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**Improving the Quality of Peanut Fed Hogs
by Finishing In Dry Lot on Corn and
Tankage, Corn and Cotton Seed
Meal, Corn and Velvet Beans.**

By
GEO. S. TEMPLETON

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F. W. Burns, Assistant

EDITOR:

Leslie L. Gilbert

*Resigned Sept. 1, 1920.

IMPROVING THE QUALITY OF PEANUT FED HOGS,
BY FINISHING IN DRY LOT ON CORN AND
TANKAGE; CORN AND COTTONSEED
MEAL; CORN AND VELVET BEANS

By GEO. S. TEMPLETON

INTRODUCTION

The acreage of peanuts in Alabama has increased very materially in the past few years. A large percentage of the acreage of this crop is harvested by allowing the hogs to gather the nuts. This method of harvesting the crop is very satisfactory. More pounds of pork can be made on an acre of good peanuts than on an acre of any other one crop that can be grown in this territory. Bulletin No. 206, published by this Station, gives a report on an acre of peanuts that produced 668 pounds of pork.

A territory that grows a large acreage of peanuts usually produces a large number of hogs. The cost of producing an acre of peanuts is relatively low compared with other feed crops, and as the hogs harvest the crop themselves the cost of producing gains makes the production of peanut pork very cheap. The hog, however, that is fattened exclusively on peanuts does not produce a carcass that is as satisfactory to the butcher or packer as one that is grown on other pasture crops, supplemented with a grain ration.

OILY PORK (Peanut Pork)

The carcass of a hog that has been fattened exclusively on peanuts is very oily and soft. The fat has a yellowish white color, and when the carcass is chilled out from 36 to 48 hours in a cooling room at 32° F. it does not become firm, but remains soft and pliable to the touch. The lard made from an oily carcass at the normal summer temperature is a semi-liquid, of a yellowish color, and cannot be made into firm lard without the use of additional hardening material. Lard of this character has a melting point of 33° C. (91.4° F.) or below. Lard made from peanut fed hogs becomes rancid in a much shorter time than lard from carcasses finish-

ed on grain feeds. Oily carcasses never become sufficiently firm to permit the trimming of various cuts into neat and attractive hams, shoulders and bacon. Pork trimmings from oily carcasses make a greasy sausage of inferior quality. In the cooking process the various cuts shrink more than is characteristic of the same cuts from firm carcasses, due to the fact that the heat used in the cooking process melts a large percentage of the fatty tissue.

FIRM PORK

The flesh of a corn fed carcass is a brighter red than that of an oily carcass, and the fat is white and firm. A carcass of this class when chilled from 36 to 48 hours in a cooling room at 32° F. becomes very firm to the touch, and lard made from this quality of carcass at normal summer temperature remains white, flakey, and firm, and has a melting point of about 41° C. (105.8° F.). Carcasses that have been in a cool storage room 48 hours firm up sufficiently so that the various retail cuts can be neatly trimmed, and the trimmings are of such quality as to produce a first quality sausage.

FEEDS THAT PRODUCE FIRM PORK

For a number of years the Alabama Experiment Station has been conducting experiments to test the effect of various southern feeds on the quality of the carcass and keeping qualities of lard. The results of these experiments show that peanuts and soybeans when fed alone produce soft pork. The following feeds produce an entirely satisfactory quality of pork:

- Corn and tankage.
- Corn 2 parts, cottonseed meal 1 part.
- Corn and shorts.
- Corn 6 parts, peanut meal 1 part.
- Corn and skimmilk or buttermilk.
- Corn and soy beans planted in alternate rows and logged down.
- Rape pasture.
- Rye pasture.
- Oat pasture.
- Oats and vetch.
- Velvet beans.
- Permanent pasture.

It is a general custom in harvesting a crop of peanuts with hogs to use spring farrowed pigs that have been maintained as cheaply as possible through the summer months until the peanut pasture is ready for grazing the latter part of August. At this season the pigs are

turned into the peanut pasture to mature and fatten exclusively on peanuts. To improve the quality of pork produced by this method it will be necessary to finish the hogs on feeds other than peanuts, but at the same time it is desired that the finish be put on at a profit.

As a hog reaches maturity and a finished condition it requires more feed for a pound gain, consequently in selecting for a finishing period hogs that have grazed on peanut pasture it is necessary to select hogs that are not mature, or too highly finished to make good gains.

The three experiments reported in this bulletin were conducted on the farm of Mr. T. R. Martin, Union Springs, Alabama. This work was conducted under the appropriation made by the State Local Experiment Law of 1911. Mr. Martin furnished the hogs, feed, and equipment for the experiments. The tests were planned by the author of this bulletin, and an Experiment Station employee was stationed on the farm and had personal supervision of the experiments. Mr. V. W. Crawford had charge of the experimental work during 1917, and Mr. G. L. Burleson had charge during 1918 and 1919.

OBJECTS OF EXPERIMENT A.

The objects of this experiment were:

1. To determine whether or not a five weeks finishing period in dry lot on grain feeds would be profitable following eight weeks pasture period on peanuts.
2. To test the influence of the following rations on the carcasses of hogs grazed on peanuts eight weeks:

- Ration 1. Corn and meat meal, two weeks; corn 2 parts, cottonseed meal 1 part, three weeks.
- Ration 2. Corn 4 parts, velvet beans 1 part, five weeks.
- Ration 3. Corn and meat meal in self-feeder, five weeks.
- Ration 4. Peanut pasture, five weeks.

HOGS USED.

The sixty head of hogs used in this experiment were raised on the farm where the experiment was conducted and on adjoining farms. Practically all of them showed improved blood, and most of them were high grade Duroc-Jerseys, Poland-Chinas, and Berkshires. When they were turned on peanut pasture they averaged 66 pounds per head, and at the close of the eight weeks they averaged 165 pounds per head. Individual weights

were taken at the beginning of the dry lot feeding period, and the hogs were weighed individually every seven days, and at the close of the test.

RATIONS.

- Lot 1. Corn and meat meal in separate compartments of self-feeder, two weeks; Corn 2 parts, cottonseed meal 1 part, three weeks.
- Lot 2. Corn 4 parts, threshed velvet beans 1 part, five weeks.
- Lot 3. Corn and meat meal in separate compartments self-feeder, five weeks.
- Lot 4. Peanut pasture, five weeks.

METHOD OF FEEDING.

From previous experiments conducted by the Alabama Experiment Station it had been determined that hogs that had grazed on peanuts eight weeks and had more than doubled their weight would classify on the market as oily hogs. In previous experiments rations containing a high percentage of cottonseed meal had produced a firmer carcass than any other rations tested.

It is not safe for the health of hogs to feed continually a ration containing as much as one-third cottonseed meal for more than three weeks, and it is considered best to use this feed at the finish of the feeding period. Consequently in Lot 1 the plan was to feed corn and meat meal in separate compartments of self-feeder for two weeks, then change the feed to cottonseed meal and corn for the remaining three weeks of the test. At first an attempt was made to mix the shelled corn and cottonseed meal into a thick slop and feed in this form. However, the hogs would root out the corn and waste the cottonseed meal, so the slop feed was discontinued after two or three days, and the shelled corn and cottonseed meal were mixed and put in a self-feeder. The self-feeder was adjusted so that only the amount of feed that was consumed would come down. A small amount of salt was added to the mixture, which seemed to add to the palatability of the ration.

In Lot 2 it was planned to feed a ration of two parts corn and one part velvet beans. For the first few days of the test the beans were fed in the pod, then threshed beans were used. The beans were very unpalatable and it was impossible to get the hogs to clean up as much as one-third of the ration as velvet beans. They would eat the corn and allow most of the beans to re-

main in the trough. Therefore, the amount of beans was gradually reduced and the corn increased until the hogs consumed a ration containing one part velvet beans and four parts corn. This proportion was used throughout the remainder of the test.

In Lot 3 the hogs were fed corn and meat meal in separate compartments of a self-feeder throughout the test. This ration proved entirely satisfactory.

In Lot 4 the hogs were weighed individually and turned on peanut pasture for five weeks. Consequently this lot of hogs had free access to peanuts for thirteen weeks.

COST OF FEEDS.

Corn	\$ 1.50	per bushel
Cottonseed meal	45.00	per ton
Threshed velvet beans	40.00	per ton
Armour's meat meal, sixty percent protein	100.00	per ton

TABLE NO. 1

Results of Experiment A In Condensed Form. Nov. 1st, to Dec. 5th, 1917. (35 days)

	LOT 1	LOT 2	LOT 3	LOT 4	
	Corn and meat meal in self-feeder 2 weeks	Corn 2 parts, C. S. M. 1 part 3 weeks	Corn 4 parts Velvet beans 1 part; five weeks.	Corn and meat meal in self-feeder five weeks	Peanut pasture five weeks
Number of hogs in lot	15	15	15*	15	15
Weight of hogs at beginning	164.4	186.4	166.7	163.4	156.2
Weight of hogs at close	186.4	211.4	202.1	216.2	192.0
Total gain per hog	22.0	25.0	35.2	52.8	35.8
Average daily gains	1.57	1.19	1.00	1.51	1.02
Feed consumed, ...	350.06	453.44	420.45	423.99	
Per 100 lbs. gain ..	Lbs. corn 13.03 lbs. M. M.	Lbs. corn 226.72 lbs. C. S. M.	Lbs. corn 92.51 lbs. beans	Lbs. corn 17.42 lbs. M. M.	
Cost of feed per 100 lbs. gain	\$10.52	\$17.88	\$13.71	\$12.83	
Average melting point of lards		40.1 C.	35.64 C.	38.24 C.	30.85 C.

*A gilt in Lot 2 showed signs of being piggy and was removed at close of second week, and corrections made in feed consumed by the lot by deducting 1-15 of feed consumed by lot for two weeks.

DISCUSSION OF RESULTS

The daily gains of Lot 1 and Lot 3 were very satisfactory for the weight of the hogs used. However, the hogs in Lot 2, fed corn and velvet beans, made daily gains of only an average of one pound, as compared with hogs in Lot 3, fed corn and meat meal, which made an average daily gain of 1.51 lbs. The total gains for Lot 1, which were fed for two weeks corn and meat meal and three weeks corn and cottonseed meal did not average as high as the gains in Lot 3, fed corn and meat meal for the entire five weeks. The largest amount of feed required for 100 pounds gain was in Lot 1. As both of these rations were palatable the only way that the small gains for the amount of feed consumed can be explained by the author is that a change of feed occurred during the five weeks which no doubt influenced the daily gains. The total amount of feed consumed by Lot 2 was much higher than in the case of Lot 3, but the daily gains were much lower. This condition was probably due to the fact that the beans were not very palatable and the hogs did not consume as heavy a ration as in the case of Lot 3 where the ration of corn and meat meal was very palatable.

Although the cottonseed meal used in the ration of Lot 1 raised the melting point of the lard above that of Lot 2 and Lot 3 it did not make a sufficient difference in firmness of the carcass to make a difference in classification by the packer. Therefore, in this experiment the ration containing cottonseed meal was not as profitable as the ration of corn and meat meal, or corn and velvet beans.

At the close of the experiment the four lots of hogs were shipped with some other hogs to the Birmingham Packing Company, Birmingham, Alabama. The hogs were divided into their respective lots and slaughtered. They were placed in a cooling room at 32 to 34 degrees F. and held at this temperature for 48 hours, at which time they were graded by the packer and cold storage notes made.

The hogs in the first three lots (see Table I.) were classified by three of the packers as closely approaching a firm condition, and as medium firm. The hogs in Lot 4 classified strictly oily and soft and were paid for on this basis. There was some difference in the firmness of individuals within the first three lots. However,

it was practically impossible to distinguish one lot from the other by handling the chilled carcasses. As compared with strictly firm carcasses, the fat layer on the backs of the hogs in Lot 1, Lot 2, and Lot 3 was slightly oily and not quite as firm to the touch as strictly firm carcasses. The packers stated that these carcasses were a decided improvement over strictly peanut fed hogs. All hogs in Lots 1, 2, and 3 sold at 16 cents, which was about one-cent above the price paid by the packing company the same day for hogs of the same finish that classified oily. The hogs in Lot 4, which grazed peanuts thirteen weeks, killed out oily and were sold on the basis of 14.30 cents per pound.

The Birmingham Packing Company makes three classifications for hogs. Firm carcasses are the best quality, and sell for the highest price. Medium firm carcasses, such as were produced in the first three lots, are docked as a rule five percent on the basis of strictly firm carcasses. Oily carcasses are usually docked fifteen percent on the basis of firm hogs.

Samples of kidney fat were taken from each carcass and turned over to Professor C. L. Hare of the Department of Chemistry for melting point determinations.

The average melting points of the lard for the four lots, in order of firmness, are as follows:

- Lot 1, 40.1° C. (104.18° F.)
- Lot 3, 38.24° C. (100.83° F.)
- Lot 2, 35.64° C. (96.15° F.)
- Lot 4, 30.85° C. (87.53° F.)

Table II. Financial Statement, Experiment A.

	LOT 1	LOT 2	LOT 3	LOT 4
	Corn and meat meal 2 weeks; Corn and Cottonseed Meal; 3 weeks:	Corn 4 parts Velvet beans 1 part 5 weeks:	Corn and meat meal 5 weeks.	Peanut Pasture, 5 weeks.
Cost per hog at 16c.-----	\$26.30	\$26.67	\$26.14	\$24.99
Total cost of feed -----	6.78	4.83	6.77	
Total cost of feed consumed	\$33.08	\$31.50	\$32.91	
Value of hog when sold at 16c. -----	\$33.82	\$32.34	\$34.59	
Value of hog when sold at 14.30c. -----				\$27.45
Profit per hog -----	.74	.84	1.68	

SUMMARY

1. The sixty hogs used in this experiment grazed on peanuts eight weeks previous to starting the experiment.

2. At the close of the eight weeks pasture period on peanuts the sixty head of hogs were divided into four lots and fed for a period of five weeks as follows:

Lot 1. Corn and meat meal in separate compartments of self-feeder, two weeks; corn 2 parts, cottonseed meal 1 part, three weeks.

Lot 2. Corn 4 parts, velvet beans 1 part, five weeks.

Lot 3. Corn and meat meal in self-feeder, five weeks.

Lot 4. Peanut pasture, five weeks.

3. The daily gains for the four lots were as follows:

Lot 3, 1.51 pounds.

Lot 1, 1.57 pounds, two weeks; 1.19 pounds three weeks.

Lot 4, 1.02 pounds.

Lot 2, 1.00 pounds.

4. To make 100 pounds of increase in live weight it required 360.06 lbs. of corn and 13.03 lbs. meat meal for the first two weeks, and 453.44 lbs. of corn and 226.72 lbs. cottonseed meal for the last three weeks, in Lot 1.

Lot 2 required for 100 pounds gain, 420.45 pounds and 92.51 pounds velvet beans.

Lot 3 required 423.99 pounds corn and 17.42 pounds meat meal.

5. With corn at \$1.50 per bushel, cottonseed meal at \$45.00 per ton, threshed velvet beans at \$40.00 per ton, and Armour's meat meal at \$100.00 per ton, the cost of 100 pounds gain was as follows:

Lot 1. First two weeks, \$10.52; last three weeks, \$17.88.

Lot 2. \$13.71.

Lot 3. \$12.83.

6. The carcasses of the first three lots (see Table I.) classified as medium firm by the packer and sold for 16 cents per pound. The carcasses of Lot 4 classified soft and oily and sold for 14.30 cents per pound. It was impossible to distinguish the carcasses of Lots 1, 2, and 3, which graded medium firm by the packer. However, Lot 4, which was oily and so classified by the packer, was easily distinguished from the other three lots.

The firmest carcasses in each lot had the best finish.

7. The average melting points were as follows:

Lot 1. 40.1° C. (104.18°F.)

Lot 3, 38.24° C. (100.83°F.)

Lot 2. 35.64° C. (96.15°F.)

Lot 4, 30.85° C. (87.52°F.)

8. The net profit per hog in the various lots in the five-weeks finishing period was as follows:

Lot 3.	\$1.68.
Lot 2.	.84.
Lot 1.	.74.

EXPERIMENT B.

During the fall and early part of the winter of 1917 an experiment was started to determine whether or not it would be advisable to give hogs a finishing period in dry lot on grain feed following a peanut pasture period. Experiment B is a continuation of this test.

In the Summary Statements of Experiment A it will be noted that cottonseed meal, although improving somewhat the firmness of the carcass did not sufficiently raise the grade to make its use profitable as compared with meat meal. Velvet beans were not entirely satisfactory as a part of the finishing ration as they were not very palatable to the hogs. The five weeks finishing period following eight weeks on peanut pasture improved the quality of the carcass and caused it to approach a firm condition. In planning Experiment B it was decided to increase the finishing period to six weeks. Armour's Meat Meal, used in Experiment A, was very satisfactory as a source of protein for balancing the corn ration, but as there are two other feeds rich in protein available on the market in this State it was planned to compare these two sources of protein, so in this test Swift's Digester Tankage, sixty percent protein, and Peerless Hog Feed, forty percent protein, made by the Birmingham Packing Company were used.

The southern hog market makes the following divisions by weight: Hogs weighing 165 and above classify as No. 1; hogs weighing from 135 to 165 classify as No. 2; and hogs weighing below 135 and above 90 classify as No. 3. Too many hogs in the South are marketed at light weights, and this is particularly true of hogs that are fattened on peanuts. In this experiment it was planned to use hogs that had been grazed on peanuts, but not finished to the point of making the most desirable killing hogs. In other words, when this experiment was started the hogs were in about the condition of a large percentage of southern hogs when they are marketed, consequently the finishing period given in dry lot increased the weight of the hogs a sufficient

amount to give a spread of one-cent per pound in the value of the hogs.

OBJECTS.

The objects of this experiment were:

1. To determine whether or not it was profitable to give hogs a six weeks finishing period on grain in dry lot following an eight weeks pasture period on peanuts.

2. To test the influence on the following rations on the carcasses of the hogs in the two lots:

(a.) Corn and Swift's Digester Tankage, 60 percent protein, in separate compartments of self-feeder.

(b.) Corn and Peerless Hog Feed, 40 percent protein, in separate compartments of self-feeder.

3. To compare the relative feeding value of the proteins in Swift's Digester Tankage, 60 percent protein, and Peerless Hog Feed, 40 percent protein, for balancing the corn.

HOGS USED.

The thirty head of hogs used in this experiment were raised on the farm where the experiment was conducted, and practically all of them were purebred Duroc-Jerseys of good type. A few of them were high grade Durocs and Duroc and Poland crosses. When they were turned on peanut pasture they averaged about 69 pounds, and at the end of eight weeks they averaged 155 pounds. These hogs more than doubled their weight while on peanut pasture, which would make the carcasses soft and oily on the market. Individual weights were taken at the beginning of the dry lot feed-period and at a period of every two weeks thereafter until the close of the test.

RATIONS.

Two lots, containing 15 hogs each, were fed as follows:

Lot 1. Corn and Swift's Digester Tankage, 60 percent protein, in separate compartments of self-feeder.

Lot 2. Corn and Peerless Hog Feed, 40 percent protein, in separate compartments of self-feeder.

METHOD OF FEEDING

The hogs were confined in two lots containing about one-half acre each. They had fresh water at all times, sufficient shade, and free access to self-feeder throughout the test.

COST OF FEEDS

Corn	\$ 1.40 per bushel
Swift's Digester Tankage, 60 per- cent protein	\$115.00 per ton
Peerless Hog Feed, 40 percent protein	\$ 80.00 per ton

COMPOSITION OF FEEDS

Samples of both kinds of protein feeds were taken and analyzed by the State Chemical Department, and reported as follows:

Peerless Hog Feed,	Protein, 30.81; Fat, 12.43
Swift's Digester Tankage,	Protein, 61.88; Fat, 7.62

Table No. 3. Results of Experiment B in Condensed form, October 22, 1918, to December 4, 1918, (44 days)

LOT	Number pigs in lot	Ration	Average Initial weight	Average Final weight	Average total gain	Average Daily gains	Feed for 100 lbs. gain	Cost of 100 lbs. gain
1	15	60 percent Tankage in in self-feeder	155.6	231	75.7	1.75	Corn 418.6 lbs. tank, 39.6 lbs	\$12.74
2	15	Corn and Peerless hog Feed in self-feeder	156.4	231.1	74.4	1.69	Corn 426.2 lbs. Peerless Hog Feed 19.4 lbs	\$11.43

DISCUSSION OF RESULTS

The average daily gains for the two lots were entirely satisfactory. The hogs gained 1.72 pounds and 1.69 pounds daily in Lots 1 and 2 respectively.

It will be noted that it required 418.6 pounds corn and 39.6 pounds of tankage in Lot 1, and 426.2 pounds corn and 19.4 pounds Peerless Hog Feed in Lot 2, for 100 pounds gain. Apparently the tankage was more palatable to the hogs than the Peerless Hog Feed.

At the close of the 44 day dry lot feeding period these hogs were shipped to the Birmingham Packing Company with a number of other hogs that had grazed on peanuts for fourteen weeks. The hogs in lot 1 and 2 were separately slaughtered and put in cold storage for 48 hours, the cooling room being held at a temperature of 32 to 34 degrees F. At the end of the 48 hours

the packer classified the carcasses and cold storage notes were made. The carcasses of both lots were classified by the packer experts as medium firm, and paid for on the basis of 15½ cents per pound, as compared with the price of firm hogs of similar weight which sold on the same market the same day for 16½ cents.

The hogs of the same breeding and quality grazing peanuts for fourteen weeks classified as oily by the packer and were paid for on the basis of 15 cents per pound.

The carcasses of the hogs in lot 1 and 2 were not quite as firm to the touch after being thoroughly chilled out as were strictly corn-fed hogs. However, they were a decided improvement over the hogs that were fed exclusively on peanuts for fourteen weeks and the packer paid one-half cent more for the medium firm carcasses than for the oily ones.

Table No. 4. Financial Statement, Experiment B.

	LOT 1.	LOT 2.
	Corn and Swift's Digester Tankage	Corn and Peerless hog feed
Cost per hog at \$14.00 per hundred ..	\$21.78	\$21.92
Total cost of feed consumed per hog ..	9.51	7.87
Total cost per hog ready to market ..	31.29	29.78
Sales per hog at \$15.50 per hundred ..	35.82	35.83
Total profit per hog	4.53	6.05

SUMMARY STATEMENTS.

1. The hogs used in this experiment grazed on peanut pasture eight weeks previous to starting the experiment.

2. At the close of the eight weeks peanut pasture period the thirty head of hogs were divided into two lots of fifteen each and fed 44 days as follows:

Lot 1. Corn and Swift's Digester Tankage in separate compartments of self-feeder.

Lot 2. Corn and Peerless Hog Feed in separate compartments of self-feeder.

3. The daily gains made were 1.72 pounds and 1.69 pounds for Lots 1 and 2 respectively.

4. To make 100 pounds increase in live weight it required 418.6 pounds corn and 39.6 pounds Swift's Digester Tankage, 60 percent protein, in Lot 1, and 426.2 pounds corn and 19.4 pounds Peerless Hog Feed, 40 percent protein, in Lot 2.

5 With corn at \$1.40 per bushel, Swift's Digester Tankage, 60 percent protein, at \$115.00 per ton, and Peerless Hog Feed at \$80.00 per ton the cost of 100 pounds increase in live weight was \$12.74 and \$11.43 for Lots 1 and 2 respectively.

6. The carcasses of both lots were classified by the packer as medium firm with no appreciable difference in the quality of the carcasses in the two lots. The firmest carcasses in each lot had the best finish.

7. For the dry lot feeding period there was a total profit of \$4.53 per head for Lot 1, and \$6.05 per head for Lot 2.

8. The three sources of profit from the six weeks feeding period are as follows:

A. \$1.00 per 100 pounds live weight due to the increased weight of hogs changing grades from No. 2 to No. 1.

B. 50 cents per 100 pounds live weight due to improving the quality of the carcass.

C. A net profit of \$2.76 in Lot 1, and \$4.07 in Lot 2 per 100 pounds gain between the cost of feed to the farmer and selling price of the hogs.

EXPERIMENT C.

Experiment C is a continuation of test carried on two previous years, and reported in this bulletin as Experiment A and Experiment B.

OBJECT

The objects of this experiment are the same as in Experiment B.

HOGS USED

The thirty head of hogs used in this experiment were raised on the farm where the experiment was conducted, and practically all of them were purebred Duroc-Jerseys. A few of them, however, were cross bred Duroc-Poland and Poland-Berkshire. These hogs had the run of a peanut field eight weeks previous to the time the experiment proper was started, and they weighed on an average 63 pounds when put on pasture. At the end of the pasture period when the experiment proper was started they averaged 150 pounds. Individual weights were taken at the beginning of the experiment, at intervals of two weeks, and at the close of the test.

RATIONS

The rations used in this experiment were the same as in Experiment B.

COST OF FEEDS

Corn	-----	\$ 1.60 per bushel
Swift's Digester Tankage, 60 per-	-----	
cent protein	-----	115.00 per ton

Peerless Hog Feed, 40 percent protein ----- 80.00 per ton

COMPOSITION OF FEEDS

Samples of both Swift's Digester Tankage, 60 percent protein, and Peerless Hog Feed, 40 percent protein, were taken, and analyzed by the State Chemical Department, with the following results:

	Protein	Fat.
Swift's Digester Tankage, 60 percent	57.5	11.14
Peerless Hog Feed, 40 percent	37.81	15.42

Results of Experiment C. in Condensed Form, Oct. 27 to Dec. 4, 1919 (38 days)

LOT	No. Pigs in lot	RATION	Average initial weight	Average final weight	Average daily gain	Average total gain	Feed for 100 lbs. gain	Cost of 100 lbs. gain	Melting point of lards
1	15	Corn and 60 percent Tankage	150.3	230	2.09	74.7	Corn 370 Tankage 33.5	\$11.42	41.65°C.
2	15	Corn and Peerless Hog feed 40 percent	150.1	221.5	1.87	71.	Corn 408.6 Peerless Hog feed 46	\$12.34	40.10°C.

As in previous experiments, the daily gain was slightly larger in Lot 1, corn and 60 percent tankage, as compared with Lot 2, corn and Peerless Hog Feed, 40 percent.

It required 370 pounds of corn and 33.5 pounds of 60 percent tankage in Lot 1, and 408.6 pounds corn and 46 pounds Peerless Hog Feed, 40 percent, for 100 pounds gain. In this test it required 51 pounds less total feed consumed in the lot fed 60 percent tankage than in the lot fed Peerless Hog Feed, 40 percent. In the previous year's experiment a total of 12 pounds more of the mixture containing 60 percent tankage was required as compared with the mixture containing 40 percent Peerless Hog Feed for 100 pounds gain. At the close of the 38 day feeding test it was planned to ship the hogs to St. Louis to be slaughtered, but due to

an embargo on live stock on account of flood conditions shipment was not made until eight days later. Individual weights were taken at the time shipment was planned, and as the Peerless Hog Feed was exhausted both lots were fed Swift's Digester Tankage, 60 percent, for eight days following. Consequently these hogs were fed for a period of 46 days. On arriving at St. Louis it was found that the packers had only two classes for southern hogs, strictly firm, and oily, soft hogs being docked on the basis of 5c if they showed any indication of peanuts after being slaughtered. Consequently two representative hogs from each lot were selected for the test and the rest of the car load sold on open market. Swift & Company made the killing test and according to their expert packer both hogs in each lot classified as firm, and were paid for on that basis. Two hogs were reserved for the killing test from a lot that were fed peanuts for fifteen weeks. These carcasses were classified as oily and docked on the basis of 5c per pound live weight.

Samples of kidney fat were collected from each of the six carcasses and turned over to Professor C. L. Hare for melting point and iodine value determinations.

TABLE NO. 6. FINANCIAL STATEMENT. EXPERIMENT C.
(38 days)

	LOT 1.	LOT 2
Cost per hog at \$12.50 per hundred---	\$18.79	\$18.76
Total cost of feed per hog-----	9.91	9.85
Total cost per hog ready to market----	28.70	28.34
Sales per hog at \$13.50 per hundred--	31.05	29.90
Total profit per hog-----	2.35	1.56

The above profit per hog is based on the value of oily carcasses on the southern market. However, in this test oily hogs sold for 5c a pound under the firm hog basis, consequently in this experiment the true net profit per hog would be \$11.27 per head and \$11.26 in Lots 1 and 2 respectively, for the finishing period, due to the profit on the feed consumed during the finishing period, the increased value of the hogs due to being raised from second grade to first grade hogs, and the improved quality of the carcass due to being made more firm.

SUMMARY

1. The thirty hogs in this test grazed on peanut pasture eight weeks previous to starting on the experiment proper.

2. At the close of the eight weeks on peanut pasture the 30 head of hogs were divided into two lots of 15 each and fed for a period of 38 days as follows:

Following the 38 day feeding period an additional feeding period of eight days was given during which time all the hogs received corn and Swift's Digester Tankage, 60 percent protein.

3. The average daily gains of the hogs were 2.09 pounds and 1.87 pounds for Lots 1 and 2 respectively.

4. It required 370 pounds of corn and 33.5 pounds of tankage in Lot 1, and 408.6 pounds of corn and 46 pounds of Peerless Hog Feed in Lot 2, for 100 pounds gain.

5. With corn at \$1.60 per bushel, Swift's Digester Tankage at \$115.00 per ton, and Peerless Hog Feed at \$80.00 per ton, the cost of 100 pounds increase in live weight was \$11.42 in Lot 1 and \$12.34 in Lot 2.

6. For the dry lot feeding period the total profit per head in Lot 1 was \$2.35, and in Lot 2 \$1.56. This profit was based on the value of oily carcasses on the southern market. However, in this test oily hogs sold for 5 a pound under the firm hog basis, consequently the true net profit per hog would be \$9.87 and \$9.06 in Lots 1 and 2 respectively, for the finishing period, due to the profit on the feed consumed during the finishing period, the increased value of the hogs due to being raised from second grade to first grade hogs, and the improved quality of the carcass due to being made more firm.

7. The average melting point and iodine value determinations were as follows:

Lot	Melting point	Iodine value
1	41.65°C (106.97°F)	60.41°
2	40.10°C (104.18°F)	64.75°
Lot fed Straight peanuts	32.95°C (91.31°F)	84.45°

8. The two hogs reserved for slaughter data from Lots 1 and 2 were classified as firm by the packer and paid for on this basis. However, in the opinion of the author, the layers of fat on the back were slightly oily and upon close examination could be distinguished from the firm carcasses.