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South Dakota Swine Field Day Proceedings and  
Research Reports, 1964

Animal Science Reports

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1964

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R.W. Seerley

*South Dakota State University*

R.C. Wahlstrom

*South Dakota State University*

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## Recommended Citation

Seerley, R.W. and Wahlstrom, R.C., "The Influence of Dehydrated Alfalfa Meal in Growing-Finishing Swine Rations" (1964). *South Dakota Swine Field Day Proceedings and Research Reports, 1964*. Paper 7.  
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THE INFLUENCE OF DEHYDRATED ALFALFA MEAL IN  
GROWING-FINISHING SWINE RATIONS<sup>1</sup>

R. W. Seerley and R. C. Wahlstrom

In 1958, an experiment was initiated to evaluate the effect of dehydrated alfalfa meal in rations for sows reared in confinement. The results of these trials have been reported earlier and in this series of reports. A part of this experiment was to rear the gilts on alfalfa-free rations or with some alfalfa meal in the ration. These gilts were used subsequently in the reproductive trials. In the reproductive phase gilts fed the alfalfa-free ration as growing gilts were fed a ration without alfalfa meal as sows, whereas gilts fed alfalfa were assigned to a treatment group with alfalfa in the ration.

The results of these trials show the effect of alfalfa meal in the ration on daily gain, feed consumption and feed efficiency of growing gilts. These trials were not designed to prove or disprove the need for alfalfa in rations for growing-finishing pigs.

Experimental Procedure

One hundred sixty-seven pigs were used in four trials during a period of five years. Trials 1 and 2 were reported in the 1959 and 1962 Swine Day Reports, respectively. Trials 3 and 4 have not been previously reported. The primary objective in this report is to compare the alfalfa-free ration with rations containing 5% alfalfa meal. However, the effects of 10% alfalfa meal in trials 1 and 2 are reported also. The effects of 2.5% alfalfa meal in trials 1 and 2 have been omitted.

Gilts were selected for these trials on the basis of soundness for later reproduction. They were thrifty pigs from good producing sows and large litters. Pigs were allotted to treatment according to breeding litter and weight. Complete mixed rations shown in table 1 were self-fed. The rations were formulated to be equal within a trial for crude protein, calcium and phosphorus. Other supplemental nutrient additions were the same insofar as possible. The rations were not isocaloric. Rations containing alfalfa were slightly lower in digestible energy due to the lower energy in alfalfa meal. Meal and pellet forms of the rations were fed in the first trial, otherwise all rations were in the meal form.

Pigs were confined on concrete during the trials. Feed was provided in self-feeders and water in automatic waterers.

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<sup>1</sup> Supported in part by a grant from American Dehydrators Association, Kansas City, Missouri.

## Results and Discussion

Table 2 summarizes the results of the four trials. Treatment averages were not calculated for pigs fed 10% alfalfa meal in the first two trials because the means would not be the same as the means for the other treatment groups for the four trials. Since the 10% alfalfa treatment groups were only in the first two trials, the effect of 10% alfalfa meal in rations is discussed separately.

Daily gain of pigs fed rations with no alfalfa meal or 5% alfalfa meal was similar, 1.62 and 1.66 respectively, to averages for the four trials. Pigs fed 5% alfalfa meal ration gained as fast or faster than control pigs in trials 1, 3 and 4, but they did not gain as fast as the control pigs in trial 2. However, pigs fed 10% alfalfa meal rations in trial 2 gained nearly the same as the control pigs, so the poorer response of pigs fed the 5% alfalfa meal ration may have been due to experimental variation with the relatively small number of pigs.

Feed consumption and feed required per pound of gain data suggested the rations were affected in calorie content by the inclusion of alfalfa meal. Pigs fed the 5% alfalfa rations ate 6.5% more feed per day and required 4% more feed per pound of gain than the control pigs. These differences were relatively small, but they probably reflect a difference in the digestible energy content of the rations. Whether pigs ate more feed with alfalfa because of improved palatability or because additional feed was needed to meet their energy requirement cannot be resolved from the data, but their energy requirement was probably the more important influence.

Trials 1 and 2 were not consistent in the effect of 10% alfalfa ration on weight gain when compared to the other treatments. Since the first trial was based on averages for 24 pigs, whereas trial 2 had only 6 pigs on this treatment, trial 1 probably represents a more correct average effect than trial 2. Research at Nevada (Bohman *et al.*, 1955) showed rations with 10% alfalfa meal decreased daily gains of weanling pigs and increased the feed required per pound of gain. Illinois (Becker *et al.*, 1956) showed pigs weighing between 100 and 200 pounds utilized rations with 10% alfalfa meal as efficiently as pigs fed alfalfa-free rations. In those trials, rations with 20% alfalfa meal or higher levels of alfalfa did depress growth and increase the feed required per pound of gain. Based on the results of trial 1 and research at other stations, rations with 10% alfalfa meal are probably near the upper level to support fast growth and good feed efficiency. The fiber and lower energy content of the alfalfa rations apparently affect small pigs more than finishing pigs.

The results of these trials were similar to the expected results with well fortified rations differing slightly in energy content. Some nutritionists suggest alfalfa contains unknown factors which are beneficial to animals when included in their diet. The rations used in these trials were adequately fortified and unknown factors in alfalfa (if any) did not have an influence on the performance of the pigs.

### Summary

The results of four trials showed pigs gained nearly the same when fed an alfalfa-free ration or a ration formulated to contain 5% dehydrated alfalfa meal. Pigs fed the alfalfa ration ate more feed and required slightly more feed per pound of gain than the pigs fed alfalfa-free rations. The calculated digestible energy content of the rations with alfalfa was less and the results support this since a little more feed was needed for a unit of gain. There was no conclusive evidence that alfalfa provided unknown factors which were beneficial to the pigs.

Table 1. Composition of Rations<sup>1</sup>

Level of Alfalfa Meal, %	Trial 1			Trial 2			Trial 3		Trial 4	
	0	5	10	0	5	10	0	5	0	5
Ground shelled corn	80.3	76.4	72.3	78.7	75.8	71.9	81.3	77.5	80.0	76.0
Dehydrated alfalfa meal	--	5.0	10.0	--	5.0	10.0	--	5.0	--	5.0
Soybean meal	13.5	12.8	12.1	18.5	16.6	15.7	12.5	11.5	17.0	16.0
Tankage	4.5	4.2	4.1	--	--	--	4.0	4.0	--	--
Dicalcium phosphate	.7	.8	.8	1.0	1.0	1.0	1.0	.9	1.2	1.2
Limestone	.3	.1	--	1.0	.8	.6	.5	.4	.8	.6
Trace mineral salt	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
Premix <sup>2</sup>	.2	.2	.2	.3	.3	.3	.3	.3	.3	.3

<sup>1</sup> These 16% crude protein grower rations were fed until pigs reached approximately 110 pounds body weight.

Thereafter the grain, soybean meal and tankage were adjusted to provide a 12 percent protein ration.

<sup>2</sup> Premixes were the same within a trial, but slightly different between trials due to sources of ingredients. Extensive footnotes would be needed to identify each. They were standard station premixes providing vitamins A, D, B<sub>12</sub>, riboflavin, pantothenic acid, choline and an antibiotic. Hygromycin B was included in the ration for a period of about 8 weeks.

Table 2. Summary of Feeding Dehydrated Alfalfa Meal to Growing-Finishing Pigs

	Trial number	Alfalfa-free ration	5% Alfalfa meal	10% Alfalfa meal
Av. initial weight, lb.	1	37.0(24) <sup>b</sup>	37.0(24)	37.0(24)
	2	49.3(6)	49.5(6)	49.5(6)
	3	40.5(23)	41.0(22)	---
	4	31.2(16)	31.1(16)	---
Av. final weight, lb.	1	205	204	205
	2	208	196	207
	3	246	254	---
	4	203	207	---
Av. daily gain, lb.	1	1.62	1.70	1.53
	2	1.62	1.50	1.60
	3	1.64	1.70	---
	4	1.60	1.61	---
	Av. <sup>a</sup>	1.62	1.66	---
Av. daily feed, lb.	1	4.87	5.12	4.81
	2	6.16	5.19	6.16
	3	5.61	6.05	---
	4	4.79	4.85	---
	Av. <sup>a</sup>	5.23	5.57	---
Av. feed per lb. gain, lb.	1	3.00	3.03	3.15
	2	3.80	3.46	3.84
	3	3.41	3.81	---
	4	2.99	3.02	---
	Av. <sup>a</sup>	3.22	3.35	---

<sup>a</sup> Averages are based on total weight gain, feed consumption and pig days of the four trials (The averages of the trials were not added and divided by 4.).

<sup>b</sup> Number in parenthesis is the number of animals in each treatment group.