloading facilities as well as containers and transport vehicles suitable to the animals being loaded
- Using movement devices (e.g. pig boards, rattles, paddles, etc.) that do not frighten the animals or cause injury or undue suffering
- Providing adequate space and headroom for animals to stand in a natural position
- Providing feed, water and rest at required intervals
- Providing adequate ventilation for all animals
- Providing non-slip, textured footing surfaces suitable to the animals being transported
- Providing protection from the weather
- Providing immediate attention, including veterinary treatment at the scene if necessary. If an animal becomes unfit for transport during the trip, it must be cared for, treated or euthanized

Signs of Animal Discomfort During Transport

Problem	Warning Signs
Overcrowding	• Load will not "settle"; animals continue to scramble for footing and the load continues to be noisy for prolonged periods of time • Animals involuntarily lie down and are unable to get up
Overheating	• All species will pant when overheated, animals standing with neck extended with open mouthed breathing is a dangerous situation • Horses and cattle should remain dry during transport; wet horses which were loaded dry are probably overheating
Cold Exposure	• Animals should remain dry during transport • Swine will pile up when chilled • All species will eat available bedding when cold stressed • Discolouration of the skin of pigs, and reluctance to move or get up when stimulated

JUDGE IT!

Have four livestock trailers placed in close proximity to each other. Discuss what members should look for in a livestock trailer such as cleanliness, doors that latch, bedding, items that might injure livestock (such as sharp edges, wires) among other things. Once this criteria has been discussed, have members judge the trailers and give reasons for their placings.



Minimum space allowance for swine in transit based on average individual body weight (Metric).

The top line describes maximum trailer carrying capacity (left hand axis); minimum space per animal is the bottom line and right-hand axis. A standard 102 - inch wide trailer (8.3 feet internal width) carrying 250 pound pigs at 57 lbs/ft² would be carrying 475 pounds per running foot of deck. Reduce load by 25% in hot humid weather. Thin animals require more space than a finished animal of the same weight.

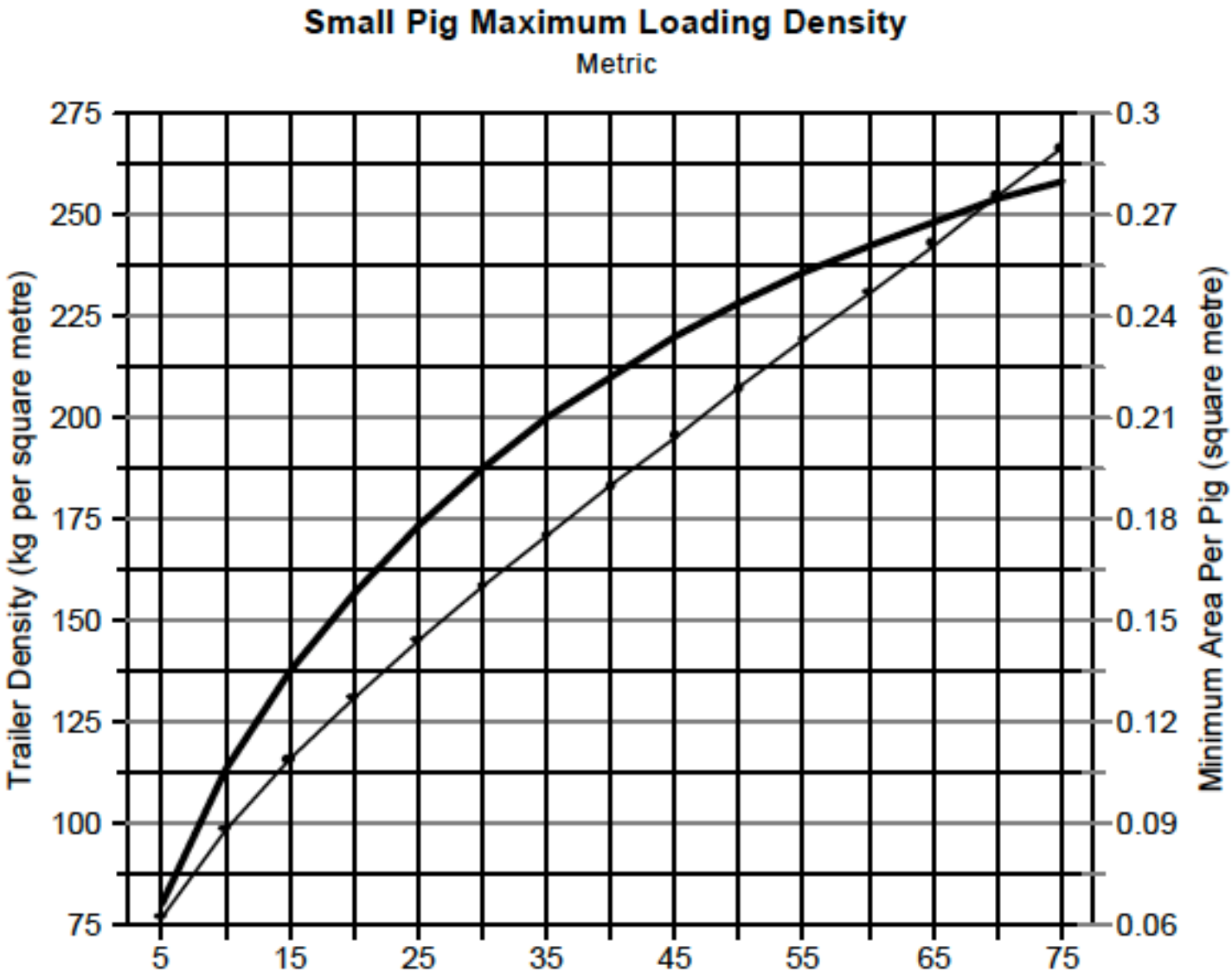


Figure 14 Minimum space allowance for young and cull swine in transit based on average individual body weight (Metric).

The top line describes maximum trailer carrying capacity (left hand axis); minimum space per animal is the bottom line and right-hand axis. A standard 102-inch wide trailer (8.3 feet internal width) carrying 50 pound pigs at 33 lbs/ft² would be carrying 275 pounds per running foot of deck. Reduce load by 25% in hot humid weather. Thin animals require more space than a finished animal of the same weight. (Codes of Practice).

Reach Out!

Invite a guest speaker from the OPP to discuss what happens when there is an emergency involving livestock while being transported.

Calculation of Maximum Pig Load Density

Minimum space per pig and reduction of compartment numbers by 25% are recommendations of the Code of Practice for the Care and Handling of Farm Animals: Transportation 2001

STEP #1:

Calculate the floor space of a compartment

A		B		C
	X		=	
Width*		Length*		Floor Space

STEP #2:

Calculate the maximum number of pigs per compartment

C		D		E
	÷		=	
Floor Space		Min. Space per pig**		Max. # of animals

INSTRUCTIONS:

A & B* – Measure inside of the trailer compartments as this is the floor space available to the pigs

C – Calculated floor space available to the pigs

D - Using the chart on the back of this page, look up the appropriate space per pig by weight

E - This is the calculated maximum number of animals per compartment during cool-cold weather. Use this value to calculate the reduced number of animals per compartment during warm-hot-humid weather.

Warm Weather (15-23^{0}C):
REDUCE compartment numbers by 10%

E		0.9	=	
	X			
Max. # of animals		to reduce by 10%		reduced max.

Hot Weather (24-28^{0}C):
REDUCE compartment numbers by 15%

E		0.85	=	
	X			
Max. # of animals		to reduce by 15%		reduced max.

Hot-Humid Weather (28-32^{0}C):
REDUCE compartment numbers by 25%

E		0.75	=	
	X			
Max. # of animals		to reduce by 25%		reduced max.

IMPORTANT NOTES:

All measurement must be consistent – imperial or metric; Code of Practice recommends no more than 30 hogs in any compartment; All calculations are rounded down, no part hogs!

Check out the Ontario Pork Load Density Calculator here: www.ontariopork.on.ca/Resources/Transportation/Calculator

RECORD OF LIVESTOCK MOVEMENT

ONTARIO PORK

Ontario Livestock Transporters' Alliance

SHIPPER

Name:_____ Producer #: _____

Departure Premises Identification number (PID) and name:

PID:_____ Name: _____

Address: _____

TRANSPORTER

Driver(s) Name(s): _____ Trailer province and license plate number:_____

Name and address of the transport company: _____

_____ TQA number: _____

Conveyance last cleaned: Date:_____ Time:_____ Location: _____

ANIMALS LOADED INTO THE VEHICLE (add more on second sheet if necessary)

Date and time of last access to feed, water and rest (FWR) prior to loading: Date:_____ Time:_____

Date of loading (dd/mm/yyyy): _____ Time of loading:_____ ❑ AM ❑ PM

Animal(s) description (species, age, purpose, tattoo number)	# of animals	Approx. weight

All animals have been determined to be fit for transport: ❑ YES ❑ NO Number of compromised animals loaded:_____

Compromised animal(s) description and measures taken: _____

_____

Animal(s) with special needs and measures taken:_____

_____

Area - Floor or container area available to animals (m^2 or ft^2):_____

If FWR was provided during transport: Date:_____ Time:_____ Place:_____

❑ Animals unloaded ❑ Provided on board

CONSIGNEE

Name:_____ Establishment number (Optional):

Scheduled delivery time: _____ _____

Destination Premises Identification number (PID): _____Name:_____

Address: _____

Date of unloading (dd/mm/yyyy):_____ Time of unloading:_____ ❑ AM ❑ PM

Arrival: All animals arrived in good condition ❑ YES ❑ NO If no, please complete the information below.

Description of transport related conditions and actions taken to address prior to arrival: _____

_____

Shipper Signature:_____ Transporter Signature:_____

Consignee Signature:_____

The transfer of care from the transporter to the receiver occurs immediately upon acknowledgement of the shipment and the accompanying documentation by the receiver.

FOR PORK

Lot #	Yard	Trucker Number	Trucker Charge	Assembler #	Assembly Fee
☐☐☐	☐☐☐	☐☐☐☐			

WHITE COPY: TRANSPORTER **YELLOW COPY: CONSIGNEE** **PINK COPY: SHIPPER**

Space Per Pig: Density Recommendations

Area Required per Pig			
Live Weight		Minimum Space	
lbs	kgs	ft^2	m^2
200	91	3.61	0.34
205	93	3.68	0.34
210	95	3.75	0.35
215	98	3.82	0.36
220	100	3.89	0.36
225	102	3.96	0.37
230	104	4.04	0.37
235	107	4.11	0.38
240	109	4.18	0.39
245	111	4.25	0.39
250	113	4.33	0.40
255	116	4.40	0.41
260	118	4.47	0.42
265	120	4.55	0.42
270	122	4.62	0.43
275	125	4.70	0.44
280	127	4.78	0.44
285	129	4.85	0.45
290	132	4.93	0.46
295	134	5.01	0.47
300	136	5.08	0.47
305	138	5.16	0.48
310	141	5.24	0.49
315	143	5.32	0.49
320	145	5.40	0.50
325	147	5.48	0.51
330	150	5.56	0.52
335	152	5.64	0.52
340	154	5.73	0.53
345	156	5.81	0.54
350	159	5.89	0.55
355	161	5.98	0.56
360	163	6.06	0.56
365	166	6.15	0.57
370	168	6.23	0.58
375	170	6.32	0.59
380	172	6.40	0.59
385	175	6.49	0.60
390	177	6.58	0.61
395	179	6.67	0.62
400	181	6.76	0.63

Note:

This chart reads horizontally. Select the live weight and read across to find the minimum space requirement in both imperial and metric.

Hot weather conditions during transport will increase the required minimum space per pig.

When temperatures increase, be sure to reduce loads by the following %:

-25%	-15%	-10%
HOT & HUMID 29-32° C	HOT 24-28°C	WARM 15-23°C

For more information on hot weather transport and our load density calculator, visit **OntarioPork.on.ca/transportation**

At Home Activity

In order to drive a livestock truck or tractor trailer, the driver must have a special license. Research and find out what kind of licensing the driver needs to be able to operate in Ontario and be prepared to share your findings at the next meeting.

Digging Deeper - For Senior Members

What happens when an accident occurs involving a truck/trailer/tractor trailer containing pigs? First responders won't necessarily have a livestock background to understand how animals will react in a stressful and possibly painful situation.

Find out what training is offered in Ontario for first responders as well as those working in the trucking industry so that everyone is prepared should an accident happen and livestock are in peril.

Digging Deeper - For Senior Members 2

There are laws for the number of consecutive hours that a truck driver can be on the road before taking a break. There are also laws for consecutive hours of travel for pig as well. Research and find out what the rules are for consecutive hours and how the industry works to conform to these rules.

Check It Out!

https://www.thepigsite.com/articles/water-sprinkling-market-pigs-in-a-stationary-trailer-1-effects-on-pig-behaviour-body-temperature-and-trailer-microclimate