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Combining Barley and Oats for Growing-Finishing Gilts

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Northcentral South Dakota is an area in which corn is not produced in sufficient quantity for livestock feed needs. Since barley and oats are also produced in the area, both are used singly or in combination for swine production. Work at the Northcentral Substation, Eureka, has demonstrated that properly supplemented all-barley rations support rapid growth and efficient gains for swine. Because of interest in the area in using oats also for swine rations this trial was designed to compare barley alone with combinations of barley and oats.

Ration Treatments

Treatment comparisons using adequately supplemented rations were as follows:

1. All barley - control
2. Barley 2 parts, oats 1 part
3. Equal parts barley and oats
4. Barley 1 part, oats 2 parts

Table 1 outlines composition of the growing and finishing rations fed.

Table 1. Composition of Rations

Treatment	1		2		3		4	
	Grow	Finish	Grow	Finish	Grow	Finish	Grow	Finish
	<u>Ration Ingredients</u>							
Barley	823	908	548	606	412	454	275	302
Oats	--	--	275	302	411	454	548	606
	<u>Supplement for all rations</u>							
			<u>Grow</u>		<u>Finish</u>			
Soybean oil meal (44%)			150		70			
Dicalcium phosphate			15		11			
Ground limestone			5		4			
Trace mineralized salt (high zinc)			5		5			
Premix ¹			2.5		2.5			
	<u>Calculated Analyses of Rations</u>							
Protein	16.1	13.5	16.2	13.7	16.3	13.8	16.3	13.8
Calcium	0.64	0.50	0.65	0.50	0.66	0.51	0.66	0.52
Phosphorous	0.66	0.57	0.65	0.55	0.64	0.54	0.63	0.54

¹ Each pound of premix provided 2 gm. oxytetracycline, 600,000 U.S.P. units vitamin A, 60,000 I.U. vitamin D₃, 400 mg. riboflavin, 1,000 mg. d-pantothenic acid, 3,000 mg. niacin, 23,044 mg. choline chloride, 3 mg. vitamin B₁₂ activity.

Experimental Procedures

One hundred crossbred SPF gilts all by the same sire were allotted to 4 treatments on the basis of litter and weight. Each lot was grown out in a grass-alfalfa pasture approximately one-half acre in area. Facilities in each lot included a shade-shelter, self-feeder and watering fountain. Both grower and finisher rations were self-fed, with the change to finisher rations being made when the lot average weight was 110 to 120 pounds. At the periodic weighing times, gilts reaching weights of 185 pounds or more were probed for backfat thickness and removed from the treatment lots.

Results and Discussion

Previous work at the Eureka Station has shown that properly supplemented barley rations support rapid, efficient gains for growing-finishing swine. Trials at other locations comparing corn rations with those in which part of the corn had been replaced by oats have shown that up to one-third of the grain may be oats without decreasing gain or feed efficiency. Data comparing combinations of barley and oats, as in this trial, were not available. Use of such combinations indicated the desirability of making these comparisons. Results of the trial are summarized in Table 2.

Table 2. Performance of Growing-Finishing Gilts Fed Barley and Barley-Oats Rations

Treatment	1 Control All Barley	2 2 Barley 1 Oats	3 1 Barley 1 Oats	4 1 Barley 2 Oats
Number of gilts	25	25	25	25
Average initial weight	82.5	78.5	79.6	78.8
Average final weight	197.5	198.8	194.5	198.9
Average daily gain	1.62	1.66	1.56	1.60
Feed per pound of gain	3.60	3.59	3.56	3.62
Average backfat probe ¹	0.89	0.89	0.83	0.83

¹ The average of three probes made (1) above the elbow, (2) above the last rib and (3) mid-way between the last rib and base of the tail.

Based on this single unreplicated trial there were only small differences in performance resulting from these ration treatments. Gilts fed a combination of two parts barley and one part oats gained most rapidly but not importantly more than gilts on any other treatment. Gilts fed equal parts of barley and oats gained least rapidly but were most efficient in feed usage. Differences in feed utilization were essentially not different.

Gilts fed the two rations with higher levels of barley gained somewhat more rapidly and had thicker backfat probes than gilts fed the higher level oat rations. All of these differences were small. However, the relationship between more rapid gain and more backfat was similar to that reported in some other work. It is not clear from this trial whether grain composition of the ration is important in these results.

Under the conditions of this trial, the results suggest that any of the rations compared would be satisfactory for the production of growing-finishing gilt pigs. It should be pointed out that pigs used in this trial had a rather high starting weight of approximately 80 pounds. Differences might be somewhat greater for pigs fed rations similar to these if treatments are begun with pigs immediately following weaning.