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Litter size in gilts after altrenogest and flushing

Abstract

Effects of estrous synchronization and flushing on litter size in gilts were compared on two farms. Estrus in gilts was synchronized with altrenogest for 14 days or estrous cycles were left unaltered (control group). One-half of the synchronized gilts were flushed by feeding supplemental ground milo (3.4 lb) in addition to 4 lb of a basal milo-soybean meal diet that all gilts received. Additional milo was provided from day 8 of altrenogest treatment until the first day of estrus. Response on the two farms differed. Altrenogest-treated gilts from one farm farrowed about one more pig than controls, regardless of whether they were flushed or not. On the second farm, litter size for control and altrenogest-treated gilts was similar but gilts that received both altrenogest and additional milo (flushed) farrowed about 1.5 more pigs. Reasons for farm differences are unknown but could be related to differing genetic background and farm environment of the gilts studied.; Swine Day, Manhattan, KS, November 15, 1984

Keywords

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LITTER SIZE IN GILTS AFTER ALTRENOGEST AND FLUSHING [1]

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Summary

Effects of estrous synchronization and flushing on litter size in gilts were compared on two farms. Estrus in gilts was synchronized with altrenogest for 14 days or estrous cycles were left unaltered (control group). One-half of the synchronized gilts were flushed by feeding supplemental ground milo (3.4 lb) in addition to 4 lb of a basal milo-soybean meal diet that all gilts received. Additional milo was provided from day 8 of altrenogest treatment until the first day of estrus. Response on the two farms differed. Altrenogest-treated gilts from one farm farrowed about one more pig than controls, regardless of whether they were flushed or not. On the second farm, litter size for control and altrenogest-treated gilts was similar but gilts that received both altrenogest and additional milo (flushed) farrowed about 1.5 more pigs. Reasons for farm differences are unknown but could be related to differing genetic background and farm environment of the gilts studied.

Introduction

At least one-third of the swine in U.S. breeding herds are gilts. Number of pigs born in first litters are often less than desired and the number of eggs ovulated is thought to limit litter size for gilts. Flushing (providing extra feed for 10 to 14 days before breeding) will increase ovulation rate by 1.5 to 2 eggs. However, increased ovulation rate often does not result in larger litters. Possibly this is because flushing treatments continue after breeding when high feed intake is known to decrease embryo survival.

By combining a flush treatment with estrous synchronization it would be possible to 'flush' only during the 10 to 14 days immediately preceding estrus when ovulation rate is sensitive to factors associated with increased feed intake. Synchronizing estrus for gilts also would simplify limiting feed intake as soon as gilts are detected in estrus. Herein, we report the results of an experiment that compares various reproductive traits for synchronized-flushed, nonflushed-synchronized, and nonsynchronized-nonflushed gilts.

Procedures

This experiment was conducted on two farms. Two-thirds of the gilts assigned for breeding were estrous-synchronized by feeding altrenogest for 14 days. Altrenogest is not cleared by the U.S. Food and Drug Administration for use in pigs at the present time. All gilts were fed 4 lb of a milo-soybean meal diet

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[1] We gratefully acknowledge the donation of altrenogest (Regu-mate®) by Dr. Stephen K. Webel and Roussel-UCLAF, Paris, France, and Morrison Pork, Smolan, KS, for allowing part of this study to be conducted on their farm.

once each day. One-half of the synchronized gilts were fed an additional 3.4 lb ground milo beginning on day 8 of altrenogest treatment.

On farm A, all gilts entering the breeding pool each week were assigned randomly to one of the three treatment groups. Estrous detection began 4 days after the last altrenogest treatment and continued for 17 days. Estrous detection for controls began 10 days before their contemporary synchronized gilts and continued for 27 days. Only conception for first services is included in data summaries. Gilts were penned in groups of 6 to 10 during altrenogest treatment and group fed 1 lb/gilt of the diet containing altrenogest (15 mg/lb). After this feed was consumed, an additional 3 lb/gilt of the diet was fed. Gilts was penned in groups of up to 6 beginning 4 days after altrenogest, during heat check periods, and during breeding. Estrus was checked once each day and 86% of the gilts were bred only once. The remaining 14% of gilts were re-mated the second day of estrus to the same boar. Gilts were approximately 7 mo old when mated. Gilts were penned after breeding in gestation stalls and fed 4 lb/day until just before farrowing when they were moved to a farrowing crate.

On farm B gilts were bred when either approximately 7 or 8 mo old. Gilts were penned in a finishing barn until about 20 days before the start of breeding. At this time they were moved to outside lots and exposed to a boar. Five to 8 days later, gilts were moved to a gestation building, penned individually in gestation stalls, and altrenogest treatment was initiated for two-thirds of the gilts. Flushing and altrenogest treatments were as for farm A, except that all gilts were fed individually. Gilts were checked for estrus twice daily for 10 days beginning 4 days after the last altrenogest treatment. All gilts were inseminated artificially twice at about 12 and 24 hr after first detected estrus, using semen from at least two boars. Gilts remained in their gestation stalls until 30 to 35 days after artificial insemination when they were pregnancy checked. Pregnant gilts were moved in groups of 10 to 20 to outside lots where they remained until just before farrowing when they were moved to a farrowing crate.

Results and Discussion

Results for farms A and B are listed in tables 1 and 2, respectively. Proportion of gilts detected in estrus and farrowing were not affected by treatments. However, treatment did affect litter size. For farm A, altrenogest-treated gilts farrowed more ($P<.08$) pigs than controls. Gilts from farm B responded somewhat differently in that gilts receiving altrenogest alone had litter sizes similar to controls but gilts that were both flushed and treated with altrenogest farrowed 1.5 more total pigs ($P<.05$) and 1.4 more live pigs than either controls or synchronized non-flushed gilts. Reasons for these farm differences are not known.

Altrenogest has been shown to increase ovulation rate in some studies and this may be the explanation for the improved litter size on farm A. Flushing also increased ovulation rate in most studies. The reason gilts from farm A responded to altrenogest alone with increased litter size but those from farm B required the combination of altrenogest and flushing is not known. We are continuing to study the effects of altrenogest and flushing with the objective of developing procedures to increase litter size in gilts in a consistent manner for all farms.

Table 1. Estrous Response and Litter Traits for Farm A.

Item	Treatments		
	Control	Synchronized	Synchronized and Flushed
No. of gilts			
Assigned	138	144	145
Detected in estrus,(%)	92 (67%)	102 (71%)	106 (73%)
Died or lost indentification	6	6	2
Farrowed	54	65	62
% of assigned	39	45	43
% of mated	59	64	58
Litter traits			
Total born	8.7	9.9[a]	9.5[a]
Born alive	8.4	9.2	8.8

[a]Gilts fed altrenogest farrowed more pigs than controls (P<.08).

Table 2. Estrous Response and Litter Traits for Farm B.

Item	Treatments		
	Control	Synchronized	Synchronized and Flushed
No. of gilts			
Assigned	74	72	72
Detected in estrus,(%)	44 (59%)	54 (75%)	56 (78%)
Farrowed	37	44	45
% of assigned	50%	61%	63%
% of bred	84%	81%	80%
Litter traits			
Total born	9.0	8.9	10.5[a]
Born alive	8.5	8.5	9.9[a]

[a]Gilts fed altrenogest and flushed farrowed more pigs than control or synchronized gilts (P<.05).