

SOW PRODUCTIVITY INDEX UPDATE

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Previous details of the sow productivity indexing program recommended in the "NSIF Guidelines" were given by Swiger and Irvin (Proceedings, 1977 NSIF Conference and Annual Meeting). Included in the program is the index (Index = 6.5 No. born alive + 21 day litter weight adjusted for age and no.). Significant genetic principles utilized include the use of ratios within contemporary groups and the use of lifetime records so as to compute lifetime breeding values. Even though the heritability of reproductive traits is generally low, Table 1 shows the value of repeated records in increasing effective heritability. By looking at the increase of effective heritability from .20 to .40 for 1 vs. 3 records, we gain some confidence that this is indeed a heritable trait worth selecting for.

Table 1. Heritability of Accumulated Records on Sows

<u>No. of records on sow</u>	<u>Heritability based on accumulated records</u>
1	.20
2	.32
3	.40
4	.46

During the past 5 years, the above described indexing system has been used by breeders in the American Yorkshire Sow Productivity Program and the Ohio Sow Records Program. A vast amount of data has accumulated which will be of interest in examining the data for refinements to make more accurate the use of the index. For the first time, a large amount of data is available on a total of 11,053 sow records as shown in Table 2.

Table 2. Sow Records

<u>Breed</u>	<u>Number</u>	<u>Herds</u>
Duroc	1,548	7
Yorkshire	6,215	69
Chester White	254	6
Hampshire	1,004	7
Spotted	257	4
Landrace	244	5
Crossbred	<u>1,531</u>	<u>5</u>
Total		

The most interesting adjustment factor in the index is the parity adjustment. Over all breeds (including crossbreds) the effect of parity is given in Table 3. If one adjusts the data to a mature sow equivalent, the adjustment factors for parity are given in Table 4.

Table 3. Overall

Parity	No.	Total Born	Born Alive	No. After Transfer	Weaned	Adj. 21 Weaning Wt.	Ave. Wt. Per Pig	SPI
1	3843	10.49	9.78	9.49	8.33	115.3	12.2	178.8
2	2603	11.08	10.38	9.94	8.68	123.2	12.8	190.7
3-6	4049	11.94	10.99	10.12	8.62	123.8	12.9	195.2
7-8	397	11.64	10.40	9.78	8.17	120.0	12.7	187.6
9+	167	11.90	10.61	9.60	8.14	117.9	12.6	186.8
F Test		**	**	**	**	**	**	**

Table 4. Adjustment for Parity to Mature Sow Equivalent

Parity	SPI Adjustment
1	+16.4
2	+ 4.5
3-6	0
7-8	+ 7.6
9+	+ 8.4

The above analysis removed the effect of breed, year, season and herd. By looking at parity adjustments for the breeds individually on the basis of contemporary group within herd, one can answer the question of whether individual breeds should have different adjustment factors.

Table 5. Breed-Parity Effects on SPI

Parity	Yorkshire	Duroc	Cross-bred	Hampshire	Land-race	Spotted	Chester
1	180.7	159.7	169.5	162.8	177.7	165.8	152.6
2	192.5	171.1	180.6	173.1	195.9	183.4	168.7
3	195.6	175.3	182.8	178.7	198.5	187.5	175.0

From Table 5 it is interesting that the 3 most numerous breeds of Yorkshire, Hampshire and Duroc all have a difference of near 15 points between parity 1 and parity 3. This supports the idea that possibly the same adjustment factors can be used for all breeds. Some of the other breeds are only slightly different, but this could be expected due to the much lower numbers included in the data.