



CARING  
FOR  
OUR  
COUNTRY

Land management practice  
trends in Australia's grazing  
(beef cattle/sheep) industries



## Introduction

Grazing (beef cattle/sheep) is an important Australian industry. Meat and wool production by this industry contributed almost 30 per cent to the gross value of agricultural production in 2009–10 (ABS 2011). The area of grazing land operated by beef cattle/sheep businesses was estimated to be more than 336 million hectares; over 40 per cent of the total area of Australia (Figure 1).

Improving soil condition is important to agricultural productivity and the quality of ecosystem services provided to the community from rural lands. Wind and water erosion, soil carbon rundown and soil acidification processes reduce the land's ability to provide productive soils, protect biodiversity and maintain clean air and water and the resilience of the landscape to climate change, whilst producing food and fibre.

Caring for our Country—the Australian Government's \$2 billion flagship natural resource

management initiative—is funding projects in the sustainable practices national priority area under the improving management practices and landscape scale conservation targets. These projects provide information to farmers in the broadacre cropping, dairy, horticulture and beef cattle/sheep industries about land management practices that will help improve soil condition and contribute to maintaining a healthy environment.

By 1 November 2011, \$442 million had been approved for projects to improve soil and biodiversity management practices on farm. On farm practice change is being monitored using the biennial Australian Bureau of Statistics' (ABS) Agricultural Resource Management Survey (ARMS), which surveys 33 000 of Australia's 135 000 agricultural businesses (farmers). Results are reported at the national, state and natural resource management (NRM) region levels (ABS 2009).

## Grazing (beef cattle/sheep) industry profile

According to ABS estimates, in 2009–10 there were 88 945 grazing (beef cattle/sheep) businesses (farmers) in Australia. Both the number of grazing businesses and the area of grazing land reported had decreased by around 4 per cent since 2007–08. In 2009–10 the average age of managers of grazing businesses was 56; on average they had managed their holdings for 24 years and farmed in their local region for

31 years. An estimated 23 per cent of grazing businesses (20 048) had a Landcare group member. The most extensive area of grazing is in the rangelands (Figure 1), where 3211 businesses graze about 255 million hectares. The estimated 85 623 businesses grazing 81 million hectares outside the rangelands are generally smaller, more intensively managed properties, likely to be fertilising pastures.



Figure 1

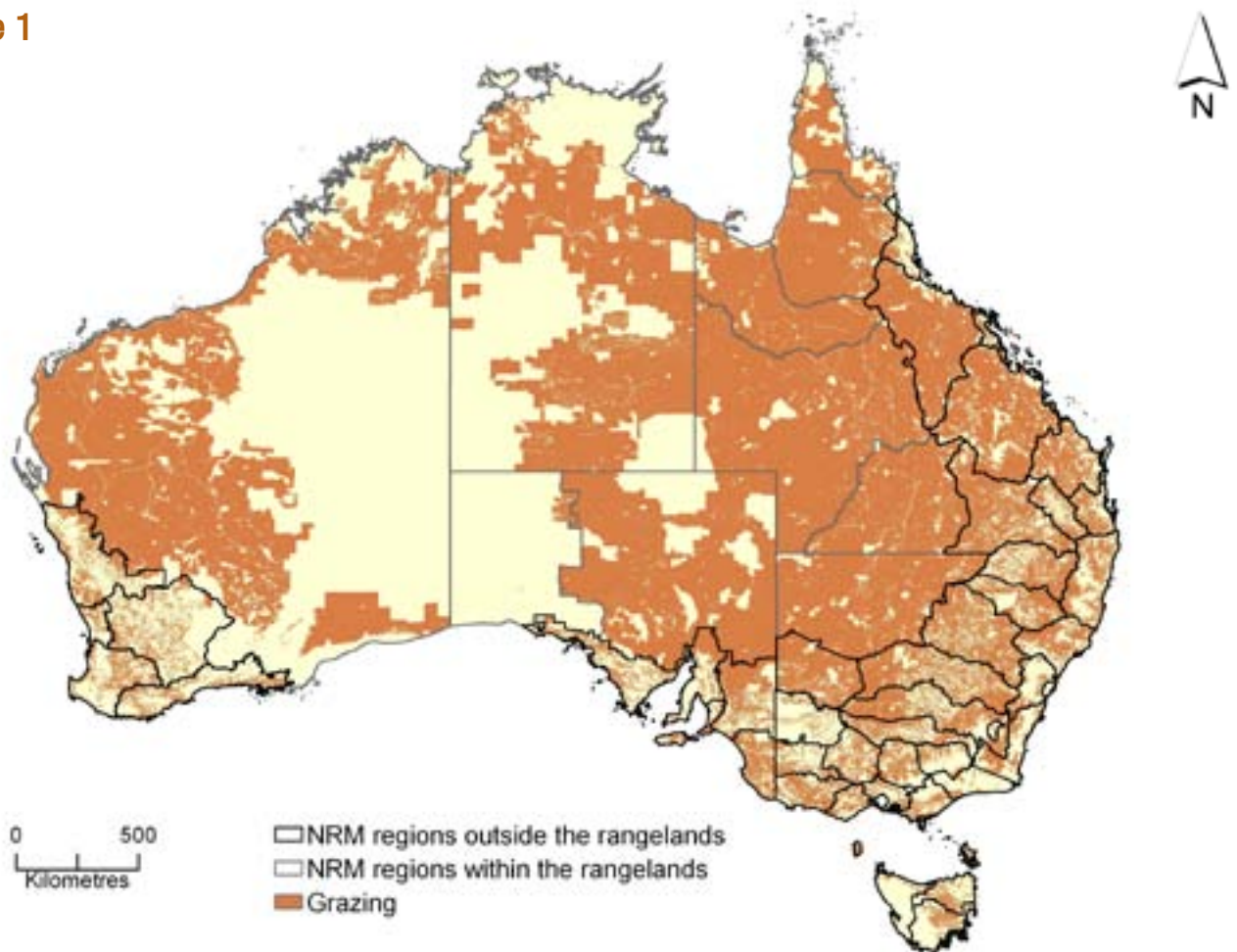


Figure 1. The location of grazing land in Australia in 2005–06 showing NRM regions within and outside the rangelands. Source: ABARE–BRS (2010).

## Land management practices

Project funding provided by Caring for our Country to encourage farmers to better manage ground cover (by monitoring the proportion of the soil covered by plants and using minimum level targets) and on more intensively managed holdings, to test and lime soils regularly,

has complemented the activities of state agencies and some industry and community groups. Data from the 2007–08 and 2009–10 ABS', ARMS and agricultural censuses for 1995–96 and 2000–01 (all agricultural businesses surveyed) help track trends in the adoption of these practices.

## Managing soil acidity

About 21 per cent of Australia's more intensively managed grazing land is thought to have a high risk of soil acidification, 17 per cent a moderate risk and 63 per cent a low risk (Figure 2; Table 1). Very acid soils are unlikely to support good ground cover, increasing the risk of soil loss

through wind and/or water erosion and reducing input to soil carbon. Areas at high risk are where the soil pH is currently low, the soil has a low capacity to buffer against pH decreases, and the dominant (current and/or past) agricultural practices are highly acidifying.

Figure 2

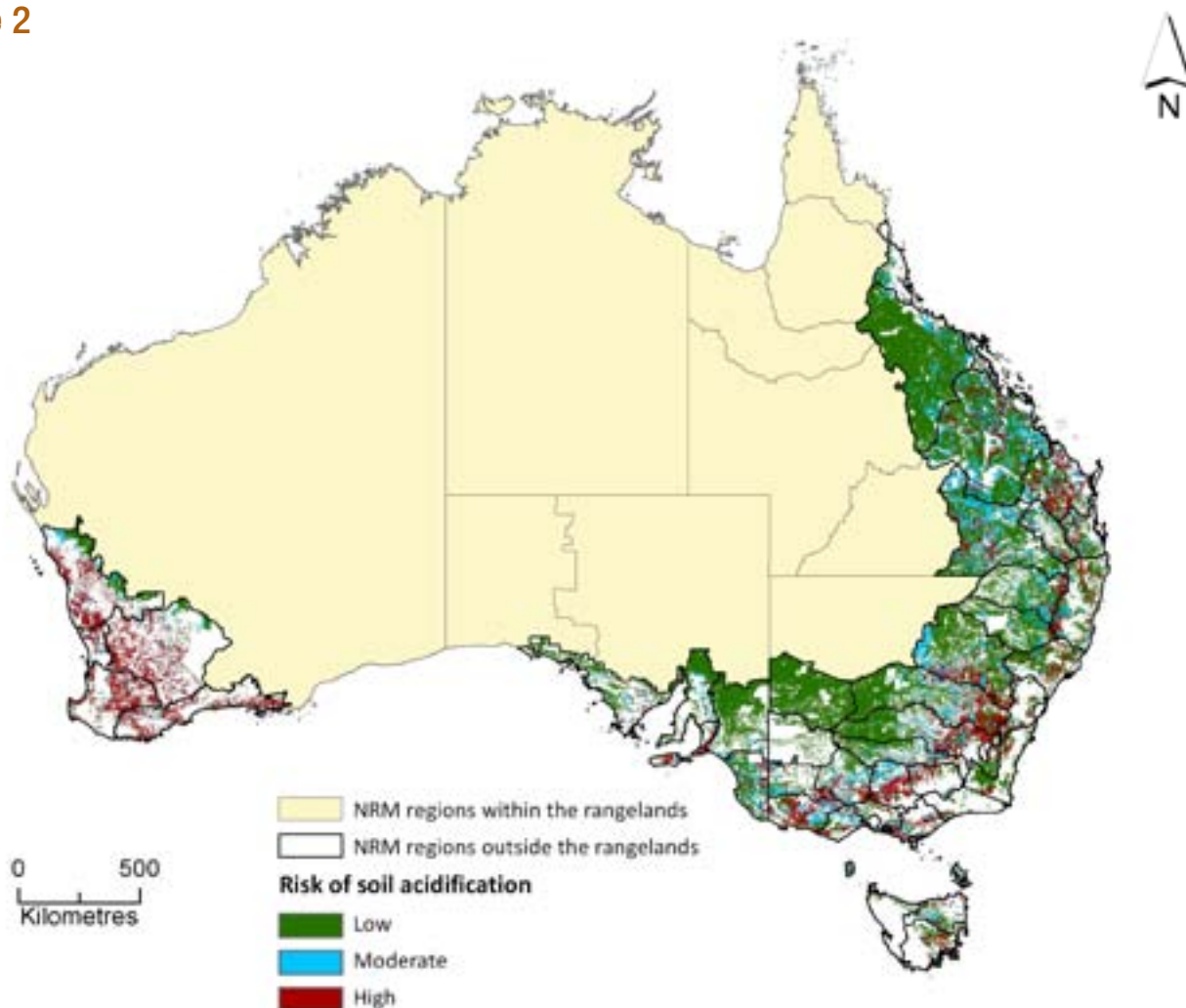


Figure 2. Soil acidification risks for more intensively managed grazing land in NRM regions outside the rangelands. This map and the estimates for Table 1 were produced by intersecting grazing (on native or modified pastures including irrigated land use) from the Land Use of Australia 2005–06 (ABARE–BRS 2010) with the soil acidification risk map (Wilson et al. 2009) and masking to NRM regions outside the rangelands.

Table 1

	Low risk	Moderate risk	High risk
WA	19%	14%	67%
VIC	40%	23%	37%
ACT	64%	7%	29%
TAS	61%	14%	25%
NSW	72%	12%	16%
QLD	67%	21%	12%
SA	78%	13%	9%
NT	na	na	na
<b>Total</b>	<b>63%</b>	<b>17%</b>	<b>21%</b>

Table 1. Estimated percentage of the more intensively managed grazing area (in NRM regions outside the rangelands) at risk of soil acidification. Source: see Figure 2.



For more intensively managed holdings in areas with soils prone to acidification, regular testing of soil pH and applications of lime and/or dolomite can be used to manage acidification. Testing soil nutrient levels to better match fertiliser applications to pasture requirements can also help slow soil acidification.

Between 2007–08 and 2009–10, the percentage of businesses outside the rangelands testing soil pH decreased from 20 per cent to 17 per cent, and the percentage testing soil nutrients decreased from 19 to 16 per cent (Figure 3).

The percentage of businesses outside the rangelands applying lime and/or dolomite to their holdings to manage soil acidity also decreased from 14 to 13 per cent between 2007–08 and 2009–10 (Figure 4). Agricultural census data (not shown) for all businesses irrespective of location indicate that 9 and 12 per cent of businesses grazing beef cattle applied lime and/or dolomite in 1995–96 and 2000–01 respectively. Comparable figures for businesses grazing sheep were 8 and 12 per cent, suggesting that the numbers of grazing businesses liming has not changed greatly over the last 15 years.

**Figure 3**

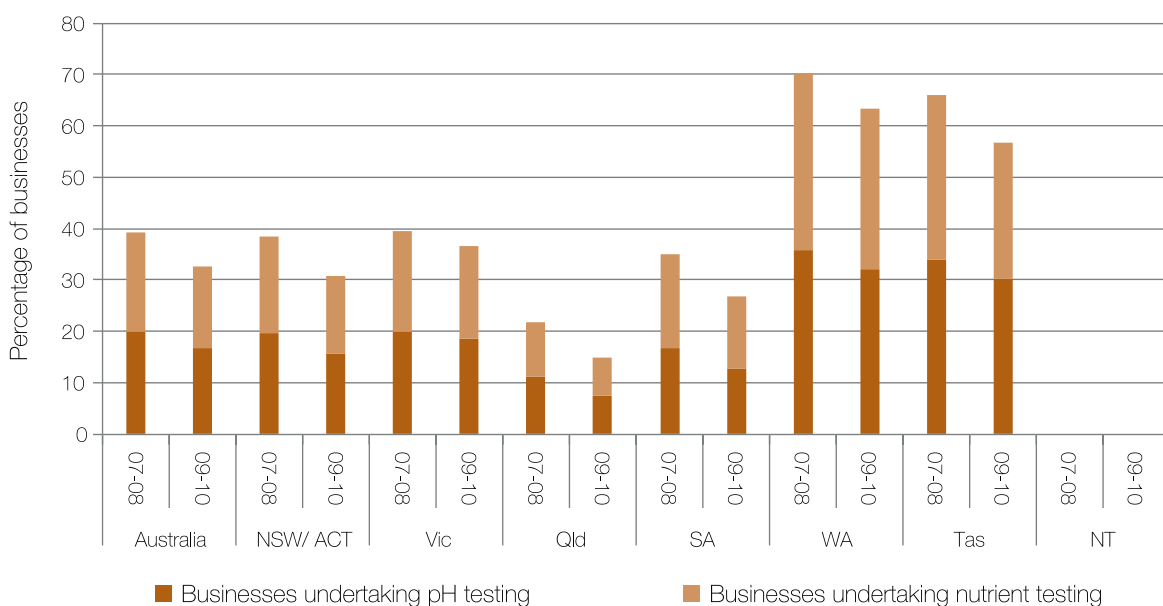


Figure 3. The percentage of grazing (beef cattle/ sheep) businesses outside the rangelands undertaking pH and soil nutrient testing in 2007–08 and 2009–10.

**Figure 4**

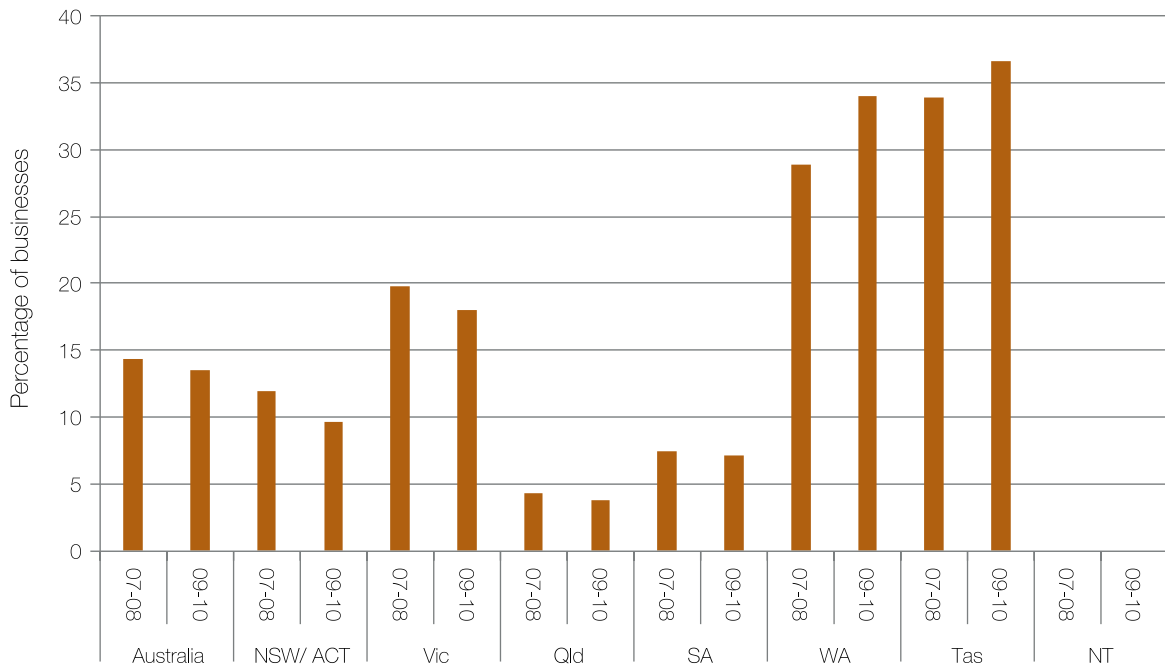


Figure 4. The percentage of grazing (beef cattle/ sheep) businesses outside the rangelands applying lime and dolomite to their holdings in 2007-08 and 2009-10.

**Figure 5**

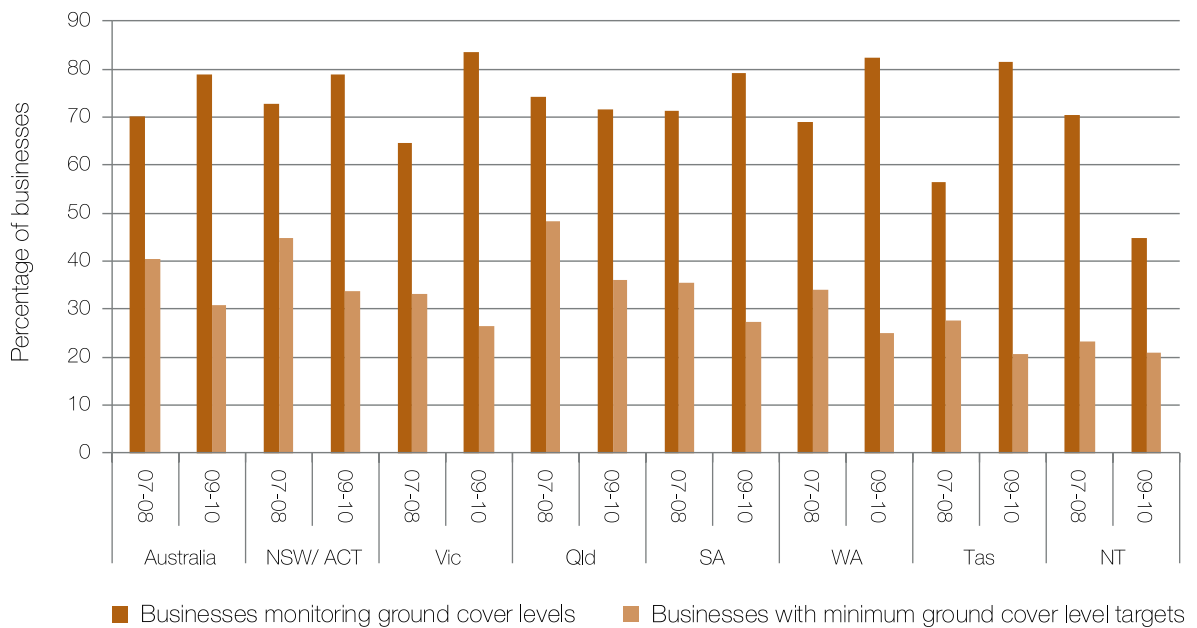


Figure 5. The percentage of grazing (beef cattle/ sheep) businesses monitoring ground cover and with targets for minimum ground cover levels in 2007-08 and 2009-10.

# Maintaining ground cover

Monitoring ground cover levels in paddocks and using ground cover targets (the desired percentage of soil covered by living or dead vegetation) helps protect the soil from increased rates of soil loss through wind and water, while helping to build soil carbon. Maintaining good ground cover levels also improves drought resilience by helping pastures respond quickly to rain.

The proportion of grazing (beef cattle/sheep) businesses both in and outside the rangelands monitoring ground cover levels has increased from 70 per cent in 2007–08 to 79 per cent in 2009–10. The percentage of businesses setting ground cover targets decreased from 40 to 31 per cent in the same period (Figure 5).

## Conclusions

These data suggest that more grazing businesses are monitoring ground cover. Ground cover levels of at least 50–70 per cent (depending on location) are needed to protect the soil surface from wind and water erosion. Further work is needed to encourage grazing businesses to set and manage to ground cover targets appropriate to their location. Given the extensive and insidious nature of soil acidification, there may be a need

to increase regular testing and, where necessary, liming of more intensively managed pastures in some regions.

Information about regional level adoption of land management practices for 2007–08 is available at <http://tinyurl.com/89sggbk> Regional results from the 2009–10 ARMS will be available in 2012.

## References

Australian Bureau of Agricultural and Resource Economics–Bureau of Rural Sciences (2010), *Land use of Australia 2005–06*, Version 4, Department of Agriculture, Fisheries and Forestry, Canberra.

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Wilson, P., Baldock, J., Grundy, M., Jacquier, J., Griffin, T., Moody, P., Chapman, G., Hall, J., Maschmedt, D., Crawford, D., Hill, J., and D. Kidd (2009), *Identification of land with a risk of acidification*, CSIRO Sustainable Agriculture Flagship, report prepared for Caring for our Country.





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