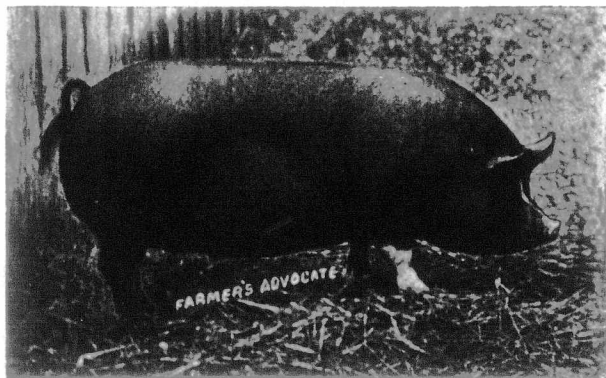


## FARM.

## Experimental Sugar Beet Culture.

In the following, an experienced agriculturist and scientist has summarized the results obtained by the agricultural experiment stations of the United States, during the past twelve years, with sugar beets:

**Varieties.**—In comparisons of varieties, Kleinwanzlebener and Vilmorin Improved have oftenest given the best average results from the standpoint of yield, sugar content of the beets, and percentage



TYPICAL BERKSHIRE SOW.

First at Toronto Industrial Exhibition, 1900.

purity of the juice for the whole country. Other varieties of much merit are Short French, Zehringen, Schreiber, Desprez, Pitzschke Elite, Knauer Imperial, Lemaire, Lane Imperial, Zieman, and Dippe.

**Soils.**—Many experiments have shown that sugar beets of the best quality, as regards sugar content and percentage purity of the juice, are grown on rather heavy soils. Beets grown on light soils mature more rapidly, but do not yield so heavily, nor are they so uniformly rich in sugar. Muck soils generally give beets of low sugar content, though fairly good results were obtained at the Michigan Station with muck soils, especially when potash fertilizers were used. From results secured at the Wisconsin Station, it is believed that with good culture and proper fertilizers, beets with a sugar content of 4 per cent. above factory requirements can be grown on soil that contains almost 20 per cent. of organic matter. Sugar beets of excellent quality have been grown on many of the alkali lands of the Western United States. In California, sugar beets of high grade, both as to sugar and purity, grew on lands containing 12,000 pounds of alkali salts per acre to a depth of three feet, when the percentage of common salt did not exceed 0.04 per cent. on 1,500 pounds per acre. In Colorado, beets grew, without detriment to the sugar content, on soil showing a top incrustation of soluble salts one-half inch thick. Beet seed germinated freely in soil containing 0.01 per cent. of sodium carbonate, but the young plants were injured in the soil containing 0.05 per cent.

**Plowing and Cultivation.**—There is no decisive data on these subjects, but in plowing, depths of 8 to 10 inches have generally given the best results. Subsoiling is of doubtful benefit, though at a few stations it has resulted in slightly-increased yields. If practiced at all, it should be done early enough in the season to give ample time for the restoration of capillarity, before the dry weather of summer sets in. A medium amount of shallow cultivation, 2 to 3 inches deep, during the season, is advisable. Five to seven cultivations will generally be found sufficient. Cultivation is of most importance in dry seasons.

**Planting.**—All the experimental evidence goes to show that beets should be planted as early in the spring as the seed will germinate: usually in April or early May for the Northern States. Planting from 1 to 1½ inches deep, in rows 18 inches apart, is about right. In Colorado, where irrigation is practiced, rows 27 and 11 inches apart, with ditches down the 27-inch rows for irrigation water, is preferred. The beets will need to be thinned to 6 to 8 inches in the row. It has been found by the Colorado Station that the period of thinning beets can be extended over two weeks without harm to the quality of the crop.

**Topping, Transplanting, and Rotation.**—The vacancies in the sugar-beet row are sometimes filled by transplanted beets. The results are usually ill-shaped roots, though the yield and quality of the roots do not seem to be affected by the operation. The practice, however, is not generally financially profitable. Beets can be topped more quickly with a hoe before drawing than with a sharp knife after drawing. At the Nebraska Station, the time required for topping an acre of beets before drawing was 11 hours, while the time required for the same with the use of a sharp knife, after the beets were drawn and laid in rows, was 17 hours. The results of co-operative experiments in New York show that the more fertility and tillage a crop requires, the better it is suited to prepare the land for a crop of beets. In Nebraska, good beets have been grown after millet, and in Wisconsin, beets grown after cereals or summer-fallowing were of good quality.

**Fertilizers.** Not many experiments have been conducted along this line. In general, barnyard manure, applied the preceding year, is considered

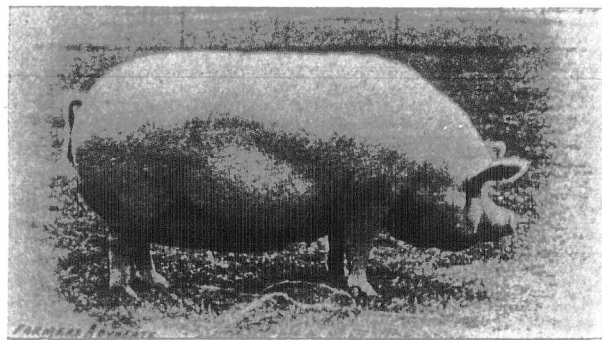
one of the most satisfactory fertilizers for this crop. Nitrate of soda used alone in large amounts has generally lowered the sugar content of the beets, but when combined with potash and phosphoric acid, good results have been obtained. Complete commercial fertilizers have been used with profit in New York, Pennsylvania, Michigan, and South Carolina. Liming soil has proved beneficial in Wisconsin and on upland soil in Michigan, but was harmful in West Virginia and also on Michigan muck lands.

**Harvesting and Storing.**—Results secured at a large number of Stations have shown conclusively that the more thoroughly mature the beets are before harvesting, the greater will be the percentage of sugar in the beets and the purity of the juice. Beets may remain in the soil after they have ripened for a considerable period, with but slight variation of sugar content occurring. Late fall rains frequently cause beets to start into a second growth, which tends to lower their sugar content. In order to prevent this second growth, the beets are sometimes loosened in the beds, sufficient to break the roots. This practice had a favorable effect upon the sugar content and purity of the beets at the Nebraska and Indiana Stations. Sugar beets lose considerable weight after pulling, by drying, and thus show a higher sugar content than normal. Beets stored in an ordinary room from six to twenty-eight days, at the New Mexico Station, varied in sugar content from 11.2 to 33.5 per cent. At the Nebraska Station, beets were stored, by different methods, from October 29 to the latter part of April. Upon examination it was found that those beets exposed to the greatest amount of ventilation suffered the greatest loss in sugar content, while those farthest from the source of ventilation suffered the least.

**Yield and Cost Per Acre.**—The yield from the more favorable sugar-beet districts varies from 9 to 30 tons per acre, and will average from 12 to 18 tons per acre. Cost of production varies from \$30 to \$40 per acre; it is seldom less than \$30, and sometimes exceeds \$50.

## Clover Ensilage.

In August, 1900, a small stave silo, 9 feet in diameter and 22 feet high, was erected. The material used was 2-inch spruce. A roof was built over the silo, but no other protection was provided



ENGLISH YORKSHIRE SOW.

First at Royal Counties Show, 1900.

for the ensilage than that afforded by the 2-inch stuff of the staves.

During the first and second weeks in September this silo was filled with the aftermath from a clover meadow. This consisted, for the most part (about 75 per cent.), of clover, with a small admixture of timothy or herd grass. The clover was in full bloom, with here and there a head turning brown. The timothy was nearly ready to shoot the head.

The crop was cut early in the morning, the mower being at work at six o'clock. The wet material was gathered at once, loaded and hauled to the silo, in which it was thrown, and tramped as firmly as possible. The silo was filled to the top three times, but when opened in January, 1901, the contents had sunk 10 feet from the top. The surface was dry, and the material for a depth of from 12 to 15 inches was of very little value, save as manure. Below that depth, however, the contents were in a good state of preservation, the leaves semi-transparent, and the clover heads looking as though having been cut some two or three days only. The odor was very pleasant, the ensilage having retained the peculiarly sweet smell of new-cut clover, with a very slight apparent acidity. There was no apparent effect from frost, and the ensilage was frozen only slightly from the wall. The ensilage was eaten with avidity by cattle, sheep, and pigs.

After being exposed to the air for some time, however, a rather unpleasant odor developed. This objectionable feature would, I think, be obviated if the ensilage were fed regularly in sufficiently large quantities as to protect the surface from too long exposure to the air.

Were the surface weighted after the last filling, the loss at the top would, I think, be reduced to an inconsiderable amount.

The use of silos to conserve clover for summer feeding is, I think, rather strongly indicated by this work.

Clover cut in June when in full bloom could be fed in palatable form during July and August, and the silo be ready for corn and clover in September. It would, however, be inadvisable to try this work with a large silo unless a very large herd of cattle were being fed.

J. H. GRISDALE, Agriculturist.  
Experimental Farm, Ottawa.

## Successful Clover Catches.

To the Editor FARMER'S ADVOCATE:

SIR,—As a grower of clover for thirty years, and in that time having had to plow up only one field for lack of what is termed a catch, I will briefly give my views and procedure. I think clover is the one crop that the ordinary farmer cannot afford to dispense with in his rotation. Two of the elements lacking in the soil in old-settled districts of Ontario is humus and nitrogen. There is no crop that will supply humus and nitrogen so cheaply as clover. There is no crop that will leave the soil in better preparation for the succeeding crop, and there is nothing that so nearly approaches a whole feed for farm stock as well-cured clover hay. I seed about 40 acres to clover every spring, mostly with a spring crop, spring wheat preferred, but have had good results seeding with either barley or oats. I usually have 25 acres of hoed crop and rape, and manure all I can besides; then seed the root and rape land, also where I have put the manure. Don't plow manure 10 inches deep, but keep it near the top of the ground, so the young clover can at once take advantage of it; then in the spring work land thoroughly with cultivator and harrow. Endeavor to sow where you are seeding down as early as land will work well. If land is inclined to be heavy and is left go a few days too long before being worked or sown and gets very lumpy, you cannot expect clover seed to germinate and get a good strong root to resist summer drought. I sow about 7 lbs. clover, 3½ timothy and 1½ alsike. There will be spots in most fields where clover will fail, and some springs, when ground is bare and continually freezing and thawing for a month or more, it will ruin the clover; then the timothy and alsike will take the place of the clover, and we will have a crop of hay or pasture. A great many farmers apply manure heavily to their root land and manure what stubble land they can, and then think they cannot afford to seed down the land receiving the manure until they have taken off two or three crops of grain; then they seed down and invite failure almost every time. A weak, straggling crop will encourage weed-growth, and if the land is poor when seeded down, it will be poor for the succeeding crop. But if land is seeded down when in good condition, the manure helping to keep soil so rootlets of clover and grass seeds can more easily penetrate the soil and make a vigorous growth, and land is sown and worked at the right time, we can usually expect a strong, vigorous crop of hay or pasture that will leave the land richer in humus and nitrogen, and capable of producing a good crop when plowed up.

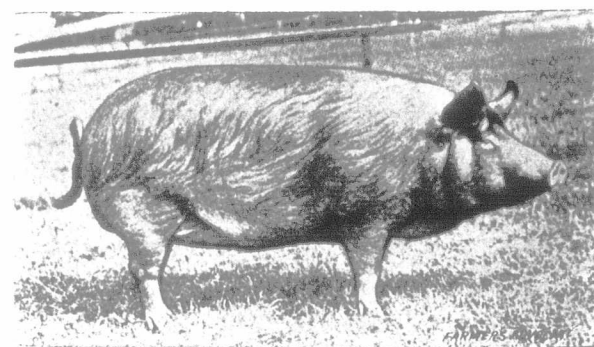
I take but one crop of hay or pasture, then plow up. I cut thirty acres for hay, pasture about ten, turn off 20th June, save the pastured field and one of the early-cut hay fields for seed, and the balance is pastured in the fall, and all is plowed once with single plow the last thing before freezing up. My humble advice is to sow lots of clover on the best land and put in the best shape. Grow more clover and less acres of grain and we will hear less about land being unproductive and getting poorer, and less about hard times. Don't fail to sow clover because it is high in price. It will pay if you have to borrow the money at 20 per cent. to pay for it.

Durham Co., Ont.

T. BAKER.

## Silage, Sugar Beets and Mangels as Dairy Foods.

At the Pennsylvania Experiment Station a feeding trial with 3 lots of 3 cows each, and covering 3 thirty-day periods, is reported. During the entire test all the cows were fed daily 7 lbs. of mixed grain and 6 lbs. of field-cured corn stover. During periods 1 and 3 all the cows received in addition silage, sugar beets and mangels, each in quantities furnishing 2 lbs. of digestible dry matter. During period 2, in



TYPICAL TAMWORTH SOW.

First at Royal Counties Show, 1900.

addition to the grain and stover, lot 1 received 6 lbs. of digestible dry matter in silage; lot 2, 6 lbs. in sugar beets; and lot 3, 6 lbs. in mangels. The results of the test showed a slight increase in the amount of butter, and percentages of fat and solids not fat in changing from the mixed ration of silage, sugar beets and mangels to silage alone, and a slight decrease in changing from the mixed ration to either sugar beets or mangels alone. They are considered, however, as showing no practical difference in the effect of silage and roots upon the yield and quality of milk, but the mixture of silage and roots is considered slightly better than the same quantity of either fed separately.