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MICHIGAN STATE COLLEGE
Of Agriculture and Applied Science
EXTENSION DIVISION
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MORE ALFALFA FOR MICHIGAN

R. E. DECKER

Michigan harvested 874,000 acres of alfalfa for hay in 1933, placing the state second among all states in alfalfa acreage, according to the Division of Crop Estimates of the United States Department of Agriculture. In 1919, the Crop Reporting Service credited Michigan with 74,000 acres of alfalfa. The increase of 800,000 acres in 14 years is evidence of the importance of this forage crop in Michigan agriculture.

Since 1919, the acreage of all tame hay in the state has averaged 2,644,000 acres per year. The alfalfa acreage of 1933 was 28 per cent of the total tame hay acreage. Timothy or timothy and clover continue to make up too large a proportion of the tame hay acreage.

Some people have expressed the opinion that Michigan is growing sufficient alfalfa. The almost complete consumption of available hay supplies in the winter of 1933-1934 and the failure of other forage crops to yield as compared with alfalfa have shown the fallacy of such ideas.

When Michigan is producing more hay than is needed to take care of its livestock needs during such seasons as were experienced in 1933-1934, it will then be in order to talk about a surplus of alfalfa. Until that time arrives, Michigan should continue an acreage expansion of this crop. One and one-half to two million acres of alfalfa seems a reasonable goal at the present time.

Why You Should Grow Alfalfa

1. Alfalfa yields more pounds of feed per acre than any other hay. During the 15 year period of 1919-1933, the average yield of alfalfa per acre was 50 per cent above the per acre yield of other hay.

The root system of alfalfa enables it to draw water from the deeper soils not reached by roots of other kinds of forage plants. Many farmers have reported that alfalfa seedlings often survive prolonged droughts while seedlings of other legumes were destroyed. Alfalfa is more dependable than other hay crops.

2. Alfalfa is rich in protein. When protein is purchased in the form of concentrates, it is the most expensive of food constituents. Alfalfa grown on the farm should reduce the yearly feed bill.

3. Alfalfa can be profitably utilized by all livestock. Well cured alfalfa hay aids the dairyman in his milk production program and it is the ideal roughage for the beef cattle and lamb feeder. Alfalfa furnishes excellent pasture for growing pigs, and the poultryman finds the bright green leaves of properly cured alfalfa hay rich in protein and vitamins for the laying hen. When fed with reasonable care, alfalfa hay is highly satisfactory for horses.

4. Alfalfa is an excellent pasture crop. Many farmers are successfully pasturing alfalfa, finding that it is dependable during the dry part of the summer when other pastures are unproductive. Experiments were carried on at the W. K. Kellogg farm during 1930-1932, with both dairy cattle and sheep, under the supervision of A. B. Dorrance in cooperation with the U. S. Department of Agriculture. Pasturing with dairy cattle during these years of low prices gave excellent returns per acre and with an increase in the market price of dairy products much better financial returns can be expected.

The 1932 pasture trials with sheep showed that alfalfa pasture was the only one to return a worthy margin above feed and fertilizer costs.

5. Alfalfa in the rotation preceding other crops assists the farmer to get increased yields from these crops. Through the medium of the nodules on its roots, the inoculated alfalfa plant is able to make use of the nitrogen in the soil-air. Plowing under an alfalfa sod adds organic matter to the soil and makes more nitrogen available for plant food.

6. Alfalfa is a good cash crop. The average value per acre of alfalfa during the period 1923-1933 was \$23.71, according to Verne H. Church, Agricultural Statistician. The value per acre during the period 1929-1933 was \$18.07. During this same five-year period, beans had a per acre value of \$17.04 and wheat \$14.02.

7. Alfalfa has a lower annual production cost per acre when the cost is distributed over a period of three to five years than many other field crops.

Estimates by Professor H. C. Rather of the Farm Crops Department at Michigan State College, based on farm records, show that where alfalfa seedings are made without a companion crop, the annual charge against a crop harvested four years will be about \$5.35 per acre. When seeded with an average companion crop and when the alfalfa is credited with the net returns from small grains at 1934 prices, the average annual charge against the alfalfa should be slightly less than \$3.50 per acre.

On strong soils where alfalfa may successfully be seeded with a companion crop yielding well above average, returns from the companion crop will more than pay for the entire cost of the alfalfa seeding.

8. Alfalfa seed production offers opportunity for an income for some alfalfa growers. After the grower has obtained sufficient acreage for hay, he can turn his attention to seed production.

How To Grow Alfalfa

There are few farms in Michigan which cannot produce alfalfa. It is being grown on many soil types. On the heavy poorly drained soils, tile drains should be laid to remove the surplus water. On these soils, timothy and alsike will usually give a more satisfactory yield until a drainage system has been finished. Where drainage conditions are such that an occasional wet season may endanger an alfalfa stand, a mixture of timothy and alsike may be sown with the alfalfa. The timothy and alsike take the place of alfalfa in spots where the alfalfa is killed. The combination makes a good mixed hay on the first cutting and clear alfalfa on the second.

Alfalfa may be seeded with a companion crop such as oats, barley, or wheat or it may be seeded alone in the summer. In seeding with winter wheat, it must be borne in mind that the wheat is fully established and can give the growing alfalfa plant much competition for moisture. Spring seedings with a grain crop are usually more satisfactory on the heavier soils because these soils are not so easily affected by dry weather and they usually contain more available plant food than sandy soils. Barley makes an unusually satisfactory companion crop. The Spartan variety of barley is an excellent companion crop as it matures earlier than other varieties and does not lodge easily, so the danger of smothering the new seeding is decreased. Smaller amounts of barley or oats when used as a companion crop should be sown, usually one to one and one-half bushels per acre.



Fig. 1. A well packed seed bed is necessary for alfalfa.

Seeding of alfalfa alone usually proves more satisfactory on soils easily affected by dry weather. The time of seeding on such soils is dependent largely upon moisture conditions and upon freedom from weeds. Where the land is quite free from weeds, the seed bed can be fitted and the alfalfa seeded in early June. If many weeds are present, the land should be thoroughly cultivated to control the weeds and the seeding can then be done in July when moisture conditions are favorable. If seedings can be made in June, they are to be preferred to the later seedings because the plant will have a better chance to make a good root growth before going into its first winter. It is not advisable to sow alfalfa in Michigan later than August 15, as the plants may not get a good start before the end of the growing season.

A well-packed seed bed is necessary for alfalfa. The use of the culti-packer before seeding should help in establishing contacts between soil particles so that capillary moisture can come up to the seed. Packing

the soil also helps to get a more uniform depth of seeding. Alfalfa seeds should not be planted more than one-half to three-quarters of an inch deep. Shallow seeding on heavy soils is best.

When and How to Use Lime

A successful stand of alfalfa requires a soil that is well supplied with lime. The crop uses considerable lime in growth but the fact that the nitrogen-gathering bacteria which work with alfalfa will not thrive in a sour soil is of more importance.

To determine whether the soil needs lime and the quantity to apply per acre, use Soiltex, a material prepared by the Soils Department of Michigan State College. This is sold at a low price and one tube will make a number of tests. The outfits can be secured from the Soils Department or from your County Agricultural Agent.

By following directions sent with the Soiltex, you can determine how much limestone should be applied. If you use marl, four to six wagon loads per acre will give as good results as two tons of finely ground limestone. If hydrated lime is used, enough should be applied to correct as much acidity as would be corrected by an application of limestone. The amount needed can be calculated from the neutralizing factor printed on the bag. From a ton to one and one-half tons per acre is usually required.

Use of Fertilizer

The alfalfa plant needs plenty of nitrogen, phosphoric acid, and potash for good growth. The inoculated alfalfa plant secures, through the bacteria on its roots, sufficient nitrogen from the air. Potash and phosphate, if not contained in sufficient quantities in the soil, must be supplied in some form of fertilizer. The use of fertilizer before seeding alfalfa should not be overlooked or failure may result. The Soils Department of Michigan State College makes the following recommendations for fertilizing alfalfa. On sands and light loams, use an 0-20-20, an 0-14-14 or an 0-8-24. On heavier soils, use an 0-14-6 fertilizer or 20 per cent super-phosphate. The rate per acre, in any case, is 300 or more pounds. The fertilizer should be worked into the soil in advance of seeding.

Top-dressing old stands of alfalfa every two years with commercial fertilizer usually results in a more vigorous growth, according to the Soils Department of the Michigan State College. The same amounts and analyses are recommended as is used for new seedings. The fertilizer should be harrowed in after the first cutting on light soils and early in the spring on heavy soils.

What Kind of Seed

Buy alfalfa seed of a variety adapted to Michigan. An adapted variety is one that will withstand our winter conditions and, over a period of four or five years, will produce satisfactory yields of hay.

The Hardigan and Grimm varieties are preferred for Michigan, with Hardigan slightly better than Grimm because its yield of hay is somewhat better. Hardigan produces a little more seed than Grimm when the season is favorable for seed production. Each year more farmers

are producing some alfalfa seed. Much of this seed is from hardy strains of alfalfa and, where farmers can get this Michigan grown seed, it is advisable to use it.

The Michigan Crop Improvement Association inspects and certifies the Hardigan and Grimm varieties. Certified seed is seed whose pedigree traces back to the original foundation stock and it must also meet high quality standards. All certified Hardigan seed can be traced back to the original lot of seed released from Michigan State College in 1920. In like manner, certified Grimm alfalfa traces to the original Grimm fields in Carver County, Minnesota. When you buy alfalfa seed bearing the certification tag of a certifying agency such as a crop improvement association, you are certain of getting seed true to name, of good

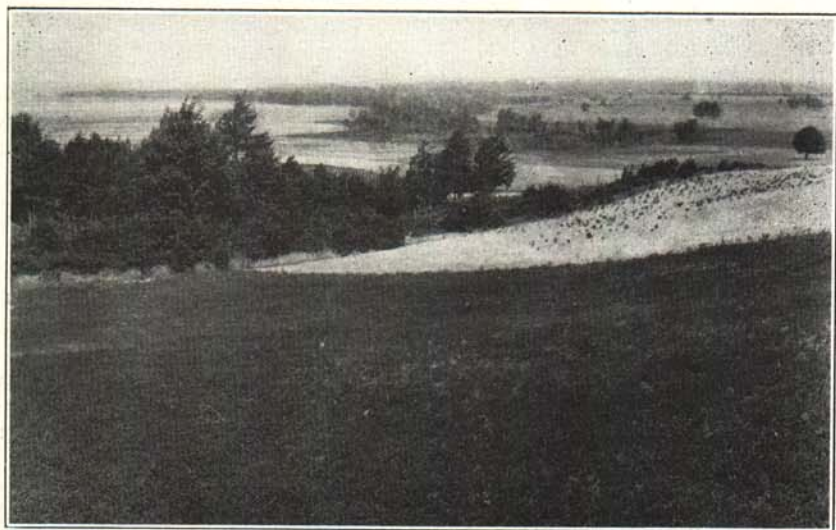


Fig. 2. Alfalfa growing on sand hills in Manistee county. The crop is adapted to a variety of soils.

quality, and known origin. "Michigan Variegated" is a trade name given to alfalfa seed whose pedigree cannot be definitely established but the fields from which the seed is produced have shown hardiness and blossom colors characteristic of variegated strains.

The northern grown common alfalfas rank next to Hardigan, Grimm, and other variegated alfalfas. The common alfalfas are grown with satisfactory results in many parts of the State but are not as hardy as the varieties previously mentioned.

Seed from Arizona and regions of similar climate is not adapted to Michigan.

When you purchase alfalfa seed, satisfy yourself as to its desirability by carefully reading the tags upon the bag. They will tell you whether the seed is certified or uncertified and give you information as to the per cent of purity and germination.

Inoculation

Inoculation of alfalfa seed is an inexpensive but important step in getting a satisfactory stand. Inoculating the seed with pure culture insures the presence of the nitrogen fixing bacteria. Fresh gelatine or wet cultures are of proved merit while, in many trials, the dust or dry cultures have been very inferior. Practically all dealers handle alfalfa cultures. One bottle of agar or gelatine culture is sufficient for a bushel of seed. Instructions as to method of using are on the bottle and should be followed.

Rate and Method of Seeding

If Hardigan or Grimm alfalfa seed is sown, 7 or 8 pounds per acre is recommended. In seeding common alfalfa, use 9 or 10 pounds per acre.

Seeding can be done with a special alfalfa drill, a drill with grass seeding attachment, or a broadcasting outfit. With any method the seed should be covered but not more than three-quarters of an inch. Following the seeder with a cultipacker packs the soil around the seed and helps to insure even germination. This practice is especially important on the lighter soils.

Handling New Fields

Alfalfa seedings should establish a good root system the first year in order that they may go into the winter with plenty of plant food reserves in these roots. A good top-growth is essential for maximum root development. Clipping of alfalfa the same year it is seeded is generally not advised. In the case of spring or early summer seedings which have become weedy, clipping may be advisable to prevent these weeds from going to seed. In no case should mid-summer seedings be clipped.

The year following seeding, it is well to permit the alfalfa to come to full-bloom before cutting the first crop for hay. This permits the plant further to increase the root reserves of plant food.

Handling Old Fields

In well-established alfalfa fields, the alfalfa should be cut for hay, if possible, when in the one-tenth to three-fourths bloom stage. Although the number of cuttings that can be removed depends somewhat on the seasons, there is much evidence that September cuttings in Michigan will reduce the yield of hay the following spring.

A good stand of vigorous alfalfa plants can quite successfully keep June grass from getting started. When June grass begins to come in, it is time to prepare another field for alfalfa.

For information on curing alfalfa, see Michigan State College Extension Bulletin No. 35.

For information on alfalfa seed production, see Michigan State College Extension Bulletin No. 111.