

Government of the Province of Saskatchewan

DEPARTMENT OF AGRICULTURE

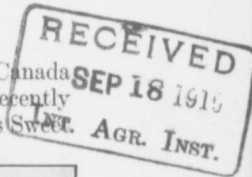
FIELD HUSBANDRY CIRCULAR

SWEET CLOVER

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Sweet Clover has long been familiar to farmers of Eastern Canada and parts of the United States as a troublesome weed but not until recently has it been considered a forage plant of economic importance. As Sweet



Harvesting Sweet Clover on the College Farm.

Clover has become better understood and its many excellent qualities better appreciated, its utilisation both as a hay and pasture for all classes of live stock has rapidly increased. At present it may be found as a cultivated crop in practically every province and state in America.

Its reputation as a weed is no doubt due to its aggressiveness in waste places, its prolific seed production and the fibrous and unpalatable character of the stem as it approaches maturity. Besides the plant possesses a bitter principle which gives the forage a taste that is not relished at first by stock. This becomes more pronounced as the blossoms make their appearance. The stock nevertheless readily become accustomed to the taste if a little judicious care is exercised in getting them started on the new forage. It is beyond question that Sweet Clover is relished by all kinds of stock both as pasture and hay if cut at the proper time. It has also proven an excellent soiling crop and in several cases has been successfully ensiled.

As a forage crop for Saskatchewan, Sweet Clover has several qualifications that make it worthy of consideration.

In the first place it is a legume, and, while not a true clover, it possesses the same advantage as Red Clover and Alfalfa for obtaining nitrogen from the air. This enables it to thrive on soil poor in this constituent and at the same time contribute liberally to its nitrogen and organic content. This accounts for its world wide fame as a renovator and rebuilder of depleted soils.

Its leguminous character also accounts for the high percentage of digestible nutrients that Sweet Clover has been found to contain, making it practically equal to Red Clover and Alfalfa in feeding value.

Sweet Clover is a biennial plant which is another obvious advantage under semi-arid conditions such as are found over the prairie portion of Saskatchewan. As a biennial it is well adapted to short rotations and therefore will not interfere, as would a perennial crop, with plans for the frequent storing of moisture in the land. Since it never survives the second winter there seems little fear that it may become a weed, especially on land that is ploughed once a year. It is almost sure, however, to persist in waste places wherever it is grown to any extent.

The large fleshy roots of Sweet Clover decay very rapidly and completely, making ploughing a much easier matter than the ploughing of alfalfa sod. The decomposed condition of the roots render them easily incorporated into the soil, and the subsoil is made porous, thus affording better aeration and drainage.

Sweet Clover appears to be a relatively hardy legume in Saskatchewan. It has now been grown on the College of Agriculture Experimental Plots for seven years. During this time there has been little winter killing until last season (1917-18) when some of the plots suffered considerably. Last winter was, however, the most severe on clovers and alfalfa that we have experienced, although a few of the varieties and strains that we have under investigation did not suffer in the least.

It is also claimed and fairly well substantiated that Sweet Clover is more resistant to alkali than any other of our forage plants. While this is probably true, we have not yet been able to verify this claim, but there is no doubt a reasonable limit to the degree of alkalinity that Sweet Clover will endure.

Kinds of Sweet Clover.

There are two leading kinds of Sweet Clover: the white-flowering species (*Melilotus alba*) and the yellow-flowering species (*Melilotus officinalis*).

The common white Sweet Clover is a tall growing biennial plant belonging to the same family as Alfalfa, Red Clover and the Field Pea. The first season's growth is leafy with relatively fine stems and will usually reach a height of twelve to twenty-four inches. The second season's growth begins from crown buds which have been formed the previous fall just beneath the surface of the ground. This growth is somewhat more stemmy and less leafy than that of the first season and progresses very rapidly under favourable conditions. During the second season it makes a growth of four to eight feet, produces numerous small white flowers on long loose racemes and eventually dies with the ripening of

the seed. As the plant matures the leaves fall away and the stems rapidly become coarse and woody.

White Sweet Clover is grown to a much greater extent in America than the yellow, chiefly because it produces more forage per acre. In many places, however, the latter has been found to produce almost if not equally as well. They differ chiefly in colour of blossom, habit of growth and time of maturing; the yellow-flowering species being not so tall, somewhat finer stemmed, more bushy in appearance and maturing about two weeks earlier. In all other respects the white and yellow Sweet Clovers are essentially alike.

Experimental Work at Saskatoon.

At the present time there are ten different varieties and over 200 plant selections under observation at the College of Agriculture. These differ greatly in yield, quality of forage, dates of maturity and hardiness, as well as in other minor respects. Experiments are also under way to determine the best practices to follow in growing the crop under Saskatchewan conditions. The yield of cured forage for both white and yellow varieties has averaged over half a ton more than any perennial crop under the same conditions.

Culture of Sweet Clover.

Like most other crops, Sweet Clover will do best if sown on fallowed land. On account of its biennial nature, however, this preparation is too costly. Quite satisfactory stands can be secured from sowing on well worked fall or spring ploughing that is free from grass. The surface should be quite firm and the seeding should be done in the rainy time, generally in the month of June.

With regard to choice of varieties it may be said that while yellow Sweet Clover is finer in quality and earlier in maturing, the white appears on the whole to be more hardy. At present most of the seed on the market is of the latter kind. Commercial seed, however, leaves much to be desired and will doubtless be superseded in the near future by much more desirable locally developed varieties.

The seed may be sown with the ordinary drill if a little cracked grain or some other material is added to give it bulk. Sow at the rate of ten pounds per acre not more than two inches deep. If sown in rows 24 to 36 inches apart, 3 to 6 pounds per acre is sufficient. Inoculation, while generally advisable, is not essential.

By sowing Sweet Clover with a nurse crop, the net value of the crop is generally increased provided winter killing does not occur. In some winters and with tender strains, however, there is some danger in this respect. It is hoped that with the introduction of hardier varieties and the improvement of cultural methods that the use of a nurse crop will become general. If this method can be made a safe practice to follow it is obvious that Sweet Clover will have a much more extensive field of usefulness than it could otherwise have.

The crop may stand some pasturing the first season, and in favourable seasons be cut for hay, but as a rule it will be found more profitable to leave the fall growth standing so that it will hold a substantial blanket

of snow. This gives winter protection and an extra supply of moisture for the next year.

Two crops are usually obtained the second season. It is important (1) that it be cut early, that is, as soon as the first blossoms make their appearance, if a good quality of hay is to be the result; (2) that the first cutting be high enough to preserve the buds on the lower part of the stem that are to make the second growth. About six to ten inches will be found the best.

Sweet Clover requires to be well cured in the field before being stored in the stack or barn. The plants should be well wilted in the swath but cured in the cock in order to preserve the leaves of the plants.

The essential thing in pasturing the crop is to keep the growth well eaten down. This means starting the grazing early and keeping the pasture well stocked. If the crop is used for pasture only it is sometimes advisable to clip back with a mower the tall growing stems that get ahead of the stock to prevent them seeding and to encourage the development of fresh green shoots. While pasturing on Sweet Clover, cattle crave some form of dry roughage such as hay or straw. It is desirable that such roughage should always be available to the stock.

For some unknown reason Sweet Clover causes relatively much smaller loss to cattle and sheep from bloat than most other green crops such as alfalfa and rape. Hogs do well on Sweet Clover pasture, making gains comparable with other legumes. For this purpose it is used as a two-season crop, but it is a mistake to overstock the first season. For hog pasture it is best to sow the Sweet Clover in rows.

When a crop of seed is desired it must not be cut for hay early in the season. Unless the growth has been exceptionally rank the crop can be handled with the ordinary grain binder and separator. By threshing close enough to hull 90 to 95 per cent of the seed, the seed-coat is more or less scratched in the process with the result that the percentage germination will be greatly increased. Yields of five and six bushels per acre are commonly obtained.

Conclusion.

Sweet Clover is a crop with which our farmers are not familiar, but one that possesses qualifications that make it well worthy of a serious trial. As forage it will probably find its greatest usefulness for the present as a pasture crop. It may also be made into a good quality of hay, although it is somewhat difficult to cure, especially in bad weather. Its probable usefulness in Western Canada, however, lies as much in its value as a soil improver as in that of a forage crop. To what extent it will be used as a forage crop will doubtless depend very largely on its ability to fill the demand for a legume crop that can be fitted into our system of farming without adding to the cost of production.

Only by trying out Sweet Clover in a sufficiently large and practical way under a variety of conditions will it be possible to correctly estimate its value to the country, and determine the places and circumstances where it will prove of the greatest benefit.