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## Dietary responses to processed and non-processed peanuts and grains by growing-finishing pigs

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### Summary

Twenty-four crossbred barrows and gilts averaging 92 lbs. were used to evaluate whole shelled peanut as a protein and energy source for pigs. Pigs used whole peanuts and corn less efficiently than ground peanuts and corn. Feed intake and average daily gain were greatly improved when peanuts and corn were fed in ground form. Roasting peanuts for one hour at 120°C improved performance only slightly over raw peanuts. Pigs fed a soybean meal diet had slightly better average daily gain than those fed a lysine-supplemented peanut meal diet.

### Introduction

Whole peanuts (28% crude protein; 50% crude fat) are a potential source of protein and energy for pigs. Large quantities of peanuts that do not meet standards for the oil industry are available where peanuts are produced. Low processing costs in feeding raw, unextracted peanuts should lower feed costs.

### Procedure

Twenty-four crossbred barrows and gilts averaging 92 lbs. were assigned by weight and sex to four dietary treatments in two replicates.

The diets were: (1) Corn-soybean meal (control) (2) Corn-peanut meal with peanut meal replacing an equal amount of soybean meal on a pound-for-pound basis with lysine added (3) Raw unextracted peanut-corn diet and (4) Roasted unextracted peanut-corn diet. Blood meal was used in diets (3) and (4) to increase protein and lysine. All diets contained equal lysine and approximately 16.8% crude protein. Diets (3) and (4) have slightly higher metabolizable energy than diets (1) and (2). Pigs were housed on a solid concrete floor and each group consumed meal feed ad libitum from a self feeder and had access to an automatic waterer. Pigs were weighed bi-weekly.

Pigs on diets (3) and (4) performed poorly on whole corn and peanuts so, corn and peanuts in these diets were fed in ground form the last 28 days. Compositions of the diets are shown in table 27.

### Results and Discussion

Table 28 shows results of the initial 28-day feeding period. Pigs fed whole corn and peanut diets (raw or roasted) ate significantly less, had lower average daily gain and poorer feed efficiency than those eating either soybean or peanut meal diets. During the 28-day period after the corn and peanuts were ground, pigs eating diets (3) and (4) showed improved feed intake, average daily

gain, and efficiency. Pigs eating the roasted peanut diet (4) had better average daily gains during this 28-day period than any other pigs, suggesting compensatory gain. They also gained more than those eating the raw peanut diet (table 29).

Results of the entire 56-day feeding period are shown in table 30. Pigs eating the control diet gained slightly more than those eating the lysine-supplemented peanut meal diet. Amino acids other than lysine possibly limited the performance of pigs eating the peanut meal diet. Pigs eating the peanut meal diet did consume more feed and gain more weight than those on either peanut diet. Possibly the higher metabolizable energy level of the whole peanut diets reduced feed intake. Roasting peanuts at 120°C for one hour had very little effect on pig performance in this trial.

Table 27. Compositions of diets fed experimental pigs (%).

Diets:	1	2	3	4
	Control	Experimental		
<u>Ingredient</u>				
Yellow corn	74.0	73.8	70.0	70.0
Soybean meal	22.5	--	--	--
Peanut meal	--	22.5	--	--
Whole raw peanut	--	--	20.0	--
Whole roasted peanut	--	--	--	20.0
Blood meal	--	--	6.5	6.5
Dicalcium phosphate	1.0	1.0	1.0	1.0
Limestone	1.25	1.25	1.25	1.25
Salt	0.4	0.4	0.4	0.4
Trace mineral (Z10)	0.1	0.1	0.1	0.1
ASP-250	0.25	0.25	0.25	0.25
Vitamin premix	0.50	0.50	0.5	0.5
L. Lysine•HCl (78.4% lysine)	--	0.20	--	--

Table 28. Results from first 28 days on indicated diets.

Factor	Diet			
	1 (control)	2	3	4
Initial wt., Kg.(lb.)	43.16(95.2)	41.96(92.5)	40.29(88.83)	40.89(90.15)
Final wt., Kg.(lb.)	70.30(155.0)	66.67(147.0)	57.46(126.67)	57.68(127.17)
Avg. daily feed, Kg.(lb.)	2.34(5.2)	2.19(4.3)	1.63(3.60)	1.66(3.66)
Avg. daily gain, Kg.(lb.)	0.97(2.1)	0.88(1.95)	0.61(1.35)	0.60(1.32)
F/G	2.4	2.47	2.65	2.76

Table 29. Results from last 28 days on indicated diets.

Factor	Diet			
	1 (control)	2	3	4
Initial wt., Kg.(lb.)	70.31(155.0)	66.68(147.0)	57.46(126.67)	57.68(127.17)
Final wt., Kg.(lb.)	96.16(212.0)	90.42(199.34)	81.42(179.5)	85.28(188.0)
Avg. daily feed, Kg.(lb.)	2.73(6.02)	2.45(5.41)	2.23(4.91)	2.49(5.48)
Avg. daily gain, Kg.(lb.)	0.93(2.04)	0.85(1.87)	0.86(1.89)	0.98(2.17)
F/G	2.97	2.90	2.61	2.53

Peanuts and corn were ground in diets 3 and 4.

Table 30. Results from Tables and combined (56 days).

Factor	Diet			
	1 (control)	2	3	4
Initial wt., Kg.(lb.)	43.16(95.16)	41.96(92.50)	40.29(88.83)	40.89(90.15)
Final wt., Kg.(lb.)	96.16(212.0)	90.42(199.34)	81.42(179.50)	85.28(188.0)
Avg. daily feed, Kg.(lb.)	2.54(5.59)	2.32(5.12)	1.93(4.26)	2.07(4.57)
Avg. daily gain, Kg.(lb.)	0.95(2.09)	0.87(1.91)	0.73(1.62)	0.79(1.75)
F/G	2.68	2.68	2.63	2.62