Weeds of Western Australia - Melilotus or King Island Melilot (Melilotus indica All.)

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MELILOTUS OR KING ISLAND MELILOT

(Melilotus indica (L.) All.)

Meliolotus is regarded by some as being a useful plant and condemned by others as a serious weed. It has some value, particularly as a coloniser on calcareous soils, but the high coumarin content of the seeds impart an undesirable taint to farm produce, including grain, meat and milk.
Melilotus or King Island Melilot
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Many people will be surprised to see Melilotus described as a weed, but, besides having certain advantageous properties, it can also prove most undesirable. Originating from Southern Asia and the Mediterranean region, it has spread widely and is now naturalised in many countries, including the southern parts of Australia. Although favouring limestone soils, especially in coastal situations, Melilotus will grow on a variety of soil types and has been found considerable distances inland.

It first gained prominence in Australia as a coloniser on King Island off the coast of Tasmania. Extreme difficulty was being experienced in establishing pastures on sandy soils, but the use of King Island Melilot, which has the nitrogen-fixing characteristic of legumes, enabled poor, exposed soils to be converted into productive pastures. On the other hand, it has a bad reputation for tainting farm produce, an aspect which will be discussed later in the article.

DESCRIPTION

The vernacular name employed depends largely on the attitude towards the plant in the district concerned. King Island Melilot is obviously derived from King Island where the plant proved extremely useful and is the name usually adopted in localities where its value as a forage plant is considered to outweigh its disadvantages. "Hexham Scent," referring to the odour caused by the presence of coumarin is often applied where its weed propensities predominate.

Melilotus indica is an almost hairless, annual, 2-3 ft. high, with erect rather than spreading branches. The leaves consist of three toothed, more or less obovate leaflets. The leaflets of the basal leaves are broader and the central vein is often red in colour.

The small yellow pea-shaped flowers are in long-stalked axillary racemes. Nine of the ten stamens are united and the ovary has two ovules. The pod is sub-globular, somewhat compressed, hard and leathery, pendulous, one-seeded, wrinkled with net-like markings and falling without opening.

Flowering occurs in the spring and early summer.

SIGNIFICANCE

As already mentioned, Melilotus is regarded as both a useful plant and a weed. It is undoubtedly hardy and has the soil-improving capacity of the related clovers. The early experience on King Island, where success was obtained with Melilotus when clovers failed, has been repeated in other localities. In South Australia it has been grown successfully on very alkaline, rather salty coastal areas and thrives on the light calcareous soils of Yorke Peninsula.

In the light of recent knowledge concerning trace element deficiencies affecting the growth of clovers, however, Melilotus has been largely superseded as
KING ISLAND MELILOT
(Melilotus indica All.)
A—Young plant; B—Leaf; C—Leaflets; D—Mature plant; E—Leaf, showing stipules; F—Fruiting branch; G—Fruit containing a single seed

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a pioneer species. Barrel medic must be regarded as a much superior pasture plant for calcareous soils and, despite its burrs, the common burr trefoil is also sown under such conditions. Barrel medic is early maturing and more palatable and nutritious without having the undesirable characteristics of Melilotus.

Melilotus has been naturalised in Western Australia for more than 50 years. It has been recorded from a number of inland agricultural districts but is most prevalent on the coastal limestone country. Conditions, possibly of both soil and climate, are less suitable than in parts of the Eastern States and nowhere in Western Australia has it become a troublesome weed. The possibility of this happening, however, cannot be ruled out entirely, especially on calcareous soils such as in the vicinity of Dongara and Greenough.

The main disadvantage of Melilotus is the flavour imparted to many items of farm produce by the coumarin present in the plant, particularly in the seeds. Milk cream and butter are liable to be badly tainted if cows graze on the plant, while mutton from sheep eating it has also been affected. The greatest problem in this respect, however, is with grain and grain products, particularly cereals.

Contact with Melilotus seeds for other than a short period will convey the flavour to wheat, barley and oats, and subsequent removal of the seed impurity will not correct the trouble. The flavour is not removed by milling and baking and there have been a number of cases in the Eastern States of bread and biscuits being affected. The Australian Wheat Board will not accept wheat containing Melilotus seed and there is a substantial reduction in the price of contaminated barley.

The problem is not restricted to Australia as shown by the following statement made by Dr. D. W. Kent-Jones, a leading British cereal chemist—"Unfortunately, South America wheat has often, in the last few seasons, been contaminated with Melilotus (Melilotus indica). If the grain is either damaged or heated before the Melilotus seed is removed, the scent of the seed may go on to the grain. If the contamination is serious, the wheat then has a hay-like smell which persists in the flour and the bread. In the case of Russian wheat grown in a more temperate climate, the taint is likely to be more marked."

Summing up, Melilotus has some value as a forage and also as a pioneer plant for poor calcareous soils. In this respect, however, experience in Western Australia has shown that barrel medic can be expected to serve the same purpose, while being a better forage plant, and not having the undesirable coumarin content. Although Melilotus so far has shown no strong tendency to become a weed in this State its cultivation is discouraged by the Department, particularly in cereal growing districts.

CONTROL

Where it is desirable to control Melilotus the plants should be prevented from seeding. This can be done by hand-pulling, cultivation or the use of chemicals. As is the case with many legumes, a high percentage of Melilotus seeds are hard and these remain dormant for varying periods. Plants may appear for a number of years after seed formation has been arrested.

The recommended rate of spraying is 6 to 8 oz. acid equivalent of 2,4-D ester or 10 to 12 oz. of 2,4-D amine per acre. Low volume treatment is effective and the best time to spray is when the crop is stooling and six to eight inches high. Later application, particularly when the Melilotus is more than six inches high, is usually much less effective.

If the plant occurs in a crop at the time of harvesting every precaution should be taken to ensure that any seeds of Melilotus are removed without delay and preferably by means of a screen on the harvester. As already mentioned, under some conditions, only a short period of contact is necessary before the cereal becomes tainted.
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