Handling **gilts**

Given the relevance of the group of gilts on breeder farms, we must consider as many factors as possible to minimize any losses and maximize their productive life.

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Adaptation of articles published in *International Pig Topics* volume 32, numbers 1 and 2.

It is often said that the production cycle begins with rearing young animals, but it is also heard that gilts are the future of a farm.

In this sense, gilts are the largest group on farms and are the most difficult to work with.

Inseminating gilts in their second or third heat can lead to an increase in the total number of piglets.

Batch handling and synchronization

The facilities, sexual behavior of boars, and most importantly, the return-to-estrus and synchronization of females, are key to the successful management of gilts.

Facilities

Despite being essential to breeding, doubt remains regarding whether pens or crates are better. Each design has its advantages and disadvantages, so the best choice is to combine both designs to optimize your objectives.

Heat detection areas usually combine both, although there are many suitable designs and so it is important to adapt your choices to the farm in question. The general idea of heat detection areas is to house sows in crates and areas for good stimulation and detection in small groups.


Source: MSD Animal Health"

The sexual behavior of the boar

Exposure to the boar normally triggers endocrine changes in females that are associated with the development of follicles.

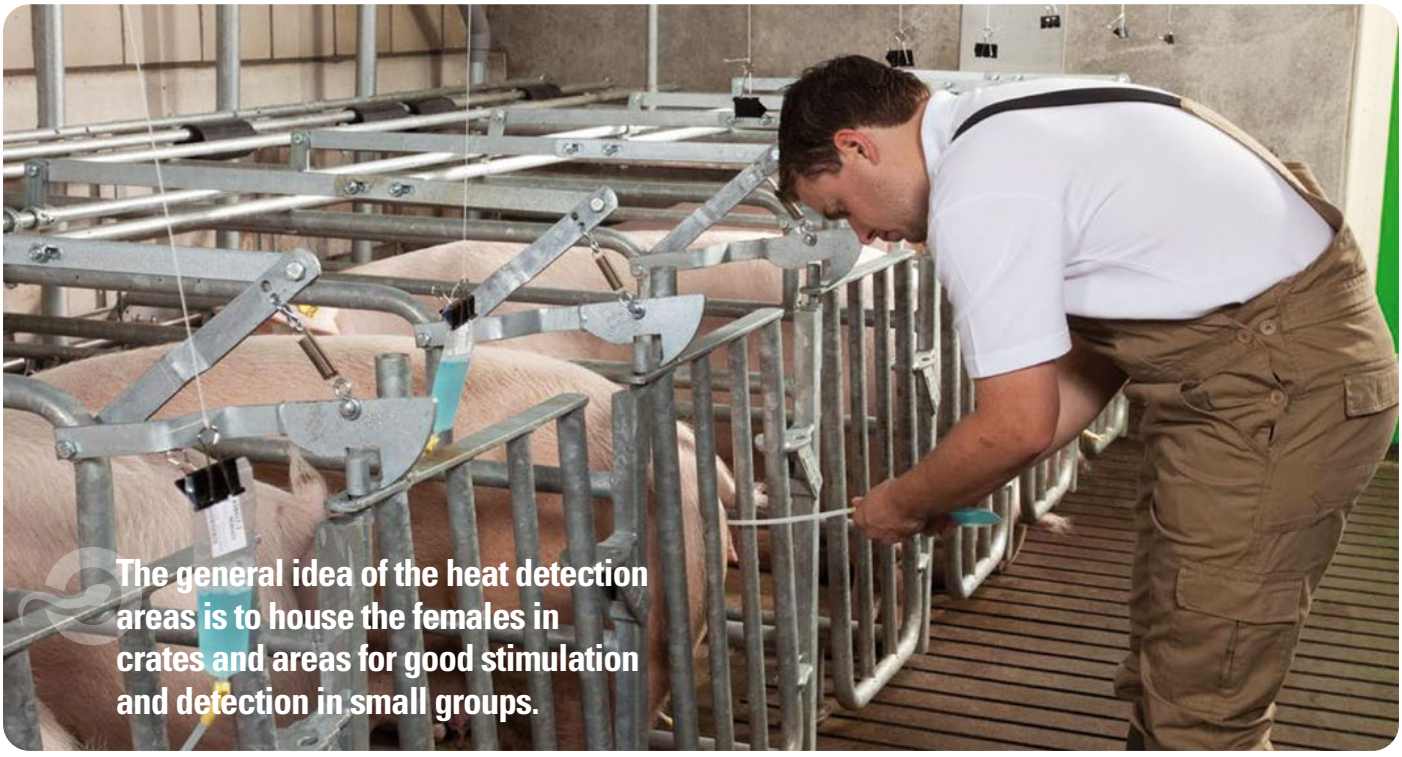
The success of boar exposure for estrus synchronization in gilts:

- Varies between farms.
- Is influenced by various genetic and environmental factors.

Essential steps

The essential steps for correctly managing gilts are as follows:

- When the females are 160–180 days old (5–5.5 months) start providing direct contact with boars every day, at least 5 days a week.
- The boars must be at least 9–10 months old (pheromone production) and have a good libido (10% of males have no libido).
- Group 6–10 females in pens (not crates) measuring 1.5–2.0 m^2 for direct contact with the male for at least 15 min per pen.
- Frequently change the boars used (rotation with three boars for example).
- According to some studies, direct contact with boars can reduce the number of non-productive days (the range between return to estrus and artificial insemination) by up to 10%.
- Estrus can be detected in gilts with a boar or by observing the standing reflex when applying pressure to their backs. Separate the females that have gone into heat.
- Introduce the boar into the pen with the remaining gilts to increase their direct contact with him.
- Register which gilts are in heat for further planning and monitoring.
- Unselected females (those not in heat) should be given a chance (using PG600®) prior to slaughter and before they reach an excessive weight.
- The detection area should be adequately designed to manage contact between the gilts and boars.
- Transfer the females with a registered heat to an area specifically for monitoring the matings.
- Group and monitor the gilts according to their first recorded heat.
- Inseminate (with dead sperm) or mating (using an epididimectomized or vasectomized boar) before the actual artificial insemination to improve the fertility results. This prevents the boars from becoming aggressive.
- Inseminate in the second or third heat to increase the total number of piglets.



The general idea of the heat detection areas is to house the females in crates and areas for good stimulation and detection in small groups.

Source: MSD Animal Health

Age at the time of first heat

Although most prepubertal gilts over 140 days of age will respond to exposure to males, the timing of this response appears to be optimal when gilts are aged 170 to 190 days.

In other words, the same percentage of females usually reach puberty regardless of their age at their first exposure to the boar, but those aged 170–190 days do so in a considerably shorter period than those who were older or younger at the time of exposure.

Return-to-estrus and synchronization

To optimize the return to heat, the facilities must be good and there must be good exposure to the boar. However, timing is also essential to achieve the required number of gilts in the batches.

With a good registration and monitoring system we can achieve the required level of synchronization. Two tools can be used to achieve this synchronization:

- Regumate®: its active ingredient is altrenogest, a synthetic progestin. In female pigs, it acts like the natural progesterone produced by corpora lutea. Treatment can be started at any time during the estrous cycle. If it is started during estrus or shortly after its onset (1–2 days), it will coincide with the normal pattern of progesterone secretion from the corpus luteum.
- PG600®: is a combination of pregnant mare serum gonadotropin (PMSG) and human chorionic gonadotropin (hCG). Gonadotropins should be used in animals that are not cycling; they are safe in all animals and do not have a withdrawal period. Individual treatment with PG600® can be administered to gilts in anestrus (aged > 7 months). Heat will present from 3–6 days after the injection.

Two tools can be used to achieve this synchronization: Regumate® and PG600®.

Source: MSD Animal Health

Regumate®

The active substance in Regumate® is altrenogest, a synthetic progestin. In female pigs, it acts like the natural progesterone produced by corpora lutea.

As long as the gilts ingest altrenogest, their ovaries will be put on pause and follicles will not grow or mature: thus, they will have no interest in the boar.

Altrenogest:

- Exerts negative feedback on the hypothalamus.
- Minimizes the gonadotropin releasing hormone (GnRH) pulses required to stimulate heat activity.

After treatment on day 18, this medication is withdrawn and, after a few hours, the hypothalamus will begin to produce GnRH, which will stimulate the pituitary to secrete FSH (follicle-stimulating hormone) and LH (luteinizing hormone).

The antral follicles (recruited for the next estrous cycle) will respond and begin to grow and produce estrogen. Gilts will accept the male 4 to 7 days after stopping treatment. Ovulation normally occurs 32 to 36 hours after coming into heat.

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Over many years, the combination of PMSG/eCG and hCG (PG600®) has been shown to be highly effective and is easier to use than two separate injections of PMSG/eCG and hCG (Bates *et al.*, 1999; Knox *et al.*, 2001).

The combined product can be used routinely in prepubertal gilts (aged around 6 months) to reduce the number of days between the final selection of batches and the first spontaneous heat.

Individual treatment with PG600® can be administered to gilts in anestrus (aged > 7 months). Heat will present from 3–6 days after the injection.

Reproductive health

When analyzing reproductive diseases, we must remember that viruses, bacteria, and other factors such as mycotoxins or CO_2, can play an important role.

Depending on the pathogen and the time of infection, we might be presented with sick sows, miscarriages, a reduction in the total number of births, mummifications, stillbirths, or low-weight piglets with problems during the lactation and post-weaning phases.

The PRRS virus

Diagnosis of porcine reproductive and respiratory syndrome virus (PRRSv):

- In acute outbreaks on farms: diagnosis is quite direct, especially if the disease affects weaned pigs.
- In endemic or chronic situations: it can be exceedingly difficult to diagnose if the samples used for detection are limited to fetal tissues.

After infection, the virus can be detected for variable amounts of time in:

- Serum.
- Oropharyngeal scrapings: this appears to be the best technique in terms of sensitivity and practicality.
- Lavage fluid (mainly from lung and tonsil tissues).
- Aborted fetuses or piglets that were born already weak.
- Necropsies of young piglets.

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Aborted fetuses or piglets born already weak

Detection of the virus in aborted fetuses can be masked by the rapid degradation of the virus that can happen during fetal tissue autolysis.

An alternative sample type can be obtained from piglets that are born already weak. These samples should be obtained before allowing suckling in order to:

- Avoid interference with the test by colostral antibodies.
- Study the fetal antibodies induced after transplacental infection.

Piglet necropsies

Lung tissue is usually the best specimen from necropsies in young pigs.

The viral antigen in these tissues is increasingly being detected by immunochemistry because, among other reasons:

- Samples suitable for this analysis can be easily preserved (i.e., fixed in formalin rather than being refrigerated or frozen).
- The viral antigen can be visualized in suitable tissue and cell types.

Porcine parvovirus

The diagnosis of porcine parvovirus is fairly straightforward if mummified fetal tissue is available because this is a very resistant virus, and the antigen appears to concentrate in the tissues as the fetus mummifies.

The definitive test for this virus is direct immunofluorescence (DI). Compared to DI for other diseases, this is one of the best systems available for detecting porcine parvovirus. If DI is not available, testing tissue for hemagglutinating activity may be helpful in detecting porcine parvovirus.

The serological analysis of females to perform the hemagglutination test is fairly straightforward, but interpretation can be very frustrating.

The main reason for performing porcine parvovirus serology is to monitor the immune status of gilts before breeding, as an alternative to evaluate acclimatization programs for ubiquitous infections on farms.

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Serological test for porcine parvovirus

The antibody response induced by porcine parvovirus is somewhat different from that of other diseases:

- After experimental infection, serum antibodies are detected within 4–5 days and peak after 11–14 days.
- These titers are quite high and seem to persist at these levels throughout the life of the animal.
- Because of the high titers in females, maternal antibodies in piglets can also be quite high and can persist up to the age of 5–7 months. The half-life of maternal antibodies is 17–19 days. In this sense, the titer will decrease every 17–19 days.
- Another unique feature of porcine parvovirus occurs during vaccination. Vaccination of previously unexposed animals induces a relatively low titer ranging from undetectable levels perhaps up to 1:32. After subsequent exposure to the virus in the field, the titer does not increase in most animals. This is the opposite of what occurs in almost every other disease we deal with. Ultimately, the titers can rise to extremely high levels, although reproductive failure does not appear to be associated with this increase. This may be the main reason why a wide variation in titer levels is observed in sow farms.
- Since the virus is ubiquitous, many gilts become infected before being mated, inducing immunity that lasts for the animal's lifetime. In summary, testing serum for porcine parvovirus in cases of reproductive failure is only useful to exclude the disease, which is rarely the goal because almost all farms are endemically infected with it. In addition, the typical paired sample strategy does not work with this virus, unless the first sample is collected prior to rearing.

Leptospirosis

Infections by *Leptospira* are present in pigs all over the world on both intensive and non-intensive farms, and in backyard pigs and wild boars.

Information about its prevalence can be obtained from the serological analysis of blood samples or fetal fluids using the classic MAT test or ELISA, using antigens that are increasingly serovar specific. PCR is increasingly used for tissue, urine, or fetal material samples, and the accuracy of this technique has increased in recent years.

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Prevalence of leptospirosis in pigs

The prevalence of this virus can widely vary in large populations, from levels of 90% in the pigs taken to slaughter in New Zealand, 20% in Brazil, and 1.2% reported in Poland in individual surveys. It is important to note that when the information is presented at the farm level, a variable proportion of farms will appear to be free of infection.

The prevalence of infection with different serogroups also varies from one country to another, depending on the presence of maintenance hosts and contact between them and the pig population.

When pigs are the maintenance host (the serovars Bratislava, Pomona, and probably also in Tarassovi), infections can be transmitted from one pig to another and between farms, with consequent effects on production.