

Researchers at Guelph and Michigan State University are experimenting with different hormone combinations to help gilts reach puberty as soon as possible after joining the breeding herd

by TREENA HEIN

Decreasing the number of non-productive days in the breeding herd is one way to improve farm performance and profitability.

Most of these days usually occur during the gilt entry-to-service interval. Minimizing this interval means that gilts must reach puberty as soon as possible after their arrival on the farm or entry into the breeding herd. This is especially important in the summer months, a time when puberty onset may be delayed.

Being able to bring gilts into estrus also allows for predictability in the supply of service-ready gilts, giving producers the ability to meet weekly breeding targets.

The physiological and behavioural changes associated with the estrus cycle are controlled by hormones produced by the endocrine system of the pig. In practice, a common method used to stimulate the onset of estrus in gilts is the injection of hormones. "Hormone products for the control and synchronization of the estrus cycle in pigs are available," says Dr. Glen Cassar of the Department of Population Medicine at the University of

Finding a way to synchronize estrus and ovulation

Guelph. "Our aim is to use these approved products to have gilts available to be bred when required by pig producers."

Cassar is collaborating with Dr. Robert Friendship, also at the University of Guelph, and Drs. Roy Kirkwood and Rodrigo Manjarin at Michigan State University to develop a protocol to synchronize estrus and ovulation in gilts using different combinations of hormones.

"PG 600 is a hormonal preparation known to be effective for the induction of estrus and ovulation in prepubertal gilts," says Cassar. "It's made up of 400 IU (international units) of equine chorionic gonadotrophin (eCG) and 200 IU of human chorionic gonadotrophin (hCG). The label recommendation for PG600 is to treat gilts of at least 85 kilograms live weight and 165 days of age. Further, it is known that the estrus response to PG600 improves as gilts get heavier."

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However, experience has shown that, when PG600 is injected into prepubertal gilts, up to 30 per cent of the gilts do not show behavioural estrus, which is required for successful breeding. Researchers also know that, based on blood progesterone levels two weeks after treatment, some of the non-responding gilts do appear to have ovulated.

"The reason for the 30 per cent non-estrus response is not known," says Cassar. "It is possible that the ovaries of some gilts are relatively refractory to hormone stimulation. Or it may be that some gilts have relatively mature follicles on their ovary at the time of PG600 injection and the hCG component causes them to be ovulated. If this happens, there will be an increase in blood progesterone before the gilt is ready to exhibit behavioural estrus. This premature elevation of progesterone will block estrus behavior."



Dr. Glen Cassar

in gilts

Cassar adds: "If this is true, the response to eCG alone (e.g. Pregnecol) would remove the ovulation effect and result in a more predictable response. This theory remains to be examined."

Friendship and Cassar have, therefore, been trying different dosages of eCG alone but, at this point, it is too early to make any recommendations. "The results have not been consistent," Cassar notes. "Some hormone treatments (e.g. PG600 or Pregnecol) are designed to be effective only if the gilts have never had an estrus cycle, but producers are not always sure that this is the case. This could be a reason for inconsistent results."

Experiments have also been done using eCG to induce estrus followed by another hormone, Lutropin, to synchronize ovulation. "This has worked well for us in weaned sows and we are also trying it in gilts," says Cassar.

In experiments conducted in Michigan and Spain, Kirkwood and Manjarin have been trying different levels of the components of PG600 in an effort to get a more predictable response. There are no results available yet.

"In the future we will continue to work at finding a protocol which works reliably for prepubertal gilts, and will also experiment with synchronizing gilts that are already cycling," says Cassar.

To do this, the researchers will experiment with Altrenogest, an orally active product which has progesterone-like activity. "When Altrenogest is fed to a group of gilts, growth of follicles on the ovaries is abated and ovaries remain in a quiescent state for the duration of Altrenogest treatment, which is usually 14 to 18 days," Cassar says.

"When Altrenogest treatment is stopped, follicular growth ensues and gilts display synchronized estrus."