

THE CONTROL OF BLACKBERRY, BOXTHORN AND SWEET BRIAR

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SUMMARY.

Aspects of research on these weeds in Victoria is discussed. Particular reference has been made to the use of hormone type substances on their control.

Blackberry is readily controlled with ester 2,4,5-T at $1\frac{1}{2}$ pounds of acid equivalent per acre.

Boxthorn is not readily controlled with hormone type substances. Arsenic pentoxide has given the most satisfactory results in Victoria.

Sweet Briar is controlled with 0.2% solutions of ester 2,4,5-T although three applications may be necessary.

I. BLACKBERRY (Rubus fruticosus L.)

The work of Robinson and Parsons (1952)* in Victoria showed that a formulation containing the butyl ester of 2,4,5-T was more effective in controlling Blackberries than one containing a mixture of the butyl ester of 2,4,5-T and the ethyl ester of 2,4-D. It was also shown in this work that the effect of 2,4,5-T increases up to the 1 pound per acre rate but higher rates do not give significant increases in kill. Following this the recommendations made for Victorian conditions were that the ester form of 2,4,5-T should be used at the rate of $1\frac{1}{2}$ pounds of acid equivalent per acre. This has proved to be very satisfactory in the field.

Further work was carried out each month of the year from February 1952 to determine at what stages of growth the plants were most susceptible and what strength of material was needed at each stage. It was shown that the best kills were obtained in January, February and March at the 1 pound per acre rate of 2,4,5-T. During this period in Victoria the plants are in the early flowering to fruiting stages of growth. Satisfactory results were obtained slightly earlier and slightly later than at these times but the rates of application had to be increased. Treatments during the winter and

* Robinson, B.D. and Parsons, W.T. (1952) - The relative efficiency of 2,4,5-T and a mixture of 2,4,5-T and 2,4-D in the control of Blackberry bramble. J. Aust. Inst. Agric. Sci., 19: 257 - 61.

spring months were not satisfactory even at the rate of four pounds of acid equivalent per acre. Observations made in the field show that excellent results can occasionally be obtained in the winter months with the normal strengths of 2,4,5-T. The reason for this is not known.

A further trial was carried out in 1953 to determine the relative efficiency of a low volatile ester of 2,4,5-T, butyl ester 2,4,5-T and triethanolamine salt of 2,4,5-T. The low volatile ester appeared visually to be slightly superior to the butyl formulation but this difference was not shown on statistical analysis. The amine formulation, even at 2 pounds of acid equivalent per acre, had very little effect on the plants and showed no promise of control. A further trial in which the amine formulation was used at 2, 4 and 8 pounds of acid equivalent per acre is at present under observation. These higher rates are having more effect than in the original trial but even if they give a high percentage kill the high rates necessary will make it uneconomical.

A problem area has been investigated at Emerald in the Dandenong Ranges where the growth is apparently somewhat resistant to 2,4,5-T. The area was treated in March 1953 with a range of strengths of ester 2,4,5-T and the plants died off in the normal manner. However twelve months later strong regrowth had occurred and no reduction in cane density had been obtained. Other patches in the immediate vicinity had been treated and gave normal results. It is felt that these resistant plants may be a different species to *R. fruticosus* or even a different variety of the same, although no obvious botanical differences were noticed. It is felt that this problem should be fully investigated if possible.

The results in the field in Victoria with the ester form of 2,4,5-T have been exceedingly good. A kill of about 80% of the canes is expected with the first spraying and complete eradication is aimed at with the second treatment. However it has been found that a third application is sometimes necessary for complete control.

II. BOXTHORN (*Lycium ferocissimum* Miers.)

Small scale indicator trials were carried out in Victoria several years ago to determine the effectiveness of the hormone type weedicides on this weed. It was shown that 2,4-D had practically no effect and in fact some of the plants appeared to be improved in vigour by the spray. The 2,4,5-T sprays defoliated the plants and gave a 10 to 20% kill but the

plants which recovered also appeared to be improved in vigour. The experiments along these lines were not continued.

The standard method of control in Victoria is by the use of Arsenical weedicides, mostly in the form of Arsenic pentoxide (36% As_2O_5) at the rate of 1 in 10 with water. If this is thoroughly sprayed onto mature plants, paying particular attention to the base of the plants, a kill of 80 - 90% can be obtained. Large bushes cannot be sprayed as thoroughly as necessary and these are best treated by cutting them off near ground level and swabbing the butt with a more concentrated arsenic pentoxide solution. This has given a complete kill in many cases. In Victoria large areas are often tackled with front-end loaders which lift the plants completely out of the ground. The regrowth which then occurs from the broken root system is then effectively dealt with by the 1 in 10 solution of arsenic pentoxide.

Other forms of arsenic have been used experimentally on Boxthorn but none of these have proved as effective as the pentoxide.

III. SWEET BRIAR (Rosa rubiginosa L.)

A series of experiments have been carried out on the control of this weed by the use of the hormone type weedicides over the past few years in Victoria. The original trial carried out in March 1952 compared the ethyl ester of 2,4-D, butyl ester of 2,4,5-T and a mixture of these two in equal proportions at the strengths of 0.05%, 0.1%, 0.2% and 0.4% solutions of acid equivalent. Counts were made of the number of green canes in each plot and the results showed conclusively that the 2,4,5-T was more effective than either the 2,4-D or the mixed esters.

It was also apparent that by increasing the concentration of 2,4,5-T in the range of 0.05% to 0.4%, the percentage kill was also increased. On none of the plots was complete eradication obtained, as many of the plants suckered strongly from the crown and the root system. The plots were retreated in March 1953 and from observations made twelve months later it was still apparent that the 2,4,5-T was the superior material. Only an odd regrowth was showing on the 0.2% and 0.4% 2,4,5-T plots, indicating approximately 95% reduction in cane density.

Further trials were carried out in December 1952 and March '53 to compare a range of low volatile esters of 2,4,5-T with the butyl ester and also to test the amine form of 2,4,5-T. These trials to date indicate that the low

volatile esters may be slightly more effective than the butyl ester but the amine is far less effective. However none of these treatments gave complete eradication with one application and the plots were retreated in February 1954. This experiment is still in progress but it is apparent that a complete kill of established plants cannot be expected with one application of the materials at present being used, even at the 0.4% rate.

Observations made in the field support the fact that two and sometimes three applications are necessary for eradication, although occasionally one application has been effective. A 0.2% solution of ester 2,4,5-T is recommended under Victorian conditions. Field observations support the early contention with this type of plant that summer and early autumn treatments (when flowering and in full leaf) are more effective than treatments in the winter and spring, although no detailed experiments have been carried out along these lines in Victoria.