

Leaflet Q. (revised)

Suggestions for Growing Alfalfa

**New York Agricultural Experiment Station
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Basis of these statements. These suggestions are based on personal observation of about 200 experimental alfalfa fields and on correspondence with over 1000 alfalfa growers in this State.

Alfalfa grows in New York. Alfalfa is being successfully grown in every agricultural county in New York and on at least one farm in nearly every township. It is possible to grow it on some part of practically every farm in the State.

A necessity in dairying. Dairymen can not afford to do business without it. With corn silage and alfalfa a small amount of grain suffices to make a satisfactory ration because alfalfa is high in protein. This saves grain bills and lowers the cost of production. As a means of helping out dry pastures alfalfa cut and fed green is unequalled.

Nature of plant. In root growth alfalfa resembles red clover, but sends down a stronger tap root. When properly handled it produces three or four cuttings each year and remains productive for many years. Land which is adapted to red clover usually grows alfalfa when any lack of inoculation and of lime is supplied.

Soil Where the other conditions are satisfactory alfalfa does well on practically all types of soil. For the best results the soil must be fertile since four to eight tons of hay per year can not be pro-

duced by this plant without plenty of food. However, some of the less fertile gravelly soils give better returns with alfalfa than with any other forage crop.

On some of our New York soils
Need of lime. red clover does not do well and alfalfa will not grow without the application of lime. The amount needed varies with different fields but there does not seem to be any means of determining the extent of the need except by applying varying amounts of lime and noting the results. Our tests have been made with 1500 lbs. of stone lime to the acre or its equivalent in other forms of calcium. In some cases the lime was absolutely essential to success and in one-half of the fields it was applied at a profit. In the other half of the fields the improvement varied from nothing at all to an amount just sufficient to pay for the lime. There is little satisfactory data regarding the relative value of various forms of lime but they are generally considered to be valuable in proportion to the calcium which they carry.

While lime is necessary in some cases and useful in many, money is often wasted by the application of lime where it is not needed.

Drainage. Alfalfa requires a well drained soil. It does not succeed where surface water stands even for a few days in the year, as it is easily smothered. The first three feet of soil should not contain standing water for any considerable period. Where red clover heaves out, alfalfa usually will do the same.

Ordinarily alfalfa fails where a hard pan is within two feet of the surface. When efficient tile drains are present it does well even on stiff clay. The stoppage of tile drains by alfalfa is confined to those drains which lead from springs and contain running water throughout the season.

Weeds. Weeds are one of the serious troubles in starting alfalfa. For this reason it is best to sow after well cultivated crops such as potatoes or corn. Stable manure carries a large amount of weed seed and should be applied to the preceding crop to get the weeds out of the way of the alfalfa. Before sowing, the land should be worked at short intervals in order to sprout and kill the weed seeds. Some of the fall weeds, like barn grass, do not sprout early and are not affected unless this cultivation is continued into July. Weeds may be introduced through the alfalfa seed or with the soil from other fields.

Seed. There is no best place to buy seed but it is important to get good seed. Buy early and send a two ounce sample to the Experiment Station and you will be promptly informed of its quality. Seed containing even a trace of dodder seed should not be sown. The small seeded dodder can be easily removed from the alfalfa and full directions for doing this will be sent for the asking. Large-seeded dodder can not be sifted out, and if the sample shows presence of dodder of this kind the alfalfa seed should not be used.

Sowing. Sow when the land is fit, preferably between June 15 and August 15. It is not fit until successive cultivations have compacted the subsoil so that the moisture comes up to the dust mulch, nearly all weed seeds are killed and the soil is fine and mellow. Sow twenty to thirty pounds of seed to the acre, sowing broadcast and covering lightly. The seed, like clover, will not grow if covered too deeply. There is a growing tendency toward midsummer seeding. Where this is done on a frequently-cultivated summer fallow it is usually successful, but where the ground is plowed late and fitted hurriedly failures are common. It is now an increasingly popular practice to sow alfalfa after a spring crop of oats and peas grown for forage. To insure success with alfalfa started in this way, the oats and peas must be sown early and harvested early so that no oats will be left on the field that are ripe enough to grow and make a volunteer crop to rob the alfalfa of moisture. Follow the harvesting of the oats and peas with immediate, thorough, repeated working with the disk harrow; and sow the alfalfa before August 10.

No robber crop. Alfalfa does best when sown alone. Many failures are due to sowing it with oats or barley. These take so much water from the soil that the alfalfa dies. Alfalfa is so valuable a crop that one can afford to spend a season in getting it started, and on the other hand,

the seed and preparation cost so much that one can not afford to throw them away.

Bacteria. Alfalfa gathers nitrogen from the air by the aid of certain bacteria in the galls or nodules on the alfalfa roots. These nodules are about the size of an alfalfa seed and are attached to the fine roots. They should be present on all of the plants. Anyone can easily find them on the roots of young alfalfa by taking up a block of earth containing the plant and carefully removing the earth from the roots. Finding these nodules is good evidence that the necessary bacteria are present in the soil.

Soil inoculation. The bacteria which are necessary to the successful growth of alfalfa were lacking in about one-half of the fields which were tested. This lack can be best supplied by applying soil from a field where alfalfa is already well inoculated. One hundred pounds per acre has given good results but twice that amount is usually applied. It is easiest to sow this soil broadcast just before seeding, when the harrow will mix the bacteria and the seed. The value of this inoculating soil is decreased by allowing it to become thoroughly dry or by mixing it with caustic lime or strong commercial fertilizers. A field which has been inoculated should be in condition to furnish soil for other fields by the following season. Ordinarily inoculating soil can be obtained from some of your neighbors. If not, the Experiment Station will

try to furnish a single sack, sufficient to start the experimental acre, to all farmers who wish it, the farmers to pay the transportation charges. Since there is a limit to the amount which the Station can furnish and the demand is so great each year that there is much delay in making the shipments, farmers are urged to obtain soil locally whenever possible.

Cutting the crop.

Cutting the immature alfalfa is usually injurious to it but it should be cut when the weeds are choking it seriously since the weeds suffer more than the alfalfa. This treatment is rarely necessary after the first season. When the alfalfa becomes yellow from the attack of the leaf spot fungus, cutting is the most successful method of combatting the fungus. Cut for hay when the first blossoms appear.

Winter protection.

The field should go into the winter with 6 inches or more of growth to hold the snow and give protection. Pasturing the fields in the fall or cutting after September 15 in the central and northern part of the State is risky.

[Your chance of success.

Where alfalfa is sown without lime or inoculation the chance of success is 1 out of 5; where inoculating soil is added it is 3 out of 5; where both lime and inoculating soil is applied it is 4 out of 5. While this gives the probabilities in the case there is only one way to find what a particular field needs and this way is to sow an experimental plat in such a way as to bring out the facts.

An easy experiment.

Select an acre in a field which you wish later to put into alfalfa. Prepare this land according to the directions which have been given, then lay it off according to the accompanying plan.

Lime only.	No treatment.
Lime and soil	Soil only.

Down-hill side
until slaking occurs. When slaked spread evenly.

The lime should be worked into the soil at least a day before the seed or inoculating soil is applied. Just before seeding sow the inoculated soil across the limed and unlimed halves as shown in the plan. Cover one-half acre with soil. This will leave each quarter treated as shown in the plan. Use the down-hill half for inoculation so that drainage will not carry the germs to the other plats.

Sow the seed on the entire acre and cover lightly. In sowing and harrowing treat the inoculated half last so as not to scatter the inoculation and confuse the results.

This experiment requires practically no additional work and it will clearly bring out the needs of the particular field. By the following season the inoculated portion will supply all the soil which will be needed for inoculating future fields.

Ask questions. Alfalfa has been studied at the Experiment Station for the past 20 years, yet there are many important facts regarding this plant which are still unknown. If in doubt in regard to some point in connection with the crop feel free to write, stating the difficulty as clearly as possible. If the facts which you require are available they will be furnished. Do not ask to be told all about alfalfa in a letter. Several books have been written on that subject. Address

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