



# Oats With Vetch or Austrian Peas as Grazing Crops for Fattening Hogs

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Oats With Vetch or Austrian  
Peas as Grazing Crops for  
Fattening Hogs

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# Oats With Vetch or Austrian Peas as Grazing Crops for Fattening Hogs

## INTRODUCTION

THE GRAZING possibilities of oats have long been recognized but vetch and Austrian peas have come into prominence in Alabama only in recent years. They have been grown mostly for soil improvement but offer much promise as a live-stock feed. They make most rapid growth in the late winter and early spring months when other green feed is scarce.

No reference has been found to literature giving results of experiments in which vetch and Austrian peas have been used as grazing crops for hogs. Experiments have been reported by a number of stations, however, which show that hogs make cheaper and more rapid gains if allowed some form of green feed in addition to a concentrate ration.

In three experiments at the Michigan Station<sup>1</sup> pigs on alfalfa pasture, self-fed yellow corn and a supplement containing equal parts by weight of tankage and linseed meal were compared with pigs self-fed alfalfa hay and the same concentrates in dry lots. A summary of the results show that alfalfa pasture was worth \$27.87 per acre.

In a two-year experiment at the Minnesota Station<sup>2</sup> it was found that pigs receiving full rations of concentrates on alfalfa pasture made much faster gains than those receiving limited rations of concentrates on alfalfa pasture. The cost of concentrates per unit of gain was practically the same for the two methods of feeding. From these findings it was pointed out that full feeding should be profitable as long as the price differential materially favored early marketed pigs.

At the Georgia Station<sup>3</sup> the results from growing pigs, self-fed on corn, tankage, and minerals supplemented by mixed pasture of oats, wheat, rye, and crimson clover were compared with those from pigs on similar concentrates in a dry lot. The group on pasture made a much higher rate of gain at a much lower cost per unit of gain.

The Kentucky Station<sup>4</sup> reported two experiments in which pigs on rye pasture made faster and more economical gains than pigs in dry lot.

From the results of 17 experiments at the Ohio Station<sup>5</sup> it was concluded that pigs on forage required fewer pounds of concentrates per unit of gain and with few exceptions gained more rapidly than those with no green feed. The rate of gain and the feed required per unit of gain varied with the amount of concentrates fed. Limiting the ration to less than an average of three pounds daily per 100 pounds live weight was not as economical as feeding three pounds or more. When a limited ration

was fed, it was desirable to give a smaller amount at first and a full feed during the last part of the feeding period.

Two experiments to determine the amount of concentrates to feed pigs on pasture were conducted at the Missouri Station<sup>6</sup>. This work showed that limited rations fed to pigs on pasture decreased the amount of concentrates required per unit of gain. Spring pigs fed less than three-fourths of a full feed, however, failed to reach the desired market finish by the end of the grazing season. Pigs fed three-fourths of a full feed required less concentrates per unit of gain and made slower gains, but required more forage than those given a full feed by hand or in a self-feeder.

It is the purpose of this bulletin to report results of experiments started at the Alabama Station in 1926 to determine the value of oats with vetch or Austrian peas as a supplement to corn and tankage for fattening hogs:

1. When the corn and tankage was self-fed
2. When the corn and tankage was limited.

## METHOD OF PROCEDURE

**Lots.**—Each of these four feeding trials included: (1) one group of pigs on pasture receiving a ration of corn and tankage self-fed, free-choice; (2) another group on pasture receiving a ration of corn and tankage limited to 3 per cent of the live weight; and, (3) a third group in a dry lot given corn and tankage self-fed, free choice. The pasture lots consisted of one acre; the dry lot was 20 by 60 feet.

**Time and Duration of Trial.**—The plan called for placing pigs on green forage at the earliest date in the late winter or early spring that sufficient pasture was available. The dry lot group was to be started simultaneously with the grazing groups. The experiment was to close at the time the majority of the pigs had reached the stage of growth and fattening required of a top hog on the Montgomery market, which was from 175 to 200 pounds in weight.

**Animals.**—Pigs farrowed in the fall were used for each of the experiments. The animals were purebred Poland China, purebred Duroc-Jersey, and Poland China-Berkshire cross. The average age and weight varied each year according to the time pigs could be placed on experiment, which in turn depended upon the growth made by the pasture crops. All pigs were kept under similar conditions prior to being placed on experiment. During the period between weaning and the beginning of the experiment the pigs were placed in a dry lot and fed a ration of white corn 8 parts, wheat shorts 4 parts, and digester tankage 1 part, by weight. For each trial the animals were divided into

three lots as nearly uniform as possible with reference to breed, sex, weight, conformation, and condition.

**Feeds and Method of Feeding.**—The ration used in the different lots were:

- Lot I. White corn and tankage, self-fed, free-choice on pasture.
- Lot II. White corn and tankage hand-fed at the rate of 3 per cent of live weight (in two feeds daily). The proportion of corn to tankage fed was 10 to 1 the first year and 12 to 1 the second, third, and fourth years.
- Lot III. White corn and tankage, self-fed, free-choice in dry lot.

A mineral mixture composed of equal parts, by weight, of charcoal, bone meal, and salt was supplied to all lots in a self-feeder. Hydrant water was kept before the animals at all times.

Oats and vetch were used as grazing crops in 1926 and 1927 and oats and Austrian peas in 1928 and 1929.

**Weighings.**—At the beginning and at the end of each experiment weights were taken on three consecutive days, the averages of which were recorded as the initial and final weights, respectively. Weights of individual animals were taken at intervals of 14 days; these weighings served for keeping the ration adjusted to 3 per cent of the live weight in Lot II.

**Calculation of Results.**—The results were calculated on the basis of the number of animals actually finishing the experiment. Data for animals removed on account of death or other causes were dropped from the records and deductions were made accordingly in the final results. The initial value of animals was calculated on the basis of market quotations from the Union Stock Yards in Montgomery, and the final valuation on the actual selling price of the animals in Montgomery less freight and commission charges.

Corn was charged at \$1.12 per bushel and tankage at \$80 per ton. No charges were made for pasture and minerals. The cost of labor was not deducted, nor was the value of manure credited.

## RESULTS OF FIRST EXPERIMENT

THE OATS and vetch were ready for grazing March 1, and the experiment was started on that date. The 29 pigs used in this experiment averaged 80 pounds each when the test started. There was an abundance of grazing available in the lots at all times, and a fairly good growth of green material remained on the land after the experiment closed.

A summary of the results is given in Table I.

**TABLE I—SUMMARY OF FIRST EXPERIMENT**  
**March 1 to April 25, 1926, Inc. (56 days)**

RATION		Lot I—Corn, tankage, minerals self-fed, free choice. Pasture.	Lot II—Corn 10, tankage 1, hand-fed 3%, live weight. Minerals self-fed. Pasture.	Lot III—Corn, tankage, minerals self-fed, free choice in dry lot.
Number of animals per lot		10	10	9
Average initial weight per animal	pounds	80.60	80.20	80.40
Average final weight per animal	"	199.60	184.40	170.30
Average daily gain per animal	"	2.12	1.86	1.60
Concentrates required per 100 pounds gain				
Corn	"	324.29	326.15	473.92
Tankage	"	24.96	34.84	36.09
Total	"	349.25	360.99	510.01
Cost of concentrates per 100 pounds gain	dollars	7.48	7.91	10.92
Average value per animal at beginning of experiment at \$6.25 per cwt.	"	5.04	5.01	5.02
Average cost of concentrates per animal during fattening period	"	8.91	8.25	9.82
Total cost per animal at close of experiment	"	13.95	13.26	14.84
Selling price per animal at \$11.25 per cwt.	"	22.45	20.74	19.16
Profit per animal above cost of concentrates	"	8.50	7.48	4.32
Apparent value of pasture per animal	"	4.18	3.16	-----
*Apparent value of pasture per acre	"	41.80	31.60	-----

\*Calculated on basis of 10 hogs per acre.

Table I shows that hogs in Lot I made an average daily gain of 2.12 pounds. They required 349.25 pounds of feed for each 100 pounds gain and returned a profit above feed cost of \$8.50 each. Lot II gained 1.86 pounds, requiring 360.99 pounds of feed for each 100 pounds gain and returned a profit above feed cost of \$7.48 each. Lot III gained 1.60 pounds daily, requiring 510.01 pounds of feed for each 100 pounds gain and made a profit above feed cost of \$4.32 each.

The hogs in Lot I which were self-fed corn and tankage on pasture made the best showing in this test. They ranked first in average daily gains, feed required per hundred pounds gain, and total profits. Lot II, receiving a limited ration of corn and tankage on pasture ranked second in these respects. Lot III, receiving corn and tankage, self-fed in the dry lot, ranked last.

It will be noted that 160.76 pounds of concentrates were



saved on each 100 pounds of pork produced when the hogs were self-fed corn and tankage on pasture, and 149.02 pounds when the corn and tankage were limited on pasture. The dry-lot group was used as a check in each instance.

The apparent value of pasture per animal was \$4.18 in Lot I, and \$3.16 in Lot II. The apparent value of pasture per acre based on 10 hogs to the lot was \$41.80 in Lot I, and \$31.60 in Lot II.

## RESULTS OF SECOND EXPERIMENT

THE SEASON was somewhat earlier in 1927 than in 1926 and the oats and vetch were ready for grazing on February 18. The pigs used this year were younger and lighter than those of the previous year. They averaged only 56 pounds each when placed on experiment. There were 10 pigs in each lot when the experiment was started; however, one pig in Lot I, two pigs in Lot II, and two pigs in Lot III proved to be unthrifty and were removed from the experiment after about two weeks.

The experiment covered a period of 84 days. There was an abundance of grazing in the lots at all times and a considerable amount of green material was turned under after the experiment closed.

A summary of the results is given in Table II.

None of the hogs this year gained as rapidly as those of the previous year. This may have been partially due to their younger age.

Table II shows that hogs in Lot I made an average daily gain of 1.47 pounds, requiring 336.15 pounds of concentrates for each 100 pounds pork produced, and returned a profit above feed cost of \$1.20 per animal. Lot II gained 0.97 pounds daily, requiring 287.11 pounds of concentrates for each 100 pounds of pork produced, and made a profit of only \$0.12 per animal. Lot III gained 1.02 pounds daily, requiring 376.70 pounds of concentrates to produce 100 pounds of pork, and lost \$1.41 per animal.

The hogs in Lot I, self-fed corn and tankage on pasture, made the largest daily gains of any of the groups. Lot II, receiving a limited ration of corn and tankage on pasture, required the least amount of feed per 100 pounds gain. The check lot made fairly good gains but required the largest amount of feed per unit of gain.

The pasture saved 40.55 pounds of concentrates on each 100 pounds of pork produced when the corn and tankage were self-fed and 89.59 pounds when they were limited.

The apparent value of pasture per animal was \$2.61 in Lot I and \$1.53 in Lot II. The apparent value of pasture per acre, based on 10 hogs to the lot, was \$26.10 in Lot I and \$15.30 in Lot II.

**TABLE II—SUMMARY OF SECOND EXPERIMENT**  
February 18 to May 12, 1927, Inc. (84 days)

RATION		Lot I—Corn, tankage, minerals self-fed, free choice. Pasture	Lot II—Corn 12, tankage 1, hand-fed 3% of live weight. Minerals self-fed. Pasture.	Lot III—Corn, tankage, minerals self-fed, free choice in dry lot.
Number of animals per lot		9	8	8
Average initial weight per animal	pounds	56.20	56.20	55.10
Average final weight per animal	"	179.40	138.10	140.60
Average daily gain per animal	"	1.47	0.97	1.02
Concentrates required per 100 pounds gain				
Corn	"	321.23	265.63	352.75
Tankage	"	14.92	21.48	23.95
Total	"	336.15	287.11	376.70
Cost of concentrates per 100 pounds gain	dollars	7.02	6.17	8.01
Average value per animal at beginning of experiment at \$8 per cwt.	"	4.50	4.50	4.40
Average cost of concentrates per animal during fattening period	"	8.65	5.05	6.85
Total cost per animal at close of experiment	"	13.15	9.55	11.25
*Selling price per animal	"	14.35	9.67	9.84
Profit per animal above cost of concentrates	"	1.20	0.12	1.41 loss
Apparent value of pasture per animal	"	2.61	1.53	
**Apparent value of pasture per acre	"	26.10	15.30	-----

\* Selling price Lot I—\$8.00 per cwt.

Selling price Lots II and III—\$7.00 per cwt.

\*\* Calculated on basis of 10 hogs per acre.

### RESULTS OF THIRD EXPERIMENT

IN THE third experiment oats and Austrian peas were used as a grazing crop instead of oats and vetch. The experiment was started March 1. The pigs used were slightly heavier than usual this year; they averaged a little more than 100 pounds each at the beginning of the test. The one-acre plots furnished an abundance of grazing for 10 pigs in each lot and, as in the two previous experiments, a considerable amount of green material was turned under after the test closed.

A summary of the results is given in Table III.

Table III shows that in Lot I the average daily gain was 1.96 pounds; 372.49 pounds of concentrates were required to produce

TABLE III—SUMMARY OF THIRD EXPERIMENT  
March 1 to April 25, 1928, Inc. (56 days)

RATION		Lot I—Corn, tankage, minerals self-fed, free choice. Pasture.	Lot II—Corn 12, tankage 1, hand-fed 3% of live weight. Minerals self-fed. Pasture.	Lot III—Corn, tankage, minerals self-fed, free choice in dry lot.
Number of animals per lot		10	10	10
Average initial weight per animal	pounds	102.10	101.30	101.80
Average final weight per animal	"	211.90	190.10	204.90
Average daily gain per animal	"	1.96	1.58	1.84
Concentrates required per 100 pounds gain				
Corn	"	354.55	250.79	377.79
Tankage	"	17.94	19.14	18.82
Total	"	372.49	269.93	396.61
Cost of concentrates per 100 pounds gain	dollars	7.81	5.78	8.31
Average value per animal at beginning of experiment at \$8.50 per cwt.	"	8.68	8.61	8.65
Average cost of concentrates per animal during fattening period	"	8.57	5.13	8.56
Total cost per animal at close of experiment	"	17.25	13.74	17.21
Selling price per animal at \$9.75 per cwt.		20.66	18.53	19.98
Profit per animal above cost of concentrates	"	3.41	4.79	2.77
Apparent value of pasture per animal	"	0.64	2.02	-----
*Apparent value of pasture per acre	"	6.40	20.20	-----

\*Calculated on basis of 10 hogs per acre

100 pounds of pork, and the profit above feed cost was \$3.41 per animal. The hogs in Lot II gained 1.58 pounds daily, requiring only 269.93 pounds of feed for each 100 pounds of gain, and made a profit above feed cost of \$4.79 per animal. Lot III gained 1.84 pounds daily, requiring 396.61 pounds of feed for each 100 pounds gain, and returned a profit of \$2.77.

All three lots of hogs made satisfactory gains. Lot I, self-fed corn and tankage on pasture, again made the largest daily gains; Lot II, receiving a limited grain ration on pasture, again required the least amount of grain per 100 pounds of pork produced. The dry lot group, as in the two previous tests, required the greatest amount of concentrates for each unit of gain.

The oat and Austrian pea pasture in this experiment saved 24.12 pounds of concentrates for each 100 pounds of pork produced when the corn and tankage were self-fed and 126.68 when they were limited.

The apparent value of pasture per animal was \$0.64 in Lot I and \$2.02 in Lot II. The apparent value of pasture per acre was \$6.40 in Lot I and \$20.20 in Lot II.

### RESULTS OF FOURTH EXPERIMENT

**O**ATS AND Austrian peas were again used as the pasture crop in the fourth experiment. They were large enough to graze by February 1 which was from two to four weeks earlier than usual. The pigs used in this experiment were younger and lighter than those of the previous year. One pig in Lot II died during the experiment and the necessary adjustments were made in calculating the results.

The one-acre plots again furnished sufficient grazing for 10 pigs and a considerable amount of green material was turned under after the experiment closed.

A summary of the results is given in Table IV.

**TABLE IV—SUMMARY OF FOURTH EXPERIMENT**  
February 1 to April 25, 1929, Inc. (84 days)

RATION		Lot I—Corn, tankage, minerals self-fed, free choice. Pasture.	Lot II—Corn 12, tankage 1, hand-fed 8 % live weight. Minerals self-fed. Pasture.	Lot III—Corn, tankage, minerals self-fed, free choice in dry lot.
Number of animals per lot		10	9	10
Average initial weight per animal	pounds	52.00	48.30	52.55
Average final weight per animal	"	191.00	137.20	186.30
Average daily gain per animal	"	1.65	1.06	1.59
Concentrates required per 100 pounds gain				
Corn	"	361.22	238.75	373.83
Tankage	"	20.86	20.15	31.40
Total	"	382.08	258.90	405.23
Cost of concentrates per 100 pounds gain	dollars	8.06	5.58	8.73
Average value per animal at beginning of experiment at \$11.00 per cwt.	"	5.72	5.31	5.75
Average cost of concentrates per animal during fattening period	"	11.20	4.96	11.68
Total cost per animal at close of experiment	"	16.92	10.27	17.43
*Selling price per animal	"	17.57	11.25	17.14
Profit per animal above cost of concentrates	"	.65	.98	.29 loss
Apparent value of pasture per animal	"	.94	1.27	-----
**Apparent value of pasture per acre	"	9.40	12.70	-----

\*Lots I and III sold at \$9.20 per cwt.

Lot II sold at \$8.20 per cwt.

\*\*Calculated on basis of ten hogs per acre

The average daily gain in Lot I was 1.65 pounds; 382.08 pounds of feed were required to produce 100 pounds of gain, and the profit above feed cost was \$0.65 per animal. The hogs in Lot II gained 1.06 pounds daily, requiring 258.90 pounds of feed for each 100 pounds of pork produced, and returned a profit above cost of concentrates of \$0.98 per animal. Lot III gained 1.59 pounds daily, requiring 405.23 pounds of concentrates for each 100 pounds of gain, and showed a loss of \$0.29 each.

All three lots of hogs made fairly good gains considering the fact that they were young when the experiment was started. Lot I again made the largest daily gains and Lot II required the least amount of concentrates for each unit of gain. The dry lot group ranked next to Lot I in daily gains but required the greatest amount of feed per unit of gain of any of the lots.

The pasture saved 23.15 pounds of concentrates for each 100 pounds of gain when the corn and tankage were self-fed on pasture and 146.33 pounds when the corn and tankage were limited.

The apparent value of pasture per animal was \$0.94 in Lot I and \$1.27 in Lot II. The apparent value of pasture per acre based on 10 hogs to the lot was \$9.40 in Lot I and \$12.70 in Lot II.

## SUMMARY OF THE FOUR YEARS' RESULTS

A SUMMARY OF the four years' results in using oat and vetch or oat and Austrian pea pasture as a supplement to corn and tankage for fattening hogs is given in Table V.

## DISCUSSION

OATS, VETCH, and Austrian peas make rapid growth in February, March, and April, a season of the year when fall farrowed pigs are being finished and when other green feed is scarce. They are, therefore, well adapted to the needs of Alabama hog producers. This combination of crops furnishes a large amount of forage, improves the soil, and affords an opportunity of growing two crops on the same land each year.

During each of the four years of this experiment one acre of land furnished sufficient forage for 10 hogs and a considerable amount of green material was turned under after the experiment closed. The land was planted to sorghum cane for silage in May and returned large yields.

Results of this experiment show that hogs can be produced cheaper on pasture than in the dry lot. If grain is cheap and it is the desire to get the hogs on the market as quickly as possible the corn and tankage should be self-fed on pasture, but if pasture is plentiful, grain high, and cheap gains are desired, the corn and tankage should be limited. In other words, limiting the grain

**TABLE V—SUMMARY OF FOUR YEARS' RESULTS  
1926-1929 Inc.**

RATION		Lot I—Corn, tankage, minerals self-fed, free choice. Pasture	Lot II—Corn 12, tankage 1, hand-fed, 3% of live weight. Minerals, self-fed. Pasture.	Lot III—Corn, tankage, minerals self-fed, free choice in dry lot.
Total number of animals		39	37	37
Average initial weight per animal	pounds	73.15	72.95	73.19
Average initial value per animal	dollars	6.02	5.95	6.06
Average final weight per animal	pounds	195.90	164.45	177.55
Average daily gain per animal	"	1.76	1.33	1.50
Concentrates required per 100 pounds gain				
Corn	"	341.24	274.01	392.12
Tankage	"	19.83	24.66	27.70
Total	"	361.07	298.67	419.82
Cost of concentrates per 100 pounds gain	dollars	7.62	6.47	8.95
Average selling price per animal	"	18.87	15.44	16.82
Average profit per animal above cost of concentrates	"	3.50	3.58	1.42
Apparent value of pasture per animal	"	2.08	2.16	-----
*Apparent value of pasture per acre	"	20.80	21.60	-----

\*Calculated on basis of 10 hogs per acre

ration for hogs on pasture slows up the rate of gain but reduces the cost of gains as the hogs are forced to eat a larger amount of the forage which is the cheap part of the ration.

### SUMMARY

Hogs receiving corn and tankage self-fed on oat and vetch or oat and Austrian pea pasture made larger daily gains in each of the four tests than those similarly fed in the dry lot; the increased gains due to pasture averaged 0.26 of a pound daily.

Hogs receiving corn and tankage self-fed on oat and vetch or oat and Austrian pea pasture required less concentrates for a unit of gain in each of the four tests than those receiving a similar ration in the dry lot.

The average cost of producing 100 pounds of gain was \$7.62 in the pasture group and \$8.95 in the dry lot group.

Hogs receiving corn and tankage self-fed on oat and vetch or oat and Austrian pea pasture made larger daily gains in each of the four tests than those receiving a ration of corn and tankage limited to 3 per cent of the live weight on the same kind of

pasture. The average daily gain for the four-year period was 1.76 pounds for the self-fed lot and 1.33 for the limited ration lot.

Hogs in Lot II, receiving a limited ration of corn and tankage on pasture, received an average of 298.67 pounds of concentrates for each 100 pounds gain. Hogs in Lot I, receiving corn and tankage self-fed on pasture, required 361.07 pounds of concentrates for each 100 pounds gain. The feed cost of producing 100 pounds of gain was \$7.62 in Lot I and \$6.47 in Lot II.

Hogs which were self-fed on pasture required 58.75 pounds less corn and tankage to produce 100 pounds of gain than those which were similarly fed in the dry lot.

Hogs fed a ration of corn and tankage limited to 3 per cent of their live weight required 121.15 pounds less concentrates to produce 100 pounds gain than those which were self-fed corn and tankage in the dry lot.

The cost of producing 100 pounds of gain was \$1.33 less on pasture than in the dry lot when both groups of animals were self-fed.

The cost of producing 100 pounds of pork was \$2.48 less with a limited ration of corn and tankage on pasture than with a ration of corn and tankage self-fed in the dry lot.

The average apparent value of pasture per acre was \$20.80 in Lot I and \$21.60 in Lot II, based on 10 hogs to the acre in each case.

One acre of pasture furnished an abundance of grazing for 10 hogs and a considerable amount of green material remained on the ground and was turned under after the experiments closed.

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