Relationships Between Sow Condition and Productivity and Effectiveness of Controlling Condition by Individual Feeding

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Story in Brief

The farrowing and weaning records for 141 litters were used to evaluate the relationship between sow condition score and differences in productivity. Each sow was scored for condition using a 9 point scale at breeding, farrowing and weaning and these scores were correlated with litter size and pig weights. Neither breeding scores or farrowing scores accounted for a significant portion of the variation in sow productivity, but gilts with higher condition scores at farrowing and those showing greatest increases in condition during gestation tended to farrow smaller litters. Condition scores at weaning and changes in condition score during lactation were correlated with litter production in that loss of condition during lactation and lower condition scores at weaning were associated with larger, heavier litters.

The variation in condition scores at farrowing among sows limited fed using troughs during gestation was compared to the variability among sows limited fed during gestation using individual sow feeding stalls. The variation in scores among the 95 sows fed in troughs was about twice as large as the variation obtained among the 246 sows fed in feeding stalls.

Introduction

Feeding for optimum production in sows requires controlled feed intake during various stages of production. Research has shown that flushing sows a couple of weeks prior to breeding by increasing feed intake tends to increase ovulation rate while restricting consumption immediate-

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ly following breeding and during gestation reduces embryo mortality. Optimum productivity depends on keeping sows in proper condition at all stages of the reproductive cycle.

When sows are limited fed in groups, some sows usually receive more than their share of feed and are essentially overfed while the more timid, slower eating sows are crowded out. The use of individual sow feeding stalls permits one to more closely regulate the feed intake for each sow but the problem of determining what constitutes optimum condition still remains. To further elucidate this problem, a visual condition scoring system was used in the swine breeding herds starting in 1965.

The objectives of the present study were to evaluate the relationships between differences in sow condition score with differences in productivity, and to determine the effectiveness of employing individual feeding stalls in reducing the amount of variation in condition among sows in the herd.

Experimental Procedure

A 9 point scoring system was used in this study to measure sow condition at the time of breeding, farrowing and weaning. Scores of 1, 2 or 3 indicated thin, under-conditioned sows, 4, 5 or 6 denoted sows in the desired moderate condition, and 7, 8 or 9 signified for those carrying too much finish.

Initially all sows were scored both by the project leader and the herdsman for the herd involved, but since the variation between scorers was relatively small only the herdsman for each herd awarded scores after the first season.

To determine the relationships between condition score and productivity, 141 sows farrowing during 1965 fall and 1966 spring were used. The distribution of litters by line of breeding and age of dam are given in Table 1. These sows were flushed prior to breeding and limit fed in groups during gestation, but no attempt was made to regulate individual feed intake during these seasons. Condition scores were given each sow

Table 1. Distribution of Litters by Line of Breeding and Age of Dam for Determining Correlations Between Condition Scores and Productivity.

Age of Dam	Line of Breeding				
	Duroc	Belts. #1	Hamp.	Crossbred	Total
Sows	20	26	21	25	92
Gilts	--	--	18	31	49

at breeding, farrowing and weaning with litter production evaluated at farrowing and weaning.

To evaluate the reduction in variability of condition among sows resulting from individual feeding, data for 6 farrowing seasons including 341 litters were used. The distribution of litters by season, age of dam and line of breeding are given in Table 2.

Results and Discussion

Phenotypic correlations were calculated to evaluate the relationships between condition scores and productivity for gilts and sows separately and then pooled overall. The results obtained are summarized in Table 3.

Breeding Score and Weight. Although neither condition score or weight at breeding were closely associated with productivity, there was a tendency for gilts with higher scores at breeding to farrow fewer pigs.

Farrowing Score and Weight. Gilts with higher condition scores at 109 days postbreeding farrowed fewer pigs. This same relationship was noted among sows but the correlation was not significant. Overall, the heavier sows and gilts at farrowing time produced pigs with heavier birth weights.

Score Change and Weight Change During Gestation. The change in scores and weights from breeding to farrowing accounted for very little of the variation in productivity. Although most correlations obtained were not significant, an increase in condition during gestation in gilts tended to be associated with decreased productivity. The correlations involving sow weight gains were generally of a positive nature.

Weaning Scores and Weights. Scores and weights obtained at weaning were more closely associated with productivity than those taken at either breeding or farrowing. In general, sows with lower scores and

Table 2. Distribution of Litters by Breed, Age of Dam and Season Used to Study Varability in Condition Scores.

Season	Feeding System	Hampshire		Crossbred	
		Gilts	Sows	Gilts	Sows
1965 Fall	Group Fed	18	7	10	16
1966 Spring	System[1]	12	14	21	9
1966 Fall	Individual Stalls	25	5	17	10
1967 Spring	Individual Stalls	21	13	19	11
1967 Fall	Individual Stalls	17	14	12	11
1968 Spring	Individual Stalls	19	9	21	10
		112	62	100	67

[1] Hampshire gilts fed in individual stalls; others group fed.

Table 3. Phenotypic Correlations Pooled over Breed, Year and Season for Gilts and Sows.

Traits	Gilts	Sows	Overall
Number of Litter Records	49	92	141
Breeding Score and:			
Number farrowed alive	—.17	—.07	—.09
Pig birth weight	—.04	0.13	0.09
Litter birth weight	—.18	0.01	—.04
Breeding weight and:			
Number farrowed alive	0.16	0.05	0.07
Pig birth weight	0.13	0.14	0.13
Litter birth weight	0.24	0.13	0.16
Sow 109-day score and:			
Number farrowed alive	—.36*	—.11	0.18*
Pig birth weight	0.0	0.14	0.07
Litter birth weight	—.34*	—.06	—.13
Sow 109-day weight and:			
Number farrowed alive	0.11	0.10	0.15
Pig birth weight	0.26	0.20	0.21**
Litter birth weight	0.26	0.23*	0.24**
Gestation score change and:			
Number farrowed alive	—.25	—.04	—.10
Pig birth weight	—.15	—.01	—.05
Litter birth weight	—.29*	—.09	—.16
Gestation weight change and:			
Number farrowed alive	—.01	0.16	0.13
Pig birth weight	0.27	0.11	0.14
Litter birth weight	0.13	0.26*	0.22*
Sow weaning score and:			
Number raised to 42 days	—.64**	—.39**	—.47**
Average pig weaning weight	0.31*	0.19	0.23**
Litter weaning weight	—.52**	—.36**	—.41**
Survival percentage	—.50**	—.31**	—.25**
Sow weaning weight and:			
Number raised to 42 days	—.44**	—.38**	—.39**
Average pig weaning weight	—.38**	0.30**	0.32**
Litter weaning weight	—.27	—.29**	—.28**
Survival percentage	—.40**	—.13	—.22**
Sow Lactation score change and:			
Number raised to 42 days	—.44**	—.48**	—.46**
Average pig weaning weight	—.05	0.16	0.09
Litter weaning weight	—.35*	—.45**	—.41**
Survival percentage	—.49**	—.30**	—.37**
Sow Lactation weight change and:			
Number raised to 42 days	—.47**	—.52**	—.50**
Average pig weaning weight	0.15	0.22*	0.20*
Litter weaning weight	—.41**	—.46**	—.44**
Survival percentage	—.51**	—.20	—.32**

* Corelation significant at 5% level.
** Correlation significant at 1% level.

lighter weights at weaning raised larger litters and had higher pig survival rates.

Changes in Scores and Weights During Lactation: Increases in weight and condition during lactation was associated with lower productivity. These results indicate that condition score is related to productivity to about the same degree as is sow weight.

Controlling Sow Condition by Individual Feeding Stalls: As indicated in Table 2, prior to 1966 sows in the swine breeding herds were hand fed in groups of less than 20 by using long troughs. Individual feeding stalls were available for the OK14 Hampshire gilts in 1966 spring and from 1966 fall all sows were fed in stalls. To determine if the variation in condition scores was reduced by using individual stalls, the coefficients of variation were calculated for each season in an effort to have some basis for comparing the amount of variation. As can be seen in Table 4, the use of individual feeding stalls apparently was effective in reducing the variation in condition scores among sows since the coefficients of variation were only about half as large after individual stalls were employed.

Table 4. Coefficients of Variation Percentages for Sow Condition Scores at Farrowing by Season, Line of Breeding and Age of Dam.

Season	Hampshire		Crossbred	
	Gilts	Sows	Gilts	Sows
1965 Fall	25.6	28.8	22.5	25.1
1966 Spring	16.4	26.0	29.5	22.3
1966 Fall	13.4	20.0	12.5	14.8
1967 Spring	10.8	12.6	15.9	11.8
1967 Fall	9.2	15.6	15.6	11.9
1968 Spring	12.8	12.3	11.6	14.5