1910

Some experiments in grazing and soiling

S E. McClendon

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Agricultural Experiment Station

of the

Louisiana State University
and A. & M. College,

BATON ROUGE.

SOME EXPERIMENTS IN GRAZING AND SOILING

by

S. E. McCLENDON, B. S.,
Assistant Director.

BATON ROUGE
THE NEW ADVOCATE, OFFICIAL JOURNAL
1910
Louisiana State University and
A. & M. College

Louisiana State Board of Agriculture
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Some Experiments in Grazing and Soiling.

BY

S. E. McClendon, B. S., Assistant Director.

For a number of years all the Louisiana experiment stations have been devoting more or less attention to growing forage crops, and special attention has been devoted to those at Baton Rouge. The earlier experiments were devoted to testing the relative yields in hay or green forage, best time of planting seed, time required for maturity, etc., of different varieties. The most important results of these experiments have been published from time to time. More recently some of the best forage and soiling crops have been pastured or fed, and the returns measured by gain in weight of the animals consuming the crops. Cattle, hogs and sheep have been used in these experiments. While the results are not quite as complete as desired, we are prompted to publish some of the data in hand at this time, because of an active demand for information along these lines.

OATS AS A PASTURE CROP FOR HOGS AND SHEEP.

In 1907 a plot of land at Baton Rouge measuring two and a half acres that had produced one hundred and ten bushels of corn was used for the following winter grazing experiment:

The corn was gathered on September 2. Then the land was pastured with cattle to clean the field. On September 26 and 27 this land was plowed with a three-mule disc plow, turning under all the left-over corn stalks, grass, etc. On the 28th this land was planted in Patterson rust-proof oats.

On October 29 seven Poland-China pigs, weighing 276 pounds, were put on these oats for the winter without other feed. Up to this time the pigs had not been fed, but had been running through the fence into a pea field and were in fine growing condition. On February 17, 1908, these pigs weighed 568 pounds, having made a gain of 292 pounds in one hundred and ten days' time on oats alone. This would be an average daily gain of .37 pounds per pig. The experiment was closed at this time, as we wished to prepare the land for the early planting of corn.
These pigs could have been sold at this time for 6 cents gross, or the 292 pounds of pork was worth $17.52. Forty-five head of sheep were pastured about one-half the time from October 29 to January 1 on the same plot to help keep the oats down. No account was kept of their gains. After January 1, 1908, we confined with the seven pigs, eight ewes and nine lambs. On February 17 the nine lambs weighed 320 pounds, and the ewes were in better condition than on January 1, when confined to the plot without additional feed. These lambs averaged sixty-eight days old and weighed 35.5 pounds each. The oldest lamb was one hundred and eleven days old and weighed sixty pounds, the youngest one being forty-eight days old. These lambs were worth 5 cents gross, or $16.00. This gives a total credit of $33.52 to this piece of land, not counting the extra pasturage up to January 1. This amounts to $13.40 per acre, without interference with the crops that were to follow.

The cost of producing this winter pasture was approximately as follows:

- Man and team, 2 1/2 days at $3 per day......$ 7.50
- Five bushels of seed oats at 75c.................. 3.75
- Seeding oats ...................................... .25
- Shoveling drains .................................. .50

Total cost ......................................$12.00

At this rate an acre of oats would be worth $8.60 for pasture alone for one hundred and ten days, after the expense of production had been deducted.

PIGS ON DRY FEED.

May 5, 1905, fifteen pigs were distributed into three groups, as nearly equal in size as possible, and put in three separate pens, and fed as follows:

Lot No. 1, weight May 5, 498 pounds, were fed 20 pounds of rice bran daily until May 15, when the lot weighed 500 pounds, a gain of two pounds in ten days. The feed was then increased to thirty pounds daily. May 21, the lot weighed 546 pounds. On May 29, the feed was increased to 40 pounds daily. June 3, the lot weighed 596 pounds. Total gain in weight, 29 days, 98 pounds, worth, at 5 cents, $4.90. Bran consumed was worth
$6.66, leaving a loss of $1.76, or it cost 6.9 cents to make one pound of gain.

Lot No. 2, weight May 5, 442 pounds, were fed same amount of polish that Lot No. 1 had of bran. May 15, weighed 594 pounds. June 23, weighed 656 pounds. Total gain in 29 days, 214 pounds, worth $10.70. Lot consumed 860 pounds of polish, worth $10.32, making a gain of 38 cents in 29 days. It cost 5 cents to make one pound of gain.

Lot No. 3, weight May 5, 460 pounds, were fed 15 pounds of polish and 5 pounds of molasses. May 15, weighed 510 pounds. May 21, weighed 580 pounds. Molasses was increased to 20 pounds per day. May 29, polish increased to 40 pounds per day. June 3, weighed 656 pounds. Total gain in weight, 29 days, 196 pounds, worth, at 5 cents, $9.80. Polish consumed, 450 pounds, worth $8.88. Molasses consumed, 260 pounds, worth $1.75. Total cost, $10.63, a loss of 83 cents. It cost 5.5 cents to make a pound of gain.

No doubt better gains would have been made had the weather been cooler. Our general observation has been that it is an easy matter to keep hogs growing satisfactorily through the summer, but they fatten more rapidly in cooler weather.

RICE POLISH VS. RICE POLISH AND RAPE PASTURE.

February 1, 1906, six pigs were put on an experiment; one group of three, weighing 330 pounds, were put in a pen and fed polish alone until March 5, and Nutraline from that date to March 23. The other group of three, weighing 370 pounds, were fed the same amount of same feed and allowed access to rape pasture. The two groups made the same number of pounds gain to March 23, when the experiment was closed, showing no advantage in this case in favor of the rape pasture.

This result seems extraordinary, as the pigs seemed to relish the rape, and the only explanation that can be suggested is that the individuality of the pigs was a factor. There should have been a larger number of animals on the experiment.

RICE POLISH (1907).

February 4 twelve pigs from six to eight months old that had had the run of fields and oats pasture during winter were put in a pen in good growing condition and fed what rice polish
they would clean up twice daily. On February 4 the pigs weighed 962 pounds. On March 1 the pigs weighed 1,470 pounds, a gain of 508 pounds in 24 days, or a daily gain of 1.7 pounds per day per pig. Pigs ate 1,800 pounds of polish at $26.50 per ton at a cost of $23.85. Sold the pigs at 5 1-2 cents, or $80.85. 508 pounds of gain at 5 1-2 cents would be worth $27.94, leaving a profit of $4.09. The actual profits were more than this, as the pigs would not have brought 5 1-2 cents when the experiment was begun. It cost 4.6 cents to make one pound of pork.

DWARF ESSEX RAPE AND OATS COMPARED.

Dwarf Essex rape has a good reputation as a forage crop for hogs and sheep in the North. On rich land it makes an excellent growth in Louisiana, and, judging from the appearance of the crop, would afford more nutrients per acre than most any other winter forage.

In 1905 small, equal areas of rape and oats were planted and grazed by two pigs on each plot from December 10 to December 29, when the Essex rape was exhausted and the experiment had to be stopped, though the oats were apparently as good as at the beginning of the experiment.

The pigs on the oats gained .21 pounds per day per pig; those on the Essex rape gained .12 pounds per pig.

The same year a small area was planted in mixed oats and Dwarf Essex rape and pastured with hogs and cows to test their preference for the crops. Neither cows nor hogs would eat the Essex rape until the oats were grazed short, thus showing a decided preference for the oats.

On January 26, 1906, two pigs weighing 266 pounds were pastured on good rape until February 9, when the two weighed 268 pounds, having gained only two pounds in fourteen days, which is within the limit of error in weighing.

On January 26, 1906, four barrows weighing 440 pounds were put on rape and oats mixed. On March 23 these hogs weighed 486 pounds, or a gain of 46 pounds in fifty-six days. The rape was not eaten in the early part of the experiment, and not until the oats were grazed to the ground did they eat the rape. Forty-six pounds of pork at 5 1-4 cents would have brought $2.41. There was less than a third of an acre in the plot.
Experiments For 1908-09.

GRAZING OATS.

September 20, 1908, oats were planted for grazing with hogs on 1.76 acres. The land had been in sorghum previous to planting oats, producing about 12 tons per acre, which was put in the silo. Good rains were secured during the fall and winter and warm weather prevailed, consequently the oats did well and produced abundance of grazing.

On October 13 the hogs were weighed and put on the oats without other feed, and allowed to graze until December 9. The weights were as follows:

October 13, large sow weighed 180 pounds—December 9, weighed 222 pounds, a gain of ............ 42 pounds
October 13, small sow weighed 156 pounds—December 9, weighed 196 pounds, a gain of ............ 40 pounds
October 13, eleven pigs weighed 344 pounds—December 9, weighed 484 pounds, a gain of ........ 140 pounds

Total ................................................. 222 pounds

The pigs gained at the rate of .22 pound per day for 57 days.

The sows gained at the rate of .71 pound per day for 57 days.

The sows were just weaning their pigs, consequently were in fine condition for gaining.

Cost of preparing the land and planting the oats:

One man and pair of mules, plowing and harrowing, two days at $3 ........................................... $6.00
Four bushels of seed oats at 75c .................................. 3.00

Total ................................................. $9.00

222 pounds' gain at 6 cents equals $13.32, leaving a profit of $4.32 after all expenses of planting were deducted.

The hogs could not keep this area grazed down, so on December 10 other hogs were added to the lot. It was also thought advisable to feed some in addition to the grazing. The lot was fed 24 pounds of a mixture composed of one pound of cotton
seed meal and ten pounds of rice polish. The mixture cost $1.25 per hundred pounds.

December 9, large sow weighed 222 pounds; March 1, weighed 270 pounds, a gain of 48 pounds in 81 days.

December 9, small sow weighed 196 pounds; March 1, weighed 250 pounds, a gain of 54 pounds in 81 days.

December 9, eleven pigs weighed 484 pounds; March 1, weighed 928 pounds, a gain of 444 pounds in 81 days.

December 10, one male weighed 156 pounds; January 18, weighed 178 pounds, a gain of 22 pounds in 39 days.

December 10, two gilts weighed 292 pounds; December 24, weighed 340 pounds, a gain of 48 pounds in 14 days.

The total gain made was 616 pounds.

On this piece of land we could easily have pastured 15 head per acre. On January 18 there was perhaps some sign of cotton seed meal poisoning, so the feed was changed to equal parts of shorts and rice polish, which cost us $1.35 per hundred pounds.

During the period of 81 days we had fed $24.98 worth of feed, and the hogs had gained 616 pounds, worth 6 cents a pound, or $36.96, or $11.98 over and above the cost of the feed.

The experiment extended over a period of 138 days, in which time the hogs had eaten $24.98 of very high-priced feed, and had gained 838 pounds, worth 6 cents, or $50.28. To the price of feed might be added the cost of planting the oats—$9.00, bringing the cost to $33.98, or a cost of about 4 cents a pound.

After the hogs were taken off the oats produced 1.8 tons of good hay. The land was then planted in sweet potatoes for hog feed.

SWEET POTATOES FOR HOGS.

Sweet potatoes in the South are generally recognized as a valuable crop for hogs. In order to get something of this value as a feed, on July 11, 1906, four-tenths of an acre of good land was set out in sweet potatoes. In the fall a few rows were dug in order to estimate the yield, which were put at 320 bushels per acre. The variety was Southern Queen, a large, dry potato.
On November 17 twenty-one head of hogs, including sows and shoates, weighing 2,460 pounds, were given access to the potatoes from a Bermuda pasture. On December 6 the hogs had about eaten all the potatoes, and weighed 2,950 pounds, a gain of 490 pounds in nineteen days, or an average gain of 1.2 pounds per day per pig. Four hundred and ninety pounds of pork at 6 cents, the price of hogs at that time, would have brought $29.90. At this rate one acre of potatoes would have brought $73.50 worth of products. This rate of gain, however, would not have been maintained as the hogs became fatter. A portion of this gain also was “fill up” gain.

On November 9, 1909, 23 head of hogs were selected for grazing sweet potatoes. They weighed 2,520 pounds. This bunch was put on the potatoes and fed a little ear corn each day. The corn was charged at 50 cents a barrel, being the prevailing price at that time. On December 1 the bunch weighed 3,130 pounds and had gained 610 pounds in 22 days. This was a gain of 1.2 plus, each day. These hogs had eaten 4 1-2 barrels of corn at 50 cents, or $2.25 worth of corn. Had rooted 12 rows of potatoes 236 feet long, which would be about .24 of an acre.

On December 9 the bunch weighed 3,390 pounds and had gained 260 pounds in eight days, or 1.41 pounds each per day; had eaten 1 1-2 barrels of corn and rooted eight rows, or .16 acre, of potatoes.

On December 9 two of the smaller ones were taken out of the experiment and sold at 7 cents per pound, weighing 370 pounds. One pig, weighing 102 pounds, was put in at this time, making the lot weigh 3,112 pounds.

On December 9 we began feeding a mixture composed of 2 pounds of cotton seed meal and 5 pounds of rice polish. The mixture cost $28.42 per ton. Fed the lot 37 pounds of the mixture per day.

On December 23 the bunch weighed 3,480 pounds and had gained 368 pounds in 14 days, or 1.19 pounds each per day. These hogs ate 518 pounds of feed at $28.42 per ton, or $7.35 worth of feed, and had rooted 18 rows of potatoes.

On December 23 a Tamworth sow was put in, weighing 294 pounds, making the lot weigh 3,774 pounds. The bunch was fed 50 pounds of the above mixture per day.
On January 7 the bunch weighed 4,210 pounds, a gain of 436 pounds in 15 days, or a daily gain of 1.26 pounds. These hogs were fed 750 pounds of feed at $1.42 per 100 pounds, or $10.65 worth of feed. They rooted 30 rows of potatoes.

Hogs were sold at 7 cents per pound.

### Recapitulation

<table>
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<th>Date</th>
<th>Description</th>
<th>Weight</th>
<th>Pounds.</th>
<th>Weight</th>
<th>Pounds.</th>
</tr>
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<td>Nov. 9</td>
<td>12 head of barrows</td>
<td>2,040</td>
<td>170</td>
<td></td>
<td></td>
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<tr>
<td>Nov. 9</td>
<td>6 head of grade razor backs</td>
<td>360</td>
<td>60</td>
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<tr>
<td>Nov. 9</td>
<td>1 sow and 4 pigs</td>
<td>120</td>
<td>24</td>
<td></td>
<td></td>
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<tr>
<td>Dec. 9</td>
<td>1 pig</td>
<td>102</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dec. 23</td>
<td>1 Tamworth sow</td>
<td>294</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total weight</td>
<td></td>
<td>2,916</td>
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Weights at close of experiment:

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<th>Date</th>
<th>Description</th>
<th>Pounds.</th>
</tr>
</thead>
<tbody>
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<td>Dec. 9</td>
<td>Two barrows were taken out weighing</td>
<td>370</td>
</tr>
<tr>
<td>Jan. 7</td>
<td>Ten barrows were taken out weighing</td>
<td>2,830</td>
</tr>
<tr>
<td>Jan. 7</td>
<td>Seven razor backs were taken out weighing</td>
<td>910</td>
</tr>
<tr>
<td>Jan. 7</td>
<td>One sow and 4 pigs were taken out weighing</td>
<td>170</td>
</tr>
<tr>
<td>Jan. 7</td>
<td>One Tamworth sow was taken out weighing</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4,580</td>
</tr>
</tbody>
</table>

This experiment extended over a period of 59 days, in which the hogs gained 1,664 pounds, or an average daily gain of 1.23 pounds. If the sow and four pigs and the Tamworth sow were cut out of the average the rest of the bunch made an average gain of 1.61 pounds.

During this period these hogs were fed six barrels of corn worth $3.00, 1,268 pounds of mixed feed worth $18.00—a total of $21.00. They rooted 1.52 acres of potatoes. The potatoes were the second crop on the land.

1,664 pounds of gain at 7 cents..............$116.48
Feed consumed.................................. 21.00

Gain over and above cost of production.............$ 95.48
HOGS GRAZING SWEET POTATOES AND FED RICE POLISH AND COTTON SEED MEAL.

On November 16, 1908, fourteen rows of potatoes were dug and the yield of the field estimated. The estimated yield was 150 bushels per acre. The acreage consumed by hogs was 1.21 acres. Portable fence was used to restrain pigs, allowing access to new area three times during experiment.

November 16 fifteen head of hogs weighing 1,472 pounds were put in the potato patch and were fed rice polish and cotton seed meal, mixed in the proportion of two pounds cotton seed meal and five pounds polish.

December 4 fifteen hogs weighed 1,922 pounds, a gain of 450 pounds in eighteen days, or a daily gain of 1.6 pounds.

December 4 two gilts, weighing 292 pounds, were taken out, leaving thirteen head, weighing 1,630 pounds, and eight pigs, weighing 360 pounds, were put in. December 10 one sow and six pigs, weighing 412 pounds, were added.

December 12 the hogs weighed 2,604 pounds, a total gain of 652 pounds from the start. In this time the hogs had been fed 1,020 pounds of feed, worth $12.55; 652 pounds of pork at 6 cents equals $39.12, a gain of $26.57 over and above cost of concentrated food.

December 12 the hogs were divided into two lots for the purpose of feeding one lot on potatoes alone and the other on potatoes and rice polish and cotton seed meal. However, an error was made in weighing that was not discovered until too late to make correction, and, while the plan of feeding was carried out to December 30, only the total gain can be reliably considered. At the beginning of the last period a hernia pig was taken out weighing 45 pounds and another animal weighing 160 pounds was put in, making total weight 2,719 pounds on December 12, for new period. December 30 the total weight was 3,310 pounds, making a gain of 591 pounds in 18 days, worth at 6 cents, $35.46. They consumed during this period 650 pounds of feed worth $8.12, leaving $27.34 return on potatoes and profit. The total dry feed consumed was worth $20.67. The total gain by hogs was 1,243 pounds, worth $74.58, leaving as return for potatoes and profit $53.91, on 1.21 acres, or $44.55 per acre, or approximately 30 cents per bushel for the potatoes.
STOCK BEETS AND RUTABAGAS.

Stock beets, though extensively used in the other countries, have never been extensively grown as a source of feed in Louisiana. The experiment stations have grown a number of varieties for many years, and always found that good yields should be expected in rich land. On October 23, 1906, plantings were made of the leading varieties on very rich soil. The beets were large enough in February, 1907, to give heavy yields of excellent quality. Some of these beets that were allowed to grow until late in May and early June, 1907, when the larger individuals weighed from twenty to thirty pounds. The largest one weighed balanced the scales at thirty-two and one-half pounds.

Beets planted on November 25, 1906, were ready for feeding April 1, 1907. The following varieties were found to be most productive:

- Mammoth Red, or Giant Long Red.
- Giant Feeding Sugar.
- Lane's Improved Sugar.
- Golden Tankard.
- Mangel Wurtzel.
- White French Sugar.

Hogs, sheep and cattle are very fond of beets, after they have once eaten them. In our first year's experience there were no weights kept on the beets eaten by the stock, nor of the gains made, yet the hogs gained in flesh and looked thrifty and healthy. The last of the November planting was fed on July 15, 1907.

Ground producing thirty barrels of corn per acre was plowed with a disc plow the latter part of August and harrowed thoroughly. A few days after this the land was bedded into four-foot rows. The rows were made this width for convenience, as three-foot rows would have done equally as well so far as the beets were concerned. The seeds were planted on September 7, 1907. Where the seed drill was used an excellent stand was secured, but after planting a few rows, the seeder was broken and the rest of the seed were sown by hand. On this area poor stand was secured and to this is partly due the small yields on this land.
PIGS FED ON BEETS.

On April 4, 1908, nine pigs, averaging eighty pounds each, were put in a lot and fed beets alone until May 20, when the pigs weighed 890 pounds, a gain of 170 pounds in forty-five days. This is an average gain of .42 pounds per pig per day.

These pigs ate from eighteen to twenty pounds of beets per day. At this rate it would take the nine pigs eleven days to eat one ton of beets. At this rate of gain one ton of beets should produce 41.58 pounds of pork. With pork selling at 6 cents, this would make beets worth $2.49 per ton. This land produced twenty-eight tons of beets per acre. At this rate an acre of beets would be worth $69.72 for pig feed.

On May 29, 1909, we began feeding beets, throwing to the hogs all they would clean up during the morning.

On May 29, the bunch weighed 1,786 pounds. On June 24, they weighed 1,943 pounds, a gain of 157 pounds in 26 days, or a gain of .287 pounds per day per hog.

BEETS AND CORN MEAL AS A FEED.

On May 20, six barrels of slightly damaged corn meal was purchased at $2.00 per barrel and fed to some pigs to which beets were fed as above. On June 22, after feeding the meal with what beets the pigs would eat, the pigs weighed 1,220 pounds, or a gain of 1.14 pounds per day per pig, for a period of thirty days.

In this case the pigs ate approximately eight pounds of beets each per day. They ate $12.00 worth of meal and about one and one-fourth tons of beets. This gave 330 pounds of pork, worth six cents per pound, or $19.80.

CULTIVATION OF BEETS.

It is best to put the rows from three to four feet wide, so that a mule and cultivator can pass through the rows without disturbing the beets. After the land is thoroughly prepared and the fertilizer applied, the seeds are planted in the drill at the rate of five to eight pounds per acre, if all conditions are ideal, otherwise plant eight to twelve pounds. This
can be done by hand, but a seed drill is much preferred, as it plants regularly and at an even depth, thereby securing a better stand with less seed. At the same time cultivation is made easier from the fact that the young plants are confined to a narrower space, which enables one to cultivate nearer the young plants than could otherwise be done.

If a heavy rain should occur before the seed are up, a light harrow should be run over the bed, to break the crust and to destroy the grass and weeds. Cultivation should be very rapid after the seeds are up and as soon as large enough they should be gone over with a hoe, taking out the grass and weeds and at the same time thinning the plants to a distance of eight or ten inches. Missing places may be transplanted successfully, if care is taken not to break the tap root of the plants, otherwise a short stubby beet is produced.

Beets at this Station have never been hurt seriously by the cold, but in a few cases the frost has scorched the leaves a little and checked the growth. For stock feeding, beets growing well up out of the ground are to be desired, as they are easier to pull, and less dirt clings to the beet, making it lighter to handle and cleaner to feed. Giant Long Red excels in these desirable characters.

STOCK CARROTS.

Stock carrots when planted on the same land will mature several weeks earlier than the beets. Carrots should be planted and worked as beets, but should be left much thicker in the drill. When left three or four inches apart and even thicker, they produced fifteen tons of good nutritious feed per acre, and should be more generally planted. Stock carrots will stand much colder weather than beets without injury, but after maturing they go to seed, consequently have to be fed early or they deteriorate in feeding value.

The following varieties are recommended:

Large White Belgian,
Victoria, and
Long Orange.
CARROTS AS A FEED.

On May 3 a group of hogs were put on Bermuda grass pasture and fed what carrots they would eat until May 29. May 3 the group weighed 1472 pounds. May 29, they weighed 1786 pounds, a gain of 314 pounds in 26 days, or at a rate of .57 pounds each per day.

TURNIPS AND RUTABAGAS.

On September 7, 1907, varieties of turnips, rutabagas and carrots were planted. These are not as productive, nor as nutritious as beets, but the fact that they mature much earlier and only occupy the land for a short time, producing an abundance of good feed at a time when good, succulent feed is apt to be scarce, should recommend them for consideration. The earlier varieties of turnips are ready to feed in sixty days after planting, and will produce from ten to fifteen tons per acre on good land. They make fairly good cow feed, sheep are very fond of them and hogs will eat them. Planted in September they would give a quantity of feed in November and December.

The following varieties are good:
For early use, Red Top Strap Leaf,
Champion Purple Top,
Purple Top Globe,
Yellow Abberdeen (a late variety and a good keeper.)

Rutabagas should be planted and worked as beets. They are later in maturing, more productive and better keepers than the ordinary turnip. When planted in September, they should do to feed in December, January and February, and produce from fifteen to twenty tons per acre.

In the old country they are generally used for sheep food, allowing the sheep to do their own harvesting, being confined to small areas by portable fencing. They are also good for cattle, especially for dairy cows, if not fed in excess so as to impart a turnip flavor to the milk. When turnips are run through a cutter and sliced in small pieces, they are greedily eaten. Hogs will eat them, but they are perhaps less desirable for hogs than for cattle and sheep.
FEEDING SORGHUM TO PIGS.

On June 24 a group of hogs weighed 1943 pounds. On July 28, weighed 1944 pounds. In this case the hogs had all the sorghum they could chew for 34 days and gained one pound.

From July 28 to September the hogs were held on a maintenance ration and were fed sorghum, corn, cushaws and peanuts. Early in September the above hogs were put on peanuts, where there was about two-thirds of a stand. The hogs gained at the rate of 320 pounds per acre. After rooting the nuts there was another period from October 13 to November 9 when the hogs were allowed to root a few rows of potatoes and were fed some corn and at the same time allowed to run on an oat patch in order to hold them at their weight, as the potatoes were not sufficiently matured to turn the hogs on them. These hogs were then used in the experiment previously outline in grazing potatoes.