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UNIVERSITY OF WYOMING
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SWINE FEEDING

I. Barley vs. Rye for Fattening Pigs
II. Barley vs. Barley and Meat Meal for Fattening Pigs

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Bulletins will be sent free upon request.
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Ration Experiments With Swine

INTRODUCTION.

Many parts of Wyoming continue to draw their pork supply from outside sources, while neighboring states are shipping large numbers of stock and fat hogs to eastern markets. Idaho is fast becoming an important pork producing center, handicapped though it is by much longer freight hauls than are most parts of our own state.

With favorable climatic conditions, good pasture crops, and grains equal to or better than corn, Wyoming can readily meet the market demands for pork products at cost figures that will leave a substantial profit for the producer.

Pigs.

The pigs put on experiment were secured from two sources. One lot, consisting of twelve head of Poland Chinas, came from a near-by ranch, while the other lot, composed of three animals carrying Duroc Jersey blood, was picked up at the local packing house. The whole lot was fairly uniform in type, though care was taken to see that one of the Durocs was placed in each pen. All the pigs were small for their age, having been farrowed the previous summer and carried through the winter on little better than a maintenance ration.

Divisions Made and Rations Fed.

The fifteen pigs were divided as carefully as possible into three lots of five each and fed as follows:

Lot I. Ground barley.

Lot II. Ground barley, 9 parts; meat meal, 1 part.

Lot III. Ground rye.

During the week preceding the test, all the pigs were run together and fed ground barley in the form of a slop.

Feeds.

Both the barley and the rye were grown within a few miles of Laramie. The meat meal (guaranteed 60 per cent protein)

was supplied by Armour & Co.'s Denver plant. Each lot of pigs had access to a mixture consisting of 25 parts charcoal, 10 parts salt, and 2 parts iron sulphate. Fresh water was supplied during the day.

Method of Feeding.

During the first six weeks of the test the feed was mixed with water and fed immediately after mixing. During the next four weeks the grain was allowed to soak from one feeding period to the next and was well softened when fed.

The lots were fed twice a day and were given all they would clean up satisfactorily. The pigs were in charge of R. P. Allen. That they were well cared for is evidenced by the gains made by all lots.

Weights.

All the lots were weighed for three successive days both at the beginning and at the end of the trial, and averages of the three weights were taken as the initial and final weights, respectively. The individuals in each pen were also weighed in this way and in addition were put on the scales every two weeks.

Shelter.

The pigs were housed in the station swine house and given the run of small yards. When the weather was favorable they were kept in the yards during much of the day.

Prices of Pigs and Feeds.

The pigs were purchased at $7.00 per cwt. and sold for $9.40. The rye cost $25.00 per ton; barley was figured at the same price, and meat meal at $55.00 per ton.

I. BARLEY VS. RYE FOR FATTENING PIGS.

Both these grains thrive throughout Wyoming, hence figures as to their value in pork production are of interest to many stockmen.

Table I summarizes results obtained in a comparison of these concentrates.

TABLE I.—*Barley vs. Rye for Fattening Pigs.*
March 21st to May 30th, 1916 (70 days).

	Lot I Ground barley	*Lot III Ground rye*
Number in lot	5	5
Initial cost per cwt	$7.00	$7.00
Average initial weight	88 lbs.	86 lbs.
Average final weight	190 lbs.	193 lbs.
Gain per pig	102 lbs.	107 lbs.
Average daily gain	1.46 lbs.	1.53 lbs.
Average daily feed per pig—		
Barley	6 lbs.	.....
Rye	.....	5.3 lbs.
Feed for 100 lbs. gain—		
Barley	413 lbs.	.....
Rye	.....	348 lbs.
Cost of 100 lbs. gain	$ 5.16	$ 4.35
*Total cost per pig	11.64	10.88
Selling price per cwt	9.40	9.40
Selling price per pig	17.86	18.14
Profit per pig	6.22	7.26
Cash return for each 100 lbs. of grain fed	2.53	2.97

*These figures include preliminary feeding (estimated), but take into account neither labor nor interest on capital invested.

An examination of the table shows that rye gave slightly heavier daily gains than barley, though less grain was consumed. Hence in a comparison of the two we find rye giving better gains per hundred pounds fed, as well as greater financial returns. Profits were very good on both lots, greater than are ordinarily secured. Several factors contributed to this: heavy gains, a wide margin between buying and selling prices, and a high price for the finished product.

II. BARLEY VS. BARLEY AND MEAT MEAL FOR FATTENING PIGS.

Meat meal, a packing house by-product, is rapidly coming into favor among stockmen, because of the gains made possible through its use. Fed in limited amounts, it has given good returns in many swine rations. Just what its value may be in other combinations remains to be demonstrated. Table

II gives results obtained in feeding barley against barley and meat meal mixed in the proportion of 9 to 1.

TABLE II.—*Barley vs. Barley and Meat Meal in Swine Fattening Rations* March 21st to May 30th, 1916 (70 days).

	Lot I Barley	*Lot II Barley, meat meal*
Number in lot	5	5
Initial cost per cwt.	$7.00	$7.00
Average initial weight	88 lbs.	87 lbs.
Average final weight	190 lbs.	209 lbs.
Gain per pig	102 lbs.	122 lbs.
Average daily gain	1.46 lbs.	1.74 lbs.
Average daily feed per pig—		
Barley	6 lbs.	5.8 lbs.
Meat meal	.....	.6 lbs.
Feed for 100 lbs. gain—		
Barley	413 lbs.	333 lbs.
Meat meal	.....	37 lbs.
Cost of 100 lbs. gain	$ 5.16	$ 5.18
*Total cost per pig	11.64	12.62
Selling price per cwt.	9.40	9.40
Selling price per pig	17.86	19.65
Profit per pig	6.22	7.03
Cash return for each 100 lbs. of grain fed	2.53	3.00

*These figures include preliminary feeding (estimated), but take into account neither labor nor interest on capital invested.

The figures show that meat meal added to a barley ration caused an increase in daily gains of nearly three-tenths of a pound per pig. Also, by reducing the feed requirements, it added only two cents to the cost of one hundred pounds gain. Thus profits per pig were increased eighty-one cents by the introduction of the meat meal, and when figured at cost price ($55.00 per ton) it added forty-seven cents to the returns received from each hundred pounds of barley fed.

At first sight it may be difficult to understand why Lot II should have given a cash return of $3.00 for each hundred pounds of grain and Lot I only $2.53 when the cost of gain was practically the same for both lots. This is explained by the fact that Lot II gained twenty pounds per pig more in the 70 days than did Lot I, and each pound put on the pigs was made at a profit of over four cents.

A comparison of Lots II and III brings up some interesting facts. The rye lot made the better gains for feed eaten, made them at a lower cost and also returned the greater profit per pig. The barley and meat meal lot made the heavier daily gains and gave slightly the larger cash returns for each 100 pounds of grain fed. It raises the question as to what would have been the returns from a rye ration supplemented with meat meal.

While no attempt was made to test methods of feeding grain, interesting figures were obtained on soaked vs. unsoaked meal. For the first six weeks both the barley and the rye were mixed with water and fed immediately, while for the last four weeks the meal was allowed to soak from one feeding until the next. Taking the four weeks immediately preceding the time during which soaked grain was fed and comparing this period with the last four weeks, furnishes some suggestive figures:

TABLE III.—*Soaked vs. Unsoaked Meal for Fattening Pigs.**

	Lot I Barley	*Lot II Barley, meat meal*	*Lot III Rye*
Gains made per pig on unsoaked feed, during four-week period	33 lbs.	40 lbs.	36 lbs.
Gains made per pig on soaked feed, during four-week period	54 lbs.	66 lbs.	53 lbs.
Average daily gains per pig on unsoaked feed	1.1 lbs.	1.4 lbs.	1.2 lbs.
Average daily gains per pig on soaked feed	2.0 lbs.	2.4 lbs.	2.0 lbs.
Feed for 100 lbs. gain on unsoaked grain—			
Barley	418 lbs.	328 lbs.	.....
Rye	.....	.....	350 lbs.
Meat meal	.....	37 lbs.	.....
Feed for 100 lbs. gain on soaked grain—			
Barley	443 lbs.	356 lbs.	.....
Rye	.....	.....	383 lbs.
Meat meal	.....	39 lbs.	.....

*The pigs were fed unsoaked feed 29 days and soaked feed 27 days.

A heavier grain consumption, together with more rapid gains, characterized the period in which soaked grain was fed.

The requirements for a hundred-pound gain were apparently not affected by the soaking process, since the change in requirements toward the close of the experiment were about what one would expect under normal conditions. It would appear that soaking the ground barley and rye speeded up the fattening process without materially influencing the amount of feed needed for a given gain.

ACKNOWLEDGMENT.

The writer is indebted to Mr. F. E. Hepner, Station Chemist, for analyses of the grains used in these experiments. The meat meal figures are those furnished by Armour & Co.

TABLE IV.—*Percentage Composition of Feeds.*

Feed	*Water*	*Ash*	*Crude protein*	*Crude fiber*	*Nitrogen-free extr't*	*Ether extract*
Barley	8.30	2.77	8.98	6.45	71.78	1.72
Rye	7.15	1.71	14.16	2.57	72.81	1.60
Meat meal . . .	.....	.....	60.00	Notover 2.00	.....	6.00

As will be seen by a study of the table, rye runs considerably higher in protein and lower in fiber than does the barley. These differences no doubt, in a measure, account for the better showing made by the rye, as young, growing pigs need a liberal supply of protein and make but little use of fiber.

CONCLUSIONS.

All the rations tested gave exceptionally satisfactory returns. Barley put on gains more rapidly than rye, though the requirements for 100 pounds gain were less when rye was used. Page. 5.

The lot receiving barley and meat meal made the heaviest gains and consumed the largest daily ration. Page 6.

The addition of meat meal to a barley ration increased the profit per pig, though it added a trifle to the cost of 100 pounds gain. Page 6.

Meal soaked until soft gave unusually heavy gains, due chiefly to an increase in the amount of feed consumed. Page 7.