

THESIS

on

SWINE FEEDING WITH THE ORDINARY CEREALS.

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## SWINE FEEDING WITH THE ORDINARY CEREALS.

The last census of the United States Department of Agriculture January 1, 1907, reports the total number of hogs in the United States as 54,794,439, with an estimated total value of \$417,791,321. On June 1, 1900 the census reports gave the number as 62,868,041 with an estimated total value of only \$231,978,031.

This shows a decrease of 8,073,602 hogs with an increased value of \$18,591,290 in the past seven years.

Of the 54,794,439 hogs in the United States, Iowa has 8,584,500 with an average value of \$9.50 or a total estimated farm value of \$81,552,750. Illinois comes next with 4,449,705 at an average value of \$8.40 or a total estimated farm value of \$37,377,522. Nebraska has 4,080,000 with an average value of \$8.70 or a total estimated farm value of \$35,496,000. Mississippi has 3,454,950 with an average value of \$7.10 or a total estimated farm value of \$24,530,145.

Oregon stands 31st. in rank with the very small number of 258,283 hogs at an average value of \$6.90 or a total estimated farm value of \$1,782,153.

The ratio of hogs to the square mile is very small, there only being 2.7 hogs to every square mile

in the state, or 624 hogs to every 1000 inhabitants.

Iowa has 154 hogs to every square mile in the state, 3,846 to every 1000 inhabitants and 37 hogs to every farm. Illinois has 79 hogs to every square mile, 922 to every 1000 inhabitants and 17 to every farm. Oregon has 2.7 hogs to every square mile 6.24 to every 1000 inhabitants and 7 hogs to every farm.

Had Oregon as many hogs to every square mile as Iowa has, there would be 14,562,240 hogs in the state. Compare this with 258,283 the present number and you can readily see the possibilities of the hog industry in this state.

At present, the hog market is not as stable as that in the east, owing to the fact that we have no such packing establishments as there are in Chicago, Omaha, St. Louis, Cincinnati, or many other large cities of the east.

With the several large packing plants under construction in Portland at the present time, it will only be a very short time until there will be a steady demand for both the bacon and lard type of hogs the year round. When a few years ago a carload of hogs was shipped into the Chicago market it became evident that the finished product from Oregon was second to none.

In Iowa the lard hog can probably be produced at a greater profit than we can in Oregon. But Oregon can certainly compete, if not excel, with the bacon hog.

In almost any part of the state hogs can be raised very cheaply upon alfalfa, rape, peas or vetch from birth until they weigh about 150 pounds. In the North Eastern part of the state they can be grown upon alfalfa and peas and finished upon wheat and barley. In the wheat growing belt they can also be grown on alfalfa during the summer, then run on the stubble for a short time in the early fall, and from here they can be finished and made ready for market in a very short time, weighing from 225 to 275 pounds. Hogs cannot only be fed the grain at a profit but they will also make good gains upon the waste grain that other live-stock will not get.

In the Willamette Valley hogs can be pastured upon rape, kale, or vetch during the summer and then finished upon either wheat or barley. There dairy industry is being rapidly developed in the Valley and no two industries probably go better hand-in-hand than does the dairy and hog industry. The by-products from the dairy such as skim-milk, buttermilk, and whey are very valuable food stuffs, when fed in the proper proportions with grain, as is shown in table II.

Skim-milk and grain should be fed in the proportion of about 3 to 1. When fed excess to this, the ration does not have as great a value pound for pound.

In the southern part of the state in Klamath, Lake, and Harney Counties, alfalfa and peas can be very successfully grown to pasture hogs upon during the sum-

mer and they can then be finished upon one of the small grains.

With a very few exceptions there are no parts of the state in which hogs when properly handled cannot be grown at a good profit.

When growing pigs are pastured upon any of the green, succulent feeds such as alfalfa, vetch, rape, or kale much better and quicker gains are made when a small supplementary feed of grain is fed. For breeding stock no other feed is necessary, as they can be kept in a good, healthy condition upon the succulent feed alone.

Hog raising where carried on properly and by up to date methods with good breeds of hogs, is undoubtedly a very profitable business.

The cost of raising a pig until it reaches the weight of about 150 pounds, upon alfalfa, rape or some other highly nutritious feed, has been reduced very greatly, estimated to be about  $3\frac{1}{2}$  cents per pound.

From this weight on until the animal is finished and ready for market the cost is much greater. There are many different feeding stuffs fed with various results and for the purpose of determining to a certain extent the feeding value of some of the most common cereals and most common fed grains, and also the value of skim-milk when fed with these, the Oregon Agricultural Experiment station conducted a series of experiments covering a period of 61 days.

Four lots with seven hogs in each lot were used.

The hogs were grade Poland China. They were divided in the following manner in regard to breed and sex, Lot I, contained 7 Polands of which 4 were sows and 3 barrows; Lot II, contained 7 Polands of which 4 were sows and 3 barrows; Lot III, contained 7 Polands of which 3 were sows and 4 barrows; Lot IV, contained one Yorkshire and 6 Polands of which 3 were sows and 4 barrows. This lot contained the largest hog of the bunch and also the smallest.

These pigs were placed in a well lighted Piggery with but little or no sun reaching them, each lot in a pen 8 x 20 feet and they had no exercise other than what they received in these enclosures.

The pens were cleaned out every other day and plenty of straw bedding furnished.

Water was kept in all the pens at all times in small wooden troughs.

Lot I was fed only finely ground barley; Lot II finely ground barley and a medium supply of separated milk; Lot III finely ground wheat; Lot IV finely ground wheat, and the same amount of separated skimmilk as Lot II.

They were fed twice a day in small wooden troughs.

Not much difference could be noticed in the general thriftiness of the different lots during the first

two periods. During the third period, Lot III seemed to be somewhat more thrifty than the others. On December 7, the smallest one in Lot IV became unthrifty and was placed in a small pen by itself and given its share of the ration.

Considering the gains by periods, Lot II and Lot IV the skim-milk lots, made their best gains during the second period while Lot I and III made their best gains during the third period. All made the least gain during the fourth or last period.

This goes to show that the quicker and younger an animal is fattened, the greater will be the gain for the amount of food consumed; however age did not materially affect the gains in this case.

This also goes to show that an animal can be brought up to a certain stage of fattening in a quicker time and with a relatively smaller amount of grain than it can be taken from this stage on until finished.

The following table shows the food nutrients of the barley and wheat.

Table No. I.

Kind	Moisture	<u>Food Nutrients.</u>			Crude Fiber	Carbo hydrates.
		Fat	Ash	Protein		
Barley	9.76%	1.45%	5.065%	10.406%	3.06%	70.25%
Wheat	10.65%	1.395%	1.96%	8.838%	2.18%	75.48%

It will be seen from the table that the barley is higher in fat, ash, and protein but lower

than the wheat in carbohydrates.

From table No. II it will be seen that the dry-lot fed barley made a greater gain for food consumed than did those fed wheat, while the opposite is true where the skim-milk was used.

For----- Table No. II see following pages.



Table No. II.

	<u>Lot I</u>	<u>Lot II</u>	<u>Lot III</u>	<u>Lot IV</u>
<u>Number of</u> <u>hogs fed</u>	7	7	7	7
<u>Number of</u> <u>days fed</u>	61	61	61	61
<u>Feed</u>	Chop Barley	Chop Barley & Skimmilk	Chop Wheat	Chop Wheat Skimmilk
<u>Weight lot</u> <u>at</u> <u>beginning</u>	872	880	889	869
<u>Weight lot</u> <u>at end.</u>	1440	1555	1405	1625
<u>Gain of lot</u>	568	675	506	756
<u>Gain per Hog</u>	91.14	96.43	72.29	108.
<u>Daily gain</u> <u>per Hog</u>	1.49	1.58	1.19	1.77
<u>Weight Grain</u> <u>eaten</u> <u>per lot</u>	2476.00	2264.00	2476.00	2264.00
<u>Weight of</u> <u>skim-milk</u> <u>eaten per lot</u>	----	1619.00	-----	1619.00
<u>Grain eaten</u> <u>per Hog</u> <u>per day</u>	5.80	5.30	5.80	5.30
<u>Skim-milk</u> <u>eaten per</u> <u>Hog per day</u>	----	3.79	----	3.79
<u>Dry matter</u> <u>eaten per</u> <u>day per Hog</u>	5.23	5.11	5.18	5.06
<u>Feed</u> (( <u>eaten for</u> (grain 4.36		3.35	4.89	3.00
<u>1 pound</u> (skim-				
<u>of grain</u> (milk ---		2.40	---	2.14

<u>Dry matter eaten per pound of grain</u>	<u>Lot I</u>	<u>Lot II</u>	<u>Lot III</u>	<u>Lot IV.</u>
	3.93	3.23	4.37	2.87
<u>Value of 1( bushel of</u> {				
Grain { 3¢	\$.41	\$.54	\$.37	\$.60
<u>When Hogs sell for</u> { 6¢	\$.82	\$1.08	\$.74	\$1.20
<u>Pounds of Grain saved by 100 pounds skim-milk</u>	----	49	----	88
<u>Value of 100 pounds of skim-milk</u>	----	\$.61	----	\$1.10
<u>Cost of grain at 14¢ per Lb.</u>	\$30.95	\$28.30	\$30.95	\$28.30
<u>Price re- ceived per Lot at 6¢ per pound</u>	\$34.08	\$40.50	\$30.36	\$45.36

One of the most notable features of table II is the abnormal value of the skim-milk fed to Lots II and IV. That of Lot II being worth 61 cents and that fed Lot IV worth \$1.10 per hundred weight.

The Lots fed skim-milk ate less dry matter per day and also ate less dry matter per pound of gain.

With a normal market price for hogs, grain can be fed to hogs at a better profit than when sold directly. Besides this the plant food is retained on the farm and put back into the soil, which is of no small consideration.

In these experiments the skim-milk was not fed in the proportion that is generally supposed to be the best. To give the best results it should be three parts of skim-milk to one of grain. In this experiment the proportion of skim-milk to grain was .72:1.00

Table No. III shows the amount of grain and skim-milk eaten and the gains made for each period during the four periods of the experiment.

Table III.

## FEED CONSUMED AND GAIN PER PERIOD.

## Lot I.

	<u>Feed</u>		<u>Gain per</u>	<u>Feed eaten</u>
	<u>Barley</u>	<u>Gain</u>	<u>day</u>	<u>for 1 lb.</u>
	<u>lbs.</u>	<u>lbs.</u>	<u>lbs.</u>	<u>of gain</u>
Nov. 1 to Nov.18	572	133	7.4	4.3
Nov. 18 to Dec.1	504	130	10.8	3.88
Dec. 1 to Dec.14	700	180	13.0	3.89
Dec. 14 to Dec 31	700	125	7.4	5.6

## Lot II.

	<u>Feed</u>		<u>Gain</u>	<u>Feed</u>		
	<u>Barley</u>	<u>Skim-</u>	<u>Gain</u>	<u>Eaten</u>		
		<u>milk</u>	<u>Day</u>	<u>for 1 lb.</u>		
	<u>lbs.</u>	<u>lbs.</u>	<u>lbs.</u>	<u>of gain</u>		
			<u>lbs.</u>	<u>lbs.</u>		
				<u>Bar-</u>	<u>Skim-</u>	
				<u>ley</u>	<u>milk</u>	
Nov.1 to Nov.18	572	365	185	10.3	3.09	2.0
Nov.18 to Dec.1	504	339	190	16.0	2.65	1.78
Dec.1 to Dec.14	588	490	185	13.0	3.18	2.65
Dec.14 to Dec.31	600	425	115	6.8	5.2	3.69

## Lot III.

	<u>Feed</u>		<u>Gain per</u>	<u>Feed eaten</u>
	<u>Wheat</u>	<u>Gain</u>	<u>day</u>	<u>for 1 lb.</u>
	<u>LBS.</u>	<u>lbs.</u>	<u>lbs.</u>	<u>of gain.</u>
Nov.1 to Nov.18	572	126	7.	4.54
Nov.18 to Dec.1	504	135	11.25	3.73
Dec.1 to Dec.14	700	160	11.40	4.37
Dec.14 to Dec.31	700	85	5.00	8.23

Table III Continued  
FEED CONSUMED AND GAIN PER PERIOD.

Lot IV.

	<u>Feed</u>		<u>Gain</u>	<u>Gain</u>	<u>Feed eaten</u>	
	<u>Wheat</u>	<u>Skim-</u>	<u>Gain</u>	<u>per</u>	<u>for 1 lb.</u>	
	<u>lbs.</u>	<u>milk</u>	<u>lbs.</u>	<u>Day</u>	<u>of gain</u>	
		<u>lbs.</u>	<u>lbs.</u>	<u>lbs.</u>	<u>lbs.</u>	<u>Wheat</u> <u>Skim-</u>
						<u>milk</u>
Nov.1 to Nov.18	572	365	191	10.6	3.	1.9
Nov. 18 to Dec.1	504	339	205	17.0	2.45	1.65
Dec.1 to Dec. 14	588	490	195	14.0	3.	2.5
Dec. 14 to Dec.31	600	425	165	9.7	3.63	2.57

It will be seen from this table that Lots I and III made their best gains during the second and third period. There was practically no difference in Lot I for the second and third period while Lot III made a considerably better gain the third period.

Lot II and IV made much better gains during the second period than they did during any of the other periods.

In every instance it took much more grain to make a pound of gain during the last period than it did during any of the other periods.

This agrees with the results of many other experiments in that the longer it takes to finish an animal and the older it gets, the more feed it takes to produce a pound of gain.

The success in swine raising rests in getting the animal in a marketable condition as young and as soon as possible.