



## Basic Pig Husbandry - The Boar

By Graeme Taylor and Greg Rouse, Livestock Officers Pigs, Intensive Industries Development, Tamworth - This Primefact is one of five articles providing an overview of basic pig husbandry, covering boars, gilts and sows, the litter, weaners and grower herds.

### Introduction

So far as overall improvement is concerned, a boar has far more influence in a herd than the average sow. Because a boar has such a tremendous influence within a herd, careful consideration should be given to his selection, management and replacement. On many farms productivity and profitability are reduced because too little consideration is given to developing a suitable breeding program to utilise boars to their full potential.

### Selection of boars

A boar must possess both the genetic potential to improve the performance of his progeny, and the physical soundness to remain an active breeder. Final selection for young boars can be carried out when they complete their performance testing between 20 and 30 weeks of age.

### Production performance

The production characters of growth rate and carcass quality are of intermediate to high heritability, and a high proportion of the boar's superiority will be displayed in his offspring.

However, it is unwise to purchase boars from apparently superior herds that are not performance tested. Ask to see the boar's performance test results and check them against other boars in the same test group — better still if there are estimated breeding values (EBVs) available for the boars. Otherwise, differences in performance could be due to non-genetic effects like environmental factors and these cannot be passed onto a boar's progeny. Cross-herd evaluations of sire lines are also available.

It is also inadvisable to obtain boars from herds of less than 60–80 sows, even if they undertake performance testing. It is more desirable to buy tested boars from large herds or breeding companies using programs like PIGBLUP that can employ enough selection pressure to identify superior animals and maintain rapid genetic progress.

### Health status

The introduction of diseased stock poses the biggest threat to the herd's current health status. Boars should only be brought in from known healthy herds, and where possible some guarantee obtained as to their freedom from certain diseases, or parasites. A disease outbreak could cause unnecessary hardship and serious economic loss. Ask your veterinary practitioner to liaise with the breeding company to compare your health status. A period of quarantine (4–6 weeks) and acclimatisation provides insurance against new diseases being introduced and allows new boars to be exposed and gain immunity to diseases on your unit. Consult your veterinary practitioner for development of a suitable program.

### Conformation and physical soundness

Particular attention should be given to the boar's legs and feet as they are subjected to considerable strain during mating. Any sign of weakness at this early age could signal a serious problem at a later date.

Make sure that his toes and pasterns are not long, weak or misshapen. When he walks, he should move freely, without any sign of stiffness or lameness. The testes should be normal in shape and size, even, and free from defects. While the width of the testes is directly related to total sperm output, it is not a true



A boar mating a sow in a pen adjacent to other boars

indication of the libido or sexual activity of the boar.

### **Physical contact**

Recent research has shown that up to about 30 weeks of age, young boars need contact, particularly physical contact, with other pigs in order to develop high serving performance. After puberty, it is

important to house boars near female pigs to maintain courting and serving behaviour. These females can be either oestrus or non-oestrus gilts or sows but must be housed next to the boar pen.

### **Boar sow ratio**

This is usually one boar per 20 sows with supervised hand matings, but in small herds or under extensive conditions, the ratio could be between 15 and 18 sows per boar. This is only a guide for determining the number of boars required. Actual boar requirements would have to be determined for each herd, based on the number of sows to be mated in a given period and the boar's replacement age. Where double or triple matings are practised, boar requirements are based on the number of sows to be mated per week. With batch farrowing the number of boars required will depend on the batch sizes selected. Obviously where artificial insemination is utilised, fewer boars are required.

### **Mating management**

While the age at which a young boar can first be used varies between breeds and individuals, the general rule is that a young boar should not be used for service until he is at least 28–30 weeks of age. Boars used at too early an age may have their working life considerably shortened and their breeding ability impaired.

### **Training a new boar**

Many breeding difficulties associated with boars can be directly attributed to lack of care and attention at their first matings. The aim is to teach the boar as quickly as possible that the reward for courting and mounting is mating. These first services are critical in the formation of a boar's mating behaviour.

#### *Confidence*

The development of a young boar's confidence is vital. Intimidation by a group of gilts or sows, or even an attack by a large sow can be a devastating experience for a young boar. Reluctance to work is the usual result. To develop his confidence a gilt or preferably a small quiet sow, of similar size, on 'standing heat' should be used for the first few services. If the gilt or small sow does not stand for the boar it can lead to frustration, injury or disinclination to work. Boars reluctant to work or lacking libido are a nuisance. They upset mating programs, resulting in the overuse of other boars or the need to run extra boars.

#### *Bad habits*

Supervision of mating is necessary to overcome or prevent the development of abnormal behaviours. Often when young boars are run together they develop bad habits. The most common is serving into the rectum. At his first services, ensure that vaginal entry takes place. It is not uncommon for a young boar to mount the front end of a sow, as the head is lower and easier to mount. This is particularly noticeable when he attempts to mate sows larger than himself. Other, less common behaviours such as masturbation do occur, and where boars continue these habits, they should be culled. Boars may have been isolated from females during the testing period and they will require a period of adjustment and social contact with females prior to being worked. Conditions in the mating area will also affect his confidence and the development or suppression of abnormal behaviours.

#### *Physical disorders*

There are several disorders seen in the boar which prevent erection and/or complete penetration at mating time. Penile adhesions are not uncommon and accidents can cause fracture of the penis. These

conditions can only be observed at mating time; therefore, supervision and observation of mating is essential in early detection of these disorders. Breeding companies often undertake a serving check of young boars prior to sale and they will normally provide some guarantee of replacement if a boar fails to perform.

### **Time of mating**

Mating is best carried out in the early morning before feeding. Serving on a full stomach can impose unnecessary strain. Also, the boar is more active in the early morning, particularly during hot weather.

The actual number of services and their timing is dictated by whether oestrus detection is carried out once or twice daily. Two services 12–18 hours apart usually give better results than either a double service 24 hours apart, or a single service. Triple services can be used if litter size is considered to be low. Plan the third mating for about 12 hours after the second.

### **Mating routine**

It is preferable to take the sow to the boar, as she normally assumes the major role in searching out the male. This initial contact is important in replacing the social contact behaviour with the sexual behaviour sequence.

Also, shifting the boar can excite him and make him difficult to control. However, if a specialised mating pen is made available, the boar will become accustomed to the routine, but ensure that the boar is placed in the pen and the sow is brought to him. Service crates can be used where small sows or gilts have to be mated to a much heavier boar, but their success varies and depends a good deal on the attitude of the boar.

### **Mating behaviour**

When a sow is introduced to a boar, the boar will approach her, emitting characteristic grunts. She may run from him and he will follow, continuing to grunt, grinding his teeth and producing foaming saliva. He may urinate frequently. He attempts to make contact with her and if she stops he may nose her flank quite forcefully, sniff the ano-genital region and her head, and then attempt to mount.

If the sow responds by adopting the mating stance (standing immobile, back arched with ears cocked), it is a signal to the boar that she is receptive and he will mount and copulation will occur. Ejaculation is signalled by tightening and relaxing of the anal sphincter and should last at least 3 minutes. If any less than that, the mating should be considered doubtful. The boar signals the end of copulation by dismounting.

### **Supervision**

Assistance at mating is seldom necessary but it is important that they be supervised to ensure that a satisfactory service does occur. When the sow is introduced to a boar and it is obvious that she will not stand, she should be removed as quickly and quietly as possible. It is not advisable to leave a sow unattended with the boar. There is the risk of causing serious injury to a sow especially with a very aggressive boar.

Correct management of a boar is more important than for any other class of pig. Viciousness in boars is often caused by bad handling and can be a constant source of danger. Staff should undertake industry training, such as 'Prohand' for the professional handling of pigs. Once a successful service has taken place, the sow should be removed and placed in a pen on her own.

### **Workload**

For the first month and during training, the young boar should be allowed no more than one sow per fortnight, gradually increasing to two sows per week (double service) by the time he is 10–12 months of age. As a boar matures (12 months plus), he could be used on two sows per week (double service) to a maximum of six matings per week. Where possible, he should not be used for more than two consecutive days.

It must be made clear that there are individual differences between boars, and their ability to mate sows varies greatly. Stock hands should be aware of this and adjust a boar's workload accordingly. Crossbred boars appear to have a higher serving performance than purebreds.

A record of a boar's matings is essential to even out the workload and to detect any drop in fertility. A boar may not produce viable sperm on the first few services, or for a short period after stress, infection or a long rest period. To reduce the possibility of small litters, a second boar could be used over his first few services. A second boar can also be used to even out the workload.

## **Boar comfort**

While improvements in housing and accommodation have been achieved, the area that has received little attention has been boar accommodation. When an expensive, performance-tested boar breaks down, producers then realise that inadequate accommodation can prove very costly.

### *Boar pen*

If conditions are considered extreme, serious consideration should be given to providing a strong, well-insulated pen for sleeping and feeding. This can be built adjacent to a central service pen. Because boars are alone in their pens they are particularly prone to the effects of temperature variations. Mature, lean working boars have little fat cover and therefore little protection against the cold. Feeding levels may have to be increased and consideration given to providing bedding or additional warmth during winter. High summer temperatures will also affect boar performance. His libido and general activity are usually affected long before there is an effect on sperm quality. If extremely high temperatures do occur, sperm quality can be affected for up to 6–8 weeks. Provision of cooling is recommended.

### *Floor surface*

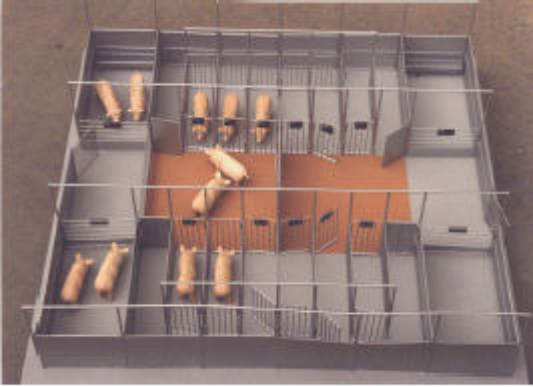
This is easily overlooked but there is nothing that will give more trouble than a rough or slippery floor. It is particularly common when the pen is used to house the boar and doubles as a service area. During mating, if the floor surface is slippery, a sow may have difficulty standing for the boar. She could easily slip causing severe injury to herself or to the boar. When a boar mounts a sow, his hind feet are often placed level with or in front of the sow's feet. As he thrusts, he gains leverage from his feet. If he happens to slip, he could easily injure himself. During ejaculation the boar is immobile but if the floor is slippery, he may fail to complete the service and become frustrated. The floor should be hard and well finished but not slippery. Providing a service area covered with sawdust, rice hulls or similar material provides excellent mating conditions.

## **Pen shape and size**

The service area should be at least 2.5 m × 3 m. It should be free of obstructions and the area should be well lit to allow for easy observation. Gates in particular should be solidly built and made to swing both ways. Circular pens also provide a good service area and work best if placed close to other boars.

## **Feed requirements**

Boars are usually fed between 2.0 and 3.0 kg of a balanced diet containing 0.55% available lysine, and a digestible energy (DE) of 12.5–13.5 megajoules per kilogram (MJ/kg). The amount fed depends on the age, weight and the amount of work the boar is doing. Supplementing the diet with omega-3 fatty acids can improve sperm quality and production, resulting in improved fertilisation and litter size. It is important that the boar be kept in a lean working condition and not allowed to become overweight and possibly lazy.



A model of a detection mating area (DMA)

## De-tusking

Tusks on a boar are potentially dangerous to the stock hands and the brood sows. The tusk will grow approximately 2 cm every 6 months, so it is advisable to de-tusk the boar at least once a year. The usual method is to restrain the boar by means of a rope with a running noose over the top half of the snout and behind the molar tusks. By pulling tight and tying close to a post or rail, the boar is then fully controlled.

Although bolt cutters could be used they are not recommended as they are difficult to manipulate and invariably shatter the tusk leaving sharp protrusions. The job is best done using surgical wire.

## Reluctance to work

A common cause of a reluctance to work is the overuse of a boar or the abuse and overuse of young boars. It is important to emphasise the need to supervise a young boar's first services, to make sure they are successful and that he is in no way injured or frustrated. This initial period will influence his subsequent mating behaviour. Boar mating sheets should be used to keep a record of the services performed by individual boars. Used properly, they should prevent overuse of boars and help detect sterility.

Make sure boar pens are positioned next to newly weaned sow pens, to maintain interest and activity. Pens for young or small boars can be 2.5 m × 2.5 m, rising to 3.0 m × 3.0 m for older and larger boars. An alternative is the use of a detection mating area (DMA) which combines the stalling of boars in large stalls (0.8 m × 3.0 m) with an adjacent mating area.

The service area should be at least 2.5 m × 3 m, with a non-slip surface. With slippery floors, sows may refuse to stand, which frustrates the boar, or he may slip, lose confidence and be reluctant to mount any further sows.

Overfeeding, besides being wasteful, limits the usefulness of a boar and makes him lazy. This can be exaggerated during periods of high temperatures. High temperatures do affect libido and stamina, and provision of wallows, sprinklers or cooling should be provided. Infection or injury can also lead to a reluctance or inability to work. Sore feet and injury to the muscles or ligaments of the back are not uncommon. 'Rest and test' should be the order of the day. Consult a veterinarian as soon as you have any concerns.

## Replacement

The useful working life of a boar can extend to about 3–4 years of age, but by then he becomes too heavy to mate anything but old sows. He is more prone to leg weakness and his breeding ability and value is doubtful. In order to maintain young active boars that are easy to handle, boars should be culled when they reach 2 years of age. As far as genetic progress is concerned, it is more desirable to replace boars when they are 12–18 months of age. Where possible, boar replacements should be planned in advance. Far too often young boars are brought in and expected to immediately perform like a mature boar.

A settling-in period is essential, particularly when buying in boars. They need time to adjust to the new environment and develop immunities to new disease organisms. In fact, they should be placed in quarantine and exposed to a low grade of infection from the piggery some 3 weeks before being used.

## Disease control

If a disease control program is being followed, it is important that the boar be included in any vaccination programs. Likewise, the control of internal and external parasites should include the boar, as he can be a source of reinfection. Consult your veterinarian to develop a suitable health and vaccination program for your boars.

## Summary

A boar has a tremendous influence on a farm's productivity and profitability. In order to maximise the herd's performance and throughput, boars should receive careful attention. While a manager may implement a suitable breeding program to utilise boars to their full potential, it is the stockperson who has the greatest impact on how well the boar will perform during his breeding life. By following basic husbandry principles the stockperson will be able to satisfy the boar's requirements and demands of his working life.

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