Alfalfa That Lives

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Alfalfa That Lives
Finding Winter-Hardy, Wilt Resistant Varieties Is One of Growers' Problems

ONE of the chief problems which Iowa farmers have in growing alfalfa is to find a satisfactory variety. Few alfalfa fields are worth leaving after the third year because wilt has thinned the stand so much. The Iowa Station, along with various others and the United States Department of Agriculture, has been trying to solve this problem by finding or developing varieties or strains which are wilt-resistant, winter-hardy and yield well.

Ladak, a variety superior to Grimm and the common strains in wilt resistance and yielding ability, has been found. Over a 14-year period at the Iowa Station, it has outyielded all other varieties compared with it.

An alfalfa breeding program, organized on a nation-wide basis, has been under way for several years. The United States Department of Agriculture is cooperating with the state agricultural experiment stations in developing varieties more resistant to wilt.

Besides wilt resistance, these varieties must also be winter-hardy, have desirable recovery habits, produce large yields of high quality forage and be good seed producers. Considerable progress has been made. In fact, the seed of a composite variety or strain is now being increased for early distribution. Within a few years we believe one or more varieties will be available which will be superior to any now grown.

Search Winter Hardy

We have compared hundreds of lots of seed, representing different varieties and different regions of production, in test plantings at the Iowa Station.

In the earlier years it was evident that much of the alfalfa seed offered in Iowa had little winter-hardiness, and usually it was found to have been produced in southwest states. As a result of tests at the Iowa Station, and at other stations cooperating with the United States Department of Agriculture, the "Verified Seed Service" was begun in 1927. This made it possible for seed dealers to know with certainty the source of the seed they handled. This almost immediately eliminated the most poorly adapted seed from the Iowa markets.

With the new Federal Seed Law, which has become effective within the past few months, the records of the source of production are dependable and the Seed Verification Service has been discontinued.

The Grimm and Cossack varieties were recognized as having outstanding value in our early tests because of their extreme winter-hardiness. Experienced growers had pretty generally settled upon one or the other of these varieties, purchasing certified seed in order to make sure of its genuineness, with the expectation that fields when once established would be left down for several years. And then came the bacterial wilt disease, which introduced a new factor.

In 1910 and 1915, and up until about 1920, a well-established field, planted with a good winter-hardy variety, might be productive for 8 or 10 years or, with cultivation to keep out bluegrass and other weedy growths, even longer. About 1920 alfalfa bacterial wilt disease appeared. The first reported observation of the disease was in Iowa, but almost immediately thereafter it was found in other important alfalfa-producing areas.

In western Iowa, where the acreage of alfalfa had been particularly large it decreased. Many fields failed to such an extent that they were plowed up. On land where alfalfa has been grown and the wilt introduced, the stand usually has been reduced by the end of the third cutting year so that it is no longer profitable and should not be planted again.

A uniform seedbed, well worked in advance of seeding to sprout and kill weed seed and to fine and firm the soil, contributes much to success in getting a good stand. The disc, harrow and cultipacker all aid in proper preparation.
be plowed. We regard resistance to bacterial wilt as important as winter-hardiness.

Seek Wilt-Resistant

With the general prevalence of bacterial wilt it soon became apparent that Grimm, although particularly winter-hardy, was one of the most susceptible to bacterial wilt injury. Cossack, also extremely winter-hardy, seemed but little more resistant than Grimm. Ladak has shown more wilt resistance and is also extremely winter-hardy. Turkistan has generally shown marked wilt resistance and also excellent winter-hardiness, but the yield is lower than other varieties and seed is not generally available.

Hardistan, selected from Turkistan, also has considerable wilt resistance but does not yield as well as Grimm or northern grown common in Iowa.

Yields from many different alfalfa variety tests have been summarized and put on a comparative basis by expressing the relative productivity on the percent of the yield of Grimm in the same planting. These results are given in the accompanying table.

The six highest yielding are all variegated varieties. The yields obtained from Ladak and Cossack are significantly better than from Grimm. The yield of Ladak has been rather strikingly superior in almost all our tests in which it has been included. This no doubt is because in this variety extreme winter-hardiness is combined with some wilt resistance.

Ladak recovers more slowly after cutting than many other varieties. Some farmers have objected to this variety, because 1 or 2 weeks after cutting the plants appear shorter than those of Grimm or common. By the time the plants come into bloom, however, Ladak has caught up and may outyield the others. An extremely heavy first crop helps to build the high seasonal yields of this variety.

Of the regional common strains, there seems to be no significant difference in seed from Montana, Kansas, Nebraska, Oklahoma and the Dakotas. Seed from Utah in almost every test has shown some lack of winter-hardiness and has given lower average yields than seed from these other states. New Mexico, California and Arizona Common are not recommended for planting in Iowa.

Because most alfalfa seedings are likely to be ready to plow up by the end of the third year, and because new seedings are less likely to winterkill than older ones, it seems good practice for many growers to use northern grown common seed rather than to pay the higher price for Ladak, Cossack or Grimm.

But if you want to leave a seeding for 4 or more years, the increased yield expected from Ladak or Cossack would undoubtedly justify purchase of this seed.

Alfalfa Essentials

But selecting the right kind of seed is not the only essential to growing alfalfa in Iowa. The first requirement for success with alfalfa is a fertile, sweet soil. The crop responds to a soil high in organic matter and available phosphorus. Alfalfa is not a good crop for soil below average in fertility unless it is heavily fertilized. On many farms, however, the average field soil is fertile enough so that alfalfa can be grown on any part of it.

Well-drained soils. Alfalfa's deep, extensive root system requires good drainage for normal development. On poorly drained soils plants will soon turn yellow and die. Bottom land soils may be excellent for alfalfa when they are well tiled. Such soils are usually fertile and high in organic matter.

Lime is necessary. To seed alfalfa on an acid soil is to invite failure. Many soils, particularly in eastern and southern Iowa, must be limed before alfalfa will succeed. Lime corrects acidity, supplies calcium for plant growth and creates a favorable condition for the nodule-forming bacteria. If lime is necessary, it preferably should be applied several months before seeding.

Phosphorus increases yield. Alfalfa responds wonderfully to phosphate fertilization. On many Iowa soils phosphorus limits alfalfa production. Where lack of available phosphorus is indicated, 150 to 300 pounds of 20-percent superphosphate applied per acre usually will markedly increase the crop.

Inoculate seed. Alfalfa nodule-forming bacteria are not found in most Iowa soils. The only safe procedure is to inoculate the seed, using cultures recently prepared for use on alfalfa and sweet clover. Such commercial cultures are now sold by most seed stores. Inoculation is recommended for all seedings except on fields where a good crop of alfalfa or sweet clover has previously grown.
Fine, Firm Seedbed

Over a long period of years many experimental plantings have been made at the Iowa Station to compare different times of planting, methods and rates of seeding and especially the different kinds and sources of seed.

Alfalfa needs a firm seedbed. The better the seedbed is prepared, the better the alfalfa crop that follows. Alfalfa seedings usually follow a cultivated crop such as corn. No better seedbed can be had than a well-disced and harrowed cornfield that was kept free from weeds the previous year. When alfalfa follows soybeans it is important to firm the seedbed with a cultipacker or corrugated roller, using the cultipacker both before and after seeding, if possible.

One of the best methods of seeding is to cultipack, broadcast the seed and cultipack again. This firms the soil about the seed, and places the seed at the right depth. When one seeds with a drill equipped with a grass seeder attachment, he must be careful to prevent the seed from being covered too deeply. Alfalfa seed should be covered not more than about ½ inch in the heavier soils and not more than an inch in the lighter soils.

When to Seed

Many experimental plantings indicate that there is no better time and method of seeding for average conditions than in the early spring with a small grain nurse or companion crop, in exactly the same way usually used for clover and grass.

Choosing a nurse crop for early spring seedings is important. barley is satisfactory but not better than a short-strawed, early-maturing variety of oats, such as Iowa 105 or Iogold. Reducing the rate of seeding the small grain helps the alfalfa. If drouth threatens the alfalfa, cut the small grain in the milk stage and make it into hay.

In some parts of Iowa, on soils low in organic matter with poor water-holding capacity, best results are obtained when alfalfa is seeded alone. Preparing a seedbed in the early spring and cultivating at intervals until June to kill weeds is an excellent procedure. When seeding alone in June, using a cultipacker is particularly desirable.

Many excellent stands of alfalfa have been obtained from seeding in August. The success of August seeding depends on late summer rains. When seeded in June or in August no nurse crop is used. The later the seedings are made the greater the danger of winterkill.

We recommend sowing alfalfa not much later than Aug. 15 in northern and central Iowa and Aug. 25 in southern Iowa.

Under extremely favorable conditions 10 to 12 pounds of seed per acre may be sufficient, but under average farm conditions the larger yield to be had in the first year from 12 to 15 pounds usually pays well.

Management

Unless alfalfa stands a foot or more high by mid-August the year it is seeded, the crop should not be cut until the following season.

Three Cutdowns per Year. We have compared removing one, two, three and four cuttings per year on several different seedings at the Iowa Station through a period of years. We found that when cut four times a year the growth is exceedingly weak and the stand about gone by the end of the second year. The fewer the cuttings, the more vigorous the growth and the longer the stand is maintained.

Maximum yields may be had when only two crops are taken per year, cutting when in the full bloom stage. But the feeding value, pound for pound, will not be as high nor the crop as palatable as when the crop is cut at an earlier stage of maturity.

Three crops per year under Iowa conditions, especially when the hay is to be fed to dairy cattle, seems to be best. The first cutting usually comes about June 10 to 15, when the plants are one-tenth to one-fourth in bloom; the second cutting is about the last week in July and the third the first week in September.

When alfalfa is cut much after the first week in September the danger of winterkilling is greatly increased and the yield from the first cutting the following year reduced.

Are Bugs in YOUR Corn?

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Furthermore, fumigation does not give satisfactory results at temperatures below 60 degrees unless excessive amounts of chemicals are used. It is, therefore, most economical to fumigate only the area where the temperature is above 60 degrees F.

Fumigation of the molded and crusted area will kill the insects present and thereby remove the principal source of heat and moisture. This will make it easier for the cold to penetrate throughout the bin and will result in a rapid lowering of the temperature throughout the mass of grain.

What should be done with the crust? It is always desirable to have the crusted surface broken up before the fumigant is applied. When the crust is very thin the corn will begin to dry out on the surface of the bin as soon as the insects are killed, but where the crust is heavy or where a quantity of corn is very moldy or rotting, the spoiled and wet corn should be removed. It is not desirable, however, to remove this layer until you are ready to fumigate as this would result in exposing a new surface of cold corn which would in turn become crusted.

If you are in doubt as to the proper procedure to follow in taking care of your corn, call your county agent, your county AAA organization or write the Extension Service at Iowa State College.