

## Impact of application methods on bracken control using metsulfuron methyl

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### Introduction

Bracken (*Pteridium esculentum*) is a widespread weed of well drained soils in the higher rainfall areas of south eastern Australia. This weed is predominantly a problem in afforestation and on farmland where regular cropping or slashing programmes are not a practical form of control due to cost, terrain, or the presence of rocks. Chemical control of bracken in these situations has been an option since the early 1970's. However cost, complexity, and reliability for long term control has been poor (8), and this has discouraged farmers from practising bracken control. Identified as problems associated with the reliability of chemical control have been application time (4, 2), wetting agent (4, 6), seasonal conditions (9, 1), water volume (1) and the target site of the chemical (6).

Metsulfuron methyl is a new chemical that has shown potential against bracken (7). This experiment is an evaluation of the effectiveness of Metsulfuron methyl for bracken control when application technique, water volume and wetting agents were varied.

### Experimental Detail

The experimental site was located on a sandy loam soil at Sarsfield, 200 km east of Melbourne in eastern Victoria. Before herbicide application, the average bracken density was 13.0 fronds/m<sup>2</sup>.

Metsulfuron methyl (30 g/ha a.i.) was applied as Brush-off® (Du Pont Australia) on 8 May, 1989 to mature frond regrowth after slashing in winter 1988. The equipment used was a boom spray and an R.A.E. weed wiper, (R.A.E. Farm Products, Bairnsdale, Victoria).

Boom spray treatments used two water volumes, 100 and 200 litres/ha in combination with no wetting agent, 2% Ulvapron® (B.P. Australia Ltd.), and 0.2% Pulse® (Monsanto Ltd.; poly dimethyl siloxane).

The weed wiper applied the chemical in 25 litres water /ha with Ulvapron® at 2.5 litres/ha as the wetting agent.

A randomised block design with 3 replications was used, with boom spray treatment plots of 4 x 25 m, weed wiper treatment plots of 6 x 25 m and control plots of 4 x 25 m.

Bracken regrowth measurements subsequent to winter slashing were made by counting fronds in 10 one metre square quadrats placed at random in each treatment on 11 November, 1991.

The frond counts were logarithmically transformed and subjected to analysis of variance using a factorial arrangement of spray treatments with added control and wiper treatments.

### Results

Long term bracken control was achieved by the boom spray with a water volume of 200 litres/ha and the wetting agent Pulse® or the weed wiper treatment.

With the boom spray treatments the lower water volume provided poor long term control with or without wetting agents. Results indicate the importance of the wetting agent on bracken control with boom spraying.

### Discussion

Bracken control can be achieved at reasonable cost (\$75/ha) with autumn applications of metsulfuron methyl using a boom spray. To achieve such a result

a water volume of 200 litres/ha was needed together with the wetting agent Pulse®.

**TABLE 1. Effect of water volume, wetting agent and application method on bracken frond density after treatment with metsulfuron methyl**

METHOD	WATER VOLUME l/ha	WETTING AGENTS		
		NIL	ULVAPRON®	PULSE®
Nil	Nil	7.6		
Spray	100	5.2	6.5	4.5
	200	4.7	2.9	0.2***
Wipe	25		0.2***	

\*\*\*These treatments differ ( $P < 0.001$ ) from all others. Standard error of difference for log transformed data is 0.38.

The need for adequate water volume when herbicide is boom sprayed onto bracken to achieve control has been reported previously (2,5). The wetting agent Pulse® has also been shown to be superior to others in bracken control work (3).

The weed wiper application method was found to give similar results to the best boom spray treatment. This has been attributed to the chemical being targeted to the back of the fronds (10, 5) where chemical uptake is greater (6).

#### References

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