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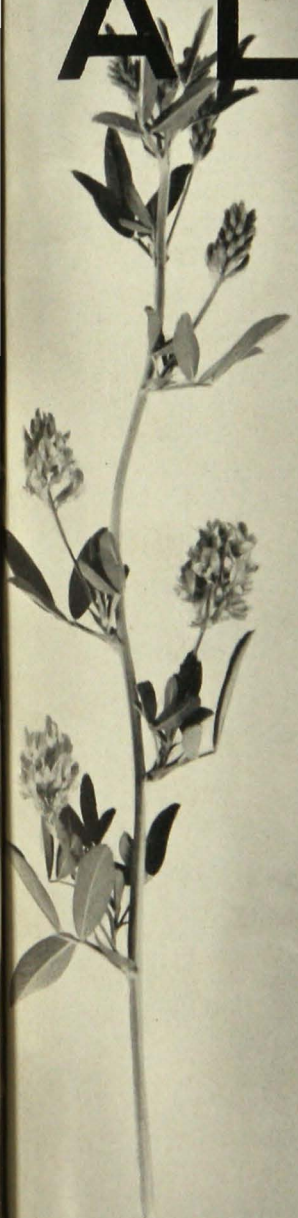
ALFALFA

in MINNESOTA



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Alfalfa in Minnesota

ALFALFA-GROWING gives the farmer certain decided advantages, and it should have a much larger place on the farms of Minnesota. Some of the advantages of the crop in Minnesota are these:

Alfalfa in a three- to five-year rotation at University Farm, over a period of ten years, has increased yields of wheat 7.8 bushels an acre; oats, 13.1 bushels; and corn, 11.3 bushels. These gains have been made over continuous cropping, even when manure has been applied at the rate of 6 to 8 tons per acre preceding the corn crop.

Alfalfa is a soil builder. A ton of alfalfa contains about 47.6 pounds of nitrogen, 10.8 pounds of phosphoric acid, and 44.6 pounds of potash; a ton of clover, 41.0 pounds of nitrogen, 7.8 pounds of phosphoric acid, and 32.6 pounds of potash; a ton of timothy, 19.8 pounds of nitrogen, 6.2 pounds of phosphoric acid, and 27.2 pounds of potash. From 34 to 43 per cent of the dry matter in animal feeds goes into manure. On well-managed farms much of these materials goes back into the soil. Besides, when alfalfa and clover are plowed under the roots add still more of such materials to the soil. Alfalfa has a heavier and deeper root system than clover and therefore adds more nitrogen and organic matter to the soil, and it is more efficient in utilizing the mineral plant foods in the subsoil and in improving the condition of heavy subsoils.

Alfalfa, like clover, is a cheap source of the protein so necessary in animal feeding. If protein is not produced on the farm, it must be purchased in the form of bran, oilmeal, or cottonseed meal to balance the ration.

Alfalfa hay yields are high. Comparative yields at University Farm for a period of four years show an average for alfalfa of 2.3 tons per acre; for alfalfa and timothy, 2.2 tons; for sweet clover, 2.1 tons; for red clover, 2.0 tons; for red clover and timothy, 2.0 tons; for timothy, 1.1 tons. Alfalfa, according to these results, averaged one-third of a ton per acre more than red clover.

An alfalfa-timothy mixture is as practical as a clover-timothy mixture. While timothy does not add to the feeding value of the crop, the timothy provides a return if the alfalfa winterkills.

Alfalfa is a dependable crop, and good stands of alfalfa are as readily obtained as good stands of clover. After satisfactory stands of alfalfa have been secured, the plants rarely kill extensively the first winter, and the amount of killing in following winters depends largely on the kind of seed sown, the way in which the fields are handled, and weather conditions.

Alfalfa has wide adaptation. The deep-rooting habit of alfalfa and its ability to grow downward rapidly, particularly during the first few months, make it possible to obtain satisfactory stands and good crops on widely different types of soil. Land on which water stands from a week to ten days in the spring is not suited to alfalfa. Low areas should be sown to timothy and alsike clover or reed canary grass.

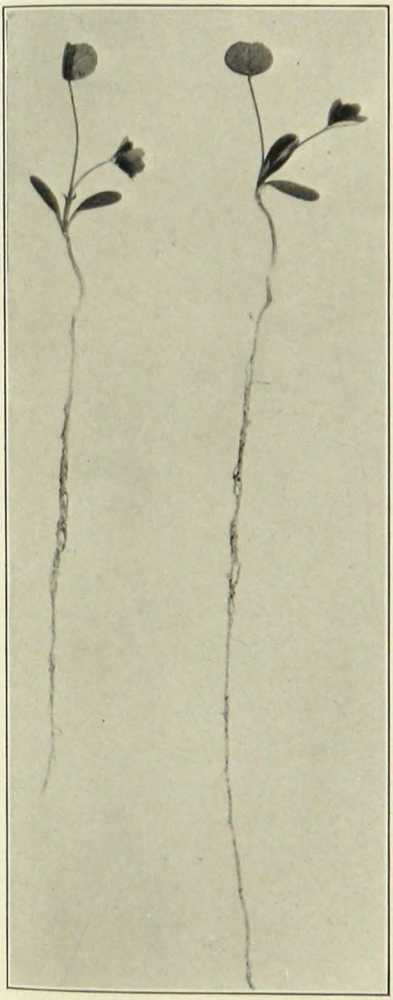

FIG. 1. ROOTS OF YOUNG ALFALFA PLANTS PENETRATE THE SOIL RAPIDLY

These are two weeks old and the roots are from 8 to 10 inches long.

Alfalfa often succeeds where clover fails. On sandy lands it is difficult to grow red clover, and when occasional stands are obtained they produce hay for but one season. The reason for this is that while the clover plants have taproots that grow to considerable depths, their progress is too slow to keep the ends of the roots where they can get enough moisture to thrive. The roots of young alfalfa plants, however, grow rapidly, using the water as they extend downward and keeping in touch with the soil moisture. The young plants are thus able to withstand prolonged drouth. Year-old alfalfa plants with roots down to 5½ feet have been found, and older plants with roots 12 feet below the surface. This habit of growth and the fact that the plant is a perennial adapt alfalfa to sandy lands where the water table is not too far below the surface of the soil.

INCREASED ACREAGE PROFITABLE

Because of the advantages named, and others, a large increase in the acreage of alfalfa on Minnesota farms is advocated. A ratio of one acre of legumes to each three to five acres in total crop has been found desirable in aiding in maintaining or improving soil productivity. Increasing the alfalfa acre-

age in the state from the one million acres in 1936 to two and a half million in the near future, along with an increase of about a million acres in sweet clover and other legume hay and pasture crops, will only bring the legume acreage to a ratio of one to each four to five acres of total cropped area.

ALFALFA IN ROTATIONS

Alfalfa fits nicely into rotation systems varying from three to six or more years in length carried out on farms divided into as many fields as there are years in the rotation. In using these rotations, one of the fields of approximately equal size is cropped to alfalfa either for only one year or more often from three to five years, and the other crops are

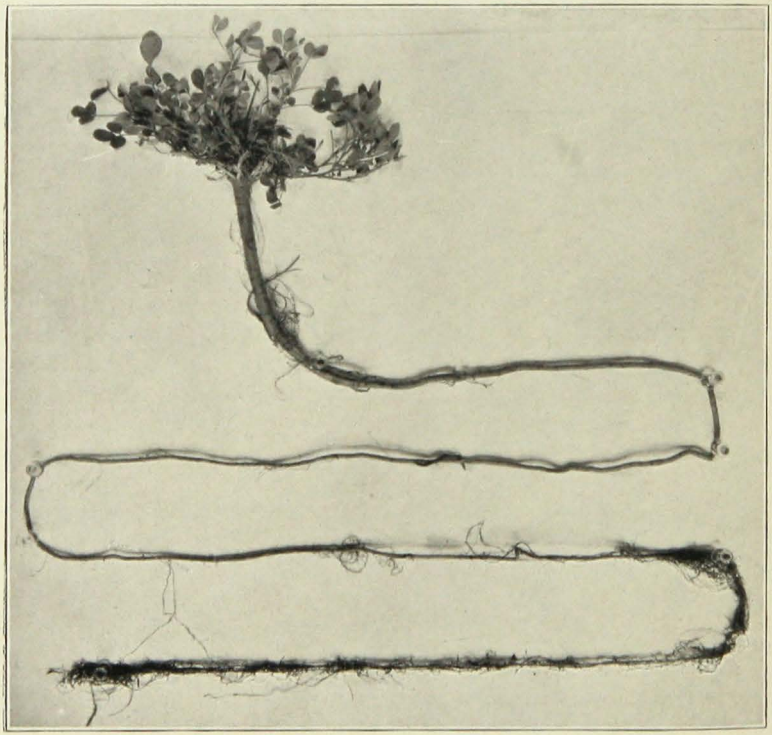

FIG. 2. ALFALFA PLANT ONE YEAR OLD, ROOT 5 FEET 6 INCHES LONG, FROM SANDY LAND IN SHERBURNE COUNTY

rotated on the remaining fields. The old alfalfa field is not plowed before a good new stand is obtained on one of the other fields. A considerable number of rotations with alfalfa as one of the crops have been planned for use in the state. A few are given here as examples. On farms with-

out permanent pasture one or more of the following rotations may be found suitable:

A. 1, grain; 2, grain and sweet clover; 3, sweet clover pasture; 4, corn; 5, alfalfa.

B. 1, grain and sweet clover; 2, sweet clover pasture; 3, corn; 4, corn; 5, alfalfa.

On farms where grazing needs are supplied largely by permanent pasture, one or more of the following rotations may provide the crops needed:

C. 1, grain with sweet clover plowed down the following spring; 2, corn; 3, alfalfa.

D. 1, grain with timothy and clover; 2, hay; 3, corn; 4, corn; 5, alfalfa.

E. 1, grain with sweet clover; 2, corn; 3, grain with sweet clover; 4, corn; 5, alfalfa.

F. 1, grain with sweet clover; 2, corn; 3, grain; 4, alfalfa; 5, alfalfa; 6, alfalfa.

KINDS OF ALFALFA FOR MINNESOTA

The Minnesota farmer contemplating the seeding of alfalfa should give attention to the kind or variety needed to meet Minnesota's climatic and soil conditions. Varieties or strains that have shown ability to thrive under Minnesota conditions should usually be given the preference. Trials carried on at University Farm have shown that Grimm strains after four years of cropping have produced about as much as in the first year, whereas Turkestan and common for the same period yielded about half a ton less per acre. In another test begun the following year, Grimm again showed a decided advantage over common alfalfas, yielding from 1.3 to 1.5 tons per acre more. In part, this marked difference was in the way in which the Grimm resisted winterkilling in an especially severe winter.

On the sandy lands at Coon Creek in Anoka County, seven varieties yielded at about the same rate the first year. Grimm, Baltic, and Hardigan averaged about the same yield for the five-year period, 2.3 tons per acre. Cossack averaged about a quarter of a ton lower. Ontario Variegated averaged about the same as the northern and the southern common varieties. The Ontario Variegated and the common varieties yielded definitely less than Grimm, Baltic, and Hardigan. The Baltic came from an exceptionally good field near Baltic, S. D. Hardigan was developed through selection at Michigan State College. Cossack was brought into the United States from Russia, and Ontario Variegated was developed in Ontario.

Alfalfa wilt, a disease attacking the roots of the plant, has resulted in large losses in Kansas and Nebraska. Wilt stunts the plants and in

time kills them. This disease has appeared in Minnesota, causing some loss on the sandy lands at Coon Creek, and being found in a few other places. Grimm and Cossack varieties are susceptible to this disease in Kansas and Nebraska, but so long as the wilt does not cause serious losses in Minnesota, the Grimm variety may be grown here satisfactorily. If, however, damage from the wilt becomes fairly common in Minnesota, then growers should seek a resistant variety. Ladak, a variety with

FIG. 3. WHEN COMMON ALFALFA IS KILLED OUT, WEEDS TAKE ITS PLACE

Left, Grimm with no winterkilling and no weeds. Right, common alfalfa more than 50 per cent winterkilled. Dandelions have taken the place of the alfalfa that was killed.

variegated flower color obtained from the mountain regions of northern India, has been found fairly resistant to wilt in Kansas and Nebraska. Tests with this variety at several places in Minnesota have shown that it yields well. It averaged in the tests 2.2 tons to the acre, whereas Grimm yielded 1.8; Baltic, 2.1; Cossack, 2.1; Common, South Dakota, 1.5; and Common, Idaho, 1.4. In a test including Ladak, Grimm, Cos-

sack, and Kansas Common, carried on at the Kansas Experiment Station, where wilt was prevalent, Ladak was the only variety that showed a satisfactory stand at the end of a three-year period.

In view of the facts just cited, farmers, by planting Ladak seed as it becomes available, can avoid serious losses if the wilt should become prevalent in this state. Ladak yields as much as Grimm, and there should be no disadvantage in changing to the wilt-resistant variety.

Other wilt-resistant varieties are being tested, but their adaptability to Minnesota conditions is not yet known.

In view of the facts thus far available, the Minnesota Agricultural Experiment Station recommends the following varieties for Minnesota:

Grimm.—Originated in Minnesota, making possible the extensive acreage in this state and other states of similar climatic conditions. Until seed of Ladak, or other suitable wilt-resistant varieties, becomes generally available, Grimm should be sown.

Ladak.—This variety has yielded well in Minnesota for several years. It is fairly resistant to alfalfa wilt. Only a little Ladak seed is available, and it should be sown on farms in the best seed-producing areas of the state in order to increase the seed supply. Such seedings should be on fields at least 40 rods from any other alfalfa, and any seed sown should be registered or certified.

Cossack and Baltic.—These varieties are cold-resistant and high-yielding, but they are not resistant to the wilt to the extent that Ladak is. Ladak should be given the preference by growers who wish to produce seed and prefer not to grow Grimm.

In southern Minnesota, where seed production is unusual, Grimm or some other hardy variety should be used, where soil conditions are somewhat unfavorable, where winter conditions are likely to be very severe, and where the stands are to be left four or five years. Under favorable conditions, particularly when alfalfa is grown in four- or five-year rotations and left standing only one or two years, northern-grown common seed may be used with less risk of winterkilling than with red clover. Even the hardiest varieties are sometimes winterkilled, particularly when ice sheets form over the plants and smother them.

Seed imported from South America, Italy, or France is not suitable for use in Minnesota. Turkestan alfalfa has not proved satisfactory in Minnesota.

HINTS ON PURCHASING SEED

The farmer should be careful about purchasing seed. The following suggestions deserve his consideration:

Certified seed.—The only safe method for the Minnesota farmer in buying Grimm or Ladak seed is to buy seed certified by the state or other reliable authority and sold in sealed bags. Only when there is considerably less rain than usual in July and August does Minnesota produce

the alfalfa seed needed for the following year. This makes it necessary to depend on states farther west for the needed seed supply. If stands in such states have been grown from genuine Grimm or Ladak seed, the seed should be satisfactory in Minnesota; but it should be certified.

Clean seed.—The farmer should be careful, also, to get seed free from seeds of noxious weeds, such as dodder, Canada thistle, sow thistle, and quack grass.

Early purchases.—It pays to buy one's seed supply early in the winter. Later, seed of poorer quality is likely to be found on the market. Farm Bureau organizations may be consulted as they have been distributing a good deal of certified seed.

How much to buy.—Twelve pounds per acre of good seed germinating from 90 to 95 per cent an acre is enough. Farmers should be sure that the seedbed is in proper condition, particularly on sandy lands where Grimm seed should be used. On such lands it is often necessary to sow a second time because young plants are killed by blowing sand. Under such circumstances it is better to sow from 8 to 10 pounds of seed per acre the first time and retain some of the seed for a second planting, if necessary. Sowing more than 12 pounds of good seed per acre is not necessary.

INOCULATION IS NECESSARY—METHODS

It pays to inoculate the seed before planting. This is desirable because in most cases leguminous crops like alfalfa are not able to get from the soil all the nitrogen needed for their growth and because when properly inoculated, such crops may leave in the soil as much nitrogen as, or more than, was there before the crops were grown. Experiments carried on at University Farm have shown that inoculation has increased the dry weight per acre of the hay 472 per cent and the dry weight of the roots in the upper 10 inches of soil 254 per cent; the amount of nitrogen in the dry hay, 760 per cent; and that in the roots, 758 per cent. Moreover, the inoculated plants were dark green and thrifty, producing a successful stand, whereas the uninoculated plants were light green and weak in growth, with a stand that was not worth retaining.

Soil culture method.—Inoculation is effected by mixing seed with surface soil from fields on which there has been grown well-inoculated alfalfa or sweet clover. Soil taken from the top three or four inches of a vigorous sweet clover patch will usually be more effective than soil from a well-inoculated alfalfa field. To inoculate with such soil, dry it gradually in the shade. After the soil is dry, sift it through a piece of window screen. When you are ready to sow, moisten the seed and then mix with an equal weight of the sifted inoculated soil. Thoro inoculation can be provided also by broadcasting the inoculated soil at the rate of 200 pounds per acre and harrowing it in immediately. This method is better than the use of glue solutions and soil or sugar solutions and soil.

Commercial cultures.—To be sure of thoro inoculation, commercial cultures are desirable. These should be used at the rate given on the containers and should be supplemented with finely sifted soil from a sweet clover or alfalfa field known to be well inoculated. The mixing should be done according to the directions already given. Commercial cultures in order to be effective should be fresh. The date up to which the contents of a commercial culture container are supposed to be effective is stamped on the wrapper, and this should be noted in making a purchase.

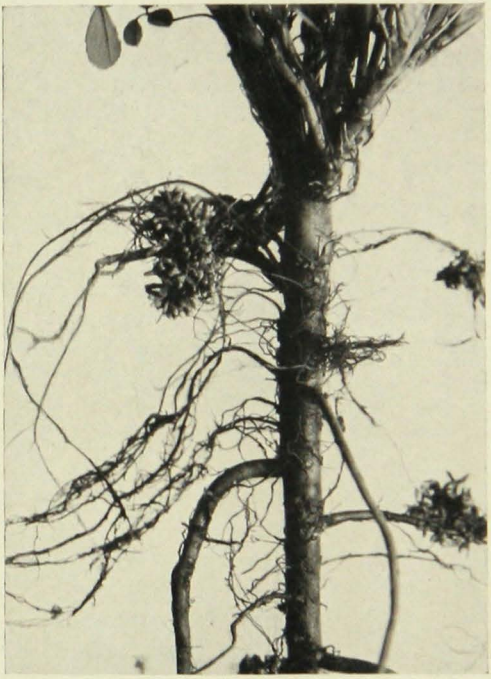

FIG. 4. A WELL-INOCULATED ALFALFA PLANT
Note the large bunches of nodules on the branch roots. The bacteria that enable the alfalfa plant to use the nitrogen of the air live in these nodules.

If, after the seed is inoculated, weather conditions prevent seeding immediately, the treatment will remain effective for a week or two under ordinary conditions.

METHODS OF SEEDING

Seed with a grain crop.—Except on sandy lands, alfalfa may commonly be planted in Minnesota with a grain crop in the spring. The grain in such cases should be sown at a somewhat lower rate than usual in order that the alfalfa plants may have less competition. On fields fairly free from weeds, flax is an excellent companion crop. If flax is used, it should be at the rate of from 30 to 42 pounds of seed per acre and it should be sown in April or very early in May. Early seeding will largely prevent the growth of such weeds as foxtail, barnyard grass, and pigweed. If fields are not ready by the first week in May, better results will follow from cultivating the field until the middle of June and then seeding the alfalfa alone. If drouth occurs in the growing season and sufficient moisture for both the grain and the alfalfa is not available, the grain crop (except in the case of flax) may be cut for hay before it is mature, with a stubble from five to six inches tall. If the grain crop is left to ripen, when it is harvested, the shocks should be removed from the field as soon as possible. If they are left too long, the alfalfa plants under them will be killed.

Seed without grain crop.—On sandy land or on other land that lies high and is likely to be dry, and on other fields on which conditions are not favorable, summer seeding without a grain crop is usually advisable. This has the following advantages: 1. Annual weeds may be killed out almost completely by disking as often as necessary to keep the surface free from all green growth. 2. If the fields are kept free from weeds, none of the moisture in the soil is used by plants before the alfalfa is sown. 3. The seedbed may be kept ready for sowing the alfalfa immediately when moisture conditions are most favorable. 4. If a successful stand does not result from the first planting, the seedbed may be prepared quickly for a second seeding the same season.

PREPARATION OF SEEDBED AND TIME OF SEEDING

Unusual care should be taken to have a firm seedbed when alfalfa is sown with grain early in the spring. Fall-plowed land well prepared with a disk and harrow is usually satisfactory. Spring-plowed land should be made firm with a corrugated roller. When alfalfa is to be sown in summer, the disk should be used systematically as often as necessary to keep the surface of the field entirely free from weeds, especially quack grass and Kentucky bluegrass.

Successful stands of alfalfa may usually be obtained if the seeding is done before the last week in July. Later seedings are attended with a good deal of risk of winterkilling. If the soil is heavy, there is usually enough moisture to permit seeding at any time in June or July on condition that the seedbed is free from weeds. On sandy lands, however, it pays to wait until after the first good rain. In order to make the most of the rain, the land should be rolled with a corrugated roller as soon after the rain ceases as possible and the seed should be sown immediately and covered.

DEPTH AND METHOD OF SEEDING

On heavy soils the seed should be broadcast and then harrowed to cover. If a drill is used, much of the seed may be placed so deep that the seedlings will be unable to push through the soil cover. On sandy land it is best to plant the seed in the openings made by the corrugated roller.

When alfalfa is sown with grain, the usual method is to broadcast the seed from the grass-seed attachment of a drill. After the seeding is completed in this way, a corrugated roller or a smoothing harrow is used crosswise of the direction of the drill. The seed may be broadcast with a wheelbarrow seeder either before or after the grain is drilled and covered with a smoothing harrow.

When alfalfa is sown alone, the best method is to broadcast with a wheelbarrow seeder or other device that will distribute the seed evenly. If the seedbed has been prepared with a corrugated roller, the use of a weeder or light smoothing harrow crosswise of the roller creases drags

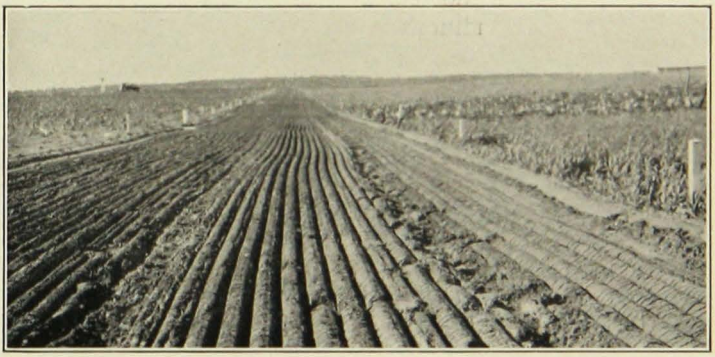

FIG. 5. PREPARING THE SEEDBED

The corrugated roller packs the seedbed and at the same time leaves openings of uniform depth into which the broadcast seed falls.

FIG. 6. USING THE WHEELBARROW SEEDER

Alfalfa seed can be broadcast fairly evenly by hand, with care, but an even distribution is more easily secured by using the wheelbarrow seeder.

most of the seed left on the ridges into the depressions, giving the seed a cover of fairly even depth. The corrugated roller may be used after harrowing, crosswise of the previous rolling, to pack the ground above the seed.

CARE DURING FIRST SEASON

Usually alfalfa should not be cut during the season in which it has been sown. Under no conditions should it be pastured closely late in the fall. The growth during the second season will be much more vigorous if all the growth of the first season is left for winter protection.

ALFALFA HAYMAKING

Time of cutting.—Good alfalfa hay contains 50 per cent or more by weight of green leaves and the stems are pliable. It is necessary, therefore, to begin cutting before the plants reach the full bloom stage; otherwise many of the leaves will have fallen off. In Minnesota it is not necessary to let alfalfa come to the full bloom stage before cutting in order to maintain vigorous stands.

How often to cut.—Cutting alfalfa as often as it comes to about the quarter to half bloom stage is the best practice in Minnesota, though cutting occasionally at a slightly earlier stage does no harm. Cutting at this stage keeps the level of the reserve foods in the roots high enough to maintain a satisfactory stand for several years.

In order to leave a good winter cover, this usually means three cuttings in central or southern Minnesota and two cuttings in northern Minnesota. Cutting when the alfalfa is about one-quarter to one-half in bloom usually gives about as large yields of hay as cutting when the crop is in full bloom, and, besides, the hay is usually leafier and the stems smaller and softer.

Two cuttings at about one-quarter to one-half bloom may be made each year on sandy lands. During years of abundant moisture, three cuttings are possible.

The final cutting in any season should be early enough to permit a growth of from six to eight inches before winter sets in, so that reserves in the roots may be replenished and ample winter protection may be provided. In northern Minnesota this means that the last cutting is removed during the last of August or the first week in September.

If for any reason stands have become weakened by too frequent cutting, or too close pasturing, a cutting or the pasturing may be omitted to permit the plants to regain their vigor.

Lodged alfalfa.—Leaves on lodged alfalfa turn yellow after a few days and drop off. To obtain good hay from lodged alfalfa, therefore, the crop should be cut as soon as the weather becomes favorable, regardless of the stage of development.

DRYING ALFALFA HAY

One of the best methods of drying alfalfa hay is to cut it after the dew is off in the morning, windrowing it with a side-delivery rake, within a few hours, and getting it into shocks before night. In Minnesota, only on small fields can the alfalfa be dried in this way. On large fields it is better to windrow with the side-delivery rake before any of the leaves have become brittle, turn the hay with the same implement and get it into the stack or mow before the leaves have become so brittle that they drop off.

ALFALFA SEED PRODUCTION

Some alfalfa seed is produced annually in Minnesota. This is chiefly in the west central and the northwestern parts of the state and on the central sandy lands. In the west central and the northwestern regions the second cutting is usually left for seed production. In order to give time for the seed to mature before frost, the first cutting should be cut early. If the second crop is to be left for seed, the first crop can be cut in the bud or beginning bloom stage. This will not injure the stand, because when the second cutting is left for seed production, the plant stores up in its roots large amounts of reserve food. Growers should watch the second cutting closely as it comes in full bloom. If there is much wet weather at that time, few seed pods will set and the crop might as well be cut for hay before the leaves have fallen.

The common practice in Minnesota is to cut alfalfa for seed with the binder when most of the pods have turned brown or black. The bundles are set in shocks until dry enough to stack. Threshing is done with a clover huller or a properly adjusted threshing machine.

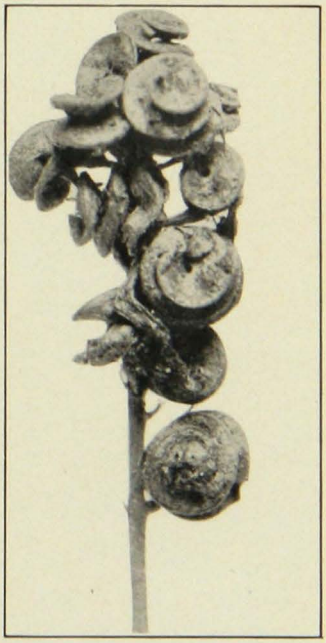

FIG. 7. ALFALFA SEED PODS
When the majority of the pods have turned dark brown or black, the crop is ready to cut.

ALFALFA FOR PASTURE

Alfalfa may be pastured successfully if the oldest stands which are about ready to be plowed up are used for the purpose. Old alfalfa fields in which there is considerable bluegrass and other grasses make good pastures. When alfalfa is sown for pasture rather than for hay, from four to six pounds of timothy or meadow fescue should be included with the alfalfa seed. These grasses in the alfalfa reduce somewhat the danger

from bloat. In order to prevent bloating in so far as possible, animals should have some dry feed such as hay or straw before being turned into the pasture in the morning. If the alfalfa is to be retained for another year or more it should not be pastured closely at any time. Sweet clover, however, is a more practical pasture crop for cattle than alfalfa. Alfalfa

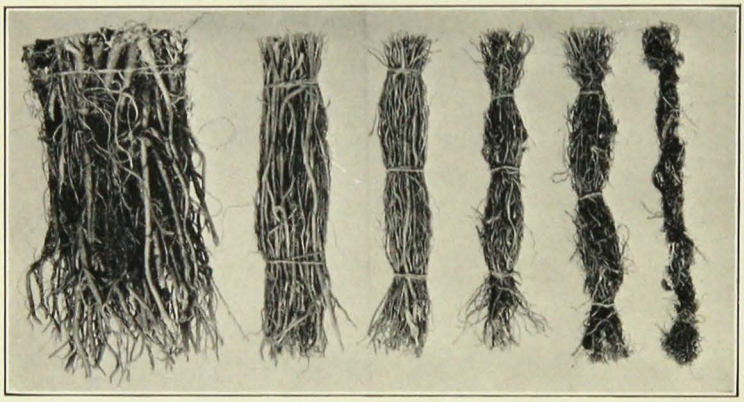

FIG. 8. ALFALFA ROOTS FROM ONE SQUARE YARD AREA

From surface ten inches of soil at left; and from that to right, from each of the five successive ten-inch layers of soil. Weight per acre, dry matter: First ten inches, 1,960 pounds; second, 560; third, 280; fourth, 140; fifth, 140; sixth, 80. Total, 3,250 pounds.

is one of the best pastures known for hogs. Properly handled, it produces tender green feed from May to September. Hogs should not be allowed to pasture it close continuously throughout the summer. A good arrangement is to shift the hogs back and forth between two or more fields, allowing each field to come to full bloom before pasturing again. Pasturing should be stopped in the fall early enough to permit a fair growth for winter protection.

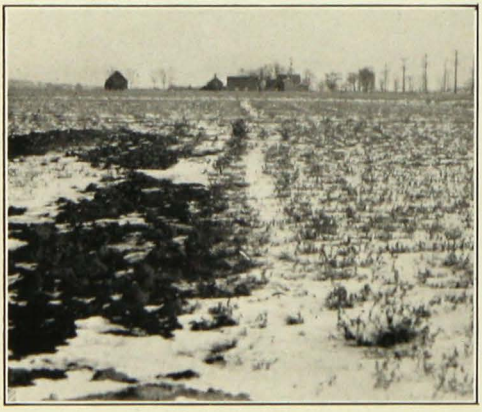

FIG. 9. ALFALFA HOLDS SNOW AND HELPS TO PREVENT THAWING

Note the good snow covering on the right. On the left some of the snow was blown off and what remained melted.

WINTER PROTECTION

The alfalfa grower should give careful attention to winter protection. The best winter protection is a growth of from six to eight inches or more to hold the snow. The coverings of alfalfa and

snow aid in preventing frequent alternate thawing and freezing, and in this way reduce winter injury.

A growth of from six to eight inches in autumn to hold the snow and aid in maintaining a more uniform temperature for the plants during the winter appears to be one of the most important considerations in maintaining a good stand. A good growth holds the snow and prevents rapid alternate thawing and freezing.

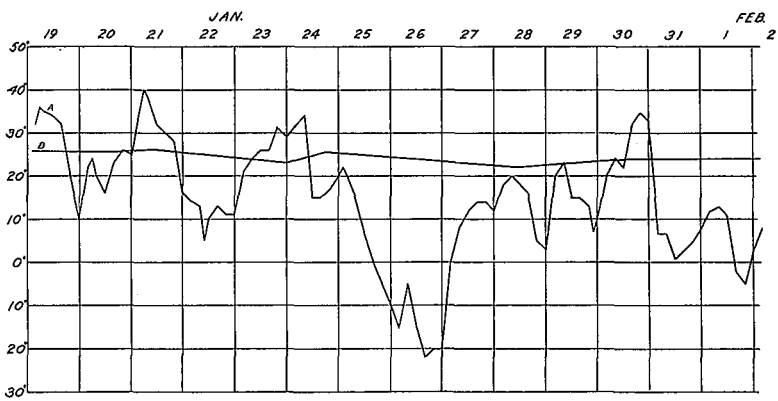

FIG. 10. VARIATIONS IN TEMPERATURES ABOVE AND BELOW A SNOW COVER IN THE FIELD

The comparatively straight line, B, shows the variations during a two-week period, January 19 to February 2, in temperature in degrees Fahrenheit underneath eight inches of snow at the surface of the ground in an alfalfa field. Protected by this snow cover, the thermometer varied only four degrees during the two-week period. The broken line, A, shows the air temperatures above the snow for the same period, with a variation of 62 degrees. With no snow covering, the alfalfa plants would be subjected to the same variations in temperature as the air.

In Figure 10 is shown the temperature range for two weeks underneath eight inches of snow and in the air above the snow. The comparatively straight line starting at the upper left-hand side, varying from 28° F. at the beginning to 23° F. at the end, is the record of the temperature beneath eight inches of snow. This is a variation of only five degrees for the 14 days. The irregular line beginning about 30° F. in the upper left-hand corner is a record of the temperatures of the air in the shade about two feet above where the record was taken beneath the snow. Here the temperature went up to 40° F. on Tuesday noon of the first week and down to 22° below zero Monday morning of the next week and back up to 38° F. by the next Friday noon. Alfalfa in a field without a good fall growth and with no snow for a covering would be subject to about the same changes in temperature as the air above it. Thawing starts growth, and severe freezing following it can do more damage to the plants than if the slight thawing and growth had not taken place.

CULTIVATION TO ELIMINATE GRASSES

If bluegrass or quack grass appears in recently sown alfalfa fields, it may be removed by using the spring-tooth harrow in June just after the first cutting has been removed. The harrow should be set at a depth of from three to four inches and used vigorously in both directions until the field looks black. This will not injure the alfalfa if the work is done at the right time. It is not advisable to use the spring-tooth harrow in alfalfa fields on heavy soil in the early spring. The land is often too wet and the weather conditions too unfavorable. The use of a smoothing harrow following the spring-tooth harrow puts the field in better condition for mowing. Usually no increase in yield may be expected from cultivating alfalfa fields as described unless considerable bluegrass or quack grass is present.

POCKET GOPHER CONTROL

Pocket gophers are an enemy of the alfalfa crop. They often do much damage by cutting off the roots of the plants and by smothering the plants underneath mounds of earth. Their work often necessitates the plowing of fields several years earlier than might ordinarily be required. Furthermore, when alfalfa fields infested with gophers are mowed, sickles are dulled or more seriously damaged by running through mounds hidden in the alfalfa. The control of pocket gophers can be effected with poison bait. A folder describing methods of control, under the ttile "Pocket Gopher Control," may be had by addressing the Bulletin Department, University Farm, St. Paul, Minn.

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