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George W. Libal
South Dakota State University

Richard C. Wahlstrom

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South Dakota State University
Brookings, South Dakota

Department of Animal Science
Agricultural Experiment Station

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Effect of Early Breeding on Reproductive Performance

George W. Libal and Richard C. Wahlstrom

Research was initiated at this station about two years ago on the effect of early breeding on reproductive performance and a preliminary report was presented at the 1974 Swine Day (A.S. Series 74-32). It was reported that, although differences were not significant, gilts bred at 8 months farrowed and weaned slightly more pigs and pig weights were greater than for gilts bred at 6 months. Although early breeding could save the feed costs incurred during an additional 2-month unproductive period, production would need to be similar for this system to be profitable.

The objectives of the experiment reported herein were to obtain further data on breeding gilts at 6 or 8 months of age and to determine if age of initial breeding has any effect on production of the second litter.

Experimental Procedure

Fifty-six crossbred gilts were allotted into two subgroups on the basis of weight and ancestry when approximately 6 months old. One group was bred at first estrus at 6 months of age and the other group was bred at approximately 8 months of age. The same two littermate Yorkshire boars were used for breeding both groups. Gilts were hand mated, a single service, when in standing estrus. The breeding period was limited to 4 weeks. Date of breeding, weight and age at breeding were recorded. Prior to farrowing sows were weighed at 110 days of gestation and gestation gain calculated to that time. Weights were also obtained immediately after farrowing and at weaning time to obtain lactation weight change. Pigs were weighed individually at birth and weaning.

From the time of allotment gilts were hand fed the gestation ration shown in table 1 in individual feeding stalls. The 6-month group was fed 5 lb. per day and the 8-month gilts 4 lb. per day to farrowing. During lactation the sows all received a lactation diet ad libitum. After weaning at 28 days both groups were fed 4 lb. of the gestation ration per day during the second gestation period. Time from weaning to breeding was observed and recorded. The same two boars were used in breeding for the second litter as for the first litter, but the breeding period was limited to 21 days.

Results

Summary data for the first farrowing are presented in table 2 and data for the second farrowing in table 3. There was an equal number of gilts bred in both age groups. However, only 18 of 28 or 64% of the 6-month gilts farrowed while 24 of 28 or 86% of the 8-month gilts farrowed. The gilts were hand mated only once and it is possible that a second service may have increased conception rate and farrowing percentage. It is not known whether the 6-month gilts had had a previous estrus prior to mating, but it is assumed that they may have been bred at first estrus. This group of gilts averaged about 6.6

months of age at breeding and were nearly 50 lb. lighter than the 8-month gilts at breeding time. Gain during gestation was slightly greater for the 6-month gilts. However, they were fed 5 lb. per day during this period compared to 4 lb. per day for 8-month gilts.

The 8-month gilts averaged 0.5 more pigs at birth and at 28-day weaning than did the 6-month gilts. Mortality from birth to weaning was high at approximately 33% in both groups and was due to the loss of several complete litters due to failure of the sows to milk. Average pig weights at birth and weaning were less for the younger 6-month gilts. Since these gilts also had fewer pigs, litter weights were reduced for this group. The 8-month gilts weaned 19 lb. more total weight per litter than did the sows bred at 6 months. Lactation weight change was relatively similar with the younger sows losing about 3 lb. and the older group gaining 2 lb. during the 28-day lactation period. The data would indicate that the 6-month gilts may not have produced as much milk during lactation as the 8-month gilts.

All sows were observed for signs of estrus for 21 days following weaning. All of the sows in the 6-month group came into estrus within a 10-day period. However, only 19 of the sows in the 8-month group (79%) were observed in estrus during a 21-day period. These 19 sows all came into estrus within 14 days and averaged 6.4 days from weaning to estrus, which was similar to the 5.1 days for the other group. Only 61% of the sows bred in the 6-month group farrowed compared to 100% of those bred in the 8-month group. Of the sows initially bred at 8 months 68% farrowed two litters and slightly less than 40% of the original sows bred at 6 months farrowed their second litter. Again, it should be emphasized that only one service was used during both breeding periods. However, if these results are repeatable, it would certainly be an advantage for delaying initial breeding to 8 months of age.

There was no difference in gestation weight gain between groups or in number of live pigs farrowed at the second farrowing. Pigs were again lighter at birth from sows in the 6-month group. However, these pigs weighed slightly more when weaned at 28 days. It is possible that the somewhat higher mortality of pigs from 6-month sows may have eliminated more smaller pigs. Litter weights at weaning were similar between groups. Sow gains during lactation were 1 and 17 lb. for 6- and 8-month sows, respectively.

Summary

Fifty-six crossbred gilts were divided equally into two groups just prior to 6 months of age. One group was bred at 6 months and the other group when 8 months old. Gilts bred at 8 months were about 50 lb. heavier at breeding and at 110 days of gestation. A higher percentage of bred gilts farrowed from the 8-month group and they farrowed and weaned slightly larger and heavier litters. A higher percentage of the 8-month group farrowed second litters. Pig birth weight was greater, but there was no significant difference in number or weight of pigs weaned in the second litter. Sows from the 8-month group averaged about 30 lb. heavier than the 6-month group of sows after weaning the second litter.

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 mineral salt, 0.8% 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. Effect of Breeding at Six and Eight Months on Reproductive Performance (First Litter)

	Age at breeding	
	6 months	8 months
Number gilts serviced	28	28
Number farrowed	18	24
Avg. initial weight, lb.	224.2	227.1
Avg. age at breeding, days[a]	202.1	246.0
Avg. breeding weight, lb.[a]	231.5	280.4
Avg. 110-day weight, lb.[a]	346.7	399.5
Avg. gestation weight gain, lb.	115.6	107.6
Avg. 28-day lactation weight change, lb.	-3.3	+1.8
Avg. number live pigs born	8.9	9.4
Avg. number pigs weaned, 28 days	5.9	6.4
Avg. pig birth weight, lb.	2.7	2.9
Avg. pig weaning weight, 28 days, lb.	12.9	14.3
Avg. litter birth weight, lb.	22.1	26.6
Avg. litter weaning weight, lb.	75.4	94.4

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

Table 3. Effect of Six and Eight Month Breeding on Reproductive Performance (Second Litter)

	Age at first breeding	
	6 months	8 months
Number sows exposed	18	24
Number sows serviced	18	19
Number sows farrowed	11	19
Days, weaning to breeding	5.1	6.4
Avg. breeding weight, lb.	306.9	332.1
Avg. 110-day weight, lb.	414.5	433.6
Avg. gestation weight gain, lb.	107.6	104.1
Avg. 28-day lactation weight change, lb.	+0.9	+16.8
Avg. number live pigs born	9.7	9.7
Avg. number pigs weaned, 21 days	7.2	8.0
Avg. pig birth weight, lb.[a]	2.7	3.4
Avg. pig weaning weight, 28 days, lb.	15.5	13.9
Avg. litter birth weight, lb.	28.7	32.7
Avg. litter weaning weight, 28 days, lb.	116.6	114.5

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