Ovulation variability in sows and gilts

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Introduction

To achieve good reproductive performance, adequate timing of insemination close to ovulation is needed (1). At farm level, multiple inseminations (>2 semen doses) are often recommended to compensate for variable and unknown ovulation time. Efficient prediction or control of ovulation could improve labor costs (Soede et al 2002). The objective of this work was to investigate factors associated with variability of ovulation in different herds and possible impacts on reproduction.

Materials and Methods

The study was performed in 4 conventional Breton farms having from 300 to 1000 sows, weaning at 3 weeks, doing 2 to 4 insemination/sow, herd fertility >85%. Measurements were performed on several batches from (?) a total of 314 gilts and weaned sows. They included daily recordings of estrus and ovarian status using transcutaneous ultrasound technique (3.5-5 Mhz probe, Exago®, ECM) (2). Information about number and timing of inseminations (AI), backfat (BF) at AI, weaning-to-estrus (WTE) or last altrenogest-to-estrus intervals in gilts (ATE), parities, previous litter size or lactation duration, health status, treatments, and subsequent performances was collected. Results were analyzed using GLM or LOGISTIQ procedures (SAS 9.2) for quantitative or qualitative data respectively.

Results

Within 8 days after weaning, 97.5% females exhibited estrus and ovulated, 2.5 % remained in anestrus and one ovulated silently. Ovulation occurred at 76 ± 8 % of estrus duration, 44.1 ± 18.7 h after the onset of estrus, with large individual variations (-3 h to +105 h).
Gilts had shorter estrus and ovulated earlier ($p<0.01$). Late weaning-to-estrus interval was associated with earlier ovulation, and shorter estrus. Weaning to estrus or last altrenogest-to-estrus intervals where the best predictors of estrus duration and ovulation time ($p<0.01$) in 3 of 4 farms. Table 1

		WTE or ATE (days)			
		<4	5	6	≥7
Sows	N	101	90	38	3
	estrus/ovulation (h)	49,7a	43,1b	34,5c	21,1c
Gilts	N	-	14	39	14
	estrus/ovulation (h)	-	45,3a	30,6b	21,5c

[a,b] values with different superscript within a row were significantly different (?)

Previous litter size was unrelated to ovulation criteria but lactation length impacted weaning to-ovulation interval. BF at AI had no effect on sows but was related to last altrenogest-to-ovulation interval ($p<0.05$) in gilts. Fertility was high (83.6 to 96 % according to farms) and poorly related to ovulation criteria. However, it increased ($p<0.05$) with the number of AI falling into the interval of [-24;+12 h] around ovulation. Low BF at AI (≤13 mm) was associated with lower fertility in gilts.

Conclusions and Discussion

Results confirmed variability of ovulation and the importance of good estrus detection procedures to adapt AI protocols. Impact of parity, BF and previous lactation should be further investigated.

References

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