



March 9, 2022 | [Kebb Borstnez](#)

CATHETERS INSEMINATION SEMEN

Best practice in artificial insemination of sows

Artificial insemination in swine farming has numerous advantages, but even with the ease of handling, some details are fundamental to achieve the best results! Check out the key points of this practice. This article has been written by [Kebb Borstnez](#) during her master thesis in Animal production and health at IFC Araquari Technical and by **Dr. Mariana Groke Marques** doctor in researcher in Embrapa swine and poultry.

Semen

Variation in semen storage temperature is associated with seminal quality. Having your own well-regulated Semen Storage Unit (SSU) is essential. Ideally, semen should be stored at room temperature of 17°C with a maximum variation of $\pm 2^{\circ}\text{C}$.

When transporting doses to the breeding area, use isothermal packaging and transport only the inseminating doses that will be used. Avoid accidental heating of doses before AI. Doses that go on farm but are not used should be discarded. Never return unused doses to storage.



Studies have found that manual homogenization of insemination doses, twice a day during storage does not result in improvement of sperm quality and is not required for semen preservation.

Heat detection



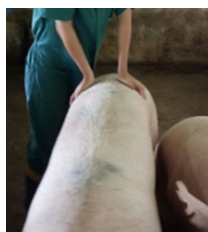
Proestrus is the phase of the sows estrus cycle that precedes estrus or heat. During this phase anatomical and behavioral changes occur in the female swine, such as: edema, hyperemia and increased vulvar secretion. These changes indicate the beginning of the female's attraction to the male, and the male to the female, but WITHOUT sexual receptivity.

Estrus is the moment in which the female has sexual receptivity, presents the male riding reflex (RTM) when lumbar pressure is exerted or when in the presence of a sexually mature male.

Phase for the realization of AI

	Proestrus	Heat / Estrus
Vulva	dema, hyperemia, secretion	Dema, hyperemia, secretion reduced compared to estrus
Behavior	Negative RTM Restlessness and agitation mounts on other females	Positive RTM allows for mounting mounts on other females ears erect in the presence of the male, remains immobile.

Estrus diagnosis should be performed **every day** in newly weaned females and gilts in the herd. After AI and until pregnancy is confirmed, this management is important to observe possible returns to estrus. This diagnosis is made through sexual stimulation of females by exposure to a sexually mature male, around 11 months of age or older, and with a good libido. Ideally, each female should have direct snout-snout contact for about 1 minute with the male. After this period, with the male still in contact with the female, the lumbar pressure tolerance reflex is performed. **Females that show the lumbar pressure tolerance reflex are considered in estrus or heat**



Artificial Insemination

The AI protocol on each farm depends on the heat detection mode (morning and afternoon or morning only) and the female category (suckling or multiparous). Currently estrus detection once per day, in the morning shift, is gaining more and more prominence. For this reason, the AI protocol for both categories is:

- Females showing RTM are inseminated on the same shift, and every 24 hours while in heat. The average number of inseminations per heat varies between 2 or 1 inseminations.
- The two main artificial insemination techniques used on swine in Brazil are :
Conventional or intra-cervical artificial insemination and Post-cervical or intra-uterine artificial insemination.





Conventional AI is performed mainly in gilts due to the physiology of the reproductive tract that is not as developed compared to a multiparous sow. In this case, the catheters used for this category are also different, being **anatomically smaller**. In addition, for this technique, around 3 billion spermatozoa/dose are used in a volume between 80 and 90 mL.

ATTENTION, gilts should start being stimulated on the farm with a sexually mature male from 170 days of age. Ideally, 90% of gilts have their 1st estrus within 40 days, with an ideal weight between 120-140 kg. The first AI should be performed only in the 2nd estrus, and after the completion of a reproductive vaccination protocol.

Intrauterine AI is performed with a **catheter fixed to the cervix and an insert that goes beyond the cervix**. This method optimizes the management of AI, requiring a **shorter handling time, lower volume and number of sperm/dose**, around 1.5 billion in a volume of 40 and 50 mL.

AI management must always be carried out with calm and a well-aligned team. Calm and receptive females = good results !!

Generally, the procedures for performing artificial insemination are:

- Perform a “dry” cleaning of the vulva. Remembering that water is spermicidal, and should not be used in the AI protocol
- Lubricate the catheter (specific lubricant or dose drops)
- Introduce the AI catheter in the dorsum-cranial direction (up and forward)
- Rotate the catheter counterclockwise
- Fix the catheter on the cervix In the case of intrauterine AI, pass the insert through the catheter
- Attach the dose to the tip of the catheter end
- Infuse the dose. In conventional AI, the infusion should be performed slowly (3 to 5 minutes) with lumbar stimulation during management. While, in intrauterine AI (PCAI), the infusion can be

carried out immediately after coupling the dose to the catheter with the aid of light pressure on the dose container

- After the completion of the AI, remove the catheter from the group
- It is important that the females do not lie down during the management of the AI, to avoid possible injury. Performing inseminations in groups of 3 to 5 females at a time is ideal.

In **conventional AI**, it is important to immediately attach an AI belt for lumbar pressure after cleaning the vulva. In addition, the presence of the male is **extremely important**. On the other hand, in intrauterine AI (PCAI), the use of an AI belt is not necessary, and one must **remove the male after estrus identification and wait for approximately 20-30 minutes before handling**. The presence of the male generates cervical and uterine contractions, which in this case, hinder the passage of the catheter and cause reflux of the dose.

In addition to management, it is important to ensure **good nutrition, an ideal body condition score** (between 2.5/3 on a scale of 1 to 5) and **good sanitary** management for the herd.

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