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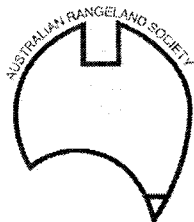
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BLADE PLOUGHING FOR WOODY WEEDS CONTROL IN WESTERN NSW

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INTRODUCTION

Many areas within semi-arid western NSW have been adversely affected by the encroachment of woody weeds. In some areas the density of woody weeds has increased to the point where pasture growth is severely impeded in most years. A number of investigations have been undertaken into control options during the past 15 years. In 1988 the Soil Conservation Service initiated a demonstration/trial program using a blade plough as the primary woody weed control agent. Initially, trial sites were blade ploughed and monitored to determine the effectiveness of the treatment and the effects on the pasture and soils. Costs of treatment were also recorded.

METHODOLOGY

At each site a number of belt transects were set up to record woody weed density by species and height classes. Observations were made on the pastures using the method of step-pointing to obtain aerial cover. The sites were then blade ploughed using a "Stationmaster" blade plough. A number of machines were used to pull the plough and these are indicated in Table 1 which gives a summary of the sites details.

Table 1. Summary of site details

Site	Property	Soil Texture	Machine	Av Shrub density	Main species
1	"Buckanbe"	S.L.	Inter 866	6940	Ddat Emst
2	"Innesowen"	S.L.	Cat D5B P/S	3340	Ddat Emst
3	"Louth Airstrip"	L.	John Deere 4840	2050	Emst
4	"Bundoon Belah"	C.L.	Cat D5B D/D	800	Emst Emmt
5	"Talealye"	S.L.	Cat D4D	2800	Ddat

Ddat = *Dodonaea attenuata*

D/D = Direct Drive

Emst = *Eremophila sturtii*

P/S = Power Shift

Emmt = *Eremophila mitchellii*

RESULTS

Average shrub mortality and cost of treatment is presented in Table 2.

Table 2. Mortality, cost

Site	Av Shrub Mortality %	Shrubs Remaining/ha	Av Seedling Recruitment/ha	Cost \$/ha
1	98.5	140	1590	40
2	95.2	100	950	45
3	94.8	125	50	60
4	72.4	200	0	56
5	96.4	100	700	50

Prior to blade ploughing pasture cover was assessed at each site. Pasture cover under the dense woody weeds did not exceed 5% at any site. Conditions remained relatively dry following treatment and there had been little pasture response prior to this article being printed. Seedling recruitment occurred in response to isolated storms. Further observations will be required to determine the survival of these seedlings.

DISCUSSION

The blade plough proved to be an effective method of primary treatment with mortality on all but one site being 95% or better. Reasons for the lower results at site 4 were the larger shrub size with many individuals in excess of 4 m in height. The plough often had difficulty in effectively rooting these large shrubs out. The 2WD wheel tractors had significant problems maintaining traction, correct depth of operation and experienced numerous staked tyres. Crawler tractors operated more efficiently with no traction problems.

The high cost associated with blade ploughing may restrict its application initially to high value areas on properties. Examples of areas for which the technique has application are: small holding paddocks, around stock watering points, dense isolated clumps of woody weeds, stock lane-ways and fence lines. It is strongly recommended that prior to any blade ploughing being undertaken a whole property assessment of the woody weed problem be made so as to target the areas with highest priority.

Currently in western N.S.W. the technique is gaining acceptance, with a number of Landcare groups being formed to experiment with blade ploughing within their own communities. A major project has also been set up through the Natural Resource Management Strategy for the Murray Darling Basin to more thoroughly research the effects of blade ploughing, with particular emphasis on appropriate post treatment management strategies. Attention is also being given to environmental effects such as soil erosion and pasture composition changes. The results of current research programmes will more effectively evaluate the role of blade ploughing in property management.

In the interim, the following recommendations are made so that potential environmental risks are minimised:

- Whilst the Soil Conservation Service does not recommend further management techniques such as raking it is recognised that such an operation may be desirable from a property management view point. If this is the case a good cover of pasture should first be allowed to develop. Raking should be carried out during Autumn or Winter when risks of erosion are minimised.
- Refrain from restocking the area until pasture species have re-established and been allowed to set seed.
- Attempt to exercise control over pastoral pests which may congregate on the treated area.
- Monitor possible seedling establishment and be prepared to carry out follow up control techniques such as herbicide application or controlled burning.

CONCLUSION

The technique of blade ploughing is the most effective primary mechanical control option available for woody weeds. The high cost, however, limits its uses to smaller, high value areas under current economic conditions. Prior to its use a whole property assessment of the woody weed problem should be undertaken so that appropriate priorities can be set for the areas to be treated.