

SWEET CLOVER

DURING the past two years the growing of sweet clover by Messrs. McCaw Brothers, of Hakataramea, has created considerable interest among farmers throughout New Zealand. This article by T. A. Sellwood, Instructor in Agriculture, Oamaru, summarises the methods adopted in America, where the crop has been widely grown, and results secured up to the present at Hakataramea.

SWEET clover belongs to a group of plants the generic name of which is *Melilotus*. These are leguminous plants which, in the comparatively young stages, are superficially somewhat like lucerne. Three species have become well established as weeds or cultivated plants in many countries of the world. In New Zealand they have been present in various parts for the past 50 to 60 years, during which time they have come into periodic prominence either as weeds or as crop plants. These three plants are:—

Melilotus indicus, called "King Island melilot." It is a yellow-flowered annual plant growing about 2ft. high as a rule. It is a common coastal weed in some parts of New Zealand.

Melilotus altissimus, a biennial plant called "yellow sweet clover." It has yellow flowers but is otherwise very similar to white sweet clover. It is not common in New Zealand.

Melilotus alba, called "sweet clover," "white sweet clover," and "Bokhara clover." It is a biennial, white-flowered plant, reaching a height of 8 to 10ft. when in full flower. This is the plant that has been used to a considerable extent in America and which has been grown by Messrs. McCaw Brothers at Hakataramea. When it is young the stems and leaves are succulent, but as it matures the stems become hard, woody, and unpalatable. The root system is deep and carries a nodule formation similar to that of lucerne and most clovers.

American Experience

Summarising the literature from the United States of America, it may be stated that sweet clover is more drought resisting than red clover and lucerne, and that it is seldom winter killed. Sweet clover grows best on a good soil with a high lime content—in fact the name is probably derived from the fact that it thrives only on sweet soil and not from its taste, which is rather bitter. The same bacteria are required as for lucerne



Sweet clover being ploughed in with a 35 h.p. kerosene tractor turning three 16in. furrows.

establishment, and therefore it is essential to inoculate the seed with lucerne culture before sowing.

Sweet clover does not yield as much leafage for grazing as does lucerne, particularly in its first year. In the second year, however, sweet clover can be grazed from early spring to late summer. When fed alone it is said to cause digestive troubles and to be unpalatable to livestock at the first feeding. In the second year it makes such rapid growth that heavy stocking is required to cope with the feed produced.

Because of uneven ripening, shattering of the seed, and the large size of the plant, no entirely satisfactory method of harvesting has been worked out, but the crop is sometimes cut with the binder, though that results in loss of seed. The combine harvester is also used. Sweet clover is reputed to make good hay in the first year, but the quality obtained in the second season is poor.

It is difficult to decide whether sweet clover is used more for pasturage or for soil improvement, but it is regarded in America as a useful dual-purpose crop. Its value as a soil improver lies largely in its ability to fix atmospheric nitrogen in the nodules on the roots—a feature common to most leguminous plants.

On the whole it is apparent from the literature available that sweet clover has been rated very highly in the United States for the past 30 years or so.

Results at Hakataramea

Some 13 years ago initial trials with sweet clover were carried out by Messrs. McCaw Brothers on 2½ acres of good land. The land was not limed or the seed inoculated. Results were poor, and the crop was finally grazed by stock.

In the spring of 1939, 3lb. of seed were sown on ½ acre of land which had previously been sown in lucerne. The results of the second attempt were very satisfactory, probably because the seed benefited from nodule bacteria established by the lucerne crop. This crop was grazed by cows for a while, and subsequently 40lb. of seed was saved.

In the spring of 1941 a further trial was sown on light, shingly land which did not require lime, but on this occasion the seed was inoculated with lucerne culture. The first season's growth amounted to only 6in., but during the following spring growth was rapid. The average height of the mature seed crop was 6ft. and in the better patches 9ft. The crop was difficult to harvest, and it had to be cut in the early morning while it was damp to prevent loss of seed by shaking.

The maintenance of soil fertility has always been a feature of the McCaw Brothers' farming practice. Before the use of sweet clover, crops such as lucerne and Montgomery red clover were used, some 500 acres of the latter being sown out. Today the area sown to sweet clover is from 400 to 500 acres, which is used for seeding, grazing, and green manuring.