Pig Normal Behaviour – the basics

The basis of animal welfare often revolves around the five ñfreedomsò

1. Freedom from thirst, hunger or malnutrition
2. Freedom from thermal or physical discomfort
3. Freedom from pain, injury or disease
4. Freedom from fear and distress
5. Freedom to express a normal pattern of behaviour

However, in order to recognize that an animalôs welfare is being compromised, it is imperative that the clinician understands and appreciates the normal repertoire of pig behaviours and expectations. This section examines some of the normal events in a pigôs life.

Normal behaviours of the pig

Farrowing
Nursing patterns and consequences
Post-weaning ï the first five days
Lying patterns as an indicator of acute comfort
Defection patterns as an indicator of chronic comfort
The thermoneutral zone in pigs
Handling and moving pigs
Mixing pigs
Pen design to accommodate pig behaviours
Play behaviour

Reproductive behaviours:
The signs of oestrus
Oestrus behaviour patterns
Courtship behaviour
Boar breeding or stud behaviour signs

Parturition (Farrowing) in the pig

assuming farrowing at 115 days

Time	Event	
110 days	Foetal production of corticosteroids	
111	Progressive swelling of vulva	
	Vulva becomes redder	
	Mammary glands develop	
113	Individual mammary glands easily visible	
114	Sow becomes restless	
	Nest making starts	
	Sow stops eating	
	Milk can be expressed from nipple	
115	Sow lies down with periods of restlessness with clawing and chomping of bedding materials	
	60-75% of sows farrow at night	
-1 hour	Sow settles down in lateral recumbency	
	Intermittent straining and paddling of legs	
-10 minutes	Passage of small quantity of foetal fluid	
	Marked twitching of tail	
	Pain and abdominal effort/straining Leg movement in time with contractions	
0	Passage of first piglet	
0-3 hours	Sow more relaxed	
	Passage of piglets every 10-20 minutes	
	Gilts may be restless after 2-3 piglets	
	Piglets born within 3 hours of all piglets	
After last piglet	Sow stands and urinates	
	Sow lies down quietly suckles	
4 hours later 8 hours max	Placental mass passed	
	The sow does little to assist her piglets	
	There is no sure way of knowing a sow has passed all her piglets and placenta. Watch sow behaviour for the next 24 hours	

Induction of farrowing

Injection of $PGF_{2\alpha}$ on day 112-113 results in parturition 28 hours later

Hormonal Assistance in farrowing

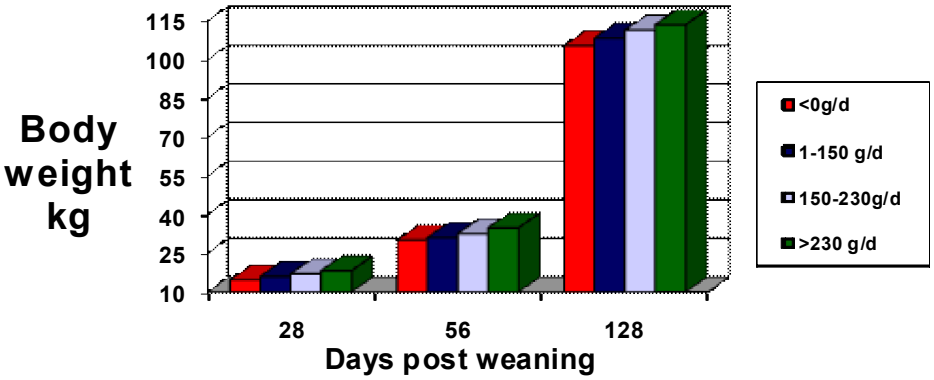
Oxytocin 5-10 IU intramuscular. More than 10 IU results in uterine spasm.
Submucosal intralabial injection only requires 2.5 IU oxytocin.

NURSING PATTERNS AND CONSEQUENCES

What attracts new born piglets?		
1	Vocalisation of sows	
2	Dark areas	
3	Afterbirth and birth fluids	
4	Movement along hair patterns	
Suckling after birth		
1	Piglets contact teat as quickly as 3 minutes, but average 15 minutes to contact the udder and 30 minutes to contact the teat	
2	Milk continuously available for several hours little aggression as pigs sample teats	
3	Cyclic milk ejection, approximately hourly, results in more aggression	
Cyclic nursing and suckling (approximately once every hour)		
	Sow	Piglets
	Slow grunting	Assemble at udder
	Increase grunt rate	Nosing and teat location
	Rapid increase in grunt rate	Slow suckling
	Milk flow (15 sec)	Rapid suckling
	Grunting declines	Slow suckling or nosing
	Sleep or change position	Fall sleep
Consequences of cyclic suckling		
1	Fan noise may interfere with nursing cycles	
2	Piglets which miss a nursing do not eat until next bout	
3	Nurse within a room to synchronise	
4	Nursing can be stimulated by sound or massage	
5	Post-suckling massage related to milk yield and gut hormones	
Teat Order		
1	Established within 3 days	
2	Consistence often over 90%	
3	Less stable in large litters	
4	About 10% of piglets use more than one teat	
5	Multiple teats more common in small litters	
6	Unused teats regress	
7	When sow turns over, so does the piglet teat order, it is teat specific	
Consequences of a teat order		
1	Stable teat orders lead to more uniform growth	
2	Relative weight gain within litters depends on competition for teat	
3	Evening out litters by weights (first 3 days) or selective teeth clipping reduced problem piglets	
4	Unused teats produce less milk in subsequent lactation	
5	Mixing after day 9 difficult to re-make teat order (1-2 days)	
In with natural state a sow would introduce her piglets to other sow's piglets around day 10. After day 14 the groups of piglets join the main group.		
When a pig is fostered after 48 hours total litter performance is reduced Fostering is about two events Foster after day three if you want more even litters (total litter size will be reduced) Do not foster after day three if you want to maximise total litter weight (litter may be variable)		

THE FIRST FIVE DAYS POST WEANING

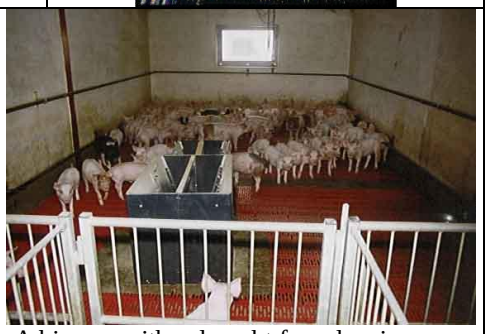
A good start is vital



In this trial from Kansas State University, the pigs which did not eat in the first week were 10kg lighter than those who grew at 230 g/day on day 128 post-weaning

Pre-weaning Behaviour		
	It is important to try and mimic as much as possible the pigôs requirements pre-weaning in that immediate post weaning period. Each piglet has:	
1	A drinker each	
2	A feeder each	
3	Minimal competition at eating/drinking	
4	Eat and drink warm liquid feed	
5	Eat and drink as a group	
6	Eat and drink once every 1-2 hours. Sows in crates feed once every hour, those loose housed by 24 days feed once every 2 hours, the weaning process has started	
7	Mother determines the time to eat ï the piglet does not. It is not an instinctive drinker, it is behaviour driven	
8	Sleep as a group	
9	Clearly defined sleeping area	
10	The piglet may not even recognise itself as an individual, only recognise the group	
	How many of these normal behaviours are catered for after weaning?	

Note that the pig would normally be weaned over an 8 - 12 week period

<table>
<tr><td colspan="3">Basic management required for the weaner</td></tr>
<tr><td>Water</td><td>It is essential to train the newly weaned pigs where their water supply is positioned
The water supply needs to provide more than 500 mls/min. Less than this flow, pigs will not spend more time to get their water supply. In the first week post-weaning there is no variation in water intake over the 24 hoursï unlike after a week where water consumption is more during the day and becomes associated with feed. Turkey drinkers provide a surface of water and allow pigs to drink as a group. Wasted water can be minimised if the drinker is suitably balanced. Turkey drinkers can be used for hospital pigs as they are easier to clean than a cube drinker. However, sufficient space is required for turkey drinkers; they require some big pen concepts. Insufficient water supply leads to fighting and ultimately variation in the group. Consider adding a sweetener to the water if it encourages intake</td><td> 
  </td></tr>
<tr><td>Air</td><td>Assess whether the pigs are comfortable by looking at the pigs when they are asleep and look where and how they are lying. It is essential to provide a sleeping area which is draught free and with an initial air temperature of 30°C either through adequate artificial heating, heated floors or straw/bedding. Avoid gases moving from the slurry pits into the pigôs building. Enter pens quietly to assess weaner lying patterns. Noisy stockpeople will miss clear evidence of draughts.
Keep the lights on for the first 3 days so the pigs can find the equipment, before weaning they probably had 24 hours of light.</td><td>  </td></tr>
<tr><td>Floor</td><td>The floor needs to be non abrasive. Having steps to feeders can cause damage to the knees and legs, particularly important in future breeding stock. The stocking rate is important and you need to avoid both under and over stocking. This can only be achieved through good pig flow. Pigs to 20 kg require 0.2 m^2; to 30 kg they require 0.3 m^2. All-in/all-out, adequate pressure washing/disinfecting is essential to prevent crossover of infection from one group to the next. The use of lime washing where possible is to be encouraged.</td><td> 
A big pen with a draught free sleeping area at the back of the pen</td></tr>
<tr><td>Stock</td><td colspan="2">To manage the pigs adequately it is essential to maximise the weaning weight. Aim to cope with the smaller weaned pigs; one possibility is by streaming these pigs sideways. Providing more ideal environments and possibly medication. These pigs should be provided with wet creep feed for longer than the rest of the group. Moving 10% of the pigs sideways, giving them good hospital accommodation and possibly re-introduce them back into the main group but at 18 kg + even if these pigs are a week older. Never introduce compromised pigs back into newly weaned pigs at 7 kg; the immune system of the 7 kg pigs is grossly inadequate to cope.</td></tr>
</table>

Feed	Feed has several aspects in the 1st five days:	
Palatability	Feed at this stage is a high quality, high cost milk diet. It is essential not to store the feed at above 18°C ï which exists in all weaner houses. Ensure the feed bag is closed at all times. The feed will sour quickly.	
Hygiene of feed	Ensure feed is properly stored. Protect the feed from infestation, for example store off the ground. Rodent contamination is a source of Salmonellosis	
How many times to feed	Prior to weaning pigs eat every 1-2 hours (12-24 times a day) depending on the management system. The mother determines feed times, the piglet does not, therefore, feed little and often. On several farms the newly weaned pigs are fed 8 x a day and even this is compromised but fits into a working day. This is continued for 3 to 4 days post-weaning. Ensure all weaners eat. While this seems extreme, if the feed intake in the first week can be optimised this can be worth 10 days to finish and the reduction in treatments easily compensates for the extra labour effort. This can be reduced over the 1st week to 2-3 times a day feeding.	
Type of feed	The piglet thrives on liquid/porridge type feed. Provide a creep/water mix and provide for the 1st few days. The aim is to get the pigs to ôbegô for the feed, this makes identification of any poor intake pig much easier, but does require a feeding system where all pigs can eat together. Any weaner that misses two eating episodes should be taken to the trough and force fed/watered. The provision of clean, warmed acidified feed helps to control post-weaning diarrhoea.	
Type of feeder	It is vitally important in the first week that all pigs can eat together and therefore a trough is required. The neck space for a pig at 7-10 kg is 70-100 mm. The turkey drinker can help as it can be used as a wet feeder in the first 3 days. The use of long feed troughs can provide sufficient space. Once the pigs are eating we can then increase the dry feeding through a trough. The feeder shown is for illustration only.	
Minimize waste of feed	Review feeder usage to minimise waste. Avoid floor feeding if possible unless you can justify this on economic grounds. The picture shows feed that the weaners have wasted and has fallen through the slats. This only helps to encourage rats, birds and flies to the farm	

Lying pattern - an indicator of acute comfort

Too cold


Lie on the floor with their legs tucked under their body to reduce floor contact. Lie huddled with other pigs. Lie close to a wall
Pigs may shiver, The pigs may become hairy
With larger pigs they seem unable to adopt this tucked position for very long and tend to lie semi-recumbent with their legs tucked into their body.

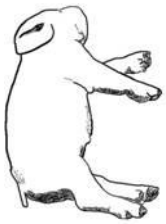

Chilled piglets


Chilled weaners


Chilled finishing pigs

Comfortable

Within a group of pigs there will be a selection of lying patterns. The main group of pigs will sleep together in a pile, however, other pigs will be lying spread out but with maximum contact with the floor. These separated pigs will be the more dominant pigs. The lower order pigs will lie on the edge of the main group. Pigs sleep with legs stretched out from the body.


Too hot

Pigs will be panting > 40 per minute
Pigs are generally dirty.
Lie away from other pigs, sometimes against a cold wall.
They do not pile
Lie in any wet/cooler area
Pigs will dig into earth/bedded floors.

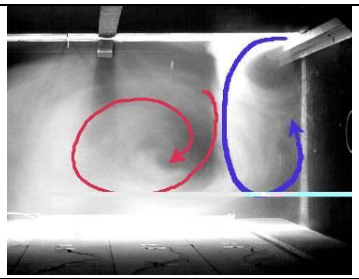

Defecation behaviour – an indicator of chronic comfort

Pigs are inherently clean animals and avoid lying in faeces. From a few days of age pigs will become toilet trained to defecation in a specific area of the environment.

The defecation pattern of the pen provides a good long term indicator of comfort. The veterinarian can see the area even without the pigôs presence. Abnormal defecation patterns indicate a chronic reduction in optimal environment.

Pig's defection area can be expected to be either

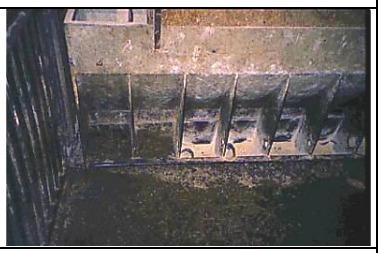
Where the pen is coolest



Where the pen has a draught ï the pigs will defecation under the cold dropping air (blue in the picture)

Where the pen is wettest ï note the feaces under the drinker

Where the pen is darkest



Where the pen is most private ï this can lead to a blocked feeder

Hot pigs will specifically choose to wallow in feaces and slurry to assist cooling. Sometimes, this is unavoidable, but its occurrence should be minimised. Once pigs become ódirtyô they can be extremely difficult to retrain ï even when provided with óidealô environments.

Note the pigôs in the picture are lying by the drinkers ï another abnormal position

Abnormal defecation patterns can also limit other pen resources creating additional stressors ï for example when pigs defecate into feeders, waters or over lying areas.

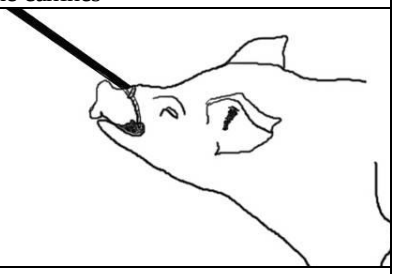
Handling and Moving Pigs

Most pigs are not used to being handled. They become very vocal when caught and will not settle easily. Pigs will work as a herd or as individuals, before moving a group of pigs think of escape routes you would take and then try to block them.

Handling

Young pigs may be picked up and will generally settle

Older pigs examine within a crate or restrain using a loop around the upper jaw behind the canines



Moving

Pigs can be moved as a group

Design passageway to prevent escapes. Walls 850 mm high

Young pigs may be easier to move in a barrow

Pigs have a wide angle 310 degree vision which allows them to see behind themselves without turning their heads. They are easily distracted by objects to the front and sides and sharp changes in floor texture and appearance. A shaft of sunlight is sufficient to affect pig movement.

When moving growers pigs use a pig boards, hands and your voice. Do not use electric prods

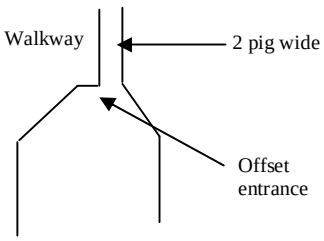
There is never any need to use violence - the pig will object

Pigs move much easier in a quiet controlled environment

Pigs can be trained to a harness. This is how they are used to hunt truffles.

Boars can be trained to walk to heel and follow a route

Take special care with boars or lactating sows. Pigs are armed with razor blades



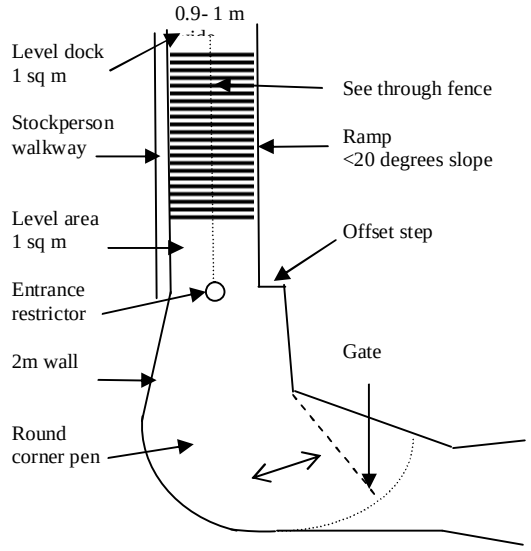
Loading finishing pig can be a particularly stressful time for a pig. It is essential to carefully design the loading area. Avoid steps and any rise over 20°. Ensure the area is well lit without corners. The use of hydraulic lifts (right) is to be encouraged.

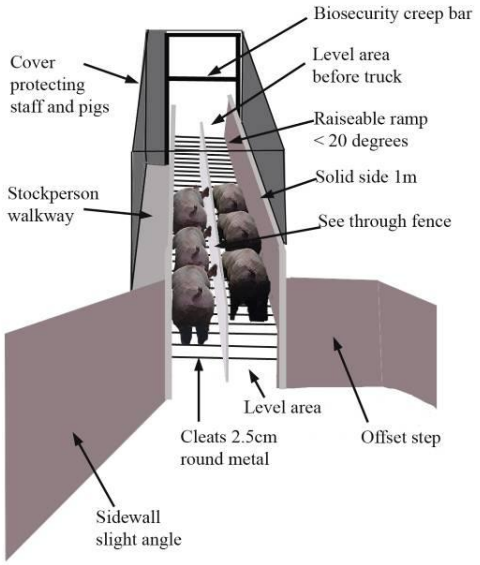
With ramps they should be constructed with at least 850 mm high to prevent distraction. The passageway should allow 2 pigs to move at the same time, allowing physical contact. Have an offset panel at ramp entrances, rather than a funnel. A catwalk along the outside of the ramp will allow staff easy access to the pigs on the ramp to improve pig movement.

Loading area design

The following may be considered when designing a loading area for pigs

Pigs	
	Any pig transported must be fit to load onto the truck and unload at the arrival point
Moving pigs	
	Pigs can be moved by a stockmanôs voice; hands and gestures; boards; flags or paddles
	The pigs are not to be hit by any of these moving aids
	Electric prodders are not to be used to move pigs
	Pigs move easier when the stockperson has fully planned the move
Basic design	
	The loading area should have no sharp turns
	The loading area should be free of any protrusions ï such as nails or bolts
	There should be no steps or gaps in the walkway
	Ideally there should be no slope to the loading area
	If a slope is necessary, the maximum slope should be 20°
	The ramp for finishing pigs should be 0.9-1.0 m wide ï sufficient for two bacon pigs
	Have a see through fence down the middle of the ramp ï so the pigs can see each other
	The ramp sides should be solid at 1.0 m high
	The loading area should be well lit ï 250 lux
	Avoid any sharp contrast in shade and hue. This includes wet patches.
	The loading area should protect the pigs and staff from the weather ï heat and cold
	The ramp should have a walkway for staff
	There should be a flat area 2 meters long at the top of the ramp
	A biosecurity creep bar should be placed at the top of the ramp
	Do not allow the farm staff to enter the truck
	Do not allow the truck driver to enter the ramp area
	Cleats in the ramp should be 2.5cm metal rod separated by a gap more than the pigôs feet but not wide enough to allow the pig to slip



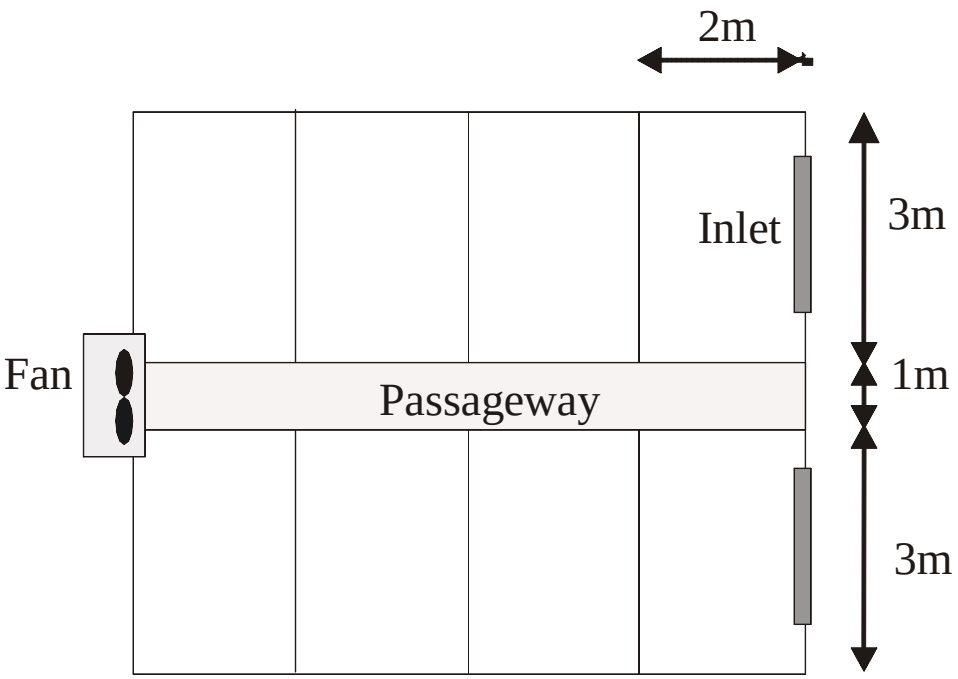


MIXING PIGS

Care is needed because:	
1	Pigs will fight whilst they establish their ópecking orderô. This happens whenever the group is disturbed.
2	It takes 1-2 days to establish the pecking order, and performance may be compromised during this period.
3	Pigs need time and space to work out their pecking order. After this, the weaker pig will back down.
For all pigs;	
1	Pigs should be kept as much as possible in stable social groups, and mixing at any stage between accommodation types should be kept to a minimum.
2	Avoid mixing in pens where sharp edges to feed troughs and drinkers protrude, and can injure the pigs.
3	Always mix pigs of similar size.
4	As a general rule, never introduce less than 3 pigs into an established larger group. However, it may be necessary to introduce 1 or 2 sows to dynamic service groups.
5	Low levels of lighting can reduce aggression when mixing. This must not be used for longer than 1-2 days.
6	Resorting to the use of tranquilizers and masking sprays may indicate that the mixing methods and facilities on your farm are inadequate.
For sows:	
1	Allow plenty of space (e.g. if mixing sows, you need 3.5 m^2 per sow) so that there is enough space to get away if chased or threatened. Sows will mostly chase for less than 2.5 m.
2	Ideally only mix sows at weaning. Avoid mixing sows 5-21 days after service as this is when the eggs implant and stress can result in high numbers of returns.
3	Use physical barriers in the pen such as big bales or plastic sheeting suspended from the roof. This allows a beaten pig to get out of sight and quickly ends the fight.
4	Time mixing to fit in with management routines to best allow supervision, however mixing in the evening may be best if you can arrange to be there to oversee this.
5	Use fresh straw at mixing ï it acts as a cushion if fighting occurs and increases surface grip.
6	Consider *ad lib* feeding when mixing.
7	Consider allowing physical contact e.g. through a gate, between a dynamic main group and a sub-group to be mixed into it, prior to mixing. This may reduce fighting when they are introduced.
8	Avoid re-mixing groups. If practical mix sows back into their original groups post weaning.
9	Avoid mixing in any form of cubicle system. Sows can be trapped easily and injured ï consider a specialist mixing pen.
10	Consider breaking up the edge of the lying area with divisions so that sub-groups can have their own areas.
11	Try closing off a section of a large yard system for a few days then penning the sub-group in this area when mixing. This helps to establish a new territory for the smaller group.

Pen Design

A client has a set of buildings all with the following design:



Photographs of typical similar buildings on other farms:

		
Inlets with central door	Totally woven metal floor	General view of possible room

The farmer needs to farm all-in/all-out from weaning (24 day) until about 30 kg.

The farmer wishes for you to suggest a design for the house to maximize weaner output and requires detail of essential 'furniture' required to promote good health of the weaners. In addition he requires a suggested pig flow for the building.

Answer:

To maximize the number of weaners that can be housed in the building

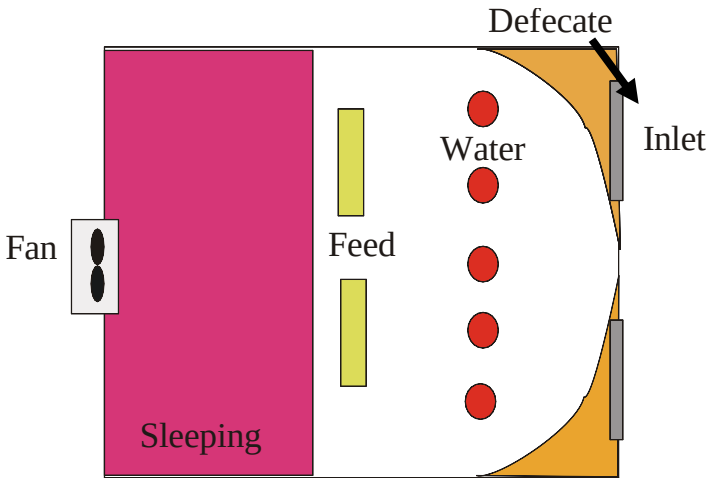
Calculation ï if the whole house is used there is 8 (4x2) x 7 (3+1+3) space = 56 m^2, therefore to 30 kg 186 weaners can be finished. Note the mortality in the house when calculating the number of weaners.

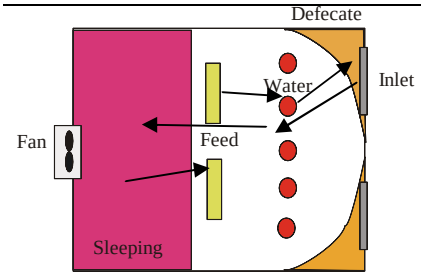
Combining pens allows the farm to capture space and any under-utilized space. Note the feeder takes up space reducing the unobstructed floor space available to the pigs

When designing a pen consider that pigs will generally do the following behaviours:
On awakening or from rest ï they eat, then drink, then urinate/defecate, socialize/exercise and then return to rest or to sleep.
Therefore, design layout to minimise traffic congestion between these areas: sleeping-eating-drinking-defecating.

A big pen layout allows for good socialization of the pen.

Consider a layout as detailed:





Pig movement within the pen

The arrows indicate possible pig movement. Note there is no cross-over of traffic the pig can logically move from one requirement to another.

The most important cross-over over the sleeping area is avoided ensuring pigs have the opportunity to sleep well.

Prescription for the pen design:

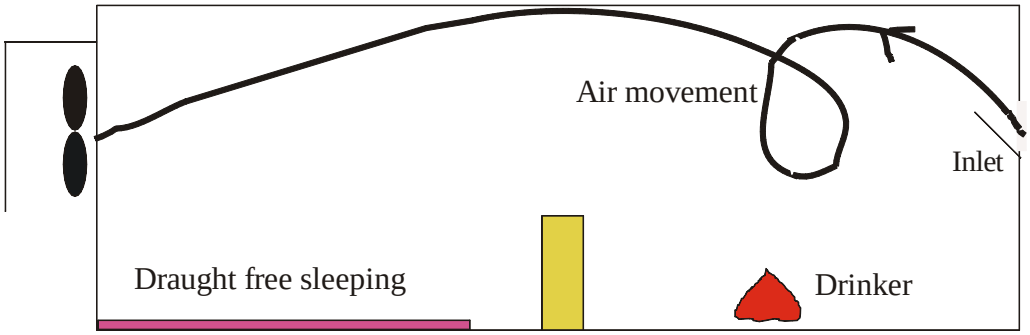
Floor ï there is sufficient space for 186 pigs to have 0.3m^2 ï excluding the feeder space. There are 4 clear zones for the pigs to express their behaviour. Cleaning of the house is optimized as the number of walls/fences to clean is minimized.

Food ï Pigs at 30 kg require 50 mm *adlib* feed space per pig. Therefore, the feeders will need to be 9.3 metres in length in total. However, in the first week weaners require to eat as a group and are restrict feed therefore they require 100 mm per pig a total of 18.6 metres. In the big pen this can be achieved by the use of a trough up to 20 metres for the first 3-4 days ï note a trough has two sides for pigs to eat out of, therefore 5 x 2 metre troughs would suffice.

Water ï Depending on the type of drinker used: 186 pigs require 5 turkey drinkers (one per 40 weaners). If nipple drinkers are used the pigs require 19 drinkers set at 13 to 46 cm in height increasing as the pig grows with a flow of 0.7 litres per minute.

Air ï The major advantage of a big pen is that the pigs are able to move away from any draught associated with the inlets. The room can be run at a constant 22-24°C, whereas the sleeping area can be on a cooling curve from 30 to 24°C over the 6 weeks of growth reducing at about 1°C a week.

Probable air movement pattern:

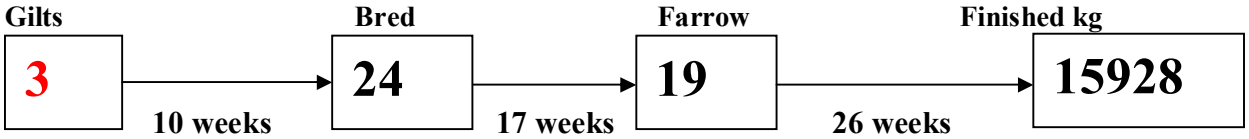


Pig Flow

The farm requires at least 6 rooms to allow for growth from weaning (24 days) at about 7 kg to the 30 kg at 10 weeks.

Suggested pig flow to provide sufficient weaners would be:

25-30 Gilt pool 95 kg to service
24 sows a week to serve 19 sows a week to farrow (190 x 7) 1330 kg to wean
(181 x 88 dead) 15928 kg a week to sell 828256 kg paid for annually 9412 pigs sold annually



Some pictures of nurseries exploiting the big pen concept

<table>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>General view of a big pen</td><td>Sleeping area in a big pen using infra-red gas heaters</td><td>Newly weaned pigs eating out of a long trough</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Big pen on straw with a covered sleeping area</td><td>Cleaning a big pen utilising circle feeders and turkey drinkers as a water supply</td><td>Entrance into a big pen.</td></tr>
<tr><td colspan="3">Wean to finish</td></tr>
<tr><td colspan="3">A modification on the big pen is to move toward a wean to finish system ï not all current systems capture all the benefits of providing pigs with a choice of where to sleep.</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Wean to finish pens</td><td>This system still utilizes the passageway</td><td>A group of finishing pigs ï 500 pigs per group</td></tr>
</table>

Pigs at Play

Any stockperson watching a group of pigs will soon be amused to observe their play activities. Play prepares them for situations and trains survival skills.

Pigs are extremely intelligent animals with a degree of complex behaviours that match and if not surpass a domestic dog. Unlike cattle and sheep, pigs exhibit a greater inquisitive and individualist behaviour patterns. This can be practically demonstrated when moving a group of pigs. In many ways pigs are more like people than they would wish to admit.

Providing an environment where pigs can explore their play behaviour can help relieve stress and allow the pig to cope better if their environment is temporarily adverse.

Company		
	Pigs will gain comfort and support from other pigs and other animals. Pigs should not be kept in isolation. There may be obvious exceptions when the pig is under treatment for meningitis or a severe lameness. However, once the pig is over the critical stage of the condition it should be housed with other pigs of a similar weight and age.	
Environmental enrichment		
Adult pigs		
	Adult pigs have a generally lower requirement to play with items placed in their pen. However, playing music to adult sows can have a calming effect and has been used to reduce savaging of piglets by gilts.	
	Farrowing sows can be provided with chopped paper, straw and hay to allow them to act out their nesting behavioral requirements. Adult sows can be provided with some chop straw even while being housed in stall accommodation. Note that the bedding materials can cause disturbance to the slurry system which if blocked would lead to significant other problems. Picture shows shredded paper in the farrowing area	

Wean to finish pigs

All wean to finish pigs should be provided with toys within the pen.

The simplest toys are often the most effective. Pigs love to play with chains, rattles, large plastic bottles, rubber belting, old boots and feedbags.

Large balls became popular in the 1990ôs and while these can be useful pigs can also become bored with them. In addition they can be placed in feeders and block feed access.

Balls

Chains

Purpose built

Car tires should be avoided as they have metal supports which can be swallowed by the pigs resulting in intestinal rupture.

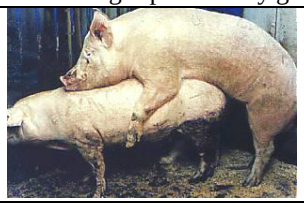
Pen layout/shape

Pen layout can encourage play behaviour. However, note that in pens which are long and narrow this can result in a running game with large numbers of pigs running at high speeds. As the pigs attempt to turn at the end of the pens individuals may slip and become injured ï including long bone fractures. When designing the pen ensure that this running behaviour is catered for by providing chicanes which will slow the pigs down.

The Signs of Oestrus

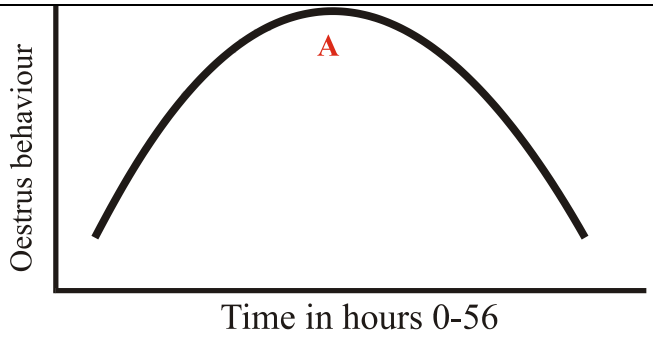
Pro-oestrus		
	In gilts, the vulva swells, but not consistent in the sow	
	The vulva becomes congested or red	
	The udder develops in gilts	
	The female becomes nervous and easily disturbed	
	Climbs up gates and walls	
	She is ridden by other sows, but does not stand	
	Vaginal walls become reddened (congested)	
	Clitoris becomes more prominent	
	Vaginal fluids thicken, produce strands between fingers	
Oestrus		
	The vulva reddening starts to subside	
	There is a slight mucus vulva discharge	
	The female starts to mount other sows, and if mounted starts to stand	
	Emits a characteristic high-pitched grunt	
	She actively seeks boars	
	Has a decreased appetite	
	Stands to back pressure, particularly in the presence of a boar	
	In a Large white, pricks her ears	
	Stands with tail upright and flicking up and down	
	Rub marks	
	Has a clean vulva in outdoor units (post service)	
	Rubs and is attracted to stockpeople	
	Has glazed eyes	
	Allows coitus	

SOME SIGNS OF OESTRUS

		
Sows seek boars	Boars are interested in the sow	Vulval changes particularly gilts
		
Vulval discharge may include discharges and some mucus	Behaviour changes include the standing reflex	The sow allows mating

OESTRUS BEHAVIOUR PATTERNS

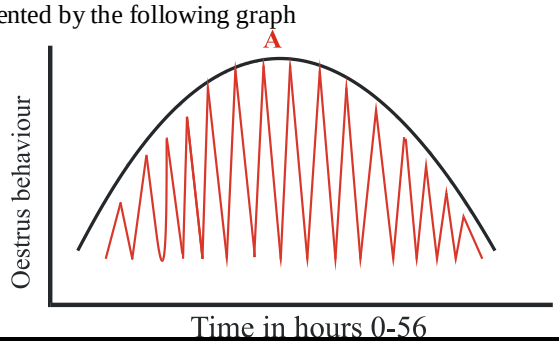
The text book illustrates that



If this is correct the sow will stand still to the point A where she does not move for several hours. This would then wane and the animal starts moving again.
Clearly this does not occur. The graph above describes a ópopulationô of individual sows. It does not describe the events in an individual

The Individual

The individual becomes more and then less interested in the boar. The pattern of oestrus behaviour is actually represented by the following graph



The sow switches in and out of oestrus

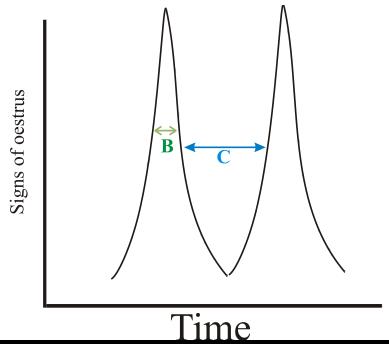
What is the detail of events around point A?

Letôs examine the events around point A in some detail:
If we accept the following:

i) the sow is in the middle of oestrus
ii) the signs of oestrus wane in intensity and the sow is not always responsive
iii) all sows and boars are individuals

Therefore the following questions can be asked:

i) how long is the sow in heat i.e. time length B?
ii) how long is the sow not in heat i.e. time length C?



Research in this area is still limited; however, based on work in gilts and personal experiences length B the gilt is in heat for 10-15 minutes. This is the time the sow will allow boars to mate with them. It is interesting to consider who initiates the end of mating. In many cases it is the sow that by fidgeting and moving around finishes mating with the boar falling off.

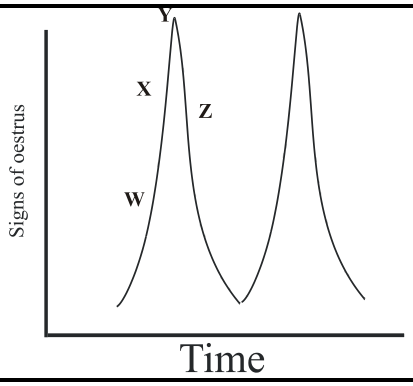
Length C is more controversial and appears more variable. However, the gilt is not in heat for a time interval of 45 minutes. The time length partially depends on the degree of ósatisfactionô the sow receives during mating. There is also a degree of submission with a keen boar.

What is the significance of these findings?

Take 4 gilts in a pen, w,x,y,z and their position in the oestrus behaviour curve is as shown on the right:-

A boar is placed in their pen. Which of the gilts demonstrate good standing heat?

Gilts y and x appear in good standing heat. Gilt w rapidly joins them. Gilt z on the other hand is uninterested in the boar. Note it is possible to miss even w if the boar by this time is occupied with x and y and the stockperson is too busy.



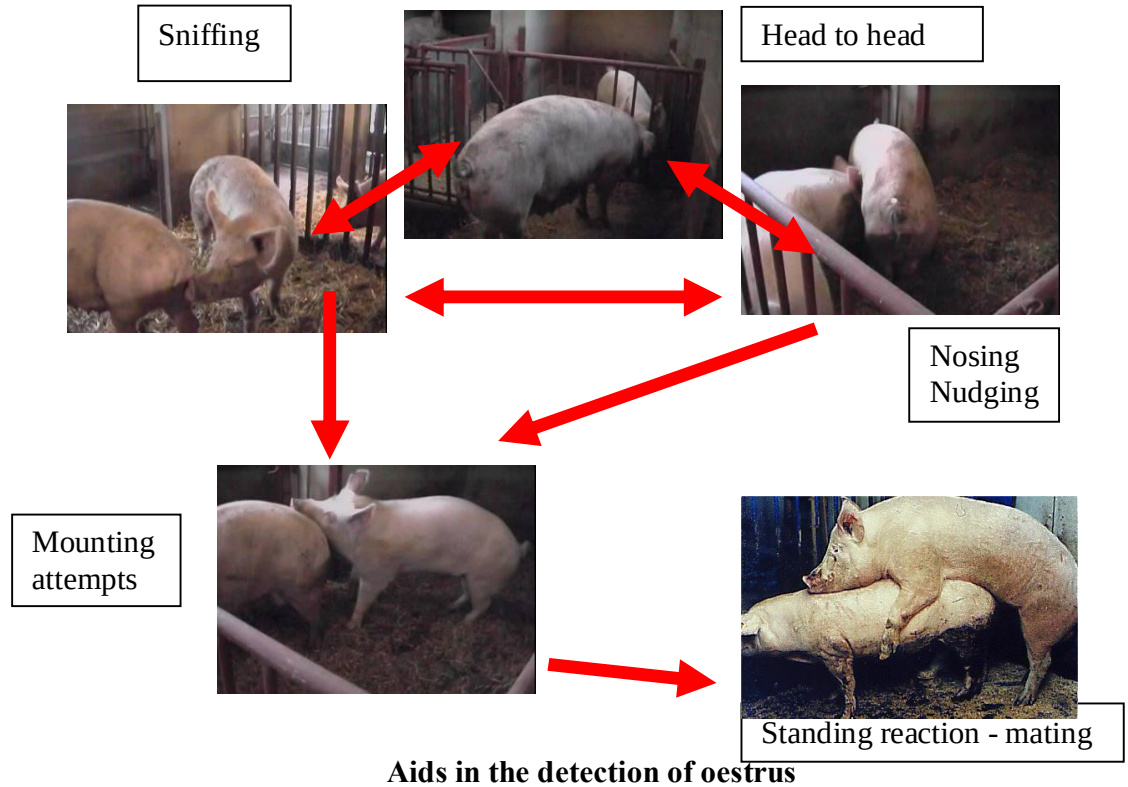
How can we encourage the sows and gilts to demonstrate good standing heat when the stockperson is observing the sows?

Stockperson's tasks	
1	Know the signs of oestrus
2	Spend more time observing heat. Examine for heat 3 times a day between weaning and breeding, especially days 4-6 post-weaning will dramatically improve the detection of standing heat.
3	Ensure you are not distracted during oestrus examination. It is vital that stockpeople have a clear mind when heat checking. For this reason only mate am while heat checking at other times of the day.
4	Heat check in cooler parts of the day In the winter 8.00, 12.00 and 16.00 In the summer 7.00, 16.00 and 20.00 would be more suitable In the extreme heat of the day the behaviour of the female and boar will be subdued
5	Heat check with adult boars who salivate and produce good quantities of pheromones
6	Use pheromone products
7	Ensure the breeding area is well lit, 500 lux required
8	Ensure the sows and gilts are housed in ideal environments i.e. draught free

Enhancing the female's response	
1	Remove the boar from sight and sound for 1 hour prior to heat checking. The boar must be removed by at least 10 meters
By removing the boar the behaviour signs sub side and when the boar is introduced more sows are interested. The peaks become much lower and length out exaggerated	
2	Sows and gilts only require 20 minutes a day boar exposure to produce good signs of oestrus but the ideal boar contact is full body and nose contact.
3	Ensure an ideal environment at a minimum of 2.8 m^2 per gilt/sow

To maximise the chance of reproductive success involves serving a sow only when she is in good standing heat, where she achieves a climax and oxytocin driven contractions of the uterus, to transport the sperm through the uterus to the safety of the oviduct

THE COURTSHIP SEQUENCE IN PIGS



Aids in the detection of oestrus

Have the assistance of a boar, preferably a mature boar that is producing a large amount of phermonomes (scents) that stimulate the female. He must be trained in the layout of the dry sow house/gestation area, but must not become too accustomed to the work, or he will only detect the sows which waste their feed
Oestrus detection should start three days after weaning and continue three time daily until served and twice daily for the entire duration of pregnancy
The boar should be presented to the head of the sow or gilt. Note that this is only stage one of the courtship sequence
House sows and gilts no closer than 1 metre from the boars. Ideally the sow and gilts should not be able to see the boars until the time to mate
It is essential to have at least 20 minutes a day boar exposure to induce oestrus. Constant exposure can be detrimental to the length of oestrus exhibited
Heat detection is easier if sows and gilts do not have boar stimuli (sight, sound or smell) for one hour prior to checking for oestrus. Gilts only exhibit intense oestrus signs for periods of 7-10 minutes and may take 45 minutes before being able to re-exhibit oestrus
Use another unfamiliar boar if sows or gilts exhibit some of the signs of oestrus, but will not mate. This is particularly important in a group of gilts where one is detected by one boar but several others in oestrus are missed by the stockpersonôs enthusiasm for the gilt which exhibits first
Apply all the principles of stockmanship Ears to detect a calling sow Eyes to detect the restless, nervous sow, which is off her food, has a swollen vulva, which is slightly red. Touch to exhibit back pressure test in the presence of the boar The commonsense to be quietly patient in observing animals.

Boar Breeding or Stud Behaviour Signs

Positive boar behaviour

Emptying of the prepuce on entry.
Urinating looking at the collection stool
Salivating and chomping at collection stool
Smelling collection stool
Chatting to collection stool
Nudging of the collection stool
Barking/grunting at the collection stool
Rubbing the underline of the collection stool
Mounting and re-mounting of the collection stool
Thrusting upon mounting the collection stool
Extension on penis upon mounting of the collection stool
Paddling while on the collection stool

Negative behaviour signs

Shying away from the collection stool
Shying away from the stockperson
Looking at the stockperson while he/she handles the underline of the boar
Entering into kennel area when asked to leave the pen
Lying down in kennel area when asked to leave the pen
Lying down in the collection area
Running around boar pen in a disturbed manor
Failure to interact with the collection stool
Failure to interact with the stockperson
Dismounting at stockpersons attempts to handle the boar
Failure to achieve erection
Failure to achieve a fully coordinated ejaculation response.

Good behaviour signs

 Talking to the collection stool	 Mouthing the collection stool	 Mounting the collection stool