Current management of pastures on properties on the tablelands of NSW

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Summary. Preliminary results of a survey of properties on the Central, Southern and Monaro Tablelands of New South Wales are presented. Landholders were interviewed to obtain information on property size, enterprise types, grazing management, clearing, fertiliser regimes and carrying capacities. In addition, familiarity with native grass species, and perceptions of their value or otherwise were ascertained. The reasons for various management practices and perceptions are discussed.

Introduction

Grazing has been practised on the Tablelands of New South Wales since the 19th Century, with the main industries being wool and beef and, on the more favoured areas, prime lambs. The Tablelands were some of the first areas in Australia to undertake pasture improvement on a large scale. Traditional sown pastures on the Central and Southern Tablelands have been subterranean clover either broadcast from the air or sown into a seedbed, or complete replacement of existing pasture with a mix of subterranean clover and introduced grasses (eg *Phalaris aquatica, Dactylis glomerata, Festuca arundinacea, Lolium perenne).* Superphosphate is applied at sowing, and frequently as a regular dressing.

In recent years there has been increasing interest in the role of perennial native grasses in pastures on the Tablelands of NSW (eg 3,4,5). Productive species (eg *Microlaena stipoides, Danthonia* spp.) (1,6) have been found to be widely distributed on the Tablelands, often comprising a high proportion of pastures, and such pastures frequently have carrying capacities of 7.5 DSEha or more (Garden, Dowling and Eddy unpublished). However, the way natural pastures are used on properties and landholders perceptions of their value is largely unknown. This paper presents the preliminary results of a survey of landowners on the Central, Southern and Monaro Tablelands of NSW aimed at describing management practices currently being used on farms, especially in relation to natural pastures

Methods

125 properties were sampled on the Central, Southern and Monaro Tablelands of NSW, an area comprising 3.5 m ha. The three tableland areas were defined as follows: Central Tablelands (from Mudgee to the Abercrombie river), Southern Tablelands (from the Abercrombie river to Bredbo) and Monaro Tablelands (Bredbo to the Victorian border). All areas were generally above 600m, although areas less than 600m enclosed within the Tablelands (eg the upper Lachlan valley) were included. Rugged areas, state forests, national parks and lakes were excluded. Within these areas, the Atlas of Australian Soils (2) was used to delineate areas of uniform major soil type. The total area of each major soil type was calculated and all soil types were sampled proportionately to their area. Potential locations were established from grid references at 5 km intervals on 1:250,000 topographic maps. The appropriate number of grid references for each soil type was then selected at random. An extra 25 sites were selected to be used in the event of original sites being found unsuitable. Smaller scale maps (eg 1:50,000, 1:25,000) were then used to locate the shire, parish and portion number in which the selected grid reference was located. The appropriate shire office was then approached to identify the owner of the property in which the portion was located. Each selected landholder was contacted by telephone and a suitable time for a visit arranged. On the rare occasions when a landholder could not be contacted or was unwilling to be involved, one of the previously selected extra sites was substituted. Each landholder was interviewed personally and, because other parts of the survey required sampling of paddocks on the property, much of each property was inspected. The following information was obtained from each landholder: property size, enterprises, livestock management, clearing, pasture improvement, stocking rates, fertilizer use, attitude to property development and native grass knowledge.

Results and discussion

Properly size, clearing and disturbance

Property sizes ranged from 40 to 6475 ha, with average sizes increasing from the north to the south (See Table I). This trend was expected as the Central Tablelands is more closely settled and the Monaro Tableland is a more remote area which is less developed. The average proportion of survey properties cleared was similar throughout the area at over 80%. However, there was wide variation, with the proportion of properties cleared ranging from 12 to 100%. It should be noted that the Monaro Tableland contains extensive naturally treeless areas. If these areas are excluded. the amount of actual clearing carried out is reduced to 52%. The amount of disturbance was higher for the Southern Tablelands (58%). while the Central and Monaro Tablelands were similar (40%). This was somewhat unexpected as the Central Tablelands is regarded as being the most highly developed area. The most common form of disturbance was cultivation, with very few landholders using knockdown herbicide for pasture establishment.

Table I. Altitude, rainfall, property size, clearing and disturbance of sampled properties on the Central, Southern and Monaro Tablelands of NSW

	Central Tablelands		Southern Tablelands		Monaro Tableland	
	Range	Mean	Range	Mean	Range	Mean
Altitude (m)	605-1140	863	460-1150	732	730-1300	932
Rainfall (mm)	635-965	760	510-915	703	455-865	627
Property size (ha)	40-2765	874	80-6475	1107	230-5260	1755
% Cleared[1]	26-100	89	12-100	82	31-100	85
% Disturbed[2]	0-100	42	10-100	58	0-91	40

1 Percent of Total property area

2 Percent of cleared area cultivated, sprayed with knockdown herbicide and/or direct drilled for pasture or crop

We believe that the figures for disturbance significantly overestimate the amount of improved pasture in the survey area. Frequently, areas described as 'disturbed' by landholders contained few improved species and pastures were a mixtures of native perennial and introduced annual grasses with some clovers and weeds. While these areas may once have been 'improved pastures', clearly the improved species have not persisted.

Stock type and management

The main enterprise combination on the sampled properties was wool with beef, with wool alone the next most common. The proportion of properties with wool as the main enterprise was 69% on the Central Tablelands. 65% on the Southern Tablelands and 93% on the Monaro Tableland. No properties were running prime lambs alone. but 12% of sampled properties on the Southern Tablelands had a combination of Prime lambs and beef cattle. The main type of stock management on all Tablelands was either set stocking, strategic (movement of stock between paddocks based on feed supply and stock condition), or a combination of both (eg dry sheep set stocked, with breeding stock or cattle moved strategically between paddocks). Rotational stocking was rare and was generally on the basis of some perceived need (eg "I don't like leaving stock in a paddock for too long"), rather than based on objective criteria.

Carrying capacity and fertilizer use

Landholders were asked to estimate carrying capacity on undisturbed and disturbed pastures and the total amount of fertilizer applied to each type of pasture. There was a wide range of carrying capacities on all pasture types, reflecting soil type (eg basalt versus slate), pasture composition and fertilizer use.

Landholders had used 78% more superphosphate on disturbed areas than on natural areas. The average carrying capacities of natural and disturbed pastures over the Tablelands were 4.3 and 7.9 dse/ha respectively. These are lower than those found by Munnich er *a!. (5).* We speculate that this difference is due to the different way that data was collected in the two surveys. Munnich *et al. (5)* collected actual stocking figures in a natural and an improved paddock on each property. whereas we relied on landholders estimates. It is clear from our figures that landholders perceive their improved pastures to be considerably more productive than their natural pastures. In many cases, disturbed pastures were dominated by the native perennial grasses *Danihonia* and *Microlaena,* and the carrying capacity was high. Because of this, landholders interpreted the area as still being 'improved' when there were few improved species present.

Satisfaction with pastures on disturbed areas

A high proportion of landholders (>80%) were satisfied with the sown pastures on their properties, despite the frequent lack of improved species in them. However, a lower proportion of those surveyed (57%) planned to sow further pastures. There were a range of reasons advanced for this including the current economic conditions and the lack of further suitable areas. However. there were several landholders who felt that they achieved sufficient increased production by using superphosphate alone and no longer wished to sow improved species.

Native grass knowledge

There were differences between the Tableland areas, with a larger proportion of Central Tableland landholders (58%) having very limited knowledge of native grasses. No landholders on the Central Tablelands used knowledge of the growth cycles of native grasses to plan their grazing management. The most knowledgeable group were those from the Monaro Tableland where there are larger areas of natural pasture and more problem species to deal with. 42% of landholders on the Monaro Tableland used growth cycles to plan grazing management. although this was mainly de-stocking pastures at the appropriate time to avoid problems of *Stipa* seed. Many landholders confused introduced naturalised annuals (eg. *Critesion, Bromus, Vulpia* spp.) with the perennial native grasses. A consequence of this was that the native grasses were often blamed for the grass seed problems in sheep caused by the annuals, and reinforced the perception of the general nuisance value and inferiority of native grasses. Common benefits of native grasses listed by landholders were good summer feed, good drought feed, persistence, ability to grow on poor soils, erosion protection and the ability to produce finer and/or cleaner wool. A particular attribute mentioned on the Monaro was the shelter for sheep provided by *Poa* tussocks. Common problems with native grasses were the sharp seeds of *Stipa* and *Aristida,* smut in *Bothriochloa* and poor winter growth of warm-season grasses. On the higher rainfall areas of the Monaro the problem of re-invasion of pastures by *Poa labillardieri* was listed by several landholders.

Stocking management of natural pastures

On the Central and Southern Tablelands, set stocking was used by a higher proportion of landholders for natural pastures than for the remainder of their properties. However, on the Monaro Tableland, where there is a greater proportion of natural pasture. the proportion of landholders using set stocking on natural pastures was similar to that for the whole property.

Conclusions

The main enterprises on properties in the survey area were wool and beef, and the most common form of livestock management approached set stocking. Most properties have been extensively cleared, and a significant amount of disturbance of original pastures has been carried out. However, a relatively small area of sown pasture has been successful. and many sown pastures have been colonised by native grasses and/or annual grass weeds. Despite this, most landholders were satisfied with the performance of improved pastures, and many would consider sowing more pastures. Many landholders were unfamiliar with most of the native grasses on their land. except where individual species posed specific problems.

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