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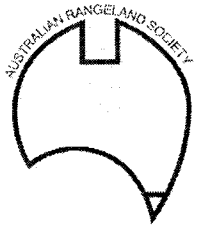

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BLADE PLOUGHING OR CHAINING UNPRODUCTIVE SCRUB IMPROVES CARRYING CAPACITY

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ABSTRACT

When trees or shrubs increase in density pasture production is reduced and a sustainable economic and ecological base may be lost. The increasing woody weed problem in the northern Alice Springs district prompted a number of local producers to implement chaining and blade ploughing as control methods. Both methods were effective in improving pasture growth and controlling some woody weeds. Pasture growth was enhanced by up to 300% after chaining mature stands of gidyea (Acacia georginae) *and mulga* (Acacia aneura), *and by up to 225% after blade ploughing juvenile ironwood* (Acacia estrophiolata), *mature mulga and turkey bush* (Eremophila gilesii).

INTRODUCTION

Five locally occurring species have been identified as problem or potential problem species. These are: a) ironwood (*Acacia estrophiolata*); b) mulga (*Acacia aneura*); c) witchetty bush (*Acacia kempeana*); d) gidyea (*Acacia georginae*); and e) turkey bush (*Eremophila gilesii*). In response to the increasing woody weed problems a number of producers implemented chaining and blade ploughing as control methods on limited areas. To determine the benefits of using either method a number of sites were selected and the effect on target species and pasture growth was examined.

Chained sites have been in place since 1991 and blade ploughed sites were established in 1993. In the elapsed time the effect on all target species has been positive. Pasture growth was enhanced in all cases and woody weed control was achieved in most.

METHODOLOGY

Twenty-six sites were selected on five participating properties. The sites were designed to measure the effect of blade ploughing or chaining on the target species and pasture species. The sites were positioned so that one site was selected within the treated area, and another site was selected close by in a comparable untreated control area. All sites were in paddocks grazed by cattle.

Tree counts were completed on the control sites at commencement of the trial to establish either percentage cover or the number of trees per hectare.

Pasture assessments were completed annually. Total dry weight of pasture was estimated for each site by the comparative yield technique of Haydock and Shaw (1975) as improved by Friedel and Bastin (1988). The dry-weight-rank method of measuring botanical composition as refined by Jones and Hargreaves (1979) was used to rank species in order of abundance.

RESULTS

The pasture yield altered significantly between the treated and untreated groups (Figures 1 and 2), and pasture composition varied with the treatment (Table 1). A high mortality occurred immediately following treatment and 95% of the target trees and shrubs were removed. After a maximum of 7 years control was achieved on 75% of the treated sites. The remaining sites in chained witchetty bush and mulga country demonstrated increases in juveniles since treatment and in two instances the number of juvenile trees growing exceeded the original numbers.

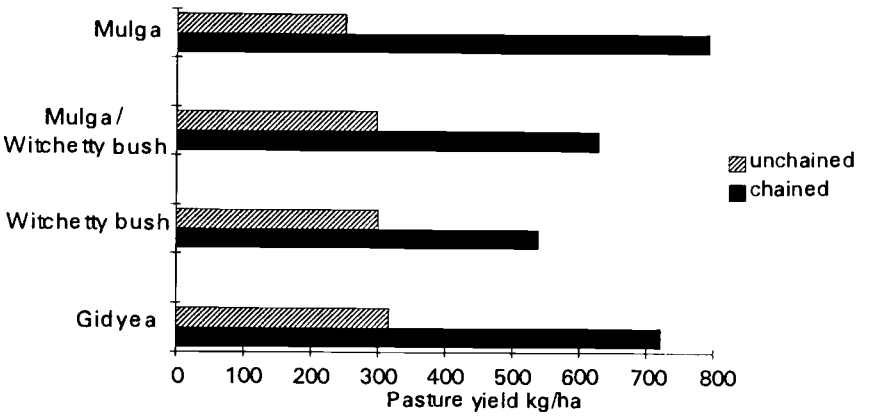

Figure 1. Mean pasture yields on chained and unchained sites over 3 years.

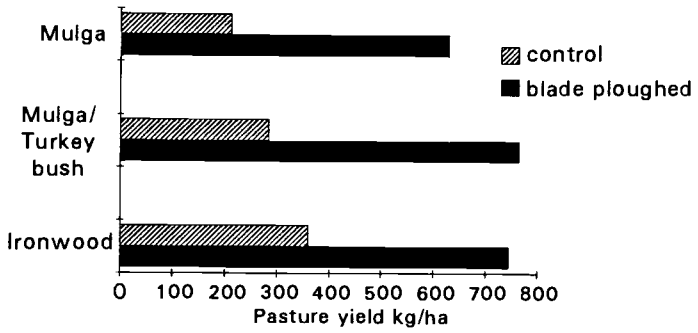

Figure 2. Mean pasture yield on blade ploughed and unploughed sites over 3 years.

Table 1. Composition of pasture yield.

	Annual grass %	Perennial grass %	Forbs %
Mean of chained sites	41.5	28.5	30.0
Mean of control sites	33.5	31.75	34.75
Mean of blade ploughed sites	16.6	62.7	20.7
Mean of control sites	17.2	46.72	36.08

DISCUSSION

Both chaining and blade ploughing proved to be effective methods of controlling woody weeds in the Alice Springs district. The removal of the woody weeds has, in all instances, allowed the pasture yield to increase. Shrub densities of between 1460 - 5400 trees/ha were responsible for losses in pastoral production. Following either chaining or blade ploughing the composition of the pasture only altered slightly in most instances, suggesting that the season was the overriding factor in the species diversity and not the removal of the woody weed.

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