



INTRODUCTION TO SMALL SCALE PIG PRODUCTION



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Congratulations on your pig purchase!

Bringing a new animal home is an exciting time! If you have never raised pigs before, you may be thinking, “What do I do with them now?” Even if this isn’t your first time raising pigs, you may have questions about feeding or management. Take some time to look through the resources and information in this package. Note that it is intended for those raising weaned pigs through growing and finishing to slaughter weight, and does not contain much detail on the management of sows, breeding or farrowing. We have included basic information on housing, management, nutrition/feeding and health, along with what you need to know for slaughter time and PigTrace, Canada’s national hog traceability program. We have also included the summary information on the requirements from the Code of Practice for the Care and Handling of Pigs developed by the National Farm Animal Care Council as well as information on biosecurity for livestock producers.

Whether you have two pigs, twenty, or two hundred, it is important for you to be aware of the management and welfare requirements of the industry, and of the traceability requirements for movement of animals and slaughter.

Enjoy your pigs!

Codes of Practice for the Care and Handling of Farm Animals

The Codes of Practice are nationally developed guidelines for the care and handling of farm animals. The Codes serve as our national understanding of animal care requirements and recommended practices and have been developed for virtually all farm animal species in Canada.

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

We encourage you to review the *Code of Practice for the Care and Handling of Pigs* (<http://www.nfacc.ca/codes-of-practice/pigs>). The document contains a significant amount of useful information. For quick reference, many of the key points are summarized in the appendices. For example, the Code requirements are summarized in appendix Q (page 65) and the floor space allowances for weaned/nursery and grower/finisher pigs are in appendices C and D (pages 49 and 50).

Information on the Codes of Practice for other farm animal species can be found at <http://www.nfacc.ca/codes-of-practice>.

Biosecurity for Small Scale Livestock Production

Biosecurity is the protection of people, animals and the environment from infectious disease, pests, and other biological threats. It refers to the proactive measures taken to exclude threats from farms that are disease free, and preventing spread of pathogens to other herds or flocks if/when a disease does occur. The ultimate goal of a good biosecurity plan is to implement easily attainable protocols that reduce problems to inexpensive and manageable occasions. The key components of any biosecurity plan are:

- 1. Fences:** Good fences keep livestock in and wildlife out. Inspect boundary fences regularly and repair as needed. Stray stock may spread disease and feral animals introduce new pathogens to your farm.
- 2. Housing, Equipment and Yard Maintenance:**
 - a. Pens should be completely emptied, cleaned and disinfected at least annually.
 - b. All equipment that comes into direct contact with livestock or poultry should be cleaned and disinfected periodically, including feeders and waterers.
 - c. If sharing equipment with other farms, be sure to disinfect the equipment before using on your farm. Use your best judgement and weigh the risks carefully.
 - d. Prevent pests and rodents by:
 - i. keeping area around pens free of debris
 - ii. cutting the grass short around pens and enclosures
 - iii. keeping feed in tightly closed containers and clean up spilled feed
 - iv. using traps and bait as necessary
 - e. Standing water should be drained.
- 3. Introducing New Stock:**
 - a. Don't bring new stock to your property if they appear unhealthy.
 - b. Avoid purchasing stock from markets and auctions.
 - c. Obtain a health certificate if possible.
 - d. Birds, eggs, and livestock should be sourced from farms with a solid herd or flock health program.

For organic production, a robust biosecurity program can prevent the need for antibiotics and parasiticides, and can reduce the potential of GMO contamination or loss of certification.

4. Quarantine:

- a. Have a quarantine area available for animals new to the farm and for sick or injured animals.
- b. The area should be a separate area or building to prevent bird-to-bird or animal-to-animal contact.
- c. Three weeks will allow time for a proper assessment of health, condition, and recuperation from transport or illness.
- d. Observe animals or birds for any abnormal behaviour, and signs/symptoms of disease. Presence of unusual behaviour or symptoms calls for veterinary inspection or tests.

5. Water and Feed:

- a. At least annually, water should be tested at source to ensure its suitability for livestock production.
- b. Design and position water bowls, troughs and waterers to prevent fecal contamination.
- c. Feed or feed ingredients should be purchased from sources that will verify its safe origin.
- d. Keep feed pest-free and dry, cover feed bins and feed systems to reduce the chance of contamination.

6. Herd or Flock Health:

- a. Contact your herd health veterinarian when livestock appear sick, mortalities are high or production drops off without apparent reason. Low numbers of mortality should be examined by a vet if the cause of death is unknown.
- b. Mortality should be disposed of in a timely manner to prevent contamination of the farm environment, reduce risk of spreading disease to other livestock and humans, and prevent attraction of pests.
- c. When animals are stressed from parasites, weather extremes, etc., natural treatments may be less effective. Monitor carefully and resort to other options as necessary. As well, remember that sick animals benefit from remedial care.
- d. Vaccinate as required (keeping the necessary records).
- e. Pay attention to parasites. Faecal egg counts are useful in determining if treatment is necessary.
- f. Keep records of treatments and veterinary care.

7. Work Flow:

- a. Farm owners and workers should have separate clothing and footwear for working around various animal species. These should be kept at the barn entrance.
- b. Use hand sanitizer or wash with soap and warm water before entering and after leaving livestock areas.
- c. Work with the youngest and most susceptible animals first.

8. Manure:

- a. Manure should be removed from the production area regularly.
- b. Farms, even hobby farms and small stables should have a manure management plan that includes collection, storage, moving and disposing of manure to minimize chance of spreading disease.
- c. Tools and equipment used for manure handling should not be used for feed or bedding.

9. Visitors/WWOOFers/Contractors:

- a. Discourage unannounced visitors.
- b. All visitors must follow biosecurity protocol.
- c. Designate a parking area for visitors.
- d. Visitors should be accompanied by farm staff.
- e. A visitor log is recommended.
- f. Post 'Biosecurity' and 'No Entry without Permission' signs on entrance doors.
- g. Keep extra footwear and outerwear (coveralls, smocks, etc.) available for visitors.

Biosecurity is not limited to large scale farms. Regardless of size or production philosophy, all farms, even hobby farms, have a responsibility to prevent an outbreak or spread of animal (or plant) disease or pests. Stay on top of industry association news and be aware of local conditions or issues as they arise. If there is a serious disease outbreak, you don't want to be the last to know!

References: The NS Poultry Emergency Response Committee, 2006

Biosecurity for Organic Livestock Producers <http://www.dpi.nsw.gov.au/factsheets>

There are National Biosecurity Standards for most livestock commodities. These guidelines are a good place to start when developing a biosecurity plan for your farm.

<http://www.inspection.gc.ca/animals/terrestrial-animals/biosecurity/eng/1299868055616/1320534707863>

PigTrace

PigTrace is an industry led, live animal traceability initiative designed to ensure protection, prosperity and peace of mind for the Canadian pork industry and its customers.

Traceability programs give animal health and food safety officials the ability to trace issues to a specific location in the case of an animal health or food safety outbreak as well as know areas where animals are located to be rescued in the event of a fire or natural disaster.



PigTrace is an industry-led, live-animal traceability program designed to manage traceability and ensure protection and prosperity of the pig industry in Canada. Nova Scotia is committed to this program and even if you only have one or two pigs for your own use, you must be a part of PigTrace. Pigs must be tagged with approved ear tags which contain both an individual identification unique to each pig and a herd identification, or have an appropriate, readable shoulder tattoo.

As well, according to the program, a location housing pigs must have a premises identification (PID). Again, this includes everything from large commercial operations to small, back-yard production. A temporary PID is issued at the time of registration with the program, and a permanent PID can be applied for with the Provincial Traceability Coordinator. The Nova Scotia Premises Identification office can be reached by phone at 902-890-9840, or by email at NSPID@novascotia.ca. More information about the Provincial traceability program and requirements can be found at <https://novascotia.ca/agri/programs-and-services/industry-protection/>.

It is a good idea to get tags in advance so that you aren't left stranded without them when it's time to take the pigs to slaughter, as provincially inspected slaughter facilities are not allowed to slaughter pigs that do not have the proper ear tag or tattoo.

All movements between premises must be reported within 7 days of transport via your account on the PigTrace website. This reporting includes transportation to a slaughter facility and removal of deadstock. More detailed information on the PigTrace program can be found at http://pigtrace.ca/wp-content/uploads/PigTrace-Program-Guide_EN.pdf.

For more information please call 902-893-7455 or visit www.porknovascotia.ca/pigtrace.

Housing and Management

Having appropriate and secure housing for pigs is very important, whether raising them in an outdoor or pasture environment, indoors, or a combination. There are a number of different housing and pen options, so it is important to figure out which one works best for your situation and the pigs. Pigs require adequate shelter that will protect them from the elements and predators. A basic shelter will be sufficient, as long as it is weatherproof and dry inside. Pigs sunburn easily, particularly the lighter skinned breeds, so if they are housed outside ensuring that they have access to shade is important. As well, winter housing is an important consideration if pigs will have access to the outside all year round. The most important thing in the winter will be to provide shelter that is not too cold, protected from the wind and will remain dry even when there has been significant snowfall. A well-constructed shed or barn can be a perfect shelter, but there are other suitable options as well. For example, large bales of straw arranged in the form of a shelter are a cost effective way to house your pigs. The bales provide thick walls, insulated against the cold and damp, and the pigs can pull bedding from the inside of the bales to maintain a comfortable pack. Just remember, in a cooler housing system pigs will be consuming additional feed to stay warm which increases the cost to raise them.

Pigs are escape artists, so when constructing enclosures (indoor and outdoor), ensure they are very solid and well built. Pigs will root at any weak spots they find, eventually causing damage and potentially working their way out. Panels or walls making up pens should be high enough that the pigs can't walk over them, but also be accessible to the herds person. A good guideline for height would be at least 90 cm. Electric fence can be an effective way to protect and keep pigs with outdoor access from escaping, although it does require a certain amount of training initially. When pigs encounter an electric fence for the first time, their instinct is to bolt forward and they end up outside of the enclosed areas. A way to avoid this would be to reinforce the presence of the electric fence by initially placing it in front of solid fencing or walls. When they encounter it and get shocked, there is something solid there to turn them around and prevent bolting forward out of the pen.

During the planning and construction/set-up phase, it would be beneficial to design a restraint area for examination or giving medication. Pigs get to be very large and are sometimes quite difficult to catch, so a simple chute to restrict movement can be very helpful. Another important area to consider would be a sick or quarantine pen. This should be easy to access and is only used when a sick pig is removed from the main pen or when adding new animals to an existing herd. It should be separate from the rest of the pigs and the pigs in this pen should not be able to contact the main herd in order to restrict the spread of disease.

Be sure to check pigs every day; keep an extra close eye on them over the first few days to make sure that they are eating, drinking, and staying within the boundaries of their pen or pasture area. It is a good idea to do a headcount to make sure that none have escaped, are stuck somewhere, or have died in an out-of-the-way location. Pigs require feed and fresh water on a daily basis, so by checking them every day these things can be quickly replenished, ensuring that sick animals are noticed and attended to without delay.

Feeders and Waterers

Growing pigs will drink 10 or more litres of water per day, so a clean, fresh supply must be maintained. This can be a challenge both due to the volume that needs to be available and the logistics of having a secure and accessible waterer. There are a number of options for watering systems, depending on how the pigs will be raised, and how long they will remain on the farm. A concrete trough or one bolted to the ground or side of the pen would work well in a permanent location, as would a nipple drinker. If the plan is to rotate areas, a system that is easier to transport would be a better option. Watering troughs should be at a height that is accessible to the pigs at all ages and stages at



which they will be using it, and at the same time high enough that they can't easily walk through it or tip it over. If it is low enough for them to walk through, they will dirty it in record time, potentially spreading disease and pathogens. Troughs also need to be secure so that the pigs don't root them over, emptying their water supply and creating mucky wallowing spots in undesirable areas. Consideration should be given to whether water will be hauled manually on a



daily basis or an automatic system will be set up. Automatic watering systems can be a great way to provide a replenishing supply of fresh, clean water. They can be bought ready to go or constructed fairly simply out of readily available materials. This allows options for a broad range of sizes and versatility depending on how large a container is used (anywhere from lengths of PVC pipe to barrels or liquid fertilizer totes). It is important to keep automated watering-systems out of direct sunlight in the heat of summer to minimize the risk of algae and bacteria build ups. The line through which water is delivered should be a light colour, if possible, as dark coloured hoses and pipes will attract the sun and heat the water to a point where it may be too warm for the pigs to consume.

Feeders should follow similar considerations as for water troughs. The size of the feeder should be relative to the number of pigs and should be easily accessible. Also consider the method by which the feeder will be re-filled; for example for a few pigs, a trough that can be refilled by hand over the side of the pen would work fine; for a larger herd that will go through feed rapidly, a larger scale hopper that could be topped off with the bucket of a tractor or skid steer could be considered. Other important considerations for feed troughs include being weather and pest proof. In an outdoor feeding system, consider some sort of tarp or cover for the feeder that can be easily removed for filling, but will keep out the elements and deter birds and rodents.

Pastured pigs will forage on the vegetation available, but are very aggressive and can cause lasting damage to the plants in a pasture setting. If possible, periodically rotating pigs to new pasture will help protect the longevity of the pasture as well as reduce disease, parasite, and pathogen risks. The longer pigs stay in one place, the more risk there is of creating a mud hole. While pigs do like to wallow in the mud to stay cool in the summertime, they do not like to be in a damp and cold environment all the time. Between rotating to fresh areas of pasture and providing sufficient bedding (especially within the sheltered areas), the damage to the pasture and to the pigs' health can be minimized. Straw, hay, and shavings all make good bedding as long as it isn't mouldy or too dusty. Pigs will usually choose an area of their pen that is cooler or draftier to use as their 'bathroom' area, and generally won't contaminate their 'living' area unless they are overstocked or the pen is too dirty.

Cleaning

It is important to clean the barn or housing area regularly, removing manure and bedding where conditions are damp, and top-dressing bedding as necessary. Pathogens can survive in a living area from year to year and present risks to newly introduced pigs, especially young piglets. Between batches of pigs, pens should be scraped, washed, disinfected, and dried. It is important that pens are clean before being disinfected, otherwise only the surface of the dirt is being disinfected and can later be worn down or scraped off, exposing the pigs to pathogens that have remained behind. Pressure washers, especially hot water pressure washers, do a great job of blasting off the dirt and providing a fresh surface to be disinfected before setting up again.



Handling and Transportation

When moving pigs, do so gently and without loud noises or yelling. Never use an electric prod or dogs to move pigs. A push board, which can be simply constructed from a partial sheet of plywood with holes for handles, works very well. Pigs are social animals and move better as a group rather than being singled out. When moving a larger number of pigs, whether it is to a new pasture area or onto the back of a trailer, consider constructing a temporary race for them to follow out of large bales of straw or panels. If this pathway can be made with slight bends in it (not sharp angles) so they can't see very far ahead of them, they will be more inclined to move forward as well.

Remember, being too forceful when moving pigs (particularly when loading for slaughter) can damage the meat and result in bruised areas that will be trimmed at slaughter, causing a loss of product.

It is recommended that pigs go through a fasting period of 12-18 hours before the anticipated slaughter time (*not* 12-18 hours before *transport*). The animals should have access to water whenever possible throughout this feed withdrawal period. Pigs with no feed withdrawal prior to transport are harder to handle and are more likely to suffer from dizziness, hyperventilation and vomiting.

Only animals that are fit should be loaded and transported. The NFACC code of practice defines a 'fit' animal and sets out requirements and recommendations for all aspects of pig handling and management. The code of practice can be found and referred to online at http://www.nfacc.ca/pdfs/codes/pig_code_of_practice.pdf. An unfit animal is classified as one that is unable to stand without assistance, or move without being dragged or carried. A compromised animal, one that has a reduced capacity to withstand stress due to injury, poor health, etc., can be transported directly to slaughter, but ensuring the animals are in suitable condition for transport is in everyone's best interest. There are a number of factors that will help you decide whether or not a pig is suitable for transport such as a decision tree found in the NFACC code of practice, but for the most part, if you are questioning if it should be loaded, it likely shouldn't.

When it comes to loading, pigs will be easier to move if they are given the opportunity to explore a new floor surface before being moved over it. This includes the ramp into the trailer, as well as the trailer bed itself. The opening into the trailer should be wide enough that the pigs fit comfortably through it. The floor should be sufficiently bedded with clean shavings, straw, or other bedding material, to provide insulation and comfort during the trip. The ramp leading into the trailer should be at a gentle angle, and the sides of the trailer should be solid to prevent escape and/or injury from sharp edges.

Weather conditions and the duration of the trip should be taken into account when planning to transport animals. The trailer will need to be warm enough in colder weather, especially when moving newly weaned animals. There will need to be sufficient air movement to keep the animals from overheating in the summer. Duration of transportation and stocking density in the trailer also play a major role in animal stress, and can be a contributor to subsequent illnesses and/or resulting meat quality.

Good management practices will go a long way to ensuring the pigs are raised in a pleasant and low stress environment, which will in turn result in a quality end product.

Health

Raising healthy pigs is important from a number of standpoints, including general animal comfort and welfare, economics and production of a quality product. There are many factors involved in animal health encompassing different areas of production, such as housing and feeding, which should be paid close attention to.

Buying stock from a healthy herd is the first thing to consider when troubleshooting health problems. New pigs are the most common method of disease entry into an existing herd. Buying from one herd and maintaining age groups in separate areas are important in minimizing disease entry into a group. It is important to find out what vaccinations and other treatments (such as deworming or medications) the pigs may have had at the source farm. From there, it is important to work with a vet or qualified individual to develop a health plan for your specific type of production. A health plan should include information on vaccination, deworming, disease treatment, euthanasia, and biosecurity. Information on biosecurity is available in the Perennia factsheet *Biosecurity for Small Scale Livestock Production* (included in this package), or visit the Biosecurity Nova Scotia website at <http://www.biosecuritynovascotia.com/>.

New pigs that will be added to an existing group should be held in a quarantine pen for thirty days to minimize the risk of passing disease to the resident herd. This quarantine pen should be completely separate from other pigs. Manage the quarantine pen separately, doing chores in this area after finishing with the main group so that nothing is transferred from the new animals to the established ones. Ideally, have separate boots and coveralls for this area. These same practices should be employed for a sick pen. The additional benefits of a sick pen include stress reduction for the sick pigs as they avoid being bullied and have less competition for feed. Additionally, it's much easier to administer medications and keep records and withdrawal times straight for animals if they are in a separate pen.

Providing adequate shelter with mould free and clean bedding is important in minimizing pathogenic risks. Pathogens can be reduced by the simple presence of sunshine or freezing conditions, as well as by rotating pastured animals to reduce the buildup of disease and parasites. Closely linked to this concept is maintaining clean barns. Shelter facilities should be cleaned out, washed, disinfected and dried between batches of pigs. Pathogens can survive on debris left in an area and may build up, posing a threat to newly introduced pigs, especially piglets.

Stress is a major factor in enhancing symptoms that are already present, or weakening the pig's system, leaving it more susceptible to illness. Stress can be avoided by not overcrowding, maintaining groups for separate ages/arrival dates, ensuring the pigs are receiving properly balanced feed rations and that feeders and waterers are full and available, and addressing issues such as dirty pens, poor ventilation, drafts, and severe weather changes as soon as possible. Pigs should be watched closely for changes in behaviour and feeding habits after a stressful event. They should be monitored every day for sudden onset of disease symptoms and to ensure that dead animals are removed from the pen, as pigs are cannibalistic and can easily be exposed to disease through proximity with a dead animal.

References for health:

- Canadian Food Inspection Agency (2013-03-11). Trichinellosis Fact Sheet. Retrieved from <http://www.inspection.gc.ca/animals/terrestrial-animals/diseases/reportable/trichinellosis/fact-sheet/eng/1330023015817/1330023110684>
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- Dee, S. (2016). Overview of Respiratory Diseases of Pigs. Retrieved from <https://www.merckvetmanual.com/respiratory-system/respiratory-diseases-of-pigs/overview-of-respiratory-diseases-of-pigs>
- Iowa State University College of Veterinary Medicine (2017). Veterinary Diagnostic and Production Animal Medicine Index of Diseases. Retrieved from <https://vetmed.iastate.edu/vdpam/FSVD/swine/index-diseases>

The following tables aim to include basic information and symptoms of common health issues associated with pig production. This is not a complete list, and should not be used to diagnose or treat any animals. When a health issue arises, contact your veterinarian for advice and treatment options.

Table 1. Respiratory Conditions

Disease/ Issue	Symptoms	Cause/Contributing Factors	Course of Action/Prevention	Other
Acute Pneumonia	<ul style="list-style-type: none"> – laboured breathing – barking cough – red/blue belly/extremities – depressed, off feed – rectal temperature 40°C 	<ul style="list-style-type: none"> – stress – virus (influenza) – bacteria – respiratory tract irritants (dust, chemicals, etc.) – extreme temperature fluctuations 	<ul style="list-style-type: none"> – move sick animals to prevent spread – individual or group treatment (vet advised) 	<ul style="list-style-type: none"> – spreads rapidly – influenza can be transmitted to humans/poultry
Chronic Pneumonia	<ul style="list-style-type: none"> – persistent barking cough – with or without laboured breathing 	<ul style="list-style-type: none"> – higher risk when mixing pigs of different ages – parasites – bacteria (<i>Mycoplasma hyopneumoniae</i>) 	<ul style="list-style-type: none"> – antibiotics usually ineffective – improvements in ventilation – avoid overcrowding 	<ul style="list-style-type: none"> – may cause permanent lung damage, failure to thrive, lung adhesions
Atrophic Rhinitis	<ul style="list-style-type: none"> – sneezing – snorting – nasal discharge 	<ul style="list-style-type: none"> – irritants (dust, ammonia, etc.) – virus – bacteria 	<ul style="list-style-type: none"> – improvements in management/ventilation – vaccination – move sick animals to prevent spread 	<ul style="list-style-type: none"> – animals may be carriers without showing symptoms – may lead to pneumonia
Swine Influenza	<ul style="list-style-type: none"> – fever – nasal discharge – weakness – coughing 	<ul style="list-style-type: none"> – onset of cold weather – influenza virus 	<ul style="list-style-type: none"> – vaccination – freedom from stress (irritants, overcrowding) – move sick animals to prevent spread 	<ul style="list-style-type: none"> – highly contagious – spread through contact – can be transmitted to humans/poultry

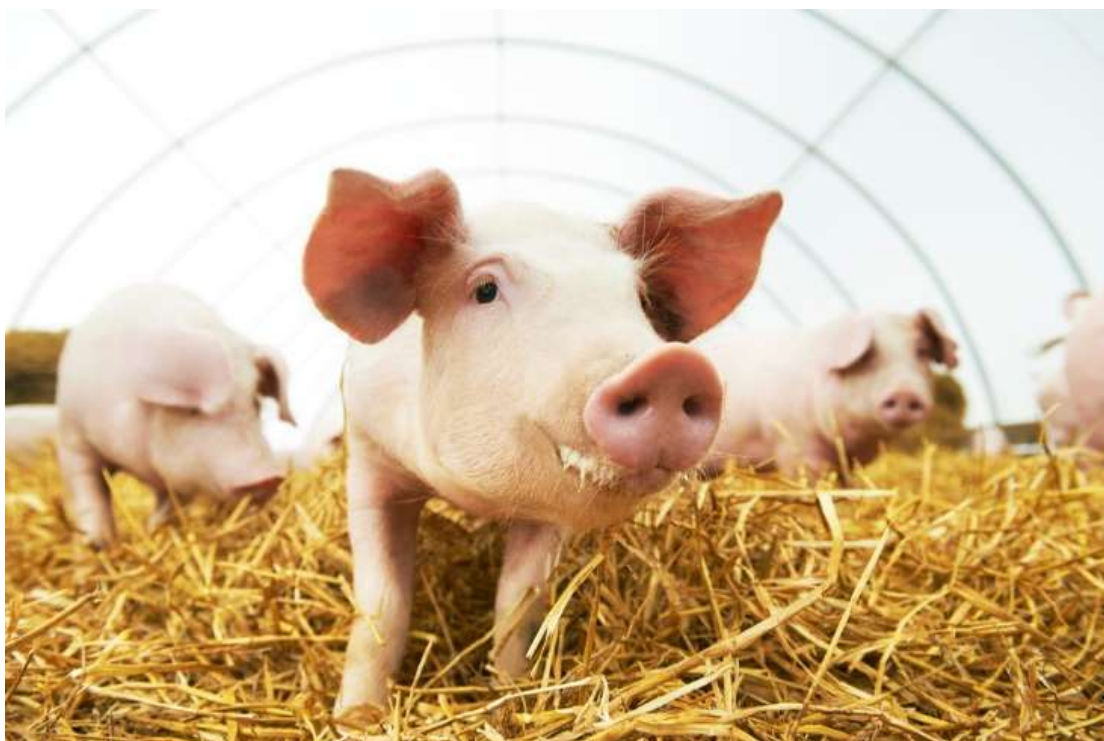


Table 2. Infectious Non-Respiratory Conditions

Disease/Issue	Symptoms	Cause/Contributing Factors	Course of Action/Prevention	Other
Porcine Epidemic Diarrhea (PED)	<ul style="list-style-type: none"> – sudden onset of watery diarrhea – depression – abdominal pain 	<ul style="list-style-type: none"> – virus – transmitted orally via feces 	<ul style="list-style-type: none"> – sanitation – isolate infected pigs – adequate water to combat dehydration 	<ul style="list-style-type: none"> – complete cure not usually possible
Porcine Circovirus (PCV/PCVAD)	<ul style="list-style-type: none"> – wasting – rough coat – diarrhea – deep purple skin discolouration 	<ul style="list-style-type: none"> – PCV1 and PCV2 viruses 	<ul style="list-style-type: none"> – anti-inflammatory – thorough cleaning/disinfecting between batches – vaccination 	<ul style="list-style-type: none"> – related to various disease manifestations
Glässers Disease	<ul style="list-style-type: none"> – sudden death – meningitis – tremors, incoordination, weakness in hind end, paralysis, discolouration of legs/extremities 	<ul style="list-style-type: none"> – bacteria (Haemophilus parasuis) – poor environment – stress – respiratory spread 	<ul style="list-style-type: none"> – treatment as soon as possible to prevent death – isolate sick animals to reduce spread 	<ul style="list-style-type: none"> – highly contagious – causes adhesion that contaminate meat – symptomatically similar to streptococcal meningitis and mulberry heart disease
Porcine Proliferative Enteritis (PPE)	<ul style="list-style-type: none"> – inflammation/ulcers on intestines – acute diarrhea – weakness 	<ul style="list-style-type: none"> – bacteria – stress 	<ul style="list-style-type: none"> – vaccination 	<ul style="list-style-type: none"> – occurs primarily in growers/finishers
Septicemia	<ul style="list-style-type: none"> – sudden death – off feed, depression – red/purple bellies/extremities – dizziness, convulsions – lameness, swollen joints, pneumonia 	<ul style="list-style-type: none"> – bacteria – transport, stress 	<ul style="list-style-type: none"> – move into isolation to reduce stress – electrolytes 	<ul style="list-style-type: none"> – most common in pigs 3 to 8 weeks

Table 3. Skin Conditions

Disease/Issue	Symptoms	Cause/Contributing Factors	Course of Action/Prevention	Other
Diamond Skin Disease (Erysipelas)	Acute: – sudden death – sudden fever/depression – red or blue skin – painful joints – diamond shaped, raised, red skin lesions Chronic: – lameness – enlarged joints – skin lesions	– ingestion of contaminated feed/water – bacteria (Erysipelothrix rhusiopathiae)	– vaccination, antibiotic treatment – sanitation – removing infected animals	– can be transmitted to humans – slows growth – meat may be condemned
Mange	– itchy – scratching, rubbing – dull coat, bare patches, heavy crusting	– small parasites living in skin – spread by asymptomatic carriers	– parasiticide – biosecurity	– all stages develop in epidermis
Lice	– bloody spots – often found on neck, jowl, flank, inner leg, ears – persistent rubbing/scratching – weight loss	– more severe in winter – spread by contact	– parasiticide	– host specific
Greasy Pig (Exudative Epidermitis)	– lesions (mainly on the head) – greasy discharge – lesions turn brown/black, crusty	– predisposing factors (ex. nutrient deficiency, ringworm, lice) – bacteria	– isolate infected animals – good management – sanitation	– usually in pigs less than 8 weeks old – less severe in older pigs
Ringworm	– brown, expanding rings – start on neck and behind ears – localized hair loss	– fungal infection – most common in winter	– usually left to resolve in its own	– contagious to humans
Photosensitization/Sunburn	– red, hot, painful skin – photosensitization occurs only on white areas	– photosensitizing agents (alfalfa, clover, buckwheat) – direct or sudden exposure to sunlight	– avoid photosensitizing agents – provide adequate shelter	– pink and white breeds more susceptible

Table 4. Deficiency and Toxicity

Disease/Issue	Symptoms	Cause/Contributing Factors	Course of Action/Prevention	Other
Vitamin E/Selenium Deficiency	<ul style="list-style-type: none"> – sudden death 	<ul style="list-style-type: none"> – selenium deficient soils 	<ul style="list-style-type: none"> – injections – supplements 	<ul style="list-style-type: none"> – includes mulberry heart disease, white muscle disease, etc. – increases susceptibility to other diseases
Rickets	<ul style="list-style-type: none"> – swollen joints – lameness – poor growth 	<ul style="list-style-type: none"> – calcium/phosphorus/vitamin D deficiency 	<ul style="list-style-type: none"> – adequate vitamin content in feed – adequate exercise 	<ul style="list-style-type: none"> – confined animals often vitamin D deficient – pastured animals often P deficient
Dehydration	<ul style="list-style-type: none"> – brief period of thirst/constipation – stop eating/responding – seizures, dog sitting 	<ul style="list-style-type: none"> – frozen water troughs – broken water lines – general lack of fresh water – excessive salt intake 	<ul style="list-style-type: none"> – provide fresh water, initially small amounts at frequent intervals – consistent supply of fresh water 	<ul style="list-style-type: none"> – may promote gastroenteritis
Ammonia Toxicity	<ul style="list-style-type: none"> – ocular/nasal discharge – coughing – reduced growth rate – influence infectious diseases 	<ul style="list-style-type: none"> – levels ~50ppm 	<ul style="list-style-type: none"> – good ventilation – good management practices 	<ul style="list-style-type: none"> – irritant – odour detected by humans ~10ppm
Hydrogen Sulfide Toxicity	<ul style="list-style-type: none"> – eye and respiratory irritant – paralysis/collapse (200+ ppm) 	<ul style="list-style-type: none"> – levels 100ppm+ 	<ul style="list-style-type: none"> – adequate ventilation during agitation – emptying and cleaning pit between batches 	<ul style="list-style-type: none"> – accumulates in liquid manure pits
Iron Deficiency	<ul style="list-style-type: none"> – loss of body condition – susceptible to infection – chill easily 	<ul style="list-style-type: none"> – raising in confinement (no natural iron source) – vitamin E/selenium deficiency 	<ul style="list-style-type: none"> – supplemental iron 	<ul style="list-style-type: none"> – outdoor with access to soil may not need supplement
Mycotoxigenesis	<ul style="list-style-type: none"> – reduced growth rate – necrosis (esp. extremities, hooves) – vomiting, diarrhea 	<ul style="list-style-type: none"> – ingestion of fungal infected grain 	<ul style="list-style-type: none"> – ensure clean feed – keep records of feed sources 	<ul style="list-style-type: none"> – symptoms enhanced by cold weather – includes ergotism, DON, zearalenone – increased susceptibility to other diseases
Pigweed Poisoning	<ul style="list-style-type: none"> – 5 to 10 days after exposure – trembling – weakness – rear leg paralysis 	<ul style="list-style-type: none"> – Redroot pigweed (Amaranthus retroflexus) 	<ul style="list-style-type: none"> – avoid access – no accepted treatment 	<ul style="list-style-type: none"> – occur most often late summer, early fall

Table 5. Other Conditions

Disease/Issue	Symptoms	Cause/Contributing Factors	Course of Action/Prevention	Other
Swine Dysentery	<ul style="list-style-type: none"> – grey/yellow diarrhea – mucus and blood – weight loss – weakness 	<ul style="list-style-type: none"> – ingestion of bacteria infected feces 	<ul style="list-style-type: none"> – good biosecurity and sanitation 	<ul style="list-style-type: none"> – more common in growers/finishers
Lameness	<ul style="list-style-type: none"> – unwilling to stand/move – arthritis, sore joints – favouring sore limb – sores/swelling 	<ul style="list-style-type: none"> – cracks, sharp surfaces damaging hoof 	<ul style="list-style-type: none"> – move to non-competitive environment – early medicinal intervention – may be managed to slaughter 	
Trauma/Bite Injuries	<ul style="list-style-type: none"> – abscesses – tail biting, chewing 	<ul style="list-style-type: none"> – competition – stress 	<ul style="list-style-type: none"> – reduce conflict over resources – distractions/toys – anti-inflammatories 	<ul style="list-style-type: none"> – bacteria may enter blood stream through wounds
Fly Damage	<ul style="list-style-type: none"> – enter wounds and cause infection, delay healing 	<ul style="list-style-type: none"> – wet, dirty housing – improper removal of dead stock 	<ul style="list-style-type: none"> – fly control (traps, flypaper, sprays) – hygienic practices (regular cleaning) 	
Internal Parasites	<ul style="list-style-type: none"> – rough coat – pot belly – failure to thrive – dry, persistent cough 	<ul style="list-style-type: none"> – many different parasites – contaminated environment – ingestion 	<ul style="list-style-type: none"> – deworming – good management practices – regularly rotate pastures, if outdoors 	<ul style="list-style-type: none"> – highly contagious – production limiting – eggs passed in feces are very resistant to environmental conditions
Trichinellosis	<ul style="list-style-type: none"> – not easily recognized in animals 	<ul style="list-style-type: none"> – nematodes of Trichinella species – consumption of infected raw tissue 	<ul style="list-style-type: none"> – prevention only – treatment in animals not practical – do not feed meat and meat by-products that are not CFIA approved feed ingredients to swine 	<ul style="list-style-type: none"> – rarely occurs in abattoirs under modern inspection, some concern for home processed meat – can pass to humans, severe symptoms
Hernias	<ul style="list-style-type: none"> – umbilical or inguinal (lower groin region) lumps 	<ul style="list-style-type: none"> – sores that become infected – twisted bowel – navel sucking – poor umbilical cord management 	<ul style="list-style-type: none"> – no practical treatment – euthanasia 	<ul style="list-style-type: none"> – pigs with small hernias may be transported directly to slaughter
Ulcers	<ul style="list-style-type: none"> – black, tarry feces – pale, anemic 	<ul style="list-style-type: none"> – destruction of esophagea – stress – finely ground feed 	<ul style="list-style-type: none"> – fibre in diet – vitamin K 	<ul style="list-style-type: none"> – most common 120 lbs to market weight
Prolapse	<ul style="list-style-type: none"> – red, bloody protrusion from the rectum or vagina 	<ul style="list-style-type: none"> – severe diarrhea – severe respiratory issues – stress – zearalenone mycotoxin 	<ul style="list-style-type: none"> – treat diarrhea/respiratory problems promptly – individual treatment response poor 	<ul style="list-style-type: none"> – whey, brewer’s grain predispose animals to prolapse

Feeding Your Pig

Feed is a huge factor in successful pig production, representing 60-75% of the cost of raising a pig to market weight. Choosing the appropriate feed for the stage of growth has a direct effect on how long it takes to get a pig to market weight and how much it costs, as well as having an effect on meat quality. Whether purchasing a commercially mixed feed from a feed store or creating a custom mix at home, it is important to meet the nutritional requirements of the pigs. One diet does not suit all.

Pigs are monogastric animals which means that they are simple stomached with a digestive system that is very similar to a human's. Also as with humans, pigs are omnivores (eat food of both plant and animal origin). This differs from animals such as cattle and sheep who are ruminants (having a rumen) and herbivores (eat food from only plant sources). Pigs require energy (fats and carbohydrates) and nutrients such as protein (amino acids), vitamins and minerals. Of great importance is a source of clean, available and accessible water.

Protein

Pigs of all ages and stages require protein for maintenance, growth and reproduction, and it is the nutrient talked about most often when discussing which feed to buy. Amino acids are the structural units of protein, so in reality, pigs require amino acids rather than protein. Ten of these amino acids cannot be produced within the pig's body from other components and, therefore, the pig's requirements for these must be provided in the feed. Lysine is typically the first amino acid to limit growth, and nutritionists tend to pay particular attention to ensuring it is available in sufficient amounts. Soybean meal is a high quality, high percent protein ingredient commonly used in swine diets, and is rich in the amino acids lysine, threonine and tryptophan.

Energy

Pigs need energy for maintenance, growth and reproduction. The bulk of the pig's energy requirement is met by fats and carbohydrates, with fats being a much denser source of energy than carbohydrates (2.25 times more dense). Common energy sources in swine feeds include corn, wheat and barley.

Vitamins and Minerals

Although present in the diet in relatively small amounts, vitamins and minerals are essential for the proper functioning of all physiological processes. Two minerals, calcium and phosphorus, are commonly mentioned when talking about feed and ingredient composition, but deficiencies, excesses and imbalances in most of the vitamins and minerals can cause health and/or production issues.

Water

Although not a feed nutrient per se, water is one of the most important components of a feeding program for swine. Vital to all body functions, water accounts for as much as 80% of body weight in pigs at birth, declining to about 50% at market. 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. The quality of this water should be considered as well – pigs should be given water that would be suitable for human consumption.



What should I feed my pigs?

Pigs can be raised on a wide variety of feeds, as long as the finished diet meets the nutritional requirements for their growth stage. The simplest way to raise pigs to market weight and meet the appropriate nutritional requirements is by purchasing commercial feed from a feed store, changing the diet purchased as the pigs grow and their requirements change.

It's easy to over-feed protein but this should be avoided, as protein is normally the most expensive component in the diet. Don't keep pigs on a high protein diet longer than required. Small, young pigs from 16 – 27kg (35 - 60lb) require 18% crude protein for maximum muscle development. Between 27 – 80kg (60 - 175lb) feed a 16% crude protein diet, switching to 14-15% crude protein once the pigs are over 80kg (175lb). These guidelines are more accurate for the requirements of commercial breeds but can be used as a good rule of thumb for any breed.

Avoid feeding mouldy feed to the pigs. The mycotoxins produced by some moulds and fungi (there are many different types) can cause growth problems, vomiting and diarrhea, and even death. Although breeding animals are not being discussed in this article, it's important to note that mycotoxins can cause significant reproductive issues when feeding sows.

Pigs need a certain amount of fiber in their diet and are able to digest some forage or pasture. While a good pasture can contribute to their nutrient requirements, it's important to understand that the role of pasture in a pig's diet is not the same as the role of pasture in a cow's diet. Where cows and other ruminants are built to turn forage into meat or milk, pigs are not. Pigs will enjoy and appreciate access to pasture but will not be able to survive on pasture alone and need access to a balanced ration that meets their requirements in order to remain healthy and productive.

Using your own feed ingredients

Because raising a pig to market weight represents a significant feed cost, it's tempting to use alternatives to commercial swine diets, either as a whole feeding plan or as a supplement to the complete diet. Different feed ingredients contain variable amounts of amino acids and energy and can have a wide range of digestibility, so some may not be suitable for all age groups of pigs. It's essential to consider the nutrient contribution of these feed ingredients; an available/inexpensive ingredient can often be incorporated in a diet but should never compromise the health and well-being or productivity of the pig. Always aim to meet the nutritive needs of the animal, first and foremost.

With a bit of research, the theoretical feeding value and recommended feeding percentages of most potential feed ingredients can be found. If it is an ingredient that will be regularly included in the pigs' diet, it's strongly recommended that it be analyzed to be sure of the nutrient composition. The Nova Scotia Department of Agriculture has laboratory services that can perform feed analysis (<https://novascotia.ca/agri/programs-and-services/lab-services/analytical-lab/>). It is also important to find out if the ingredients should be processed before feeding. For example, cereal grains need to be cracked, rolled or soaked and soybean must be heated before feeding to be utilized by pigs.

Note: Feeding swine anything containing meat or meat by-products (or food that is suspected to contain meat or meat by-products) is not permitted in Canada because of the risk of transmission of exotic diseases (for example, foot-and-mouth disease, African swine fever, classical swine fever and zoonotic diseases such as Trichinellosis). Those meat-based ingredients which are approved feed ingredients can be found in Schedule IV or V of the Federal Feed Regulations (<http://www.inspection.gc.ca/animals/feeds/approved-ingredients/eng/1322975007194/1322975281243>). More information on recycled food products can be found at <http://www.inspection.gc.ca/animals/feeds/regulatory-guidance/rg-1/chapter-3/eng/1329319549692/1329439126197?chap=19>.

How much will my pigs eat?

How much a pig will eat is largely dependent on their breed and sex, and what they are being fed. Feed intake may be higher than anticipated if the feed is nutritionally inadequate (particularly in energy). The following are a few general guidelines (keep in mind that these feed amount are based on daily intake – if feeding occurs twice daily, feed half the amount at each feeding). If you are feeding multiple pigs, be sure that there is enough space for all the pigs to eat in comfort.

- An 18kg (40lb) pig (around 8 weeks of age) will consume about 0.7 - 0.9kg (1.5 – 2lb) of 18% protein pelleted grower feed per day
- By around 35kg (approx. 75lb and 12 weeks of age), the feed consumption will have increased to 1.1 – 1.35kg (2.5-3lb) of 16% protein feed per pig per day
- Once the pigs are 55 – 60kg (125lb and approx. 16 weeks), daily feed consumption will be roughly 1.8 – 2.3kg (4-5lb) of 16% protein feed per pig per day (switching to 15% protein once the pigs are approximately 80kg or 175lb)
- This amount should be gradually increased so that the pigs are getting about 2.7 – 3.2kg (6-7lb) of 14-15% protein feed per day once they are roughly 110 – 115kg (250lb)

Increases in the amount of feed the pigs are getting should be done gradually as the pigs grow (weekly, for example). Assuming they are being fed set amounts a couple of times per day rather than free feeding (i.e. feed always available), keep an eye on whether the pigs are cleaning up their feed within 20-30 minutes. If there is feed left over, decrease the amount they are being given. If they are cleaning everything up and are still hungry, increase the feeding amount.

Remember, pigs that are outside a lot will need more feed than pigs raised indoors in a controlled temperature environment, particularly in colder weather.



Feeding a pig can be as complicated or as simple as you make it, but the key is to make sure the nutritional needs of the animal are being met for the growth stage that it is at, while keeping costs as low as possible. A poorly balanced diet will result in pigs which get sick more easily, grow slowly, convert feed inefficiently and produce a poorer quality carcass (too fat, low muscle mass, etc.). Common sense and research is needed when considering substitute ingredients – an apparently cheaper ingredient can easily become an expensive mistake. Correct feeding makes a difference when producing a great quality pork product!

Slaughter

Knowing when to bring pigs to market can be challenging. What the desired market weight is will depend on what the end product will be. How long it will take to reach that market weight will vary greatly depending on the breed and how the pigs have been fed. The most common breeds sold for small scale production in Nova Scotia are Landrace and Duroc, with some Tamworth or Berkshire, though in smaller numbers. On average, the market weight for hogs in Nova Scotia is 90-150 kg for commercial production. Market weight for small scale production is generally slightly lower, approximately 75-80 kg. Note that the weights and percentages discussed in this section are general guidelines, and are not meant to be used as hard and fast rules. Each production system will be different and therefore yield different results.

Helpful terminology:

- Live weight – The weight of an animal before it has been slaughtered and prepared as a carcass.
- Market weight – The target weight for the pigs to go to the slaughterhouse.
- Hanging weight/carcass weight – The weight of the carcass after it has been dressed (guts removed, blood drained, etc.), before butchering.
- Cut weight – The weight of the final product after butchering. This will be the carcass weight minus some bone weight, trimming, moisture, etc.

The hanging or carcass weight of a pig will be approximately 72-75% of the live weight (with the skin left on). The cut weight will be approximately 75-82% of the hanging weight. This percentage can vary greatly depending on how cuts are trimmed, how much bone is removed, etc. For example, the percentage will be less if mainly boneless cuts are chosen. All weights will vary depending on breed, condition, diet, as well as the presence of dirt and hair on the animal at the time of slaughter. Aging or further processing, such as smoking, will reduce the cut weight of the animal. A carcass that is aged in the cooler will lose moisture, and will therefore be lighter than a fresh cut carcass.

When planning for slaughter and processing, there are a few things to think about in advance.

- If the pigs will be slaughtered off farm, transportation to the slaughterhouse needs to be considered. Refer to the *Handling and Transportation* section of the Pigs 101 info sheet for additional information on transportation.
- There are a few options around how to have pigs slaughtered. They can be slaughtered on farm, at an uninspected slaughterhouse, or at a provincially inspected slaughterhouse. From a food safety perspective, a provincially inspected facility is the best option. If the meat will be sold be aware that **all** meat sold through retail and farm markets in Nova Scotia must be slaughtered at a provincially inspected abattoir. A list of provincially inspected slaughterhouses (updated August 2016) is included in this package. For the most up to date information, contact your regional Agricultural Resources Coordinator, whose contact information can be found at <https://novascotia.ca/agri/contactus/staffdir/branch.asp?dept=agr&orgLevelID=31> .

It is strongly advised that arrangements be made with the abattoir well in advance, as they get very busy and may not have the capacity to accommodate extra animals coming in on short notice. If the pigs will be slaughtered in one facility and processed in another, be sure to have a plan for timing that works with both facilities. Also, make sure to have enough freezer space to store the final product between the time of processing and the time of sale.