Application of Sow Selection

R. H. Hines
Kansas State University

One of the most important factors affecting monetary return on a swine enterprise is the reproductive performance of the herd. Management has a very large role in establishing the number of pigs weaned per sow which agrees with the estimates of the heritability of reproductive traits in the range of 10 to 20 percent. If we measure sow productivity on the basis of pigs saved per litter, we find that producers have made progress in that the average number of pigs saved per litter in 1930-34 was about 5.4, while today it is 7.4. A large amount of variability is evident in litter size; however, studies to select directly for this trait have been rather ineffective.

What are the traits that identify superior sow productivity? In our program, we have chosen three traits that help identify the productive sow: (A) Number of pigs born alive, (B) number of pigs weighed at 3 weeks of age, and (C) weight of litter at 21 days of age. In addition, we do weigh pigs at birth, but feel this is more an indication of our feeding program during gestation. Birth weight of pigs is closely associated with survival rate Many summaries on the effect of birth weight on survival have been published suggesting that pigs which weigh over 4.0 lbs. (90% + survival), 2.5 to 3.9 lb pigs (85% + survival), 2.0-2.4 lbs. (65-75% survival), 1.5-1.9 lbs. (45-65% survival), less than 1.4 lb. pigs (20-30% survival). Individual birth weight is negatively correlated (-.30 to .59) with litter size in that pigs from litters of less than seven were biggest and decreased as litter size increased beyond 7 pigs.

To apply a sow selection program to our herd, we felt it had to be simple in order that data could be collected, summarized, and used in the selection

process. Before utilizing the Kansas Sow Program in our herd, the selection of replacement gilts was by recollection of dams' performance and visual appraisal. Yes, we were weighing pigs at birth and again at 21 days; however, the summary of this production data was left for later which meant the data was never summarized and used. Then in 1978, KSU Extension Service offered a sow productivity program to aid producers in identifying superior lines of sows within a producer's herd. We immediately enrolled and have utilized this service to assist us in summarizing our data for application in our selection program

The summary report ratios each trait which permits us to directly evaluate each sow line for number of pigs born alive, number of live pigs at 3 weeks, and weight of litter at 3 weeks. We also like to compare performance of daughters of various herd boars for their first parity. We adjust only the litter weight data for age at weighing. We realize there may be good reasons for adjusting for parity and number of pigs raised per sow; however, we feel adjustments can mask some of the differences in performance. For an index of sow productivity in our herd, we add the ratios for the three traits and divide by three. The sows which rank the highest one farrowing will rank near the top the next and the next. Repeatability of the initial farrowing performance appears to be rather high in our herd.

Today, the SF selection program consists of four steps:

A. Select gilts from top producing sows based on litter records.

B. Select gilts with above average weight per day of age.

C. Select gilts with acceptable backfat thickness.

D. Visual appraisal for soundness and type

SOW FAMILY COMPARISON

	NoFAR Live	NoFAR Dead	No Wean	Avg Birth Weight	Avg 21 Day Weight
BUG	11.1	1.09	9.27	2.84	12.0
HOPE	11.3	.89	8.78	2.80	12.5
T-BIRD	10.6	1.06	7.94	2.85	12.5

SIRE SUMMARY - GILT LITTERS

	No. Gilts	Avg. Index	No. Gilts Above HA
Hickory	11	103.1	7
Gold Coin	7	106.7	5
Wildcat	10	87.1	3
Long Horse	11	103.5	6

LITTERMATE SOW COMPARISONS

(Ratios)

Pigs Born	Birth Weight	21 Day Weight	Pigs Wean	INDEX
133.7	126.4	131.3		134.3
103.7	121.5	112.6		116.2
102.9	121.7	117.7		114.8
62.4	69.6	72.5	60.8	66.3
51.9	75.8	92.5	76.4	74.1
113.5	90.8	68.5	82.6	88.8
133.7	122.1	122.9	133.8	128.1
129.6	115.5	115.6	114.5	118.8
123.0	146.3	137.1	141.6	137.0
98.0	112.8	98.4	97.3	104.1

Sold Because Injury

DAUGHTERS OF ABOVE SOWS

		Avg. Index
1-5	7-1	131.5
	7-3	118.4
1-10	1-3	88.2
1-11	9-3	137.1

DAM - DAUGHTER COMPARISON

Sow	Avg. Index	Daughter	Avg. Index
50-12	103.9	94-6	111.1
62-6	120.0	15-2	102.2
70-7	92.5	12-2	92.2
83-9	125.4	21-8	51.8
		21-10	63.8
15-3	84.7	32-2	79.1
19-11	123.6	11-3	108.2
132-6	126.6	4-3	126.6
15-10	104.7	93-5	134.6
		93-7	48.6
19-5	107.5	95-7	122.3
3-6	84.0	90-3	79.0

SF SELECTION PROGRAM FOR 1980'S

1. Select from top producing sows (Identification the Key)
2. Above Avg. Wt. per day AGE
3. Acceptable Backfat Thickness at 220 lbs. < 1.1 inches
4. Visual Appraisel for Soundness and Type

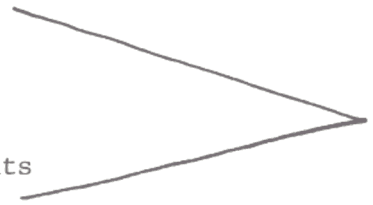
REPRODUCTIVE EFFICIENCY

KEY to Profitable Swine Production

No. Pigs Born

No. Pigs Wean

21 Day Pig Weights



Management 80-90%
Genetics 10-20%

Birth Weight - Indication of gestation feeding program
- Closely associated with survival rate

> 4.0#	=	90% + Survival
2.5-3.9	=	85% + Survival
2.0-2.4	=	65-75% Survival
1.5-1.9	=	45-65% Survival
< 1.4	=	20-30% Survival

INITIAL SELECTION PROGRAM

A. Weigh pigs at birth, note no. born alive and dead.

B. Weigh pigs at 21 days

C. Plan to summarize litter records

D. Allow DATA to remain unsummarized and collect DUST

E. Select gilts on Basis of Recollection Gut Feeling, Indicators?

Results:

48-1 Predicted to be a top sow-feminene, long, broody, etc.

Avg. Index - 3 litters = 82.5
5 daughters kept - Index
117.4, 72.7, 53.1, 81.0,

48-3 Coarse, non-feminine, maybe raise a top herd boar

Avg. Index - 3 litters = 126.2
5 daughters kept - Index
121.5, 96.4, 127.8, 104.1, 80.9

SIMPLE PROGRAM

1. Adjust for age of pig (21 day weight)

2. Ratio of traits for comparison

3. Working Index of females for ranking
   Ratio of No. pigs born alive
   Ratio of No. pigs weaned
   Ratio of Litter Weight at 21 days

   ADD and DIVIDE by 3 = Sow Index

0 - Repeatability of initial farrowing performance appears to be rather high in our herd.

RAW DATA - not masked by adjustments

Example: Weight per day age (lbs./days)
