

# SWINE REPRODUCTION: Boar Management

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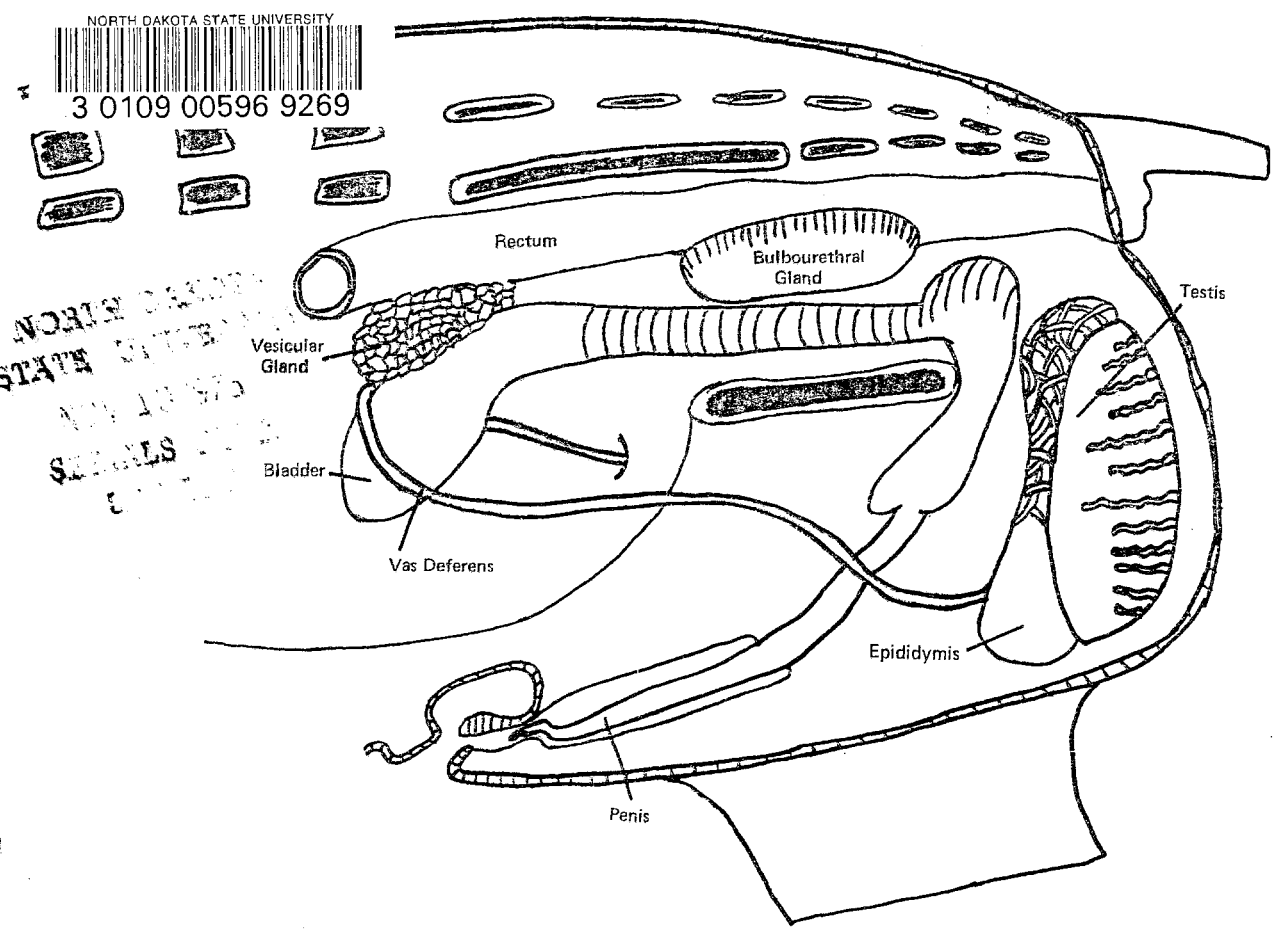
SWINE PRODUCTION is a competitive business where maximum efficiency is essential if the producer is to make a profit. The average hog farmer has a substantial amount invested in a litter at birth; these costs are fixed whether the sow farrows one pig or 12. Proper boar management can increase litter size and increase net returns.

## REPRODUCTIVE PHYSIOLOGY OF THE BOAR

The primary functions of the boar are to produce high quality sperm capable of fertilizing the egg and to introduce this sperm into the female at the proper time. The superior boar must also be the source of

most (80 percent) of the genetic improvement the breeder hopes to make in the herd.

Sperm production is accomplished in small tubules within the testes. The process from the initial division until the sperm is ready to be deposited in the female requires approximately 50 days. These mature sperm are stored at the base of the testes in the epididymis (Figure 1) until ejaculation, when they are propelled by muscular contractions through the vas deferens and penis into the cervix of the sow. The testes also have the function of producing the male sex hormone, testosterone. This hormone gives the boar his characteristic appearance and sex drive and prolongs the life of the sperm in the epididymis. Removing



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the testicles (castration) prevents testosterone production, resulting in a male with a less masculine appearance. If the testes are allowed to remain in place too long before castration, it will result in a barrow with a "staggy" appearance.

The accessory sex glands in the boar are necessary for the production of the large volume of seminal fluid associated with a boar's ejaculation. This fluid serves as a carrier for the sperm. The boar will ejaculate approximately 100 to 500 milliliters of semen with average ejaculates containing 40 to 45 billion normal live sperm.

A boar usually begins sexual activity around 5 to 6 months of age. Semen volume at this age is generally very low, 40 to 50 milliliters. While the young boar may appear capable of breeding, he may soon be over-worked to the point where he will fail to settle any sows. A low semen volume will also lower the fertilization rate, which means fewer pigs at farrowing. The desire to mate and the ability to settle sows are two different matters.

Boars less than one year old should be used sparingly every other day, or if used for a week should be given a week's rest. A boar does not reach sexual maturity until 8½ to 9 months of age. If growth is accelerated by higher feeding levels, body weight at time of sexual maturity is higher than normal and the animal reaches maturity at a younger age. However, if growth is slowed by under-feeding, sexual maturity is delayed and body weight does not reach the level of normally fed animals.

## BREEDING PROBLEMS

A newly purchased boar should be isolated for at least 30 days in cleaned and disinfected quarters before he is allowed with the rest of the herd. The location should ideally be located several hundred feet from the rest of the herd, have protection from the weather, have about 20 square feet of sleeping area and be adjacent to an exercise area. If there is any chance of health or parasite problems, the boar should be treated for internal and external parasites and vaccinated for erysipelas and leptospirosis. If the boar is from a non-validated brucellosis-free herd or if there is any chance of exposure to brucellosis prior to purchase or enroute to the farm, he should pass a negative brucellosis test within 30 days.

Following the isolation period, boars should be allowed fenceline or nose-to-nose contact with non-pregnant sows and gilts to inoculate them with any hidden viral or other infections he may be carrying. By allowing the females to contact and recover from

such infections prior to breeding, any such contagious infections should not interfere with successful reproduction.

Such infections, which may cause problems of sterility, mummification of pig embryos, embryonic death, and infertility, are often lumped together under the description "SMEDI". Pigs may harbor infections, due primarily to a group of viruses called entero-viruses, with no observable symptoms. At present there is no vaccine to aid in developing immunity against such infections. Deliberate exposure of non-pregnant females is the only workable means known for prevention.

Fenceline contact between existing and newly introduced breeding stock should be allowed a minimum of 30 days in advance of breeding. Penning boars in pens or alleys used by sows and gilts on alternate days is another means to help insure mutual cross-inoculation. When an isolation period and a "fenceline-contact" period are both used, it becomes necessary to bring the new boar home a minimum of 60 days before planning to use him for breeding. Starting boar purchases early also affords more selection in prospective herd sires.

Prior to mating, a lot of disappointment can be avoided by permitting the boar to mate a few market gilts. If he settles them, he can be used with little risk.

Observe the boar while he is exposed to a sow in heat. If he is a young, inexperienced boar, he may require some assistance. Young boars will often mount the front end of a gilt. If he does, move him around gently to the right position and he should soon learn to mount correctly.

Check for penile defects such as a limp, small or tied penis which will not protrude from the sheath. This will keep the boar from entering and breeding the sow. When possible, collect a semen sample and have it evaluated by a qualified technician or veterinarian. The hand-grasp technique is the preferred way of collecting semen but an electro-ejaculator or a collection of semen backflow from the female is possible.

The producer can tell much from observation of the semen. A thick, rich, creamy color will generally indicate high quality semen, while a thin, watery appearance may indicate low sperm density which can cause a fertility problem. The semen can also be observed for signs of blood. Observance of blood may indicate an infection of the urinary system or an abnormality of the penis.

Breeding habits of boars are another factor which can cause a problem. Some boars give attention to only one sow or gilt for two to three days, avoiding others which should be serviced. This lack of boar power will result in lowered conception rate. A normal percentage of females may become pregnant but litter size is greatly reduced.

It has been well established that temperature has a major impact on reproduction in both the male and female. Recent studies on the boar indicate that while low temperatures have no effect on fertility, high temperatures severely reduce semen quality. As temperatures approach 90° F and are maintained there, the percentage of live sperm, motility and fertility decrease substantially. Any illness which causes elevated temperatures also has an adverse effect on semen quality. Keeping the boar as cool as possible during the breeding season will help maximize fertility.

Occasionally boars may become lame soon after the breeding season begins. This may be due to several factors: 1) Boars that are heavily muscled are putting more strain on their vertebrae, joints and sockets. This extra stress can cause them to become lame and will interfere with their ability to move about and to mount, especially if the boar is straight in his shoulders and pasterns. 2) The boar may harbor a muscle infection which doesn't express itself until under the stress of breeding. This may make him lame and incapable of breeding. The infection can be treated but valuable time is lost in getting the females bred. If a high fever accompanies the infection, semen quality also may be adversely affected. 3) Slippery floors may be a problem. Many boars are more active breeders on dirt or bedded floors than on slippery concrete floors.

Boars with poor sexual activity may have hormonal deficiencies. These boars can occasionally be stimulated with testosterone injections. Testosterone will

not increase sperm number or quality. Testosterone's function is only to stimulate sexual desire in the boar. It is not advisable to keep a boar with low sex drive. Sex drive is a heritable characteristic and to stimulate a boar with testosterone to get him to breed will cause him to raise offspring with the same undesirable trait.

## BOAR NUTRITION

If the seller of a new boar is using a drastically different ration, it would be a good idea to acquire about 50-75 pounds of his ration and make a gradual transition to the ration which will be used. Young boars are growing and should not be under-fed. A boar going into the breeding season should receive 4 to 6 pounds of a balanced 14 percent protein ration depending on his age and condition. A young boar should receive from 5 to 6 pounds and older boars from 4 to 5 pounds. It also may be wise to consider increasing the feed level two weeks prior to and during the breeding period. After the breeding period, a boar in average condition can be maintained on about 4 pounds daily of a balanced 14 percent ration. Do not allow the boar to become overweight; fat boars lose their sex drive and the ability to mount.

## BOAR POWER

It is also extremely important that adequate boar power be provided for the females to be bred. The exact number of gilts or sows to be serviced per boar is difficult to determine because of the individual ages and breeding habits among boars. The most frequent figures recommended are listed in Table 1.

Many factors can influence the correct number of boars to sows. One of these factors concerns the age of the boar. Sperm production in the young boar is low but increases rapidly up to 12-15 months of

Table 1. General recommendations for number of services and number of sows per boar.

Age of boar	Number of services		
	Per day	Per week	Per month
8-15 months	2	8	24
15 months and older	3	12	36

Length of breeding season	Number of sows per boar by age of boar			
	Hand-mating		Pasture-mating (or pen-mating)	
	8-15 months	15 months and older	8-15 months	15 months and older
Three weeks	20	30	10	15
Six weeks	30	40	20	30

age. Even though this young boar may be willing to mount and breed the sow, the number of sperm being introduced into the female may be so low as to reduce conception rate and the number of baby pigs at farrowing. Another factor to consider is that a large number of sows may come into heat within a few days; this is particularly true if these sows were all weaned at once. In this case, sufficient boar power should be available to not only get these sows bred, but to insure a maximum conception rate. A maximum conception rate will put more baby pigs on the ground at farrowing and eventually more dollars in the producer's pocket.

### FAIR PRACTICE CODE

In 1973, a code of fair practice for buyers and sellers of purebred registered swine was adopted and recommended by National Association of Swine Records (Figure 2). This code was established so both buyer and seller understand the sale policy and responsibilities before the transaction. Reputable breeders will generally enter into a written agreement with the buyer concerning a fair adjustment policy if a problem develops with the boar. The breeder is usually willing to serve as a consultant to the boar buyer and is an excellent source of practical swine management information.

**A CODE OF FAIR PRACTICE FOR BUYERS AND SELLERS OF PUREBRED REGISTERED SWINE**

Adopted and Recommended by National Association of Swine Records April 17, 1973

Buyers of purebred, registered boars and gilts buy them to be breeders. Many factors may affect an animal's breeding capabilities. Many of these are not visible at time of purchase. Some problems may be the result of management before sale. Some the result of handling and management by the buyer after purchase. Some may be hereditary. Because of this, adjustments need to be a sharing of responsibilities.

**All Adjustments Are a Matter Between Buyer and Seller**  
The National Association of Swine Records or individual Registries assume no responsibilities for enforcement of these recommendations.

**Standard Warranty**

All purebred, registered hogs, over four months of age, (Not used for breeding under 7 months of age) sold as breeding animals for breeding purposes are sold with a warranty that they are capable of and will breed.

If and when any said animal does prove to be a non-breeder the seller shall make an adjustment to the satisfaction of the buyer, provided the buyer informs the seller of the situation within a reasonable time after purchase in keeping with normal management practice characteristic of buyer's type of operation.

In all purebred transactions the registration certificate is an integral part of the transaction and shall be delivered to the buyer properly transferred on the Association records at the expense of the seller.

**Suggested Warranty Adjustments**  
(These are only suggestions, considered as generally acceptable within the industry. Other adjustments may be made if satisfactory to both buyer and seller.)

**Boars Failing to Serve or Settle Sows**

1. Refund the purchase price or difference between purchase price and market value as shown by sales receipt if boar sold on the market.
2. Make a replacement of another boar satisfactory to buyer.
3. Give buyer credit (amount to be agreed on by both buyer and seller) on the purchase of another animal or animals.

**Gilts Sold as Open**

A — If proven to be bred . . . 1 — Refund of purchase price upon return to seller. 2 — Refund difference, if any, between price paid for gilt and value of a commercial bred sow.

B — If proven to be a non-breeder . . . 1 — Make a replacement of another gilt satisfactory to buyer. 2 — Refund purchase price or difference between purchase price and market value of gilt as shown by sale receipt. 3 — Give buyer credit, (amount to be agreed upon by both buyer and seller) on the purchase of another gilt in the future.

**Bred Sows**

A — Are expected to be bred to a designated boar and date of service. When proven otherwise . . . 1 — Replace the sow with another satisfactory to the buyer. 2 — Refund the difference between the purchase price and market value of sow as shown by sale receipt. 3 — If buyer desires to keep sow, refund one-half difference between purchase price and market value of gilt at time of purchase.

**Handling The New Boar**

- 1 — Buy boars two months before needed for breeding.
- 2 — Keep boar in isolation from other hogs for 30 days.
- 3 — Don't use a young boar until seven months or more of age.
- 4 — Give boar fence line contact with females for three weeks.
- 5 — Hand mate one to three gilts thoroughly in heat to start boar.
- 6 — Keep boars cool.
- 7 — When pen mating allow one young boar to 12 to 15 gilts.

**Handling Gilts Before Breeding**

- 1 — Don't breed gilts until at least seven months old.
- 2 — Breed gilts on third heat period or later.
- 3 — Expose gilts to boar by fence line contact.
- 4 — Limit feed 200 pound gilts until just before breeding.

Figure 2. Example of a buyer-seller adjustment policy guaranteeing boar breeding performance, as approved by the National Association of Swine Records.

**DATE DUE  
SUBJECT TO RECALL  
AFTER 2 WEEKS**

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