Animal Care at Work

ANIMAL CARE ASSESSMENT PRODUCER MANUAL 2017



Canadian Pork Council Conseil canadien du porc

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To learn more about the Animal Care Assessment (ACA[™]) program, write or call the Canadian Pork Council at the address and phone number below.

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Introduction:

The swine Animal Care Assessment has been designed as an educational and assessment tool for producers to track the welfare of animals on their farms, independent of the production system. Coupled with the external verification process, the program can be used to provide assurance of on-farm animal welfare. Implementing an animal care assessment will help you manage animal care on your farm and demonstrate this to customers.

Pigs are raised in many ways including indoor systems (which predominate in Canada), outdoor pasture systems and mixed indoor-outdoor systems. Each system has its own set of advantages and disadvantages for the animals. Within any system, however, animal welfare is largely determined by the amount and quality of care provided.

Standards described in this assessment are outlined in various recommended codes including the Recommended Code of Practice for the Care and Handling of Farm Animals — Pigs, the Addendum Early Weaned Pigs and Transportation. Producers are encouraged to refer to these documents when completing the assessment.

The Approach:

The aspects of day-to-day farm life that impact the health and welfare of the pig have been identified in the swine Animal Care Assessment and checklist. By completing the questions, producers will create a welfare assessment for their farm.

This program builds on the food safety aspects of the CQA[®] program as it is recognized that many practices that promote food safety on farms also are essential to good animal care. Attention to animal health and well-being are critical. Participants following the Animal Care Assessment will be required to meet the food safety requirements of CQA[®]. When the document refers to operating procedures or standard operating procedures, this simply means that you have an approach to address this particular issue, and that the approach is written down.

Shaded questions are program requirements.

This document was developed by a team of producer representatives, researchers and government officials. It is an evolving document. As part of the evolution, the Canadian Pork Council is committed to taking a leadership role in furthering work on various issues, including sow housing, tail trimming, castration and environmental enrichment.



Part 1: General

Stockmanship

Well-trained stockpeople are the key to success in any type of system. Stockpeople and pigs are in regular and close contact during the course of a normal day. Sometimes pigs need to be restrained for veterinary purposes or other procedures. During these interactions, the demeanor and behaviour of the stockperson influences the pig's stress level and subsequently, the pig's response.

Handling studies have shown that pigs are very sensitive to brief tactile interactions with humans. Negative tactile interactions imposed briefly but recurrently will cause fear of humans.

The above-mentioned interactions also affect the stockperson, and can influence his or her attitude, stress level, and work performance to the extent of affecting job satisfaction.

Before working with pigs, stockpeople need to know the basic needs of the animals entrusted to their care and receive adequate instruction to look after them humanely. Training should include a review of the Recommended Code of Practice for the Care and Handling of Farm Animals — Pigs, the Addendum Early Weaned Pigs and Transportation. Producers are encouraged to establish standard operating procedures for dealing with various aspects of pig welfare (feed, water, treatment, handling etc.) and to make these standard operating procedures part of the education and ongoing training of staff.

Attitudes and personalities of stockpeople strongly determine their demeanor and hence their behaviour towards animals. A stockperson's behaviour influences a pig's welfare and the quality of the interaction influences both welfare and production. Pigs that are handled by stockpeople that are considerate perform better. Producers need to understand the relationship between attitudes and behaviour and begin training staff and selecting new staff with positive attitudes. The best stockpeople:

- Like their pigs
- Have a good understanding of their needs
- Are determined to meet the needs of the pigs
- Provide, through knowledgeable handling practices, a high level of care which results in optimum pig health, welfare and performance.

Staff Training

1) Do you have copies or have access to the Recommended Codes of Practice for the Care and Handling of Farm Animals available?

(Participants should have access to the codes that are of relevance to their farming operation available as follows: Recommended code of practice for the care and handling of farm animals: Pigs, Addendum Early Weaned Pigs and Transportation)

Yes O No O



2) Do you have a documented system in place that ensures that stockpeople have access to, and receive training in animal handling?

Yes	\bigcirc	No	0

Handling:

Pigs must be handled with care, gentleness and patience. Positive human contact is an important factor in animal welfare and productivity. Studies show that fear of humans (i.e. shying away or vigorous avoidance) produces long-term stress in pigs.

3) Are stockpeople monitored weekly on how they interact with the pigs in their care?

Yes O No O N/A O

4) Do pigs experience consistent, positive human contact on a daily basis?

Yes O No O

Use of handling devices

The actual moving of pigs, whether from pen to pen, barn to truck or truck to plant, can be stressful for pigs and attendants. Patience and common sense are needed to make the move easier.

By encouraging the lead pig to enter the handling facility, others will generally follow.

Handling devices can help move pigs if used properly — the improper use of these devices is not acceptable. Attendants must be patient and considerate. Sometimes the best move may be to stop or step back and let both the pig and the attendant calm down.

Electric prods should be used only as a last resort and only according to manufacturers' instructions. It is unacceptable to use electric prods on very young animals and breeding animals. It is also unacceptable to use prods on sensitive areas, such as the nose, eyes, vulva, anus and testicles.

5) What devices are used to move pigs on your farm?



6) Are stockpeople trained in the use of handling devices used on your farm?

Yes \bigcirc No \bigcirc

Loading Pigs for Transport:

Loading pigs for transport is stressful, especially if this is a new experience for the pig. Pigs have evolved to treat novel situations as dangerous. Their reaction will also be influenced by previous experience and genetics.

If pigs have not been exposed to regular human contact, they will resist attempts to loading. The way to overcome this is to gradually introduce pigs to the idea of being loaded and unloaded through consistent contact with stockpeople. Tame animals that are used to close contact with people are usually less stressed by handling.

Everyone involved in the handling and transportation of pigs needs to be trained in the basics of pig behaviour and good pig handling. Quiet, careful handling during all phases of production will help preserve meat quality.

Educational materials should be available in the barn for staff who have questions regarding the handling of certain classes of pigs (i.e. non-ambulatory, piglets, sows, boars).

7) Are pigs moved in a manner such that none fall down or are forced through doorways?

Yes O No O

Compromised pigs

At the time of transport, all pigs must be fit for transport. Animals that are sick, injured, disabled, fatigued or that cannot be moved without causing them additional suffering are unfit for transport.

Federal regulations prohibit loading or transporting any animal that is unfit for transport. Some provinces also have their own regulations and industry standards. Please refer to resources provided by provincial hog producer associations, identified in Appendix 2, to determine the specific requirements for your province.

8) Is your transporter on a trucker quality assurance program?

Yes O No O



Transporting early-weaned piglets

Handling and transportation of newly weaned piglets must be conducted with care.

9) Are early weaned piglets transported according to the recommendations in the Addendum — Early Weaned Pigs?

Yes O No O N/A O

Loading facilities

Well-designed handling facilities should facilitate easy, quick and humane sorting, treating and loading of pigs. Facilities should be designed to encourage the smooth flow of animals, thereby reducing excitement, panic and traffic jams and, indirectly, to reduce heart difficulties, body injuries and damaged meat (including bruises, PSE and other losses).

10)	ls non-slip flooring p include providing wo grooves or slats.)	rovided on loading ramps and walkways? (This could ood shavings or wood chips, or ensuring floors have
	Yes 🔘	No O
11)	Do pathways and ran	nps have sharp edges that would cause scratches or injury?
	Yes 〇	No O
12)	Do pathways and rar	nps have sharp turns that impede pig movement?
	Yes 🔘	No O
		la adia a dia ama adala . Tha condicilita ana cira a condicata da condici

Pigs find loading and unloading disagreeable. They dislike moving up (or down) ramps. Loading of pigs can be more easily accomplished if pathways and ramps have no sharp turns that impede movement and that may lead to injury of the pigs. An ideal loading alley and ramp should be curved, have solid walls, be properly illuminated and be flat. Ramps should never be steeper than 20°. Step height should not exceed 10 inches for market hogs. Pigs will move from a darker place to a brighter place, but they will not move toward blinding light. Pigs will refuse to move forward onto a truck if air is blowing into their faces.

13) Are ramps steeper than 20°?

Yes \bigcirc No \bigcirc



14) Are your loading areas and ramps well lit?

Yes O No O

15) Are loading densities appropriate?

Yes O No O

Temperature and Ventilation During Transportation

Appropriate temperatures must be maintained, and a source of fresh air ventilation be provided for pigs undergoing travel. As pigs are especially sensitive to extremes of temperature, they must be protected from the cold in winter and the heat in summer for the duration of the travel. On extremely hot days, pigs must be periodically sprayed with cold water to prevent stress.

Transportation of boars

Moving and transporting boars can be dangerous to handlers and other animals. When de-tusking is necessary prior to transport, it must be carried out humanely. Only the two tusks in the bottom jaw need to be removed as these are the teeth used for fighting. Ensure stock-people are adequately trained to handle these animals, and refer to Appendix 2 at the back of this booklet for more information.

Pig Health and Comfort

Pigs should be observed (this does not involve entering the pens) at least twice per day for signs of disease, injury, thermal comfort (too cold or too hot) or general unthriftiness (not thriving or growing well). Monitoring should be more frequent during high-risk outbreak situations such as suspected signs of illness, or abnormal behaviour (i.e. tail biting). Pigs should be observed while feeding to monitor their comfort level around the feeder(s).

Stockpeople need to know the normal behaviour for their pigs and be able to recognize signs that indicate discomfort or disease, as well as what needs to be done to remedy the situation. Pigs that do not stand or show interest at feeding time need to be closely examined. Refer to Appendix 2 in the back for access to more information on caring for compromised pigs.

16) Are stockpeople familiar with the behavioural and other signs related to discomfort or disease?

Yes O No O

Sick, injured or disadvantaged pigs must be attended to immediately and may be moved to a designated isolation/hospital pen. An isolation/hospital pen should be available for each category of pig on the farm. The key to success with an isolation/hospital pen is to intervene



early. Sick, injured or disadvantaged pigs need to be relocated as soon as staff recognize that these animals need special attention. For example, lameness in any animal is usually a sign that they are in pain. Lameness in pigs is a sign of ill health and discomfort. Some examples of conditions that cause leg problems are arthritis, abscesses, fractures and skin ulcers in the joint area. When there is a high incidence of lameness, identify the source of the problem. (Refer to the Caring for Compromised pigs references for more information on identifying specific actions that need to be taken with various conditions.)

It is recommended that producers establish a standard operating procedure for isolating and caring for sick or injured pigs.

17)	Do you have a	documented stan	dard operating pro	cedure in place for the
	identification,	care and humane	treatment of sick o	r injured pigs?

Yes O No O

Isolation pens (i.e. hospital pens) need to be draft free and warm with ready access to feed and water in order to minimize competition that can lead to fighting and to sick pigs not being able to access the feed and water they require. Isolation/hospital pens should be cleaned and disinfected as appropriate. Refer to the CQA[®] program requirements.

18) Is there space where you can isolate and treat pigs that need special attention (eg, hospital pen, or segregated area)?

Yes O No O



Euthanasia

In the case of severe injury or when pigs fail to respond to treatment, pigs must be humanely euthanized. Please refer to provincial hog producer organization references as outlined in the reference list.

19)	$^{\circ}$ Do you have a euthanasia plan that includes the proper methods for euthanasia
	of the different sizes and types of pigs on your farm?

Yes O No O	

Mortality

Unusual diseases or high mortality warrants investigation by barn staff. Individual producers should establish acceptable mortality levels for each phase of production. All mortalities should be recorded and records examined and evaluated at least twice a year.





Facilities

Every type of housing system must provide conditions conducive to comfort, good health, growth and performance at all stages of the pig's life. Ensure that buildings intended for indoor housing of pigs are suitably insulated and ventilated. Monitor ventilation and heating daily to maintain a comfortable environment, paying particular attention to temperature, relative humidity, condensation, dust and ammonia. A standard operating procedure for the maintenance of heating and ventilation systems should be developed and available for staff.

21)	Are systems for	[·] controlling	temperature	and	ventilation	well maintain	ed?

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1 11 1	
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	~ ~ ~

22) Are emergency plans in place at each facility to deal with power failures?

Yes O No O

Air Quality

Keep air movement at pig level in the resting area of the pens below 0.2m/s (40ft/min).

Drafts moving as slowly as 0.25 m/s (50 ft/min) can be detected on the back of a person's wet hand. However, when the effective temperature is near or over the upper range of the comfort zone, higher air speeds may be needed.

Low ventilation rates lead to increased CO2 and ammonia levels and microbial proliferation.



Fresh air should be provided and excessive heat, ammonia and water vapor should be removed by means of efficient air exchange. Ongoing ammonia concentrations greater than 25 ppm are not acceptable for human or pig health.

23) Is the level of ammonia less than 25 ppm?

Yes O No O

Ammonia Level Records:

Gestation room(s):	,
Farrowing room(s):	
Weaner barn(s):	
Grow/finish:	

Lighting

Pigs should not be kept in permanent darkness, but be allowed access either to natural or artificial light. Light should be of a sufficient intensity to allow a newspaper to be read (or this booklet!).

24) Is lighting provided on a daily basis?

Yes \bigcirc No \bigcirc



Part 2: Sows and Piglets

Stockmanship

The housing systems currently used for pregnant sows have both advantages and disadvantages. Within any system, however, animal care is largely determined by the operator's understanding of the animals and the extent and quality of care provided.

The swine industry in Canada acknowledges that the use of the gestation stall is not acceptable to some of the Canadian public. However, until a sustainable, animal–welfare friendly alternative is available to producers, sows will continue to be housed in stalls. Therefore, this assessment will include the measure of the welfare of these animals under current conditions. The industry is working with researchers and producers to develop sustainable alternatives to the gestation stall.

Stockpeople working in farrowing rooms must be aware of the vulnerability of sows and piglets during, and immediately after farrowing. Some sows and gilts may need assistance during farrowing. Sow health problems occur most commonly in the first few days after farrowing. Normally, newborn piglets will suckle soon after birth. It is the stockperson's responsibility to confirm access (i.e. visually see piglet sucking) within the first 12 hours. All piglets must have access to colostrum within the first 12 hours of life as well as continuous access to a functional teat or an appropriate supplementary milk source.

Farrowing

25) Are sows and piglets observed closely during, and 24 hours post-farrowing, by knowledgeable staff?

	Yes	\bigcirc	No	\bigcirc							
••••••			 		 	 	 	 	 	 	

Excessive fighting should be monitored by stockpeople and appropriate action (such as removing pigs) taken before severe injury occurs. Evaluate skin wounds and lesions to determine when fighting is excessive.

Stockpeople authorised to perform minor surgical tasks must be properly trained. Training should include the preparation of facilities and restraints and the ability to select and maintain the appropriate equipment for each procedure.



Piglet processing

Proper training of employees is critical to ensure that animals experience minimal stress, discomfort and pain during these procedures and are able to maintain normal health and productivity.

Teeth Trimming

Teeth trimming is a practice used to minimize the risk of damage to the sow's teats and to littermates. Teeth trimming may not be necessary, depending on breed and management; over time, this practice is becoming less common.

26) When teeth trimming is necessary, are teeth trimmed by a trained operator within a few days of the pig's birth?

Yes \bigcirc No \bigcirc N/A \bigcirc

Castration and Tail Docking Pain Mitigation Protocol for Suckling Pigs and/or Weaned Piglets

The administration of analgesics during castration and tail docking is beneficial in controlling post-procedure pain. An analgesic reduces or eliminates pain (pain killer) and an anesthetic causes the loss of sensation or consciousness.

Male piglets are castrated to control "boar taint" and to reduce aggression and handling challenges associated with intact males. This may, in turn, decrease the risk of injuries to personnel and other pigs. Vaccination against boar taint, is an effective alternative to surgical castration. Production of intact males at lighter weights reduces boar taint, but does not guarantee its absence.

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. Studies indicate that environmental enrichment reduces the chance of tail-biting.

Docking tails too short may lead to infections or prolapses. Docking tails too long is not effective at reducing tail-biting. Tail docking is known to cause acute stress, as indicated by physiological and behavioural responses. Some pigs with docked tails may develop increased sensitivity and/or chronic pain in the region. The tail wound should be healed before weaning.

Failure to keep instruments clean and sharp can lead to infections (examples: *Salmonella, Circovirus, Streptococcus suis,* and *Porcine Epidemic Diarrhea (PED)*) spreading amongst pigs or to tissue deterioration. Disinfect instruments used for castration and tail docking with alcohol or iodine. Inspect instruments regularly to ensure they are sharp and clean.



Answer question 27 if you have suckling pigs on site.

		Voc	\bigcirc	No	\bigcirc	NI/A	\bigcirc				
		Tes	\bigcirc	NO	\bigcirc	IV/A	\bigcirc				
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28)	Answe weane A prot	er que ed pig ocol i	estion lets or s in pl	28 if yc n site. ace for	ou hav castra	e suckli	ng pig	js and / ed afte	or r 10 d	ays	
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Nutrition

Water

Sows must have access to drinking water at all times. It should be fresh and free from contamination. Nipple drinkers provide an excellent source of clean, uncontaminated water. One nipple serves six sows in loose housing. Seek professional advice on the number of nipples and the distribution of water devices recommended for your facility.

29)	Do	sows	have	access	to	water	at	all	times?	
	20	50115	110110	acce55	66		Ca C	Call	0.001	

Yes O No O

It is recommended that a separate and easily accessible water source be provided for piglets.

Feed

Feeding schedules should be part of the standard operating procedure and all stockpeople should review these documents.

30) Is a feeding standard operating procedure available?

Yes O No O	
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All sows should be fed, at a minimum, once per day. In any group housing situations, there should be sufficient space (1.5 linear feet per sow) for all sows to eat at the same time in order to reduce fighting.

31) Is there sufficient space for all sows to eat at the same time?

(Not applicable to electronic sow feeding stations.)

Yes \bigcirc No \bigcirc N/A \bigcirc

Producers should assess the nutritional needs of their pigs according to the type of housing available. Pigs must have access to nutritionally adequate diets for each class of pig. Select a diet to meet the basic nutritional needs of sows as currently defined by the National Research Council. Seek expert advice before using unusual feedstuffs.

32) Are sows fed daily to meet their nutritional needs?

Yes O No O

Note: Producers will need to demonstrate the rations are appropriate (examples include: working with a feed specialist, referring to feed labels, using an appropriate reference material).

Groups with Electric Sow Feeders (ESF's) should be closely monitored, especially in (a) larger groups, (b) when groups are first formed and (c) when new animals are added. Dominant sows will eat first and often return to the feeder to remove any feed left by other sows.

Sows that are not using the feeder are either off feed, have lost their transponder or have not adapted well to the feeding system.

33) Are ESF records monitored daily to ensure that all sows are accessing the feeder?

Yes O No O

Piglets should be provided with access to a functioning teat or a supplementary milk source. Creep feeding a highly digestible, palatable diet is recommended.

Body Condition Scoring

A good measure of sow welfare is body condition score — body condition scoring can contribute greatly to good husbandry and help to avoid costly welfare problems. It is important to recognize unthrifty sows and to take appropriate action when sows fall below the predetermined score.



A number of sows from various stages of gestation (see Appendix 1) should be assessed to get the most accurate measure of body condition in your herd, with particular attention to sows within two weeks of farrowing or two weeks after weaning.

A scale from 1 (emaciated) to 5 (obese) is used in the scoring system which combines both visual appraisal and feel. Visual appraisal alone is not enough; handling the sow is essential to get an accurate assessment of condition. In practice, very few extreme (1 or 5) scores are found in well managed sow herds. The majority of sows should fall into the middle scoring range (2 or 3). To cover this middle range adequately, half scores may be used (1.5 to 3.5). Refer to the reference list for more specific details.

Body Condition

		,			
Body Score Sheet	1	2	3	4	5
Number of Sows Observed*					

Fotal number of sows observed:
otal number of sows in the herd:
Total number of sows with a score less than 2:

34) What is the percentage of sows observed that are less than score 2?

Culled sows are particularly susceptible to becoming compromised during transport and require special considerations before deciding to transport. For example, consider the condition of the animal and the length and type of journey to ensure appropriateness.

Sow-Piglet Comfort

Farrowing Stalls

Sows in farrowing stalls must be able to lie down comfortably, without the head having to rest on the feeder or their hind end in contact with the back of the stall. They must also be able to lie down fully and stand back up freely.

It is useful to have several sizes of farrowing units to accommodate sows of various sizes. Assess sows of various parities to collect a true measurement of the appropriateness of farrowing unit sizes.



The farrowing unit is to be designed so that the sow can be safely controlled while still allowing the piglets to nurse without undue restriction. These needs can be met by using adjustable rails or finger bars, or by using different sizes of units to accommodate smaller or larger sows.

All equipment used in the facility must be well maintained and the correct size for the type of sow and management used.

Appropriateness of equipment can be determined through careful observation of individual pigs. The presence of scratches and wounds on the skin of the head, body or feet can be a sign of poorly designed equipment. Producers/barn staff should observe pigs daily for scratches arising from poorly designed/damaged equipment. Sharp edges on stalls and feeders must be identified and fixed immediately (See Appendix 1 for number of animals to observe to calculate the percentage of pigs with scratches from equipment).

35) Is equipment that causes scratching or wounding of sows and/or piglets promptly repaired or replaced?

	Yes	\bigcirc	No	\bigcirc			
••••••					 	 	
••••••					 	 	

Sow Stalls

The height and width of the individual sow stall must allow for the sow to stand freely and to lie comfortably, without the head having to rest on a raised feeder, to lie down without the rear quarters having to be in contact with the back of the stall and to allow the sow to lie without her udder protruding into the next stall.

All equipment used in the facility must be well maintained and the correct size for the type of sow and management used. To accommodate a typical herd, it is suggested that a minimum



of 10% of the stalls be 70 cm wide, or wider, an additional 30% be at least 65 cm wide or wider, and that no more than 15% be 55 cm wide. The remaining 45% of the stalls should be 60 cm wide or wider. Injuries should be reduced by alloting animals to stalls based on their size.

36) Can sows stand freely and lie comfortably?

Yes O No O

Appropriateness of equipment can be determined through careful observation of individual pigs. The presence of scratches and wounds on the skin of the head, body or feet can be a sign of fighting and/or poorly designed equipment. Sharp edges on stalls and feeders must be identified and fixed immediately.



Yes O No O

Group Housing:

In group housing, there is to be sufficient space to allow all sows in a pen to rest at the same time. Pen design should incorporate ample room for subordinate sows to escape dominant sows — a rectangular pen allows for this better than a square pen design. In hot weather, floor space allowance may need to be increased up to 10 to 15% on slatted floors. Solid floors may need a greater increase. Research to determine if the current acceptable space allowances for sows are appropriate, is currently underway.

In group housing systems, sows will fight when first introduced to establish a dominance hierarchy within the group. However, when space allowance, access to feed and water and other environmental factors are sufficient, fighting will diminish within the first 24 to 48 hours.

Ensure there is an equitable distribution of feed.

38) Are stockpeople aware of the signs of excessive fighting?

Yes O No O

List the actions to be taken when excessive fighting is observed.



Facilities/Supervision

Temperature

The temperature that the pig actually feels in its immediate surroundings depends on many factors, including:

Flooring material Presence or absence of bedding material Air movement Size of pig Group size Dryness of the floor Humidity Feed type and intake Health status

The thermal comfort zone for gestating sows is $10-21^{\circ}$ C. The sow and her piglets have different temperature requirements. Farrowing rooms should be kept at $18-20^{\circ}$ C ($64-68^{\circ}$ F) with the provision of radiant (heat lamps) or floor heat to — $30-34^{\circ}$ C ($93-100^{\circ}$ F) for neonatal pigs, and $25-30^{\circ}$ C ($77-86^{\circ}$ F) for 4-week-old pigs. Piglets that are seen to huddle or shiver are too cold. Piglets avoiding the heated zone or resting on its perimeter are too hot. **Producers are to monitor the pigs regularly.**

A major component of a comfortable barn environment is the appropriate temperature and air quality. Both depend on well maintained ventilation systems (natural or mechanical).

39) Are temperatures maintained for sow/piglet comfort throughout the different rooms?

Yes O No O



Part 3 – Weaned Piglets

Stockmanship

Separation of piglets (weaning) from their dam is a stressful time for both piglets and sows. The practice of early weaning has grown in Canada and has led to the development of a special code of practice.

Sometimes due to the death of the sow or to control some type of disease, piglets are weaned early. Weaning at less than 14 days of age requires very high levels of animal care and specialized management.

40) Is a standard operating procedure available for care of piglets during and following weaning?

Yes \bigcirc No \bigcirc

41) If early weaning is being practiced, do stockpeople follow the recommendations of the Addendum — Early Weaned Pigs?

Yes O No O



Weaned pig comfort

All equipment used in the facility must be well maintained. Just because a piece of equipment or flooring is sold commercially, does not mean that it has been properly designed for the weaner. Appropriateness of equipment can be determined through careful observation of individual pigs. The presence of scratches and wounds on the skin of the head, body, or feet can be a sign of poorly designed equipment. Sharp edges should be identified and fixed immediately.

42)	ls equipment o promptly repa	or penning ired or repl	that causes scratching o laced?	or wounding of weaned p	igs
	Yes) No	0		

A pen must have enough space for all weaned pigs to lie down at the same time. Pen design should provide ample room for subordinate pigs to escape dominant animals. A rectangular pen allows for this better than a square pen design. Floor space allowance in pens should be sufficient for the end weight of the piglets when they leave the nursery. The recommended space allowance for pigs on the ACA program is represented by the following formula: Space in square metres – 0.0335 x (Body weight in kilograms^{0.667})



Recognizing that the welfare of pigs is impacted by more than just space, and includes other factors such as humidity, wind and temperature, some flexibility in the figures is allowed for to accommodate short periods of time in the raising of pigs when space may be more limited (for example, pens become more crowded just prior to moving the first animals from a pen). Therefore, the minimum space allowances required for hogs is represented by the following formula:

Space in square metres = $0.028 \times (Body weight in kilograms^{0.667})$

To illustrate how these formulas translate into space allowances, see the conversion chart below. The body weight used in the calculations is the average weight of the animals in the pen, not the weight of the largest animal leaving the pen.

Averaş	ge Pen	Recom	mended	Minimum			
kgs	lbs	m²	ft²	m²	ft²		
10	22	0.16	1.67	0.13	1.40		
20	44	0.25	2.66	0.21	2.22		
30	66	0.32	3.49	0.27	2.91		
60	132	0.51	5.53	0.43	4.63		
70	154	0.57	6.13	0.48	5.13		
80	176	0.62	6.70	0.52	5.60		
90	198	0.67	7.25	0.56	6.06		
100	220	0.72	7.78	0.60	6.50		
110	243	0.77	8.29	0.64	6.93		
120	265	0.82	8.79	0.68	7.34		
130	287	0.86	9.27	0.72 7.75			

Space Allowance

43) Have you calculated the space allowances for weaned pigs on your farm?

Yes O No O

Outline your calculations for allocating space allowance per pig.



Pigs kept on solid, bedded floors and partially slatted floors require more space for control of the manure than those kept on fully slatted floors over the manure pit.

44) Do pigs have a dry area for resting in the pen?

Yes \bigcirc No \bigcirc

Keep mixing to a minimum. When grouping piglets from different litters is necessary, mix pigs of about the same size and place them in clean pens on the same day.

When first mixed, pigs will fight to establish a dominance hierarchy within the group. However, when space allowance, access to feed and water and other environmental factors are sufficient, fighting will diminish within the first 24 to 48 hours.

Stockpeople are to watch for excessive fighting and behaviours such as tail biting, and take appropriate action (such as removing piglets) before severe injury occurs. Evaluating skin wounds and lesions can be useful for determining when fighting is excessive.

45) Are weaned pigs observed for signs of excessive fighting?

Yes O No O

List actions to be taken when excessive fighting is observed:



Tail biting, belly nosing/sucking, navel biting and vulva biting are significant problems within the industry. Although much has been learnt from research and practical on-farm experience, it is not possible to produce a definitive solution suitable for all cases. Each outbreak should be thoroughly assessed to identify the particular cause of an outbreak on the unit and to find the appropriate solution to the problem. Quantify the problem:

• Note the position of pens and numbers of pigs affected, check records of previous incidents. List possible causes:

- Such as interruption or inadequate supply of feed or water, inadequate ventilation, drafts, incorrect temperature levels, overstocking, competition at feeding, excessive light levels, elevated dust/noxious gases. Different causes may be found in different pens on the same unit.
 Modify standard operating procedure:
- Modify your standard operating procedure to implement the necessary changes to prevent future outbreaks.

46) Do you have a standard operating procedure for handling pigs with social behaviour problems (i.e. tail biting, vulva biting, navel sucking, or ear biting)?

Yes O No O



If yes, detail what the specific problem(s) was and how this situation was addressed:

•••••	 													
•••••	 													
•••••	 													
•••••	 													
•••••	 													
•••••	 													
•••••	 													

Nutrition

Water

Newly weaned pigs are especially sensitive to water quality. At this stage any contamination of water bowls can reduce the acceptability of water. Drinking water must be available at all times. It should be fresh and free from contamination. Nipple drinkers provide an excellent source of clean, uncontaminated water. Barn water should be tested occasionally to ensure it's appropriate for the animals.

47) Do weaned pigs have access to water at all times?

Yes \bigcirc No \bigcirc

Feed

Weaned pigs must have access to nutritionally balanced diets for each stage of growth. Select a diet to meet the basic nutritional needs of weaned pigs as currently defined by the National Research Council. Seek expert advice before using unusual feedstuffs. Newly weaned pigs will be accustomed to eating all at one time; it may be necessary to provide additional, temporary feeder space.



48) Are pigs fed daily to meet their nutritional needs?

Yes O No O

Note: Producers will need to demonstrate the rations are appropriate (examples include: working with a feed specialist, referring to feed labels, using an appropriate reference material).

Facilities Management

Weaned pigs should be weaned into a clean, dry, well-heated, draft-free facility specifically designed to meet their needs.

The thermal comfort zone for a newly weaned piglet is $24-34^{\circ}$ C. The thermal comfort zone for four week old pigs is $25-30^{\circ}$ C (77-86° F). Low consumption and digestion of feed in the first days after weaning causes a drop in body heat production and an increase in the pig's need for warmth.

Producers are encouraged to read the weaned pig's behaviour for signs of heat or cold stress. Piglets that are seen to huddle or shiver are cold. Weaned pigs resting around the perimeter of pens are hot.

The use of heat lamps, covers or bedding can increase the temperature for weaned pigs.

49) Are temperatures maintained to meet the requirements of the weaned pigs?

Yes 🔿 No 🔿



Part 4 – Grow/Finish

Stockmanship

Positive human contact is an important factor in animal well-being and productivity. Studies show that fear of humans (i.e. shying away or vigorous avoidance) produces long-term stress in pigs. Fear is produced not only by rough handling (goading, slapping) but also by handlers who approach pigs too quickly. Handlers can reduce fear reactions by crouching (to reduce perceived body size), moving slowly and walking through pens at least once daily and by gently moving pigs.

50) Do stockpeople observe each pen every day?



Pig Comfort

Over-crowding in the grower-finisher area causes stress and discomfort. Failure to provide pigs with sufficient room to carry out their normal activities creates stress, causes aggressive behaviour, and lowers the quality of the environment (e.g. increased ammonia in the air).

In all situations, the amount of space must allow all pigs in a pen to lie down at the same time. Pen design and shape should incorporate ample room for subordinate pigs to escape dominant pigs — a rectangular pen (versus a square) allows for this activity — and access to resources to reduce fighting.

NB: In hot weather floor space allowance may need to be increased up to 10 to 15% on slatted floors and perhaps greater on solid floors, to allow for necessary heat dissipation.



The recommended space allowance for pigs on the ACA program is represented by the following formula:

Space in square metres – 0.0335 x (Body weight in kilograms⁶⁶⁶⁷)

Recognizing that the welfare of pigs is impacted by more that just space, and includes other factors such as humidity, wind and temperature, some flexibility in thei figures is allowed for to accommodate short periods of time in the raising of pigs when space may be more limited (for example, pens become more crowded just prior to moving the first animals from a pen).

Therefore, the minimum space allowances required for hogs is represented by the following formula:

Space in square metres = $0.028 \times (Body \text{ weight in kilograms}^{0.667})$

To illustrate how these formulas translate into space allowances, see the conversion chart below. The body weight used in the calculations is the average weight of the animals in the pen, not the weight of the largest animal leaving the pen.

1												
Averaş	ge Pen	Recom	mended	Minimum								
kgs	lbs	m²	ft²	m²	ft²							
10	22	0.16	1.67	0.13	1.40							
20	44	0.25	2.66	0.21	2.22							
30	66	0.32	3.49	0.27	2.91							
60	132	0.51	5.53	0.43	4.63							
70	154	0.57	6.13	0.48	5.13							
80	176	0.62	6.70	0.52	5.60							
90	198	0.67	7.25	0.56	6.06							
100	220	0.72	7.78	0.60	6.50							
110	243	0.77	8.29	0.64	6.93							
120	265	0.82	8.79	0.68	7.34							
130	287	0.86	9.27	0.72	7.75							

Space Allowance

51) Have you calculated the space allowances provided on your farm for grower and finisher pigs?

Yes O No O



Outline your calculations for allocating space allowance per pig.

When first mixed, pigs will fight to establish a dominance heirarchy within the group. However, when space allowance, access to feed and water and other environmental factors are sufficient, fighting will diminish within the first 24 to 48 hours.

Excessive fighting should be observed by stockpeople and appropriate action (removing pigs) taken before severe injury occurs. Evaluating skin wounds and lesions can be useful for determining if fighting is excessive and when remedial action should be taken.

52) Are stockpeople aware of the signs of excessive fighting?

Yes O No O

List the actions to be taken when excessive fighting is observed.



Vices

Research has shown that the welfare of pigs is improved by environmental enrichment (usually in the form of straw or other substrates) and therefore enrichment should be considered as an integral part of management practices. Pigs are inquisitive animals and like to explore their environment. In settings of deficient stimuli, pigs may explore their pen mates, which leads to high levels of harmful social behaviour (tail-biting, ear biting, navel sucking).

Environmental enrichment can stimulate behaviour patterns similar to those of pigs in seminatural settings. The provision of toys and other substrates has been shown to reduce the incidence of tail-biting, as well as having a calming effect on pigs. Calmer pigs are easier to handle. (See section on weaned pigs for more information on management of vices.)

53) Are tail biting, ear biting and/or navel sucking a problem on your farm?

Yes 🔿	No	\bigcirc
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54) Do you have a standard operating procedure for handling pigs with social/ behaviour problems (ie. Tail biting, vulva biting, navel sucking, or ear biting)?

Yes O No O
If yes, detail what the specific problem(s) was (were) and how this situation was brought under control:



All equipment used in the facility must be well maintained and the correct size for the type of pig and management used. Just because a piece of equipment or flooring is sold commercially, producers must not assume that it has been properly designed for the pig. Appropriateness of equipment can be determined through careful observation of individual pigs. The presence of scratches and wounds on the skin of the head, body, or feet can be a sign of fighting and/or poorly designed feeding equipment.

55) Is equipment or penning that causes scratching or wounding of pigs promptly repaired or replaced?

Yes O No O

Nutrition

Water

Drinking water must be available at all times. It should be fresh and free from contamination. Barn water should be tested occasionally to ensure it's appropriate for the animals. Nipple drinkers provide an excellent source of clean, uncontaminated water. One nipple serves 1–15 pigs. Drinkers must be adjusted to the corresponding pig height.





Feed

Pigs must have access to nutritionally balanced diets for each stage of growth. Producers should assess the nutritional needs of their pigs according to the type of housing available. Each class of pigs must have access to nutritionally adequate diets. Select a diet to meet the basic nutritional needs of sows as currently defined by the National Research Council. Seek expert advice before using unusual feedstuffs.

The type of feeder will dictate the number of feeders required. Feeding schedules should be part of the standard operating procedure and all stockpeople should review these documents. Plans should be in place to ensure the appropriate amounts and types of feed are available in advance.

57) Is a written standard operating procedure for feeding and feed delivery available?

	Yes	\bigcirc	No	\bigcirc
•••••				
••••••				



58)	Are pigs fed daily to meet their nutritional needs?			
	Yes O No O			
	Note: Producers will need to demonstrate the rations are appropriate (examples include: working with a feed specialist, referring to feed labels, using an appropriate reference material).			
59)	When controlled feeding is practiced, is enough space and feed available so that all pigs can eat at the same time?			
	Yes O No O			
60)	Are feeders and waterers checked daily to ensure that they are clean and functioning properly and at the appropriate height? (For nipple drinkers, the appropriate height is 2 inches above the shoulder).			
	Yes O No O			

Facilities/Supervision

The temperature that the pig actually feels in its immediate surroundings depends on many factors, including:

Flooring material Presence or absence of bedding material Dryness of the floor Humidity Air movement Size of pig (surface area) Group size Feed type and intake Health status

Keep facilities properly ventilated but free from drafts at pig level, which may contribute to tail biting. Spray cooling will help to prevent discomfort on warm days.

Well-fed grower pigs of 20 kg are generally most comfortable at room temperatures of 20–28° C (68–82° F), declining to 14–20° C (57–68° F) at 100 kg. However, the range that provides thermal comfort varies a great deal depending on circumstances such as floor type, dryness of the floor, group size, feed intake and air movement. Use of straw bedding provides a heat saving benefit of at least 3–6° C (5–11° F).

Producers are to read the pig's behaviour for signs of heat stress or huddling from cold.


Some provision for heating or cooling should be present and in good working order during extremes in weather. Your operation must be able to moderate temperatures sufficiently to prevent extreme thermoregulatory behaviour such as excessive panting in hot weather or excessive piling in cold weather, within your capacity.

61) Are standard operating procedures available to deal with extremes in temperature?

Yes \bigcirc No \bigcirc

Note: You will need to have a plan that lays out what must be done in an emergency situation of weather extremes.





Appendix 1:

Number of individually housed or large-group housed pigs to be observed per site.

Average number of pigs per site	Site Size: Minimum number of individually housed or large group housed pigs for assessment	Approximately everypig or sow
50	All	All
90	46	2^{nd}
150	53	$3^{ m rd}$
250	63	4^{th}
350	70	$5^{ m th}$
450	76	6 th
550	82	7^{th}
700	89	8 th
850	95	$9^{\rm th}$
1000	100	10 th
2000	126	16 th
3000	144	21 st
4000	158	25 th
5000	170	29 th

Reference: Swine Welfare Assurance program



Appendix 2: Resources for producers

National

Recommended code of practice for the care and handling of farm animals: Pigs

Recommended code of practice for the care and handling of farm animals: Pigs Addendum Early Weaned Pigs

Recommended code of practice for the care and handling of farm animals: Transportation Animal welfare database: www.prairieswine.com

Quebec

Le Transport des animaux fragilisés: Évaluation des animaux à risque Arbre de décision: Transport des animaux fragilisés Euthanasie des porcs à la ferme: Les options du producteur Plan d'Action sur l'euthanasie La trousse de départ du producteur Le guide du compostage à la ferme

Ontario

Caring for Compromised Pigs: Assessing Animals at Risk Should this pig be transported? (Decision tree) Cold and Warm weather loading charts for transporters On-Farm Euthanasia of Swine — Options for the Producer On-Farm Euthanasia of Swine — Action Plan

Manitoba

How pigs are raised Pigs in Transit Humane Handling and Euthanasia of Swine: Standards for the Care of Unfit Animals and poster

Alberta

Humane Handling of Swine: Standards for the Care of Unfit Animals Humane Handling of Swine — poster Hog Handling and Training Course

Appendix 3: Optional Handling Assessment

Dr. Temple Grandin has developed an objective scoring system for assessing animal welfare in the processing industry. This scoring system is widely used in the US - it is easy to use and can identify problems that impede pig movement. When pigs balk, handlers tend to prod pigs. Handlers resort to using the prod because they don't understand why pigs are not moving forward. By identifying distractions and other impediments to movement, pigs will be less stressed and handlers will not have to use prods to load pigs.

Parts of this system can be used to identify problems which impede movement of pigs during handling on farm. The following is a short animal welfare assessment that you and your staff can use to score handling. If your score is below the prescribed level, you need to determine why and work together to remove distractions and improve understanding of animal behaviour.

Critical control points for objective scoring:

- 1. Percentage of pigs that vocalize (squeal) during handling:
 - 100 pigs should be observed at a specific point in the handling process (for example, at the room door or at the entrance to the truck).
 - Sites for observations should be varied over several days and sites should be located all along the route this will show if the cause of the squealing is the prod, handler intervention or a problem with the facility (i.e., air blowing into the face of the pigs, poor lighting etc.)
 - A note is made as to whether or not the pig squeals (S) or doesn't squeal (X).
- 2. Percentage that fall during handling:
 - Again, observe 100 pigs. Pigs that fall or slip are given an "F" for falling and an "X" if no falling is observed.
 - A pig falls when part of its body touches the floor.
- 3. Percentage moved with electric prod (goad):
 - Observe 100 pigs and note which pigs are prodded with "P" and an "X" if no prod is used.

These critical control points are useful since they measure many problems. For example, pigs might squeal because they are prodded or they might squeal because they cannot see the way forward (due to bad lighting, distractions, changes in flooring type, etc.). Pigs will fall because of poor flooring, lameness or because they are being rushed. Both

measures (i.e., squealing and falling) can also tell us things about the stockmanship – pigs fall because stockpeople are rushing the pigs, are not tuned into the reason that pigs stop and are not examining individual pigs to isolate compromised animals.

If you score a high number of pigs being prodded (more than 25%) or more than 25% of the pigs falling, investigate the cause! Is there something in the facility that is stopping pigs from moving forward (i.e., bad lighting, change in flooring type, air in their faces etc.) or are staff over-using the prod because they have not been shown an alternative (i.e. pig boards) or they don't realize that pigs may be reluctant to leave their home pen? Are pigs falling because they are being forced to run or because floors are slippery?

Tip:

Is loading out difficult on your farm? Did you fall below the recommended scores in your audit? Try making a video of the loading out procedures and using this to identify spots where pigs are stopping and/or balking.

Use the video to analyze the behaviour of both pigs and handlers. Play the tape back for all staff involved and ask the following questions – use the answers to modify loading out procedures:

Are there identifiable areas where pigs stop to investigate changes in flooring or lighting? Is this the same spot where staff repeatedly used the prod?

Are pigs stopping because air is blowing in their faces as they move into the truck?

Is there a place for the truck driver to stand so that he/she is not impeding the forward motion of the truck?

Totals for Objective Numerical Percentage Scores

	Actual %	Min. Passing Score	Excellent	Final Score / Excellent / Pass/Fail
Percentage of pigs prodded with an electric prod	Animal # 1_2_3_4_5_6_7_8_9_10_11_12_13_14_15_ 16_17_18_19_20_21_22_23_24_25_26_27_28_29_30_ 31_32_33_34_35_36_37_38_39_40_41_42_43_44_45_ 46_47_48_49_50_51_52_53_54_55_56_57_58_59_60_ 61_62_63_64_65_66_67_68_69_70_71_72_73_74_75_ 76_77_78_79_80_81_82_83_84_85_86_87_88_89_90_ 91_92_93_94_95_96_97_98_99_100_	25%	5%	
Percentage of pigs falling	Animal # 1_2_3_4_5_6_7_8_9_10_11_12_13_14_15_ 16_17_18_19_20_21_22_23_24_25_26_27_28_29_30_ 31_32_33_34_35_36_37_38_39_40_41_42_43_44_45_ 46_47_48_49_50_51_52_53_54_55_56_57_58_59_60_ 61_62_63_64_65_66_67_68_69_70_71_72_73_74_75_ 76_77_78_79_80_81_82_83_84_85_86_87_88_89_90_ 91_92_93_94_95_96_97_98_99_100_	25%	5%	
Percentage of pigs squealing during handling in a specified area. The specified area was	Animal # 1_2_3_4_5_6_7_8_9_10_11_12_13_14_15_ 16_17_18_19_20_21_22_23_24_25_26_27_28_29_30_ 31_32_33_34_35_36_37_38_39_40_41_42_43_44_5_ 46_47_48_49_50_51_52_53_54_55_56_57_58_59_60_ 61_62_63_64_65_66_67_68_69_70_71_72_73_74_75_ 76_77_78_79_80_81_82_83_84_85_86_87_88_89_90_ 91_92_93_94_95_96_97_98_99_100_	50%	25%	
Reasons for scores that are n	not acceptable minimum passing score:			

References:

Gonyou, Harold, 2005. Practical Approaches to Ensure Animal Welfare on Farms. In Proceedings of the 2005. London Swine Conference.

Grandin, Temple, 2004. http://grandin.com/welfare.audit.using.haccp.html

Appendix 4: Understanding Pig Behaviour

Attitude:

Pigs that are handled with a positive attitude perform better. The best stockpeople:

- Like their pigs
- Are determined to meet the pig's needs
- Have a good understanding of the requirements of their pigs, and
- Can translate this understanding through their handling practices into a high level of care which results in a high level of pig health, welfare and performance.

Sorting and Moving Pigs – Stay calm:

Calm pigs are easier to handle and move than excited animals. Animals that become agitated and excited bunch together and are more difficult to separate and sort. If animals become agitated or excited, allowing them to calm down for a few minutes will make them easier to handle.

Pig Behaviour:

Many aspects of handling cause stress in pigs. Separation from familiar pen mates, mixing with new animals, new environments, exposure to new sounds and equipment, changes in temperature and ventilation cause stress.

Understanding pig behaviour will help you with your job and enable you to be able to move pigs quickly and efficiently while reducing the stress to the pigs during loading and unloading.

• Loading and unloading will be a novel (new) experience for many pigs. Novel experiences produce fear in pigs - especially if they have not experienced frequent human contact.

- Pigs don't like having to move up and down ramps; pigs do like to play follow the leader. If you can get the lead pig moving, the rest will follow if given time. Let the leader pig lead, don't try and force pigs up or down ramps.
- Like all animals (you included), pigs have a flight zone. If someone stands to close to you, you feel uncomfortable and will move away. The same principle applies to the pig when handlers get into the flight zone, pigs will move away. Pigs that are not accustomed to humans will have a very large flight zone and will react (by squealing and trying to get away) when a handler reaches the perimeter of the flight zone. If you enter too quickly and deeply into the flight zone, the pig will turn back on you. A good handler understands the principles of the flight zone and will use this to guide pigs (Figure 1). The edge of the flight zone is the best place to be to get pigs to move in the direction you want them to.



• Pigs are herd animals and will try to stay with the herd. Move pigs in groups by gently encouraging the lead pig. A small, manageable (5 to 8) group of pigs is easier

to move than a large group (remember, the rest will follow the leader). Don't try to move an isolated pig – let the pig rejoin the group and then move the group.

- Pigs have 310° panoramic vision what they see greatly influences how they behave.
- Pigs have good hearing they react to loud noises such as yelling and slamming gates. Use your normal speaking voice when working with the pigs.
- Equipment should be designed to reduce noise. Clanging and banging metal parts should be silenced with rubber pads. Air operated equipment should be equipped with mufflers to reduce noise. Hissing air may cause animals to stop and refuse to walk through a facility.
- Hats or coats, hands or arms, chains, drains in the causeway will cause pigs to slow down or stop. Remove the distraction – don't goad the pigs!
- Pigs will want to move from dark to light however, pigs will not move into bright light such as sunlight or headlights.
- Warm weather contributes to a special set of problems for pigs a small increase in temperature, when combined with other stressors, can be fatal for pigs. Just like you, pigs will be reluctant to move in hot weather. Do not use bedding in hot weather.
 Similarly, pigs will be reluctant to leave a warm barn for a cold truck.
- Pigs will fight when mixed, leading to injury. If loading pigs from different farms, use gates to separate.

Slow is fast – be patient. Remember that pigs are not clued into your goal of getting them either on or off the truck – their objectives are different than yours.

Handling Devices:

- Handling devices are for guiding pigs the use of the pig's behaviour and modifying or manipulating aisleways and loading ramps will make moving pigs less stressful and reduce the reliance on handling devices.
- If needed, handling the pig board is the least threatening device (when used correctly) for moving pigs.
- Handling devices can help move pigs the improper use of these devices is unacceptable. Prodding wedged or jammed pigs will make things worse – when prodded a pig will attempt to get away, further increasing the jam. Stockpeople must be patient and considerate. Sometimes the best move is to step back and let both the pig and the attendant calm down. If pigs are spooked, lit will take 30 minutes to calm them down.
- Electric prods should not be used on-farm for loading or sorting pigs pigs find the electric prod aversive and will remember this negative experience next time they are moved.
- Never prod a non-ambulatory/compromised pig.
- If pigs get jammed in a bottle-neck (door way, etc.) don't prod the back pig. Use the flight zone of the lead pig to get the pigs going.
- Excessive vocalization can signal an overuse of the electric prod. If you have to use an electric prod, look for distractions and/or lighting problems that are causing pigs to balk. Figure 2 provides a list of common distractions which may cause pigs to balk.

A small nylon flag on the end of a slender flexible stick can work for sorting pigs.
 Animals can be easily turned with the flags. A small plastic bag on the end of a stick also works well.

Figure 2: Common distractions which may cause pigs to balk.

Common distractions that impede movement:

- sparkling reflections on puddles
- reflections on smooth metal
- chains that jingle metal clanging or banging
- high pitched noise
- air hissing
- air drafts blowing towards approaching animals
- clothing hung on the fence
- piece of plastic that is moving
- fan blade movement
- see people moving up ahead
- small object (coffee cup) on the floor
- changes in flooring and texture
- drain grate on the floor
- sudden changes in wall colour
- A Matador cape (Figure 3) can be used to move groups of pigs either out of a pen or down an alley. It is made from lightweight plastic cloth and measures 60 in (150cm) long by 30 in (76 cm) high. There is a short stiffener rod on each end of the top. A cape half as long with a single stiffener rod can also be used.

Figure 3: Home-made matador cape for moving pigs.



- A plastic paddle or a small flag can be used for quietly moving pigs.
- Hogs will stop when a solid barrier is placed in front of them because it prevents them from seeing an escape pathway. This is why a portable panel or board is efficient for moving hogs. Handling will be easier if you use a panel. A light aluminum panel with a hinge in the middle is recommended for separating hogs out of a pen. A large flag can be used in place of the panel.
- A slapper, used to make noise by hitting the board or fence, can also be used if pigs are not too excitable. Avoid hitting the animals. Modern, leaner hybrids are more susceptible to bruises and get too excited if they are hit with the slapper. Avoid excessive noise or shouting. Animals that remain calm will be easier to handle. Excited animals will bunch together and be harder to sort.

Compromised Pigs:

- The Recommended Code of Practice for the Care and Handling of Farm Animals Transportation advises that all animals should be in good physical condition and optimum health prior to loading.
- A pig that is in distress makes loud, deep, gasping sounds. These pigs should be left alone and allowed to recover.
- Act quickly to cool an over-heated pig or it will die. Do not force the pig to run or climb ramps. If possible, move the pig to a cooler environment and wet it down with a fine spray of cool water. Do not pour cold water on pigs because they could die of shock.
- Animals that are sick, injured, disabled, fatigued or cannot be moved without causing them additional suffering are not fit for transport.

- Non-ambulatory animals any animal that due to age, injury, metabolic or systemic disease, etc., is unable to stand or walk without assistance are one class of compromised animals.
- It is a good idea to survey all animals for fitness to travel before starting to load.
 Refer to the decision tree "Should this pig be loaded" for detailed descriptions of conditions that require euthanasia and/or a delay in transport. Pigs must be evaluated as per the recommendations on the decision tree.

Appendix 5: Animal Care Checklist

	Weekly and Daily Checklist	Yes	No	If no, list action taken	Signed	Date
	Flooring and pens from free from protrusions or other					
I	hazard areas that expose pigs to injury					
Ĺ	Pigs observed to be comfortable and exhibiting normal					
Y	behaviour					
G	Ventilation rate efficient in minimising ammonia/dust					
С	Water flowing to all drinkers (at least one per $10 - 15$ pigs)					
н Е	Pigs fed or have access to feed					
Ē	Sick or injured pigs separated/treated/euthanized					
K	Pigs have access to dry place in which to lie					
S	Staff absences covered					
	Mortalities (number)					
	Facility equipment operational (lighting, feeding and					
W	watering equipment, heating and cooling systems)					
E	Drinker flow rate appropriate (COP pg 16)					
E K	Feed checked and feed supply planned					
L	Sows in appropriately sized accommodation (COP pg 11)					
Y	Rodents and birds controlled					
	Alarms, back-up systems or contingency					
	equipment/facilities available/operational					
	Mortalities within targets					
6 MTH	Rifles/captive bolts checked and maintained					
MIH	Herd health plan documented					
	Feed Silos cleaned out					
	Surface water or suspect bore water tested					
	Review biosecurity program					
IK						

Appendix 6: Sample Standard Operating Procedure for the Care of Sick or Injured Pigs

1. Pain Control

Introduction:

It is important to minimize the pain and discomfort of the animals. Although often subjective, indications of pain <u>may</u> include:

- 1. Vocalization.
- 2. Lesions that are red, swollen, or hot.
- 3. Elevated heart and respiratory rate.
- 4. Inability to move, stand, rise, or use a limb.
- 5. Shaking

Standards:

Treatment protocols have been established to ensure sick animals are appropriately cared for. Individuals must be familiar with the barn protocol. Guidelines for pain control are outlined in these protocols (for example; recumbent non-ambulatory; down sows should be humanely euthanized). If there are any individual, exceptional cases (not outlined in the protocol), a veterinarian should be contacted the day the animal is noticed. A plan (or prescription drug) will be made for that animal to make it as comfortable as possible.

Procedure:

Follow treatment protocols. Contact herd health veterinarians with the specifics of exceptional cases. A plan will be given immediately.

Monitor:

Individual animals will be monitored by staff daily. Monitoring will be done frequently (2-3 times/day) during high risk outbreak situations. Treatment protocols will be reviewed and updated as necessary. Veterinarians will monitor regularly.

2. Treatment

Introduction:

Intensive livestock production requires the knowledge and treatment of disease. Your Veterinarian has developed a treatment protocol for your barn that outlines the disease, clinical signs, and treatment of common ailments. Other health considerations include sanitation and disinfection, biosecurity, disease monitoring protocols, vaccinations, and overall management. All staff must know current protocols, and where the reference is located.

Standards:

See also:	- Barn Treatment Protoco		
	- Biosecurity Protocols		
	- Disinfection Protocols		
	- Vaccination Protocols		
	- Management SOP's		
	* Ventilation		
	* Heat		
	* Sanitation		

Procedures:

Follow above protocols. Any exceptional cases a herd health veterinarian will be contacted immediately and a plan devised.

Monitor:

Barn workers will check animals a minimum once daily for abnormalities (disease, injury, or competitiveness). Managers and Veterinarians will monitor regularly.

3. Rectal Prolapses

Introduction:

Rectal prolapses occur as a result of:

- piling caused by drafts or chilling
- increased coughing or sneezing
- diarrhea
- certain medications

Leaving prolapses unrepaired is inhumane and may result in a rectal stricture.

Standards:

Rectal prolapses where greater than two centimeters of mucosa (pink/red rectal inside) is protruding, and less than 12 - 24 hours old, must be surgically repaired. Prolapses less than 2 cm should be separated and allowed to return to normal; if it has not within 12 hours it should be surgically repaired. Prolapses older than 24 hours should be segregated in a sick/hospital pen and repaired with a Profix tube.

Profix tubes are plastic tubes that can be inserted into the rectum and secured with calf elastrator rings. This causes the prolapse to fall off and the tube to function as a rectum and prevent stricture (healing closed).

No animal can be transported until prolapse is healed.

Procedure:

Nursery/Grower

- replace the day they occur.

- restrain between legs or hang over a board; sedate if necessary.
- wear gloves.
- use local anaesthetic injected around the anal area.

- wash the prolapse with warm water and disinfectant soap - gently reduce (place back in).

- use a double strand of 2.0 or 3.0 catgut and place a purse string suture around the rectum with a large cutting needle.

- tie the suture in 2 knots at the top under the tail and cut the ends short.
- you should be able to place 1 large finger in the rectum.
- wipe the pig so it is free of blood.
- the suture will dissolve.
- treat the underlying problem (scours, crowding, chilling).
- keep separated if possible.

Sows/Adult Animals

- replace the day they occur.

- sedate and restrain.
- use an anaesthetic ring block around the affected opening (rectum or vagina)
- wash with warm water and disinfectant soap.
- gently reduce.
- use umbilical tape to place a purse string suture around the affected opening.
- you should be able to pass 2 fingers into the opening.
- cull the animal as soon as possible.

Monitor:

Barn workers monitor daily. Managers and veterinarians monitor regularly.

Appendix 7: Sample Ventilation Maintenance Record

Location:

Suggested ratings:

1 = poor, requires immediate maintenance and repair 2 =

3 = satisfactory, changes/maintenance should be done

4 =

5 = excellent, no changes/repairs need to be made at this time

Date	Controls/ thermostat/ sensor	Fan operation / condition	Inlet operation and condition of louvres, curtains, etc.	Overall condition of equipment (Good / Poor)	Air conditions in barn (Good / Poor)	Initial

Appendix 8: Sample Emergency Plan for Power Outage – Daytime Assignment Sheet

Activity	Name/Title
	Backup Name/Title
Activity	Name/Title
	Backup Name/Title
Activity	Name/Title
	Backup Name/Title
Activity	Name/Title
	Backup Name/Title
Activity	Name/Title
	Backup Name/Title
Activity	Name/Title
	Backup Name/Title
Activity	Name/Title
	Backup Name/Title

Sample Emergency Plan for Power Outage – After-Hours Assignment Sheet

Activity	Name/Title	
	Backup Name/Title	
Activity	Name/Title	
	Backup Name/Title	
Activity	Name/Title	
	Backup Name/Title	
Activity	Name/Title	
	Backup Name/Title	
Activity	Name/Title	
	Backup Name/Title	
Activity	Name/Title	
	Backup Name/Title	
Activity	Name/Title	
	Backup Name/Title	

Appendix 9: Sample Farrowing Standard Operating Procedure

Proper management during and post-farrowing requires keen observation skills, knowledge of the pig's behavior and environmental needs, patience, and attention to detail.

Pre-Farrowing:

The pre-farrowing period is the time to prepare the facilities and sows for the birth of piglets. Sufficient time must be provided in the production schedule to make these preparations thoroughly.

Prepare the farrowing quarters:

- Clean and disinfect the farrowing rooms thoroughly before placing sows, including floors, crates, feeders, walls, fans, and lights. Ideally, the room should stand idle for a day or two to allow complete drying before sows enter.
- Check for worn or sharp edges that may cause injury. Check to see that waterers are functioning properly. Adjust size of crates to accommodate the females that will be housed in them.
- Outdoor reared pre-farrowing preparations involve moving farrowing huts to a new, dry location and providing ample bedding material for the sow to create a nest. Ample use of bedding provides a cleaner environment and allows sows and piglets to create a micro-environment.

Prepare the sow for farrowing:

- Allow sows time to become accustomed to the farrowing stall four to five days is recommended. Gilts that have never before been exposed to the farrowing equipment can learn how to manuever in the farrowing crate and operate feeders and waterers.
- Sows must always be handled gently with great patience. Use slow, deliberate movements around sows and minimize loud noises. Be certain that distractions like equipment, shadows, slick floors, spilled feed and drafts are removed before moving sows from one location to another. Never beat a sow to move her, rather use gentle persuasion and patience. NEVER USE AN ELECTRICAL PROD TO MOVE SOWS!
- Check heat lamps, heat pads, radiant heaters to ensure proper functioning beginning 24 hours before expected farrowing.

Farrowing:

- Frequent, attentive observation of sows is important to predict when farrowing will occur. Accurate predictions of the time of farrowing will help ensure that the environment is ready for arrival of the piglets.
- Signs of impending farrowing include: nest building; increased restlessness of the sow; a firm, swollen udder; milk that can be squeezed from teats; increased respiration rate from about 25 to 75 breaths per minute; twitching of the tail; and expulsion of blood-stained fluids. The most reliable and easily observed signs are milk in the teats, increased respiration rate, and expulsion of blood-stained fluids from the vulva. The decision to intervene in the farrowing process is often a difficult one to make.
- If farrowing process is not progressing smoothly, determine if the sow has not finished farrowing. Evaluate the "fullness" of the sow's abdomen, the number of piglets she has, and the quantity of placenta produced in determining if the sow has completed farrowing. Assuming she is not done farrowing, three of the most common signs include: 1. One or more piglets are present but labor stops for 45 minutes or more; 2. The sow is laboring (straining) but no piglet has been born for at least 45 minutes; and 3. All piglets are dry and the attendant is quite certain that more pigs are to be born.
- Contact barn manager for instructions on how to proceed and refer to SOP on difficult farrowing.

Piglets:

- It is critical that newborn piglets suckle promptly to receive a healthy dose of colostrum. Colostrum contains the protective antibodies needed by the piglet. Piglets should receive colostrum within the first 12 hours of life.
- Observe piglets for signs of chilling.
- Piglets are usually processed during the first day of life (clipping teeth, docking tails, clipping the umbilical cord, identifying piglets, treating splay-legged pigs, and providing supplemental nutrients). Some producers choose to delay some of these practices until the piglet is older and stronger or they may not perform some practices at all.
- *Clipping needle teeth:* The newborn piglet has eight needle teeth located on the sides of the upper and lower jaws. Many producers clip these teeth within 24 hours after birth to reduce the chance piglets will lacerate each other and/or the sow's udder. Teeth should be clipped using a sharp side cutter so that only one half of the exposed tooth is removed.
- **Docking tails:** Tails are docked to practically eliminate tailbiting. Most purchasers of weaned pigs and feeder pigs require tails to be docked. Tail docking should done within 24 hours of birth when it is least stressful on the piglet for these reasons: the piglets are small and easy to hold; at this age littermates are less likely to investigate and bite a newly docked tail; the piglet

and farrowing quarters are still relatively clean; and the piglet is well protected with antibodies from the colostrum of the sow. Tails should be docked about one inch from the point where the tail joins the body. Docking too short might lead to rectal prolapses or rear leg paralysis in later life. Use a disinfected side cutter to dock tails. A specially designed, heated cutter that will cauterize the wound can also be used successfully. Very sharp instruments should be avoided because of their increased potential to cause excessive bleeding.

- Supplemental iron: Injection of iron is preferred over oral administration because iron is poorly absorbed from the piglet's digestive tract. Injectable iron products are available in both 100 and 200 mg of iron/cc concentrations. Iron dextran is one of the most common products used. A single injection of 200 mg of iron before three days of age is sufficient to prevent anemia. Iron injections should be administered in the neck muscle behind the ear. Iron should not be injected in the ham as damage to the sciatic nerve may occur or the muscle may be stained which will reduce quality of the ham at slaughter. Stretch the skin before injecting iron then release the skin after injection. This practice will help prevent the iron from leaking out of the injection site. Do not overdose with iron as too much iron can be very toxic to the piglet.
- *Identification:* Piglets may be identified in some way at processing. In commercial settings, identification usually takes the form of ear notches or ear tattoos. Animal care workers need to carefully identify piglets as poorly placed notches or tattoos are difficult to read when pigs get older.
- *Castration:* Castration is best done when the piglets are relatively small and before 14 days of age.
- *Creep feeding*. Creep feeding is recommended beginning at about 10 days of age for piglets weaned at three weeks of age and later.
- *Water:* Piglets should have access to a source of water.
- *Euthanasia:* Check with barn manager.

Appendix 10: Body Condition Scoring For Sows

Introduction:

Body Condition Scoring can contribute significantly to good management of sows in all settings. Body condition scoring provides a clear indication of both the appropriateness of the feed and the effectiveness of the feed delivery system.

The scoring technique provided below is simple and can be quickly learned. Body Condition Scoring requires that various areas of the sow's body be felt to determine fat covering.

Suggested scoring guide

A scale from 1 (emaciated) to 5 (obese) is used in the scoring system which combines both visual appraisal and feel. Visual appraisal alone is not good enough: handling the pig is essential to get an accurate assessment of condition.

Figure 4 shows the various locations on the pig's body which can be palpated to determine body condition (source: Queensland Government, Department of Primary Industries).



Figure 4: Palpation points for body condition scoring.

Table 1. Condition scoring guide

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.



Condition score 1:

thin, with hips and

prominent and no

fat cover over hips and backbone.

backbone very

Condition score 2:

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

Condition score 3: It takes firm pressure hip bones and



Condition score 4:

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



Condition score 5:

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

In practice very few extreme (1 or 5) scores are found in well managed pig herds, while scores of 1 or 4 will be rarely seen. The majority of sows should fall into the middle

scoring range (2 or 3). To cover this middle range adequately, half scores may be used (1.5 to 3.5).

Sows should not enter the farrowing house with a condition of less than 3. Condition score of an individual sow may fall to 2.5 during lactation but a score of 2 or less is not acceptable and producers should take steps to avoid this problem.

Although each of the scale points has a definite description, the system still has an element of subjectivity as different stock-people may score the same sow slightly differently within the half-point system. However the important point is to arrive at a consistency of scoring on the unit. Then use an external visitor, your vet or consultant, to check your scores to ensure you are somewhere "in line" with common practice.

Timing:

Sows should be condition scored at weaning, at service, mid-gestation and at farrowing. Body condition lost during lactation needs to be regained during gestation.

Date: ______ Body Condition Scores: 1 = emaciated 5 = fat1 = 2 = 3 = 4 = 5 = 6 = 7 = 8 = 9 = 10 = 11 = 12 = 13 = 14 = 15 = 16 = 17 = 18 = 19 = 20 = 21 = 22 = 23 = 24 = 25 = 26 = 27 = 28 = 29 = 30 = 31 = 32 = 33 = 34 = 35 = 36 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 21 = 22 = 23 = 24 = 25 = 26 = 27 = 28 = 29 = 30 = 31 = 32 = 33 = 34 = 35 = 36 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 31 = 22 = 23 = 24 = 25 = 26 = 27 = 28 = 29 = 30 = 31 = 32 = 33 = 34 = 35 = 36 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 31 = 22 = 23 = 24 = 25 = 26 = 27 = 28 = 29 = 30 = 31 = 32 = 33 = 34 = 35 = 36 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 31 = 22 = 23 = 24 = 25 = 26 = 27 = 28 = 29 = 30 = 31 = 32 = 33 = 34 = 35 = 36 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 31 = 23 = 33 = 34 = 35 = 36 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 5 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 5 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49 = 50 = 37 = 38 = 39 = 40 = 41 = 42 = 43 = 44 = 45 = 46 = 47 = 48 = 49

Date: _____ Body Condition Scores: 1 = emaciated 5 = fat $1_2_3_4_5_6_7_8_9_{10}_{11}_{12}_{13}_{14}_{15}_{16}_{17}_{18}_{19}_{20}_{21}_{22}_{23}_{24}_{25}_{26}_{27}_{28}_{29}_{30}_{31}_{31}_{32}_{33}_{34}_{35}_{36}_{37}_{38}_{39}_{40}_{41}_{41}_{42}_{43}_{44}_{45}_{46}_{46}_{47}_{48}_{49}_{49}_{50}_{50}_{50}$

Appendix 11: Sample Equipment Repair Standard Operating Procedure

- 1. Animals should be observed daily for wounds and/or scratches caused by damaged or broken equipment, including feeders, feed troughs, gates, hardware and waterers.
- 2. Any evidence of animal injury from equipment should be reported to supervisor/operator as soon as possible.
- 3. Repairs should be made on the same day to prevent further injury.
- 4. If there will be a delay in making a repair, pigs should be moved to a pen/area where they will not be injured further.
- 5. Equipment damage and repair should be recorded use the animal care checklist if no record keeping system is appropriate for collecting this information (optional).

Appendix 12: An Introduction to Managing Dry Sows in a Loose Housing System

Introduction:

European legislation banning the use of stalls and tethers for gestating sows, together with increasing concern among consumers in North America has led Ontario producers to consider the merits of alternative housing systems for gestating sows.

The most common alternative for gestating sows is to keep them in groups in a loose housing situation. However, there are many risk factors that need to be considered before sows are placed in a loose housing situation. These factors influence the behaviour of sows in groups and can contribute to fighting (aggression) which is detrimental to the individual sow, and to the group as a whole. Risk factors need to be audited on a regular basis in order to measure the success (or failure) of the loose housing facility.

The major risk factors associated with loose housing are:

- 1. Mixing
- 2. Competition for Feed and Water
- 3. Space Allowance and Pen design

The key to the success of a loose housing system will be the ability of stockpeople to identify when risk factors are affecting the behaviour of sows in a group and the ability of stockpeople to take appropriate action to eliminate the risk. This booklet is intended as a guide for stockpeople in dealing with the successful management of sows in groups through a review of some of the recent published literature.

An Introduction to Sow Behaviour:

Establishing a Dominance Order:

Sows living in a group generally establish a dominance hierarchy based on the subordinate sow's avoidance of more dominant animals. The formation of the group order may take one to two days depending on group size, sow weight and sow parity. Aggressive behaviour is most commonly seen during the development of the dominance order, usually involving the extremely dominant and extremely subordinate sows.

Researchers have analyzed the behaviour of sows during the establishment of the dominance order and have described several definite behaviours which signal either dominance (fight) or submission (flight). "Head-to-body knock " by a dominant sow was shown to be slightly more aggressive than "head-to-head knock." Both behaviours will signal a retreat by a subordinate sow. A retreat or avoidance were signaled by a head tilt. "Nose-to-nose" was considered to be mildly aggressive for one of the pair, especially if there had been some prior interaction between the two sows.



Figure 1: Behaviour patterns of sows (Jensen, 1980).

Once the dominance order is established, it is often easier to identify relative dominance rankings between sows in the group by observing subordinate sows' avoidance of more dominant animals, rather than by observing aggressive behaviour of more dominant individuals. Sows learn to recognize signs from more dominant sows and avoid or escape to a neutral or protected area.

Once established, the dominance order allows sows to avoid frequent bouts of aggressive interaction. The dominance order will be relatively unaffected by a separation period, i.e., farrowing. Sows may recognize each other after being housed in individual farrowing crates for up to 6 weeks (Arey, 1999).

In a loose housing system, pen design and space allowance can contribute to increased bouts of aggression, when sows are not provided with enough options to avoid more dominant animals. Flight distance (see below) is critical to reduce aggressive encounters.

Flight Distance:

Flight distance is defined as the distance required for an individual sow to get far enough away from a dominant sow to avoid injury. Research has shown that, in a straw bedded pen, the distance that subordinate sows were pursued by the dominant sow varied from 0 to 20 m (66'), with the majority of the encounters (75%) resulting in a chase by the dominant sow of less than 2.5 m (8'2") (Pig Welfare Advisory Group).

The amount of available flight distance can be shortened if physical barriers are provided. Sows can hide behind these barriers and thus avoid confrontation with the dominant sow. Ideally, barriers should be flexible or constructed with round edges to reduce the risk of injury.

Group Size and Composition

In the wild (wild boar, feral and free-ranging pigs), the primary social grouping of pigs consists of two to four sows, their most recent litters and young offspring from earlier litters (Gonyou, 2001). In these groups, sows are closely related, usually mothers and daughters and siblings.

In larger groups in a controlled environment, it is believed that sows will form smaller subgroups. It is more difficult for sows to form a stable hierarchy in larger groups; this can lead to increased aggressive behaviour (fighting, vulva biting) especially when resources (feed, water and space) are at a premium (Rizvi et al., 1998).

Signs of insufficient space allowance would include increased fighting, aggressive behaviours and the presence (lying) of new sows in dunging area at all times (Moore et al., 1993).

Risk Factors:

1. Mixing:

The most common source of injury in loose-housed sows arises from aggression when sows are mixed.

Producers can chose to keep sows in **stable groups**, moving these units through the production cycle (farrowing-breeding-gestation-farrowing) or sows can be kept in larger, **dynamic groups**, with sows being added and removed on a regular basis – usually weekly.

Both arrangements involve the mixing of unfamiliar sows, although a dynamic group system will involve mixing sows on a more regular basis. The introduction of new sows, or the initial formation of a stable group will result in increased levels of aggression while the sows establish a dominance hierarchy within the group. Producers and barn managers should always be present to oversee the mixing of new sows and should be familiar with the signs of sow aggression.

Sow to sow aggression and the establishment of a dominance heirarchy should abate within the first 24 hours after mixing. The causes of continued aggression within a group after 24 hours should be investigated. (Research has indicated that establishing a social hierarchy in a group of ten pigs takes 24 hrs.)

Below are some strategies that can be employed to reduce the level and interval of aggression when mixing sows.

Training of gilts:

Research in the Netherlands (van Putten and Buré, 1997) has shown that re-grouping and re-penning gilts before five or six months of age improved their social skills and reduced fighting when mixed later, at higher weights. The assumption was that this activity gave the gilts the opportunity to learn the signs of dominance in other pigs and to learn how to fight efficiently, to break off fights or to avoid fights altogether. The experiment took place over three years and involved mixing and re-penning groups of 8 gilts 2, 3 or 4 times. The number of fights recorded decreased with the increasing number of times animals were re-grouped; gilts re-grouped 4 times fought less than gilts re-grouped 3 times and gilts re-grouped 3 times fought less than gilts grouped 2 times.



Figure 2: The average number of agonistic (aggressive or defensive social interactions) encounters during 24 hours of observation of experimental groups of pigs (E). The experimental groups were re-grouped either 2, 3 or 4 times. C represents the control group. (van Putten and Buré, 1997).

The handling and exercise involved with the re-grouping and re-penning (gilts had to walk some distance to their new pens) contributed to the overall experience of the gilts, making them easier to handle and less fearful of new situations (van Putten and Buré, 1997).

Introducing sub-groups into a larger, dynamic group:

When unfamiliar sows, known as the sub-group, are added to an already existing group of sows, there are several options that can help to reduce the fighting that can occur.

- The sub-group should not be smaller than 3 sows.
- Pre-mixing small groups of sows prior to their introduction into the larger group has been shown to strengthen sub-group behaviour and to reduce aggression between sub-group members (Durrell et al. 2003).

- Break up the laying area with divisions to form a specific area for the subgroup.
- The sub-group can be kept in a penned-in area within the main group. The pen should provide an area where sows can see each other and can establish nose to nose contact. This allows the sows to become familiar with the new sows through smell and touch across the barrier. Similarly, housing new sows in a pen adjacent to their new group, provides the same type of discovery.

The addition of fresh straw at mixing will only delay the establishment of a dominance hierarchy and, therefore, fighting among sows.

2. Competition for Feed and Water:

Social Facilitation of Eating:

In the wild, sows will spend most of their time rooting and looking for food. Subsequently, domesticated sows are motivated to eat throughout the day.

Sows are also stimulated to begin eating when adjacent sows begin to eat (Gonyou, 2001). This is known as social facilitation and can lead to fighting when feed resources are limited. Social facilitation is of critical concern in systems with electronic sow feeders, since there is the potential for one sow to be eating at any given time (Jensen et al., 2000). This means that the stimulus to eat is present for all the sows in the group throughout the day.

Sows also drink immediately after eating; lack of drinkers or available trough space can also lead to aggression.

Reducing Competition for Feed and Water:

One of the major challenges when group housing sows is to minimize the aggression that can occur at feeding time (Anderson, 1999). This is of critical importance since competition for food and/or water will lead to aggression in intensively kept sows. Aggression can reduce the feeding time of sows and therefore effect weight gains, etc.

Pens should be designed where all individuals are allowed access to food and may complete eating their ration without being displaced by others. Insufficient feed and water access places timid sows at risk.

Researchers in England conducted a survey of 211 farms which employed several loose housing designs and feeding regimes (Risvi et al. 1998). These researchers observed that

feeding sows once a day, rather that twice a day or ad libitum, increased the risk of vulva biting two-fold, whereas feeding twice a day reduced the risk three fold. Vulva biting occured when a sow approached a pen mate from the rear or when the pen mate steps back towards the snout of a sow which leads to a bite. Vulva biting seldom ends in a fight, but vulva biting is recognized as an aggressive behaviour in sows.

Research indicates that the number of water (nipple) drinkers may be a cause of aggression among sows (Rizvi et al. 1998). Nipple drinkers should be checked regularly to ensure that they are functioning properly or water can be available from a trough. The recommended water flow rates for gestating sows range from 1.5 to 2 litres per minute and is dependent on the temperature.

The type of feed can also effect the level of aggression. Less aggression is seen with wet feed (Anderson, 1999).

Low ranking sows will spend less time at the trough; they avoid aggressive encounters at the expense of food intake. In the UK, it is recommended that low ranking sows be removed for individual feeding.

Electronic Sow Feeders:

The use of electronic sow feeders (esf's) poses a different type of risk, as mentioned above (social facilitation). The issue is not so much the number and location of the feeder, but controlling the behaviour of the sows that may be frustrated due to the sequential feeding. Groups with esf's should be closely monitored, especially in larger groups, when groups are first formed and when new animals are added. Dominant sows will eat first and often return to the feeder to remove any feed left by other sows (Gonyou, 2001).

The addition of un-chopped straw or other suitable roughage has been shown to reduce the levels of aggression where esf's are used (Jensen et al., 2000). Straw or roughage must be added in sufficient amounts so that it does not become the focal point of fighting between competing sows. Straw must be clean and of good quality to make it attractive to the sows.

The provision of two distinct meals of chopped corn silage on the floor has been shown to reduce the incidence of vulva biting (van Putten and van de Burgwal, 1990). The chopped corn silage allows the sows to eat simultaneously and therefore relieves some of the frustration due to social facilitation. van Putten and van de de Burgwal also found that vulva biting was reduced when gilts were trained to use the feeding station before they were introduced into the main group and when an area was reserved for them (see mixing below).

Jensen et al., (2000) found that starting the feeding cycle in the late evening for overnight feeding reduced the pressure at the electronic feeders and led to reduced levels of aggression, due to the sows choosing to rest versus waiting in line at the feeder. Night

feeding can only be successful if the barn is kept quiet and free of disturbance throughout the day. All maintenance and other work has to be done during the night, so the sows can rest during the day.

Socialization of gilts has been shown to reduce aggression and may be a useful strategy for systems with electronic sow feeders.

Trickle feeding:

This method is in use in Europe and research is underway in the US to evaluate this delivery system. In trickle feeding, all sows are fed simultaneously and receive the same amount of feed. Sows are fed in a slow manner; the feed delivery is timed to the rate of eating of the slowest-eating sow. Sows quickly learn there is nothing to be gained by stealing a neighbor's feed.

A supply auger fills a dispenser with feed for two sows. A second lower dispensing auger trickles the feed out into each feeding position. This slow method of feed delivery 'fixes' the sows in place, eliminating competition. Thus all sows in the group grow at an equal rate and maintain their condition

3. Space Allowance and Pen Design:

Pen design - providing sows with places to rest, places to hide from dominant sows and enough space to escape from aggressive sows – has more influence on the level of aggression in loose housed stalls than space allowance. Rectangular pens are recommended versus square pens of equal square footage and stocking density.

Flooring must be non-slip to provide suitable traction for sows, especially for submissive sows.

Feeding Stalls:

Anderson et al., (1999) found that full length body partitions reduced overall aggression at feeding time the most, while shoulder length partitions reduced aggression somewhat and was preferred over no partition. The length of the partition also influenced feeding time, with sows spending more time eating when a full length partition was used. However, the presence of full body partitions led to an increase in bites toward the vulva. This was offset with the installation of a gate across the back of the partitions, effectively isolating the sow for the duration of feeding.



Figure 3: Diagram showing types of feeding stalls for loose housed sows: (a) full body, (b) shoulder partitions, (c) no partitions (Anderson, 1999).

Barnett et al., (1992) found that the provision of partial feeding stalls {(b) in Figure 3} reduced aggression during the first 90 minutes after aggression.

Space Allowance:

Although pen design may be considered to be the most critical factor influencing the level of aggression in the loose housing environment (by providing the sow with the opportunity to retreat from dominant sows) the provision of enough space allowance is still a major consideration. Recommended space allowance vary depending on the system used (i.e., with or without bedding, feeding stalls, type of flooring, etc.). The following table provides some examples of recommended space allowances.

Source	Recommended Space Allowance for a > 250 kg (> 550lb) sow	
	m ²	sq ft
Canadian Code of Practice	2.3	25
UK	3.5	37.5
New Zealand Code of Practice	1.4	15
Table 1: Some recommended space allowances for sows in groups.

Stocking densities should not be calculated based on space allowance entirely, but must be derived from considering the risk factors (mixing, competition for feed and water, space allowance and pen design) outlined in this guide.

Managing the Dominance Order - Body Condition Scoring:

Stockpeople need to learn to recognize and identify sows along the dominance spectrum – which sows advance and which chose to retreat. An effective way of managing the shifting dominance order is to establish an acceptable body score for sows in your groups, and take action (separate) sows which fall below the acceptable score.

The scoring technique provided below is simple and can be quickly learned. After a little practice, several people can independently condition score a group of sows and achieve a close measure of agreement.

Suggested scoring guide

A scale from 1 (emaciated) to 5 (obese) is used in the scoring system which combines both visual appraisal and feel. Visual appraisal alone is not good enough: handling the sow is essential to get an accurate assessment of condition.

Figure 4 shows the various locations on the sow's body which can be palpated to determine body condition (source: Queensland Government, Department of Primary Industries).



Figure 4: Palpation points for body condition scoring.

In practice very few extreme (1 or 5) scores are found in well managed pig herds, while scores of 1 or 4 will be rarely seen. The majority of sows should fall into the middle scoring range (2 or 3). To cover this middle range adequately, half scores may be used (1.5 to 3.5).

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.

Table 1.	Condition	scoring	guide
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If, for example, satisfactory performance is obtained when brood sows are in condition 2 or 2.5 at service and 3 at farrowing then they should be fed to maintain these standards.

This booklet provides an overview of the risks to sows involved when sows are kept in groups. There are, of course, other factors to consider when keeping sows in groups, including:

- Worker health and safety
- Reproductive performance
- Economic competitiveness
- Environmental impact
- Food safety risks.

A successful transition to keeping sows in groups will necessitate a careful study and review of all of these factors.

Research is currently being conducted in North America to investigate further the best methods and housing parameters to keep sows in groups. Producers are encouraged to contact their producer organization, agriculture department staff, veterinarian and university faculty to keep up to date on new findings relative to the keeping of sows in groups.

Further reading:

Pig Welfare Advisory Group: http://www.defra.gov.uk/animalh/welfare/publications/booklets/pb3084/pwag2toc.htm

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Appendix 13: Sample Vices Protocol

Introduction:

Confinement rearing of hogs has resulted in removal of many of the pigs opportunities to root and chew. Periodically, these behaviors can be directed at other penmates resulting in tail, ear, and flank chewing. Many factors have been implicated in triggering the problem including crowding, temperature fluctuation/drafts, inadequate feed/water supplies and some nutritional deficiencies (eg. salt). Belly nosing/sucking of weaned pigs is also believed to result from reduced environmental stimulation and seems to be more frequent in early weaned pigs or smaller wean weight piglets.

Standards:

Target is to have < 1% of the chewing vices (tail, ear, or flank). Animals that are being injured by these activities are to be treated appropriately.

Preventive measures to minimize these vices should be incorporated into facility design, and are to be maintained and reviewed annually or more frequently if necessary. In outbreak situations, appropriate measures to determine and correct underlying cause will be taken. Belly sucking incidence should be targeted at <1%.

Procedures:

1.) Tail Chewing

Prevention

- tails will be properly docked in all piglets at an age less than 5 days.
- proper stocking density of pens
- maintenance of physical environment as stress free as possible (ambient temperature, freedom from drafts, adequate feed and water access).
- appropriately balanced nutrition.
- provision of diversions for the pigs need to root/chew in the form of chains or other objects from the ceilings to dangle to the pens, and/or regularly changed toys such as tires to be rotated between pens daily.

Treatment

- affected pigs must be protected from further on going injury by removal of the chewed or the chewing pig(s) to a separate treatment pen whenever possible. Antimicrobial treatment of affected pigs.
- humane euthanasia of severe cases in a timely manner; ie. very severely, and suddenly affected animals or where therapy/convalescence is obviously not being effective or freshly injured market weight pigs that cannot be held back before slaughter.

- when incidence is so high as to preclude removal to a separate sick pen:
 - affected animals must still be appropriately treated in a timely manner and approaches to pen control addressed more intensely; for example - use of water softener salt, additional toys/chains. Shipping of lighter weight animals to reduce stocking density may help. Movement of affected pigs into rooms of younger pigs can be considered on consultation with herd health veterinarians.
 - ii) Review and determination of any predisposing factors (physical, climatic, environmental, nutritional) in order to correct the problem
- barn with ongoing, recurrent problems must review basics of facility design, environment and nutrition to determine if larger scale, more permanent changes need be done.
- 2.) Belly Nosing

Prevention

- piglet wean weight and age will be maximized
- production guidelines to reduce light weight piglets at weaning.
- provide adequate and easy access to high quality fresh feed in a warm, draft free environment.

Treatment

- provide adequate stimulation in the environment of the nursery pen (toys, chains, etc.).
- extra feeder spaces and a variation in feed form (ie. wet feed with water or electrolytes) is to be made available for small wean weight pens or pens where the problem is developing.
- isolate the noser or, if it is beginning to fail as a result, euthanize it so it does not further injure other pen mates.

Monitoring:

- Barn staff to monitor daily and respond appropriately (management of pigs(s) or notify welfare committee).
- Herd health veterinarians and production managers will record/assess incidence on a monthly basis. Welfare committee audits will also assess the situation in the barns

Appendix 14: Animal Care Assessment Validator's Work Sheet

Space allowance:

Pen area # of/pen Space per animal	= =
Pen area # of/pen Space per animal	= = =
Pen area # of/pen Space per animal	= =

Comments:						

Body Condition Scores: 1 =emaciated 5 =fat

1_2_3_4_5_6_7_8_9_10_11_12_13_14_15_16_17_18_19_20_ 21_22_23_24_25_26_27_28_29_30_31_32_33_34_35_36_ 37_38_39_40_41_42_43_44_45_46_47_48_49_50_

 $1 _ 2 _ 3 _ 4 _ 5 _ 6 _ 7 _ 8 _ 9 _ 10 _ 11 _ 12 _ 13 _ 14 _ 15 _ 16 _ 17 _ 18 _ 19 _ 20 _ 21 _ 22 _ 23 _ 24 _ 25 _ 26 _ 27 _ 28 _ 29 _ 30 _ 31 _ 32 _ 33 _ 34 _ 35 _ 36 _ 37 _ 38 _ 39 _ 40 _ 41 _ 42 _ 43 _ 44 _ 45 _ 46 _ 47 _ 48 _ 49 _ 50 _$

 $1_2_3_4_5_6_7_8_9_10_11_12_13_14_15_16_17_18_19_20_21_22_23_24_25_26_27_28_29_30_31_32_33_34_35_36_37_38_39_40_41_42_43_44_45_46_47_48_49_50_$

Wounds/Scratches: $\sqrt{}$ = no wound/scratch X = wound or scratch

1_2_3_4_5_6_7_8_9_10_11_12_13_14_15_16_17_18_19_20_ 21_22_23_24_25_26_27_28_29_30_31_32_33_34_35_36_ 37_38_39_40_41_42_43_44_45_46_47_48_49_50_

 $1_2_3_4_5_6_7_8_9_10_11_12_13_14_15_16_17_18_19_20_21_22_23_24_25_26_27_28_29_30_31_32_33_34_35_36_37_38_39_40_41_42_43_44_45_46_47_48_49_50_$

1_2_3_4_5_6_7_8_9_10_11_12_13_14_15_16_17_18_19_20_ 21_22_23_24_25_26_27_28_29_30_31_32_33_34_35_36_ 37_38_39_40_41_42_43_44_45_46_47_48_49_50_

Appendix 15: Slope Meter

Please also see the slope meter calculator in Appendix 15 (attachment).

Slope meter design:

