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Age of Breeding and Reproductive Performance of Gilts

George W. Libal
South Dakota State University

Richard W. Wahlstrom

South Dakota State University
Brookings, South Dakota
Department of Animal Science
Agricultural Experiment Station
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It has been a standard recommendation that gilts be bred when approximately 8 months old so they farrow at approximately a year of age. This would allow the gilt to reach an adequate weight, reach puberty and experience three estrous cycles which should increase litter size. This recommendation was made at a time when pigs reached market weight at approximately 7 to 8 months of age. This management of the gilt had fit very well into the practice of farrowing twice a year at 6-month intervals.

At a time when pigs reach market weight at 5 to 6 months of age, when continuous farrowing allowing gilts to fit into the farrowing program any time of the year is more popular and when feed costs are very high for the 2 to 3 months of unproductive time while the gilt is reaching 8 months of age, it is time to re-evaluate our recommendation of age at which gilts should be bred. The following data are from an initial experiment designed to compare reproductive performance of gilts bred at 6 months of age (approximately first estrus) with gilts bred at 8 months of age (approximately third estrus).

Experimental Procedure

A total of 70 crossbred gilts were allotted to two breeding and management regimes on the basis of weight and ancestry when approximately 5½ months old. Forty of the gilts were selected to be farrowed and 30 of the gilts were selected to be slaughtered after 25 days of pregnancy. The farrowing group averaged about 211 lb. and the slaughter group averaged about 196 lb. at selection. Each of these groups was then divided into two breeding groups, one group to be bred at 6 months of age and one group to be bred at 8 months of age. From the time of allotment the 6-month group was fed 5 lb. and the 8-month group fed 4 lb. of a standard gestation ration shown in table 1. The feed was hand-fed in individual feeding stalls to insure that each gilt received her measured amount. The gilts were housed in wooden floor, bedded houses in dirt lots.

When the average age of each group was either 6 months or 8 months, one of two littermate Hampshire boars was hand bred in a single service to the gilts when in standing estrus. The breeding period was 4 weeks. Date of breeding, weight at breeding and age at breeding were recorded for each gilt. At farrowing sow 110-day weights and pig birth weights as well as 7-, 14- and 21-day sow and pig weights were recorded. Gilts in the slaughter group were slaughtered in the S.D.S.U. Meat Laboratory. Weight at slaughter as well as number of corpora lutea (an indication of the number of ova shed) and embryos at 25 days of pregnancy were recorded.

Results and Discussion

Summaries of the gilt, pig and litter data for the gilt farrowing groups are shown in tables 2 and 3. Of the 20 gilts allotted to each breeding group, 19 from the 6-month group and 20 from the 8-month group were serviced and 14 from the 6-month group and 16 from the 8-month group farrowed. Average age at breeding was 6.5 months and 8.5 months for the two groups. Although initial allotment weights were approximately equal, gilts in the 8-month group averaged approximately 50 lb. more than gilts in the 6-month group at breeding and after 110 days of gestation. Gestation weight gains were approximately equal. Gilts from the 6-month group gained weight (7.3 lb.) during a 21-day lactation period while gilts from the 8-month group lost weight (-9.6 lb.).

The 8-month group of gilts averaged 0.5 more pigs at birth and 1.0 more pigs after 21 days lactation. However, these differences were not statistically different. The litter weights at birth were significantly heavier for the 8-month group. Heavier litter weights after 7, 14 and 21 days lactation were also observed, but these differences were not statistically significant. Average pig birth weights were statistically the same at birth but favored the 8-month group of gilts. Average pig weights after 7, 14 and 21 days lactation were significantly greater for the 8-month group of gilts.

A summary of the gilt data for the slaughter groups of 6- and 8-month gilts is shown in table 4. Of the 15 gilts allotted to each breeding group, 11 were serviced and 7 were pregnant in the 6-month group and 12 were serviced and 9 were pregnant in the 8-month group after 25 days of gestation. Although gilt weights were approximately equal between breeding groups when allotted, gilts from the 8-month group were about 60 lb. heavier at breeding and at slaughter than gilts from the 6-month group. Average ages at breeding were similar to those of the farrowing groups. No statistical differences in number of corpora lutea indicating ovulation sites or number of embryos at slaughter were observed. However, average number of corpora lutea and embryos both favored the 8-month group.

Summary

Seventy crossbred gilts were allotted to two breeding groups, one to be bred at 6 months of age receiving 5 lb. of feed per day and one to be bred at 8 months of age receiving 4 lb. of feed per day. Twenty gilts from each group were designated to farrow and 15 gilts of each group were designated to be slaughtered after 25 days of pregnancy. Average age at breeding was 6.5 and 8.5 months for the two groups.

In the farrowing group the 8-month gilts were about 50 lb. heavier at breeding and at 110 days gestation. They also lost weight during lactation compared to the 6-month group which gained weight. No significant differences were seen in number of pigs born or weaned. However, average number of pigs at both of these times favored the 8-month group. Litter weight at birth and average pig weight at 7, 14 and 21 days were greater for the 8-month group.

In the slaughter group the 8-month gilts weighed approximately 60 lb. more at breeding and at slaughter. No statistically significant differences in number of corpora lutea or number of embryos were observed. However, average numbers of both favored the 8-month group.

Table 1. Composition of Gestation Diet

Ingredient	Percent of diet
Ground yellow corn	69.0
Ground oats	10.0
Dehydrated alfalfa meal (17%)	10.0
Soybean meal (44%)	7.0
Dicalcium phosphate	3.0
Trace mineralized salt (high zinc)	0.5
Vitamin premix[a]	0.5

[a] Provided per lb. of diet: vitamin A, 2000 IU; vitamin D, 200 IU; riboflavin, 1.25 mg; pantothenic acid, 5 mg; niacin, 10 mg; choline, 50 mg and vitamin B_{12}, 7.5 micrograms.

Table 2. Gilt Data of the Farrowing Group

	Age at breeding	
	6 months	8 months
Number of gilts	20	20
Number of gilts serviced	19	20
Number of gilts farrowed	14	16
Avg. initial weight, lb.	213.1	209.5
Avg. age at breeding[a]	195.6	253.5
Avg. breeding weight, lb.[a]	233.5	283.9
Avg. 110-day weight, lb.[b]	355.1	402.5
Avg. gestation weight gain, lb.	120.2	124.1
Avg. 21-day lactation weight change, lb.[a]	+7.3	-9.6

[a] Significant difference ($P<.005$).
[b] Significant difference ($P<.05$).

Table 3. Pig and Litter Data of the Farrowing Group

	Age of breeding	
	6 months	8 months
Avg. no. of live pigs		
Birth	8.6	9.1
7 days	6.8	7.5
14 days	6.5	7.1
21 days	6.0	7.0
Avg. litter weight, lb.		
Birth[a]	24.4	29.2
7 days	34.0	39.6
14 days	48.3	58.4
21 days	62.3	77.9
Avg. pig weight, lb.		
Birth	2.9	3.3
7 days[b]	4.4	5.3
14 days[b]	7.0	8.4
21 days[b]	9.6	11.3

[a] Significant difference (P<.05).
[b] Significant difference (P<.025).

Table 4. Gilt Data of the Slaughter Group

	Age at breeding	
	6 months	8 months
Number of gilts	15	15
Number of gilts serviced	11	12
Number of gilts pregnant	7	9
Avg. initial weight, lb.	196.0	195.2
Avg. age at breeding, days[a]	189.7	256.3
Avg. breeding weight, lb.[a]	215.0	273.4
Avg. slaughter weight, lb.[a]	248.0	309.9
Avg. number of corpora lutea	11.7	12.2
Avg. number of embryos	7.1	9.4

[a] Significant difference (P<.005).