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feeding
BRED and OPEN SOWS
for market.....



Agricultural EXPERIMENT STATION
ANIMAL HUSBANDRY DEPARTMENT
SOUTH DAKOTA STATE COLLEGE ♦ BROOKINGS



SHOULD THESE SOWS BE BRED WHILE BEING
FATTENED FOR SLAUGHTER

The answers to the following questions are given in this publication and will help each producer determine the advisability of breeding sows while fattening for market.

1. Does it pay producers to breed sows being fattened for market?
2. Do bred sows net the packer more or less returns than open sows?
3. Do bred sows gain faster or slower than open sows?
4. Does breeding sows during fattening affect their economy of gain?
5. Do bred sows produce more or less edible meat than open sows for each 100 pounds feed consumed?
6. Do bred sows produce as good quality carcasses as open sows?

Feeding Bred and Open Sows for Market

By LESLIE E. JOHNSON *and* TURNER WRIGHT¹

Throughout large portions of the swine producing area in the corn belt it is a common practice to fatten and market sows following the weaning of their first or second litter. Many producers breed the sows while in the feed lot because they believe this results in both faster and more economical gains. Packers, in general, disapprove of this practice and believe that both packer and producer lose by it.

In August, 1945, a packing plant at Sioux Falls, South Dakota, made a survey to determine the extent of breeding that was done while sows were being fattened. The study showed that 29.7 percent of the kill during that month consisted of barrows and gilts, 35.3 percent of open sows and 35 percent of bred sows.

Up until the time of the study described in the following pages, no experimental work had been done on this problem with swine. G. H. Hart and others² compared bred and open heifers in the feed lot. They concluded that pregnancy did not increase food consumption or affect the economy of gain when the weight of the pregnant uterus, which was mostly water, was considered. They also reported that pregnancy had little, if any, affect upon the grade of carcass or dressing percentage so long as the heifers were fairly well finished and had not been bred more than five or six months.

Animals Used, Rations and Method of Feeding

The sows used in this experiment were composed of a mixture of purebreds, high grades and crossbreds. All sows were healthy and vigorous, and graded from medium to good in type and quality. They were divided into two similar groups on the basis of breed, weight, type and condition. Ten head were fed per lot each year (1943-45 inclusive). Feeding periods were 68 days, 54 days and 61 days respectively. The sows were placed in the feed lots immediately following the weaning of spring litters in late June and early July. The Lot 1 sows were hand bred as they came in heat. The Lot 2 sows were left open.

Both lots were fed and managed alike throughout the tests. The ration consisted of shelled yellow corn, self-fed; one-half pound of protein supplement per head daily, hand fed; mineral, self-fed; and oats-rape pasture. The protein supplement was a mixture of equal parts of tankage, soybean oil meal and linseed meal.

The sows were marketed direct to the packer. The buyer had no information concerning which sows were bred and which were open, but he did know that the efficiency of bred and open sows was being studied. The same procedure was followed in collecting all carcass data. In making the financial comparisons, no charge was made for the breeding of the sows.

¹Animal Husbandman and Associate Animal Husbandman, South Dakota Agricultural Experiment Station.

²Hart, G. H., Guilbert, H. R., and Cole, H. H. The Relative Efficiency of Spayed, Open and Bred Heifers in the Feed Lot. California Agr. Exp. Sta. Bul. 645, 1940.

Efficiency During Fattening

Table 1 gives the production data on the bred and open groups of sows in the feed lot. The first year's work has been omitted from this table as an acute attack of necro occurred in the experimental lots. Two of the sows died and a third became so weak that she had to be removed from the trial. Also one abortion occurred in the bred lot due to an outbreak of infectious abortion.

Table 1. The Efficiency of Bred and Open Sows in the Feed Lot, 1944 and 1945 trials

Sows fed an average of 57.5 days	Lot 1 bred	Lot 2 open
Total number of sows	20	20
Initial weight*	266.0	266.2
Final weight	392.4	378.0
Daily gain per sow	2.20	1.94
Feed / 100 pounds gain		
Corn	438.5	467.9
Protein supplement	22.3	24.7
Mineral	1.34	1.12
Feed cost / 100 lbs. gain†	\$8.98	\$9.61
Finished conditions of sows	Good+	Good+
Shrink to market (lbs.)	8.0	6.5
Selling price / cwt.‡	\$13.10	\$13.44
Net Returns per head§	\$5.68	\$5.91

*All weights in pounds.

†Feed prices: Corn, \$1.05 for 56 pounds shelled; tankage, \$4.12 cwt.; soybean oil meal, \$3.03 cwt.; linseed meal, \$2.69 cwt.; mineral, \$1.97 cwt.

‡No dock other than that used in determining price.

§Labor, equipment cost, cost of breeding sows in bred lot, and credit for manure are not included.

The bred sows consumed 5.9 percent more feed daily, made 13.4 percent (.26 pound) more gain daily, and consumed 6.4 percent less feed per pound of gain than the open sows. The finished condition of the two lots of sows at the time of slaughter was very similar. This was also true for shrinkage enroute to market, there being an average difference of only one and one-half pounds between the two groups. The lot of open sows, however, outsold the bred lots by \$0.34 per 100 pounds. This higher selling price and slight reduction in shrinkage enroute to market for the open sows more than cancelled the advantage of reduced feeding costs in the bred lot. As a result, the bred sows returned \$0.23, or 3.9 percent, per head less than the open sows.

In arriving at the prices paid for the "piggy" sows, the buyer estimated the dockage necessary to equalize the dressing percentage of "piggy" and "non-piggy" sows and fixed the price accordingly. Thus both price and amount of dockage in pounds were available for study, although all sows were bought on the basis of price per hundred pounds of liveweight.

The amounts of feed necessary for hundredweight gain were 493.7 pounds for the open sows and 502.7 pounds for the bred sows when the bred sows were docked for all uterus weight in excess of that of open sows.

The amount of feed necessary to produce 100 pounds of carcass was estimated

for both groups of sows by assuming that all sows would have dressed 75 percent when put on feed. On this basis the open sows required 586.3 pounds of feed per 100 pounds of carcass and the bred sows required 590.3 pounds.

Very similar results were obtained in the first year's work which was not included in the above figures because of disease. During this trial the bred and open lots gained 1.42 and 1.26 pounds per day respectively. The bred sows required 471 pounds of feed per 100 pounds of gain, and the open sows 548 pounds. The selling prices per 100 pounds liveweight were \$13.50 for the bred sows and \$14.10 for the open sows. These differences resulted in the open sows netting \$0.71 more per head than the bred sows.

Efficiency When Slaughtered

Table 2 gives the slaughter and carcass data on the bred and open lots of sows. The open sows had a slightly higher dressing percentage than the bred sows. With dockage deducted, however, the bred sows dressed highest, but the difference was not significant. In thickness of fatback and the yield of belly, both groups were very similar. In grade of belly and firmness of carcass, however, the bred sows were inferior. If the 1943 data had been included, the differences would have been still greater.

Table 2. Slaughter and Carcass Data on Bred and Open Sows. 1944 and 1945 Trials.

Sows fed an average of 57.5 days		
17 bred sows in Lot 1 carried pigs	Lot 1	Lot 2
an average of 55.8 days	Bred	Open
Number of sows (total)	20	20
Weight at slaughter	384.4	371.5
Dressing percentage	77.6	78.7
Dressing percentage after docking	80.6	79.7
Thickness of fatback (inches)	2.20	2.24
Firmness of carcass	Low firm	firm
Yield of belly (% carcass weight)	19.1	19.0
Grade of belly	Low medium	Low good

The average slaughter weights of the bred sows when finished were 358, 408 and 377 pounds for the three trials. When the bred sows were marketed at 358 and 377 pounds, their carcasses were distinctly softer than those of the open sows marketed at nearly similar weights. This difference was greater than one would expect to occur by chance in one trial in twenty.

The data in Tables 1 and 2 were summarized on the basis of lots as fed. During these two trials, 85 percent of the bred sows carried litters. This appears to be a normal conception rate for sows and represents, therefore, what the average producer would get when breeding sows during the fattening period. To show more clearly the difference between only bred and only open sows, Table 3 was prepared. This table contains the data on all sows fed during the three years of the trial as they were very similar in condition and type to those bought regularly by packers.

Table 3. Slaughter and Carcass Data on all Bred vs. all Open Sows. 1943, 1944, and 1945 Trials

	Bred sows	Open sows
Number of sows (total)	22	35
Days pregnant	55.8	0
Number of pigs in uterus	8.8	0
Weight of uterus and contents	14.9	2.3
Weight of water in uterus	5.5	0
Dock on sows at market	18.0	4.4
Dressing percentage	76.5	79.4
Dressing percentage after docking	80.3	80.4

As previously stated, the buyer had no information to indicate which sows were bred and which were open. He passed a few that were bred and docked a few that were open. Also, the dockage on the bred sows was slightly larger than the weight of the uterus and contents. In the end, however, the dressing percentages of the two lots after docking were practically identical—80.3 and 80.4 percent. This happened because the buyer had a tendency to dock the wasty, low dressing open sows. The open sows that were not docked dressed 79.8 percent, while the open sows that were docked dressed only 78.2 percent.

Application of Findings

The results of this study indicate that the producers have nothing to gain financially from breeding sows during the fattening period when sows are full-fed on a good balanced ration and marketed at a high good finish. The bred sows did make faster and cheaper gains but the loss in selling price slightly more than offset the advantage in efficiency of gain. This was true when no breeding charge was made for the bred sows and no discrimination existed in carcass price for the lower grade of bellies and softer carcasses in the bred sow group. Thus, it would seem advisable for producers to keep sows open during the fattening period. Furthermore, the practice of breeding sows that are being fattened for market lessens the opportunity of holding the stock to avoid any temporary market slump that is unpredictable at the time the sows are placed on feed.

The packer received practically the same returns for both groups after docking when assuming that the tankage from the uterus and contents paid for the labor and cost of processing them. If the packer had been forced to sell the carcasses on a discriminating market, his net returns would have been slightly less for the bred group.

The small financial and efficiency difference between bred and open sows when fattened rapidly and slaughtered indicates that a producer can market bred sows up to 60 days after breeding without any great loss to himself or the industry, if conditions change to make this necessary. Thus producers have some chance to change production plans during the early part of the gestation period. Certainly, however, there is no advantage in breeding sows which are being fed to a good plus finish in a 60-day period and marketed.

Summary

This study showed that the groups of sows bred at the beginning of the trials (1) consumed 5.9 percent more feed daily, (2) gained 13.4 percent more weight daily and (3) required 6.4 percent less feed per pound of gain than open sows similarly fed and managed. The open sows, however, outsold the others by \$0.34 per 100 pounds. Because of this differential, the bred sows returned \$0.23, or 3.9 percent, per head less profit than the open sows.

A comparison of the carcass data showed that the open sows excelled in (1) dressing percentage, 2.1 percent; (2) firmness of carcass, approximately one-third of a grade; and (3) grade of belly, approximately one and one-third grades.

The two groups of carcasses were similar in (1) thickness of fatback and (2) yield of belly. Considering the dockage in both groups, the dressing percentages of all bred and open sows were 80.3 percent and 80.4 percent respectively.

Breeding of sows during the fattening period appears, therefore, to be an undesirable production procedure. If, however, a producer finds it necessary to sell bred sows on the slaughter market, he can do so up to 60 days after the sow is bred without any great loss to himself or the industry.