NATIONAL FARM ANIMAL CARE COUNCIL
CONSEIL NATIONAL POUR LES SOINS AUX ANIMAUX D'ÉLEVAGE

CODE OF PRACTICE

FOR THE CARE AND HANDLING OF

PIGS

For Public Comment Period

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Introduction

Canada's pork producers are leaders in the Canadian agriculture industry when it comes to developing protocols that demonstrate their collective commitment to both animal care and welfare, as well as to food safety. In 2005 the Canadian Pork Council (CPC) launched its Animal Care Assessment (ACA™) program which was based on the existing Code of Practice, as an independent, voluntary assessment tool for producers to promote and demonstrate responsible pork production. ACA™ is a way for producers to say what they do, do what they say, and prove it.

Nearly a decade before producers started to verify their commitment to animal care and welfare through ACA™, the pork industry took the lead in food safety with the launch of its Canadian Quality Assurance program in 1998. Through CQA®, on-farm practices are controlled and monitored using a powerful tool based on internationally recognized principles. As a market requirement, CQA® enrollment and compliance is a critical component of any commercial hog production facility.

Effective January 1, 2012, ACA™ became a requirement under the CQA® program. The integration of the two programs demonstrates that Canadian pork producers are committed to both food safety and animal care.

This Code of Practice will play an important role in pork industry's ongoing efforts to assess animal care on Canadian pig farms. Once complete, the Code will guide the review and update of the Canadian Pork Council's ACA™ program.

The requirements and recommended practices in this document represent a challenging balance between animal welfare and the abilities of producers to affect change in an economically viable way. As the code development process involved representatives with diverse interests, not all parties fully agree with every requirement and recommendation. However, all members agree that this document represents the best achievable balance.

As a guiding principle, requirements are intended to be outcome- or animal-based, as they are most directly linked to animal welfare, and can be applied in a wide range of animal production systems. Since requirements will often state the necessary outcome, the producer has the flexibility to determine how the outcomes can be achieved using individual management and husbandry practices. Recommended practices encourage continuous improvement in animal care. However, failure to implement recommended practices does not imply that acceptable standards of animal care are not being met.

This code does not apply to associated industries such as AI boar stud farms, meat processing, or transportation beyond the farm gate.

Glossary of Terms

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(s)	An agent that alleviates pain without loss of consciousness.
Anesthetic(s)	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	Sexually mature males intended for use in breeding over the weight of 135 kg/300 lbs.
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.
Body Condition Score (BCS)	A five stage 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.
Consciousness	Awareness of feelings, sensations and emotions, including pain and distress.
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.
Environmental Enrichment	A way of changing the environment of pigs to their benefit.
Euthanasia	Greek word meaning "good death". Euthanasia methods should cause a rapid and irreversible loss of consciousness with minimum pain and distress to the animal.
Farrowing	Giving birth to piglets.
Farrowing Crate	An enclosure closely related to the sow's body size, in which sows are kept individually during and after farrowing.
Finisher	Pigs that are generally above 70 kg 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	A young female pig, selected for reproductive purposes, before she has 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 30-40 and 70 kg. 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 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.

***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 m^2. The formula is: $A = k \times BW^{0.667}$, where: ▪ A = floor surface area in m^2; ▪ *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.
Lux	An international measure of light intensity (not to be confused with watts).
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	The facility where weaned pigs are housed until they move to the next phase of production.
Nursery Pigs	A pig after it has been weaned from the sow, up to approximately between 30 and 40 kg in live weight. Also referred to as a "weaner" or "weanling".
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 and is usually determined by the animal's wide angle vision.

Reproductive Cycle	The period from farrowing to the following farrowing.
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".
Stable 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.
Stockperson(s)	A person (or persons) 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.
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 and 40 kg in live weight. Also referred to as a "nursery pig".
Weaning	The act of permanently separating piglets from the sow.

1. Housing and Handling Facilities

1.1 Housing Systems

Regardless of the type of housing system used, the design needs 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 or mechanical breakdown
- Pigs must not be tethered as part of their normal housing systems

RECOMMENDED PRACTICES

a. Inspect pigs regularly for injuries that indicate hazards in barns
b. Develop and follow a facility maintenance program and document scheduled and non-scheduled repairs
c. Design and construct alleyways and hallways in such a way that pigs can be moved side-by-side in twos or threes, depending on the size of the pigs
d. Use solid front gates and walls in alleyways and hallways to minimize visual distractions

1.1.1 Gilts/First Parity Sows

While aggression within groups cannot be completely eliminated, it can be managed to protect vulnerable gilts and first-parity sows (1).

Gilts that are regrouped three or four times before five months of age may experience less aggression than gilts with fewer prior experiences of regrouping (2).

RECOMMENDED PRACTICES

a. Group gilts and sows by size; since first-parity sows are closer in size to gilts, consider grouping gilts and first-parity sows together
b. House gilts in groups prior to breeding

1.1.2 Post Farrowing/Weaned Sows

From weaning to mating, sows can be kept in individual stalls, or in groups. The stress associated with weaning, drying off and then entering the estrus cycle within a few days, coupled with the aggression associated with mixing, makes group housing a challenge for producers, and can negatively impact sow welfare if not properly managed.

1.1.3 Gestating Sows

In well-managed and designed housing systems, it is possible to achieve equal or better productivity and health in group housing systems compared to individual gestation stalls (2). Group sizes, feeding systems and mixing practices (i.e., stable group v. dynamic group) influence sow welfare in group housing.

Sows housed in stalls can show an increased incidence of behaviours that indicate stress (2) (e.g., bar-biting, sham-chewing, excessive drinking).

Due to the inherent aggressive nature of sows, a combination of group housing with a short period of stall housing can assist in minimizing injuries, improving body condition and can facilitate confirming pregnancy after breeding.

When using gestation stalls, it is critical that pregnant gilts and sows are kept in stalls that are appropriate to the size of the individual animal. Conventional gestation stalls [58 – 60 cm (22.8 – 23.6")] may not be wide enough for larger sows to lie laterally, especially towards the end of the gestation period (2).

Through science and innovation, the Canadian pig industry is committed to adopting housing designs/systems that offer more freedom of movement for sows.

The industry will continue to investigate feasible housing systems that allow sows greater freedom of movement through all stages, and that reduce the need for stalls during gestation.

REQUIREMENTS

- As of July 1, 2024, mated gilts and sows must be housed in groups. Individual stalls may be used for up to 28 days after the date of last breeding, and an additional period of up to 7 days is permitted to manage grouping
- For all holdings newly built or rebuilt or brought into use for the first time after July 1, 2014, mated gilts and sows must be housed in groups. Individual stalls may be used for up to 28 days after the date of last breeding and an additional period of up to 7 days is permitted to manage grouping
- After July 1, 2024, all individual stalls, as well as all new installations and replacements of existing individual stalls that occur after July 1, 2014, must be sized appropriately to allow sows to:
  - Stand up at rest in a stall without simultaneously touching both sides of the stall
  - Lie down without their udders protruding into adjacent stalls
  - Stand up without touching the top bars
  - Stand in a stall without simultaneously touching both ends of the stall
- Time in stalls can only be extended to protect the welfare of individual sows on the advice of a competent stockperson

RECOMMENDED PRACTICES

a. House gilts and sows in groups and manage feeding, space allowance and enrichment in such a way so as to minimize aggression
b. Distribute the feed widely or in such a way so as to ensure that all sows in the group have access to feed in systems where protection during feeding is not available
c. Manage gilts and sows that have lost body condition as separate groups or individually
d. Remove sows that are suffering from persistent bullying to a different accommodation
e. Refer to Appendix A – *Guidelines for Determining Individual Stall Sizes for Gestating Sows*
f. Refer to Section 1.2.1 (*Sow Space Allowances*)

1.1.4 Nursing Sows with Piglets

Sows may be stressed when they are introduced to the farrowing crates or pens close to the time of farrowing and/or if sows are moved to crates from loose housing systems (3). Sows are highly motivated to nest-build around the time of farrowing (3) and nest-building behaviour before farrowing can lower the risk of piglet crushing (3). However, it is recognized that more research is required on how nesting materials can be used in existing commercial settings that utilize slatted floors.

Farrowing crates help reduce crushing of piglets during and soon after farrowing. Producers are encouraged to consider systems that permit sows the opportunity for more freedom of movement after 5 to 10 days of lactation as close restriction of the sow beyond this time is of little or no benefit to the litter.

Ensuring sows are housed in appropriately sized farrowing crates is important for the welfare of the sows, and can be one factor in preventing sores.

REQUIREMENTS

- The length of a farrowing crate must allow the sow enough room to move forward and backward, and to lie down unhindered by a raised trough or rear gate. For the small minority of existing facilities that do not meet this standard, the requirement must be met by July 1, 2024
- When standing in a normal position in a farrowing crate, the sow must not touch both sides of the crate (not including anti-crush rails) simultaneously, and her back must not touch any bars along the top
- Sows must not be kept in farrowing crates for more than 6 weeks in any one reproductive cycle except in exceptional circumstances (e.g., when a sow is required to foster a second litter)
- The farrowing system must provide an area to which the piglets can retreat when the sow moves

RECOMMENDED PRACTICES

a. Introduce sows to clean farrowing quarters 3 to 5 days prior to expected farrowing
b. Provide bedding/nesting material for sows at least 48 hours prior to expected farrowing unless it is not technically feasible for the manure management system
c. Procure adjustable crates when replacing crates, renovating and/or building housing facilities
d. Adjust crates to provide the sow with more space from 5 to 10 days after farrowing when using crates and when possible
e. Ensure that an unobstructed area behind the sow is available to facilitate natural or assisted farrowing

1.1.5 Weaned (Nursery) Pigs & Grower/Finisher Pigs

A warm, dry, clean and draft-free environment is critical for newly weaned piglets. Most nurseries in Canada need to be equipped with supplemental heating. Grower/finisher pigs that have been housed in large groups (i.e., >80-100 pigs) tend to be less aggressive when mixed with unfamiliar pigs than pigs housed in smaller groups (i.e., 20) (4).

RECOMMENDED PRACTICES

a. Protect weaned pigs from drafts and air speeds over 0.25 m/s (50 feet/minute)
b. Provide supplemental heat to achieve recommended temperatures. Refer to Section 1.4 (*Environmental Management: Temperature, Ventilation and Air Quality*)

1.1.6 Boars

Boars may be kept on their own, in small groups, or with a group of breeding gilts or sows; however, boars are usually housed individually. Boars that are kept on their own are normally taken out several times a week for heat detection or mating purposes and receive social enrichment from this activity. Where boars are kept in groups, they need to be compatible.

REQUIREMENTS

- Boars must be able to stand, lie down, and adopt normal resting postures without undue interference
- As of July 1, 2024, boars must be provided with sufficient space so that they can stand, turn around, and lie comfortably in a natural position

RECOMMENDED PRACTICES

a. House boars in pens. These pens should be large enough for them to easily turn around
b. Construct pens in such a way that allows for boars' visual contact with other pigs
c. Locate working boars close to the breeding area to provide ease of movement
d. Ensure each stall can be opened from the front and the back for easy movement

1.2 Space Allowances

Space allowances need to meet the movement and social needs of the pigs, and depend on the interaction of a number of factors, including feeding strategies, group size, age, breed, temperature, insulation, ventilation, pen shape, flooring, lighting and other husbandry factors.

1.2.1 Sow Space Allowances

In group housing systems, floor space affects sow welfare, health and productivity.

REQUIREMENTS

- All group housed sows must be able to stand, move about and lie down without undue interference with each other in a space that provides for separation of dunging from lying and eating areas

RECOMMENDED PRACTICES

a. Keep mated gilts and sows at a minimum space allowance that is provided as guidance in Appendix B – Recommended Minimum Floor Space Allowance for Gilts and Sows in Group Housing. There are variations in the amount of space required based on feeding systems, groups sizes, flooring, etc.
b. Increase the space allowance if persistent bullying and aggression occurs

1.2.2 Weaned/Grower/Finisher Pig Space Allowances

When calculating space allowances for pigs, a formula that relates body weight to body surface area is used. Floor space allowance is expressed using a *k*-value, which, when multiplied by a pig's body weight $(kg)^{0.667}$, gives the floor surface area in m^2. The optimal *k*-value may change according to temperature, type of flooring and group size.

Performance of nursery and growing/finishing pigs is negatively affected when $k < 0.0335$ (2). At $k < 0.039$, growing/finishing pigs alter normal resting behaviours (2).

REQUIREMENTS

- Pigs must be housed at a space allowance of $k = 0.0335$. When a short-term decrease in space allowance is needed at the end of the production phase:
  - a decrease of up to 15 % for nursery pigs and up to 10% for grower/finisher pigs is allowed;
  - a decrease of up to 20% for nursery pigs and up to 15% for grower/finisher pigs is allowed only if it is demonstrated that the higher densities do not compromise the welfare of the animals as determined by average daily gain, mortality, morbidity and treatment records, as well as the absence of or no increase in vices such as tail-biting

RECOMMENDED PRACTICES

a. Increase space allowances so that all pigs can lie laterally at the same time. Refer to Appendix C – *Floor Space Allowances for Weaned/Nursery Pigs* and Appendix D – *Floor Space Allowances for Grower/Finisher Pigs*

1.2.3 Boar Space Allowances

Boars are usually housed individually. Boar stalls need to provide enough room for boars to stand and to lie down comfortably.

RECOMMENDED PRACTICES

a. Refer to Appendix E – Recommended Minimum Space Allowances for Boars

1.3 Facilities for Sick and Injured Pigs

Sick or injured pigs often benefit from being segregated in an area where they can recuperate without having to compete with healthy pen mates for food, water and comfortable lying areas.

REQUIREMENTS

- Every pig production facility must have the ability to segregate sick or injured pigs in a separate area where the necessary treatment can be administered

RECOMMENDED PRACTICES

a. Design facilities for sick and injured pigs in such a manner so as to improve pigs' chances of recovery. For example, facilities for sick and injured pigs should allow sick animals to spend large amounts of time resting in a warm place
b. Provide an enhanced comfort zone that is conducive to recovery, such as heat, bedding and easy access to fresh feed and water
c. Locate the facilities for sick and injured pigs in a warm area where there are no drafts, preferably in areas where pigs can be observed more frequently
d. Provide sufficient lighting to ensure thorough inspection of the animals
e. Provide softer, non-slip flooring in facilities for sick and injured pigs, particularly for those pigs that show signs of lameness
f. Provide separate facilities for sick and injured sows

1.4 Environmental Management: Temperature, Ventilation and Air Quality

The effective environmental temperature, or the temperature that the pig actually feels in its own immediate surroundings, depends on many factors such as air temperature, air movement, humidity, flooring material, bedding/dryness of the floor, size of pig, group size, feed type and intake, and health status. The temperature at pig level may differ several degrees from that measured at higher levels.

For newborn piglets, managing heat loss is critical.

The ability to control air quality is important for pigs' health, welfare and comfort. Gases, dust, moisture and microorganisms can be produced from the animals and from manure decomposition, feeds and building materials. The gases of most concern in swine facilities are ammonia, hydrogen sulfide, carbon monoxide and methane (5). Causes for high ammonia levels include insufficient ventilation, dirty floors, and a high ventilation rate that stirs up ammonia from the pit.

REQUIREMENTS

- Environmental control systems must be designed, constructed and maintained in a manner that allows for temperatures, fresh air, and hygienic conditions that minimize harm to pigs
- Newborn piglets must be housed at temperatures that will assist them to reach and maintain normal body temperatures
- Reasonable steps must be taken to help prevent housed pigs from becoming overheated or cold stressed

RECOMMENDED PRACTICES

a. Maintain air circulation, dust levels, temperature, relative humidity and gas concentrations within limits that are not harmful to the pigs

b. Protect pigs from wide or abrupt temperature fluctuations

c. Monitor pig behaviour daily for indicators of thermal discomfort and take remedial action if necessary

d. Aim to provide the optimal temperatures appropriate for the size/production phase of pigs. Refer to *table 1.1 for Optimum Temperatures for Housed Swine of all Ages*

e. Ensure that separate temperature needs of lactating sows and piglets are met:

- Aim for a temperature range of 18°C (64°F) to 20°C (68°F) post-farrowing in the farrowing room as a whole. Higher temperatures may be appropriate during farrowing to ensure that newborn piglets are not chilled and maintain body heat
- Provide supplemental heat of up to 34°C (93°F) in creep areas for piglets

f. Maintain or increase the effective temperature for the first 4 to 5 days post-weaning at approximately the same temperature used in the farrowing houses at the time of weaning

g. Maintain adequate air quality and ventilation at all times (ammonia levels < 25 ppm). Take corrective action immediately to reduce ammonia levels if they exceed 25 ppm at pig level

h. Develop protocols that allow manure to be drained with a minimum release of noxious gases

Table1.1 – Optimum temperatures for housed swine of all ages (6)

Animal	Optimum Temperature*, °C (°F)	Desirable Limits*, °C (°F)
Litter -- newborn	35 (95)	32 – 38 (89 – 100)
Young pigs (2-5 kg) in Farrowing Room	30 (85)	27 – 32 (81 – 89)
Young pigs (at weaning)[1]	35 (95)	33 – 37 (91 – 99)
Young pigs (5-20 kg) in Weaned Pens	27 (80)	24 – 30 (75 – 86)
Growing pigs (20-55 kg)	21 (70)	16 – 27 (61 – 81)
Finishing pigs (55-110 kg)	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.		

[1] Adapted from: Influence of Hot-Humid Environment on Growth Performance and Reproduction of Swine (refer to *Cited References*). "Young pigs (at weaning)" added by Code Development Committee.

1.5 Lighting

Continuous lighting, particularly very bright lighting, as well as continuous dark conditions have negative effects on pig welfare (7). When awake, pigs prefer a lit environment, but prefer to sleep in the dark. Generally speaking, light in which a newspaper can be read is considered sufficient.

Piglets and weanling pigs may benefit from additional hours of light in order to locate food sources (7). Leaving lights on for piglets during the first 24h post weaning will facilitate the initiation of feeding.

REQUIREMENTS

- Sufficient lighting must be available to permit thorough inspection of pigs at any time, and for normal husbandry practices
- A minimum of 50 lux[1] of lighting must be provided for a minimum of 8 hours per day
- Pigs must have access to a darkened area (i.e., ~5 lux or less, with the exception of heat devices in farrowing areas) for at least 6 hours per day (8)

RECOMMENDED PRACTICES

a. Match the intensity/location of the lighting to the purpose of the area that the lighting affects
b. Provide lighting in a range of 150 to 250 lux in handling facilities

1.6 Flooring and Bedding Management

Flooring can impact animal health, comfort, and productivity, and if improperly designed and/or maintained, can contribute to injuries.

Bedding can provide a combination of potential benefits to sows and growing pigs such as thermal regulation, physical comfort, environmental enrichment and nutrition (9). Bedding can also be used by sows to build nests (10).

Mats may improve the welfare of sows and piglets in farrowing crates and are believed to offer similar comfort levels to those associated with straw, but do not provide pigs with the same ability to control their own micro-climate when compared to loose bedding materials.

REQUIREMENTS

- Flooring must be designed and maintained to minimize slipping
- Flooring must be designed, constructed and maintained in a manner that does not cause injury or suffering to pigs standing or lying on them, and must contribute to pig comfort
- Where bedding is provided, it must be clean, dry, and not harmful to the pigs

[1] Equivalent to the lighting in an average family living room, which is considerably less light than a very dark, overcast day or office lighting

RECOMMENDED PRACTICES

a. Ensure that gap widths for slatted floors are appropriate for the sizes of pigs and that the slat widths maximize the contact area with the soles of pigs' feet.
b. Slope solid floors to promote drainage
c. Incorporate skid-resistant grooves for ramps that slope more than 10% and for concrete breeding floors and other floors to prevent slipping and falling
d. Finish concrete floors on which pigs walk with texture to provide traction when wet
e. Keep the lying area dry. Where bedding is used, provide sufficient amounts of bedding and top up as needed
f. Remove soiled and wet bedding from pens before new groups of pigs are moved to them
g. Check the source of sawdust and wood shavings to ensure that it does not come from wood that has been chemically treated (e.g., pentachlorophenol)

1.7 Feeding/Watering Areas

Feeders need to provide pigs with access to feed for each stage of production and need to meet the needs of both the smallest and largest animals in the pen.

REQUIREMENT

- Feeders and waterers must be constructed, located, and maintained in a way that makes them available for use by all pigs in that area

RECOMMENDED PRACTICES

a. Provide sufficient feeder space to accommodate the size of the pigs. Refer to Appendix F – *Feeder Design: Width of Eating Space*
b. Provide sufficient feeder space to accommodate a maximum of 13-18 pigs/feeder space
c. Ensure that there is adequate headroom for sows
d. Use tray dividers to prevent small pigs from getting in the feeder in nursery pens
e. Keep feeders clean
f. Maintain feeders so that there are no rough edges
g. Position waterers over slatted floors in partially slatted pens
h. Adjust flow rates on nipple waterers according to the age and size of pigs in the pen. Refer to Appendix G – *Water Intake, Recommended Flow Rate and Height of Nipple Drinkers*

1.8 Enrichment

Enrichment improves animal welfare by enhancing animals' physical or social environments. Enrichment goals include (11):

- Increase the number and range of normal behaviours;
- Prevent the development of abnormal behaviours, or reduce the frequency or severity;
- Increase positive utilization of the environment (e.g., use of space); and
- Increase the animal's ability to cope with behavioural and physiological challenges

Environments for pigs can be enhanced through methods that span several categories (11):

- **Social enrichment** – involves either direct or indirect (visual, olfactory, auditory) contact with other pigs;
- **Occupational enrichment** – encompasses both psychological enrichment that provides animals with control or challenges (e.g., devices) and enrichment that encourages exercise
- **Physical enrichment** – can involve altering the animals' enclosures or adding accessories such as objects, substrate or permanent structures (e.g., nest boxes)
- **Sensory enrichment** – visual, auditory, olfactory, tactile and taste stimuli
- **Nutritional enrichment** – involves either presenting varied or novel food types or changing the method of food delivery

Pigs are initially attracted to materials that are odorous, deformable, and chewable, but for sustained enrichment, the best materials are complex, changeable, malleable, destructible, and are ingestible or contain sparsely distributed edible parts (11).

Enrichment materials and objects need to be monitored to ensure that they do not cause health problems (e.g., strangulation, choking, poisoning, obstruction of the digestive tract, transmission of pathogens) or compromise food safety (11). While straw is recognized as a premium source of enrichment, it poses challenges to manure management systems.

Enrichment strategies, such as providing objects suitable for chewing and rooting, can deter pigs from harmful social behaviour such as ear and tail-biting (12) and from engaging in stereotypies such as belly nosing and sham chewing (11).

Simple and inexpensive environmental enrichments such as suspended cloth strips or hoses and small amounts of increased positive contact with people will reduce both excitability and fighting in young pigs. Objects used for enrichment can quickly lose their novelty value, so it is unlikely that long-term use of the same object will continue to satisfy pigs' enrichment needs.

REQUIREMENTS

- Pigs must be provided with some type of environmental enrichment (social, occupational, physical, sensory, and/or nutritional)

RECOMMENDED PRACTICES

a. Provide some type of physical enrichment such as straw, hay, wood, sawdust, mushroom compost, peat or a mixture of such that does not adversely affect the health of the animals and when it can be safely used. Refer to Appendix H – *The Six Ss: Simple Criteria for Choosing Enrichment for Pigs*

b. Provide continuous access to a range of novel suspended toys such as cloth strips or rubber, or straw dispensers, along with free toys on the pen floor in housing where the use of substrates may impede manure management systems

1.9 Outdoor Housing

Due to its climate, most areas in Canada are unsuitable for outdoor production.

It is critical that suitable conditions be maintained in outdoor shelters that are not equipped with supplemental heat or mechanical ventilation.

REQUIREMENTS

- Nose rings must not be used
- Pigs must have access to shelter that minimizes the effects of adverse weather and provides a dry resting area and shade
- A protocol must be developed and implemented that protects pigs from parasites and predators

RECOMMENDED PRACTICES

a. Choose outdoor sites carefully: land prone to flooding, poorly drained sites, stony soils and sites with heavy soils are not suitable for outdoor systems
b. Locate the outdoor facility to take advantage of existing windbreaks, or if not available, construct windbreak fences to control snow and wind in and around the facility
c. Select pigs for suitability for outdoor conditions
d. Develop and document a strategy for dealing with emergency situations such as water provision in freezing conditions and feed provision to the site in snow and severe wet weather
e. Protect pigs from cold drafts
f. Locate gates and doors for easy access with a loader to remove manure. Remove soiled and wet bedding from sleeping areas between each batch of feeder pigs
g. Protect feed in hoppers with covers
h. Provide outdoor pigs with opportunities for wallowing

2. Feed and Water

2.1 Nutrition and Feed Management

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.

REQUIREMENTS

- Pigs must be provided with daily access to feed that maintains their health and meets their physiological requirements
- Pigs must be fed a wholesome diet which is appropriate to their species, age and production phase
- Feed must be provided in such a way so as to prevent competition resulting in injury or excessive weight variation within the group
- Corrective action must be taken if there is a significant reduction of feed intake

RECOMMENDED PRACTICES

a. Check feeders daily to ensure they are functioning properly
b. Where pigs are limit fed, provide enough space for all pigs to eat simultaneously. Where pigs are fed sequentially, provide complete protection. Refer to Appendix F – *Feeder Design: Width of Eating Space*
c. Ensure that pigs are able to find feed and water when introducing them to unaccustomed housing
d. Take remedial action if persistent bullying is leading to deprivation from food
e. Develop contingency plans to provide an alternate means of obtaining and delivering feed in case of supply failure or delays in delivery
f. Store feed in a clean location and clean feed bins regularly
g. Use feeder trays made of an easily cleaned material such as plastic or rubber (13). Clean as needed

2.1.1 Nursing Piglets

It is essential that new-born piglets receive an adequate amount of colostrum from the sow, as soon as possible after birth, and within 12 hours, when their digestive tracts are still able to absorb the proteins that give immunological protection.

Producers can use strategies such as split suckling (removal of the larger pigs in a litter from the dam for a short period within 24 hours after birth to allow the smaller piglets access to the dam) and cross-fostering (permanent removal of piglets from a large litter to a sow with a smaller litter of similar age piglets). It is important that cross-fostering occur before teat order is established.

REQUIREMENTS

- All piglets must have access to colostrum as soon as possible after birth, and within 12 hours
- Piglets at risk of dying from inadequate nourishment must be fostered, split suckled, hand-reared or euthanized. Refer to Section 6 (*Euthanasia*)
- Creep feed must be provided to nursing piglets after 28 days of age
- Supplemental iron must be administered to piglets reared indoors to prevent nutritional anemia

RECOMMENDED PRACTICES

a. Utilize split-suckling within 24 hours to allow smaller piglets access to the dam
b. Utilize cross-fostering when the litter size is too large for the sow to nurse. Fostering must be carefully managed to ensure that the nurse sow accepts and is able to feed all of the piglets
c. Administer an energy supplement (e.g., freshly thawed colostrum), when necessary, to weaker piglets and those at risk because of size or birth order
d. Provide a highly palatable creep feed to nursing piglets 5 to 7 days prior to weaning to assist with transitioning to the nursery
e. Provide piglets with water nipples appropriate to their size

2.1.2 Weaned/Nursery Pigs: First Week

The change from liquid sow's milk to a dry starter diet is challenging for piglets. Newly weaned piglets have very little body reserves and must get established on nursery feed as quickly as possible. Feed needs to be readily accessible, available frequently, be fresh and highly palatable.

REQUIREMENTS

- All newly weaned pigs must have continuous access to fresh feed that is presented in such a way that the majority of pigs can eat at one time, and feeder design must be appropriate for the size of the piglets

RECOMMENDED PRACTICES

a. Use feeding trays or floor-feeding in addition to feeders until pigs are eating readily from the feeder (3 to 4 days after weaning)
b. Feed moistened feed to piglets that show signs of inadequate feed intake (e.g., thin, gaunt, lethargic)

2.1.3 Nursery through Finish

Daily feed intake normally increases steadily between weaning and market weight.

RECOMMENDED PRACTICES

a. Adjust rations frequently to meet the changing nutrient requirements of the pigs as they grow

2.1.4 Boars

Controlling feed intake is important for boar optimal health and welfare.

RECOMMENDED PRACTICES

a. Feed boars bulky or high fiber feed to satisfy appetite
b. Control feed intake; feed measured amounts

2.1.5 Gestating and Farrowing Sows

Measures to satisfy appetite as well as nutritional needs are important for sow welfare. The amount of feed required will vary according to body condition (refer to Section 2.2), weight and reproductive stage.

REQUIREMENTS

- Sows must be fed daily to meet nutritional requirements

RECOMMENDED PRACTICES

a. Control feed intake; feed measured amounts
b. Feed sows some bulky or high fiber feed to satisfy appetite
c. Reduce feed intake about 48 hours prior to expected farrowing

2.1.6 Lactating Sows

During lactation, sows are at risk for significant weight loss due to additional demands to produce milk for the piglets. Diets with a higher nutrient density are appropriate for this phase of production.

REQUIREMENTS

- Feeding strategies must be developed and followed to minimize sow condition loss and optimize milk production

RECOMMENDED PRACTICES

a. Increase feed intake after farrowing to minimize weight loss during lactation
b. Feed two or more times daily, or ad libitum shortly after farrowing
c. Increase nutritional density for lactation

2.2 Body Condition Scoring for Breeding Stock

Assessing body condition using a Body Condition Score (BCS) system is a useful management tool that helps to evaluate health and welfare, assess nutritional status and optimize production. Typically, the 5-point BCS scale is used with a score of *1* referring to “too thin”, and a score of *5* referring to “too fat”, and *3* as “ideal”.

It is important to consistently assess sow body condition at critical points in the production cycle:

- **At weaning –** Sow is likely to be in her poorest condition. Condition at weaning can vary considerably;
- **At service –** It is important for sows to regain condition that may have been lost since farrowing and weaning;

- **Mid-Gestation –**Helps to determine whether the feeding strategy is optimal, either for the individual sow, or for the herd as a whole. Allows for corrective action, if necessary, to be taken before farrowing;
- **At Farrowing –** Helps to assess whether the feeding strategy during gestation was successful in meeting the target condition

REQUIREMENTS

- Corrective action must be taken for animals at a BCS of less than 2 or more than 4 (see below)

RECOMMENDED PRACTICES

a. Establish and follow a BCS Plan which sets target scores for each phase of production and identifies the critical points at which corrective action is necessary. Consultation with qualified advisors can assist with developing target body condition scores
b. Regularly assess the BCS of sows. Score body condition of sows at service, mid-gestation, farrowing and at weaning. Refer to Appendix I – *Sow Body Condition Scoring*
c. Aim for the following BCS targets, taking the genetic characteristics of the herd into account:
   - Sows at farrowing, 3.0 to 3.5, with 80% scoring 3[1] (14)
   - Lactating and Weaned Sows, 2.5 to 3.5
   - Boars, 3 or 4
   - When the body condition score of gilts, sows and boars falls below 2.5, take remedial action to improve body condition
d. Regain BCS lost during lactation during the gestation phase
e. Cull sows/gilts/boars if remedial action fails to recover body condition to a score of 2 or above.

2.3 Water

The provision of an adequate potable supply of water is critical for maintaining pig health and welfare. A pig's daily consumption of water varies with factors such as environmental temperature, age, weight, reproductive stage (e.g., lactation) and diet. Herd hierarchy and social interaction can limit access of individual pigs to drinking water.

REQUIREMENTS

- All pigs must have continual access to a supply of palatable water that is not harmful to health
- Water must be tested annually to ensure its suitability for the animals and corrective actions must be taken as necessary
- A contingency plan to provide water in the event of an interruption or contamination of the supply of water to the animals must be established

[1] Adapted from: Assessing Sow Body Condition (refer to Cited References).

RECOMMENDED PRACTICES

a. Monitor flow rates for all watering devices (e.g., nipples, bowls, troughs) to ensure that all pigs have access to adequate quantities of water. Refer to Appendix G – *Water Intake, Recommended Flow Rate and Height of Nipple Drinkers*

b. Design, allocate and position drinkers in such a way that the needs of all pigs can be met. Refer to Appendix G – *Water Intake, Recommended Flow Rate and Height of Nipple Drinkers*

c. Check water supply at least daily, and at least twice daily in hot or very cold weather, to ensure that the requirements of the pigs are being met

d. Supplement liquid feeding systems with a separate source of water that is potable and palatable

3. Animal Health

3.1 Relationship of Animal Health to Animal Welfare

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 (15).

RECOMMENDED PRACTICES

a. Participate in learning activities related to animal health and biosecurity

3.2 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 (16).

A Herd Health Management Program should include[1]:

- 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*
- 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 bio-security

[1] Components marked with an asterisk (*) are mandatory under Canadian Quality Assurance (CQA ®) and/or Animal Care Assessment (ACA™) programs

Veterinarians play a key role in helping producers to meet these animal health obligations. Having a good working relationship and a valid Veterinary Client/Patient Relationship (VCPR)[1] with a swine veterinarian improves the health and welfare of pigs.

REQUIREMENTS

- A Herd Health Management Program must be developed and followed

RECOMMENDED PRACTICES

a. Establish a working relationship with a licensed veterinarian
b. Work with the herd veterinarian to develop a Herd Health Management Program
c. Keep newborn piglets, weanlings, growers/finishers and gestating animals separate
d. Ensure incoming breeding stock receives appropriate treatments for external and internal parasites
e. Ensure herd additions originate from sources of known health status
f. Aim for All-In/All-Out at the highest possible level
g. Quarantine incoming breeding stock

3.2.1 Reportable/Notifiable Diseases

Animal owners, veterinarians and laboratories are required to immediately report the presence of an animal that is infected or suspected of being infected with a reportable disease to the appropriate federal or provincial authority.

For more information, refer to: Reportable Diseases, Immediately Notifiable and Annually Notifiable Diseases - A guide for the agri-food community and laboratories.[2]

REQUIREMENTS

- A veterinarian must be advised of any suspected reportable disease

[1] A Veterinarian/Client/Patient Relationship exists when all of the following conditions have been met (43):

- 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.

[2] Canadian Food Inspection Agency web page http://www.inspection.gc.ca/english/anima/disemala/guidee.shtml.The Reportable Diseases Regulations (SOR/91-2) are accessible at: http://laws-lois.justice.gc.ca/eng/regulations/SOR-91-2/page-2.html

3.3 Sick and Injured Animals

Individual animals need to be assessed on an ongoing basis for illness and injuries. The comfort and humane treatment of sick or injured animals are priorities.

Pigs exhibiting signs of illness or injury need to be identified early and dealt with as soon as possible. The herd veterinarian can assist with determining what conditions can be treated effectively and humanely. Prompt decision-making and action are vital to ensure the welfare of sick and injured animals.

Producers may find value in benchmarking specific injuries as a percent of the total herd to establish targets. As examples, targeting 2% or less of pigs with lameness or shoulder ulcers could be used to measure the effectiveness of management practices.

REQUIREMENTS

- A standard operating procedure that details protocols for the identification, care and humane treatment of sick or injured pigs must be developed and implemented
- Pigs must be examined daily for sickness and/or injury
- Pigs that are sick, injured, in pain, or suffering must be promptly treated, or be euthanized or if fit for human consumption, slaughtered on-farm. Refer to Appendix J – *Example Decision Tree for Euthanasia* (17)

RECOMMENDED PRACTICES

a. Investigate behavioural vices such as tail-biting, belly nosing, sucking, aggression and fighting to identify the possible environment, feed, management or health factors causing the problem
b. Move sick and injured pigs to a sick pen
c. Check sick, injured or recovering animals at least twice daily
d. Consult with the herd veterinarian regarding treatment
e. Document treatment of pigs to assist in the decision making process regarding further treatment and/or euthanasia

3.4 Skills Related to Animal Health and Welfare

Early recognition is important for managing disease. In addition to being competent in and knowledgeable about humane and effective methods of handling and moving pigs, stockpersons need to be competent in assessing animals for illnesses and injuries as well as in following procedures outlined in the farm's Herd Health Management Program for dealing with sick and injured animals. All pigs need to be checked daily.

3.4.1 Recognizing Sickness Behaviour

Understanding sickness behaviour offers an important opportunity for managing swine health and improving animal welfare. Pigs that are sick differ from their healthy pen mates. There may be a reduction in the social interaction of ill pigs, and increases in huddling, shivering and resting behaviours (18).

RECOMMENDED PRACTICES

a. Ensure all stockpersons are competent in recognizing behaviour associated with common pig diseases and ailments such as lameness, prolapses, strictures and hernias
b. Ensure that stockpersons understand farm protocols and procedures for dealing with animals identified as being sick or injured

3.5 On-Farm Surgery

In the event that surgery to correct specific conditions is required on-farm, guidance from a licensed veterinarian is critical.

REQUIREMENTS

- On farms where surgeries will be performed, guidance from veterinarians regarding the appropriate techniques of each procedure, pain control, and the need to properly instruct all personnel who will be expected to perform such procedures must be sought
- Stockpersons who perform on-farm procedures must be competent in performing those procedures

3.6 Farrowing

Sows and gilts need time to adjust to their farrowing stalls before farrowing.

Some sows and gilts need assistance during farrowing.

When farrowing is complete, the sow should appear comfortable and should not continue to strain. Sows should stand and drink in a few hours.

Sow health problems are most common during the first few days after farrowing, and sows need to be checked regularly (4 or 5 times per day) during this period. In some cases a farrowing gilt or sow may snap at or injure piglets that approach her head during and after farrowing. Isolating the piglets and controlling the first few nursing periods is advised.

REQUIREMENTS

- Sows must be observed frequently around their expected farrowing times
- Upon discovering sows in farrowing difficulty, prompt assistance must be provided
- Sows must be provided with continuous access to water post-farrowing

RECOMMENDED PRACTICES

a. Seek guidance from the herd veterinarian on how to recognize and manage difficult farrowings
b. Record breeding and expected farrowing dates
c. Observe sows during late pregnancy for indications that farrowing is imminent
d. Provide nest-building material to facilitate nesting behaviour
e. Ensure that the sow and farrowing facilities are clean prior to farrowing
f. Maintain calm surroundings during the farrowing process
g. Consult a veterinarian regarding the appropriate administration of antibiotics and/or analgesics following difficult births
h. Encourage sows to stand up 2-3 times daily starting the day after farrowing
i. Check sows and piglets at least twice daily for signs of disease, injury or abnormal behaviour

3.7 Newly Weaned Piglets

There are many factors to consider when determining when to wean piglets, including herd health, management practices, piglet size, birth weight, genetics, sow nutrition, litter size and the facilities (19). Generally speaking, the younger the piglet at weaning, the more sophisticated the housing, management and feeding systems need to be (20). Regardless of age, low weight piglets require additional care and can benefit from being kept in specialized pens until they are able to be moved to the common nursery area.

Newly weaned pigs are susceptible to disease challenges, so adherence to high hygiene protocols is important (20).

REQUIREMENTS

- Weaning procedures that minimize negative impacts on the health and welfare of the piglets must be developed and followed

RECOMMENDED PRACTICES

a. Ensure that the pH levels in the water are appropriate for the age of the newly weaned piglet
b. Source weanlings only from reputable suppliers with known health status
c. Monitor all piglets closely during the first 2 weeks after weaning for any signs of ill-health
d. Treat signs of ill-health promptly
e. Ensure that the area that piglets are weaned into is clean and dry

3.8 Sanitation

Good sanitation practices help to reduce the incidence of disease.

At a minimum, a sanitation protocol that includes cleaning, washing and disinfection needs to be applied annually in each production area of the barn. In between full sanitation applications, sanitation maintenance, such as scraping and sweeping, is important for pig health and cleanliness.

Facilities and management practices and legislative requirements can vary from region to region and province to province.

REQUIREMENTS

- The facility's sanitation protocol must be applied to each production area of the barn at least annually
- Manure must be removed and stored in a manner that does not affect the health and welfare of the animals

RECOMMENDED PRACTICES

a. Ensure that facilities are cleaned thoroughly and disinfected prior to receiving new groups.
b. Remove manure from alleys and pens to keep pigs clean
c. Maintain sanitary conditions for animals

3.9 Pest Control

Rats and mice can be a major health threat around swine facilities. Flies and other insects can be both nuisance and a disease vector.

RECOMMENDED PRACTICES

a. Learn to recognize signs of rodent infestations
b. Implement procedures to monitor and control pests
c. Eliminate or reduce the number of places rodents can use for shelter
d. Prevent clutter in and around buildings
e. Store feed in rodent-proof facilities
f. Make structures rodent-proof
g. Take steps to locate and eliminate insect breeding areas
h. Develop and follow an insect control program

3.10 Emergency and Safety

Emergency management protocols provide for the welfare of pigs in the event of an emergency (e.g., power failure, fire, flooding, inclement weather).

RECOMMENDED PRACTICES

a. Develop and review with stockpersons emergency management protocols
b. Ensure stockpersons are familiar with emergency procedures
c. Consider emergency management protocols when designing or renovating facilities
d. Ensure fire extinguishers are available in all buildings. Check annually for charge and working order

4. Husbandry Practices

4.1 Handling, Moving, Restraining and Treating Animals

Positive human contact is an important factor in animal well-being and productivity. Pigs with previous handling and moving experiences are easier to move (21).

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 (21). Moving people distract pigs (22).

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 (21).

Individual pigs may need to be restrained on a temporary basis for veterinary purposes or other procedures.

REQUIREMENTS

- Use humane moving devices when moving pigs (e.g., chase boards, shakers)
- Electric prods must only be used as a last resort and never as the primary driving device. When necessary, use of prods must be restricted to the back and hind quarters on lead pigs, but never used in the anal and genital areas, and only when there is a clear path for them to move forward
- Electric prods must not be used in the finishing pen
- Electric prods must not be used on nursery, distressed, sick or injured pigs (refer to Glossary of Terms for definition of *distressed*)
- Pigs must not be handled aggressively (e.g., kicked, walked on top of, picked up or suspended by one front leg, ears or tail)
- Pigs that become distressed during handling must be attended to immediately

RECOMMENDED PRACTICES

a. Aim for less than 1% of pigs showing injuries resulting from handling, restraining or moving pigs
b. Respect the pigs' flight zone: never approach an unsuspecting animal through its blind area. Refer to Appendix K – *Pig Vision and Flight Zone*
c. Move pigs in manageable groups that are small enough for the handler to be able to affect the lead pigs and that are appropriate for the facilities and the size of pigs. Always move pigs at a pace comfortable to the animal
d. Have non-essential people move out of the line of pigs' sight when moving pigs
e. Walk through finishing pens periodically in a calm manner so that pigs become accustomed to people
f. Restrain pigs only for as long as necessary and use appropriate well-maintained restraint devices

4.2 Stockmanship Skills Related to Animal Welfare

Ensuring stockpersons understand the behavioral principles of handling pigs such as flight zone and point of balance is an effective management tool on farms (23). The attitudes of handlers play an important role. Patience, timing and being able to predict the movement of the animal are important animal handling qualities (23).

REQUIREMENTS

- Handlers must be competent in low-stress pig handling methods

RECOMMENDED PRACTICES

a. Ensure animal handlers understand the behavioral principles of low-stress pig handling such as flight zone and point of balance, and understand how their attitudes and behaviour impact pig welfare. At a minimum, handlers should be instructed in:
    - Pigs' reactions to stressors (e.g., separation from pen mates, mixing with new animals, new environments)
    - The need for positive interactions between handlers and pigs
    - Sorting and moving pigs, including the need to affect the direction of the lead pigs
    - The optimum group sizes for moving pigs
    - The correct use of handling and humane moving devices
    - How to manage distressed and heat-stressed pigs
    - The correct use of restraining devices that are appropriate for various sizes of pigs
b. Hire handlers with positive attitudes and who exhibit empathy towards pigs

4.3 Mixing Pigs

When pigs are mixed, they go through a period in which they establish social hierarchy, which often involves aggression. Providing regrouped pigs with areas to escape attacks reduces aggression (21).

Pigs in large groups (i.e., >80) seem to be more tolerant when unfamiliar animals are introduced to the group (4). There is evidence that farms using large group housing have fewer death losses during marketing than farms utilizing smaller group sizes.

REQUIREMENT

- Remedial action must be taken to minimize or eliminate injuries associated with aggression

RECOMMENDED PRACTICES

a. Aim to reduce aggression-induced bites, scratches and wounds to less than 15% of pigs at any one time
b. Minimize mixing of pigs
c. Minimize other stressors when mixing pigs: avoid overcrowding, or mixing when the air temperature is above 32°C (90°F)

4.4 Breeding

It is important to protect the breeding animals from injury. Breeding gilts too early may predispose them to lameness and other problems (24). Boars not actively involved in heat detection or breeding need exercise to meet their physical needs.

REQUIREMENTS

- Breeding practices must not cause injury or suffering to any of the animals
- Boars must be provided with opportunities for exercise at least twice per week

RECOMMENDED PRACTICES

a. Maintain slip resistant floors in mating areas
b. Remove any objects or projections, such as feeders or nipple drinkers, that may cause injury during mating
c. Grow and develop replacement gilts carefully. Do not rush gilts into breeding production. Only breed gilts that have achieved adequate body weight and condition, age, and maturity to ensure the health and welfare of the gilt and the litter
d. Keep records on individual sows and use them to monitor farrowing difficulties and maternal behaviour
e. Match boar size to that of gilt or sow

4.4.1 Genetic Selection

Genetic selection for specific positive production traits can influence health and behaviour, which in turn, can impact pig welfare. For example, increased aggression and tail-biting behaviour has been linked to specific genetic strains. Also, sows that produce fast-gaining offspring have to be fed restricted diets, which can result in abnormal behaviours caused by the unfulfilled feeling of hunger.

RECOMMENDED PRACTICES

a. Breed for traits that have a positive influence on animal welfare and behaviour
b. Maintain breeding records to assist in identifying genetic sources of undesirable traits

4.5 Elective Husbandry Procedures

While justified, elective husbandry procedures such as castration, tail-docking and tusk trimming can be painful for pigs. Minimizing stress, discomfort and pain requires attention to protocols and equipment that enable stockpersons to perform such procedures with skill and care for the pigs' welfare.

REQUIREMENTS

- Elective husbandry procedures must only be carried out by competent stockpersons
- Properly maintained equipment must be used and hygienic conditions must be maintained

4.5.1 Castration

Typically, pigs are castrated before weaning to control "boar taint", and to reduce aggression and handling challenges associated with intact males.

Castration of pigs is painful regardless of age. The administration of analgesics is beneficial in controlling post-procedure pain (2). The application of topical anesthetics is ineffective in relieving pain during castration (2).

Immuno-castration has the potential to be an effective alternative to surgical castration, but because errors will occur, immuno-castration will require additional safeguards and testing for taint at plants. Production of intact males at lighter weights reduces boar taint, but does not guarantee its absence (2). In addition, aggression inherent with raising intact males presents other welfare challenges (2).

REQUIREMENTS

- Castration performed after 14 days of age must be done with anesthetic and analgesic to help control pain
- As of July 1, 2019, castration performed at any age must be done with analgesics to help control post-procedure pain

RECOMMENDED PRACTICES

a. Use an anesthetic and analgesic to control pain during castration and after the procedure for piglets 14 days of age or less
b. Use a licensed veterinarian to castrate pigs weighing more than 23 kg. (51 lbs.)
c. Consider using non-surgical methods to control boar taint once available and accepted in Canadian markets
d. Consider marketing intact males in markets where lighter market weights are accepted

4.5.2 Identification

A national system is in place to facilitate trace-back of swine to the farm of origin, when necessary. Slap tattoos that are linked to the pigs' origin premises are a market-driven requirement on pigs that are marketed in Canada.

Producers may elect to individually identify breeding animals. Identification is an important tool for maintaining health records and for tracking pigs through the farm. Identification methods include ear notches, ear tattoos, electronic transponders, ear tags, or pen (group) recognition.

Ear notching is considered to be painful. Ear tattooing causes stress in pigs, which may be reduced by refinement of equipment and techniques.

REQUIREMENTS

- Ear notching must only be performed on piglets when deemed necessary and when piglets are less than 14 days of age

RECOMMENDED PRACTICES

a. Use analgesics to control pain when ear tattooing, notching or punching
b. Do not use excessive force when applying slap tattoos
c. Use a specialized hammer designed for the size of pig when slap marking young pigs; pigs should be a minimum of 20 kg (44 lbs.)
d. Ensure that tags are correctly inserted, taking care to avoid main blood vessels and ridges of cartilage
e. Use non-toxic substances for temporary identification (e.g., livestock markers)

4.5.3 Tail Docking and Tail-Biting

Tail-biting is both a welfare and economic problem that involves destructive chewing of pen-mates' tails. Tail-biting can result in serious wounds and bleeding, and more severe consequences such as infection, spinal abscess, paralysis, and in extreme cases, death (25).

Tail-biting can be triggered by a wide range or combination of factors including overstocking, feed deficiencies, incorrect temperature levels, inadequate ventilation, drafts, high levels of dust and noxious gases such as ammonia, and lack of enrichment.

Some studies suggest that environmental enrichment, especially the provision of straw, reduces the chance of tail-biting (26).

The practice of tail-docking has been adopted primarily to reduce the risk of tail-biting. Docking tails too short may lead to infections or prolapses. Not docking tails short enough is not effective in reducing tail-biting (25).

Tail docking is known to cause acute stress, as indicated by physiological and behavioural responses. Animals with docked tails may develop increased sensitivity and chronic pain (27).

REQUIREMENTS

- Tail docking of pigs over 7 days of age must be done with pain control

RECOMMENDED PRACTICES

a. In order to prevent or control instances of tail-biting, investigate all aspects of the environment, feeding and management practices to identify contributing factors where tail-biting is a problem, so that remedial action (e.g., environmental enrichment) can be taken
b. Routinely monitor pens for signs of tail-biting and take corrective action as necessary (e.g., assess possible contributing factors; remove biter; add rooting and/or physical enrichment)
c. Provide rooting substrate (e.g., straw, shredded paper, hay, wood, sawdust) twice daily to weaned piglets to prevent tail-biting
d. Perform tail-docking, when deemed necessary, on piglets as early as possible, preferably between 24 to 72 hours of age to a length of not less than 1.2 cm from the base of the tail
e. Use analgesics to control pain when docking tails on piglets

4.5.4 Teeth Clipping

Although once a standard practice, routine teeth clipping is less common. Teeth clipping can help to reduce injury to littermates and/or the sow from outwardly projecting canine or "needle" teeth.

Typically, piglets start to use their teeth to compete within the first 24 hours of age, which is when the decision of whether clipping the teeth of aggressive piglets needs to be made.

Improperly performed, clipping needle teeth may cause discomfort to the piglet.

REQUIREMENTS

- The need to clip piglets' teeth must be evaluated

RECOMMENDED PRACTICES

a. Only clip teeth of piglets that show aggressive behaviour to littermates or nursing sows
b. Avoid shattering of teeth
c. Avoid clipping too short or too sharp. Remove the tips of teeth only or grind needle teeth with an appropriate grinder. Remove only one-third to one-half of the tooth
d. Clip teeth as early as possible when deemed necessary
e. Avoid teeth clipping on low birth weight piglets
f. Treat injured littermates as soon as possible

4.5.5 Tusk Trimming

When deemed necessary, tusk trimming is done to prevent boars from injuring other pigs or handlers. The teeth in the upper jaw may be considerably smaller and only the tusks on the lower jaw need to be trimmed. The procedure should remove the tip of the tooth only and should not involve the pulp cavity, the inside of the tusk that contains nerves and blood vessels.

Tusk trimming can be a painful procedure. Producers need to transport boars individually instead of trimming their tusks. Refer to Section 5.1.2 (*Preparing Boars for Transport*)

RECOMMENDED PRACTICES

a. Trim tusks at least 2 to 3 cm above the gum line without causing damage to other tissue (28)
b. Tusk trimming should be performed by a veterinarian, or a competent stockperson with appropriate sedative (consult the herd veterinarian)
c. Use embryotomy wire or a wire saw
d. Consider on-farm euthanasia of boars if they cannot be transported without risking the welfare of the boar, other animals, or stockpersons

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.

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.

5.1 Pre-Transport Planning

Advance planning is a key factor affecting the welfare of animals during transport. Planning includes selecting and preparing the animals, ensuring appropriate loading facilities are in place, and making arrangements with a qualified transporter. The nature and duration of the journey also needs to be taken into consideration (29) to ensure that animals are fit for the intended journey. Those responsible for arranging transportation services need to know the expected length of the trip, including intermediate stops (e.g., rest stops, assembly yards, auctions), and whether the transporter needs to provide additional services (e.g., feed, water, rest) during transit.

Loading densities may change based on various factors such as weather, the weight of individual pigs and the expected duration of the trip.

REQUIREMENTS

- Pigs must be loaded, unloaded, handled and transported by competent persons
- Pigs that are incompatible by reason of their nature, gender, health, weight or age must not be mixed

RECOMMENDED PRACTICES

a. Ensure all required paperwork (e.g., livestock manifests, bills of lading, emergency contact information) is completed and provided to the transporter so that the vehicle can leave immediately after loading
b. Ensure loading facilities are compatible with the type of conveyance being used by the transporter
c. Ensure the following information is discussed and agreed upon between transporter and shipper when booking transportation:
    - Number of pigs to be shipped
    - Type and average individual weight of pigs (e.g., weaners, market hogs, sows, boars)
    - Time and point of loading
    - Destination
    - Special requirements, if any, of the animals being transported
    - Special protection for all pigs from cold or hot weather as appropriate
d. During hot weather, schedule loading and transport of pigs to avoid traveling during the hottest hours or congested traffic conditions and take action to cool pigs prior to loading when necessary and possible (e.g., misting, spraying)
e. Know how to determine proper loading densities in all weather conditions in order to provide more accurate information to transporters when arranging for transport (refer to *Recommended Code of Practice for the Care and Handling of Farm Animals: Transportation*)
f. Schedule loading and transportation so that pigs can be unloaded promptly at destination

5.1.1 Preparing Pigs for Transport

Several factors affect the welfare of pigs during loading and transportation. These include:

- Group size
- Feeding programs and methods, including some feed additives and nutritional deficiencies
- Lighting conditions at loading
- Drafts in the loading/handling facilities
- Extreme heat, humidity or cold
- Aggressive handling during production
- Lack of regular moving and handling during the finishing period
- The attitudes of handlers both during the production phase and during loading

Feed withdrawal prior to transport is an important consideration for pig welfare (30). Pigs with no fasting period before transport are harder to handle (31) and are more likely to suffer from dizziness, hyperventilation and vomiting. Withdrawing feed several hours prior to loading may benefit pigs. However, pigs should not be mixed in order to withdraw feed.

RECOMMENDED PRACTICES

a. Select and identify pigs before the transport vehicle arrives to avoid delays in loading pigs
b. Do no load pregnant sows destined for slaughter within 6 weeks of expected farrowing or sows with suckling litters
c. Provide access to cool drinking water in assembly and all holding pens
d. Avoid feeding market pigs at least 5 hours prior to transport, but withdrawal of feed should not exceed 24 hours in total prior to slaughter

5.1.2 Preparing Boars for Transport

Cull mature boars destined for slaughter can be aggressive with handlers and other pigs.

REQUIREMENTS

- Boars must not be injured to discourage them from fighting

5.1.3 Preparing Newly Weaned Piglets for Transport

Generally, newly weaned piglets load easily. Because of their smaller size, they are more susceptible to temperature stress during transportation.

REQUIREMENTS

- The vehicle or container must be bedded with clean straw, shavings or other bedding material to provide effective insulation and comfort and to prevent the piglets from developing hypothermia or frostbite

RECOMMENDED PRACTICES

a. Avoid excessive noise to rush and crowd pigs into or out of the truck and into the chute during movement
b. Ensure 25% of floor space is visible when piglets are standing
c. Ensure that the conveyance is clean, disinfected, draft free and provides the correct temperature and air quality for newly weaned piglets
d. Ensure appropriate herd identification and health records are in place before loading begins

5.2 Fitness for Transport

Compromised animals have a reduced capacity to withstand the stress of transportation, due to injury, fatigue, infirmity, poor health, distress, very young or very old age, impending birth, or any other cause. Many compromised animals are unfit to transport: for example, **non-ambulatory** animals, those animals unable to stand without assistance or move without being dragged or carried, regardless of size or age (32).

Some compromised animals might be fit to transport with special provisions such as separation from other animals, extra bedding, and/or transporting to local slaughter only.

The carrier or the driver has the right and responsibility to refuse to load an animal that they recognize as unfit or compromised.

REQUIREMENTS

- Unfit animals must not be loaded (33). Refer to Appendix L – *Should this Pig be Loaded?* for guidance for determining fitness
- Compromised animals that are able to be transported under special provisions must be shipped directly to local slaughter, not through auction markets
- Animals that cannot bear weight on all four legs must not be loaded; these animals will likely become non-ambulatory during transport

RECOMMENDED PRACTICES

a. Evaluate fitness for transport in the context of each trip, including relevant factors such as the anticipated total trip duration from farm to final destination and prevailing weather conditions. As examples, compromised animals are more likely to suffer adverse effects of hot humid weather, and an animal that is fit for a short journey direct to an abattoir may not be fit for marketing through an auction
b. Refer to Appendix L – *Should this Pig be Loaded*?, for further guidance on determining fitness for transport
c. Identify less severe conditions early so that animals can be treated or shipped, as appropriate, before the condition worsens
d. Develop a cull management program
e. Market cull animals when they are fit

5.3 Handling During Loading or Unloading

Quiet handling is essential to the safe and efficient movement of pigs. Calm pigs are easier to sort and separate than excited pigs. Pigs are easier to sort if the handler moves slowly and deliberately and separates the desired pigs from the group on the first attempt. Pigs will be easier to move if they are given an opportunity to explore the new floor surface prior to being driven over it. Piglets that have never walked on concrete may balk and be difficult to move.

Electric prods are not appropriate tools to use as a primary driving device. Alternative handling tools such as chase boards, canvas slappers, shakers, flags or plastic paddles are more effective and more humane. Refer to Section 4.1 (*Handling, Moving, Restraining and Treating Animals*).

Both genetics and pigs' previous experiences will affect the ease of handling of pigs.

The transportation process is stressful for pigs. While some stress is acceptable, transporting extremely stressed or distressed pigs is a serious welfare concern. Possible contributing factors include heavy market weight, lack of exercise tolerance (i.e., distance moved during loading), rough handling, long feed withdrawal times, feed additives, steep loading ramps, high loading density, and hot, humid weather (34) (35).

Distressed pigs may exhibit (32):

- Difficulty breathing or open-mouth breathing, panting or gasping
- Patchy skin discolouration
- High body temperature
- Stiffness
- Reluctance to move (no other visible abnormalities)
- Inability to rise
- Trembling

It is important that all handlers learn to recognize signs of distress in pigs, as well what to do with them once they are identified. Pigs that are showing signs of distress are compromised and must not be loaded. A rest is often sufficient for pigs to recover. If in 2 to 3 hours the pig has not recovered, chances are that it is not going to and it may need to be euthanized (36).

RECOMMENDED PRACTICES

a. Handle pigs quietly and patiently
b. Ensure stock handlers are properly instructed and knowledgeable about animal behaviour and are skilled in handling pigs in varying climatic conditions
c. Clearly define the roles and responsibilities of each handler, including the transporter, before loading or unloading
d. Move pigs in manageable groups that are small enough to encourage forward movement of the lead pigs and that are appropriate for the facilities and the size of pigs. Always move pigs at a pace comfortable to the animal
e. Move pigs showing signs of distress during loading to a recovery pen and allow 2 to 3 hours to recover before attempting to move or load

5.4 Loading/Unloading Facilities

It is important to utilize facilities that allow for safe and easy movement of pigs to the loading facilities. Attention to the following will allow for easier movement of pigs:

- Compatibility between loading and unloading facilities with vehicle(s)
- Consistency in flooring types, temperature, air movement, and lighting (23)
- Eliminating visual distractions that cause pigs to baulk such as gaps between pens, alleys, ramps side gates, and chutes
- Eliminating the need for loading ramps, or if not possible, limiting the angle of loading ramps and ensuring that ramps are wide enough to accommodate the size of pigs
- Utilizing ramps that allow 2 pigs to walk side-by-side

REQUIREMENTS

- Loading and unloading facilities must be constructed with safe and secure footholds and must be maintained to facilitate ease of movement, and to prevent pigs from falling off, escaping or being injured

RECOMMENDED PRACTICES

a. Limit the angle of loading ramps to 20 degrees or less
b. Ensure that gates, doors and alleys are sufficiently wide to achieve good pig flow without bruising injury, and which avoid sharp turns
c. Use solid sides on ramps, crowd pens and chutes
d. Utilize cleats on ramps that are spaced at intervals appropriate to the size of the pigs [20 cm (8”) apart for market hogs and maximum of 10 cm (~3”) apart for piglets and nursery pigs] (37)
e. Provide consistent conditions between barn and loading ramp to minimize stress when moving and loading pigs

6. Euthanasia

6.1 On-Farm Euthanasia Plans

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. Guidance from a licensed veterinarian is strongly recommended.

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

REQUIREMENTS

- An on-farm written euthanasia plan to facilitate timely on-farm euthanasia must be developed and followed
- Individuals who euthanize pigs must be trained in the appropriate euthanasia methods

RECOMMENDED PRACTICES

a. Work with a qualified advisor to help develop a comprehensive euthanasia plan
b. Ensure that stockpersons are aware of the euthanasia plan
c. Develop clear criteria around when to euthanize an animal to ensure consistent decision making among on-farm personnel. Refer to Appendix J – *Example of Decision Tree for Euthanasia*

6.2 Decision Making around Euthanasia

Allowing a sick or injured animal to linger unnecessarily is unacceptable. There are three options for pigs that become ill or injured:

- **Treatment** – If appropriate and proven medical treatment is available
- **Ship direct to Slaughter** – If the animal is deemed fit for transport (refer to Section 5.2) and fit for human consumption
- **Euthanize** –Euthanasia may be the best option for welfare reasons

REQUIREMENTS

- Pigs with untreatable conditions that compromise the pigs' welfare and that are not responding to treatment and are not fit for transport must be promptly euthanized, or if fit for human consumption, slaughtered on-farm

RECOMMENDED PRACTICES

a. Ensure that on-farm personnel understand guidelines on when animals must be euthanized
b. Refer to Appendix L – *Should this Pig be Loaded?,* for guidance on animals that should be euthanized on-farm if not being treated

6.3 Methods of Euthanasia

Any euthanasia method must result in an immediate loss of consciousness (insensibility), with minimal pain and distress, followed by rapid progression to death.

REQUIREMENTS

- An acceptable method for euthanizing pigs must be used. Refer to Appendix M – *Methods of Euthanasia*
- The method used to euthanize pigs must be administered in a manner that is quick and causes the least possible pain and distress. Refer to Appendix N – *Example Procedures for Euthanasia Methods*

6.4 Confirmation of Death

Death has been defined as, "the irreversible loss of brain activity demonstrable by the loss of brain stem reflexes" (38). Regardless of the method used, it is important to be able to immediately examine the animal for evidence of death to ensure that the method has been successful. Signs that a pig is returning to sensibility include the presence of one or more of the following:

- Rhythmic breathing
- Constricted pupils
- Attempts to raise the head (righting reflex)
- Vocalization
- Palpebral reflex (run finger along the eyelash and if the pig blinks or moves its eye, the pig is sensible)
- Response to a painful stimulus (such as a nose prick with a needle)
- Natural blinking
- Absence of jaw tone (floppy tongue)

REQUIREMENTS

- Animals must be evaluated for insensibility immediately following the application of the euthanasia method. A backup method of euthanasia must be immediately applied if an animal shows signs of returning to sensibility
- Death must always be confirmed when euthanizing animals before moving or leaving the animal

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Appendix A: Guidelines for Determining Individual Stall Sizes for Gestating Sows [1]

Minimum widths of individual holding units for gestating gilts and sows of various sizes					
Interior Width of Individual Holding Units		Weight (at breeding) of Sow housed individually for majority of gestation		Weight (at breeding) of Sow housed individually for first trimester only (~ 1 month)	
cm	In.	Kg.	lb.	Kg.	lb.
60	24	<150	<330	<210	<465
65	26	150-200	330-440	210-260	465-575
70	28	200-260	440-575	260-320	575-705
75	30	260-340	575-750	>320	>705
80	32	>340	>750	N/A	N/A

[1] After July 1, 2024 mated gilts and sows must be housed in groups. Individual stalls may be used, for 28 days after the date of last breeding, and an additional period of up to 7 days is permitted to manage grouping.

Appendix B: Recommended Minimum Floor Space Allowances for Gilts and Sows in Group Housing

Group Description	Partially Slatted Floors		Solid Bedded Floors	
	m^2	ft^2	m^2	ft^2
Gilts	1.4 – 1.7	15 – 18	1.5 – 1.9	16 – 20
Sows	1.8 – 2.2	19 – 24	2.0 – 2.4	21 – 26
Mixed (Gilts and Sows)	1.7 – 2.1	18 – 23	1.9 – 2.3	20 – 25

Appendix C: Floor Space Allowances for Weaned/Nursery Pigs

Average Body Weight		Requirement		Short Term Adjustment to Requirement allowable at end of Production Phase				Recommended Practice	
***k* value:**		**0.0335**		**0.0285**		**0.0268**		**0.039**	
Weight of Pigs		**Minimum Space Allowance per Pig**		**15% short-term allowable decrease in floor space**		**20% short-term allowable decrease in floor space[1]**		**Ideal Minimum Space Allowance**	
		Fully Slatted or Partially Slatted Floors							
Kg.	**lbs.**	**m^2**	**ft^2**	**m^2**	**ft^2**	**m^2**	**ft^2**	**m^2**	**ft^2**
10	22	0.16	1.67	0.13	1.42	0.12	1.34	0.18	1.95
12	26	0.18	1.89	0.15	1.61	0.14	1.51	0.20	2.20
14	31	0.19	2.10	0.17	1.78	0.16	1.68	0.23	2.44
16	35	0.21	2.29	0.18	1.95	0.17	1.83	0.25	2.67
18	40	0.23	2.48	0.20	2.11	0.18	1.98	0.27	2.89
20	44	0.25	2.66	0.21	2.26	0.20	2.13	0.29	3.10
22	49	0.26	2.83	0.22	2.41	0.21	2.27	0.31	3.30
24	53	0.28	3.00	0.24	2.55	0.22	2.40	0.32	3.50
26	57	0.29	3.17	0.25	2.69	0.24	2.53	0.34	3.69
28	62	0.31	3.33	0.26	2.83	0.25	2.66	0.36	3.88
30	66	0.32	3.49	0.28	2.96	0.26	2.79	0.38	4.06
32	71	0.34	3.64	0.29	3.09	0.27	2.91	0.39	4.24
34	75	0.35	3.79	0.30	3.22	0.28	3.03	0.41	4.41
36	79	0.37	3.94	0.31	3.35	0.29	3.15	0.43	4.58
38	84	0.38	4.08	0.32	3.47	0.30	3.26	0.44	4.75
40	88	0.39	4.22	0.33	3.59	0.31	3.38	0.46	4.92

[1] Supporting records required. Refer to Section 1.2.2.

Appendix D: Floor Space Allowances for Grower/Finisher Pigs

	Requirement		Short Term Adjustment to Requirement allowable at end of Production Phase				Recommended Practice			
***k* value:**	**0.0335**		**0.0302**		**0.0285**		**0.039**		**0.045**	
	Fully Slatted and Partially Slatted Floors								**Solid Bedded Floors**	
Maximum Average Body Weight in Pen[1]	**Minimum Space Allowance per Pig**		**10% short-term allowable decrease in floor space**		**15% short-term allowable decrease in floor space[2]**		**Ideal Minimum Space Allowance**			
Kg.	**lbs.**	**m^2**	**ft^2**	**m^2**	**ft^2**	**m^2**	**ft^2**	**m^2**	**ft^2**	**m^2**	**ft^2**
40	88	0.39	4.22	0.35	3.80	0.33	3.59	0.46	4.92	0.53	5.67
45	99	0.42	4.57	0.38	4.11	0.36	3.88	0.49	5.32	0.57	6.14
50	110	0.46	4.90	0.41	4.41	0.39	4.17	0.53	5.70	0.61	6.58
55	121	0.49	5.22	0.44	4.70	0.41	4.44	0.56	6.08	0.65	7.01
60	132	0.51	5.53	0.46	4.98	0.44	4.70	0.60	6.44	0.69	7.43
65	143	0.54	5.84	0.49	5.25	0.46	4.96	0.63	6.80	0.73	7.84
70	154	0.57	6.13	0.51	5.52	0.48	5.21	0.66	7.14	0.77	8.24
75	165	0.60	6.42	0.54	5.78	0.51	5.46	0.69	7.48	0.80	8.63
80	176	0.62	6.70	0.56	6.03	0.53	5.70	0.73	7.81	0.84	9.01
85	187	0.65	6.98	0.58	6.28	0.55	5.93	0.76	8.13	0.87	9.38
90	198	0.67	7.25	0.61	6.53	0.57	6.16	0.78	8.44	0.91	9.74
95	209	0.70	7.52	0.63	6.77	0.59	6.39	0.81	8.75	0.94	10.10
100	220	0.72	7.78	0.65	7.00	0.61	6.61	0.84	9.06	0.97	10.45
105	231	0.75	8.04	0.67	7.23	0.63	6.83	0.87	9.36	1.00	10.80
110	243	0.77	8.29	0.69	7.46	0.65	7.05	0.90	9.65	1.03	11.14
115	254	0.79	8.54	0.71	7.69	0.67	7.26	0.92	9.94	1.07	11.47
120	265	0.82	8.79	0.73	7.91	0.69	7.47	0.95	10.23	1.10	11.80
125	276	0.84	9.03	0.75	8.13	0.71	7.67	0.98	10.51	1.13	12.13
130	287	0.86	9.27	0.77	8.34	0.73	7.88	1.00	10.79	1.16	12.45
135	298	0.88	9.50	0.79	8.55	0.75	8.08	1.03	11.07	1.19	12.77
140	309	0.90	9.74	0.81	8.76	0.77	8.28	1.05	11.34	1.22	13.08
145	320	0.93	9.97	0.83	8.97	0.79	8.47	1.08	11.61	1.24	13.39
150	331	0.95	10.20	0.85	9.18	0.81	8.67	1.10	11.87	1.27	13.70

[1] Typically ~ 10 to 20% less than the target market weight
[2] Supporting records required. Refer to Section 1.2.2.

Appendix E: Recommended Minimum Space Allowances for Boars

Boar Pens		
Flooring Type	Minimum Pen Size	
Partially Slatted	1.8 m x 3.1 m (5.6 m^2)	6 ft. x 10 ft. (60 sq. ft.)
Solid	2.4 m x 3.1 m (7.4 m^2)	8 ft. x 10 ft. (80 sq. ft.)
Boar Stalls		
Boar Weight	Minimum Stall Size	
135 kg (300 lb.)	0.70 m x 2.13 m	28 in. x 7 ft.
180 kg (400 lb.)	0.82 m x 2.29 m	32 in. x 7 ft., 6 in.
≥225 kg (500 lb.)	0.91 x 2.44 m	36 in. x 8 ft.

Appendix F: Feeder Design: Width of Eating Space (39)

The minimum width of a feeding space is based on the shoulder width of the largest pig in the pen, plus 10% to accommodate variation in body shape. The formula used to calculate the width of a feeding space is:

Minimum feeder space width = maximum shoulder width x 1.10

cm = (6.1 x maximum body weight $(kg)^{0.333}$) x 1.10

Recommended Width of Eating Space			
Weight of Largest Pig in Pen		**Feeder Width**	
kg.	lbs.	cm	in.
55	121	25.5	10.2
70	154	27.7	11.1
100	220	31.1	12.4
110	242	32.2	12.9
120	264	33.1	13.2
130	287	33.9	13.4
140	309	34.8	13.9
150	331	35.6	14.0

Feeders are most crowded when growing pigs reach a point that only one pig can eat from a feeder space at the same time (typically 25 kg), at which point they spend 80 – 110 minutes/day eating, depending on the feed and feeder type.

Appendix G: Water Intake, Recommended Flow Rate and Height of Nipple Drinkers (40)

Phase	Weight (kg.)	Intake (L/day)*	Nipple Drinkers**		
			Flow (L/min)	Height [cm, (inches), 45°]	Height [cm, (inches), 90°]
Gestation		Variable	0.5 to 1.0	90 cm (35”)	75 cm (30”)
Lactation		12 – 20	1.0 to 2.0	90 cm (35”)	75 cm (30”)
Piglets		Variable	0.5 to .07	15 cm (6”)	10 cm (4”)
Weanling	5	1.0 to 2.0	0.5 to 1.0	30 cm (12”)	25 cm (10”)
Weanling	7	1.5 to 2.5	0.5 to 1.0	35 cm (14”)	30 cm (12”)
Grow/Finish	15	2.5 to 3.5	0.5 to 1.0	45 cm (18”)	35 cm (14”)
Grow/Finish	20	3 to 4	0.5 to 1.0	50 cm (20”)	40 cm (16”)
Grow/Finish	25	3 to 4	0.5 to 1.0	55 cm (22”)	45 cm (18”)
Grow/Finish	50	5 to 7	0.5 to 1.0	65 cm (26”)	55 cm (22”)

* Water disappearance may exceed consumption by as much as 100% (average is 35%) if traditional nipple drinkers are employed. Consumption will increase 15 to 50% if barn temperatures are above the temperature comfort zone.

** Waste will increase if drinkers are poorly positioned, if flow rates are excessive or if feed intake is restricted

Appendix H: Simple criteria to think about when choosing the best enrichment objects for pigs (The six Ss) (41) [1]

- **SAFE**
  - No sharp edges
  - No tires
  - No poisonous wood or wood that may have been preserved, or any other toxic material
  - No staples or fixings in wood
  - No materials that may be toxic to pigs
  - Limbs and/or other body parts cannot become trapped
  - If the enrichment can be broken or dismantled by the animals, the fragments must not pose a safety risk
  - The enrichment should not be able to be used to injure pen-mates or damage the enclosure
- **SANITARY**
  - Materials should not be fouled
  - Materials should be easily cleaned or sterilized to prevent disease transmission
- **SOFT**
  - For the pigs to slowly destroy the object, it must be malleable (adds to the novelty factor)
- **SIMPLE**
  - Anything too complex can cause frustration and could actually lead to vice
  - A number of simple items is better than one complex item, and allows more pigs to gain access at one time
- **SITE**
  - Do not site toys over lying, drinking or feeding areas
  - Dunging areas prove the optimum position
  - Switch sites regularly to help maintain novelty
- **SUSPENDED**
  - Provides extended novelty factor
  - Avoids fouling
  - Allows more pigs to gain access to the toy if it is suspended in a central location

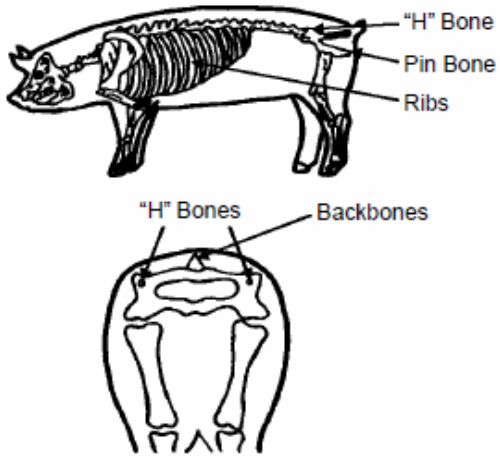
[1] Adapted from: Environment Enrichment for Pigs - Providing objects or substrates for proper investigation and manipulation-Keeping pigs occupied in non-harmful behaviour(refer to Cited References). Additional text from *Guide for the Care and Use of Agricultural Animals in Research and Teaching* (refer to Cited References).

Appendix I: Sow Body Condition Scoring System (14)

This scoring system uses finger or hand pressure at key points on the sow's body to arrive at a number, or score.

The points used on the sow's body are those areas where the only tissue between the skin and bones is fat tissue. These areas on the sow include the ribs, back bone, "H" bones, and "pin" bones (Figure 1). By assessing the ease or difficulty of feeling these bones, you can estimate the fat stores of the sow. It is important to rely on more than one of these areas when assessing body condition. Different animals may deposit fat in differing degrees at different locations.

Figure 1. Location of ribs, backbone, "H" bones, and "pin" bones on the sow.



Relationship between condition score and back-fat level (14)

Condition Score	Approximate Level of Backfat	
	Inches (in)	Millimeters (mm)
1	< 0.6	< 15
2	0.6 – 0.7	15 – 18
3	0.7 – 0.8	18 – 20
4	0.8 – 0.9	20 – 23
5	> 0.9	> 23

Condition Scoring Guide

Condition score 1:

The sow is visually thin, with hips and backbone very prominent and no fat cover over hips and backbone.

Condition score 2:

The hip bones and backbone are easily felt without any pressure on the palms.

Condition score 3:

It takes firm pressure with the palm to feel the hip bones and backbone.

Condition score 4:

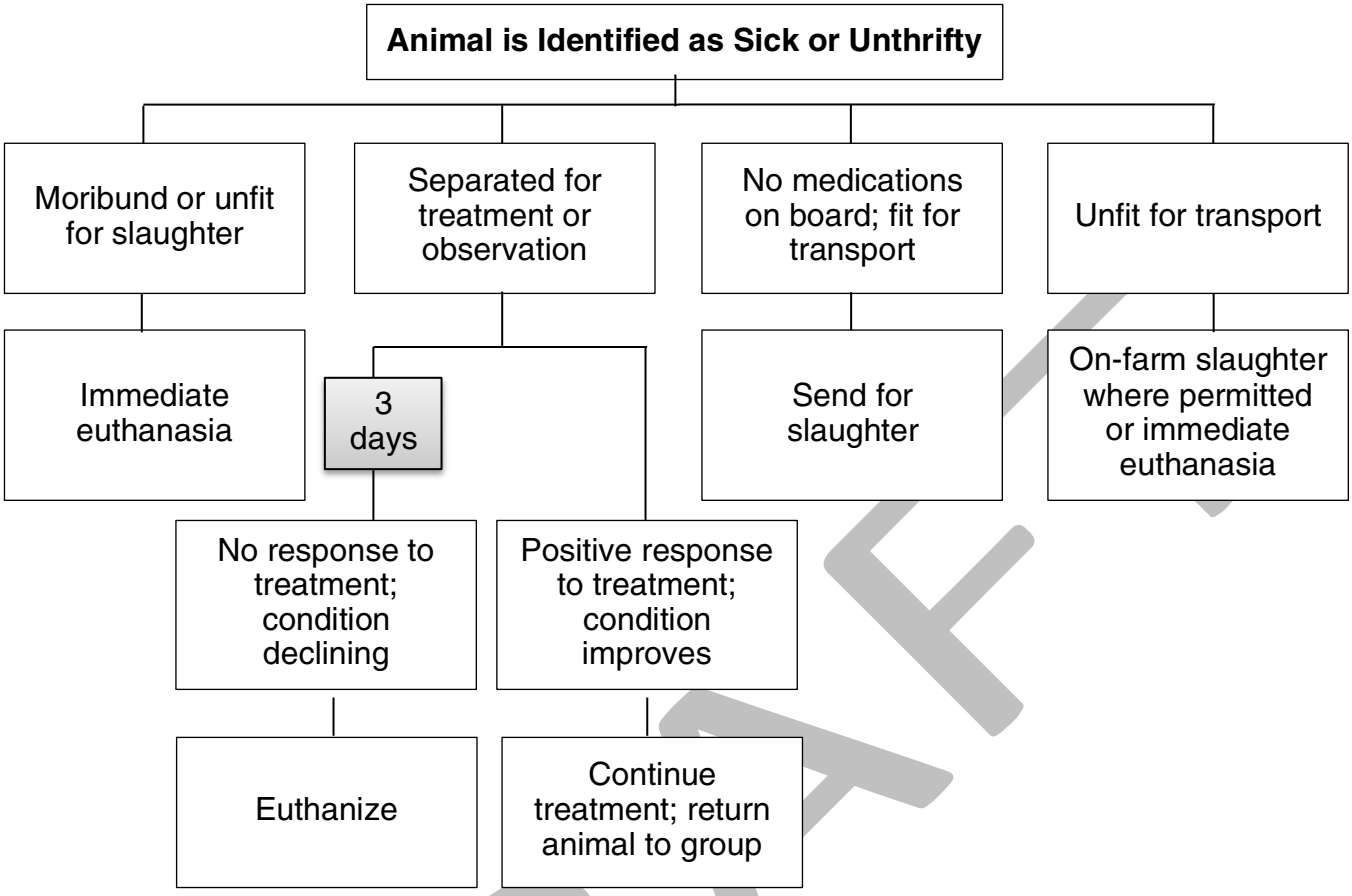
It is impossible to feel the bones at all even with pressure on the palm of the hands.

Condition score 5:

The sow is carrying so much fat that it is impossible to feel the hip bones and backbone even by pushing down with a single finger.

Score	Appearance	Pelvic Bones	Loin	Ribs
1	Emaciated	Very prominent. Deep cavity around tail head	Vertebrae are prominent and sharp. Very narrow loin. Hollow flank.	Individual ribs are very prominent.
2	Thin	Obvious with slight cover.	Narrow loin. Flank rather hollow. Slight cover on spine, but prominent vertebrae.	Rib cage less apparent but individual ribs easily detected with slight pressure.
3	Ideal	Covered but felt with pressure.	Spine covered and rounded.	Ribs are covered but can be felt with pressure.
4	Fat	Only felt with firm pressure. No cavity around tail.	Difficult to feel vertebrae. Flank filled.	Rib cage not visible and difficult to feel.
5	Obese	Impossible to feel and huge fat deposits (hanging skin and fat).	Thick fat cover, impossible to feel bones. Flank full and rounded.	Thick fat cover, not possible to feel ribs.

Appendix J: Example of Decision tree for Euthanasia (17)



Examples of criteria for euthanizing weanling or growing pigs (17)

- Weak, unable to stand
- Unable to eat or drink
- Moderate to severe lameness
- Fractured leg
- Severely damaged digits
- 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 body weight loss (20% or greater)
- Severe diarrhea with dehydration (no response to treatment in 2 or more days)
- Respiratory disease with dyspnea (no response to treatment in 2 or more days)

Appendix K: Pig Vision & Flight Zone (42)

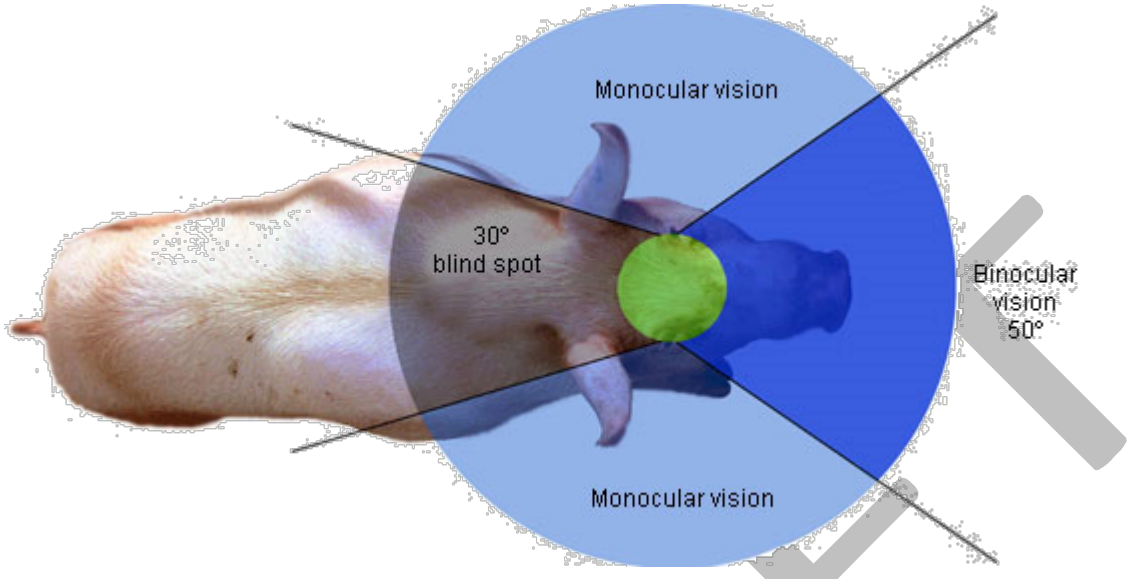


Figure 1 – Monocular and binocular vision zones of the pig

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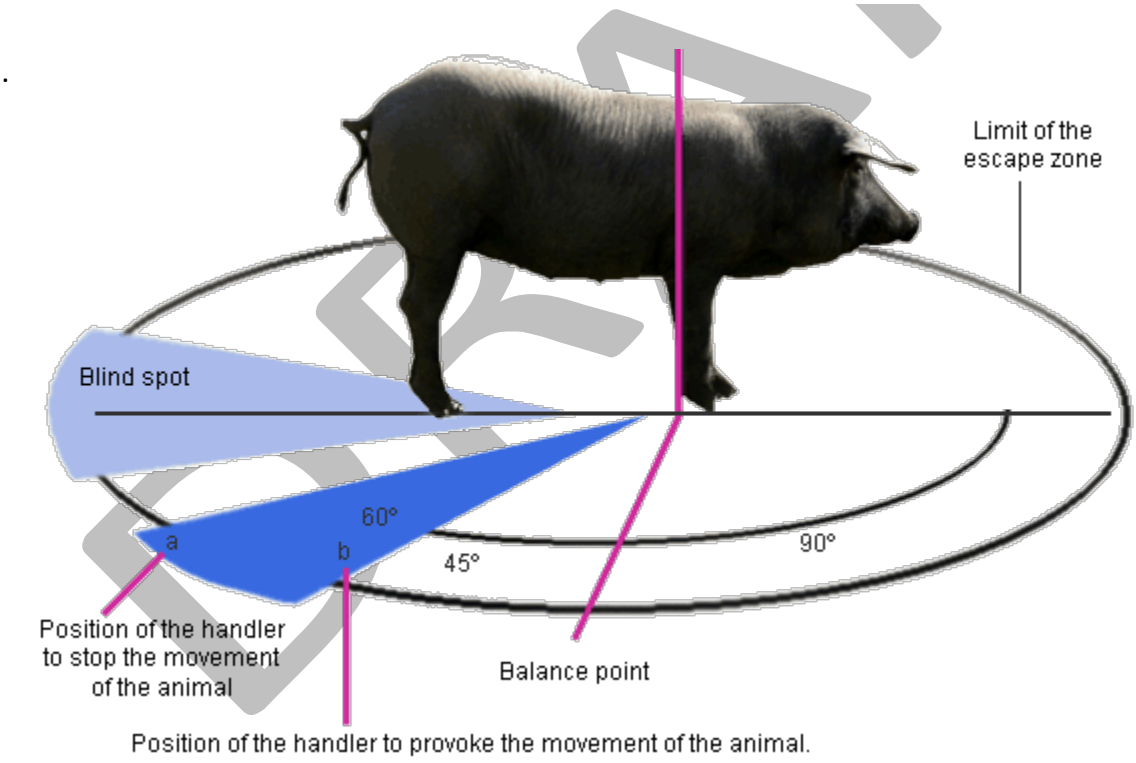
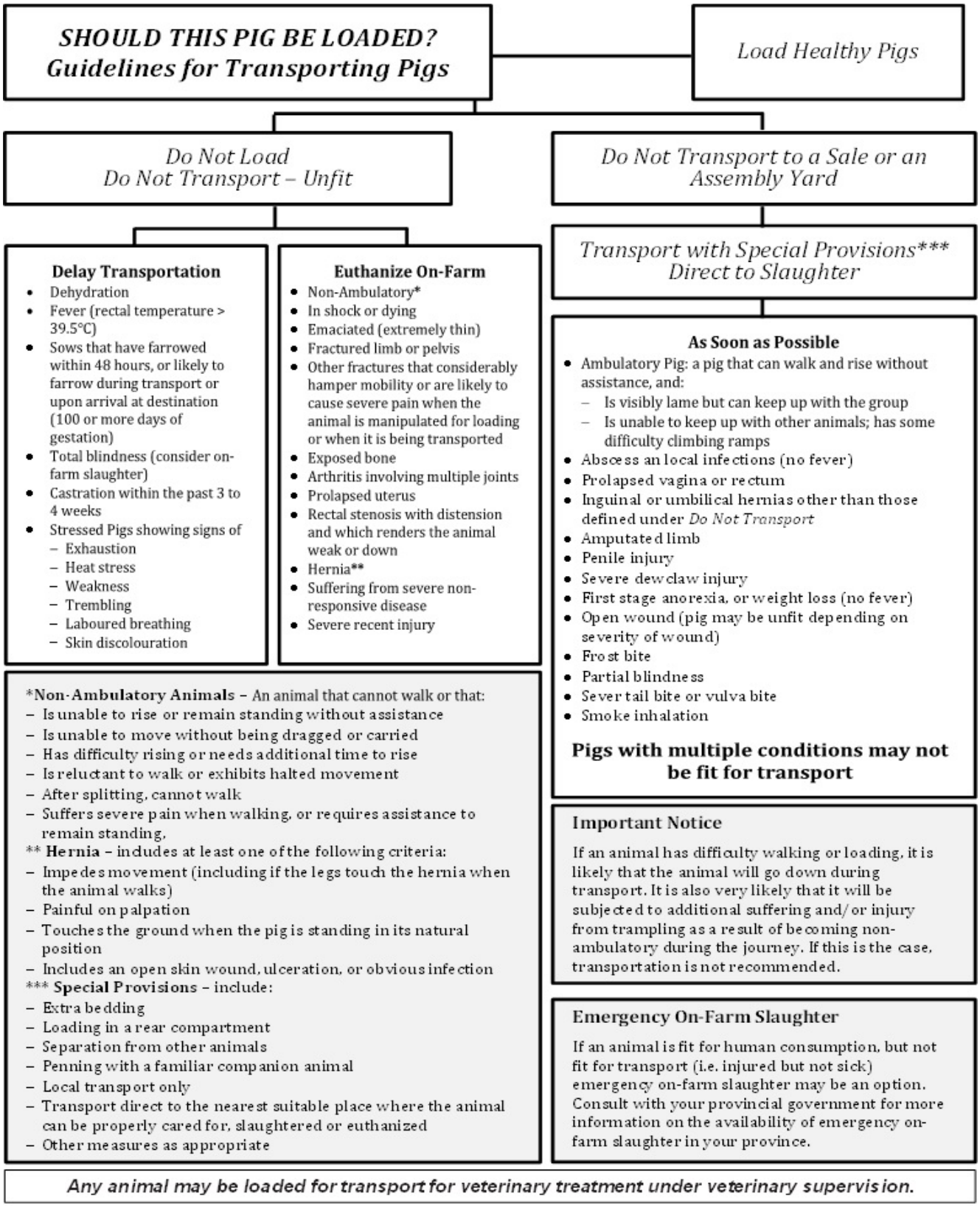


Figure 2 - Balance point of the pig. If the intention is to move the pig in a forward direction, the animal handler should be situated at point b.

Appendix L: "Should this Pig be Loaded?" Decision Tree[1]



[1] Adapted from: *Should this Pig be Loaded?* Decision Tree published jointly by BCFACC, AFAC, FACS, MFAC and OFAC (May, 2010) and from *Arbre de Decision Transport des Animaux Fragilisés* published by Federation des producteurs de porcs du Quebec (July, 2011)

Appendix M: Methods of Euthanasia

The following is a list of acceptable and unacceptable methods of euthanasia of individual animals for use on-farm, as well as methods that are only considered acceptable with the noted conditions. The chart is based on the information that was available at the time of publishing. New, acceptable equipment and/or euthanasia methods may be developed and become available during the life of this Code. For any method to be considered acceptable, it must render the animal immediately unconscious and the animal must not recover consciousness prior to death.

	Suckling Piglets	*Nursery Pig < 10 weeks [<32 kg (70 lbs.)]*	*Grower Pig <68 kg (150 lbs.)*	*Pigs 68 kg to 200 kg (150 lbs. to 440 lbs.)*	*Mature Pigs > 200 kg (440 lbs.)*
Anesthetic Overdose[1]	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Blunt Trauma[2]	Acceptable (2)	Unacceptable	Unacceptable	Unacceptable	Unacceptable
Electrocution	**Conditional**[3] for piglets ≥ 2.3 kg/5 lbs. **Unacceptable** for piglets <2.3 kg/5 lbs. (2)	Conditional[3]	Conditional[3]	Unacceptable	Unacceptable
CO_2 and/or Argon Inhalation	Conditional[4]	Conditional[4]	Unacceptable	Unacceptable	Unacceptable
Gunshot to the Head	Unacceptable	Acceptable	Acceptable	Acceptable	Acceptable
Non-Penetrating Captive Bolt	Acceptable	Conditional[5] Acceptable for piglets <9 kg/19.8 lbs.	Unacceptable	Unacceptable	Unacceptable
Penetrating Captive Bolt	Unacceptable	Acceptable	Acceptable	**Acceptable** for pigs < 120 kg (264 lbs.) **Conditional**[6] for pigs ≥ 120 kg (264 lbs.)	Conditional[6]

[1] Administered under the direction of a licensed veterinarians only.

[2] Blunt trauma can be administered by grasping the hind legs of the piglet and striking the top of the cranium firmly and deliberately against a flat, hard surface. Alternatively, a sharp, firm blow with a heavy blunt instrument to the top of the head over the brain can be used. Sufficient force should be used to euthanize the piglet in one attempt.

[3] Electrocution of animals must be performed using properly-maintained, proven effective, purpose-designed equipment only. The electric current must flow through the brain first, resulting in unconsciousness and then through the heart which results in cardiac arrest. This can occur either simultaneously in one step, or by using a two-step method with electrocution to the head performed first.

[4] Animals must be sedated to the point of unconsciousness before introduction to gases. This form of euthanasia is acceptable only with properly-maintained, proven effective, purpose-designed equipment

[5] Non-penetrating captive bolt euthanasia may be used if the manufacturer specifies that the equipment is designed for the animal's weight range. A secondary method of euthanasia may be required depending on the type of equipment used after the animal becomes insensible (unconscious). For pigs at the heavier end of this weight range, a penetrating captive bolt will be more effective.

[6] Pigs ≥120 kg. in weight require a secondary method (e.g., bleeding, reapply the captive bolt) that is performed after the animal becomes insensible (unconscious).

Appendix N: Example Procedures for Euthanasia Methods

Blunt Trauma[1]

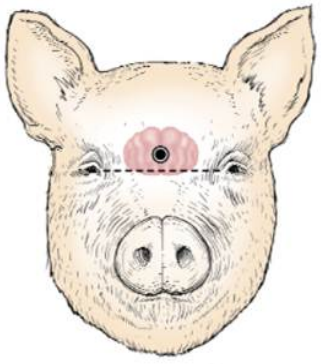


Figure 1: Frontal site suitable for blunt force (44)

Euthanasia by blunt trauma is only effective for suckling piglets because their skull bones are thin enough for the force to case depression of the central nervous system and brain damage.[2] A sharp, firm blow with a heavy blunt instrument on the top of the head over the brain is an efficient way of humanely killing piglets. Blunt trauma can be administered by grasping the hind legs of the piglet and striking the top of the cranium firmly and deliberately against a flat, hard surface. Alternatively, a sharp, firm blow with a heavy instrument to the top of the head over the brain can be used.

It is essential that blunt force be administered swiftly, with determination and firmly enough to ensure quick, humane euthanasia on the first attempt. If there is any doubt whether the pig is dead, the blunt force should be repeated. Contact your veterinarian for proper technique instruction.[3]

Captive Bolt/Gunshot

Correct positioning for this method is critical. The shot should be directed at the midline of the forehead, 2 cm (0.8 inches) above eye level. The penetrating captive bolt should be placed very firmly against the skull and directed upward approximately 20° from the skull towards the brain. The trigger is pulled as soon as the correct position and angle are achieved and the animal is not moving. A charge large enough to cause the bolt to penetrate the skull of a sow or boar should be used.[4]

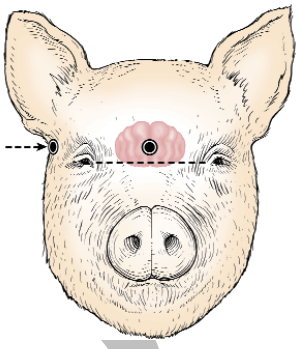


Figure 2: Frontal site, suitable for captive bolt pistol or gunshot (44)

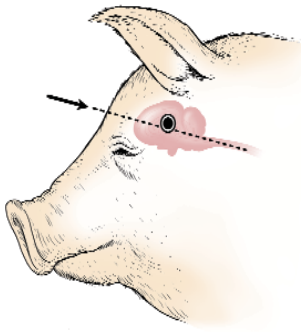


Figure 3: An alternative for gunshot only is the temporal region (44)

[1] Diagrams reprinted from: Humane Euthanasia of Sick, Injured and/or Debilitated Livestock. Refer to References.
[2] On-Farm Euthanasia of Swine –Recommendations for the Producer: National Pork Board (January, 2009)
[3] On-Farm Euthanasia of Swine – Options for the Producer: Ontario Pork (no date)
[4] On-Farm Euthanasia of Swine – Options for the Producer: Ontario Pork (no date)