

A REVIEW OF THE CONTROL OF ST. JOHN'S WORT IN VICTORIA

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I. INTRODUCTION

St. John's Wort (Hypericum perforatum L.) was first introduced to Australia from Germany for medicinal purposes. It was originally grown at Bright in the north-east of Victoria during the gold mining boom of 1870-1880, but it soon escaped from cultivation and in a few years had infested large areas of the rich Ovens Valley around Bright. It is a perennial plant which can dominate the vegetation of an area to the exclusion of all fodder plants and therefore greatly reduce the carrying capacity of infested areas. It also contains a compound (hypericin) which affects the unpigmented portions of the skin of animals making them susceptible to sunlight. This eventually has fatal results.

II. SPREAD

The plant produces a prolific number of small seeds, contained in sticky capsules, which can readily adhere to the coats of most animals and also to the feet of birds. When gold was discovered in other parts of Victoria towards the end of last century the miners moved from the north-east with their horses, chaff and other belongings, and unintentionally took the St. John's Wort seeds with them. Thus the weed was distributed widely over many parts of Victoria and soon became established in these new areas. It has also spread from the north-east with pine seedlings from Forestry Nurseries and small infestations can now be found in many forests in southern Victoria.

From the original infestation in the north-east, the weed soon spread to New South Wales and later into South Australia and Western Australia. In Victoria it was recognised as a serious threat to agricultural land and it was soon proclaimed noxious under the Vermin and Noxious Weeds Act of Victoria.

III. CONTROL

(a) Salt. The use of common salt at the rate of 5 to 6 tons per acre was the most widely used method of control for many years. This was effective but expensive and impracticable on large areas. It also acted as a soil sterilant which was undesirable. Similar types of weed-icides were also used but common salt was by far the most popular.

(b) Chrysomela hyperici. A survey of the natural enemies of St. John's Wort overseas was undertaken by C.S.I.R. in the 1920's. In 1929 a beetle (Chrysomela hyperici) was introduced to Australia from southern England and, after screening and testing, was liberated in the Bright district in 1930. Although further liberations were made and the insects persevered with, they failed to become established and the attempt at control of the weed by this method was regarded as a failure. However, in 1939 it was noticed that the beetles had re-appeared in fairly large numbers and collections were made from this colony by C.S.I.R. officers and transferred to Gippsland and Wodjbee, in N.S.W. By 1944 C. hyperici had become firmly established and it was realised that this insect gave promise at last of being an effective method of control of the weed.

(c) Chrysomela gemellata. In 1939 this closely related species was introduced from southern France and was liberated at Bright in the same year. By 1942 it had become well established and it was realised that this insect also showed promise for the control of St. John's Wort.

These two species of Chrysomela are leaf eaters, attacking the plant in two stages of its life history. The adult beetle defoliates the erect plant as it runs up to flower, whilst the larva attacks the prostrate winter growth of the plant.

(d) Agrilus hyperici. This is a root-boring insect which was introduced from France in 1939-40. These were liberated at Bright where they soon became established but their progress was retarded by the influx of the Chrysomela species. These killed most of the weeds in the experimental areas, thus retarding the build-up of the Agrilus into worthwhile numbers. Recent inspections show that this insect is still active in these areas, but it has not developed into an effective controlling agent in Victoria.

By 1945 the Chrysomela beetles were thoroughly acclimatized and were effectively clearing acres of heavily infested country. Realising that these beetles offered a most promising method of control, the Victorian Lands Department, working in co-operation with C.S.I.R. officers made an all-out effort to colonize these insects throughout the weed infested areas of Victoria. In 1945 510,000 of the mixed species were collected and liberated in other north-eastern districts. In 1946 the existing colonies had increased to such an extent that 1,063,000 beetles were collected and liberated in other areas. The following numbers have been collected in subsequent years - 1947 2,553,000; 1948 957,000;

1949 768,000; 1950 600,000; 1951 105,000. These were liberated in most of the weed infested areas of the state and in most cases the beetles soon became established. Most of these collections and distributions were made by Inspector F.C. Schreiber of the Victorian Lands Department, who was stationed at Bright at this time. Inspector Schreiber has now been transferred to Melbourne where he can spend full time in further liberations, paying particular attention to the odd problem areas of the state. One of these is at Warrenbayne, near Benalla, and the beetles were introduced there for seven years before two small colonies appeared in 1954. These give great promise of solving this difficult problem in the next few years.

A recent survey of the work of the Chrysomela beetles throughout Victoria revealed that most of the St. John's Wort on cleared country had been effectively controlled. Farmers generally have realised the value of the beetles but appreciated also the need to follow up this work by top dressing and pasture improvement. This has resulted in many areas which were heavily infested a few years ago being brought back into full production. It is now apparent that the Chrysomela beetles offer a very effective and cheap method of controlling St. John's Wort on open country, but for final eradication their use must be combined with top dressing and pasture improvement.

In timbered country the beetles are generally not as effective on the St. John's Wort as in open country and this is a problem which is being investigated at present. So far it has been found that C. hyperici is more effective in this type of country than C. gemellata.

(e) Hormone weedicides. Experiments in Victoria have shown that the most effective chemical for the control of this weed is the ester form of 2,4-D used at the rate of 2-3 pounds of acid equivalent per acre for boom spraying or as a 0.2% solution for spot spraying. These recommendations have given excellent kills in the field and are used mainly for cleaning up small areas and infestations where the beetles are not readily established. Here again the spraying must be followed up by pasture improvement or seedling re-infestation will occur.

There is no doubt that the combination of biological control by Chrysomela beetles, with the hormone type weed-icides and pasture improvement, has relieved Victoria of one of its worst weed problems.