

REPORT OF A SEMINAR ON PRACTICAL SCRUB CONTROL ORGANISED BY THE BROKEN HILL BRANCH OF THE AUSTRALIAN RANGELAND SOCIETY

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Introduction

The increase in unwanted woody plants in the poplar box (*Eucalyptus populnea*) lands of semi-arid eastern Australia, and the problems of the grazing industry caused by those plants, have been well documented in previous issues of this journal.

The increase in woody shrubs on sandy country west of the Darling River is a more recent occurrence. A seminar and field excursion on the subject was organised by the Broken Hill branch of the Australian Rangeland Society on 29-30 May, 1980. A summary and review of the proceedings to be published separately are presented below.

Historical and Ecological Aspects of Shrub Invasion - G. Harrington, CSIRO

The introduction to the proceedings reiterated the suggestion that suppression of fire, either intentionally or as a result of heavy grazing, is principally responsible for the increase in shrub (*Aust. Rangel. J.* 1(4), pp.271-9). Grazing is seen to contribute by increasing the moisture available for shrub seedlings on red earth soils, through reduced competition, but probably this is not so on the coarser textured soils west of the Darling.

A Survey of Inedible Shrub Invasion - P. Barker and C. Booth, Soil Conservation Service of N.S.W.

Results of a survey conducted in the north-western corner of N.S.W., covering an area of over 6 million hectares west of the Paroo River, were presented. The survey identified types of country susceptible to shrub invasion, and potential levels of infestation. Sandplains, dunefields and sandy alluvial plains appeared most susceptible, with potential decreases in grazing capacity of more than 30%. At such levels of shrub density there would be considerable problems with stock management and soil stability.

Impact and Control of Shrub - The Pastoralists' View - G. Rodda, 'Nagaella', N. Scadding, 'Belvedere', and R. Jackson, 'Nantilla'.

These three Western Division lessees (two from the Scotia mallee country, the third from Wanaaring) gave remarkably similar accounts of the shrub problem. All agreed it had become much worse in recent years and would force people off the land if not controlled. They also agreed that invasion first occurred on disturbed soil surfaces (whether through drought, stocking, mechanical disturbance or past cropping). One lessee felt that the decline of rabbits due to myxomatosis had allowed the shrub to get away.

Mustering is perceived as the most serious management problem: 100% musters were rare and labour and time requirements were increased by as much as 400%. Lost carrying capacities ranged to a 26% reduction for the worst affected country. An increase in the kangaroo population, and the need to regularly grade tracks and fences, were also discussed. The only positive aspect of shrub invasion was a contribution to drought forage.

Shrub control by fire is considered to be impossible because rainfall (less than 260 mm for all lessees) was too low to produce the necessary fuel. Chemicals are thought to be too expensive except for use in specialised circumstances, and two of the lessees consider physical control ineffective. However, one lessee has developed a tractor-mounted implement which cuts off shrub roots below ground level with little surface disturbance, and he hopes it will be effective in controlling shrub on his more productive open country.

The severity of the shrub problem is said to be such that government grants are necessary, both to fund research and to assist lessees with future management and control measures.

Chemical Control – B. Alchin, Western Lands Commission, and C. Proude, Du Pont Limited

The development of a new chemical, which has many advantages over conventional methods of chemical control, has prompted the Western Lands Commission to establish field trials to test the product. Velpar (R)* can be applied through a gun as single spots on the soil surface above the root zone, or in solid form as pellets or granules. The estimated cost of the chemical at the time ranged from 3 cents per plant for shrubs less than 1 metre high, to 7 cents per plant for tree suckers and shrubs taller than 2 metres. The total cost of treatment (including vehicle and labour) of a moderately dense stand of shrubs (114 plants per hectare) was \$7.80 per hectare.

While Velpar has proved effective in field trials, it is most likely to be used as part of an integrated program that includes fire, mechanical methods and grazing management. Large scale field trials have been established to resolve practical difficulties associated with the chemical.

Fire Control – G. Harrington, K. Hodgkinson and J. Noble, CSIRO, and P. Walker, Soil Conservation Service of N.S.W.

This section of the seminar dealt with the use of fire to control both woody shrubs and mallee. Shrub control investigations have already established some details of species and age susceptibility, and the effects of the fire, and of post-fire stocking (both by domestic animals and kangaroos) on pastures. The ideal prescribed fire is a low intensity burn in autumn or spring, fuel loads in excess of 1.5 t/ha, small shrubs, and wind speed above 10 k.p.h. and relatively high temperatures. More than one fire will probably be required to control shrub populations.

Burning of mallee country has shown that there are many benefits for pastoral use, including in particular the potential to at least double carrying capacity in the years immediately following the fire. The aim of CSIRO's mallee fire research program has been to determine the 'ideal' fire regime, based on periodic burning, for promoting maximum herbage productivity and for reducing fuel hazard without causing degradation of the vegetation resource or accelerating soil erosion.

Small experimental plot burns have been complemented by a number of large paddock burns which have included testing of aerial ignition techniques. To date, autumn burns have achieved better management results than burns in spring.

The control of shrub and timber by fire is not a recommendation but a self-help exercise which will receive the assistance and cooperation of the interested government bodies.

* (R) Registered Trade Name.