1972

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A.S. Series 72-39

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A considerable amount of research has been conducted during the past few years on the effects of various methods of processing grain on performance of finishing cattle. One of the methods that has been reported to improve performance of finishing cattle is cooking corn. This method of processing grains is now possible by use of the "on-the-farm cookers" that have been developed for cooking soybeans.

Little information is known concerning the effects of cooking corn on the growth performance of growing-finishing pigs. Therefore, the objective of the present study was to evaluate the performance of pigs fed cooked or regular corn in free-choice and complete mixed ration feeding systems.

Experimental Procedure

Forty-eight crossbred pigs averaging about 60 lb. were allotted to three replications of four treatments on the basis of litter, weight and sex. The pigs were housed in a confinement type house with slotted floors.

The four treatments were as follows:

1. Cooked corn, complete mixed diet
2. Regular corn, complete mixed diet
3. Cooked corn, free-choice diet
4. Regular corn, free-choice diet

The composition of the protein-mineral-vitamin-antibiotic supplement used in this experiment is shown in table 1. The complete mixed diets were formulated by mixing 77.5 lb. of the respective type of corn and 22.5 lb. of supplement and fed until the pigs averaged 115 lb. From 115 lb. to market weight the proportion of corn and supplement in the diets was 87 and 13 lb. The diets formulated in this way contained 15.9% protein when fed to 115 lb. and 12.1% protein after pigs weighed 115 lb. Pigs fed free-choice were allowed corn and supplement in separate compartments of the self-feeder.

The corn was cooked in a "on-the-farm cooker" to a temperature of about 250° F. Moisture content was 9.14 and 11.29% for the cooked and regular corn, respectively.

Twenty-six pigs were slaughtered at the termination of the experiment and carcass data were obtained for length, backfat, loin eye area and ham-loin percent.

Results

A summary of the results of this experiment is presented in table 2. The data have been combined by type of corn and method of feeding. Cooking the corn did not affect rate of gain during either the growing or finishing

periods. However, pigs fed cooked corn consumed less total feed and were more efficient in that they required less feed per unit of gain. Although these differences existed during both the growing and finishing periods, they were significant only during the growing period from 60 to 115 lb. in weight. For the entire trial, pigs fed cooked corn required 6% less feed per lb. of gain than pigs fed regular corn. The improvement in feed efficiency due to cooked corn is slightly over 4% when adjusted for the difference in moisture content of the corn.

Faster gains were obtained when pigs were fed complete mixed diets than when they were self-fed free-choice. These differences were statistically significant during the finishing (115 to 205 lb.) period and for the entire experiment. Pigs fed free-choice gained at a similar rate during both growing and finishing periods. The feed consumption of the free-choice fed pigs was considerably less than those fed complete diets during the finishing period. However, feed efficiency was similar with the two feeding systems. These results are not in agreement with other research where we have noted no significant differences due to method of feeding.

There were no significant differences in any of the carcass data obtained for either type of corn or feeding method.

Summary

Forty-eight crossbred pigs were used to study the effect of cooking corn and complete mixed or free-choice feeding systems. In this experiment, cooking corn did not affect rate of gain but did decrease feed consumption and improve feed efficiency. Pigs fed complete mixed diets gained about 11% faster than those fed free-choice. There was no difference in feed efficiency between the two feeding systems. Quality of carcasses was not affected by either corn or feeding method.

Table 1. Composition of Supplement

Ingredients	Percent
Soybean meal (44%)	63.1
Meat meal (50%)	20.0
Dehydrated alfalfa meal (17%)	10.0
Dicalcium phosphate	3.0
Ground limestone	1.0
Trace mineral salt (1% zinc)	2.5
Vitamin-antibiotic premix[a]	0.4

[a] Provided per lb. of supplement: 6,800 I.U. vitamin A, 1,000 I.U. vitamin D, 6 mg. riboflavin, 24 mg. calcium pantothenate, 48 mg. niacin, 240 mg. choline, 36 mcg. vitamin B_{12} and 45 mg. oxytetracycline.

Table 2. Effect of Cooking Corn on Performance of Pigs Fed Free-choice or Complete Mixed Diets

	Corn		Feeding Method	
	Cooked	Regular	Complete	Regular
No. of pigs	24	24	24	24
Avg. initial wt., lb.	59.7	59.9	59.5	60.0
Avg. final wt., lb.	208.1	207.2	210.7	204.6
60 to 115 lb.	1.71	1.70	1.75	1.66
115 to 205 lb.	1.81	1.78	1.92[a]	1.67[a]
60 to 205 lb.	1.77	1.75	1.85[a]	1.67[a]
Avg. daily feed, lb.				
60 to 115 lb.	3.93[b]	4.25[b]	4.11	4.07
115 to 205 lb.	5.63	5.80	6.06	5.37
60 to 205 lb.	4.98	5.20	5.31	4.87
Avg. feed per lb. gain, lb.				
60 to 115 lb.	2.31[b]	2.51[b]	2.35	2.47
115 to 205 lb.	3.12	3.30	3.19	3.23
60 to 205 lb.	2.81	3.00	2.88	2.93
Carcass data				
No. of pigs	13	13	17	9
Length, in.	30.25	30.30	30.25	30.30
Backfat, in.	1.16	1.09	1.15	1.10
Loin eye area, sq. in.	4.32	4.67	4.65	4.33
Ham-loin, %	42.96	42.56	42.99	42.53

[a] Significant difference due to feeding method ($P < .05$).
[b] Significant difference due to corn ($P < .05$).