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Sweet Clover for Profit

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Sweet Clover for Profit

Growing and Using the Crop in South Dakota*

SWEET CLOVER was once considered only as a weed, but now it is held a very valuable crop. This deep-rooted, vigorous-growing, hardy, biennial legume surely has a place on South Dakota farms. It has no equal as a combined soil-building, weed-fighting, pasture and hay crop.

Sweet Clover and South Dakota Farming

Sweet clover is a most important crop in a successful system of crop rotation in South Dakota. It is a legume and our farms must have more acres of these crops. Its large, deep-growing roots add much valuable nitrogen and vegetable matter to the soil, thus improving the soil on which it grows; it endures dry weather and still produces valuable pasture and hay; it successfully competes with the weeds that rob our other crops; it reduces the acreage of small grain crops and it improves the quality, yield and profit of the crops that follow it. Surely such a crop, when properly used, has a place on the farms of South Dakota.

The 1925 census shows less than three acres of clover (white, sweet and red) per farm in eastern South Dakota. This is hardly a beginning. Eastern South Dakota farms should have one-fifth or more of the cultivated land in some legume crop or crops—alfalfa, sweet clover, red clover. Sweet clover is the legume crop for South Dakota for rotation purposes. Three examples of rotations are: Corn—oats—sweet clover, then repeat; corn—corn—oats—sweet clover, then repeat; corn—wheat—oats—sweet clover, then repeat.

Growing Sweet Clover

Varieties.—The two of most importance at this time to the South Dakota farmer are: (1) White blossom biennial. This is most commonly grown and is of greatest importance. (2) Yellow blossom biennial. It is smaller growing than the white biennial, is more spreading the first year, has finer stems and is earlier. Others of lesser importance are: (1) Grundy County or Crystal Dwarf white blossom. This variety is a biennial, earlier, little finer stemmed and shorter than the ordinary white biennial. It is a heavy seed producer which ripens uniformly. (2) "Hubam" or annual white blossom. Its place in South Dakota agriculture has not been determined. (3) Hansen's Siberian or "Arctic" white sweet clover. It is a biennial with superior hardiness, fine stemmed, rather short, and a prolific seed producer. (4) Selections of the yellow biennial, are Albotrea and Madison County yellow. The following discussion refers to the ordinary biennial white sweet clover.

The Seed.—The hulled and scarified seed is in the majority of cases

*This circular was written by agricultural extension specialists
South Dakota State College, Brookings

the best to plant. This is without question true where sweet clover is to be used in a rotation of crops. Unscarified seed, both hulled and unhulled, can safely be planted on land where it is intended that sweet clover shall stay for a term of years.

The Seedbed.—A properly prepared seed bed pays. A piece of clean cultivated land is an ideal place to plant sweet clover. Such fields are usually firm, quite free of weeds and contain some moisture. Early fall plowed land is usually better than spring plowing. Spring plowed land should be given extra cultivation to prepare a firm seed bed. Because sweet clover is a "rough and tumble" type of plant, commonly found



Fig. 1.—A good pasture in dry weather. Sweet clover on R. J. Wellman farm, south of Aberdeen, South Dakota, July, 1926.

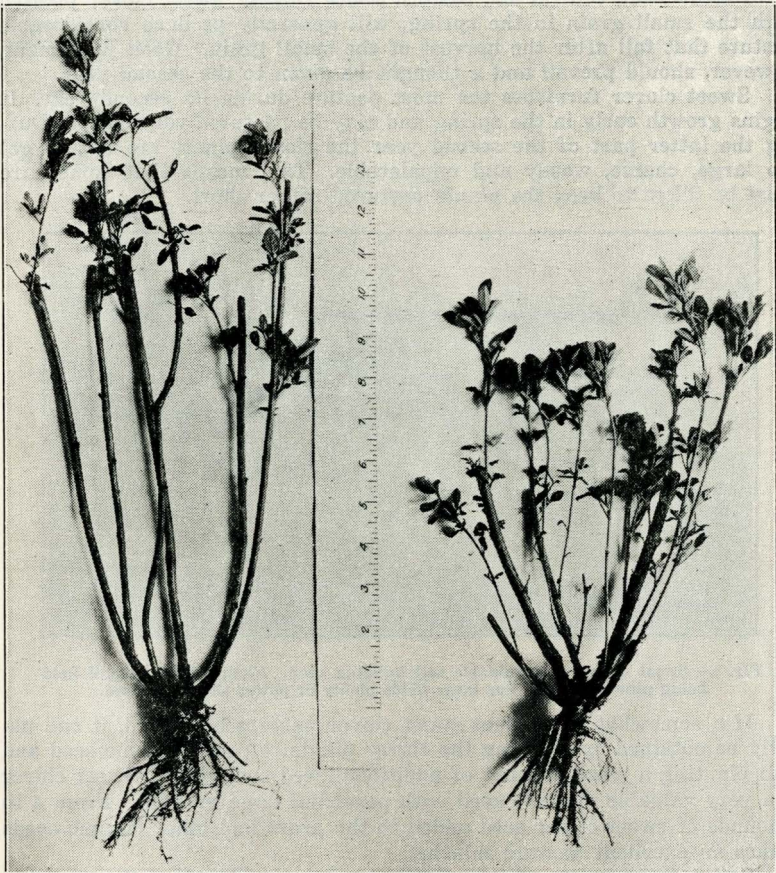
growing so abundantly in waste places, with little or no preparation of the seed bed, is no reason why a proper seed bed should not be prepared when this crop is planted by the farmer.

Planting the Seed.—Clean and scarified sweet clover seed, planted for pasture and hay production in South Dakota, should be sown at the rate of 10 to 15 pounds per acre. For seed and for pasture and hay in the drier parts of the state, 8 to 10 pounds are sufficient. If unscarified seed is used, increase the above rates by 5 to 10 pounds. Late fall, winter or very early spring planting of unscarified seed is not recommended except for thickening up an old sweet clover pasture.

Many different seeding methods are used, such as the grass seeder attachment to the grain drill; a special clover, alfalfa or grass seeder drill; the ordinary grain drill thoroughly mixing the clover seed with the grain and planting shallow. A common method is to broadcast the seed by some kind of a hand or machine broadcast seeder, then cover by light discing or harrowing.

Nurse Crop.—Over all of eastern and central South Dakota, sweet clover, when planted as the legume in the rotation, should be seeded with a nurse crop of small grain. During the average season, on a soil of fair fertility, with a seedbed properly prepared, using clean scarified seed, and properly planted, this method will succeed. In the drier sections, the nurse crop becomes a serious competitor of the clover for moisture and in many cases should not be used.

Inoculation.—Sweet clover grows best when the plants are well inoculated. This fact is determined by examining the roots. If the small



(Picture courtesy U. S. Department of Agriculture.)

Fig. 2.—Sweet clover must be cut high to insure next crop. After cutting, new growth starts from buds on main stems. Crop must be cut above these buds. Plant at left, from thick stand, showing how stubble must be left high. Plant at right, from thin stand, showing how stubble can be cut lower.

nodules or bunches are found in abundance the plants are said to be well inoculated. If the soil into which sweet clover is to be planted does not naturally contain these bacteria, then they should be supplied. If sweet clover or alfalfa plants are known to become inoculated naturally on such a soil then artificial inoculation is not necessary.

Care of the Sweet Clover Crop

A field of sweet clover requires care and management even though it is a hardy crop. This plant is used in a number of different ways and its proper management, therefore, depends very largely upon the use made of it.

Pasture.—In central and eastern South Dakota, sweet clover planted with the small grain in the spring, will generally produce considerable pasture that fall after the harvest of the small grain. Good judgement, however, should prevail and a thought be given to the second year.

Sweet clover furnishes the most pasture during its second year. It begins growth early in the spring and may be pastured very early. During the latter part of the second year the clover plants are apt to get too large, coarse, woody and unpalatable. This means that some care must be taken to keep the plants pastured rather short.

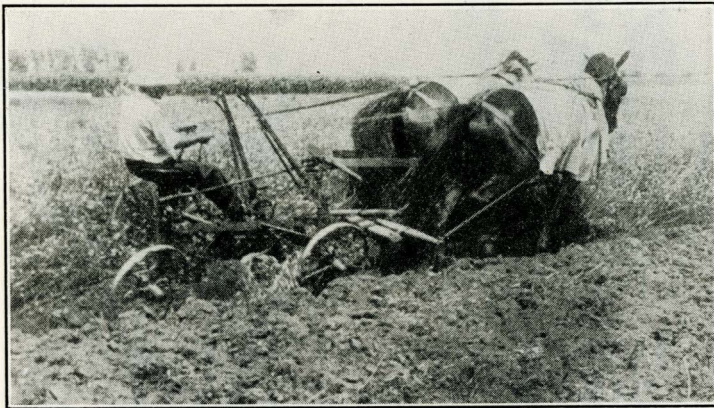


Fig. 3.—Sweet clover is a valuable soil building crop. Picture shows small field being plowed under. For large fields plenty of power should be used.

If a somewhat permanent sweet clover pasture is desired, it can usually be obtained by allowing the clover plants to produce some seed and also planting a small amount of additional seed each year. Sweet clover is a very valuable plant to seed with perennial tame grasses. From 4 to 6 pounds of sweet clover seed added to the grass and other legume seeds makes an excellent pasture mixture.

Soil Improvement.—Sweet clover is a very valuable soil improving crop. Being a legume, it uses much nitrogen from the air. This is a most practical means of putting nitrogen into the soil. All of our farm crops must have nitrogen. Much of the land in the older settled sections of South Dakota should be growing more acres of legume crops to maintain or increase the nitrogen supply. In the growing of all crops, organic matter in the soil is destroyed. This material is a very important part of the soil. The large, fleshy, deep-growing roots, the stubble and top growth of the sweet clover all add much organic matter to the soil. On hard, heavy, clay or gumbo soils, sweet clover works wonders in subduing, breaking-up, mellowing, and otherwise putting such soils into a much better condition to be cultivated. A marked difference is many times noticed in the way such soils will receive and retain moisture after growing sweet clover.

Seed.—Sweet clover seed ripens unevenly. When one-half or more of

the seed pods have turned brown, indicating that the seed is ripe, the largest amount of mature seed will be secured.

The grain binder makes a satisfactory machine to harvest the seed crop. If the stand is very heavy or tall, it is best to take only a part of a swath. An extra high divide board is very useful and prevents the breaking of binder reels. Shift the reel so that the outer end hits the falling sweet clover first and tends to shove it up toward the elevator. The self-rake reaper makes a satisfactory harvester but the mower and rake are very unsatisfactory. The bundles are shocked like small grain. A newer method of harvesting is to rebuild an old binder.



Fig. 4.—A sweet clover seed crop in the shock. A good cash crop.

Sweet clover is usually threshed with the ordinary grain separator. The crop should be thoroughly dry before threshing begins because this helps greatly in hulling the seed.

Before a grower allows a large acreage of sweet clover to produce seed, he should secure all possible information regarding the market for such seed. Because of the seeding habits of the sweet clover plant, supplies of this seed can be very rapidly built up. Sweet clover seed competes with red clover and to a certain extent with alfalfa and Alsike clover, as the legume crop in the rotation. Thus the supplies and prices of these crops have an influence on the demand for and price of sweet clover seed.

Sweet clover produces seed the second year of its growth. The best seed crops are harvested from fields which have a medium to slightly thin stand of plants. With the ordinary biennial white blossom, the first crop of the second year should be either harvested early for hay, clipped and the cutting left on the land for fertilizer, or pastured for a while.

Hay.—Sweet clover, properly handled, makes good hay. It excels, however, as a legume pasture crop. Alfalfa takes first place as the legume hay plant. Wherever alfalfa cannot be easily grown, or wherever it is not now grown and until it is grown, sweet clover makes a most acceptable hay crop. One of the essential points in making good sweet clover hay is to cut it early; this means not later than just before the first flower buds appear. In South Dakota most of the sweet clover hay is made from the first crop of the second year. A hay crop is very seldom secured during the first year. When sweet clover is planted the first year especially for hay, then the hay crop is handled the same as

for the first crop of the second year, except that it is not necessary to leave such a high stubble and the crop is comparatively easy to cure.

A very serious mistake is to cut the first crop of the second year too low. If the stand is thick it is very important that a high stubble be left. Such precautions are necessary because the following crop must come from the buds on the lower part of the stems of the clover plants. If the main stems are cut off below these buds there will be no second crop. In order to cut sweet clover hay high enough, the ordinary shoe runner on both the inner and outer ends of the sickle bar is replaced with a higher, adjustable runner. This makes possible adjusting the sickle bar to leave as high a stubble as is desired. The grain binder is used by some growers in order to cut the crop high enough.

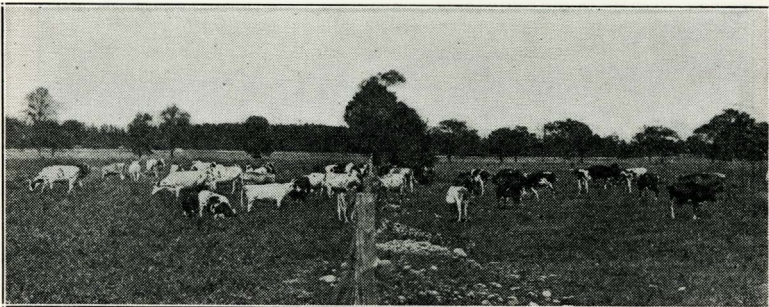


Fig. 5.—Sweet clover makes good cattle pasture. Note excellent sweet clover pasture at left while across the fence on the right is short, poor old grass pasture. There are too many pastures like those on the right and not enough like those on the left.

If the crop of sweet clover hay is fine stemmed and leafy, it can be handled much like alfalfa. Sweet clover is more difficult to cure than alfalfa. It takes a longer time and there is a greater loss of leaves. If the crop is tall, very succulent, and the season wet, the making of good cured hay is practically impossible. If the crop is medium in growth, not so succulent, and the season normal with spells of favorable hay curing weather, good hay can be made.

A few South Dakota growers report leaving the sweet clover in the swath until quite well cured, then using a sweep-rake and putting it directly into the stack.

Other Uses.—A thick, thrifty-growing field of sweet clover is one of the best crops to eradicate weeds. Sweet clover is the most important bee pasture plant that grows in South Dakota. In a few sections sweet clover is used in a limited way as a silage crop.

Alfalfa and Sweet Clover Seed.—Sweet clover must be kept out of alfalfa seed producing fields. In such fields, sweet clover is a weed, and a bad one. Alfalfa seed growers who make seed production a regular practice, should not produce sweet clover seed.

Feeding The Sweet Clover Crop

All classes of livestock need a feed which supplies muscle and bone building materials. This is especially important with beef breeding cows, dairy cows, young growing animals and work animals. The legume

crops, sweet clover and alfalfa, furnish these materials. Most South Dakota farms produce plenty of such feeds as corn and sorghum fodder, wild and millet hay, straw, corn and barley grain, but not enough of the legume crops. As a feed for livestock, sweet clover is of first importance as a pasture crop. Alfalfa takes first place as the legume hay plant.

Sweet clover has a composition nearly the same as alfalfa. It has a high feeding value. It has been very correctly stated that, "Sweet clover is not a rival of alfalfa but its summer sister." Sweet clover contains a substance known as cumarin which gives to both the pasture and hay the bitter "sweet clover" taste. The green pasture contains more of it than the cured hay. Because of this material, it is not as palatable as alfalfa, but stock usually eat it well after becoming accustomed to it.

Dairy Cattle.—Sweet clover hay is a satisfactory substitute for alfalfa in the ration of a dairy cow. It is not as palatable as alfalfa and because it is somewhat coarse and stemmy, the high producing milk cow should not be required to clean up all that she is fed. In localities where both legumes can be grown successfully, the usual practice of dairymen is that of relying upon the alfalfa crop for hay and upon sweet clover for pastures.

With a few exceptions, sweet clover gives excellent results as a pasture crop. The number of trials are limited, yet several experiment stations report no ill effects on dairy cattle when pastured on sweet clover. These reports show that the milk flow was maintained satisfactorily and no complaints were received reporting the odor or flavor of the milk being disagreeable.

Beef Cattle.—Sweet clover makes a very good pasture for beef cattle when pastured closely and not allowed to become coarse and woody. They may refuse to eat sweet clover at first when turned onto pasture, but will soon become accustomed to it by keeping them on a field of young plants for a few days. As a dry roughage sweet clover, if well cured and of good quality, has been found to compare very favorably with alfalfa hay. The Kansas Experiment Station found choice, first year sweet clover hay fully equal to alfalfa hay as a roughage for beef cattle. The hay when fed with corn fodder, sorghum fodder, wild hay and similar roughages to beef breeding cows during the winter, will give far better results than will the corn fodder, wild hay and similar roughages fed alone. At the South Dakota Experiment Station steers fed sweet clover as a roughage with corn silage made a daily average gain of 2.45 pounds at a feed cost of \$4.34 per 100 pounds gain whereas the alfalfa fed steers made a daily average gain of 2.49 pounds at a feed cost of \$4.30 per 100 pounds gain. The sweet clover fed in this experiment was run through a hay cutter which increased its palatability to a great extent. In another South Dakota Experiment Station preliminary report, the results of an experiment with calves weighing 421 pounds fed to a weight of approximately 700 pounds is given. One lot of the calves fed good quality hay made from yellow sweet clover cut before it had made a rank growth or had become woody and all that they would eat of a good grain mixture made as rapid gains with as low a feed cost as did calves fed alfalfa hay and all they would eat of the same grain mixture.

Hogs.—Sweet clover, while not quite so good as alfalfa, makes a de-

sirable pasture for hogs if not allowed to make too rank a growth or become coarse and woody. It is especially useful in a three year rotation to provide clean pasture as well as green feed for pigs to prevent losses from roundworms, necrotic enteritis and other similar parasitic and filth born diseases. The sweet clover hay, if of good quality and well cured, can be used to advantage, especially for the brood sows and fall pigs if alfalfa or red clover hay is not available.

Horses.—Sweet clover will supply a good summer pasture for horses, mares, colts and young horses seem to thrive well on it. Horses will eat well cured sweet clover hay, even if it is a bit woody, more readily than other classes of stock. A small amount of sweet clover hay mixed with wild hay or timothy makes a satisfactory roughage for work horses.

Sheep.—As a pasture, this crop has proved to be of great benefit to the shepherd. Sheep, after becoming accustomed to eating it, can be carried in good condition on sweet clover pasture during the entire grazing period. Sheep eat any pasture on which they are grazed very closely. This close grazing habit helps to keep the sweet clover down so that the growth is fresh and tender. In experiments at South Dakota Experiment Station where alfalfa hay, white sweet clover, Canadian field peas, shredded corn fodder, and prairie hay were used as roughages when fed to lambs, it was found that sweet clover hay was only excelled by alfalfa hay. Lambs fed sweet clover hay gained uniformly, the hay was palatable and from the results obtained it should be considered one of the principal crops in livestock farming.

Feeding Precautions

Bloat.—Sweet clover pasture is usually considered a safe pasture for cattle and sheep but cases of bloat have occurred. However, animals will not bloat on sweet clover pasture any more than on any other green feed. If bloat occurs, the animal should be removed temporarily and if the case is light, the animal should be exercised or if the case is severe the animal should be relieved by the use of a trocar.

Mouldy Hay.—Thousands of tons of mouldy sweet clover hay have been fed to cattle without any difficulty, but during the past year there have been some cases of poisoning as a result of such feeding. When this condition occurs it causes the blood to lose its clotting power and if any slight hemorrhage occurs within the body, there is a possibility of the animal bleeding to death internally. The only possible preventive measure is to remove the mouldy sweet clover hay from the cattle immediately. This may possibly be used up later by mixing it with some good hay.

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