Kansas Agricultural Experiment Station Research Reports

Volume 0
Issue 10 *Swine Day (1968-2014)*

Article 273

1983

Estrous synchronization and scheduled artificial insemination for gilts

Duane L. Davis

Jeffrey S. Stevenson

W E. Schmidt

Estrous synchronization and scheduled artificial insemination for gilts

Abstract

Gilts were artificially inseminated on the fifth, sixth and seventh days after estrous synchronization with altrenogest (scheduled AI). Contemporary controls also were synchronized but were checked for estrus twice daily. Scheduled AI gilts had farrowing rates and litter sizes similar to controls. Altrenogest is not presently available to pork producers but these results suggest that it could be used in combination with artificial insemination to schedule breeding according to a predetermined schedule.; Swine Day, Manhattan, KS, November 10, 1983

Keywords

Swine day, 1983; Kansas Agricultural Experiment Station contribution; no. 84-174-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 442; Swine; Estrous synchronization; Artificial insemination; Gilts

ESTROUS SYNCHRONIZATION AND SCHEDULED ARTIFICIAL INSEMINATION FOR GILTS

Duane L. Davis, Jeffrey S. Stevenson and
William E. Schmidt

Summary

Gilts were artificially inseminated on the fifth, sixth and seventh days after estrous synchronization with altrenogest (scheduled AI). Contemporary controls also were synchronized but were checked for estrus twice daily. Scheduled AI gilts had farrowing rates and litter sizes similar to controls. Altrenogest is not presently available to pork producers but these results suggest that it could be used in combination with artificial insemination to schedule breeding according to a predetermined schedule.

Introduction

Efficient pork production requires that animals be handled according to predetermined schedules. However, breeding is a difficult task to schedule and gilts, in particular, often do not fit into predetermined schedules. This led us to investigate the possibility of artificially inseminating gilts at a prescheduled time after estrous synchronization.

Experimental Procedures

Crossbred gilts (Yorkshire x Duroc) were estrous synchronized by feeding altrenogest for 18 consecutive days. Altrenogest is not presently available to swine producers but likely will be in the next few years. Altrenogest has the effect of the naturally occurring hormone, progesterone, and synchronizes estrus by suppressing estrus and ovulation in all of the gilts during the 18-day feeding period. After the drug is withdrawn, the gilts all start to grow follicles on their ovaries at the same time and most show estrus 4 to 7 days later. We used our previously collected data to determine the optimum time to artificially inseminate (AI) gilts after the last altrenogest feeding. These data indicated that three inseminations, on days 5, 6 and 7 after the last altrenogest feeding, would give the best results. Therefore, gilts in the scheduled AI group were artificially inseminated with 100 ml of pooled semen from at least two boars at noon on the appropriate days. Gilts in this treatment group were not checked for heat and were housed in individual gestation stalls during and after the altrenogest feeding period. An equal number of contemporary gilts were assigned randomly as controls and were handled the same as the scheduled AI group, except that they were removed from their stalls twice daily, beginning 3 days after the last altrenogest feeding, for estrous detection. Control gilts were inseminated artificially 12 and 24 hours after first detected estrus with semen from at least two boars. This is our standard breeding procedure. All gilts, control and scheduled AI, were in

individual gestation stalls, and had nose contact with a boar during AI. A blood sample was collected from all gilts approximately 2 weeks after last altrenogest feeding and serum progesterone measured by radioimmunoassay. This allowed us to determine which gilts had ovulated after the synchronization treatment. This was necessary because scheduled AI gilts were not checked for estrus. Measuring serum progesterone also allowed us to determine if any of the control gilts not detected in heat actually had ovulated.

Results and Discussion

Fertility of gilts in the scheduled AI group was essentially the same as for control gilts (table 1). Farrowing rate (gilts farrowing/gilts cycling x 100) was approximately 80% for both groups and this is very close to the average farrowing rate for our herd. Control gilts tended to come into estrus later than in our previous studies (6.2 vs about 5.5 days after last altrenogest feeding in our prevous studies). However, despite this delay in estrus, scheduled AI still achieved fertility equivalent to controls. The variation in responses encountered over the five trials is in table 2. These results are encouraging and suggest that it may be possible to schedule AI on commercial hog farms. This could be helpful for allowing increased use of AI and in scheduling farrowing facilities.

Table 1. Scheduled AI After Altrenogest: Results of 5 Trials

Item	Treatment	
	Control	Scheduled
No. of gilts:		
Assigned	101	100
Inseminated	87	100
Cycled[a]	92	84
Farrowed (%)[b]	73 (79)	67 (80)
Pigs born:		
Alive	9.8	10.1
Total	10.7	10.9
Days to estrus	6.2	---

[a]Based on serum progesterone 2 weeks after the last altrenogest feeding.

[b]As a percent of gilts cycling.

Table 2. Scheduled AI: Range of Observations Over 5 Trials

Item	Treatment	
	Control	Scheduled
No. gilts assigned	10-25	10-25
Gilts cycled, %[a]	85-100	65-100
Days to estrus	5.8-7.0	---
Gilts farrowed,[b] %	65-100	61-100
Total pigs born	9.0-12.1	10.3-11.8

[a]Based on serum progesterone 2 weeks after the last altrenogest feeding.

[b]As a percent of gilts cycling.