

Breeding 101

The two functions of the herd are: 1.) to produce pigs for pork production and 2.) to provide replacement breeders to perpetuate the herd.

This article is meant to be used as a guide to provide basic information. The intention is to take some of the mystery out of breeding. Numbers, timing, and dates are averaged and may vary slightly depending on several factors including hog condition, weather, age, and keeping in mind there are always exceptions.

It must be understood that the number of pigs farrowed represents the combined fertility of the sow and the boar and also reflects the quality of management the sow receives.

Gilts & Sows

There are four stages to all gilts and sows cycles. 1.) Proestrus is just before going into active heat and lasts around one day. Your boar may be interested but she is not receptive. 2.) Estrus is in active heat and sexually receptive. This stage usually lasts 36 to 44/46 hours. 3.) Metestrus is just going out of heat, and 4.) anestrus is no heat. Anestrus usually lasts around 18 days. The gilt or sow is more fertile late on the first day of her cycle or during the second day. Studies show she ovulates anywhere from 18 to 40 hours after her active cycle begins, (this would be later in stage 2).

It's not necessary to know the technical terms but it is important to know the timing of the stages for successful breeding. On average the entire cycle lasts 21 days. 1 day prior to active heat, 2 days approximately in active heat and 18 days no heat.

In general a sow will produce an average of 16 to 18 ova during each heat cycle, but the range is anywhere from zero to 30. Ova are immobile and have a short viable life, usually only a few hours. Some ova will not be fertilized, some will not be viable and some fertilized ova will die in the early stages of development. Gilts on average reach puberty around 6 months of age. Gilts normally produce less ova their first cycle, increasing slightly the second cycle, and considered mature by the third cycle. By waiting to breed an additional 1 ½ months from her first cycle she may produce 1-2 more piglets in her first litter, and as many as 5 more piglets than she would have if bred on her first cycle. Studies show that about 95% of all normal ova are fertilized.

It must be noted that heritability of litter size at farrowing is about 15%, meaning that selection for litter size is possible. Condition and age of gilt, sow and boar combined with good management are equally important factors that are within the farmer's control. We also accept that it's more difficult to get females pregnant and litters are likely to be smaller if mated during the heat of summer.

Boars

Boars on average reach breeding maturity around 6 to 7 months of age with sperm production increasing up to 8 or 9 months of age. A young boar may require a period of adjustment. Instinct tells him what to do but he may exhibit clumsiness his first few attempts.

Mature boar sperm count can be from 40 to 100 billion per ejaculate for live cover. Sperm is mobile and must make its way to the female reproductive organs usually within minutes or a few short hours at most. Interestingly sperm motility is not what takes the sperm from the site of insemination to the site of fertilization. Contractions of the uterus bring in the sperm and their motility is used to penetrate through the cell layer on the outside of the ova to allow fertilization. On average, sperm survive around 30 hours stored in the oviduct, but their fertilizing ability begins to decline within a few hours, possibly before the gilt or sow releases the ova. This is why it's advisable to breed late on the first day or on the second day of the heat cycle. Both ova and sperm have a short life span.

Semen volume and sperm numbers may be affected by age, weather conditions, general health, and reproductive use. Testicles /scrotum are suspended outside the body. Extreme weather conditions, heat or cold can affect their production of viable semen. The testicle is especially sensitive to high temperatures and the effects of cold are normally not noticeable until fairly severe: if you see frostbite, you have poor semen quality. Depending on the severity of stress, sperm quality can be affected for up to 8 weeks as it takes that long for the individual sperm cells to develop and mature in the testes. Boar semen is deposited in both the vagina and the cervix unlike most other farm animals.

Unlike many other animals and even in ideal conditions boars require a few days down time, usually 2-3 between breeding to recoup. This is not so much for the boars overall rest but it allows his body to build and produce healthy sperm in the amounts needed for fertilization in ideal conditions. Recommended boar use is no more than 3 successful mounts before rest. Willingness to mate does not indicate or guarantee conception or fertility. Once mature, a boar maintains the breeding drive every day, while a gilt or sow is receptive only during the heat cycle or 2 days out of every 18 to 21 days or so.

Weight and Age

For optimal results breeders should attempt to mate the gilt or sow and boar near the same age, weight and size. An older heavier boar could injure a smaller gilt or sow possibly permanently breaking down her rear end and causing injury to himself too. A larger boar with longer, taller legs could also possibly penetrate the bladder rather than the cervix due to the angle of penetration. Likewise a young inexperienced boar may become intimidated by a larger sow causing performance failure. The gilt or sow will be standing firm while holding up a few hundred pounds of boar. The boar will be balanced on his rear legs. If possible breeding should be accomplished on level firm ground free of obstacles or pot holes.

Nutrition

Proper nutrition is a large contributing factor for breeding and fertility. Poor diet may cause a loss or reduction of ova and may create an unhealthy uterus environment for fertilization for your gilt or sow. It may also reduce or deform your boar's sperm or cause lack of libido.

Breeders should work with their County Extension office, herd veterinarian, other local producers or reliable sources to determine pasture grasses for their area based on their soil type and weather conditions. Optimal recommendations of protein for swine are 16%. Much more than that is usually eliminated as waste product. Additional protein does not add muscle mass in the mature hog. Protein levels of pasture and forage should be monitored and supplemental feed adjusted depending on seasons, pasture growth and type. The diet should consist of enough protein, calcium, phosphorus, salt and other vitamins and minerals to assure the hog maintains optimal health.

Excess weight on a gilt or sow can create fertility problems. One theory is that it creates an unfriendly environment in the reproductive organs that possibly goes back to survival of the fittest. The theory is that the body believes the overweight hog is storing for the winter months when food is scarce. It adjusts to an unfriendly reproduction environment in order to survive the winter struggles by not producing and feeding a litter. Overweight gilts or sows also are known to experience more difficulty during farrowing and may produce less survivors in their litters.

A balanced diet for gestation must provide nutrients for five different uses:

- To maintain the tissues of her body in a functioning condition.
- To supply the energy she utilizes in her life processes
- The development of her unborn litter
- To build her body reserves of nutrients against the severe drain of lactation
- To provide nutrients to guarantee her own continued growth if she is not mature.

The developing litter grows more during the last third of gestation and more than 80% of its growth is water. The aim for gilts, sows, and the litter is to keep them in good condition and at proper weights. Good pasture not only allows the hog to develop reserve vitamins and minerals in their tissues when supplemental feeding may be inadequate, it also gives her additional exercise which helps in weight control and possibly an easier farrowing. Food intake, type and amounts, are determined by the type available in order to obtain and maintain optimal health and growth. Proper nutrition of pregnant and lactating sows pays off in a larger, stronger litter and a healthy sow.

- Gestation is 114 days or 3 months, 3 weeks, 3 days.

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