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SWEET CLOVER.

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SWEET CLOVER is destined to occupy an important place on the farms in many parts of Kansas, especially the southeastern and the western parts of the state. As a soil improver it is unexcelled; for pasturing purposes it has considerable value; and as a forage crop it can be utilized to good advantage where alfalfa or red clover can not be successfully grown. There are several varieties of sweet clover, of which the common white sweet clover and the large biennial yellow sweet clover are the most important. The white variety is generally to be preferred for farm purposes, although the biennial yellow is sometimes preferred where hay production is desired.

Practically all of the soils in the state are adapted to growing sweet clover; poorly drained, acid, and very sandy soils excepted. It thrives best on fertile land well supplied with lime, but will make a satisfactory growth on very poor soils. When grown for hay it is best to plant on fairly fertile land. Where the sweet clover is to be pastured it may be planted on the poorer soils and yet yield returns that will justify the growing of this crop upon them. It is not to be expected that sweet clover will make as great a growth on very sandy soils as on more fertile land. However, there are many places in western Kansas where sweet clover is bringing larger returns from sandy soils than any other crop that can be grown.

PREPARING THE SEED BED.

To seed sweet clover successfully a thoroughly compacted seed bed is necessary, with just enough loose soil on top to enable the seed to be covered. The lack of a solid seed bed is probably the chief reason why sweet clover so often fails when seeded upon cultivated fields. Sweet clover has been seeded successfully in western Kansas by broadcasting it on sod land and stirring the top soil lightly with a disk harrow, to insure the covering of the seed. Under natural conditions it re-seeds itself readily on the hard compact soils along roadways, in prairie sod, and vacant lots where the seed is scattered by natural agencies, such as rain and the alternate freezing and thawing of the ground. Evidently there is greater danger of having the seed bed too loose than too firm when seeding sweet clover on cultivated land. If it is necessary to plow the ground in preparing it for sweet clover the plowing should be done several months before seeding. It is usually best to seed on corn ground or after some other inter-tilled crop and depend upon implements that merely stir the surface of the soil to prepare the seed bed.

SEEDING SWEET CLOVER.

Under natural conditions sweet clover remains in the ground during the winter and germinates in the spring, although occasionally a few seedlings may be found in the fall. It may be seeded any time from January to the last of May, with equal chances of success. In the eastern fourth of the state it may often be successfully seeded with a nurse crop of oats or barley, provided the seed bed is not too loose and open and a rather thin stand of grain is grown. In favorable seasons good stands of sweet clover may be obtained by seeding with fall wheat, the sweet clover being sown in the spring in the same manner as red clover is usually seeded. As a rule about twenty to twenty-five pounds of clean or hulled seed per acre is required. Where the unhulled seed is used the amount of seed per acre should be increased five pounds. This comparatively large amount of seed is necessary because of the fact that often only about one-half of the seed germinates the first season. The remainder of the seed has such hard seed coats that it does not germinate the first season, and, therefore, is practically useless.

Rough, wooded, or stony lands that are untillable may be seeded by sowing the sweet clover broadcast during the late fall or winter. The seed will be worked into the ground by the alternate freezing and thawing of the ground or washed under by rains. In very sandy soils sweet clover is often drilled into the thin native sod by using a disk drill, as any other preparation of the ground would make the seed bed too loose.

INOCULATING.

To produce satisfactory results it is necessary that sweet clover be inoculated with the proper bacteria. If it is not growing along roadsides and in fence corners or anywhere else in the locality in which it is to be seeded, it is very likely that inoculating will be essential. This may be done by obtaining soil from an alfalfa field or ground on which sweet clover is growing and spreading it over the field which is to be seeded, at the rate of two hundred to three hundred pounds of infected soil to the acre. This inoculated soil should be harrowed in immediately, as exposure to the sunshine and the drying out of the soil will kill the bacteria. Best results may be obtained by applying the soil on a cloudy day. If inoculated soil is not available within reasonable distances it may be more practical to inoculate with the pure cultures that are sold for this purpose. This method consists of treating the seed with a pure culture of the proper kind of bacteria, according to directions accompanying the material. The inoculated seed should be sown soon after it is treated, and should never be exposed to the sun.

Fortunately the only portion of Kansas where it would be necessary to inoculate for sweet clover is in those parts of the eastern fourth of the state where the crop is not growing naturally. The soil in the remainder of the state is evidently well supplied with the proper kind of bacteria.

HANDLING SWEET CLOVER FOR HAY.

Sweet clover properly handled produces a fair quality of hay which makes a desirable substitute for the more valuable forms, such as alfalfa or red clover. One cutting of sweet clover can be obtained the first year. This crop should not be cut until the crown sprouts have begun to show on top of the roots about one inch underground. At this time the crop can be cut close to the ground. Two and perhaps three crops of hay

may be obtained the second year. The first one should be cut just before the first bloom buds appear, since the plants rapidly become coarse and woody after they start to bloom. The sweet clover should be cut sufficiently high to leave a few branches and leaves on each plant. If cut too close at this time many of the plants will be killed. The second cutting should be handled in the same way as the first. The time of cutting will have to be governed by the judgment of the farmer. The sweet clover will be continually in bloom soon after the second cutting comes on. Ordinarily it should be cut when about twenty inches high, and must be cut high, as at the first cutting. The third cutting may be mown close to the ground. The hay is cured in the same manner as alfalfa or red clover.

SAVING THE SEED.

Where a seed crop is desired the second cutting of the second year's growth is the most practical one to leave, although maximum yields of seed can be obtained where the first cutting is allowed to grow to maturity. The sweet clover may be harvested readily with a binder, binding and shocking it like a small-grain crop, or by cutting with a mower and raking and stacking similar to the way alfalfa grown for seed is handled. Along the Arkansas river in western Kansas it is a common practice to head the sweet clover with an ordinary grain header. It is then shocked in medium size shocks, usually placing one header-box load in each shock. This allows it to cure out readily and yet permits it to be stacked in a small space so that it can be brought rapidly to the thresher. It should be cut about the time three-fourths of the seed pods become dark. Avoid handling the straw when in a very dry, brittle condition, as the seed will shatter badly at such times. The sweet clover should not be hulled or threshed until it is thoroughly dry. Yields of from two to eight bushels per acre may be expected.

SWEET CLOVER AS A PASTURE CROP.

Sweet clover makes excellent pasture for cattle, sheep, horses and hogs. It very rarely causes bloat, and for this reason is preferable to alfalfa for pasturing cattle.

Sweet clover is practically equal to alfalfa and red clover in feeding value, and stock pastured on it make gains that compare favorably with those secured on the latter crops. For pasturing purposes sweet clover is of greatest value in supple-

menting other pasture. It produces early and late grazing, survives the midsummer droughts, often furnishing succulent pasture during the time pasture grasses are dormant, and will produce fairly well on soils that would otherwise be practically barren. Sweet clover may be grown along river bottoms, on land where the water does not stand, even though the water table occasionally rises within two feet of the surface of the soil. Because of this fact it is an important pasture crop on the low river bottoms.

As a rule live stock have to acquire a taste for sweet clover before they can be induced to eat it. The best way to accustom them to the crop is to pasture them upon it early in the spring, before other forms of green feed are available.

For best results the sweet clover should be pastured heavily enough to keep down the growth, so that at all times there will be an abundance of fresh shoots for grazing purposes. It may be necessary to clip back the old growth once during the second year to maintain the development of fresh shoots. A sufficient number of plants should be left to thoroughly reseed the field, in case permanent pasture is desired. If hogs are pastured on the sweet clover during the first year it is best to ring them to prevent them from digging up the roots of the young plants.

SWEET CLOVER AS A SOIL IMPROVER.

For quick results in improving the soil sweet clover is superior to most other crops. Its ability to thrive well on soils lacking in humus or otherwise badly run down makes it especially adapted for this purpose. Like alfalfa, cowpeas and other legumes, it has the ability to obtain nitrogen from the air by means of the nitrogen-gathering bacteria which live in tubercles on the roots of the plants, thus adding much nitrogen to the soil in which it grows. When plowed under for green manure or allowed to remain on the land this crop is a very efficient one in building up the humus content of the soil. The large roots, which penetrate deeply, break up the lower layers of the soil and add much humus thereto when they decay, thus improving the physical condition of the soil to a considerable depth below the depth of plowing. Sandy as well as heavy clay and hardpan soils, which would not otherwise produce satisfactory crops, may be so improved in texture by growing sweet clover for a few years that they become quite productive.

