



# **National Agricultural Youth Show**

## **Pigs Manual**



2022

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## 1. PREPARATION FOR THE SHOW

This should start several months before the show during which time the animal is taught to "socialize" with people so that it can be easily handled at the show grounds. The pig must be taught to respond to leading and directions given, using either a solid board or flat sided stick. Gentle tapping is all that should be needed. Regular washing should also be done so that it becomes used to water and being scrubbed. Equipment needed may include:

Advertising / pedigree material;  
Health and / or registration papers;  
Bedding, Broom and Fork; Hosepipe connections;  
**Washing equipment:**  
shampoo, sponge, clothes or brushes;  
Fly spray and / or wound aerosol;  
Feed and Feed bucket.

For a week or more before the show you should feed the animals and water them with the containers you will use at the show. This prevents them going off feed and water as they will be used to the containers. Pigs should be dewormed and treated for mange at least two weeks before the show. Pigs should preferably be transported early in the day whilst still cool or otherwise have a shade cloth covering over the truck and wet pigs before travelling. If pigs are particularly stressed about travelling one can try and get them used to it by doing a few trial trips before the show.

## 2. AT THE SHOW

Keep your animal, stall and passages clean and neat. Do not leave feed and water buckets loosely lying in the stall. Keep pigs clean and well bedded at all times. Ensure there is sufficient shade available as pigs are susceptible to heat stress. This can be avoided by having plenty of cool water available at all times and keeping the animal moist. This facilitates evaporative cooling.

Some animals may be a little lame after travelling as they are not used to much movement in their confined housing. Ensure lots of hay to lie on and encourage them to walk on soft grass in the paddocks. Note that gilts may come on heat due to the stress of the trip and this will make them very loathe to walk around as this is a "standing" heat. It usually occurs 2 – 3 days after the travelling so don't arrive at the show too early. A responsible stockman should be with his animal at all times to answer questions from visitors. A courteous attitude and neat appearance is important.

When show day arrives, know what needs to be done and keep on schedule. Ensure pigs are well fed and watered to prevent distractions in the ring as they will want to explore their new surroundings avidly.

Before entering the ring, any manure spots should be removed, eyes wiped, vulva cleaned, hooves cleaned and animal brushed down. (Fly repellent may be used to prevent this nuisance if necessary). Don't fuss unnecessarily around the animal once this is done, but let it rest until it is time to enter the ring. Walk the animal calmly and as gently as possible to the ring. The pig has an inquisitive nature, so let it do a bit of exploring along the way as it picks up new smells, but keep it moving slowly all the time – **don't rush it!**

### **3. SHOWMANSHIP AND JUDGING**

Showmanship is an art in which the show person exhibits the animal in a manner to highlight the strengths of the animal. In other words, the show person wants to leave a good image of the animal in the judge's mind. Showmanship does not start the week of the fair, but instead it starts when the pig is procured. Pigs should be moved around in their pen frequently at home in order for them to get used to the show person. They should be accustomed to responding to a cane or whip before show day. Pigs must be kept in a good environment and be fed properly if they are going to have a sleek hair coat. This means a clean pen and preferably a pen bedded with clean straw or shavings. The pig should be fed a highly palatable, well-balanced diet. External parasites must be controlled on pigs or they will have a rough skin and hair coat. To control lice and mange the pigs may need to be sprayed several times. Make sure to use a product for both mange and lice. There are several products available to control lice but only a few controls mange. Read the label when purchasing these materials and follow the label when using them.

Cleanliness is the first criteria for evaluation of showmanship. A dirty or stained pig does not present a good image of the pig. Also, a show person in dirty clothes detracts from the appearance of the pig. Pigs should be washed once or twice before arriving at the show and then again just prior to the show. A mild soap should be used when washing the pig. Remember to clean the hard-to-get areas, such as the ears, legs, elbows, flanks and eye channels. A wet rag is usually used to clean the inside of the ears and the eye channels. A scrub brush can be used on the rest of the pig. All of the soap must be rinsed from the hair of the pig, otherwise the pig will develop a scaly condition of the skin. When washing and rinsing the pig be sure not to get water down in the ear of the pig. After the pig has been rinsed, brush the hair into its natural position. To exhibit a pig to its maximum potential, the show person must have an understanding of desirable type and know the strengths and weaknesses of his pig. Because pigs have so little hair, not much can be done to change their appearance. Using the hair as is done in some other species. The appearance of a pig can be changed by feeding and handling practices prior to the show. In the 60's and early 70's the emphasis was on decreasing backfat and increasing percent ham and loin. Consequently, many barrows that were shown then were limit fed for several weeks or more prior to the show. This would take some of the fat off of these barrows and make them appear leaner than if they had just come off of a feeding floor. Also these pigs were shallower in the flank which made them look as if they would have more ham and loin percent. During this period of time, it was thought that pigs that were shallow in their rib, were desirable as these pigs appeared to be heavily muscled and trim. Many of these barrows were seven or more months old. To make these older,

course haired pigs look finer boned, the ears and tails were clipped. Underlines were clipped to make these pigs appear shallower.

Today's views on ideal market pigs have changed from the 60's and early 70's. Producers still want lean muscular pigs, but they want pigs that will grow fast and reach market at a young age. Also, these pigs need to be more durable being heavier boned and more massive in their skeletal features. To grow fast, these pigs need to have a lot of capacity, or in other words, they need to have a lot of depth of rib and flank and adequate width at chest floor. As a result, it is usually not desirable to clip ears, tails and underlines on pigs today. Clipping market pigs for the show ring has become associated with old, stale barrows that have been held back to make them appear leaner.

The hair coat of a pig should be brushed to bring out the luster. Brushing should start well before the show, and can be used to acquaint the pig to the show person. The hair should lie naturally on a pig, which means it should be brushed slightly back and then down. Use only water on the pig just prior to entering the show ring. The pig will look sleek entering the ring and the water will evaporate as the class goes on and keep the pig cool. Oil is not recommended as a substitute for water as it makes the pig hot and uncomfortable.

When showing the pig, the show person should always know where the judge is standing and where the pig is, so that the show person can keep the pig between him and the judge. The pig should be on the move, by driving it back and forth in the ring while keeping it about 4 to 5 meters away from the judge. It is important to keep the pig a reasonable distance from the judge, so that the judge can get a good view of the pig. Pigs should be driven with either a cane or a whip. If a cane is used, it should be held with the crook away from the hand. This gives the show person a larger surface area to control the pig. If a whip is used it should be short (no more than one meter long) and light weight. No matter which one the show person decides to use, it should be used around the pig's head and shoulders. The pig trains very readily to respond to light taps about the head and shoulders. Do not hit the pig on the loin or ham, as these are valuable cuts of pork and bruising them would decrease the value of the carcass. A show person should have a small brush in his pocket and should be used to brush off dirt or smooth the pig's hair, when the judge is not looking.

When told to pen a pig, the show person should get the pig into the pen as soon as possible. Pigs should be trained to go into a pen, before bringing them to the show and this should be a simple task on show day. Once the pig is penned, the show person should remain attentive and keep the pig up as the judge may give further commands. If the judge come to the pen, make sure the pig is towards the front of the pen and is clean so the judge can look at it.

Be courteous while in the show ring. One show person should not hit another show person's pig. Remember to close all gates behind you, including holding pen gates. When possible, you should assist other show persons. An example of this would be opening the gate to the pen next to the one you are in for someone else. Finally, if the pig you are driving cuts between the judge and another pig which the judge is studying, let your pig go and you should go around the other pig and show person.

The show person should be dressed in clean, neat, conservative clothing so as not to detract from the pig. Hard toe shoes should be worn to protect the feet if stepped on by the pig. Sandals and tennis shoes are not acceptable, because they offer little or no protection. Finally, a show person should have a positive attitude. Showing pigs is very

competitive, but it is also very rewarding. Persons who do not have a positive attitude probably are not reaping the rewards of their swine project.

The show person's ability to handle the pig may be tested in several ways. The judge may ask a show person to do any of the following:

1. Drive the pig to one end of the ring and hold it there.
2. Drive the pig around obstacles such as chairs or hurdles.
3. Stop the pig.
4. Pen the pig.
5. Switch pigs with another show person.

The judge may also use your ability to keep your pig out of fights as a test of control.

Remember, showmanship is an evaluation of the abilities of the show person to care for and present a pig. The judge will be evaluating the show person's knowledge of pigs, as well as the care and training of the pig prior to the show.

Furthermore, the judge will be looking at the appearance of the pig and the show person. The attitude of the show person will be considered by the judge in his final placing.

The pig will be judged on conformation as far as breeding characteristics are concerned viz. at least 14 functional teats, well-formed vulva, strong legs and back, carrying capacity and trueness to breed and meat qualities if applicable.

When evaluating structural soundness, we primarily look at the pig's feet and legs, body cavity and top line. The pig's shoulder and front leg structure are very closely associated. Sloping shoulders give the front legs plenty of flex and cushion which will properly distribute the pig's weight over the entire sole of its foot. The shoulders should be large and exhibit easy rotation or penetration. The front legs should be slightly concave or slope back at the knee and the feet should be big with even toes and have flex or cushion to the pasterns. A very straight shoulder will cause the pig to be "over on his knees" and force him to stand on his toes. Similarly, the rear legs should show flexibility and freedom of movement allowing the pig to take long strides easily. The body cavity should be relatively deep, long and wide, giving the pig body capacity. Body capacity can be viewed from the side as depth, or rib and flank from the front as width of chest floor and from avocet as width between the shoulder blades and over the loin. Remember, a fat pig actually has a small body covered by a thick layer of fat. The pig's top line should be level. Generally, a level-topped pig will be free moving and structurally sound.

The stockman will be evaluated on his control of the pig and confidence in the ring. The knowledge class will have already being dealt with, but additional facts relating to pig management and conformation may come up in this session.

## **4. BREEDS**

### **4.1 LARGE WHITE**

The Large White has gained in popularity over the past ten years. At one stage the Large White nearly disappeared from the SA scene, but due to the far sightedness of certain breeders, the Large White has gained in popularity and is today the breed that has the most pigs passing through the test stations. The performance results of the Large White are somewhat better than any other breed and individual specimens achieve results in FCR as low as 1.75/1. The Large White female makes an excellent mother and rears large numbers of piglets. Generally, the Large White female is docile. When a Landrace male is mated to a Large White female the progeny makes excellent F1 females. The Large White as a breed is less stress susceptible than the Landrace, but stress is not completely absent in this breed.

Especially heavily muscled pigs can be stress susceptible.

Courtesy : **PIGMANIA**

### **4.2 S A LANDRACE**

The SA Landrace can undoubtedly be regarded as the "mother superior" of South African pig breeds. The Landrace has played a major role in improving the performance of the South African pig farmer. As do all breeds the Landrace also has its problems. One of the problems that is being overcome by selection, is stress. At one stage in South African pig history, a large percentage of Landrace pigs were stress susceptible but due to constant selection, there is an improvement in the situation (Test station results on Halothane test). Because of the mothering ability of the SA Landrace, they are used extensively throughout the world to cross with Large White to produce high quality F1 gilts. As a pure breed the Landrace is a docile animal that can be handled easily.

Courtesy : **PIGMANIA**

### **4.3 S A HAMPSHIRE**

At the same time as the Duroc was imported, the Hampshire also came to South Africa. The reasons behind the importation of Hampshires were also much the same. The Hampshire is known for its low back fat and excellent conformation. The eye muscle is superior in this breed. The colour is black with a white "belt". Breeders claim good results when crossing the Hampshire to Landrace for a F1 sow. However, there has been too little experimentation to be able to propagate the Hampshire for this purpose. The Hampshire should also be used as a terminal sire when good results should be achieved. Colour is however also a problem as with the Duroc. Numbers are a limiting problem with the Hampshire and semen imports from the USA take place regularly.

Courtesy: **PIGMANIA**

### **4.4 S A DUROC**

For many years there was only two major breeds of pig in South Africa. In 1980/81 the first importation of Durocs from Canada and SPF pigs and embryos from the USA took place. The object of this importation was to make a third breed available to the S A pig farmer for use on his F1 sows. The Duroc, because of its performance at test stations and the fact that the colour does not come through to the same extent as other coloured

breeds when used on white sows was chosen as the most suitable breed. The object was never to establish a third major breed and the idea of using a coloured breed should be carefully planned to avoid too much colour coming through in the progeny. The Duroc sow cannot be regarded as a good mother although there are sows that perform as well as any other breed. Breeders considering breeding Durocs must concentrate on breeding a high-performance boar for the terminal sire market. The Duroc is absolutely stress free – a high performer that grows well. Performance wise the Duroc compares well with the Landrace and as breeding continues with selection for mothering ability there must be an improvement in this trait. It must, however, be stressed that this is a long-term project and fast results cannot be expedited. The Duroc boar is an excellent worker and rarely gives trouble in mating. When used as a terminal sire on a F1 cross L/LW the progeny is usually always white, although occasionally a coloured pig does occur. However, the advantages of this three-way cross outweigh the loss on the grading of the few coloured pigs. Because of small numbers, the genetic pool semen is continually imported from the U S A, to improve the breed.

Courtesy: **PIGMANIA**

#### **4.5 LARGE BLACK**

The Large Black was imported to South Africa as far back as 1910 and until the arrival of the White breeds, the Large Black was the most popular breed in South Africa. However, due to the progress of the white breeds the Large Black almost became extinct. A few purebred specimens were saved and there is now a concerted effort to revive this breed. The Large Black is a superb mother, rearing large litters. The female is very docile and the breed is well known for this trait. In recent years the Large Black has been crossed with the Landrace to produce a superior mother. Experiments done with these F1 Large Black/Landrace crosses have proved them to be excellent outside pigs. On a very large unit in Gauteng where these F1 sows are fanned outside, they outperform all other crosses on numbers raised. The Large Black is however a fat pig and a certain amount of colour does not come through in the first cross. It is recommended that a Large White boar be used on the F1 Large Black / Landrace to produce a white piglet. Here again, numbers are a problem and breeders will have to look at importation for new bloodlines in future.

#### **4.6 CHESTER**

A very limited number of Chester White pigs were imported into South Africa. They are used mainly as a terminal cross sire. Because they are white, they have the advantage over the coloured breeds as a terminal sire, as all their progeny are white. However, the Chester has been found to "nick" with the Large White and produce an outstanding F1 gilt. Experiments are still in the early stages and results can be only expected in a few years but early results are very promising. In the USA this breed is used as a mother breed but because there are two excellent mothering breeds in South Africa, the Chester cannot compete in this sphere as a purebred. Very little testing has been done in South Africa on Chesters and at the moment the Chester is of very little economic importance. There are, however, a number of breeders who are continuing to improve the breed and if they can make progress, the Chester might just have a future because of its colour. Chesters as Durocs and Hampshires, have excellent bone and make good working boars. With exception of the colour, their standard of excellence is the same as that of the Duroc and Hampshire.

Courtesy : **PIGMANIA**

## 5. YOUNG STOCK MANAGEMENT

Pig production in South Africa is basically intensive as compared to extensive i.e., mainly done on enclosed concrete-floored or environmentally comfortable types of housing and very little done on open lands or pastures.

There are approximately 128 000 sows in South Africa producing = 2,1 million pigs for slaughter each year. This gives an average of 16.5 piglets per sow per year sold. These are produced by roughly 1 000 pig farmers in the country. The top producers in the country can sell 24 piglets per sow per year with an average herd size of 300 sow.

### 5.1 BREEDING

This is where the whole process of pig production starts. A sow usually comes on heat 3 – 5 days after she has been weaned her piglets. She will then stand still for the boar who is allowed to mate her usually only 3 times with 12 hours between each service. Some farmers use artificial insemination on sows in order to save on the number of boars they need to buy and so have fewer boars, but of better genetic quality. AI is usually only done twice per sow at 24-hour intervals.

Where natural service is used, one requires approximately 1 boar per 12 – 14 sows and with AI usually half the number of boars. Boars can usually mate 2 sows per week i.e. = 6 services.

Gilts are unmated sows or sows which haven't farrowed yet. A gilt usually comes on heat at approximately 6 months, but is preferably only mated at about 7 = 8 months of age and weighs 110 – 120 kg. She will usually cycle every 3 weeks until she conceives and likewise with non-pregnant sow.

Once the sow is pregnant, she is removed to dry sow stalls or pens and remains there until farrowing. During the first 6 weeks it is essential to keep the sow as calm and unstressed as possible to ensure maximum chance of conception. Every 21 days she is checked until 63 days that she is still pregnant. This may be done using either a "tester" boar or a pregnancy diagnosing machine or tester. If she is not pregnant, she will show heat again and is known as a "return to service" (R/S) sow or not-in-pig (NIP) sow and must go back to the boar or is culled due to poor fertility.

A dry sow is pregnant for 3 months, 3 weeks and 3 days, i.e., ± 114 days. She will be fed 2 kg of food per day (± 13 - 14% protein) until day 90 where after she will receive 3 kg per day until she farrows. The food is increased in the last 4 weeks so that she does not lose condition and helps with piglet growth inside the uterus, and udder formation and thus later, milk production for the new suckling.

Two weeks before farrowing, sows are vaccinated for E-coli and Erysipelas (Diamond Skin Disease) and also treated for mange and dewormed to prevent the piglets from contracting these problems as newborns from the sow or other sources.

### 5.2 FARROWING HOUSE

The dry sows are brought into the farrowing house 3 - 5 days before they are due to farrow to enable them to climate to the farrowing crates and environment in which they will

have their piglets. The sow is usually washed off first with a disinfectant/soap to ensure that she is as clean as possible before farrowing to prevent transfer of unnecessary diseases etc. to the piglets after birth. Crates are used to prevent the sometimes, careless sows from crushing their piglets, milk appears in the udder of the sow 6 - 12 hours before she farrows. From  $\pm$  6 hours before birth she shows nesting behaviour, becomes very restless and will not eat.

The birth process lasts on average 2 – 4 hours and is completed when the afterbirth (placenta) comes out. The milk produced in the first 6 – 8 hours is called colostrums and contains large amounts of antibodies which the piglet must ingest in order to enable it to have resistance against the various diseases (bacteria and viruses) that are in the environment. This is called passive immunity and is from the sow. Colostrum also provides essential energy to enable the piglet to survive the first few days of life.

After  $\pm$ 3 – 4 weeks this immunity decreases and the piglet must then develop its own immunity and this is called active immunity (especially against E-coli which is found in the sow's dung).

Immediately after birth the piglets must drink colostrum at least 60 ml within the 1<sup>st</sup> 6 hours as after this, they can no longer absorb antibodies and then be placed under an infra-red heater in order to maintain their body temperature. This should be between 28 - 30° C. Their feet and umbilical cords should also be dipped in a disinfectant.e.g., iodine to prevent them from picking up joint or navel infections. Between days 1 - 3 the teeth (eye) upper and lower may be clipped, ears notched and tails docked and the umbilical (dry) chord cut.

By day 5 all piglets must also receive an iron injection so that they don't develop anemia which is a problem in pigs raised on concrete and not having access to soil. The piglet receives insufficient iron from the sow's milk and only once creep feeding and the liver becomes functional, is sufficient iron available. This is at about 4 weeks of age.

Meanwhile the sow is now fed a lactating sow diet (16% protein) the volume of which is gradually increased up to 2 weeks after farrowing. A rough guideline is that she receives 2 kg of food plus 0,5 kg for every piglet eg. a sow with 12 piglets should receive 2 kg + (0,5 x 12) = 8 kg of food per day to produce sufficient milk for the piglets.

Sows must also have free access to plenty of cool, fresh water usually coming out of the water nipples at a minimum rate of 2 litres per minute. A sow may drink up to 20 litres of water a day during peak lactation and produce 8 - 9 litres of milk at this stage.

From 10 - 14 days of age creep feed is made available to the piglets in the farrowing pen. This is usually  $\pm$  20% or more protein with a high level of milk powder added. As the sows' milk production reaches a maximum by  $\pm$  3 weeks, the piglets need to take in extra food (creep) in order to keep growing healthily and supplement their needs to ensure optimum growth.

Piglets can develop diarrhea because of changes in their immune system. In serious conditions, an antibiotic injection can be given or an oral medication.

### 5.3 WEANING AND GROWTH PHASE

In South Africa piglets are weaned between 4 and 5 weeks of age, and should weigh between 7,5 and 9 kg.

A piglet should not be weaned if weighing under 6 kg. It will cause slow growth and the piglet will not adapt the new conditions. Weaners are normally treated against mange and moved to a heated unit ( $\pm 28^{\circ}\text{C}$ ) and placed on a weaner ration with 18% protein, normally with medication in the feed. This medication can prevent E-coli diarrhea

The weaner sow is moved back to the breeding unit and placed with the boar. A sow can have approximately 2,2 litres per year. A good sow will have 9,5 – 10,5 piglets per litter – thus can she produce 20-24 piglets per year. A sow can produce up to 12 litters, but is normally slaughtered after 6-8 litters to ensure genetic improvement.

They normally produce for 3 years before replaced. This gave a replacement average of 33% for sows and gilts (young sows). (Boars normally worked for 2 years and half of the boars are replaced yearly to ensure genetic improvement). Approximately 8-10% of the piglets can die before weaning. This is weaner mortalities and can be the result of weakness, abnormalities and diseases, no milk or the sow lies on them.

Few (2-3%) dies after weaning and can be caused by diarrhoea or other diseases such as pneumonia and dysentery. Weaners are kept on a 8% ration up to 10 weeks, when they should weigh 28-30 kg. It is now known as a grower and being fed a grower ration of 16% protein up to 120-130 days when weighing 60-70 kg, now known as a slaughter pig for the delivering of fresh meat. All pigs are fed *ad lib*, ie. free access to as much feed as they can eat. This assured rapid growth.

Some farmers keep the pigs up to 90-100 kg at 150-160 days and feed them a finisher ration of 14%. They can be kept under limited feeding, i.e., to limit the feed to prevent them from becoming too fat. These heavier pigs are known as a porker. Up to ten weeks these pigs develop 3 parts of meat and one part of fat. The ratio change gradually so that they have 1 part of meat against 1 part of fat at 5-6 months. Thus, the older the pig, the fatter it will be.

Slaughter sows at the end of their productive life are known as sausage pigs and boars are taken to abattoirs as crude pigs. At the abattoir, the quality of pork meat is graded and classified according to the pig's backfat and eye muscle width. The Intra-scope of Hennessy's grading chart is used to grade pork meat.

## 6. FEEDING

The pig's digestive system is actually the same as humans, i.e., it is an omnivore, an all eater. They can eat plants as well as animal products. A lot of small farmers feed their pigs waste food from hotels or mining hostels. This is not ideal for growth and health. In

intensive systems balanced rations are fed to ensure the best results for quality and health.

Maize is the main source of energy in all rations for pigs, usually 60-70%. Wheat and sorghum can also be used, but is not that popular.

Fish meal is the most important source of protein and usually makes out 5-10% of the ration. Other sources of protein include soybeans and various oil-cake feedings.

The most important source of fibre is bran and forms 15-20% of a ration. Lucerne is another fibre component. The rest of the diet consists of salt, calcium, phosphate, vitamin and mineral mixtures.

The last-named instant mixtures form normally 2-4 kg of the food mixture. Medication is added to the feed if necessary and is the most economical way to treat a lot of pigs. The antibiotic is usually added at a rate of 1 - 2 kg per ton of feed. Sometimes in weaner pens, the antibiotic may be included in the water supply as a sick pig may not always eat, but it will usually still continue drinking.

Growth stimulants are popular in most piggeries and involve products which are included in the ration to inhibit detrimental organisms in the digestive system. This facilitates a better absorption of nutrients by the pig, improves feed conversion and thus improves the growth and profitability of the pig. A normal good total herd feed conversion ratio is  $\pm 4,0$  i.e., 4 kg feed required to produce 1 kg of meat (dead weight). Growth charts have been included for more details concerning these aspects in a piggery, i.e., ADG - average daily gain; FCR - feed conversion ratio, etc.

The above has just been a very broad overview of pig production with hopefully most of the important aspects being mentioned. Not all the detail is here but a good background can be obtained by reading these notes and at least start to help you understand the intricacies and challenges facing one in a piggery.

## **7. VETERINARY ASPECTS**

Hygiene and control of disease is one of the major factors in intensive pig production in order for it to be successful. Thus, regular use of good disinfectants is essential with occasional strategic use of antibiotics. There is no replacement for good management and the success of a piggery will depend on it. A few diseases of economic importance will be discussed in order that one can possibly be aware of how to diagnose and prevent or treat them.

### **7.1 MANGE**

This is caused by a mite called *Sarcoptes suis* and can affect animals of all ages but more predominantly older sows and boars. The mite burrows into the skin causing severe irritation to the animal which, due to scratching, can affect its' growth by up to 10%. Apart from this it can also lead to a large amount of physical damage to the pig and the buildings thus causing further economic loss. The mite tends to concentrate in the ears of the pig and around the joints of the legs. These areas must be given special attention when treating.

The life cycle of the mite is  $\pm 3$  weeks and so an effective method of control is to treat the animals once per week for 3 weeks to break this cycle. Pens and surrounding walls should be sprayed with dip as the eggs and larvae hide in crevices and cracks waiting to infect new hosts as they come into the pen.

Various dips or pour-on e.g., Six-a-side or "Triatix Pig Pour-on" are available to treat mange or one can use injectable solutions e.g., Ivomec or Dectomax.

Prevention is better than cure and so regular treatments of breeding animals are recommended viz. at least 2x / year for sows and every 2<sup>nd</sup> month for boars which are one of the main carriers in a herd. Sows should preferably be treated before each farrowing to prevent infestation of her piglets.

## 7.2 ARTHRITIS

This is caused by a variety of bacteria and can affect any age group of pig. In young suckling pigs one can get joint-ill or navel-ill which is contracted within a few hours of birth due to poor hygiene and bacteria being able to penetrate through the soft pads of the trotters. Prevention entails dipping the feet and umbilical cord in a disinfectant solution as soon after birth as possible e.g., Iodine or Acriflavin. Sows are particularly prone to lameness due to their confined way of life. Obvious abscesses are lanced, flushed out with clean water and followed by dilute peroxide instillation. A broad-spectrum antibiotic may then also be given.

Non-infectious lameness may be best treated with anti-inflammatory products and animals placed in a ground camp to get exercise and movement of the limbs.

## 7.3 ESCHERICHIA COLI SCOURS

This is the name of the bacterium which causes the scours or diarrhea. The organism is only really dangerous to suckling pigs and weaners. It occurs naturally in the digestive tract of sows and so they infect their offspring from birth onwards. The piglets don't have these bacteria in their systems initially as they feed on milk, but later these organisms become a useful and normal part of their small intestinal flora once they eat solid food.

The sow passes passive immunity against E-coli to her piglets via the colostrum. Piglets must ingest at least 60 ml of colostrum within the first 6 hours of birth in order to obtain sufficient antibodies against these and other bacteria or viruses in the environment. The passive immunity lasts for 2 - 3 weeks after birth whereafter, it breaks down and the piglets must now establish their own active immunity against the E-coli bacteria. During this change-over period the piglet may develop a "milk-scours" which is usually not necessary to treat. The next challenge for the piglet is at weaning when it changes from milk to solid food. If its active immunity is not well developed, it may succumb to the bacteria and develop yellowish brown diarrhea. This can cause dehydration or sometimes a toxemia and eventual death if allowed to go unattended. For this reason, antibiotics are usually included in all weaner rations as a preventative measure. Individual severe cases may be treated with injectable antibiotics or water medication. This disease is of major economic importance in a piggery as every day of diarrhea can mean one day extra to market.

#### **7.4 SWINE DYSENTERY**

Caused by a bacteria-like organism which affects pigs  $\pm$  8 - 15 weeks of age or older. It is a disease of the large intestine and shows as a brownish diarrhea with maybe fresh mucus and undigested blood present. Affected pigs don't die usually, but show retarded growth. In-feed medication is the best if a large number are affected. Most growth stimulants control this disease.

#### **7.5 CAMPYLOBACTER OR "REDGUT"**

This is not to be confused with swine dysentery, as it affects the small intestine and the diarrhea usually appears very dark and even black due to digested blood in the feces. Animals can die rapidly due to loss of blood and thus rapid individual treatment is needed with injectable antibiotics. This disease usually affects the heavier baconer or gilts brought onto a farm.

#### **7.6 PNEUMONIA**

Two main types viz. *Mycoplasma* and *Actinobacillus* which affect mainly growing pigs. It is important to differentiate between the two as the treatments are different and a vaccine is available for *Mycoplasma*. Your veterinarian should be consulted to diagnose which one or if both are present. The economic losses can be extremely high if the latter should breakout on a farm. They do, however, tend to occur simultaneously. Vaccination, management and in-feed medication are all required to control these diseases.

#### **7.7 LEPTOSPIROSIS**

This is a disease of the breeding animals in the herd ie. sows and boars. Symptoms usually include abortion "storms", increased stillbirths and/or weak piglets at birth. The conception rate also decreases. The bacteria are transmitted by boars from sow to sow. The disease can be treated, but a preventative vaccination programme is recommended. Economic losses can be severe.

#### **7.8 PARVO VIRUS**

Also, a disease of the breeding herd, but more particularly affecting the unborn litter. Symptoms of the disease are seen at birth with various stages of mummified fetus and weak piglets with meningitis. Abortions may occur and fertility can be affected. No treatment is available and thus prevention is practice via vaccination of breeding stock. The boar is again the main carrier of the disease.

#### **7.9 ERYSIPELAS (DIAMOND SKIN DISEASE)**

This bacterium is a normal inhabitant in the tonsils of the pig but under conditions of extreme stress eg. cold and wet conditions it may become pathogenic ie. disease causing and harmful to the host. It causes a septicemia and symptoms include arthritis, heart lesions and very typical diamond-shaped skin lesions.

The condition can be treated with Penicillin but a preventative vaccination is essential as the disease is notifiable and must be reported to the State Vet. He can then close the farm down until the disease has disappeared and not allow marketing of pigs until no more symptoms are visible. This is in theory but seldom carried out.

## **7.10 WORMS**

Pigs are mainly affected by *Ascaris spp.* Of round worm especially if housed outdoors. Worms don't cause much serious damage, except to the liver which gets "milk spots" on it and cannot be used by the factories for processing. It is advisable to deworm all breeding sows at least twice per year before each farrowing to prevent transmission of worms to offspring. Deworming powders or injectable products may be used.

## **7.11 "GREASY PIG DISEASE"**

This is very common in suckling or weaner piglets especially from gilt litters. It is caused by a bacteri, which causes damage to the skin leading to a moist surface to which dust, etc. sticks. Hence the name as the pigs appear dirty and greasy. Treatment includes antibiotic injections and daily washing with a disinfectant e.g., Iodine products.

## **7.12 ATROPHIC RHINITIS**

This disease is becoming more and more important in piggeries in South Africa. It is caused by a combination of two or more bacteria present in the nasal passages of the pig. The toxin from the bacteria destroys the turbinal bones in the nose leading to increased susceptibility to other pneumonic diseases and damaging the nose in such a way that it grows skew. This is a typical symptom of the disease. The main effect is a delayed growth in the growing herd which has severe economic implications. Treatment is difficult but antibiotics together with a vaccination program can control the disease to a degree. Management is one of the major factors in limiting the condition ie. ensuring good ventilation and no overcrowding.

One can see that several diseases can cause severe financial losses and thus all precautions must be taken to prevent these diseases getting into a herd. The best is to always buy breeding stock from a recognized breeder and preferably stick to the same breeder as far as possible as this will prevent foreign diseases creeping in as breeders tend to keep a "closed" herd for this reason.

Consult your veterinarian for a specific vaccination program for your particular farm as most of the diseases can be prevented by vaccination. Prevention is better than cure! The cost of regular vaccination far outweighs the losses one would incur should some of these diseases break out on a farm.

It is also important to quarantine new animals in a separate area on the farm away from the main herd when they are brought in from outside farms. This should be for 4 - 6 weeks during which time gilts are exposed to afterbirths, mummies and dung from the main farm in order that they can be exposed to the bacteria and viruses on that farm and so build up an immunity to them.

It is advisable to treat new arrivals with a long acting antibiotic to limit disease spread and also an anti-inflammatory drug to help with lameness induced by travelling long distances.

The above aspects should give one some good guidelines by which to manage the disease problems in a piggery but are by no means conclusive. Please consult your Vet for more detailed information.

### **7.13 INJECTION SITES**

The best place to inject a piglet is in the neck muscle. The position is one to two fingers behind the ear and in the upper third of the neck. Larger sows are usually injected a hands' breadth behind the ear and also in the upper third of the neck. Avoid injecting in the hindlimbs as this can cause lameness and also damage meat quality. Sterile needles and syringes are essential and ensure medicine and vaccines are stored at correct temperature. Good hygiene practices are vital to ensure effective response to treatments.

## **8. GENETICS**

This is a very intricate but important part of any piggery. The type of pig production a farmer wants to get involved in will determine what generic stock he will need, e.g. Does he wish to produce breeding stock for selling to commercial farmers, or be a multiplier unit, or just produce animals for market, etc. There are four main pure breeds seen in South Africa at present viz. Large White, Landrace, Duroc and Hampshire. Chester whites are also slowly now making an appearance.

Generally, your white animals are dual purpose (i.e. Carcass and dam line (mother) whereas your coloured pigs tend to be more for carcass or sire lines is. Not used for mother-line production.

Breeders will normally produce pure bred boars to sell to the commercial pig farmer and also supply him with F1 gilts with which to mate them. These F1 gilts are crossbred between a Large White boar and Landrace sow or vice versa. These gilts have a combination of the two breeds which makes them the best mother-line females available. There is no colour in them and they have very good hybrid vigor i.e. The ability to produce stronger, healthier, faster growing and more numerous piglets than their pure-bred counterparts, and to raise them better due to improved milk production and mothering ability.

The F1 gilts may be mated with pure bred boars or crossbred boars known either as F1 or Hybrid boars. All the progeny or offspring of these latter boars should be sold and not kept for breeding purposes. These boars are known as terminal sires because they transfer good meat qualities to their offspring and thus progeny should not be kept for breeding purposes as the two are not compatible.

There are numerous different breeding systems but the above system has proved to be the best i.e. where commercial farmers buy in terminal boars and mate them with bought in F1 gilts. A more common system, which is now losing popularity as pig production becomes more precise, was to do cross breeding. This entailed farmers only buying in new boars, either Large White or Landrace and mating them to their own gilts. If the sow or gilt approved to be physically more like a Large White then a Landrace boar would be used and vice versa. The disadvantage of this system is it eventually leads to a fair

amount of in-breeding and one loses the hybrid vigor spoken about earlier. As a result, very little if any genetic progress is made unless new boars are very regularly bought in and, so grading and meat quality declines.

It is advisable to replace boars at a 50% culling rate which is equivalent to them working for  $\pm 2$  years on the farm before being culled. The sows are usually replaced at a 33% rate i.e.  $\pm 3$  productive years or 6 - 8 litters before they are culled, This ensures genetic improvement on both male and female sides continually. After the sixth litter in sows, one usually starts finding that litter size, weight, evenness and sow milk production begins to deteriorate and hence it is better to replace them with new and genetically improved gilts. Genetic progress should always be being made and each subsequent year's boars and gilts should be better than the previous year's breeding stock.

## **8.1 ARTIFICIAL INSEMINATION**

This is becoming more popular as the price of top-quality boars increases and their availability decreases. Furthermore, with the increased accuracy of grading and high feed prices, it is becoming more essential to use boars with very good FCE (Feed conversion efficiency) and producing a high lean meat percentage in the slaughter progeny.

Artificial insemination can be carried out on two different levels:

- 8.1.1 Farmers buy in fresh or frozen semen from recognized A.I. centers and then inseminate their own stock. One can go through a catalogue of the various boars in the Centre and choose to use semen from a boar which best meets your specific needs.
- 8.1.2 establish an A.I. unit on one's own farm. This entails keeping boars of good quality, tapping them on your farm and then inseminating sows with fresh, diluted semen.

The technique will not be discussed in detail, but it is relatively simple, the most important aspects being the quality of the semen and the timing of the insemination. Rather what we will focus on is the advantages and disadvantages of the process:

## **8.2 ADVANTAGES OF ARTIFICIAL INSEMINATION:**

- 8.2.1 Semen from top quality genetically superior boars is now available to commercial farmers at a cost-effective price.
- 8.2.2 Farmers can theoretically reduce the boar herd by at least 30 - 40%.
- 8.2.3 They can thus keep fewer boars on the farm but of better quality.
- 8.2.4 Have fewer problems related to the keeping of boars e.g., less lameness, less disease problems, less housing required, less problems with infertility and libido failure, etc.
- 8.2.5 Since semen can be diluted. top quality genetics can be spread rapidly through a herd.
- 8.2.6 Individual boars can now be evaluated on progeny results within a shorter period of time.
- 8.2.7 Herds can be rapidly upgraded by buying in semen from A.I. stations.

- 8.2.8 Very importantly, disease can be reduced and controlled much more effectively by not having to continually bring in live animals from other farms
- 8.2.9 Each boar's semen is evaluated and thus one can immediately detect infertility problems and thus one can expect an increased conception rate and thus farrowing rate.
- 8.2.10 Since boars are regularly evaluated, one can cull boars accurately on performance rather than just on age as in a conventional, natural, hand-mating system.

### **8.3 DISADVANTAGES:**

- 8.3.1 The level of management input needs to be much higher as with time spent initially monitoring the process.
- 8.3.2 Staff need to be specifically trained to carry out the process effectively.
- 8.3.3 A laboratory will have to be set up if one is going to tap one's own boars. This may be quite expensive initially and require training to man it.
- 8.3.4 Poor quality genetics can just as rapidly be spread through a herd as good quality.
- 8.3.5 Estrus observation of gilts and sows is crucial to the success of the process and so attention to detail is very important.
- 8.3.6 Problems may be related to transport and or storage of semen and so microscopic evaluation is important to do to ensure success of artificial insemination - this requires equipment and training.

Generally, however, the advantages far outweigh the disadvantages in the long term and provided the farmer is prepared to acquire the training and put the time and effort into perfecting the process, it will be a success. One warning, however, rather do it properly right from the beginning, or don't do it at all since the cost of incorrect technique, timing, management, etc. can be very great.

## **9. PERFORMANCE TESTING**

Breeders test boars according to certain parameters in order to measure how good they are, viz:

- 9.1 average daily gain (ADG) - how many grams they grow every day while on test.
- 9.2 Feed conversion efficiency (FCE) - how much feed required to produce 1 kg of meat.
- 9.3 P2 - back fat thickness in the position of the 12<sup>th</sup> and 13<sup>th</sup> thoracic rib i.e., T2 & T13.

These figures are measured between 30 kg to 80 kg when the animal is on test. Each boar is then given an Index figure of 200 or more. The figure 200 is usually used as the average of all the boars tested in that particular year and every point above 200 indicates how much better that animal is than the average. Hence every year, if there is continued genetic progress being made, the value 200 should be better than the previous year's score of 200.

Progeny of these boars are tested "centrally" at e.g., Irene and "on-farm" in order to achieve an accurate result of how these animals will perform comparably with other breeder's pigs. The better or progressive producers will only buy boars on

their index figures firstly and then secondarily on how they look. The heritability, of these carcass traits to off-spring is 40 - 50% from the male side, i.e. You have a 50% chance that 50% of a particular quality will be seen in that particular boar's progeny. On the female side, mothering traits are poorly heritable, in the order of 10%. Thus, one can see the importance of always having well-bred boars with good indices and why one should not breed your own boars.

As a general rule it is advisable to buy from only one particular breeder and not jump around all over the country. This breeder can then work out a breeding program for your particular situation and can supply you with what you need. Find a breeder whose animals adapt well to your farming methods and environment and stick with him. This has three major advantages:

- 9.4 diseases are limited dramatically to what he has on his farm and so there should be little chance of picking up new and foreign diseases (basically a closed herd).
- 9.5 because you work closely together, he can advise you regularly and supply you with stock to ensure continuous genetic progress.
- 9.6 Thus, if you have any problems, you can always go back to him for advice and back-up service because his reputation is at stake.

## 10. CLASSIFICATION OF PORK

All pigs, once they have reached the desired weight are slaughtered at specialized abattoirs or those with correct facilities to do so. There are four main weight categories into which pigs fall when marketed. The first group are the "sucklers" which weigh between  $\pm 12 - 20$  kg dead weight; next are the porkers - 20 to 60 kg dead weight; "baconers" weigh between  $\pm 61 - 90$  kg and "sausage" pigs weigh 91 kg and more. An uncastrated male animal, weighing greater than 55 kg is classified as a "Rough" and is usually only suitable for by-product manufacture, e.g., dog food, etc. As a rough guideline pigs slaughter out at 70 - 75% of their live weight.

At the abattoir pigs are stunned with an electric current first, then bled and placed in a scalding tank at 65°C in order to soften the hair for removal. They then go through a dehairing machine before being inspected by Meat Hygiene Officers for diseases, etc. and then they are "graded" or classified. The classification of pork revolves around the conformation of the carcass, the weight, the back fat thickness (P2) and the diameter of the "eye muscle" which enables one to determine the percentage of lean meat on the carcass.

Two types of instruments are used to classify pork. The first and older method is using an intra scope. All this does is measure the thickness of the fat over the ribs in the 712/713 position, i.e., between the 2nd and 3rd last thoracic ribs 45 cm from the midline. The latest instrument is the Hennessy Grading Probe (HGP) which measures back fat thickness in the same position and also the diameter of the eye-muscle along the back of the pig. From these two measurements one is able to determine fairly accurately the percentage of lean meat on the pig. This is then used to classify the pig into various categories according to these specifications:

<b>CLASS</b>	<b>LEAN MEAT</b>	<b>BACK FAT (mm)</b>
P	>70%	<12
O	68 + 69%	13 – 17
R	66+67%	18 – 22
C	64+63%	23 – 27
U	62+63%	28 – 32
S	<61%	>33

"P" class is the leanest with the highest meat percentage and "S" class the fattest with the lowest meat yield.

Buyers then pay prices according to the class and conformation of the pig and weight category. Pigs below 60 kg are usually used for fresh meat and above this i.e., "baconers" and "sausages" as their names suggest are for processing purposes.

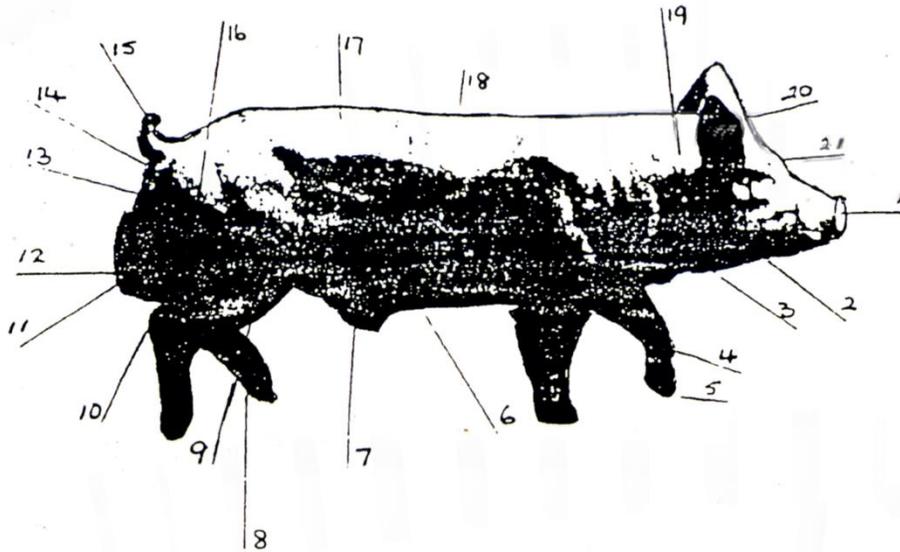
Pig production is generally very specialized and scientific but we hope these broad guidelines will give you a very good idea of how challenging and intricate pig production can be when done correctly and successful.

## **11. USEFUL HINTS**

- 11.1 Pigs respond very well to TLC –tender loving care i.e., work gently and calmly with them and you will achieve far more than with rough and loud handling, i.e., good stockman ship.
- 11.2 Remember piglets can never be too warm (28 – 30°C) and require good kennels, heaters and deep or plenty of sawdust to keep them off cold floors and reduce disease challenge.
- 11.3 Sows or adult pigs require cool temperatures (18 – 20°C) therefore heat in summer is more of a problem than cold.
- 11.4 Avoid overcrowding in a piggery as it leads to services vices e.g., tail biting, ear biting, etc. as pigs are unhappy.
- 11.5 Fresh feed and cool, clean water are extremely important for healthy, happy pigs.
- 11.6 Attention to detail is essential to obtain optimum production in a piggery. It takes time!
- 11.7 Management is the key to success in pig production and involves "hands - on" work and good record keeping.
- 11.8 Prevention is better than cure as regards diseases and involves hygiene, vaccination programmes, good ventilation and maintenance of buildings in a good condition at all times.
- 11.9 The welfare of the pig is of vital importance and should be taken into consideration at all times especially as regards housing, feeding, transport, sick animals and abattoir aspects. (See Websters points for more detail).

11.10 The more you put into your animals' care, the more satisfaction and enjoyment you will get from them.

## 12. PARTS OF A LARGE WHITE PIG



- |                              |                                 |
|------------------------------|---------------------------------|
| 1. Snout                     | 11. Testes                      |
| 2. Jaw                       | 12. Scrotum                     |
| 3. Jowls                     | 13. Vulva                       |
| 4. Pastern                   | 14. Anus                        |
| 5. Trotter                   | 15. Docked Tail                 |
| 6. Teat line (Mammary Gland) | 16. Ham                         |
| 7. Prepuce or Sheath         | 17. Eye Muscle                  |
| 8. Dewclaw                   | 18. Strong Back                 |
| 9. Stifle                    | 19. Short neck (Injection size) |
| 10. Hock                     | 20. Upright Ear                 |
|                              | 21. Short Head                  |