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Fattening Pigs

J.W. Wilson

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AGRICULTURAL EXPERIMENT STATION

SOUTH DAKOTA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS

DEPARTMENT OF ANIMAL HUSBANDRY

Fattening Pigs

BROOKINGS, SOUTH DAKOTA

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The production of pork is one of the principal industries in the corn-belt. The pig will yield a larger return for the feed consumed than either the sheep or the steer and will make a larger daily gain for his weight than any other animal on the farm.

All animals fatten rapidly when receiving corn as a ration on account of its highly carbonaceous nature. But the question is often asked by farmers who are practicing dairying to a greater or less extent, what is the value of skim milk and buttermilk for the pig when fed in conjunction with corn?

The Thirteenth Census Report of the United States shows that there has been an increase of 193.4 per cent in the swine industry in South Dakota during the past ten years. There has also been a large increase in the number of dairy cows in the state during this time. This increase can justly be attributed to the prevailing high prices of dairy products, the influx of new settlers from dairying and corn-producing states, and the gradual extension of the corn-belt northward. Dairying and pork production go hand in hand, since the by-products of the creamery are unexcelled, when accessibility is considered, as a feed to increase the returns from a bushel of corn when fed to pigs.

Skim milk and buttermilk are considered in some places as waste products, but when fed in the proper quantity to pigs less grain is required for the production of a pound of gain than when corn is fed alone. Henry of the Wisconsin Experiment Station, after many trials, concludes that for the best results not over three pounds of skim milk should be fed with one pound of corn meal, and that when more than this quantity is given the feeding value of the milk is not obtained.

Skim milk and buttermilk are similar in composition, both being proteinaceous and highly digestible. Experiments show that when feeds of this nature are fed in conjunction with our
highly carbonaceous grains to pigs, the gains are more rapidly made and as a rule are cheaper than when they receive the corn alone.

The market in this state for fat hogs is as good as one could wish, as part are shipped to eastern points and part to Pacific coast points. The breeds raised are principally those of American origin, the Poland-China, Duroc-Jersey and Chester-White, although there are a few herds of the English breeds such as Berkshire and Yorkshire. All seem to do well and are suited to our conditions. However, the breed is only a small part of the success to be obtained in the economical production of pork, as much more depends on the nature of the feeds and the feeder. The hog requires a variety of feeds, with good pasture in the summer and warm sheltered quarters where it can get plenty of exercise, in the winter.

Experiments at this Station show that hogs do not make as large gains during cold as they do during mild weather, hence there is an advantage in forcing the pig and putting him on the market at an early date. The use of the hand separator on the farm renders skim milk, from a feeder's standpoint, more valuable than formerly, when the whole milk was taken to the creamery for separation. This is because it is more uniform in quality and there is less danger of contamination from disease, as milk furnishes one of the best medias for the growth of germs.

Henry of the Wisconsin Experiment Station in his book on "Feeds and Feeding" reports that skim milk contains 9.4 and buttermilk contains 9.9 pounds of dry matter to 100 pounds of milk, a difference of but five-tenths of a pound, so we may consider them practically equal in this respect. These products are usually much cheaper in the market than the by-products of the mills and factories, can usually be obtained cheaper, are a home product and serve the same purpose in narrowing the ration as the higher priced commercial feeding stuffs.

THE EXPERIMENTS

The results of two experiments with pig feeding are contained herein. 1. To determine the comparative value of but-
termilk, sweet skim milk and sour skim milk when fed in conjunction with corn. 2. To determine the practical value of the "Hog Motor" a contrivance to compel the hog to grind his grain before eating it.

Experiment No. 1

This included a period of sixty-two days each in the sum-
mers of 1910 and 1911. The pigs were all good thrifty indi-
viduals of their kind, consisting of pure-bred Poland-Chinas, 
Duroc-Jerseys, Berkshires, Hampshires and grade Duroc-Jer-
seys. Each year the twenty-four head were divided into lots 
of six head each, as equal in breed and size as was possible, 
placed in small lots in which there was an abundance of blue 
grass pasture, and weighed up for the experiment. Each 
was given its feed regularly morning and evening and the 
quantity regulated until it was receiving all the grain it would 
eat.

In the 1910 experiment an average of about two and one-
half pounds of milk was fed for every pound of shelled corn. 
In the 1911 experiment an average of about three pounds of 
milk was fed for every pound of shelled corn. Each year a 
lot was fed on shelled corn without milk as a check lot. At 
the close of the experiments the pigs in the check lots were not 
as fat as those in the other lots and did not have the finish of 
those in the milk lots. These pigs were weighed every thirty 
days. The following table includes the number of pig, the 
weight at the beginning, the weight at the close, the total gain 
and the average weights and gains for the period for both 
years.
TABLE No. I.
Weights and Gains

1910 Experiment 1911 Experiment

<table>
<thead>
<tr>
<th>SHELLED CORN</th>
<th>SHelled Corn and Sweet Skim Milk</th>
<th>Shelled Corn and Sour Skim Milk</th>
<th>Shelled Corn and Buttermilk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of pig</td>
<td>Weight at beginning</td>
<td>Weight at close</td>
<td>Gain</td>
</tr>
<tr>
<td>1</td>
<td>82</td>
<td>147</td>
<td>65</td>
</tr>
<tr>
<td>2</td>
<td>88</td>
<td>145</td>
<td>69</td>
</tr>
<tr>
<td>11</td>
<td>119</td>
<td>198</td>
<td>80</td>
</tr>
<tr>
<td>4</td>
<td>76</td>
<td>150</td>
<td>74</td>
</tr>
<tr>
<td>5</td>
<td>66</td>
<td>127</td>
<td>61</td>
</tr>
<tr>
<td>6</td>
<td>91</td>
<td>158</td>
<td>67</td>
</tr>
<tr>
<td>Totals</td>
<td>512</td>
<td>325</td>
<td>408</td>
</tr>
<tr>
<td>Averages</td>
<td>86</td>
<td>154</td>
<td>68</td>
</tr>
</tbody>
</table>

From a study of the above table it is evident that when milk was fed with the corn and grass, the pigs weighing between 80 and 100 pounds more than doubled their original weights in two months’ feeding, but where no milk was fed the original weight was not gained in a single instance during this time. Neither can it be said that the heaviest or the lightest pig in a lot will do the better. Of the 48 head only one
pig made an average gain of two pounds per day. This was No. 12 in the sweet skim milk lot of the 1911 experiment. This pig had an extra large middle and evidently utilized larger quantities of feed. The writer has often thought there was much room for further improvement in the various breeds of swine by selecting types for special purposes. Some sows are heavy milkers while others are light milkers. The heavy milking sows always raise a good litter of pigs, while with the poor milkers an inferior litter is the result. The start the pig receives during the first six weeks from the good milking sow is noticeable ever afterwards.

Some pigs are heavier feeders than others, as was the case with this heavy gainer and a few others in the lots, a highly desirable character in any breed. Further, it will be seen by table No. I that there was a difference in the gain each year for the three lots that received milk with their corn, of only four pounds. The lots that received milk made an average gain, in 62 days, of 32 and 42 pounds more, respectively, than did the lots that did not receive milk.

Table No. II includes the total number of pounds of feed fed, total gain, feed for pound of gain and the average gain per head daily for both experiments.

**TABLE NO. II.**

<table>
<thead>
<tr>
<th>Kind of Feed</th>
<th>Grain consumed</th>
<th>Gain</th>
<th>Milk consumed</th>
<th>Grain for pound of gain</th>
<th>Milk for pound of gain</th>
<th>Average per gain daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelled corn</td>
<td>3832</td>
<td>775</td>
<td></td>
<td>4.68</td>
<td></td>
<td>1.04</td>
</tr>
<tr>
<td>Shelled corn and sweet milk</td>
<td>3831</td>
<td>1227</td>
<td>10547</td>
<td>3.12</td>
<td>8.59</td>
<td>1.65</td>
</tr>
<tr>
<td>Shelled corn and sour milk</td>
<td>3889</td>
<td>1221</td>
<td>10656</td>
<td>3.18</td>
<td>8.72</td>
<td>1.64</td>
</tr>
<tr>
<td>Shelled corn and buttermilk</td>
<td>3889</td>
<td>1223</td>
<td>10556</td>
<td>3.15</td>
<td>8.64</td>
<td>1.66</td>
</tr>
</tbody>
</table>

By feeding milk a larger quantity of grain was consumed by each lot. The largest gain for feed consumed was with the lots that received sweet milk and shelled corn. But the quantity of feed required for a pound of gain with the lots that received milk is so nearly the same, that these feeds appear to be about equal for pig feeding. The average gains per
head daily for pigs in these three milk lots are practically the same. Anything added to the ration of a fattening animal that will increase the appetite to cause a larger consumption of feed, must be considered a benefit, providing the cost of such product is not prohibitive.

Each bushel of corn fed without milk yielded an average of 11.9 pounds of pork. Each bushel of shelled corn fed with 154 pounds of sweet skim milk yielded an average of 17.9 pounds of pork. Each bushel of shelled corn fed with 153 pounds of sour skim milk yielded an average of 17.6 pounds of pork. Each bushel of shelled corn fed with 153 pounds of buttermilk yielded an average of 17.7 pounds of pork. The record shows that an average of 153 pounds of milk and one bushel of corn yielded an average of 17.7 pounds of pork. These figures show that the 153 pounds of milk increased the average gain of 5.8 pounds of pork for every bushel of corn fed, so that this milk was equal to the amount of corn required to produce this gain in shelled corn lots which in this case is about one-half a bushel.

The price of corn and pork varies in the market, hence we did not consider it an advantage to report these results on a financial basis. The grass pasture was a factor in these gains, as the pigs grazed during the evening and the cooler days.

EXPERIMENT No. II.

This experiment was conducted to determine the practical value of the "Hog Motor" for fattening hogs.

The "Hog Motor" is a machine so constructed with a pair of burrs that the hog is compelled to grind all the grain before he receives it. Many advantages are claimed for this mill, and the exhibits at many of our state fairs during the past few seasons where the hog was working for his feed attracted considerable attention.

Fattening animals require more or less exercise, and especially swine. In the early spring when the sow and the pigs are enclosed in a small place much trouble is reported from the fattest pigs of the litter dying. This can be avoided if the sow is separated from her pigs and cause them to worry once or
twice each day until they can be turned in a yard when she will provide the exercise.

The value of ground grain and whole grain for fattening swine has received attention at many of the experiment stations throughout the United States, and more especially at those located in the corn belt.

Rommel, of the United States Department of Agriculture, after making an extensive study of the subject, reports in Bulletin No. 47, Bureau of Animal Industry as follows: "The results detailed show a preponderating amount of evidence in favor of corn meal, judging purely from the basis of feed required for 100 pounds of gain and disregarding the expense of grinding. The average of 19 trials with 297 pigs where the amount of feed eaten is reported, is 524 pounds of grain required per 100 pounds of gain when corn is fed whole in the form of shelled corn, and 479 pounds when fed ground, a difference of nearly 8.59 per cent in favor of grinding. This is considerably higher than the value usually given for corn meal, and may be explained to some extent by the large amount of feed required to make a given amount of gain in some of the experiments, notably the first at the Ohio Station, which must have been due to extraordinary conditions. Careful researches show that an exact estimate cannot yet be made of the comparative value of shelled corn and corn meal. It is worthy of particular attention, however, that in these experiments there were only 9 instances out of twenty-six where the value of the two feeds was equal, or in favor of whole grain; and in one of the latter, the first Missouri test, although the gains are considerably in favor of the pigs on corn meal, they were more economically made by the pigs on whole corn. The instances that favor whole grain are the Maine experiments, the first in Ohio, the second in West Virginia, the first in Kentucky, the first in Missouri, and the fifth, eighth and eleventh in Wisconsin." Rommel states further "The only definite conclusion that can be drawn from these figures is that it is beyond anyone to say that an advantage may be expected to follow the feeding of corn meal sufficient to pay the cost of grinding. If corn sells on the open market at 50 cents per bushel of 56 pounds and grinding costs from 3 to 5 cents per
bushel, a saving of ten per cent by such method would be very good economy; but if corn falls to 25 cents the cost of grinding must be lessened to make meal feeding profitable."

In the fall of 1911 eight head of pigs averaging a trifle over two hundred pounds were divided into two lots of four head each for the experiment. These pigs were placed in yards and had access to a good rape pasture. In one lot was placed the "Hog Motor" filled with shelled corn and in the other lot was placed the self-feeder filled with corn meal. In a few days when the pigs in the motor lot became acquainted with the machine and were working it successfully the two lots were weighed up for the experiment and the grain weighed from then until the close of the experiment which covered a period of 61 days. The corn for the self-feeder lot was ground to the same consistency as that ground by the motor lot. These pigs were older and fatter at the beginning than those reported in Experiment I in this bulletin and this is the reason why it required more pounds of grain for a pound of gain. However, referring to the gains on the first period (See Table No. I) they were as good as could be expected, on hogs of this weight, when corn was fed alone, and are undoubtedly larger than they would have been with shelled corn.

### TABLE No. I.

**Weights and Gains Hog-Motor Lot**

<table>
<thead>
<tr>
<th>No. of Pig</th>
<th>First weight</th>
<th>Second weight</th>
<th>Gain 31 days</th>
<th>Final weight</th>
<th>Gain second 30 days</th>
<th>Total gain per head</th>
<th>Average gain per head daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>219</td>
<td>230</td>
<td>61</td>
<td>303</td>
<td>22</td>
<td>84</td>
<td>1.33</td>
</tr>
<tr>
<td>31</td>
<td>230</td>
<td>232</td>
<td>62</td>
<td>320</td>
<td>28</td>
<td>97</td>
<td>1.47</td>
</tr>
<tr>
<td>33</td>
<td>219</td>
<td>276</td>
<td>57</td>
<td>326</td>
<td>50</td>
<td>107</td>
<td>1.75</td>
</tr>
<tr>
<td>H. Totals</td>
<td>845</td>
<td>1076</td>
<td>233</td>
<td>1206</td>
<td>120</td>
<td>363</td>
<td>1.34</td>
</tr>
<tr>
<td>Averages</td>
<td>210</td>
<td>289</td>
<td>68</td>
<td>301</td>
<td>30</td>
<td>91</td>
<td>1.49</td>
</tr>
</tbody>
</table>

**Self-Feeder Lot**

<table>
<thead>
<tr>
<th>No. of Pig</th>
<th>First weight</th>
<th>Second weight</th>
<th>Gain 31 days</th>
<th>Final weight</th>
<th>Gain second 30 days</th>
<th>Total gain per head</th>
<th>Average gain per head daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>260</td>
<td>233</td>
<td>73</td>
<td>370</td>
<td>37</td>
<td>110</td>
<td>1.80</td>
</tr>
<tr>
<td>34</td>
<td>219</td>
<td>277</td>
<td>58</td>
<td>306</td>
<td>29</td>
<td>87</td>
<td>1.42</td>
</tr>
<tr>
<td>37</td>
<td>225</td>
<td>280</td>
<td>55</td>
<td>303</td>
<td>33</td>
<td>78</td>
<td>1.28</td>
</tr>
<tr>
<td>35</td>
<td>233</td>
<td>309</td>
<td>78</td>
<td>329</td>
<td>30</td>
<td>106</td>
<td>1.74</td>
</tr>
<tr>
<td>Totals</td>
<td>937</td>
<td>1189</td>
<td>262</td>
<td>1318</td>
<td>119</td>
<td>381</td>
<td>1.40</td>
</tr>
<tr>
<td>Averages</td>
<td>224</td>
<td>299</td>
<td>68</td>
<td>329</td>
<td>30</td>
<td>95</td>
<td>1.55</td>
</tr>
</tbody>
</table>
The unusually cold weather in November when the thermometer registered at zero and below, is responsible for the small gains for each lot during the second thirty days of the experiment. During this time the lot doing their own grinding gained as much as the lot receiving the grain ground before feeding. As before stated in this bulletin, hogs do not gain as rapidly during cold weather as when it is warmer, probably because a larger per cent of grain is required to maintain body heat during cold weather.

There are certain grains that should always be ground, because when fed whole a large per cent will be found unground in the excrement. Sometimes grains will become dry, hard and flinty; and will be increased in palatability if ground.

The following table reports the total pounds of grain consumed, total gain and grain for pound of gain:

**TABLE No. II.**

<table>
<thead>
<tr>
<th>Total Grain and Gains</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Hog-Motor Lot</td>
</tr>
<tr>
<td>Self-Feeder Lot</td>
</tr>
</tbody>
</table>

Table No. II shows that the hogs eating meal from the self-feeder consumed 133 pounds more during the 61 days and made 18 pounds more gain than did the lot doing their own grinding, but it required .09 more pounds of grain for a pound of gain with this lot than with the motor lot. The additional 18 pounds of gain made by the self-feeder lot was made with 133 pounds of grain and the cost of grinding the corn, while with the motor double the number of hogs could have worked the grinder. Each bushel of corn meal fed in the self-feeder yielded an average of 9.79 pounds of pork and each bushel of shelled corn fed in “Hog Motor” yielded an average of 9.94 pounds of pork, a difference of .15 pounds of pork in favor of the lot that did their own grinding with the “Hog Motor.” Every particle of grain that comes through the mill is eaten with
no waste and the mill is durably built and ought to last for several years. From these results we consider the "Hog Motor" a useful device in swine feeding.

**SUMMARY**

1. Sweet skim milk, sour skim milk and buttermilk are practically equal for pigs when fed in the proportion of from two and one-half to three pounds of milk to one pound of shelled corn.

2. Pigs weighing from 80 to 100 pounds, on a ration of corn and milk in proportion as above stated, made an average gain of 1.65 pounds daily during a feeding period of 62 days.

3. The lots receiving milk made an average gain, in 62 days of 32 and 42 pounds more, respectively, than did the lots receiving shelled corn and water.

4. The milk evidently increased the appetite, since the pigs receiving it consumed a larger quantity of grain.

5. In fattening an animal, any feed that will increase the consumption of grain and hasten early maturity, providing the cost of such product is not prohibitive, must be considered a benefit.

6. Ordinarily, with all ages of swine, a bushel of shelled corn will produce an average of 10 pounds of pork. In this experiment, on an average for the two years of feeding period of 62 days each, a bushel of shelled corn yielded 11.9 pounds of pork. But when an average of 153 pounds of milk was fed with a bushel of shelled corn, an average yield of 17.7 pounds of pork was produced. This was a difference of 5.8 pounds in favor of the milk lots; or in other words, the milk was equal to 5.8 pounds of pork. However, it must not be understood that this quantity of milk fed to a pig without the corn would yield this amount of gain; but when fed in combination, as above stated, similar results are to be expected.

7. The pig is the most economical producer of all meat-producing animals on the farm, yielding larger returns daily for live weight and feed consumed than either the sheep or the steer and furnishing a market at home for grain and dairy by-products.
8. Where the pigs in both lots had access to all the feed they would eat, the gains during the unexpected cold weather was a factor in lessening the total gains for each lot. In the lot in Experiment No. 1 where the pigs made a larger average daily gain, they were about two months younger but of a desirable market weight at the close of the experiments. From this we might suggest that greater profit would be made if hogs are fattened earlier and disposed of before danger of cold weather.

9. Pigs receiving corn meal from a self-feeder, made larger gains than those doing their own grinding with the “Hog-Motor,” but the number of pounds of grain required for a pound of gain was larger with the self-feeder than with the lot doing their own grinding.

10. The cost of grinding is a factor that must be considered in feeding corn meal and from the results of this test we believe the “Hog-Motor” practical and a grain-saver.
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