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**Peanut Meal as a Protein
Supplement to Corn for
Fattening Hogs in
the Dry Lot**

By

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of the

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AUBURN

PEANUT MEAL AS A PROTEIN SUPPLEMENT TO CORN FOR FATTENING HOGS IN THE DRY LOT

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INTRODUCTION

In the soft pork experiments in cooperation with other southern experiment stations and the Bureau of Animal Industry, the Alabama Station has accumulated a considerable amount of interesting data on the feeding value of rations containing peanut meal. The cooperating parties have agreed that when sufficient feeding data are available they may be published.

The results reported in these pages will cover only the feeding value of peanut meal without reference to the quality of pork produced. The latter will be reported when, in the opinion of the cooperating parties, there is sufficient data to warrant definite statements.

Due to the limited supply and the high price of tankage, southern hog feeders have attempted to use other feeds as a source of protein to balance such carbonaceous feeds as corn and sweet potatoes. In the majority of cases, perhaps, they have been content to feed an inefficient, high carbohydrate ration, even though the purchase of high priced nitrogenous feeds usually would have made the ration more economical.

Various substitutes for tankage have been tried. Naturally cotton seed meal was one of the first to be used in the South. Its use as a hog feed is attended with more or less danger, however, and it is fed to hogs only in very limited amounts.

The production of peanuts has increased greatly within the last 10 or 12 years and a considerable part of the crop has been utilized by cottonseed mills for the production of edible oil. The by-product (peanut cake, peanut feed, or peanut meal) contains 30 percent to 43 percent of protein. The experiments reported in the following pages show that it makes a satisfactory supplement to corn for fattening hogs.

PLAN OF EXPERIMENTS

Objects.—The objects of the several experiments reported in this bulletin were:

1. To determine the influence of peanut meal on the quality of pork.
2. To study the value of peanut meal as a supplement to corn for fattening hogs in the dry lot.

Animals Used.—The animals used in most of the experiments were purebred Duroc Jerseys or Poland Chinas. In a few cases high grades or cross-breds were used. In each experiment special care was taken to have the lots as uniform as possible in age, thrift, weight, breed, sex, and conformation.

Quarters.—All the experiments were conducted in dry lots containing shelter.

Weighing.—In the first two experiments reported, individual weights were taken on two consecutive days at the beginning and end of the experiment. In the later experiments individual weights were taken on three consecutive days. Individual weights were made at regular intervals of 14 days throughout the experiments.

Feeding.—All hogs in experiments 1 and 2 were hand fed except in Lot 4 of experiment 2 where the corn and peanut meal were self fed, free choice. Lots 1 and 2 of experiments 3 and 4 were also hand fed. In the other experiments the feeds were mixed and self fed except in the cases noted in the tables where the free choice method of feeding was used.

Water and Minerals.—The hogs had access to water and to a simple mineral mixture composed of equal parts by weight of charcoal, air-slaked lime, and salt.

Quality of Feeds.—No. 2 white corn was used in all experiments.

Three grades of peanut meal were used. They were as follows:

1. Peanut meal made from whole nuts (including hulls), guaranteed to contain 30 percent of protein.
2. Peanut meal made from whole nuts (including hulls), guaranteed to contain 36 percent of protein.
3. Peanut meal made from shelled nuts (hull free) with a guaranteed protein content of 41 percent.

The greater part of the peanut meal produced in this section is of the first two grades. When peanut meal is mentioned in these pages it means the product containing hulls, unless designated as "hull free."

The following is a table of representative analyses of the feeds used in these experiments, as reported by the Department of Research Chemistry of this station.

Analyses of Feeds

Feed	Water	Ash	Crude Protein	Ether Extract	Fiber	N-free Extract
Peanut meal ----- (Hulls in, 36% protein) ..	8.92	3.52 ($P_2O_5 = 1.03$) ($CaO = 0.21$)	38.63	10.89	15.61	22.43
Peanut meal ----- (Hulls in, 30% protein) ..	7.88	5.91	32.31	6.98	20.39	26.53
Peanut meal ----- (Hull free, 41% protein) -	8.17	3.98	31.65	6.49	29.20	20.51
		3.37				
	9.08	($P_2O_5 = 1.19$) ($CaO = 0.205$)	42.5	10.16	10.16	24.63
Corn -----	13.30	1.28	11.25	4.63	5.95	63.59
	11.43	1.35	9.40	4.09	2.10	71.63

NOTE: Experiments 1 and 2 (Tables I and II) are from unpublished data collected at this station by Geo. S. Templeton and G. L. Burseson. The authors acknowledge their indebtedness. Mr. Burseson assisted also in experiments 3 and 4 of the soft pork series.

RESULTS

TABLE I.—*Summary of Experiment I—Soft Pork Series*
 March 1 to June 12, 1918—104 Days

	Lot 1	Lot 2	Lot 3	Lot 4
	Corn-8 40% tankage-1 Hand fed	Corn-1 P. N. Meal-1 Hand fed	Corn-2 P. N. Meal-1 Hand fed	Corn-3 P. N. Meal-1 Hand fed
Number of hogs to lot	8	8	8	8
	Lbs.	Lbs.	Lbs.	Lbs.
Av. initial weight	54	54	54	54
Av. final weight	173	170	171	177
Av. daily gain per hog	1.14	1.11	1.12	1.18
Av. daily feed per hog:				
Ground corn	4.24	2.40	3.11	3.59
Peanut meal (hulls in 32.31% protein)	-----	2.40	1.55	1.19
Tankage				
(40% protein)	0.53	-----	-----	-----
Total	4.77	4.80	4.66	4.78
Feed for 100 lbs. gain:				
Ground corn	372.5	216.0	277.4	303.75
Peanut meal	-----	216.0	138.6	101.25
Tankage	46.5	-----	-----	-----
Total	419.0	432.0	416.0	405.0
Feed cost 100 lbs. gain	\$13.90	\$12.50	\$12.74	\$12.72

Prices of Feeds:

Corn—\$1.90 a bushel

40% Tankage—\$55 a ton

Peanut meal—\$48 a ton

A summary of the first experiment is shown in Table I. These hogs were hand fed and the daily feed consumption was kept about the same in all lots. There were no significant differences in the average daily gain per hog in the various lots.

A ration of 2 parts corn and 1 part peanut meal compared very favorably with a ration of 8 parts corn and 1 part tankage in amount of feed required for 100 pounds of gain. Slightly less feed was required for a unit of gain when the proportion of corn was increased to 3 parts corn and 1 part peanut meal. The largest feed requirement for 100 pounds of gain was on the ration of 1 part corn and 1 part peanut meal.

Notwithstanding the fact that more feed was required for 100 pounds of gain on the ration of equal parts of corn and peanut meal than on any of the other rations, this ration produced the cheapest gain. When this experiment was run corn was selling at \$1.90 a bushel, or \$67.86 a ton, while peanut meal was only \$48.00 a ton.

TABLE II.—*Summary of Experiment 2—Soft Pork Series*
March 20 to June 29, 1920—101 days

	Lot 1	Lot 2	Lot 3	Lot 4
	Corn-10 60% tankage-1 Hand fed	Corn-7 P. N. Meal-1 Hand fed	Corn-1 P. N. Meal-1 Hand fed	Corn P. N. Meal Free choice
Number of hogs to lot	6	6	6	6
	Lbs.	Lbs.	Lbs.	Lbs.
Av. initial weight -----	84	83	84	85
Av. final weight -----	220	209	225	203
Av. daily gain per hog -	1.21	1.25	1.31	1.08
Av. daily feed per hog:--				
Ground corn -----	5.19	4.92	3.34	4.54
Tankage				
(60% protein) -----	0.52	-----	-----	-----
Peanut meal				
(32.31% protein) --	-----	0.70	3.34	0.86
Total -----	5.71	5.62	6.68	5.40
Feed for 100 lbs. gain:				
Ground corn -----	429	394	255	420
Tankage -----	43	-----	-----	-----
Peanut meal -----	-----	56	255	80
Total -----	472	450	510	500
Feed cost 100 lbs. gain--	\$17.18	\$15.19	\$17.74	\$16.39

Prices of feeds:

Corn—\$1.92 a bushel

Tankage (60% protein)—\$115.00 a ton

Peanut meal—\$60 a ton

Table II shows a summary of experiment 2. In this experiment a ration was included that contained a much larger proportion of corn (7 parts to 1 part peanut meal) than any used in the first experiment. This ration produced practically as large gains as the one of equal parts of corn and peanut meal, while the feed requirement for 100 pounds of gain was considerably less on the ration containing the larger propor-

tion of corn. Less feed was required for a unit of gain on the ration of 7 parts corn and 1 part peanut meal than on the ration composed of 10 parts corn to 1 part 60 percent tankage. The lot receiving corn and peanut meal, free choice, (proportion eaten 5.25 parts corn to 1 part peanut meal) made the smallest gain. Practically the same amount of feed was required for a unit of gain in this lot as in the lot receiving equal parts corn and peanut meal. The feed requirement for 100 pounds of gain by all lots in this experiment was rather high in comparison with other experiments at this station.

The price of corn was practically the same as in the first experiment, but the price of peanut meal had increased to \$60.00 a ton. Under the conditions of this experiment the gains were less expensive on 7 parts of corn to 1 part of peanut meal than on larger proportions of peanut meal.

TABLE III.—*Summary of Experiment 3—Soft Pork Series*
November 20, 1920, to March 16, 1921

	Lot 1	Lot 2	Lot 3	Lot 4
	Corn-7 P. N. Meal-1 Hand fed	Corn-1 P. N. Meal-1 Hand fed	Corn P. N. Meal Free choice	Corn Hull free P. N. Meal Free choice
Av. number days fed ---	69	69	69	69
Number hogs to lot ----	8	8	8	8
	Lbs.	Lbs.	Lbs.	Lbs.
Av. initial weight -----	97.4	98.4	94.0	95.0
Av. final weight -----	189.4	189.2	187.4	197.0
Av. daily gain per hog -	1.33	1.31	1.35	1.48
Av. daily feed per hog:				
Ground corn -----	5.29	3.01	4.33	4.24
Peanut meal				
(38.6% protein) ---	0.75	3.01	1.30	-----
Hull free P. N. meal				
(42.5% protein) ---	-----	-----	-----	1.69
Total -----	6.04	6.02	5.63	5.93
Feed for 100 lbs. gain:				
Ground corn -----	396.81	229.6	320.0	287.8
Peanut meal -----	56.69	229.6	96.6	-----
Hull free P. N. meal ---	-----	-----	-----	114.8
Total -----	453.5	459.2	416.6	402.6
Feed cost 100 lbs. gain -	\$8.42	\$10.62	\$8.94	\$9.49

Prices of Feeds:

Corn—\$1.12 a bushel

Peanut meal—\$52.50 a ton

Hull free P. N. meal—\$65.00 a ton

Table III shows a summary of the third experiment. This test differed from the previous ones in that the hogs were not all fed for the entire period. Two hogs from each lot were shipped to the abattoir of the Bureau of Animal Industry at Beltsville, Maryland, for slaughter at intervals of 21 days, 32 days, 34 days and 29 days respectively. The total feeding period was 116 days, making an average feeding period of 69 days for the 8 hogs.

Lot 4 which received corn and hull free peanut meal, free choice, made larger gains and required less feed for a unit of gain than Lot 3 which received ground corn and peanut meal (hulls included), free choice. Lot 4 consumed a slightly larger proportion of peanut meal to corn than did Lot 3, indicating that the hull free peanut meal was more palatable than the meal that contained the hulls.

Lot 4 ratio of peanut meal to corn = 1:2.55

Lot 3 ratio of peanut meal to corn = 1:3.31

Although Lot 4 required less feed for 100 pounds of gain than Lot 3, the gains were more expensive because the hull-free peanut meal cost so much more than the meal containing hulls. Since corn was cheaper than peanut meal in this experiment, the larger proportion of peanut meal consumed by Lot 4 tended to increase the cost of gain.

A comparison of lots 1 and 2 show results very similar to those of the second experiment in respect to the rate of gain. In this experiment both the rate of gain and the total amount of feed required for a unit of gain were practically the same whether the proportion was 7 parts of corn to 1 part of peanut meal, or 1 part of corn to 1 part of peanut meal.

The price of corn was \$1.12 a bushel, or \$40.00 a ton, and the price of peanut meal was \$52.50 a ton. At these prices, the ration containing the smaller proportion of peanut meal produced the cheaper gains.

TABLE IV.—*Summary of Experiment 4—Soft Pork Series*
December 1, 1921, to March 25, 1922

	Lot 1	Lot 2	Lot 3	Lot 4
	Corn-7 P. N. Meal-1 Hand fed	Corn-1 P. N. Meal-1 Hand fed	Corn 2 P. N. Meal-1 Self fed	Corn 2 Hull free P. N. Meal-1 Self fed
Av. number of days ----	72.5	72.5	70.0	70.4
Number of hogs to lot --	12	12	12	12
	Lbs.	Lbs.	Lbs.	Lbs.
Av. initial weight -----	86.6	85.0	86.3	84.8
Av. final weight -----	179.9	191.9	173.8	185.1
Av. daily gain per hog -	1.28	1.47	1.25	1.42
Av. daily feed per hog:				
Ground corn -----	4.86	2.85	3.43	3.45
Peanut meal				
(38.63% protein) --	.69	2.85	1.72	-----
Hull free P. N. meal				
(42.5% protein) ---	-----	-----	-----	1.73
Total -----	5.55	5.70	5.15	5.18
Feed for 100 lbs. gain:				
Ground corn -----	378	193.76	286.15	242.69
Peanut meal -----	54	193.76	143.08	-----
Hull free P. N. meal				
Total -----	-----	-----	-----	121.34
Total -----	432	387.52	429.23	364.03
Feed cost 100 lbs. gain -	\$5.65	\$5.76	\$6.04	\$5.43

Prices of feeds:

Corn—70c a bushel

P. N. meal—\$34.50 a ton

Hull free peanut meal—\$39.50 a ton

Table IV shows a summary of the fourth experiment. Three hogs from each lot were shipped to Beltsville for slaughter at intervals of 29 days, 29 days, 31 days, and 25 days. Lots 3 and 4 had only 2 hogs each for the final shipment because one hog had been removed from each of these lots on account of injury.

As in the third experiment Lot 4 which received hull-free peanut meal made larger gains and required less feed for a unit of gain than Lot 3 which received peanut meal containing hulls. In this experiment the gains cost less on the hull-free ration because the spread in the price of the two grades of meal was not so great as in the third experiment.

Although, Lot 2 made larger gains and required less feed for a unit of gain than Lot 1, the gains were more

expensive, due to the larger proportion of peanut meal which was higher in price than corn. (Corn was 70 cents a bushel, or \$25.00 a ton, and peanut meal was \$34.50 a ton.)

It is not always true that the ration which produces the cheapest gain is the ration which shows the greatest final profit. The increase in the amount of gain may sometimes more than offset a slight increase in the cost per unit of gain. There is a relationship between the rate of gain, the cost of gain, and the selling price of hogs that influences the final profit. However, in these experiments, the rate of gain was so nearly the same on the different proportions of corn and peanut meal that this relationship did not have to be considered. It may be assumed that the proportion which produced the cheapest gain likewise produced the greatest profit.

TABLE V.—*Summary of Experiment 5—Soft Pork Series*
November 8, 1922, to January 7, 1923

	Lot 1	Lot 2
	Light hogs Corn-2 P. N. Meal-1	Heavy hogs Corn-2 P. N. Meal-1
Av. number days -----	66	57
Number hogs to lot -----	14	12
	Lbs.	Lbs.
Av. initial weight -----	75.9	131.6
Av. final weight -----	178.4	231.3
Av. daily gain per hog -----	1.55	1.75
Av. daily feed per hog:		
Ground corn -----	4.23	5.31
Peanut meal (32.3% protein) -----	2.11	2.65
Mineral matter -----	0.07	0.08
Total -----	6.41	8.04
Feed for 100 lbs. gain:		
Ground corn -----	273.5	303.0
Peanut meal -----	136.7	151.0
Mineral mixture -----	4.6	4.8
Total -----	414.8	458.8
Feed cost of 100 lbs. gain -----	\$8.00	\$8.84

Prices of feeds:

Corn—\$1 a bushel

Peanut meal—\$45 a ton

Mineral mixture—1c a pound

Table V shows a summary of the fifth experiment. This experiment was planned to show the influence of

the weight of the feeder pig at the beginning of the peanut meal feeding period, on the quality of the finished carcass. The results are included to furnish additional data on the feeding value of the ration used.

Each hog in this experiment was fed to put on approximately 100 pounds gain and was then shipped to Beltsville for slaughter. As would be expected, the smaller hogs made the more economical gains. The results are not strictly comparable from the feeding standpoint because the hogs in the light weight lot represented a somewhat smaller, more blocky type than those in the heavy weight lot.

The gains were very satisfactory and the amount of feed required for 100 pounds gain was about the average of that reported in the 4 previous experiments.

TABLE VI.—Summary of One Lot Fed Peanut Meal in Each of Five Other Experiments

	Exp. 1	Exp. 2	Exp. 3	Exp. 4	Exp. 5
	Corn-1 P. N. M.-1 Self fed	Corn-1 P. N. M.-1 Self fed	Corn P. N. M. Free choice	Corn-2 P. N. M.-1 Self fed	Corn-2 P. N. M.-1 Self fed
Number of days -----	75	75	60	106	74
Number hogs to lot -----	7	6	6	10	9
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Av. initial weight -----	76	75.8	122.2	72.9	56.6
Av. final weight -----	185	186.3	250.8	171.0	157.1
Av. daily gain per hog --	1.46	1.47	2.15	0.93	1.36
Av. daily feed per hog:					
Ground corn -----	2.86	3.35	-----	2.51	3.36
Shelled corn -----	-----	-----	6.80	-----	-----
Peanut meal					
(hulls included) -----	2.86	3.35	2.76	1.25	1.68
Total -----	5.72	6.70	9.56	3.76	5.04
Feed for 100 lbs. gain:					
Ground corn -----	196.0	227.9	-----	271.5	247.2
Shelled corn -----	-----	-----	317.1	-----	-----
Peanut meal -----	196.0	227.9	128.7	135.7	123.6
Total -----	392.0	455.8	445.8	407.2	370.8
Feed cost of 100 lbs. gain	\$7.70	\$7.45	\$8.54	\$7.90	\$7.19
Prices of feeds:					
Ground corn—bushel -	\$1.25	\$0.85	-----	\$1.00	\$1.00
Shelled corn—bushel -	-----	-----	\$1.00	-----	-----
Peanut meal—ton ----	\$35.00	\$35.00	\$45.00	\$45.00	\$45.00

Table VI shows a summary of 5 lots that were fed peanut meal in other experiments. The results of these experiments are being reported in other publications. The data from the peanut meal lots are included in this bulletin to furnish additional data for a comparison of rations composed of different proportions of corn and peanut meal.

TABLE VII.—*Summary of All Experiments with Different Proportions of Corn and Peanut Meal*

	Corn-7 P. N. Meal-1	Corn-3 P. N. Meal-1	Corn-2 P. N. Meal-1	Corn-1 P. N. Meal-1	Corn Peanut Meal Free choice
Number of experiments	3	1	6	6	3
Total number hogs used	26	8	65	47	20
Av. number days fed	78	104	77	81.6	76
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Av. initial weight	89.0	54.0	82.3	79.3	99.8
Av. final weight	189.5	177.0	182.3	190.2	211.1
Av. daily gain per hog	1.28	1.18	1.30	1.35	1.46
Feed for 100 lbs. gain					
Ground corn	389.6	303.75	287.9	217.3	-----
Shelled corn	-----	-----	-----	-----	350.7
Peanut meal	55.6	101.25	143.9	217.3	102.3
Total	445.2	405.0	431.8	434.6	453.0

For feed cost of 100 pounds gain see Table VIII.

Table VII shows a summary of all experiments with different proportions of corn and peanut meal.

In the order of the greatest average daily gain per hog the rations ranked as follows:

	Pounds
Corn-Peanut meal, free choice	1.46
Corn 1-Peanut meal 1	1.35
Corn 2-Peanut meal 1	1.30
Corn 7-Peanut meal 1	1.28
Corn 3-Peanut meal 1	1.18

The amount of feed required for 100 pounds of gain on the different rations was:

	Total Lbs.
Corn 3; P. N. Meal 1	
303.75 lbs. ground corn	
101.25 lbs. peanut meal	405
Corn 2; P. N. Meal 1	
287.9 lbs. ground corn	
143.9 lbs. peanut meal	431.8

Corn 1; P. N. Meal 1		
217.3	lbs. ground corn	
217.3	lbs. peanut meal	----- 434.6
Corn 7; P. N. Meal 1		
389.6	lbs. ground corn	
55.6	lbs. peanut meal	----- 445.2
Corn-P. N. Meal, free choice		
350.7	lbs. shelled corn	
102.3	lbs. peanut meal	----- 453.0

These results indicate that there was no great difference in the efficiency of the rations composed of various proportions of corn and peanut meal. Shelled corn and peanut meal, free choice, produced the largest gains but the feed required for a unit of gain was greatest on this ration.

There were only slight differences in the rate of gain when the ration consisted of 1 part ground corn to 1 part peanut meal, 2 parts ground corn to 1 part peanut meal, or 7 parts corn to 1 part peanut meal. The ration of 3 parts corn to 1 part peanut meal did not produce as rapid gains, but this proportion was used in only one experiment and will, therefore, be disregarded in the discussion. About 10 to 15 pounds more feed was required for 100 pounds gain when the proportion was 7 parts corn to 1 part peanut meal than when either 2 parts corn to 1 part peanut meal or 1 part corn to 1 part meal was used.

In view of these results it seems that the proportion of corn and peanut meal used should be regulated by the relative prices of the two feeds. Normally, nitrogenous feeds are expected to be more expensive than carbonaceous feeds. Therefore, it is probable that the most profitable results would usually be obtained by using a rather large proportion of corn and a small proportion of peanut meal.

Provisionally, we would recommend the use of as much as 7 parts of corn to 1 part of peanut meal when a ton of peanut meal costs more than a ton of corn. For hogs under 70 pounds the use of 5 parts of corn to 1 part of peanut meal might prove more profitable, if peanut meal costs only slightly more than corn.

TABLE VIII.—*Feed Cost of 100 Pounds Gain on Different Proportions and Varying Prices of Corn and Peanut Meal*

Price of corn per bushel -----		\$0.60	\$0.80	\$ 1.00	\$ 1.20	\$ 1.40
Price of peanut meal per ton	Ratio of corn to peanut meal fed					
\$30.00 -----	7:1	\$5.00	\$6.40	\$ 7.78	\$ 9.18	\$10.57
	3.4:1*	5.28	6.54	7.79	9.04	10.29
	2:1	5.24	6.27	7.30	8.33	9.35
	1:1	5.59	6.37	7.14	7.91	8.69
\$40.00 -----	7:1	5.28	6.67	8.06	9.45	10.82
	3.4:1*	5.80	7.05	8.31	9.56	10.81
	2:1	5.96	6.99	8.02	9.05	10.07
	1:1	6.67	7.45	8.23	9.00	9.78
\$50.00 -----	7:1	5.56	6.95	8.34	9.73	11.13
	3.4:1*	6.31	7.56	8.82	10.07	11.32
	2:1	6.68	7.71	8.74	9.77	10.78
	1:1	7.76	8.54	9.31	10.08	10.86
\$60.00 -----	7:1	5.84	7.23	8.62	10.01	11.41
	3.4:1*	6.82	8.07	9.33	10.58	11.83
	2:1	7.40	8.43	9.46	10.49	11.51
	1:1	8.85	9.63	10.40	11.17	11.94

* The proportion 3.4:1 was that consumed when shelled corn and peanut meal were fed, free-choice.

Table VIII shows how varying prices of corn and peanut meal would have influenced the cost of gains produced on rations containing different proportions of these two feeds, based on the results from such rations in the experiments reported in the previous pages.

TABLE IX.—*Summary of all Experiments Showing Comparison of Hull-free Peanut Meal With Whole Peanut Meal (Hulls included)*

	Hulls in	Hull free
Number of experiments -----	2	2
Number hogs used -----	20	20
Av. number days fed -----	69.8	69.8
	Lbs.	Lbs.
Av. initial weight -----	89.4	88.9
Av. final weight -----	179.2	189.9
Av. daily gain per hog -----	1.28	1.44
Pounds feed for 100 lbs. gain:		
Corn -----	300.2	260.9
Peanut meal (hulls in) -----	123.7	-----
Peanut meal (hull free) -----	-----	118.7
Total -----	423.9	379.6

Table IX shows a summary of two experiments comparing peanut meal (hulls included) with hull-free peanut meal. In the first experiment corn and peanut meal were fed, free choice, to two lots of hogs, peanut meal (hulls included) to one lot and hull-free peanut meal to the other. In the second experiment the feeds were mixed in the proportion of 2 parts of corn to 1 part of peanut meal, hull free peanut meal being used in one ration and peanut meal (hulls included) in the other.

In the two experiments the average daily gain was 0.16 pounds higher and the amount of feed required for 100 pounds gain was 44.3 pounds less on the rations that contained the hull-free meal than on those that contained the peanut meal (hulls included). On this basis 2,000 pounds of hull-free peanut meal was equal in value to 2,084 pounds of peanut meal (hulls included) and 660 pounds of corn. This does not take into consideration the value of the increased gain on the rations containing the hull-free meal.

The protein content of the two grades of peanut meal compared in the above experiments was 42.50 percent for the hull-free meal and 38.63 percent for the meal that contained hulls. A large part of the peanut meal that is made from whole peanuts (hulls included) contains only 30 percent to 31 percent of protein. Meal containing only 30 percent of protein would be expected to give less favorable results than meal containing 38.63 percent of protein; and, consequently, it would have a smaller relative value in comparison with hull-free meal.

POINTS OF INTEREST

1. A ration of corn, peanut meal, and mineral matter was satisfactory from the standpoint of gains produced and amount of feed required for 100 pounds of gain on fattening hogs in the dry lot.

2. The rate of gain and the total amount of feed required for 100 pounds of gain on this ration compare very favorably with average results on rations of corn and tankage. It must be borne in mind, however, that the protein content of peanut meal averages around 30 per cent to 36 per cent as compared to 60 per cent for high grade tankage. Hence, a larger amount of peanut meal than of tankage is required when they are used as protein supplements.

3. There was little difference in the rate of gain on rations composed of 7 parts corn and 1 part peanut meal, 2 parts corn and 1 part peanut meal, or equal parts corn and peanut meal. Corn and peanut meal, free choice, (3.4 parts of corn to 1 part of peanut meal were consumed) produced slightly larger gains than any of the above rations.

4. There was little difference in the amount of feed required for 100 pounds of gain when the proportion was 2 parts corn to 1 part peanut meal, or 1 part corn to 1 part peanut meal. With 7 parts corn to 1 part peanut meal slightly more feed was required for 100 pounds of gain. The largest feed requirement was with corn and peanut meal, free choice.

5. These results indicate that the best proportion of corn and peanut meal to feed would depend on the relative prices of the two feeds. It is probable that in most instances the larger proportions of corn should be used. (See Table VIII, page 14.)

6. In two experiments the average daily gain per hog on a ration containing hull-free peanut meal was 1.44 pounds as compared with 1.28 pounds on a ration containing the same proportion of peanut meal with hulls included.

7. Two thousand pounds of hull-free peanut meal (42.5 percent protein) was equal in feeding value to 2,084 pounds of peanut meal with hulls included (38.6 percent protein) plus 660 pounds of corn. This does not take into consideration the value of the increased rate of gain when hull-free meal was used.