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BEST PRACTICE NATIVE SHRUB MANAGEMENT IN SOUTH-WEST QUEENSLAND

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INTRODUCTION

Native shrub thickening (also referred to as shrub encroachment) is a significant problem for land managers in south west Queensland, as shrubs out compete valuable pasture plants and lower pastoral productivity. Many areas with high shrub densities are believed to have previously been open woodlands with grassy understoreys (Harrington *et al.* 1979). This is generally a result of higher grazing intensity and decreased fire regimes since European settlement (Noble 1997). Native shrub species that commonly cause problems include members of the genera *Eremophila*, *Acacia*, *Dodonaea* and *Senna*.

Many studies have explored the possibilities of native shrub management through mechanical, biological and chemical forms of control (eg. Noble *et al.* 2001). The use of fire has also been thoroughly investigated. Most of this information however, is not accessible to land managers or is not presented in an easily understood manner. In part, this has been due to the complex nature of native shrub management and consequently, has limited land managers' capacity to readily apply control measures.

A Department of Natural Resources and Mines (NR&M) and South West Strategy project funded through the Natural Heritage Trust, is documenting and correlating the findings of these past studies in conjunction with land manager consultation, to develop Best Practice Native Shrub Management (BPNSM) guidelines. This process will enable a wider and more accessible understanding of shrub dynamics and management by land managers in the region. The project aims to produce a guidelines booklet, fact sheets, an information database, land manager case study examples and extension field days.

DEVELOPMENT OF BPNSM GUIDELINES

The process of developing BPNSM guidelines for the south west region has largely been addressed through extensive investigation of past studies. To assist in this research, a much-needed database of past studies has been constructed. Information from land manager case studies, surveys, and from field days and workshops has also been gathered for incorporation into the guidelines. It is envisaged that the BPNSM guidelines will be a compilation of individual shrub management strategies and land manager experiences, to be extended in the form of a booklet. The guidelines will emphasise the importance of a holistic approach to shrub management and encourage sustainable management on a whole of property basis.

An important component of the BPNSM guidelines will be the inclusion of monitoring recommendations. Monitoring shrub populations is critical for effective native shrub management, as it allows the problem to be detected early. Many shrubs can be controlled more easily if treated when young. Early detection also allows for land managers to plan the implementation of control measures, in terms of finances, stock management and season. The guidelines will also encourage ongoing monitoring to determine the success of treatments and the need for follow up action.

CHALLENGES FOR DEVELOPING BPNSM GUIDELINES

Complexity Between Management and Environmental, Social and Economic factors

Even though cost-benefit analyses show the long-term benefits of native shrub management for land managers far outweigh the short-term losses (Burgess, 1987), it is the short-term cost outlay, together with the uncertainty of monetary return that appears to prevent most land managers from actively addressing native shrub problems. The generally poor ability of land managers to absorb the costs of initial treatment, as well as other associated and ongoing costs to ensure successful management

(destocking and follow up treatments) also makes the adoption of management strategies difficult. This is particularly the case for many properties in the region where land values are comparatively low.

Environmental conditions also cause complications for land managers when implementing native shrub management strategies. Drought will result in limited pasture recovery after treatment, while heavy winter rainfall after a burning treatment may result in high shrub germination rates rather than a decrease in shrub density. Land managers may also have difficulty trying to successfully implement treatments due to a combination of environmental factors, economics, and total grazing pressure.

As for all sustainable land management activities, achieving a balance between environmental, economic and social factors is critical for success. The BPNSM guidelines will consider all of these factors.

Complexity of Shrub Dynamics

Another major obstacle in developing BPNSM guidelines is the complexity of native shrub dynamics. In order to develop guidelines it is critical that plant attributes such as response to treatment, mechanisms of dispersal, root depth and germination initiators are understood. An understanding of these factors will allow for the appropriate timing and type of treatment to be implemented to positively manage thickening native shrubs. Initial consultation with land managers has indicated however, that land managers do not correlate the importance of shrub dynamics with management, and are therefore reluctant to learn about these factors. The BPNSM guidelines will attempt to strike a balance between educating land managers about shrub dynamics and control measures. The project will attempt to make land managers aware of the importance of understanding shrub dynamics through extension activities.

Conclusions

Managing native shrubs in south west Queensland is a major challenge for land managers. The development of BPNSM guidelines informs land managers of strategies for successful on-ground shrub control and thus helps ensure sustainable use of Queensland's rangelands. This information will also be invaluable to other regions where similar problems with native shrubs have been identified.

REFERENCES

- Burgess, D.M.N. (1987). The economics of prescribed burning for shrub control in the western division of New South Wales. Farm Business Notes no. 34. New South Wales Department of Agriculture, Orana and Far Western Region.
- Harrington, G.N., R.E. Oxley and D.J. Tongway (1979). The effects of European settlement and domestic livestock on the biological system in poplar box (*Eucalyptus populnea*) Lands. *Aust. Rangel. J.* 1 (4): 271-279.
- Noble, J.C. (1997). The Delicate and Noxious Scrub. CSIRO, Lyneham, ACT.
- Noble, J.C., Grice, A.C., Dobbie, M.J., Muller, W.J. and Wood, J.T. (2001). Integrated shrub management in semi-arid woodlands of eastern Australia: effects of chemical defoliant applied after an initial disturbance. *Aust. Rangel. J.* 23(2): 224-58.