

UNIVERSITY OF IDAHO  
AGRICULTURAL EXPERIMENT STATION  
Department of Animal Husbandry

BULLETIN NO. 125

AUGUST, 1921

Published by the University of Idaho, Moscow, Idaho.

---

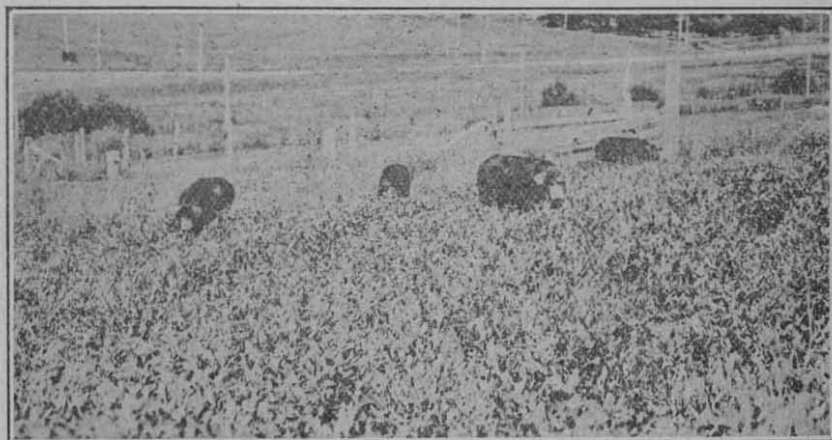
---

FIELD PEAS FOR PORK PRODUCTION

BY  
R. E. GONGWER

---

---



FALL PIGS HOGGING OFF FIELD PEAS

---

---

INTRODUCTION

The field pea has become one of the staple farm crops throughout Idaho, especially in the northern section of the state. Formerly the crop was sold for seed, at a price of from four to eight cents a pound depending upon the variety. Due to several causes, the price of field peas has dropped during recent years, until it is now comparable with the price of grains used for feeding purposes. In order to determine the value of field peas as a hog feed, and to study the most economical methods of feeding them, the following experiments were conducted on the Experimental Farm of the University of Idaho College of Agriculture, at Moscow, Idaho.

The data in this publication were collected by C. W. Hickman, assisted by O. E. McConnell, in the dry lot feeding of 1918 and 1919, by R. E. Gongwer in the pasturing work of 1920.

## HOGGING OFF PEAS

### Method of Procedure

The peas used were, with one exception, the \*Blue Prussian variety. The White Canadian was seeded in 1916 and produced an excellent yield of palatable feed, which was pastured that fall. The pigs used in these experiments were pure bred Poland-China and Duroc-Jersey shotes grown on the University Farm. The several lots were selected in each experiment with a view to obtaining uniformity of size, condition, thrift and sex. Both the spring and the fall pigs used were carried over the summer with a small amount of grain on alfalfa pasture, and were good thrifty feeder pigs at the time of turning onto the field peas. The spring pigs were farrowed in March and April and were of an average weight of 80 pounds at the beginning of the experiments. The fall pigs were six months older and weighed on the average of 159 pounds when turned into the pea fields. Initial and final weights were the average of three weights taken on consecutive days, the second day in each case being considered as the first and last day of the experiment.

These experiments extending over a period of three years, may be divided into two sets, depending upon the age of the pigs used. Both the spring and fall pigs were fed upon peas alone, and upon peas supplemented with varying amounts of barley. The barley was fed rolled, mixed with water to form a thick paste, and given in one feed at night. The fact is subsequently developed that peas contain a larger proportion of protein than is required for fattening hogs. It would be inferred from this that pigs on pea pasture supplemented with some barley, which is relatively low in protein, would gain more rapidly and economically, due to the fact that they were fed a properly balanced ration. The barley was fed in amounts equal to one per cent or two per cent of the body weight of the hog per day, and is hereafter referred to as a one per cent or two per cent ration. The experiments began August 3rd in 1915, August 16th in 1916, and August 10th in 1920, and extended for periods of from three to six weeks, or until all of the peas were consumed. The pigs were turned onto the peas in each case when the peas were beginning to harden, and when the vines were starting to turn yellow.

### Spring Pigs

Both the spring and fall pigs were handled at the same time and in the same manner. Results obtained with the spring pigs are noted in Table I.

A study of Table I. shows considerable variation from year to year in the rate and cost of gains. The rate of gain is very low in both lots in 1915, probably due to keeping the pigs on pasture after the peas were nearly all consumed. In both 1915 and 1916, however, the pigs fed barley with the pea pasture gained more rapidly making the average results for these years show an advantage in this respect in favor of feeding a two per cent barley ration. The pigs fed such a ration gained 40 per

\* A discussion of varieties, yields, and methods of culture will be found in Idaho Experiment Station Bulletin No. 115.

TABLE I.—SPRING PIGS ON FIELD PEAS

Year	1915		1916		1920		Average	
	No grain	2%	No Grain	2%	No Grain	No Grain	2%	
Barley Fed								
Area Pastured, Acres .....	2.83	1.42	0.82	0.84	2.00	5.65	2.26	
Total Number of Pigs .....	65	20	14	26	14	93	46	
Number of Pigs per Acre .....	23	14	17	31	7	16.5	20.3	
Average Initial Weight, Lbs. ....	69.5	84.8	88.6	81.7	115.6	78.1	83.0	
Days on Pasture .....	35	38	28	21	35	33.4	28.4	
Total Initial Weight, Lbs. ....	4516	1697	1246	2123	1503	7265	3820	
Total Final Weight, Lbs. ....	5963	2317	1700	2913	1994	9657	5230	
Total Gain in Weight, Lbs. ....	1447	620	454	790	489	2392	1410	
Ave. Daily Gain per Pig, Lbs. ....	0.64	0.82	1.16	1.45	1.09	0.77	1.08	
Total Barley Fed, Lbs. ....		1241		1162			2403	
*Total Lbs. Gain Credited to Barley...		248		232			480	
Total Lbs. Gain per Acre Credited to Peas .....	511	262	554	664	245	425	411	
Estimated Yield of Peas in Bushels per Acre .....	25	20	30	30	22	24.7	23.7	
Pounds Peas to Produce 100 Lbs. Pork .....	293	458	325	271	538	348	346	
Pounds Pork Produced Per Hundredweight of Peas .....	34	24	31	37	19	28.7	28.8	

\* 500 Lbs. of barley equals 100 Lbs. of Pork.

cent more rapidly than pigs fed upon pea pasture alone. A two per cent ration of barley made it possible to carry a greater number of larger pigs per acre of forage, although the pigs were not carried for quite so long a period of time. If pea pasture is limited and a large number of pigs are on hand to be fed, more pigs can be carried to the acre of forage by feeding a supplemental grain ration.

Experimental evidence shows that approximately 500 pounds of barley are required to produce 100 pounds of gain in weight on pigs of this size. Proceeding upon this assumption, an amount equal to one-fifth of the total weight of the barley fed in each lot was subtracted from the total gains in weight of the pigs. This part of the gain was considered as having been produced by the barley fed, and the balance was credited to the peas consumed. Estimating the yield of peas, and using this method of discounting for the barley fed, we find that from 271 to 538 pounds of peas were required to produce 100 pounds of gain on the hogs, with an average in all lots of 347 pounds. The amount of peas eaten in making 100 pounds of gain on the pigs in 1920 was very high, due to the fact that heavy pigs were used, and that the grain was over-ripe and shattered badly.

The amount of peas required to produce 100 pounds of pork in the barley fed lots, after deducting for the barley eaten, was practically the same as the quantity needed to produce a similar gain on pasture alone. The lack of variation in this respect may be due to errors in estimated yield, but it is more probable that the pigs fed no barley ate the available feed more completely. At least fifty per cent of the digestible nutrients in the pea plant are in the hay, leaving only half of the food value in the form of peas. The hog, an animal adapted to the consumption of grains, will eat coarse roughages, if forced to do so, in order to balance his ration. Field peas alone have a nutritive ratio of 1:3, the hay without the peas has a nutritive ratio of 1:6.4.\*\* Pigs weighing around 100 pounds should have a ration with a nutritive ratio of about 1:5. Rather than eat too narrow a ration, such as we have in peas alone, the pigs will eat some of the pea vines. When this carbonaceous feed is furnished in the form of a supplemental barley ration, the gains are more rapid but the pigs eat only the pea grain without making use of the balance of the pea plant. A supplemental ration, therefore, of barley fed to spring pigs hogging off peas increases both the rate of the gain and the carrying capacity of the pasture, but it does not produce any greater total gain from the forage consumed, nor does it return more profit per acre pastured.

#### Fall Pigs

Four lots of fall pigs were fed, two in 1916 on peas alone and two in 1920, one with a one per cent and the other with a two per cent ration of rolled barley. The results are noted in Table II.

\*\* Henry & Morrison, Feeds and Feeding.

TABLE II.—FALL PIGS ON FIELD PEAS

Year	1916	1920	1920
Barley Fed .....	No grain	1%	2%
Area Pastured, Acres .....	2.22	1	1
Total Number Pigs .....	34	6	8
Number of Pigs per Acre .....	15	6	8
Average Initial Weight, Lbs. ....	143.7	181.8	207
Days on Pasture .....	28.4	35	35
Total Initial Weight, Lbs. ....	4885	1091	1656
Total Final Weight, Lbs. ....	6012	1435	2156
Total Gain in Weight, Lbs. ....	1127	344	500
Average Daily Gain Per Pig, Lbs. ....	1.16	1.64	1.79
Total Barley Fed, Lbs. ....		439	1358
*Total Gain Credited to Barley, Lbs. ....		88	272
Total Gain Per Acre Credited to Peas, Lbs.....	508	256	228
Estimated Yield Peas, Bushels Per Acre .....	30	22	20
Lbs. Peas Per Cwt. of Pork .....	354	515	526
Lbs. Pork Produced Per Cwt. of Peas .....	28	19.3	19

\* 500 Lbs. barley equals 100 Lbs. Pork.

There can be no exact comparison of the 1916 and the 1920 results, since they were obtained in different years, and with hogs of different weights. They show, however, results somewhat similar to those obtained with spring pigs. When fed a supplemental ration of barley on pea pasture, the pigs gained more rapidly, 1.16 pounds being the average daily gain on pigs fed no barley, compared with 1.64 pounds when fed a one per cent ration, and 1.79 pounds when fed a two per cent ration. The one per cent and the two per cent rations gave very similar results both in rapidity and economy of gain, but both lots failed to make as economical gains as the lot fed on field pea pasture alone.

#### Summary of Hogging Off Peas

It has been developed that in hogging off field peas both spring and fall pigs will make satisfactory gains, these gains being more rapid but not any more economical, when a supplementary ration of rolled barley is fed. The 48 fall pigs had an average initial weight of 159 pounds and the 130 spring pigs had an average initial weight of 80 pounds. The fall pigs gained more rapidly than the spring pigs, 1.35 pounds and 0.86 pounds being the respective average daily gains. There was little difference in the condition of the fall and spring pigs, and this difference in rate of gain is largely explained by the difference in size. In the amount of peas required to produce 100 pounds of gain the spring pigs have a positive advantage. They produced 100 pounds of gain with 347 pounds of peas, while it required 403 pounds of peas to produce a like gain in the fall pigs. The spring pigs, if in good thrifty growing condition will not gain quite as rapidly as the larger fall pigs, but will gain much more economically.

Reviewing, in all of the experiments with both spring and fall pigs, the pounds of pork produced per acre credited to the peas consumed, we

find that the average under all conditions is 406 pounds, with a variation from 664 pounds to 228 pounds. These gains are influenced by the yield of peas, the size of the pig used and the length of time the pigs are kept on pasture, but under the poorest conditions a gain of 228 pounds was secured. With pork at ten cents a pound enough value is received from each acre of peas to pay for the seed, for the planting of the crop, for the interest on the land and, in addition, leave a profit. With pork at ten cents a pound we can calculate the value of the peas produced at \$1.90 per hundred weight of peas in the lot showing the poorest returns, and \$3.70 per hundred weight in the lot showing the best returns with an average in all lots of \$2.72. These are higher prices than can be received for peas at the present time, with no expense for harvesting and threshing.

### FEEDING PEAS IN DRY LOT

Two experiments were conducted in order to determine the most economical method of feeding peas in dry lot, the first during the winter of 1918 and a duplicate the following winter. The purpose was two-fold: (1) To determine the most economical combination of barley and peas for fattening hogs and (2) to determine the advisability of feeding tankage with these various combinations of peas and barley.

The feeds were mixed by hand and fed in the form of a wet mash twice a day. The barley was steam-rolled before feeding, and the peas were cracked. Both are standard feeds in Idaho. The tankage was secured from a local packing house, tested forty-three per cent crude protein, and was a product such as is commonly produced by the smaller packers. There was some variation in the size of the pigs used, but they were all spring pigs which had been carried on alfalfa and pea pasture during the previous summer. The average initial weight was 160 pounds, and they were fed to weigh out at 200 pounds.

Table III contains the data obtained during the two tests. A ration of barley three parts, and peas one part plus five per cent by weight of tankage produced the most rapid gains and the most economical gains, both with respect to the amount of feed required to produce 100 pounds of pork and with respect to the cost of this feed. This was true in each of the two tests as well as in the average results. A ration of equal parts of barley and peas (Lot I) produced the next most economical gains, but the addition of five per cent of tankage to this ration (Lot II) increased the rapidity of the gains five and one-half per cent.

Lots I, III, V, VII, and VIII show the relative value of peas and barley and various combinations of these two feeds. Barley alone, an unbalanced ration deficient in protein, made the most expensive gains both with respect to cost of gains and amount of grain required per hundred pounds of gain. Three parts of barley to one of peas made much more economical gains than barley alone, since 39 pounds less grain was required to produce 100 pounds of gain. Peas alone, or one part of barley to three parts of peas, produced slightly more economical gains than the two previous rations, but a ration of equal parts of barley and peas proved to be the cheapest and produced the most rapid gains.

TABLE III.—PEAS, ROLLED BARLEY, TANKAGE FOR FATTENING HOGS

Average of Tests—1918 and 1919

Lot Number	I	II	III	IV	V	VI	VII	VIII
Ration	BARLEY 1 part PEAS 1 part	BARLEY 1 part PEAS 1 part TANKAGE	BARLEY 1 part PEAS 3 parts	BARLEY 1 part PEAS 3 parts TANKAGE	BARLEY 3 parts PEAS 1 part	BARLEY 3 parts PEAS 1 part TANKAGE	BARLEY 3 parts PEAS 1 part TANKAGE	PEAS
		5%		5%		5%		
Total Number of Hogs Per Lot . . . . .	10	10	10	10	10	10	10	10
Average Days on Feed . . . . .	30.8	30.8	30.8	30.8	30.8	30.8	30.8	30.8
Average Initial Weight, Lbs. . . . .	152.8	160.4	155.6	174.0	165.0	160.4	150.0	158.8
Total Initial Weight, Lbs. . . . .	1528	1604	1556	1740	1650	1604	1500	1588
Total Final Weight, Lbs. . . . .	1976	2076	1942	2190	2028	2114	1854	1986
Total Gain Per Head, Lbs. . . . .	44.8	47.2	38.6	45.0	37.8	51.0	35.4	39.8
Average Daily Gain Per Head, Lbs. . . . .	1.45	1.53	1.25	1.46	1.23	1.66	1.15	1.29
Total Grain Consumed, Lbs. . . . .	2140	2277	2011	2383	2086	2292	2094	2018
Ave. Grain per Head per Day, Lbs. . . . .	6.95	7.39	6.53	7.74	6.77	7.44	6.80	6.55
Grain per Hundred Pounds of Gain. . . . .	477	482	521	529	552	449	591	507
Cost per Hundred Pounds of Gain, with feeds valued as follows:								
Barley at \$1.80 per Cwt.								
Peas at \$2.00 per Cwt.								
Tankage at \$2.50 per Cwt. . . . .	\$9.06	\$9.25	\$10.16	\$10.47	\$10.21	\$8.45	\$10.64	\$10.14

FIELD PEAS FOR PORK PRODUCTION

If no tankage is used, a ration of equal parts of peas and barley is recommended. When fed upon a mixture of this proportion, 100 pounds of gain was produced with 477 pounds of grain, 30 pounds less than the amount required with any of the other rations. The addition of tankage to the three combinations of peas and barley invariably increased the rate of gain and the daily consumption of feed per head. When added to the lot fed the smallest proportion of peas (Lot VI) tankage returned a good profit. The value of tankage in the rations containing a larger percentage of peas was not so marked. Gains were more rapid and more feed was consumed per head, but the added cost of the tankage increased the cost of gains.

#### Summary of Dry Lot Feeding

A ration of barley alone or a ration of peas alone did not make satisfactory gains. A ration of three parts of barley to one part of peas made very poor returns, but when five per cent of tankage was added to this ration most rapid and economical gains were produced. The addition of tankage to any of these grain mixtures increased the rapidity of the gains, and is of most value in reducing cost of gains when the percentage of peas in the ration is low. A mixture of equal parts of peas and barley produced excellent results, when fed either with or without tankage, and in the case of a low market price for peas would be the most economical proportion to feed.

#### SUMMARY

When hogging off field peas best results are obtained by confining the pigs to a small area until it is pastured clean, as shattered grain will be lost if it rains. Growthy feeder pigs weighing from seventy-five to one hundred twenty-five pounds make the greatest gains in weight for the peas consumed. A supplemental grain ration of rolled barley fed at this time, increases the rate but does not affect the economy of gain. When the market price of peas is comparable to the price of other grains used for feeding purposes, it will pay to hog off your peas. There will be no expense for harvesting and threshing and the income from the pork produced will equal or exceed the market value of the peas.

Peas should be cracked, soaked or steam-rolled when fed to hogs in dry lot. They may be fed alone, but cheaper and more rapid gains are made with a mixture of peas and barley. The addition of a small amount of tankage to this mixture is of most value when the proportion of peas is low, but it always increases the rate of gain and stimulates the appetite of the pigs. Most rapid and economical gains are produced in dry lot on a mixture of three parts of rolled barley, one part of cracked peas plus five per cent by weight of tankage. With peas at a lower price than barley a ration of equal parts of the two grains either with or without the tankage will produce most economical gains.