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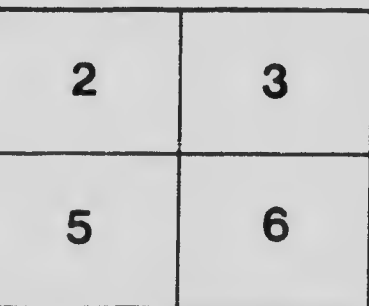
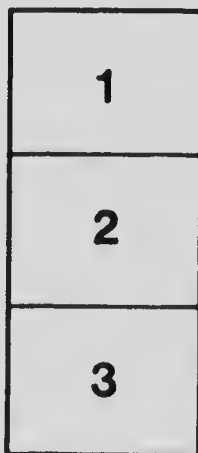
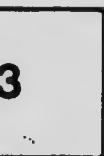
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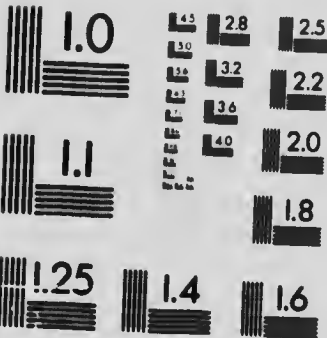
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DIVISION OF FORAGE PLANTS.

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## SWEET CLOVER---THE TRUTH.

BY

M. O. MALTE, PH. D.

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During the last twelve months or so the interest in Sweet Clover, shown by farmers in different parts of Canada, has assumed surprising proportions. Numerous articles in the agricultural press and still more numerous 'letters to the editors' of the agricultural papers have discussed the sweet clover question, but so far no definite conclusions as to the merits or demerits of the sweet clover have been arrived at.

A certain number of the writers cannot condemn it strongly enough claiming that it is a 'nuisance' and a 'pest' which when introduced on a farm will spread beyond control and which will lessen the value of the farms. Instances have been quoted, in which the selling price of farms has dropped as much as two thousand dollars on account of their being overrun by sweet clover, wilfully introduced by their owners.

On the other hand a great number of writers are enthusiasts who look upon sweet clover as a forage crop of extraordinary value which, unfortunately, has been misjudged and altogether underestimated in Canada. Articles have appeared in which the writers remark that 'colleges across the border are loud in its praise' and that it is a 'staple crop in Europe,' etc.

The result of these contradictory statements is that the unfortunate farmer who is unfamiliar with the plant in question is at a loss as to its real value.

In the following paragraphs a few facts will be given which, it is hoped, will help to clear the situation.

### VARIETIES.

Under the name of Sweet clover are recognized a number of leguminous plants characterized by a very pronounced sweet odour. They all belong to the same genus, viz: *Melilotus*, and are often called melilots. Although called sweet clover, they have not much in common with the true clovers, represented by the Red, White and Alsike varieties. As a matter of fact, they are more related to alfalfa than to any other leguminous plant.

There are two varieties of sweet clover in Canada, the white and the yellow. The former (*Melilotus alba*) is the more common and is considered somewhat superior to the latter (*Melilotus officinalis*). Both these sweet clovers are biennial, i.e. live two years.

A third variety, called *Melilotus indica*, is a small annual plant, which is grown in California, Utah and other western states of the Union.

In Canada, only the White Sweet Clover is of any agricultural interest.

#### ORIGIN AND DISTRIBUTION OF WHITE SWEET CLOVER.

White Sweet Clover, also called Bokhara Clover, is a native of Asia. It was introduced into Europe over two thousand years ago and was brought to America about the middle of the eighteenth century. In Canada it is now found quite commonly, especially in the eastern provinces.

#### REQUIREMENTS AS TO SOIL.

Sweet clover can be grown successfully on almost any kind of soil. It is often found in sterile, dry places where nothing else will grow on account of lack of food. It will thrive surprisingly well in sandy fields, on stiff clay, in sour soil, on alkali land and in many other places where most farm crops prove a failure. This ability to live and, in fact, to do well in soil where the food supply is scant, is largely responsible for the glowing praise bestowed upon sweet clover during recent years.

#### SWEET CLOVER AS A SOIL IMPROVER.

Like most other biennial plants, sweet clover develops a strong and somewhat fleshy tap root which penetrates the ground to a considerable depth. Its numerous branches break through even very compact soil, thus making it porous and penetrable to air and water. The fleshy nature of the taproots makes them decay readily when the plants, after the end of the second year, die. Considerable humus can also be added to the soil by incorporating with it the rather rank top growth.

For these reasons Sweet Clover is no doubt of great value on old, worn-out land and on soil the mechanical condition of which needs improving.

Like other leguminous plants Sweet Clover through the assistance of certain bacteria has the faculty of gathering nitrogen from the air circulating in the soil. Soil deficient in nitrogen will consequently be improved through the growing of Sweet clover.

In this connection it must be mentioned that the bacteria occurring on the roots of Sweet clover, seem to be identical with those occurring on the roots of alfalfa. At any rate, they act in exactly the same way as the alfalfa bacteria, and soil from a sweet clover field can therefore be used to advantage for inoculation of fields prepared for alfalfa. For the same reason, sweet clover can be used, on poor soil, as a preparatory crop for alfalfa.

#### ATTRACTIVENESS TO STOCK.

One of the most serious objections raised against sweet clover is the statement that farm animals do not like it and that they cannot be induced to eat it unless starved. Its distastefulness to stock is, as is well known, due to the presence of a bitter element, called coumarin, which is especially noticeable in the wild plants.

On the other hand, it has been claimed that animals are very fond of it and prefer it to other kinds of fodder.

Observations made by the writer indicate that cattle and horses at least carefully avoid sweet clover in pastures, where other plants are at hand, and that, to most animals, the hay is far from attractive. But domestic animals, like human beings,

can develop a taste for and grow very fond of food which they at first refuse to touch. Whether animals, unfamiliar with sweet clover, will like it or not from the beginning also depends upon what time of the year they be pastured on it. If turned on to it early in the spring when the plants are very juicy and tender, they will have less objection to it than later when the plants are better developed. This is due not only to the fact that early in the spring the animals are hungry for green feed, but also because that the young plants contain a much smaller amount of eumarin than the older ones and consequently are less bitter.

#### SWEET CLOVER FOR HAY AND PASTURE.

As a hay crop, sweet clover cannot compete with alfalfa. Full crops can be relied upon only every second year, whereas a well-established alfalfa field will yield large crops during many consecutive years. In feeding value it is also inferior to alfalfa, holding less protein and less carbonhydrates than the latter. Where alfalfa can be grown with reasonable success, sweet clover should, therefore, by no means be introduced.

The principal advantage of sweet clover for pasture lies in its ability to shoot very early in the spring, to remain green during periods of prolonged drought, to continue growth until late in the fall, and to stand close grazing well. As a rule there is no danger of sweet clover producing bloat. But even with all these good qualities it is doubtful whether it will ever be of general importance as a pasture crop in any part of Canada. It will be useful only on soils too poor for other pastures.

The statement sometimes made that, in Europe, sweet clover has been cultivated for hundreds of years as a staple crop for hay and pasture, has no foundation whatever. As a matter of fact, it is, in Europe, generally looked upon as a weed pure and simple.

#### OBJECTIONS TO SWEET CLOVER.

Apart from what already has been said against sweet clover, there are a few other objections of a more serious nature, which should be given due and careful consideration by farmers before they decide to introduce sweet clover as a farm crop.

#### CHARACTER OF THE WEED.

It is often claimed that sweet clover, on account of being a biennial plant, cannot assume the character of a weed, if properly handled. Being a biennial it lives only two years and if the plants are prevented from going to seed the second year, there should be no danger of sweet clover spreading all over the farm.

Theoretically this is perfectly correct and sounds well, but in practice it turns out to be quite different.

The writer goes so far as to say that sweet clover, when once introduced on a farm, will prove almost impossible to get rid of, no matter what precaution be taken. Many a farmer, believing that he had destroyed every sweet clover plant on his farm before it had had any chance to set seeds, has been painfully surprised to discover that, in spite of all, sweet clover suddenly appeared in the most unexpected places. In practice even the most careful eradication methods and the most careful effort to prevent it from going to seed have too often proven in vain. Over and over again it has been discovered that seed, in spite of the most careful attention, has been developed and dropped to the ground. Only a few such overlooked seeds will be sufficient to start a weed crop which very soon will prove detrimental to a well managed farm.

Even granting that sweet clover may be checked or quite suppressed in well cultivated and clean-kept fields, there are always places on a farm where sweet clover, once introduced, is apt to take a firm foothold. Along roadsides, fences, ditches, etc.,

where it is not properly looked after, the abundance of seed which, by wind, can infest whole districts.

#### MENACE TO ALFALFA

On worn-out soils or in districts where alfalfa crop can be raised, the nuisance of sweet clover by its good qualities. But in good alfalfa clean farms and clean seed are essential. The seeders of sweet clover make it utterly impossible.

This is especially the case in districts which look promising or has already produced alfalfa.

The young sweet clover plant is so small that an average farmer will not be able to detect it. It blossoms the difference first becomes apparent where sweet clover grows as a weed. Farmers always run the risk of having their alfalfa contaminated, of course, that the alfalfa seed, however small, or less sweet clover seed.

The seed of sweet clover is very small and in general appearance that even experienced alfalfa men mixed with alfalfa. This being the case, it is likely, may put on the market alfalfa seed, 'accidents' of this kind most numerous in the growing district and the alfalfa seeders explanation.

The danger of getting alfalfa seed in irrigated districts. It will grow in ditches, and produce large quantities of seed and carried by the water all over the irrigating waters has caused a great deal of trouble to look upon sweet clover as a pest.

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looked after, it will have an ample opportunity to produce an  
by wind and water, will be carried over the farm and rapidly

#### CE TO ALFALFA-SEED PRODUCING DISTRICTS.

r in districts where absolutely no other leguminous forage  
nuisance character of sweet clover may be counterbalanced  
But in good or even medium agricultural districts, where  
ed are essential to the success of farming, the weed charac-  
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e case in those districts of Canada where alfalfa seed raising  
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ver plant is very much like the young alfalfa plant and the  
e able to tell the difference. When the plants have developed  
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over is very similar to alfalfa seed, in fact so similar to it  
at even experienced seed analysts often fail to detect it when  
s being the case, the alfalfa seed growers, maybe unknow-  
market alfalfa seed contaminated with sweet clover. That  
most necessarily will hurt the reputation of the whole seed  
alfalfa seed industry of Canada in general needs no special

g alfalfa fields infested with sweet clover is especially grave  
will grow abundantly and luxuriantly along the irrigation  
re quantities of seed which will be dropped into the ditches  
e all over the irrigated area. This rapid spreading through  
s caused a number of the irrigated States in the American  
lover as a troublesome weed.

n. MARTIN BURRELL, Minister of Agriculture, Ottawa, Ont.



