



## Breeding pigs

The successful pig farmer always uses good breeding animals. The piglets that are produced must grow fast and produce quality carcasses with a high percentage of meat and a small quantity of fat.

Therefore, when you buy breeding animals, make sure that the pigs come from a farm known to have pigs of good quality and where the management and standard of hygiene are excellent. When buying pigs for the first time, it is advisable to take someone along who has the necessary knowledge and experience.

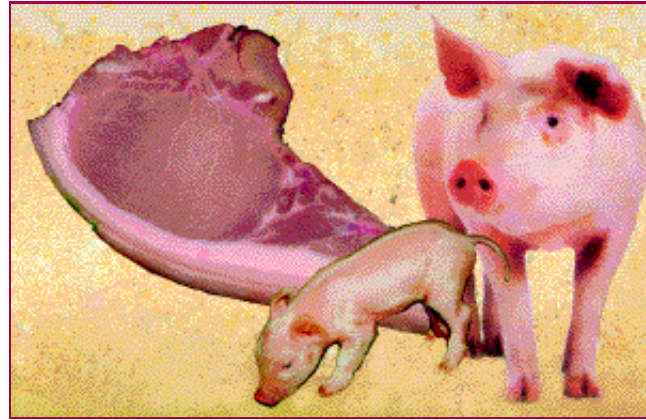
In the case of a small-scale farm, with 20 or less breeding sows, the following selection and breeding programme can be used:

- Always buy good (above average) purebred boars. Buy from a farmer of repute who keeps good records so that the performance of the boar and his parents are known.
- Buy boars from prominent breeds used in South Africa, such as the Landrace and Large White.
- When buying gilts (young female pigs) for the first time, make sure that they come from a breeder with good pigs and who

keeps accurate records.

The gilts need not be purebred, but can be crossbred pigs, e.g. Landrace or Large White sows crossed with boars from the other breed.

- When at a later stage you want to select your own gilts for breeding, it is important to apply strict selection measures and to keep accurate records of growth and feed conversion. If you do not have a record system, it will be advisable to buy replacement gilts.
- Always buy gilts from the same breeder (farm) and make sure that a breeding plan (policy) is used. Consult an adviser, if necessary. If pigs are always bought from the same breeder it is advisable to let him dictate the breeding policy.



### Boar selection, management and use

- Select boars that are free from defects (see chapter on management).
- Buy efficient animals that:
  - grow faster than average
  - have less backfat than the average of the breed
  - have eaten less feed than average to reach a specific

weight.

- A good boar will reach 90 kg live weight before it is 140 days old, have a P2-backfat measurement of 15 mm or less, and require only 2,99 kg of feed or less to gain 1 kg in weight to grow from 30 to 90 kg live weight.
- Buy boars at least four or five weeks before they are used for the first time. This will allow you time to keep them in quarantine and the boars to adapt to the new environment.

### ***Training and use of young boars***

Young boars must be carefully supervised to identify possible problems and to make sure that they will not injure themselves when serving a sow for the first time.

Important considerations:

- The boar must be at least 8 months old.
- The boar and the sow should preferably be about the same size.
- The boar should work (serve the sow) in his own pen or in a pen that is familiar to him.
- The floor of the pen must not be slippery and all obstructions removed.
- A small sow and not a gilt should be used to train the boar.

Procedures when using a boar:

- The boar should be in the pen a few minutes before the sow is brought into it so that he can get used to the pen.
- Stand in the pen with a board ready to prevent the sow to harass the boar or to prevent the boar to harass the sow, if necessary.
- Do not hurry the boar, let him work at his own time.
- Talk gently to the boar so that he gets used to your presence.
- Do not force the boar to mount the sow, but direct him gently to the rear (backside) of the sow.
- If the sow is well on heat she will not move around the pen too much. Help the boar by letting the sow stand with her head to the corner of the pen.
- By adjusting the female's tail, attempt to let the boar insert himself.
- After service, allow the boar to conduct "courtship" under supervision for a few minutes, but do not allow him to remount.
- If a young boar does not serve the first time, repeat the above procedures every two to three days if possible. Much patience is needed which will eventually be rewarded by having boars which are temperamentally good with sows and people and which have no bad habits.
- Once a young boar starts to serve (work), he should **not be used more than twice a week until he is one year old.**
- Older and full-grown boars (mature) can be used three times a week, but preferably not on consecutive days.
- On a farm with 20 breeding sows at least two boars must be kept, namely a young boar to serve gilts that come onto heat

for the first time, and a full-grown one to serve older and heavier sows. It is also advisable to have a spare boar available at all times.

- Finally it is important to keep records. The dates when the boar has served a sow as well as the number of the sow that has been served must be recorded so that infertile boars and boars that give small litters can be identified and eliminated.

### ***Replacement of boars***

- Boars must be replaced when they become too large to serve most of the sows on the farm.
- Boars usually have a maximum working life of between 18 and 24 months. This means they should be replaced when they are 30 to 36 months old.
- It is very important to keep record of the boars' use so that infertile ones can be detected and replaced as soon as possible.
- A low sex drive (libido) can also be a problem. Some boars are slow workers and are sometimes reluctant and only now and then willing to work. Attention must be given to these boars so that they can be replaced if necessary.

### **Gilt (sow) selection and management**

Only the best among the young growing female animals on the farm must be selected and kept for breeding. Select breeding gilts from sows that produce large litters with above average growth rate, and

carcasses with a low fat content.

The following characteristics should be considered when selecting gilts:

- Strong, straight legs with large, even-sized claws.
- Gilts should walk straight and well, and stand up on their claws without falling over at the pastern joints just above the foot.
- A well-formed vulva and six well-shaped, prominent teats on each side of the belly. The teats should start well forward and be spaced evenly to allow adequate suckling for the piglets.
- A well-developed ham, good length with light shoulders and head.

### ***Replacement of gilts***

If replacement gilts are not available when needed or if they do not comply with the requirements, the gilts should be bought. It is advisable to buy them from the same farm where the boars come from, because in this way the previous owner can advise you on the breeding policy for a small pig farm.

### ***Gilt management before first service***

- Gilts are usually selected for breeding at five to six months of age. The pigs not selected can then be sold as baconers at a live weight of about 85 to 90 kg. The selected gilts are reared to weigh between 120 and 130 kg at seven and a half to eight

months of age when they are ready to be served by a boar for the first time.

- Gilts have to be in a good condition to produce large litters (eight to 10 or more healthy piglets) and should not be too fat when they are ready for mating. Therefore, they should be fed about 2 kg of meal per day from the time of selection until a boar serves them at the age of eight months. This will also ensure that not too much fat is lost during the suckling period and that they are in a good condition after weaning their first litter.
- Care and management of pregnant and lactating sows (sows with piglets) are discussed in the chapter on management.

### ***Culling of sows***

Culled sows must be removed from the farm and sold as soon as possible. It does not pay to keep culled sows on the farm to gain weight before they are sold. As soon as the sow's udder has returned to normal after weaning it is wise to send her to the abattoir. A replacement gilt can then be brought into the herd immediately.

Reasons for removing sows from the herd are usually not known beforehand. Therefore, replacement gilts should always be available so that the number of breeding sows on the farm always remains the same.

Reasons why sows have to be removed from the herd and

slaughtered:

<b>Reasons for culling</b>	<b>% of sows to be culled</b>
Not pregnant	17
Failure to conceive at service	12
Do not come on heat	5
Abortions	6
Lameness	12
Poor performance (small litters, etc)	14
Old age	25
Disease	3
Lack of milk	5

Sows that farrow regularly and rear large litters (nine or more piglets) and are free of other problems and diseases should rear five to six or even more litters before they have to be removed from the herd. A sow is usually removed from the herd when her litters start to become smaller (two small litters in succession) or when she does not readily come on heat after weaning.





# Diseases

## Diseases from birth to weaning

About 50 % of all the pigs that die on a pig farm usually die before they are weaned. The following preventive measures can be taken:

- Good housing, management and nutrition of the sow
- Supervision and assistance when the sow farrows
- Piglets must suckle the sow within 1 to 2 hours after birth to take in colostrum which provides immunity for the first two to three weeks of their lives
- A warm, draught-free creep area.

## Defects

Some piglets are born with defects that are inherited from the sow or boar. Deficiencies in the nutrition (feed) of the sow and infections during pregnancy can also cause defects in piglets.

Defects mostly frequently seen are:

- Umbilical, scrotal and inguinal hernias (or ruptures)
- The piglet does not have an anus (*Atresia ania*)
- Bisexual piglets (hermaphroditism)
- Congenital tremors—piglets have the tremors at birth, but can also develop tremors during the first four to five days after birth. These piglets can die of starvation if the tremors are severe, or recover gradually when the tremors are mild.
- Splay leg—the piglets are born with weak hind legs resulting in typical splayed legs. These

**piglets often die from starvation or from the sow lying on them.**

### ***Iron deficiency***

**Piglets have low iron reserves when they are born. Sow milk is also low in iron. Suckling piglets therefore must receive a supplement to prevent an iron deficiency.**

Signs of iron deficiency are seen at two to three weeks of age:

- Piglets become anemic (they develop a pale white colour which can be seen in their ears)
- Growth is retarded
- Hair becomes coarse and hard
- Piglets become listless.

**Prevent iron deficiency by injecting the piglets with an iron preparation three to five days after birth. Small quantities of red soil scattered on the floor of the pen may also prevent iron deficiency**



**In severe cases the piglets can even die.**

### ***Infection***

#### ***Escherichia coli (colibacillosis)***

***E. coli* bacteria normally occur in the intestines of pigs and other animals. Under certain conditions these bacteria multiply at a fast rate and invade the entire gastro-intestinal tract of the pig. They produce toxins (poisons) which can cause diseases in the pigs.**

**Factors which promote the development of *E. coli* infections are:**

- Piglets not taking in enough colostrum and therefore they do not have sufficient immunity
- Piglets exposed to cold
- Insufficient milk intake
- Unhygienic conditions and other stress factors that can have an adverse effect on immunity.

**Affected piglets can be treated with an antibiotic, and if necessary, electrolytes can be added to the drinking water to prevent dehydration**



**Signs of infection appear from one to 21 days after birth, but usually within the first 10 days. Piglets become listless with varying degrees of diarrhoea (which is often yellow-white in colour). In severe cases they may die even before any signs of diarrhoea is seen. A large number of piglets may die, usually from dehydration.**

## **Sow diseases**

**The breeding sow must be healthy and in a good condition so that she can rear her piglets successfully. Therefore good housing, management and correct feeding of sows are important. It is also advisable to consult a veterinarian about a vaccination, mange control and deworming programme for the specific pig farm.**

## ***Reproductive problems***

**Several organisms cause problems known as the SMEDI complex:**

**S —stillbirths (piglets born dead)**

**M—mummification (piglets born as mummies)**

**ED—embryonic deaths (embrios die soon after the start of pregnancy)**

**I—infertility (sows do not farrow)**

**Consult a veterinarian if you suspect any reproductive problems to establish the cause. It may even be necessary to do laboratory tests. These problems can largely be prevented by:**

- **good hygiene—removing dung and urine daily**
- **controlling rats and mice**
- **making sure that gilts (young female animals to be used as breeding sows) have contact with older sows so that they can develop immunity before they are mated**
- **vaccinating against parvo virus and leptospirosis. Consult a veterinarian about a vaccination programme**
- **placing new pigs under quarantine (keep away from the other pigs on the farm) for four to six weeks if possible.**

### ***Problems during and after farrowing***

**Supervision is critically important when the sow farrows and for the next two to three days (for both the sow and the piglets). Problems must be attended to immediately.**

**Look out for:**

- **problems during the birth of the piglets**
- **extreme restlessness of the sow**
- **attacks on the piglets by the sow (particularly young first-litter sows)**
- **abnormal discharges from the sow's vagina**
- **sows that refuse the piglets to suckle (they usually lie on their bellies)**
- **udders that are swollen, red and painful**
- **piglets with congenital (inherited) defects**
- **small piglets**

- **piglets that are hungry—check the udder for milk.**

**During and immediately after farrowing problems can occur such as retained piglets or placenta and mastitis.**

### **Retained piglets or placenta**

**Sows are restless and continue to press and strain. Careful examination will show that the piglets or the placenta are stuck in the birth canal. Remove the piglets or placenta carefully after thoroughly washing and disinfecting your hands. It is advisable to wear gloves. Lubricate the hand and area with liquid paraffin to prevent injury to the sow. Should it happen that the piglets or placenta cannot be removed, a veterinarian must be called immediately.**

### **Mastitis—*metritis-agalactia complex (MMA)***

**Sows are infected by the MMA syndrome just before and usually within the first three days after farrowing.**

**Mastitis—infection or inflammation of the udder**

**Metritis—infection or inflammation of the uterus**

**Agalactia—no or very little milk**

**Symptoms may include a discharge of white to yellow pus from the vulva, inflammation, tenderness and hardening of the udder, fever, depression, loss of appetite and a drying up of the sows' milk. Sows then lie on their bellies to prevent piglets from suckling.**

**Piglets must be cared for immediately to prevent them from dying. They should be fed a milk substitute as described in the chapter on nutrition until the milk flow of the sow normalises.**

**Sows often respond well if treated with an antibiotic or with corticosteroids. A veterinarian must, however, be consulted about the right treatment. Sows usually recover quickly.**



## Measures to prevent MMA

- **Prevent constipation by feeding the sow 0,5 to 1,0 kg of bran per day from a few days before farrowing to a few days thereafter. Green feed can also be used.**
- **Keep the pen clean to prevent the buildup of *coli* bacteria. It is important to clean the bedding to prevent contamination and teat infections.**

## Diseases after weaning

### *Echerichia coli* (colibacillosis)

- The sudden change in feed taken in after weaning as well as the stress caused by weaning can cause the *E. coli* bacteria to suddenly multiply in the intestines of the weaned piglets. This causes colibacillosis or post (after) weaning scours as a result of the toxins

**Affected pigs can be treated with the right kind (prescribed) of antibiotic**



(poisons) produced in the intestines of the piglets.

- **Piglets show signs of diarrhoea within two to 10 days after weaning and may die because of dehydration if not treated. In severe cases they can even die without any signs of diarrhoea.**
- **Other diseases can also cause diarrhoea. It is therefore important to make sure that the piglets are dying from colibacillosis and not any other disease which needs a different treatment. A postmortem (after-death) examination is therefore necessary. A veterinarian must take an intestinal sample and send it to a laboratory to establish the cause of death.**

**It is, however, always best to prevent and control the diseases by:**

- **limiting stress during weaning**
- **ensuring good hygiene by daily cleaning of pens**
- **feeding the piglets the right feed**
- **adding medicine to the feed**
- **vaccinating with an *E. coli* vaccine.**

### **Swine dysentery**

- **This disease is also known as bloody scours and attacks mainly pigs between the ages of seven to 16 weeks. It can be very severe in sows just before they are to farrow and can lead to sudden death.**
- **New pigs brought onto a farm can carry the disease and infect the other pigs. The first indication of swine dysentery is diarrhoea. If the**

pigs are not treated it can spread throughout the herd.

- As the diarrhoea gets worse, it can contain blood and even bits of tissue from the intestine. Pigs that are infected lose weight fast and become thin with coarse hair. If they are not treated, many may die.

**Always consult a veterinarian to treat dysentery and to draw up a control programme**



- **It is important to make sure that the pigs died of swine dysentery by performing a postmortem examination on bacteria collected from the large intestine. Untreated pigs should be used for the postmortem examination.**

**There are several drugs available for the treatment of swine dysentery. It is, however, important to make sure that the pigs have swine dysentery by consulting a veterinarian. The veterinarian should provide a programme to treat and control the disease. Incorrect treatment and diagnosis can result in large losses.**

**The disease is also spread by dung from infected pigs. Good hygiene is therefore very important in preventing the spread of the disease. The houses should be cleaned regularly to prevent the buildup of dung in the pens.**

**New animals must be kept under quarantine (apart from other animals) and also be treated.**

## **Skin diseases**

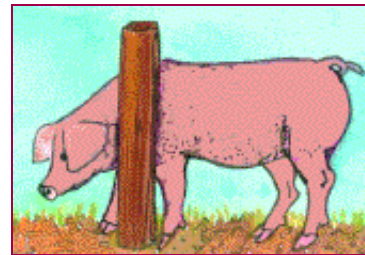
### ***External parasites***



- **Large bloodsucking parasites called lice are found on the shoulders, groin and belly of the pig. Severe irritation is caused.**
- **The pigs rub themselves against walls, feed troughs and other objects and cause damage to their skins where infection occurs. This causes the pigs to grow slower and can result in their carcasses being condemned after slaughtering at an abattoir.**
- **Regular treatment with a remedy for ectoparasites to control infection is important.**

## **Pig mange**

- Pig mange is caused by the sarcoptic mange mite.
- It is economically very important because pigs grow slower and utilise their feed less efficiently.
- In severe cases carcasses are condemned at the abattoir.



***Infected pigs rub themselves against objects***

## ***Internal parasites***

### **Measles**

- **Tapeworms are found in human beings, but pigs carry the bladderworm stage commonly known as measles. These are small white nodules about 15 m in size and are found in the heart, tongue, diaphragm and muscles of the pig.**
- **Diagnosis is only possible when the pig has been slaughtered.**
- **Pigs are infected with measles when they eat human excreta that contains tapeworm pieces or eggs.**

- **Pigs cannot be treated for measles. They must therefore be prevented from eating human excreta.**

## Roundworms

- Also known as ascaris worms, they are the largest worms occurring in pigs.
- Adult worms are found in the small intestine of the pig and can be up to 250 mm long.
- Eggs are laid in the small intestine and are excreted in the dung. The eggs are then eaten by the pig and the larvae are released from the eggs in the small intestine. They then enter the wall of the intestine and move through the liver to the lungs. From the lungs they are coughed up, swallowed and again reach the intestine where they grow and the cycle is repeated. The liver of the pig develops so-called "milk spots" that cause it to be condemned at slaughtering.



- **Eggs cannot be killed by disinfectant**
- **Dung must be removed regularly to prevent reinfection**
- **Wash floors and walls with a hard bristle brush to remove sticky eggs**

- **A dry cough is usually a sign of infection. In severe cases the pigs may have diarrhoea and also grow poorly.**
- **Examining the faeces for the presence of eggs may confirm that roundworms are present.**
- **Infection can be treated and controlled by using several registered anthelmintic products.**



***The eggs are eaten with food that is contaminated by dung in which eggs occur. Larvae are released in the small intestine from where they move through the liver to the lungs. From the lungs they are coughed up, swallowed and again reach the intestine where they grow and the cycle is repeated.***

Draw up a control programme with the help of a veterinarian. Good management and hygiene are very important to reduce infection.

### **Nodular worms**

- The worms are found in the large intestine of pigs and do not have another host.
- The larvae are ingested by the pig and penetrate the wall of the large intestine where they form small white nodules. They

remain there for up to one week before they return to the intestine where they mature.

- In severe cases pigs may grow slower or lose weight, eat less and develop diarrhoea.
- Treatment and control are the same as for ascaris worms.

Other worms occurring in pigs from time to time are lungworm, whipworm and bankruptworm. Treatment and control are the same as for ascaris worms.

## Respiratory diseases

Respiratory diseases often occur under intensive farming conditions. Various organisms such as viruses, bacteria, mycoplasmas and internal parasites play a role in respiratory diseases.

The following factors can aggravate respiratory diseases:

- Inadequate ventilation
- Exposure to cold
- High humidity
- Temperature fluctuations
- Overcrowding of pigs in a pen
- Stress factors that can decrease the immunity of pigs to diseases.

Good management, correct nutrition and efficient housing are therefore important to prevent respiratory diseases.

Signs of respiratory diseases in pigs include coughing, sneezing, slower growth and in severe cases sudden death.

A postmortem examination (or when the pigs are slaughtered at the abattoir) is necessary to determine if the pigs had a respiratory disease. It is a very complex disease and therefore it is necessary to consult a veterinarian to help with the prevention, treatment and control thereof.

### **African swine fever**

African swine fever is a virus disease. It is acute and very contagious. It runs its course in a very short time and results in many pigs dying.

Strict control measures are applied by the Department of Agriculture and therefore the disease is restricted to the controlled areas consisting of the Northern Province, Ingwavuma and Northern KwaZulu-Natal.

Warthogs, bushpigs and tampans that are found in warthog holes, carry the virus. A tampan can transmit the virus to its offspring. The disease is transmitted to domestic pigs when they come into contact with wild pigs or when a tampan feeds on domestic pigs.

Within five to nine days after

exposure to the virus pigs start to show signs of African swine fever. The following symptoms can usually be seen:



***African warthog***

- An increase in body temperature about four days before any other symptoms are seen.
- Pigs stop eating and huddle together in a dark place.
- Slow and uncoordinated movement, especially in the back legs.
- Mucous discharge from the eyes and nose.
- Rapid and difficult breathing.
- The skin becomes red, especially over the abdomen, ears and snout.
- Pigs die within a day after the symptoms occur although some pigs may live for three days.



***Bushpig***

Most or even all pigs on the farm can die. Pigs that recover can, however, remain carriers of the disease.

## **Control**

It is very difficult to control the disease because a successful vaccine has not been developed yet. Pigs that recover from the disease are also only temporarily immune.

In South Africa control measures involve destroying all pigs on the farm as soon as possible when an outbreak occurs. The carcasses are burned and the pigsties disinfected with formalin. New pigs are not allowed onto the farm for a period of three months.

The following control measures are in force in the control areas:

- All pigs must be kept in pens so that they do not make contact with warthogs and bushpigs.
- Uncooked kitchen waste may not be fed to pigs.
- Pigs must be kept in approved pens or else they may not be removed from the area.
- Pigs or raw meat may not be taken from one property to another without a permit from a state veterinarian (with the exception of pork bought from a butchery).
- Pigs kept in approved sties may only be sent to approved quarantine abattoirs, but the necessary permit must first be obtained.
- Warthogs and bushpigs or their carcasses may not be removed from the controlled area.

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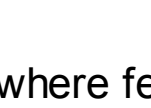
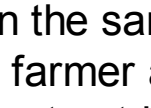
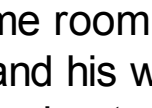
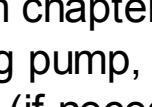
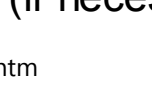


## Economic considerations

A large enough area must be available for erecting the necessary pig and other buildings. It is also important to have land available where manure can be stacked in windrows to dry.

Before venturing into pig farming you should accurately determine the money needed to buy and erect fixed and movable assets.



	Production cost	Income	Profit
			
Land			
Shed			
Housing for pigs			
Housing for farmer and workers			
Water facilities			
Self-feeders			
Feed scale			
Gate and fence			
Truck			
Boars			
Gilts			
Feed			
Salaries for workers			

## Profit and loss account of a pig farmer

### Essential fixed assets

- Land
- Room or shed where feed can be mixed and stored. Equipment can be stored in the same room
- Housing for the farmer and his workers, if appropriate
- Pig housing as set out in chapter on housing
- Water facilities, including pump, pipes, taps, drinking nipples, reservoir and boreholes (if necessary)

- Self-feeders
- Feed scale
- Security fence and entrance gate
- Truck
- Roads



## Important movable assets

- Truck for transporting pigs and feed
- Ten or 20 pregnant gilts between the ages of 10 and 12 months
- Two or three young boars between the ages of eight and 12 months
- Additional equipment.

## Initial feed requirements

It is important to note that pigs are only sold 11 months after the first pigs were introduced onto the farm. You must therefore have

enough money to buy the necessary feed for the pigs until an income can be generated from selling them.

Young sows, bought when six weeks pregnant (8 to 12 months old), should produce two litters of 10 piglets each during their first 11 months on the farm. To feed the sow and the pigs she produces will require about 4,5 tons of feed for the 11 months until the first pigs are sold. Boars eat about 2 kg of feed per day and therefore 660 kg of feed is required to feed a boar during the first 11 months.

## **Production cost**

### ***Feed cost***

Feed is always the biggest cost factor on a pig farm and amounts to between 60 and 80 % of the total production cost. Everything possible must therefore be done to keep feed cost as low as possible.

It is important to:

- use well-balanced feed mixtures that are mixed for specific pig groups on the farm (for example creep feed for piglets and a growth mixture for growers)
- prevent feed wastage
- save on feed cost by mixing your own feed
- buy feed ingredients at the lowest possible price
- farm with good-quality pigs that have the ability to produce pig

meat with a low fat content and can therefore utilise their feed efficiently.

A saving of as little as R10 on a ton of mixed feed will save R3 on the production cost of a 90-kg pig. The production cost can be further reduced by R30 if 10 % is saved on the quantity of feed fed to produce a 90-kg pig.

### ***Other costs***

These include:

- Labour
- Transport
- Fuel
- Veterinary costs
- Medication
- Washing detergents
- Slaughter fees
- Repairs and maintenance
- Replacement animals

### ***Feed requirements***

It is important to know how much feed is required for your pigs. Feed is the biggest cost factor on the farm (60 to 80 %) and therefore the most expensive cost item. The total quantity of feed that must be fed to the different pig groups must be known if a profit

is to be made.

On a well-run pig farm with good-quality pigs kept under good farming conditions the following guidelines can indicate to the farmer whether the performance of his pigs is adequate.

## **Sows**

- During the dry and pregnant period—2 kg/day for 285 days 570 kg
- During lactation—8 kg/day for 56 days 448 kg

## **Boars**

2 kg/day for 365 days 730 kg

## **Piglets**

About 80 g/day for 28 days (1,5-7 kg for 0-28 days of age) 2 kg

## **Weaners**

About 800 g/day for 42 days (7-25 kg for 28-70 days of age) 34 kg

## **Porkers**

About 1,6 kg/day for 40 days (25-50 kg for 70-110 days of age) 64 kg

## Finisher pigs

About 2,6 kg/day for 50 days (50-90 g for 110-160 days of age)  
130 kg

### *Feed required per pig marketed in one year (kg)*

**Suppositions: Each sow weans 20 marketable pigs per year**

**Each boar serves 15 sows per year**

Sow (1 000 kg/20 piglets):	50
Boar (730 kg/20 piglets/15 sows/boar):	2,4
Piglet:	2
Weaner:	34
Porker:	64
Finisher:	130
<b>Total</b>	<b>280</b>

**These figures are approximate estimates and can vary between 270 kg or less and above 300 kg. Feed costs are in excess of R1 000/t of feed or more than R1/kg. Every 1 kg of feed saved on a marketable pig therefore extends the profit margin for the farmer by R1. The importance of keeping the quantity of feed required to rear market pigs as low as possible cannot be overemphasised.**

**Cost structure changes on a daily basis. No attempt is**

**therefore made to attach monetary values to the economic aspects discussed in this chapter. Readers interested in costs are advised to consult the South African Pork Producers' Organisation. (See the chapter on publications and further information.)**

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## Glossary

Anthelmintic drug	remedy against worms
Anaemic	animals with a shortage of blood
Baconer	a pig ready for slaughter at 90 kg live weight
Capital items	items with money value
Cannibalism	pigs bite other pigs
Congenital	inherited
Creep area	area where baby piglets lie and eat away from the sow
Colostrum	milk of a sow directly after she gives birth

Deficiency	shortage
Diarrhoea	watery manure
Environment	temperature, wind, rain in a specific area
Farrow	a sow giving birth
Finisher	growing pig during the period before slaughter at 90 kg live weight
Dung	manure
Gilt	a young female pig selected for breeding
Hernia	rupture
Nutritional value	value of feed for production
Lactating sow	a sow suckling a litter of piglets
Gastrointestinal tract	food channel
Placenta	afterbirth fluids and membranes
Porker	a pig ready for slaughter at 60 kg live weight
Postmortem	after death
Scours	watery manure
Sow	a female pig that has already had piglets
Unpalatable	feed that pigs do not like
Utilisation of feed	use of feed by a pig to grow
Umbilical cord	the cord that attaches a newborn piglet to its mother
Wean	to remove piglets from mother's milk supply



Weaner

a piglet that has been taken away from its mother

## Contents

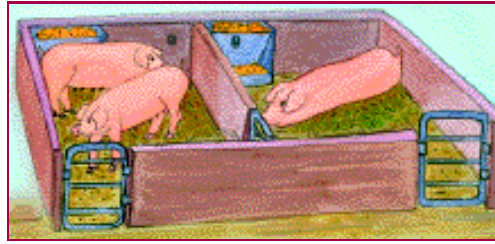


## Housing

Good, efficient housing makes management easier and helps the farmer to successfully rear 85 % or more of all the live born piglets to market weight in the shortest possible time. Pigs at different stages of growth need different environments (temperatures). If they are to produce and grow to their maximum potential piglets need special protection against very low temperatures. Growing and reproducing pigs must be protected against high temperatures. The houses must therefore be built in such a way that the pigs are protected against extreme temperatures and other bad weather conditions such as cold winds and continuous rain.

## The boar pen

- Boars are kept separately in their own pen. One boar is kept for every 15 to 20 sows. On a pig farm with only 20 sows it is advisable to keep at least two boars, namely a young not too heavy boar for young sows and gilts, and an older boar for



- older, heavier sows. You will therefore need two pens.
- Sows are brought to the boar to be served in the boar pen. This pen should be 9 to 10 m<sup>2</sup>, with the short side at least 2 m wide so that the boar can easily turn around in it.
  - The floor should be made of cement and must not be slippery. It should slope towards the sides and to the front so that urine and waste water can drain into a shallow manure channel at the front of the pen.
  - The walls must be of solid concrete or cement plastered brick. Gates can be made of round iron pipes, with a 20 mm diameter, spaced vertically not further apart than 75 mm. The height of the gate and also the walls should be 1 400 mm.
  - An under-roof sleep area, about a third of the size of the pen, must be covered in bedding. Straw, grass or sawdust can be used for this purpose.
  - A feed trough is placed in the sleeping area in such a way that it does not get filled with bedding. The trough for each boar should be 450 to 600 mm long, 150 to 200 mm high and 500 mm wide.
  - Cool, clean water must be available at all times on the side where the gate is. The pig will also dung in this area. A small water trough with a ball valve to control the level of the water or

preferably a pig-drinking nipple can be used. The nipple must be placed at a 90° angle with the vertical and between 550 and 650 mm from the floor.

- Make sure that the boar pen is well ventilated and draught free. It is important that the temperature does not rise higher than 22 °C for long periods. If the temperature rises above 32 °C the boar may become infertile for up to six weeks. On very hot days boars can be kept cool by sprinkling them with water.

- **Gilts and dry sows**

- Gilts should be brought to the boar for the first time when they are 7,5 to eight months old.
- Dry sows come onto heat three to seven days after weaning when they have to be served by a boar again. Therefore, keep gilts and dry sows to be served in pens next to or near the boar so that they can be checked for heat daily until they are served.
- Do not keep more than five gilts or sows in one pen.
- Gilts and sows should not be kept in the same pen.
- An area of about 5 m<sup>2</sup> per pig is required. Therefore, to house five pigs a pen with an area of approximately 25 m<sup>2</sup> is required.
- The construction and specifications (apart from the size) of the sow/gilt pen are the same as that of the boar pen.
- Individual feeding is, however, important to ensure that each pig receives the correct quantity of feed every time. Enough trough space with partitions that allow the pigs to eat individually is

therefore necessary.

- Nineteen days after the pigs have been served by a boar they are again brought into contact with a boar for five to seven consecutive days to make sure that they are pregnant. If the boar does not serve them again, it can be concluded that they are pregnant and they can then be placed in the pregnant sow house.

## Pregnant sows

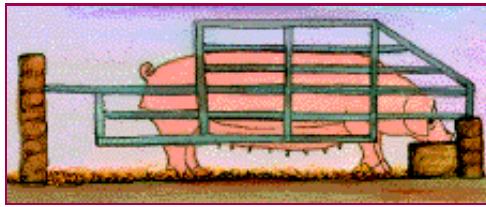
Pregnancy lasts 114 to 116 days. Sows are put in the pregnant sow pen about 24 days after service and are only moved to the farrowing pen seven days before they give birth. They stay in these pens for about 85 days. The pens can be similar to dry sow pens. Provided the sows are about the same size, up to five pregnant sows can be kept in one pen. To make sure that each pig receives the correct quantity of feed, provision should again be made for individual feeding. The construction of this pen is also similar to that described for boar pens. At least two and preferably three pens (to house a maximum of five pregnant sows each) are needed.

## Farrowing pens

The farrowing pen is the most important pen on the farm. It has to be designed in such a way that the right temperature is provided for the sow and her piglets during the first seven to 10 days after birth, while trampling and overlying is prevented as far as possible.

- It is advisable to build a

farrowing house (large room) containing five or six farrowing pens. A five-pen house should be 13,25 m long, and a six-pen house 15,5 m. The width in both cases should be 4 m. Each pen will be 2 x 2,25 m with a 1 m wide feed passage on the northern side of the pens and a 1 m wide dung passage on the southern side. The entrance must be on the short side of the building with a 1 m space between the outside wall and the first pen. The space is linked to the feed and dung passages. The figure on the following page illustrates the layout of a typical farrowing crate.



***A sow in a farrowing crate***

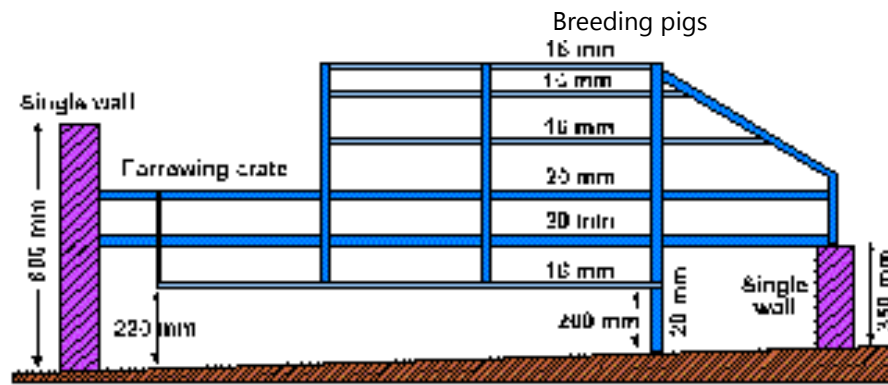
- Each pen must have a farrowing crate (see figure on p 42) where the sow is kept from one week before the piglets are born until they are weaned when they are 28 or 35 days old. The crate is placed in the pen allowing a space of about 1 m on the one side and 0,5 m on the other side. The feed trough (500 mm long and 200 mm high) for feed and water is on the feed

passage side of the pen. If water is laid on in the farrowing house a water nipple can be placed above the feeding trough. The entrance gate is on the side of the dung passage.

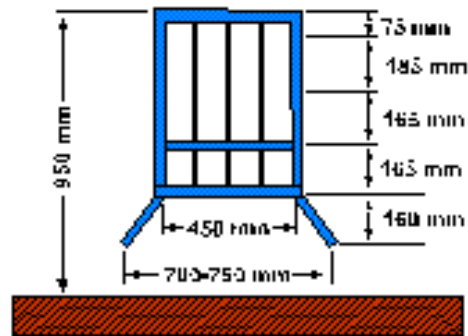
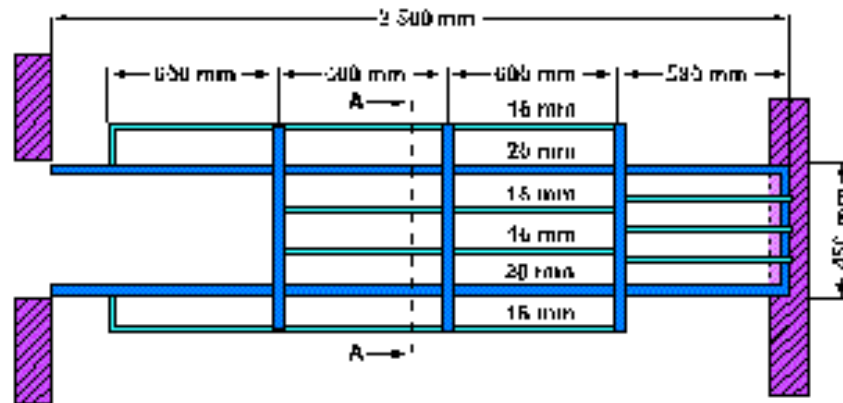
- A creep area must be provided for the piglets. A steel or wooden box, 600 x 600 mm which is large enough for the litter to creep into, can be placed next to the feed trough and the feed passage wall. The creep is important because it helps to reduce deaths as a result of crushing. It also provides a draught-free area where the piglets heat one another. In this way the creep area provides the required temperature of 27 to 32 °C for piglets during the first 10 days of life.
- The farrowing house must have windows on both sides (on the long wall sides) to ventilate and cool the house. The temperature where the sow is kept (in the farrowing crate) should preferably not be higher than about 21 °C.

**Side view**

**Top view**



Section AA (seen from above)



**Plan for a typical farrowing crate**

**Note: Use 16 mm and 20 mm diameter steel pipes and rods for farrowing crate construction.**

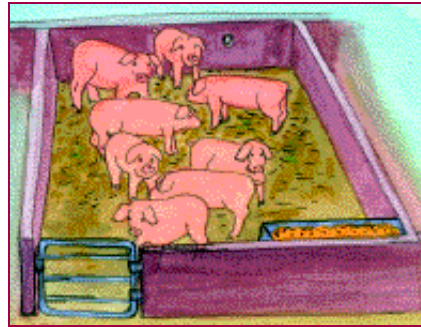
## Weaner and finishing house (growing pigs)

Piglets are weaned when they are only 28 days old. They must therefore be looked after with care for at least another four to six weeks until they are 10 weeks old. They must be kept in pens at a temperature of 17 to 25 °C and draughts and wet conditions should be prevented.

It is advisable to keep the growing and finishing pigs in pens similar to those used for weaners.

A weaner/finisher house with 20 pens must therefore be built. Each pen

must be large enough to house a litter of 10 to 12 pigs, kept in the pen from the age of four weeks until they are sold at a live weight of 90 to 110 kg. Two rows of 10 pens are built in the house. The building will be 40 m long and 9 m wide. The individual pens,



should be 12 m<sup>2</sup> or 4 x 3 m with 1 m high concrete walls, and two 1 m wide dung passages along the north and south walls of the building with a feeding passage, 1 m wide in the middle between the two rows of pens. The entrance to the building is again to the short side of the building with a 1 m space between the outside wall and the first pen linked to the feed and dung passages. The entrance gates to the pens are on the side of the feed passage. Water troughs or drinking nipples are fixed to the pen walls facing towards



the dung passages.

The pigs will lie down and sleep along the inside wall of the pen where the feed trough is placed. Growing pigs must have access to feed at all times. It is therefore ideal to use self-feeders. An effective self-feeder can be set in such a way that feed wastage is restricted to a minimum (feed is expensive and must not be wasted by the pigs). A long concrete trough built next to the feed passage wall, can also be used, but usually causes the pigs to waste feed and is therefore not recommended.

**If you want to keep piglets healthy and alive, keep them warm, and if you want the sows to have enough milk for the piglets, keep them cool**



## Handling of manure

The solid manure which contains some bedding must be stacked outside in windrows. It is important to stack the manure in such a way that water will be allowed to drain from the manure as quickly as possible. Stacked manure has an unpleasant smell and becomes a breeding place for flies if left in a windrow for a long period. **It is therefore, essential to air the manure in the windrow by turning it regularly.** The oxygen in the air keeps the anaerobic bacteria in

the manure alive and in this way helps to turn the manure into valuable compost. On a 20-sow pig farm up to 300 tons of composted manure can be produced every year. The compost can be used as fertiliser on cultivated lands or can be sold as compost.

An income equal to the sale of 20 baconers is possible if good-quality compost is produced



***Make compost by adding soil, grass cuttings, leaves, etc. It can be used as fertiliser on cultivated lands or can be sold for an extra income***

## Diagrammes of required buildings

Build three pig houses:

- A building for boars, gilts, dry and pregnant sows
- A farrowing house
- A building to keep growing pigs in from the time they are weaned until they are sold to be



slaughtered.

The diagrams show the number and size of each pen required on a farm where a maximum of 20 breeding sows are kept.

### ***Building plans and equipment***

Detailed building plans and information on the equipment required on a pig farm can be obtained from the ARC Institute for Agricultural Engineering, Private Bag X519, Silverton 0127, tel: (012) 842 4000. The Institute can also advise you on the outlay of the unit. The figure on the following page.

### **Outdoor housing of pigs**

- Pigs can also be kept outside in camps where shade structures provide the necessary protection against wind, rain and excessive heat or cold.
- The capital required to start outdoor pig farming is therefore 20 to 30 % less than the amount of money required for an indoor unit.
- There are both advantages and disadvantages which must be taken into consideration before deciding to build an outdoor piggery instead of an indoor unit.

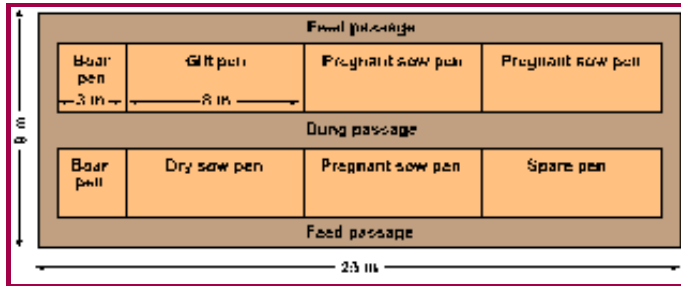
#### Advantages

- Strong and healthy weaner pigs can be produced on a properly

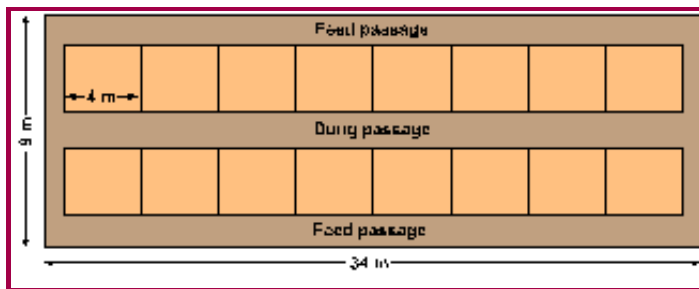
run outdoor pig unit.

- Labour costs should be less.
- There will be less problems with the disposal of manure.
- Capital costs will be appreciably less.
- Disadvantages
- Lower productivity because pigs grow slower and most probably less pigs will be produced. Profit margins could therefore be smaller.
- Handling of individual pigs will be more difficult.
- Sows that are not pregnant or that are infertile will be difficult to identify.
- Pigs can only be kept out of doors on light soils that are well drained.
- Strong fencing is required to ensure that pigs are kept inside.
- Mud during the rainy season can be a problem, hindering access to the camp.
- Feed is wasted as a result of birds and predators eating the pig feed.

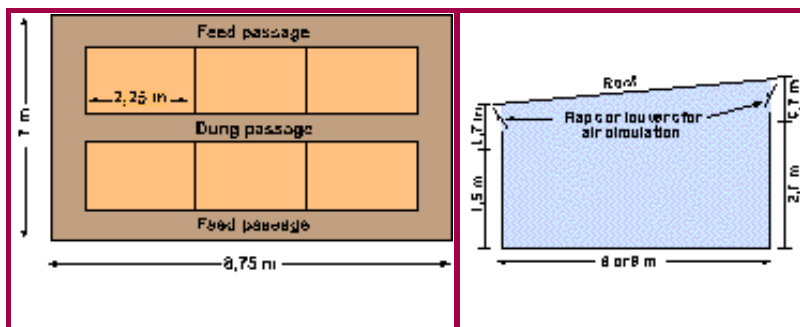
- Loss of piglets killed by predators.



**Sketch with dimensions of a building for boars, gilts, dry sows and pregnant sows**



**Sketch with dimensions of a building for growing pigs from weaning to slaughter (minimum 16 and maximum 20 needed for a farm with 20 breeding sows)**



**Sketch with dimensions of a Outside wall and roof**

***building  
for sows with piglets (farrowing  
house)***

***dimensions of the buildings  
(length of the building should be  
east/west)***

### ***Requirements for outdoor pig farming***

A suitable climate, the correct type of ground surface and well-trained, motivated labourers are essential.

### **Temperature**

- Temperatures must be within the thermic neutral zone for pigs—preferably not below 15 °C and not higher than 30 °C.
- If temperatures are lower or higher additional heating or cooling is necessary.
- Enclosed straw-covered areas can supply additional heat.
- Cooling can be supplied by shade structures or mud puddles.

### **Rainfall**

Do not farm out of doors in high-rainfall areas—more than 500 to 800 mm per year.

### **Soil type**

The soil must be light and well drained. Camps, pens and paths that

are always wet can ruin the unit.

## Level of the ground

Fairly level ground that does not slope too much is needed. Too much of a slope will hamper access to the unit. Earth and straw will also wash away if the slope is too big.

## Services

- Provide good water supply to all the camps and pens.
- The camps must be accessible to vehicles for loading and offloading of pigs.

## *Example of a camp system for 25 producing sows*

(ILI Extensive Pig Housing, ARC Institute for Agricultural Engineering, Silvertown)

The sows are divided into groups of five and remain together in their groups in the camps.

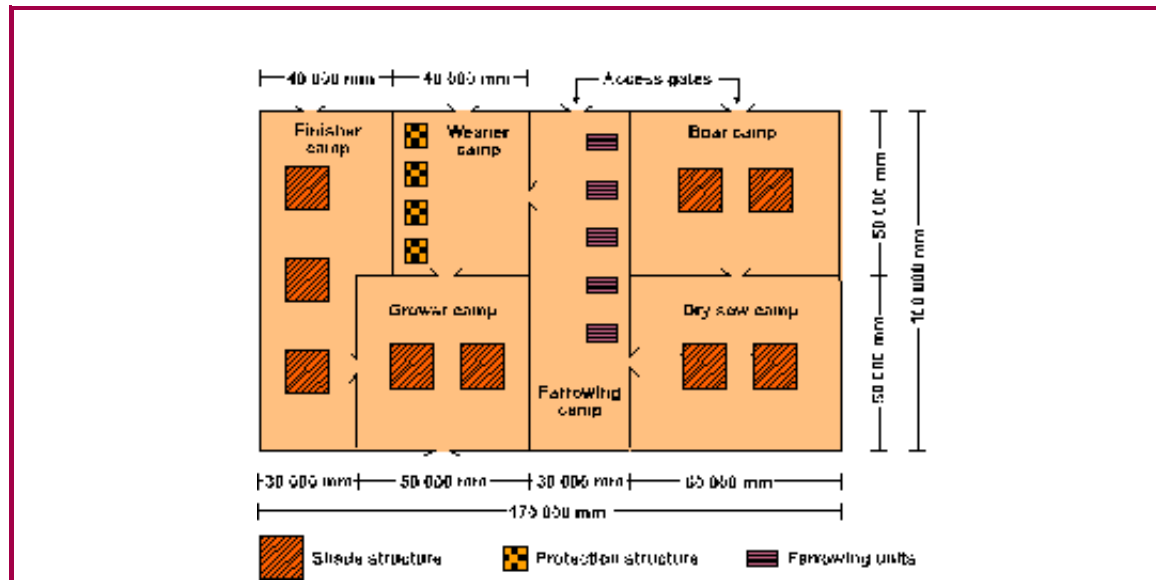
The table shows the number of camps, pigs and camp sizes for a 25-sow unit.

## Number of camps, pigs and camp sizes for a 25-sow unit

Type of	Number of	Number of pigs per Proposed camp
---------	-----------	----------------------------------

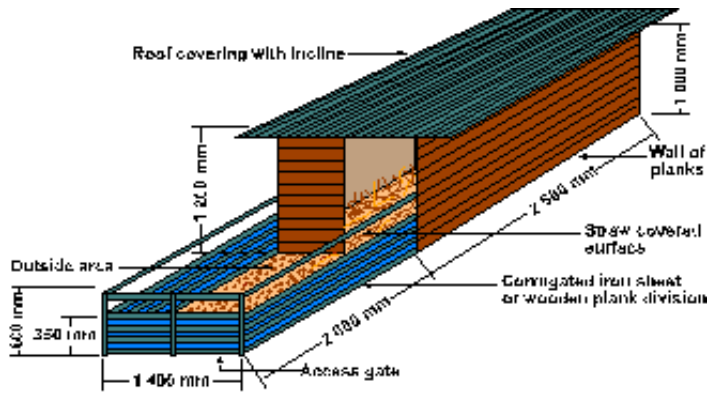
camp	camps	camp	size (m <sup>2</sup> )
Boar	1	5 sows x 2 boars	3 000
Dry sow	5	5 sows x 1 boar	3 000
Farrowing	1	5 sows x litter	3 000
Weaning	1	5 sows x litter	2 000
Growing	3	50	2 500
Finishing	3	50	3 000

At least 4,55 ha of land is therefore needed for erecting the camps. Land is also required for a feed and equipment store, houses for the farmer and workers as well as roads.

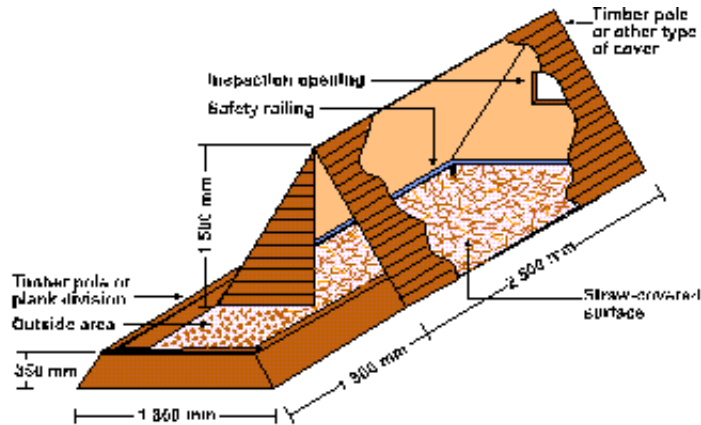


**Proposed layout for an extensive camp system with 25 producing sows**

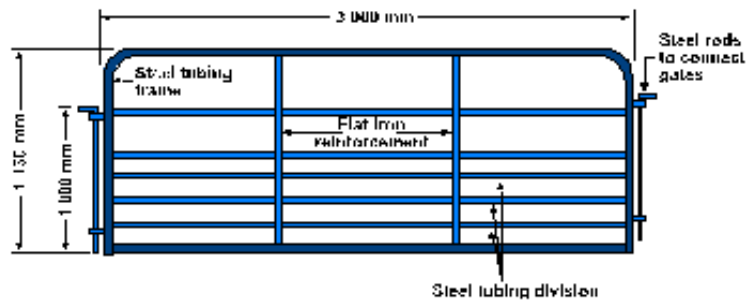




**Chamber type farrowing structure in camp**



**Triangular farrowing structure in camp**



# Steel frame gate for use in camps

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Guide to  
Small-scale pig farming



EH Kemm

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2002

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Pretoria 0001, South Africa

Illustrations by Ronelle Stoltz



## Introduction

The profit (money) made by the pig farmer depends on the number of pigs sold per sow on the farm over a period of one year. The profit made is therefore influenced by the ability of the farmer to manage the farm in such a way that the sows produce a maximum number of pigs that can be marketed in the shortest time possible.

## Good management means:

- Good housing that will allow the efficient production of marketable pigs.
- Proper disease control. Clean conditions and precautionary measures on the farm will make disease control easier.
- The use of good, highly productive breeding animals that grow efficiently, use their feed efficiently, produce carcasses with a low fat content and produce up to 20 and more piglets per year.
- Correct feeding. The farmer must know the feed requirements of the different age groups and feed each group the correct quantity of the right mixture.



Pig farmers should be aware that profit margins can differ from year to year. The price of feed and the market price of pigs go up when pig meat is scarce and drop again when there is an oversupply. Likewise, feed prices change, particularly that of maize which is included at a rate of up to 60 % in pig feeds. Feed costs, however, amount to about 60 % of the total production costs. Therefore, when feed prices are high and pork prices low pig farmers

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## Management

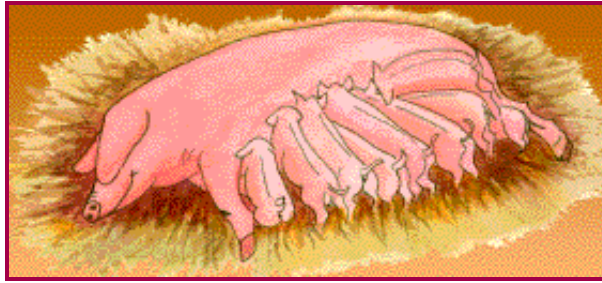
### Piglets from birth to weaning

- Almost 50 % of the pigs that die on a farm, die before they are 14 days old. Good management in the farrowing house, where the piglets are born and kept for the first 28 to 35 days of their lives, is therefore of the utmost importance.

**Remember to keep the piglets dry and in a draught-free pen or box where the temperature is high and does not change much**

- The farrowing pen must be designed in such a way that the sow cannot lie on top of the piglets. Newborn piglets are very sensitive to cold, draughts, wet bedding and floors as well as sudden changes in temperature. Ensure therefore that everything possible is done to prevent piglets from being exposed to these conditions.
- A farrowing crate for the sows and a creep area for the piglets

(see chapter on housing)  
should be provided to prevent or reduce deaths as a result of piglets being trampled by the sow or as a result of cold, draughts, etc.



- Make sure that all piglets suckle a teat **as soon as possible** after birth to take in colostrum. The first milk produced by the sow immediately after the piglets are born is known as colostrum. It plays an important role in the protection of the piglets against diseases during the first few weeks of their lives.
- **If a sow has more piglets than the number of teats she has, the extra piglets can be placed with another sow with a smaller number of piglets. This can only be done if the piglets of the sows are born within a few days of each other.**
- Sometimes a sow does not accept her own piglets, usually as a result of birth shock (often seen in sows having their first litter of piglets). If this happens the piglets can be taken away from the sow for a few hours. If she still refuses to accept them they should be placed with another sow if possible. Sows that do not accept their piglets or bite them, must rather be slaughtered.
- If another sow is not available to rear the rejected piglets, they can be reared artificially. It does, however, take time and hard

work, because the piglets do not always grow and perform well. The following milk combinations can be used to rear piglets artificially:

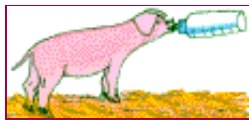
- 2,5 l of fresh cow's milk
- 150 ml of fresh cream
- 125 ml of glucose
- 1 beaten egg



OR

- 4,5 l of fresh cow's milk
- 0,5 l of cream

- Feed the piglets small quantities every 2 to 3 hours. Start by giving 50 ml each time they are fed, so that each piglet takes in 350 ml per day. Gradually increase the quantity to about 100 ml so that each piglet gets 750 ml at three weeks of age. Provide



creep meal in a shallow dish or on the floor from two weeks onwards to encourage the piglets to eat meal as soon as possible. Fresh, clean water must always be available in a shallow dish. The piglets should drink water as soon as possible.

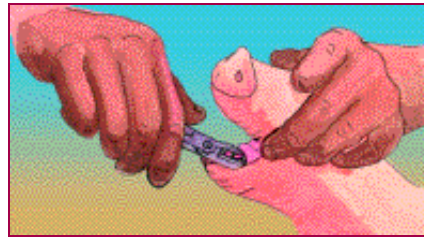
## Specific treatment of piglets

### *Umbilical cord*

Disinfect the umbilical cord after birth with an iodine solution or any other suitable disinfectant to prevent bacterial infection.

### ***Tusk clipping***

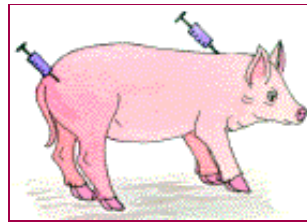
Piglets have very sharp temporary tusks (or teeth) at birth which must be clipped to prevent injuries to the teats of the sows during suckling. Use a tusk clipper and do not clip the teeth too close to the gums.



***The very sharp temporary tusks (or teeth) of piglets should be clipped***

### ***Iron injections***

The milk of the sow does not provide enough iron to piglets that are reared on concrete floors. Piglets must therefore be injected with iron when they are three to seven days old to prevent them from becoming anaemic which results in poor appetite and growth until they start eating meal.



***Injectable iron preparations for piglets can be bought and injected into the neck or buttocks***

In order to handle the piglets as little as possible clip the tusks and give the iron injection at the same time, about three days after birth.

### ***Water and feed***



Clean, fresh water placed at the back of the pen where the piglets will learn to dung is very important. The sooner they start to drink water the better.

Two to three weeks after birth they will start to nibble on feed placed away from the water near the creep area. Creep feed is expensive and they will not eat much before weaning, therefore only small quantities of feed must be given from two to three weeks of age. Increase the daily quantity gradually when they start eating to prevent wastage.

## **Sow management**

Good management is necessary to produce a maximum number of pigs that can be sold per sow in one year's time at a maximum profit for the farmer. The management skills of the farmer determines to a large extent how many piglets are reared, how long it takes to rear them to market weight and the cost involved.

A farmer with good management skills will:

- Feed his pigs correctly, which means that he will have to know what and how much the pigs must be fed.
- Build pig houses that are efficient and planned in such a way that management is made easier.
- See to it that the pig houses and pigs are kept clean under hygienic conditions to prevent and control diseases.
- Use good breeding material that will breed pigs that are able to

grow fast, have carcasses with well-developed muscles (meat) with as little fat as possible and use their feed efficiently.

- Supervise daily and keep records so that it will be easy to make sure that everything that needs to be done is carried out.

## ***Pregnant sows***

Sows come on heat every 21 days. A sow served by a boar is not always pregnant. The sow must be brought to a boar again 19 days after she has been served for three to seven days to make sure that she becomes pregnant. Sows that come on heat for a second time should again be served. Sows that regularly come on heat after service by a boar must rather be slaughtered.

Pregnant sows must be free of internal parasites. Parasite infection will affect the health of the sow as well as her feed intake. The sows can also infect the piglets. Parasite eggs that are excreted in the dung can be eaten by the piglets. Deworm pregnant sows 21 to 28 days before they have their piglets (piglets are born 116 days after service).

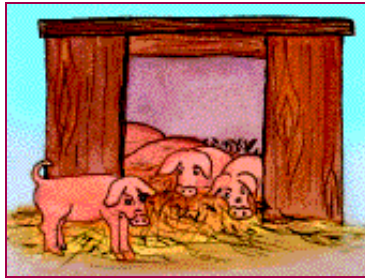
## **Management during farrowing**

### ***The farrowing house***

- Piglets have a low resistance to infections. The farrowing house must

preferably be situated some distance from the other pig houses and a high standard of hygiene must be maintained.

- Wash and scrub the farrowing pen properly every time the sow and piglets are removed. Disinfect the pen and leave it to dry for a period of two to three days before placing a sow in it.
- When a sow and her piglets are in a pen it must be kept as dry as possible. Use as little water as possible for daily cleaning. Dirty and wet bedding must be removed daily.



***The piglets must be kept warm in a dry, draught-free creep area such as a box***

### ***The sow***

- Wash and disinfect the sow before putting her in the farrowing pen four to five days before the piglets are born. Young female pigs (glits) that are about to farrow for the first time, must get used to their pen. Therefore, put them in the farrowing crate for a few hours per day from about 10 days before farrowing so that they can become accustomed to it.
- To prevent sows from becoming constipated during this period, green feed such as lucerne or a high-fibre feed, such as bran can be fed. Feed 1 kg bran when they are put in the farrowing

crate for the four days before farrowing.

## **Farrowing**

- The sow becomes restless and starts to "make a nest" with the bedding in the crate when she is ready to farrow.
- Swelling of the vulva is a sign that she is ready to give birth.
- Supervision during the birth process is necessary, especially when it is a sow giving birth for the first time. When the piglets are born, make sure that they do not get entangled in birth membranes and that they do not suffocate in mucus or amniotic fluid.
- Keep the sow calm so that she does not trample the piglets to death.
- Piglets usually break the umbilical cord which joins them to the sow. If weak piglets do not break the cord themselves it is advisable to break the cord with the thumb and forefinger.

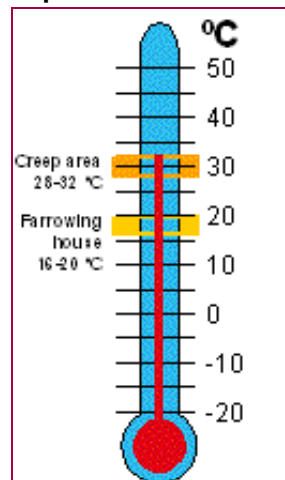
During the first week after farrowing it is important to pay attention to the following:

- Check that the sow is not constipated.
- The afterbirth must be discharged from the sow as soon as possible (within one to two days).

- The sow should not develop a fever as a result of infection.
- Look out for milk fever during the first few (4 to 6) days after farrowing.
- Look out for the development of mastitis that results in hard and inflamed (red) teats.
- Mastitis and a lack of milk (agalactia) can cause the piglets to die of hunger. Immediate attention by a veterinarian is therefore necessary.

## Management during lactation

- There is a large difference in the environmental temperature requirements of sows and piglets. Sows must feel comfortable. Very high temperatures will cause the sows to eat less and lose weight. Lactating sow (sows with piglets) will produce less milk for the piglets, so that the piglets will grow slower. If they lose too much weight they will also take longer to come on heat after weaning, which means a delay before the next pregnancy period.
- High temperatures are, however, needed for the piglets, particularly for the first seven to ten days after birth. A dry, draught-free creep area (or box) where they can lie, is therefore very important (see chapter on housing).



- Diarrhoea can be a problem in piglets. If the quantity of feed fed to the sow is increased too soon after farrowing, it can cause diarrhoea. If the piglets get diarrhoea, do not feed the sow for a day. If the condition does not improve a bacterial infection can be the reason. The piglets should then be treated with antibiotics.

***As a general guideline the temperature in the farrowing house should preferably be 16 to 20 °C and in the creep area as high as 28 to 32 °C***

### ***Other management aspects***

- Clean cool water must always be available for the sow.
- Provide enough food for the sow, preferably as much as she wants to eat so that she does not lose weight while suckling her piglets.
- Inspect the sow's udder regularly (preferably daily) for hard lumps (signs of infection). If lumps are found, treat the sow immediately.
- Clean the farrowing pen daily.
- Wean the piglets when they are four weeks but not more than five weeks old.
- Wean the piglets by taking the sow away from the litter (piglets). Move the piglets to the growing pens seven days later.
- Sows come on heat again three to five days after weaning.

Therefore, take them to the boar from three days after weaning once a day until they are served.

- Sows must receive less feed (about 2 kg a day) from the day after weaning.

## Management from weaning to slaughter

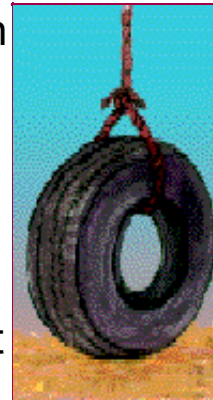
- Clean water and feed in a trough, preferably a self-feeder must be available to the piglets after weaning.
- Piglets sometimes tend to eat too much for a day or two after weaning. This can cause diarrhoea that can be stopped by providing less feed for a few days. If it continues it may be a bacterial infection and must be treated with an antibiotic. Antibiotics can be mixed into the feed or given, dissolved in water, by way of a teat attached to a plastic bottle fastened to the wall or gate.
- It is advisable to treat the litter for internal parasites soon after weaning.
- Always keep the piglets of the same sow together by moving them to the same growth pen seven days after weaning. Piglets coming from different litters will fight one another when placed in the same pen.
- If it is necessary to put pigs from different sows in the same pen, try to put those of the same size and type together. Do not put one or two new pigs in a large group. Put all the pigs in a new pen that is unfamiliar to them. Spray the pigs with a solution with a distinctive smell.

- Growing pigs must grow as fast as possible and therefore they must eat as much as possible of the right feed mixture (see chapter on nutrition) without becoming too fat.
- A suitable self-feeder that ensures that every pig can eat as much as it wants, without wasting feed, is therefore very important.
- Growing pigs can be sold as porkers when they weigh 60 to 70 kg and are between 15 and 18 weeks old, or as baconers when they weigh 86 to 90 kg and are just less than six months old.
- Transport pigs to the market when it is cool, e.g. early in the morning or late afternoon.
- There must not be too much moving space on the vehicle.

## ***Cannibalism***

Conditions in the growing pen that are unfavourable such as cold, draughts, concrete floors without bedding, not enough eating space and poor ventilation can cause stress to the pigs. Pigs bite one another's tails when stressed. This leads to cannibalism and continued tail biting. Pigs with injured tails grow slower and may even die if the injuries become more severe. Injured pigs must therefore be removed from the pen, and the wounds disinfected and treated with an antibiotic.

To prevent tail biting, make sure that the conditions in the pen are optimal:



***Put an old  
tyre in the  
pen or  
hang a***

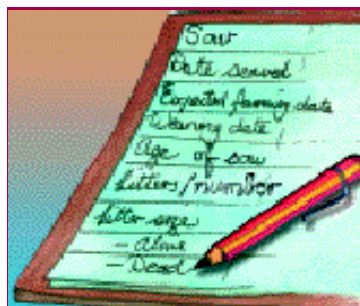


- Not too hot or too cold and draught free
- Sufficient clean bedding
- A big enough self feeder
- Enough clean water
- Not too many pigs in the pen.

***chain from  
the roof to  
prevent  
boredom***

## Record keeping

Keeping records helps the farmer to manage his pigs effectively and to know which pigs to select for breeding. All breeding animals should be marked permanently by using an ear-number system so that records can be kept for each animal.

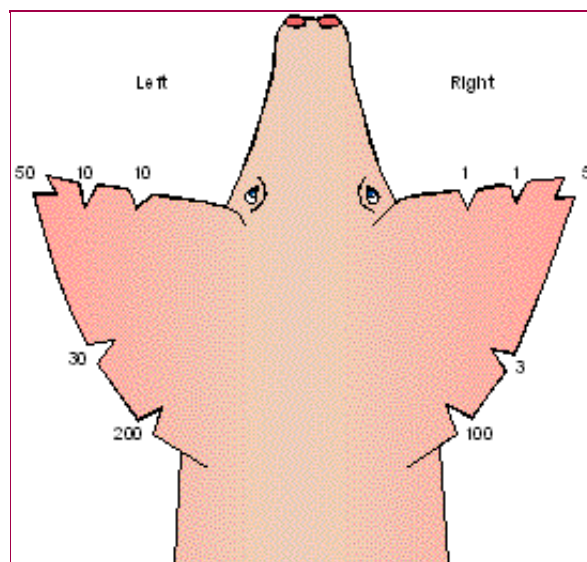


Records for each sow for the following should be kept:

- The date that the sow is served so that it is possible to know when she must come on heat again if she is not pregnant, or to know whether she is pregnant when she does not come on heat 20 to 25 days after service.
- The expected farrowing date so that she can be brought to the farrowing house three to four days before she is due to farrow.
- The weaning date so that the piglets can be weaned on the right date and that the sow is brought to the boar again for service from three days after weaning. This will also indicate which sows to cull (those that do not come on heat or those that are on heat again within about three weeks).
- The age of the sow and how many litters she has had so that

sows that get too old can be culled.

- The litter size (number of piglets) must be recorded. The total number born, the number born alive, the number born dead and the number of piglets that die between birth and weaning. These records will give an indication of problems concerning fertility or disease.
- The records kept will help to select females to be used as sows for future breeding from big litters and sows that farrow regularly. It is important that sows produce at least two litters every year.



***Ear-number system for pigs***



## Nutrition

Feed is the biggest cost factor in pig production and can amount to 60 to 80 % of the total cost of production. Correctly fed pigs will ensure:

- efficient reproduction and growth
- efficient feed utilisation
- good-quality meat
- maximum profit for the farmer.

Pigs must therefore be fed the correct quantity of the right feed mixture. The nutrient requirements, especially digestible energy and protein, of the various production classes differ. These production classes include:

- boars and pregnant sows
- sows with piglets
- young pigs, three to 10 weeks old
- growing pigs up to slaughter at a live weight of 60 or 90 kg.

Feed mixtures can either be bought or the farmer can mix them himself. The latter is less expensive but it is important to consult an expert on how to mix the feedstuffs that have to be included in the mixtures for each of the production classes. The various feedstuffs

must be weighed off correctly before mixing.

Feed mixtures for each of the pig classes must contain the right quantities of the following nutrients, namely:

- digestible energy (DE)
- proteins
- minerals
- vitamins.



Four different mixtures must be used.

## Feed sources

### Grains

- Grain constitutes between 55 and 70 % of the total feed mixture.
- The grain in a mixture provides mainly energy (between 60 and 80 % of the total DE in the mixture).
- Although grain is mainly an energy source with a low protein content, it also contributes substantially (30 to 60 %) to the protein content of the mixture.
- Maize is used as a grain source in pig feeds because it is high in DE and low in protein and therefore used mainly as an energy source.
- Grain sorghum has a nutritional value similar to that of maize. Provided sweet sorghum (low tannin) varieties are used, sorghum can be substituted for maize on an equal basis in feed

mixtures.

- Feed-grade wheat, when available at a cost not exceeding 20 % above that of maize, can also be used. The protein content of wheat is usually higher and the DE content lower than that of maize. Using wheat in stead of maize in feed mixtures could lead to considerable savings in protein costs. Wheat must always be coarsely ground when used for feeding pigs.
- Barley is included mainly as a grain source in the Western Cape. It has a higher fibre content and a lower digestible-energy content than other grain types. Barley should not comprise more than 70 % of the grain component of a mixture.
- Oats can be used but not more than 40 % should be included in mixtures for growing pigs and 60 % or less in mixtures for finishing pigs.

### ***Grain by-products***

Grain by-products such as wheat bran, maize bran, maize leaves, maize-stalks and maize-cobs are used to dilute the DE content of the mixture. Brans have a protein content higher than that of grains and are also relatively inexpensive.

- Wheat bran is the most popular DE diluent used in pig feeds. It is usually cost effective and has a laxative effect in pigs. When seasonal shortages occur, other diluents such as maize bran, maize leaves, maize-stalks, maize-cobs and lucerne can be used.

- Hominy chop, a by-product from the maize-milling industry, can be used when available at a reasonable price. It is a product that can vary a great deal depending on the miller it is bought from. It is higher in fat content than maize and can be used as a partial replacement for maize.

### ***Plant protein sources***

#### **Oilcake meals**

Soya-bean oilcake meal and sunflower oilcake meal are plant protein feedstuffs usually included in pig feed mixtures. Soya-bean oilcake is of a higher and better quality protein and contains considerably less fibre than sunflower oilcake.

#### **Full-fat oilseeds**

- Full-fat soya-bean and sunflower seed meals have a high oil content. The oil results in soft fat in pig carcasses. Therefore, the inclusion of these two feedstuffs, if fed in combination with maize, must be limited in rations for finishing pigs. Full-fat soya-beans must be heat treated before use to destroy a substance (trypsin inhibitor) which reduces the growth rate of pigs.

#### **Lucerne**

- Lucerne is also used as a DE diluent in pig feed mixtures. It has

a high fibre and low DE content. Therefore, the inclusion of lucerne in feed mixtures for pigs must be limited. Lucerne also varies much in composition depending on the growth stage when cut, and on the extent of leaf loss during drying and baling.

### ***Animal protein sources***

By-products of the animal and fishing industry can be used as animal protein sources for pigs.

### **Fishmeal**

Fishmeal is the most frequently used and best protein source to include in feed mixtures. It also has a high DE content.

### **Blood and carcass meal**

- Bloodmeal has a very high nutritional value. Do not, however, use more than a maximum of 5 % in feed mixtures because it is unpalatable. It becomes burnt easily during processing, which has a detrimental effect on the quality of the proteins.
- Carcass meal can vary a great deal in composition and quality because manufacturers use different products and processing methods. Heat damage during processing can downgrade the quality of the proteins in carcass meal.

## **Calcium and phosphorus sources**

- Feed lime is a good calcium source and is not very expensive, but it contains no phosphate.
- Monocalcium phosphate, dicalciumphosphate and bonemeal are usually included as sources of phosphate. These sources also contain calcium, but in smaller quantities than feed lime.

## **Waste products in pig feed mixtures**

Waste products must be used with great caution in pig rations.

- Kitchen refuse and byproducts from the bakery and other food-processing industries may contain toxic substances such as excessive quantities of salt and other additives which can be harmful to pigs.
- Even hard objects such as pieces of broken glass, which can injure the pigs, are sometimes found in waste products.
- These products are usually high in moisture (water) content and therefore have a very low nutritional value when fed in a wet form.
- Only use waste products in an air-dry form.
- Use a flat cemented area in the sun for drying the waste.
- Remove any undesirable material from the waste when it is spread out on the cemented area. After drying, grind the waste in a hammermill. The milled meal can then be used to replace part of the meal meal when mixing pig rations.



- Before using the waste-product meal it is advisable to have it analysed for protein, fat, fibre, calcium and phosphate content by an analytical laboratory. Thereafter it is important to get the advice of a pig nutritionist on how much of the dried waste meal must be included in a pig ration.

### Inclusion levels of feed sources in mixtures

Maximum inclusion levels must not be exceeded when mixing feeds for the different pig production classes (see table).

### Maximum inclusion level of feed sources for the various pig production classes

Feed source	Young	Growing	Finishing	Sows
	pigs 3-10 weeks	pigs 10-20 weeks	pigs 20-25 weeks	
<b>Grains</b>				
Maize meal	NL*	NL	NL	NL
Grain sorghum	NL	NL	NL	NL
Wheat	NL	NL	NL	NL
Barley	40	50	NL	NL
Oats	20	40	60	NL

**Grain by-products**

Wheat bran	15	18	25	25
Hominy chop	NL	NL		NL
Maize bran	15	18	25	25

**Plant protein sources**

Soya-bean oilcake meal	25	NL	NL	NL
Sunflower oilcake meal	10	15	15	15
Full-fat soya-bean meal	20	10	0	15
Lucerne meal	0	10	15	15

**Animal protein sources**

Fishmeal	15	15	8	15
Bloodmeal	0	3	5	5
Carcass meal	0	5	8	5

\* NL = nil

**Feed requirements of the different production classes*****Breeding pigs***

## Boars

- **Boars must be kept in a good condition, which means that they must not be too lean or too fat.**
- **Feed the boar 2 kg/day of a sow-and-boar mixture (MIXTURE 1).**
- **If the boar becomes too lean/thin give it a little extra feed per day and slightly less when it becomes too fat.**

## Dry and pregnant sows

- **After sows are weaned (piglets removed from the sow) until they farrow (have their next piglets) a sow-and-boar mixture (MIXTURE 1) is provided at a rate of 2 kg/day.**
- **Make sure that the sow remains in a good condition during this period.**
- **Like the boar, the sow must not become too lean or too fat.**
- **Increase or decrease the quantity of feed slightly when necessary.**

## Lactating sows (sows suckling piglets)

- **Sows with piglets are fed a lactation mixture (MIXTURE 2).**
- **A sow with a large litter of piglets must produce enough milk to rear them properly.**
- **The sow should lose as little weight as possible while**

**suckling her litter to remain in a good condition until the end of the lactation period. This will ensure that she comes on to heat within seven days after weaning with an excellent chance to again produce a large litter.**

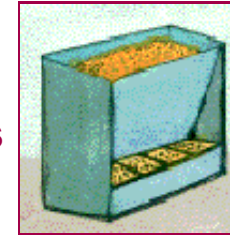
- **On the day that the piglets are born sows are usually not interested in feed. Provide 2 kg of feed the next day and gradually increase the quantity up to a maximum at about seven days after farrowing.**
- **The maximum quantity fed will depend on the number of piglets in the litter. A sow in good condition should be fed 2 kg plus 0,4 kg/piglet in the litter. A sow with 10 piglets should therefore receive at least 6 kg of feed per day. Feed the sow more than the recommended quantity if she is willing to eat more to prevent weight loss during lactation.**
- **The daily quantity of feed can be provided in two equal portions mixed with water early in the morning and late in the afternoon. Sows take in more feed when it is mixed with water.**
- **Fresh clean water is very important and must be available to the sow and piglet at all times.**

### **Young pigs (three to 10 weeks old)**

- **A feed mixture for creep-fed and weaned piglets (MIXTURE 3) is provided to piglets from the time they start eating at 3 weeks of age until they are about 10 weeks old and weigh**

**between 25 and 30 kg.**

- **Piglets eat very little before they are weaned. Solid feed can, however, be provided to piglets before weaning. Always feed it in a dry form and make sure the trough is placed where the sow cannot reach it. Feed is expensive, therefore restrict wastage to a minimum.**
- **Provide MIXTURE 3 when the piglets are weaned.**
- **Feed must always be freely available in a dry meal form.**
- **Use an efficient self-feeder to put the feed in and make sure that as little feed as possible is wasted.**
- **Pigs must now eat as much as possible to ensure quick growth.**



### **Growing pigs (10 weeks old up to slaughter)**

- **Fast-growing pigs that will produce a good-quality carcass with a high meat and low fat percentage, can be fed as much as they will eat of MIXTURE 4. Dry meal fed in an efficient self-feeder must therefore be available to the pigs at all times.**
- **They should also maintain maximum intake to ensure quick growth so that they can reach a marketable weight as soon as possible.**
- **Fresh clean water must be available at all times. Keep feed and water as far apart as possible to prevent the feed becoming wet.**

## Feed mixing and feed mixtures

- It is less expensive to mix your own feed than to buy it ready mixed.
- Follow the correct procedures when mixing own feed (feedstuffs must be accurately weighed and well mixed).
- Make sure that all the feedstuffs required for the mixture are available and bought at the best price possible.
- Store the bags of feedstuffs you buy as well as the mixed feed in a dry place.
- Mix the feed by hand using spades on a hard, smooth and preferably cement floor.
- The different mixtures must be stored undercover before use.
- Availability and cost must be taken into consideration when deciding on the feedstuffs needed for specific mixtures for each of the four production classes.
- Seek expert advice in formulating the mixtures before mixing, should it be necessary to change any of the feedstuffs to be used.

The following mixtures are recommended for home mixing:

### *Standard feed mixtures*

Feedstuffs	Mixture 1	Mixture 2	Mixture 3	Mixture 4
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		Breeding pigs		
Maize meal	70	70	70	70
Soya-bean oilcake meal	14	12	14	12
Fishmeal	—	5	10	5
Wheaten bran	12,5	10	5	10
Feed lime	1,5	1,2	0,5	1
Monocalciumphosphate	1,0	0,8	0,5	1
Fine salt	0,5	0,5	0,5	0,5
Mineral and vitamin mixture	0,5	0,5	0,5	0,5

- **All these feedstuffs are readily available from feed stores.**
- **When using your own or locally available maize, make sure that it is dry and mould free, and coarsely ground before use.**
- **If you have your own maize available or if you can buy it (or maize meal) locally, the nearest feed company can be asked to mix the rest of the feedstuffs for you. All that needs to be done then is to add 70 % of maize meal to 30 % of the bought mixture and mix thoroughly. This procedure could save much on transport costs.**

**In conclusion, it is very important that feed mixtures meet the protein and DE requirements of the specific production class. Therefore, do not change the feedstuffs or the quantities used in a mixture without consulting an expert on pig nutrition.**

## Contents



## Publications and further information

Additional information and more detail on specific aspects of pig farming can be obtained from the publications and information centres listed below.

### Publications

#### *ILI Extensive Pig Housing*

ARC-Institute for Agricultural Engineering

Private Bag X519

Silverton

0127



#### *ILI Manual on Housing for Pigs*

ARC-Institute for Agricultural Engineering

Private Bag X519



**Silverton**

**0127**



***Pig Production in South Africa***

**ARC-Institute for Animal Nutrition and Animal Products**

**Private Bag X2**

**Irene**

**1675**



***The Pigman's Handbook***

**Editor Gerry Brent, Farming Press Limited.**

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## **Information**

**South African Pork Producer's Organisation**

**PO Box 1508**

**Pretoria**

**0001**



**ARC-Animal Nutrition and Animal Products Institute**

**Private Bag X2**

**Irene**

**1675**



**ARC-Animal Improvement Institute**

**Private Bag X2**

**Irene**

**1675**



**ARC-Institute for Agricultural Engineering**

**Private Bag X519**

**Silverton**

**0127**



**Department of Agriculture**

**Private Bag X250**

**Pretoria**

**0001**



**Provincial Departments of Agriculture**

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