



CARING
FOR
OUR
COUNTRY

Land management practice
trends in New South Wales and
the Australian Capital Territory's
grazing (beef cattle/sheep) industries



Introduction

Grazing (beef cattle/sheep) is an important industry in New South Wales (NSW); meat and wool production by these industries contributed over 40 per cent to the gross value of agricultural production of the state in 2009–10 (ABS 2011a). This estimate includes the Australian Capital Territory (ACT). As there were a small number of agricultural businesses in the ACT, they have been included in the results for the Murrumbidgee Natural Resources Management (NRM) region. The beef cattle/sheep industries in NSW/ACT contributed 9 per cent to the gross value of Australia's agricultural production in 2009–10 (ABS 2011a). The area of grazing land operated by beef cattle/sheep businesses was estimated to be almost 44 million hectares; over 50 per cent of the total area of NSW/ACT (ABS 2011b; 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).

Beef cattle/sheep industry profile

According to ABS estimates, in 2009–10 there were over 31 000 beef cattle/sheep businesses in NSW/ACT, a decrease of about 2 per cent since 2007–08. During this time the area of grazing land reported increased slightly (by less than 1 per cent). In 2009–10 the average age of managers of grazing businesses in NSW/ACT was 57, on average they had managed their holdings for 24 years and farmed in their local region for 31 years. An estimated 21 per cent of grazing businesses (6 728) had a Landcare group member.

The majority of the area grazed in NSW/ACT, (62 per cent or 27.2 million hectares) and most of the beef cattle/sheep businesses (98 per cent or 30 192) were located in NRM regions outside the rangelands boundary (Figure 1). These businesses outside the rangelands were generally more intensively managed properties likely to be fertilising pastures.

Figure 1

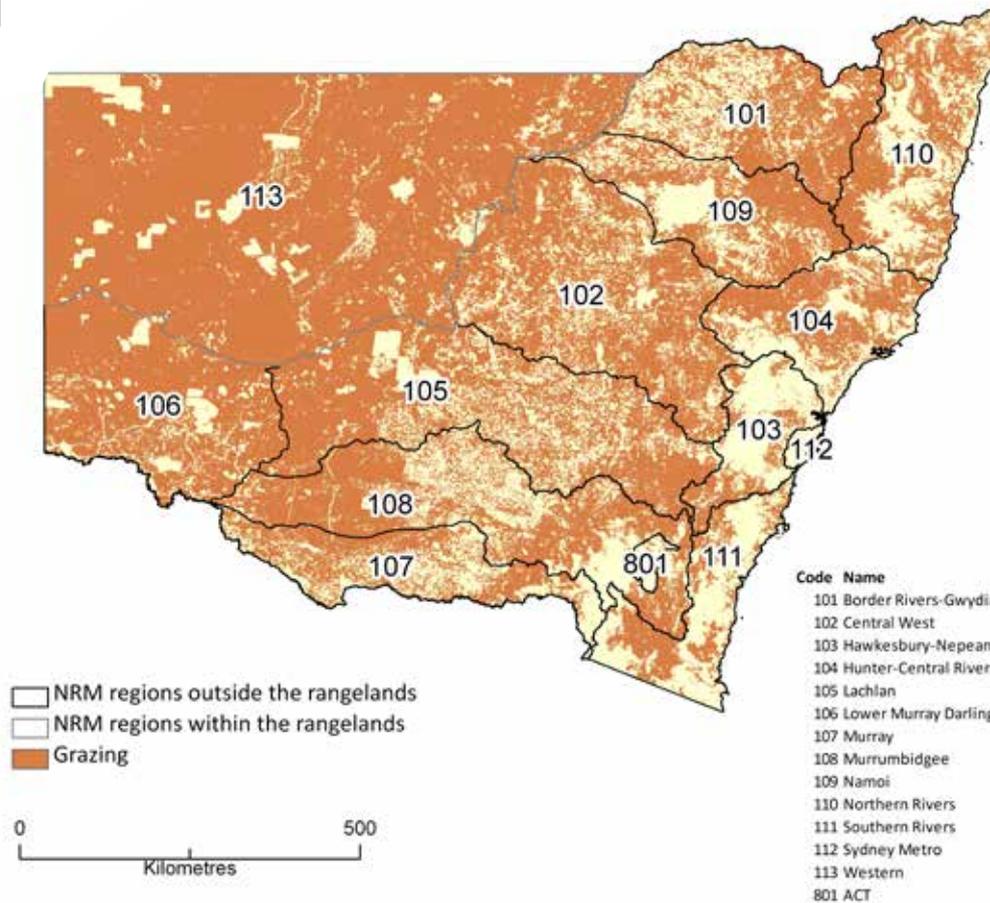


Figure 1. The location of grazing land in NSW/ACT NRM regions in 2005–06 showing NRM regions within and outside the rangelands. Source: ABARE–BRS (2010).

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 establishing minimum targets below which ground cover should not fall), 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. Data were not publishable for some practices in regions where the numbers of beef cattle/sheep businesses were small.

Managing soil acidity

It is estimated that about 50 per cent of Australia’s agricultural land has a surface soil pH less than or equal to 5.5, which is below optimum for extremely acid-sensitive agricultural crops and pastures, and below the optimal level to prevent subsoil acidification (National Land and Water Resources

Audit 2001). Where soil acidity moves further down the soil profile, damage may be irreparable. 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.

Approximately 16 per cent of NSW/ACT's more intensively managed grazing land (i.e. outside the rangelands) is thought to have a high risk of soil acidification and 12 per cent a moderate risk (Figure 2; Table 1). 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.

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 16 per cent, and the percentage testing soil nutrients decreased from 19 to 15 per cent (Figure 3).

Increases in soil pH and soil nutrient testing occurred in the Border Rivers-Gwydir (from 21 to 22 per cent in both cases) and Namoi (pH testing from 13 to 14 per cent and nutrient testing from 14 to 16 per cent) regions. The greatest decreases in soil pH testing (from 35 to 26 per cent) and nutrient testing (from 32 to 24 per cent) occurred in the Murray region.

The percentage of NSW/ACT businesses outside the rangelands applying lime and/or dolomite to their holdings to manage soil acidity also decreased slightly, from 12 to 10 per cent between 2007–08 and 2009–10 (Figure 4). Increases in the number of businesses applying lime or dolomite occurred in the Southern Rivers, Namoi, Border Rivers-Gwydir and Hunter-Central Rivers regions, with the largest increase, from 9 to 13 per cent, in the Hunter-Central Rivers region. The largest decrease (from 19 to 16 per cent) occurred in the Lachlan region (Figure 4). Table 2 shows the rates of lime and dolomite application for NSW/ACT's intensively managed grazing lands for 2007–08.

Figure 2

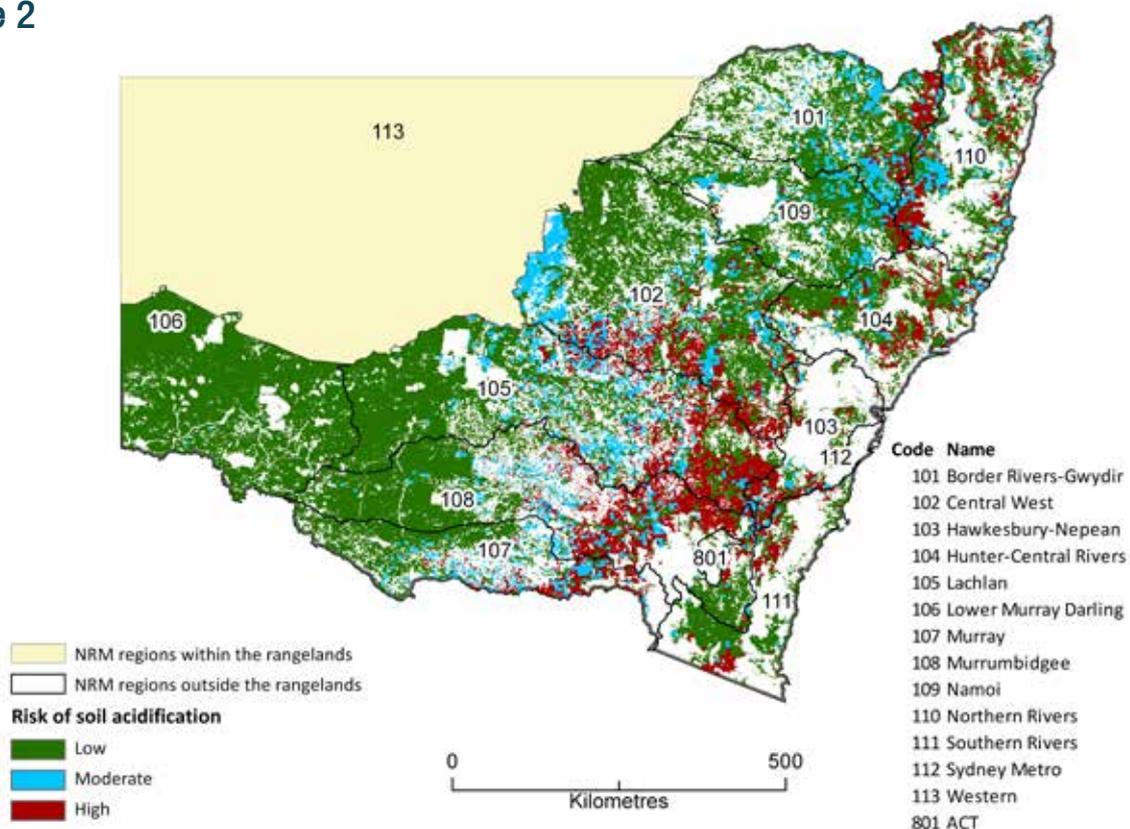


Figure 2. Soil acidification risks for more intensively managed grazing land in NSW/ACT NRM regions outside the rangelands. This map and the estimates for Table 2 were produced by intersecting grazing land (on native or modified pastures including irrigated) from the Land use of Australia 2005–06 (ABARE–BRS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



Table 1

	Low risk	Moderate risk	High risk
Border Rivers-Gwydir	71%	20%	9%
Central West	66%	17%	17%
Hawkesbury-Nepean	48%	10%	41%
Hunter-Central Rivers	67%	9%	25%
Lachlan	67%	14%	19%
Lower Murray Darling	100%	0%	0%
Murray	67%	18%	15%
Murrumbidgee	64%	12%	25%
Namoi	82%	15%	4%
Northern Rivers	56%	17%	27%
Southern Rivers	74%	3%	22%
Sydney Metro	96%	4%	0%
ACT	65%	6%	29%
Total	72%	12%	16%

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

Figure 3

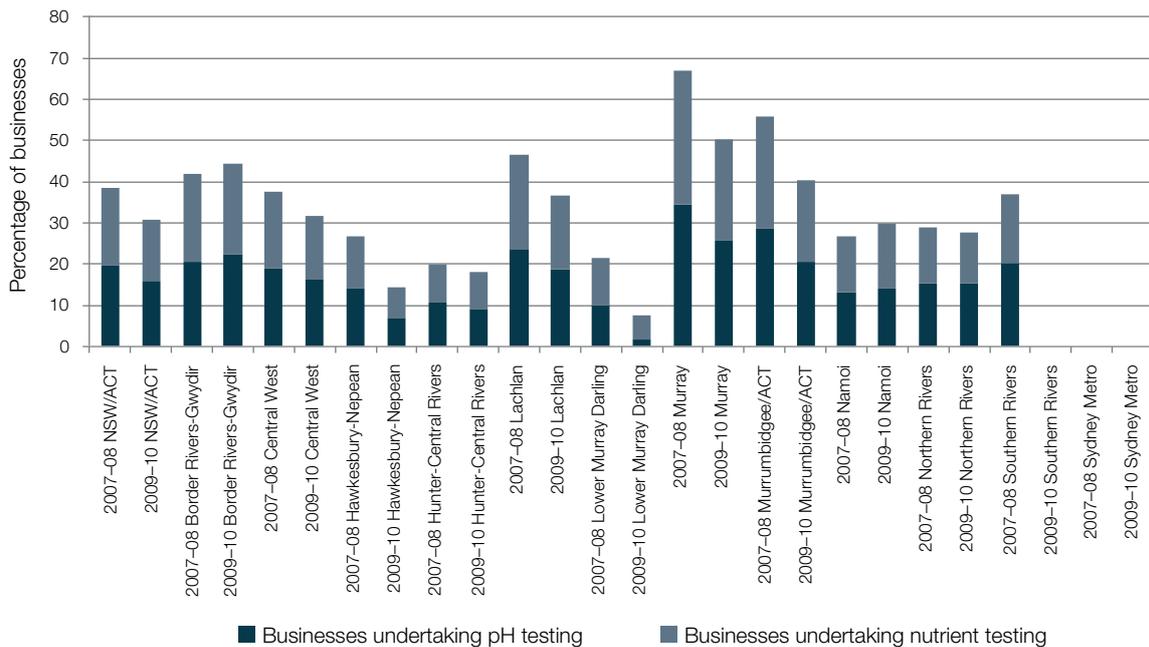


Figure 3. The percentage of beef cattle/sheep businesses outside the rangelands in NSW/ACT undertaking pH and soil nutrient testing in 2007-08 and 2009-10. Results for Southern Rivers (2009-10) and Sydney Metro were not publishable.



Table 2

	Tonnes (t) of lime applied	Lime application rate (t/ha)	Tonnes (t) of dolomite applied	Dolomite application rate (t/ha)
NSW	354 832	1.54	10 827	0.95
Border Rivers-Gwydir	3 959	0.68	0	0
Central West	60 026	1.74	1 907	2.08
Hawkesbury-Nepean	10 705	1.24	688	1.55
Hunter-Central Rivers	np	n/a	np	n/a
Lachlan	69 639	1.71	1 003	1.80
Lower Murray Darling	0	0	0	0
Murray	67 377	1.45	2 422	0.58
Murrumbidgee and ACT	np	n/a	np	n/a
Namoi	np	n/a	np	n/a
Northern Rivers	35 918	1.35	3 480	1.04
Southern Rivers	5 873	1.75	543	1.18
Sydney Metro	np	n/a	0	0

Table 2. Rates of lime and dolomite application for NSW/ACT intensively managed grazing lands for 2007–08.

Figure 4

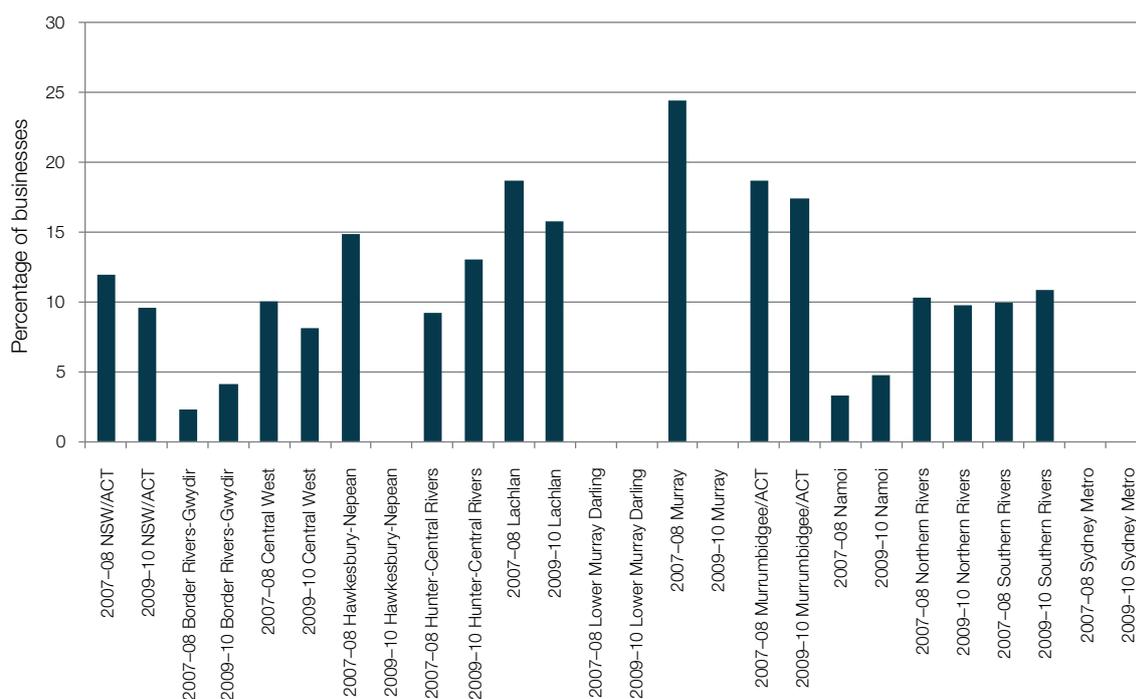


Figure 4. The percentage of beef cattle/sheep businesses outside the rangelands in NSW/ACT applying lime and dolomite to their holdings in 2007–08 and 2009–10. Results for Hawkesbury-Nepean (2009–10) and Sydney Metro regions were not publishable.

Figure 5

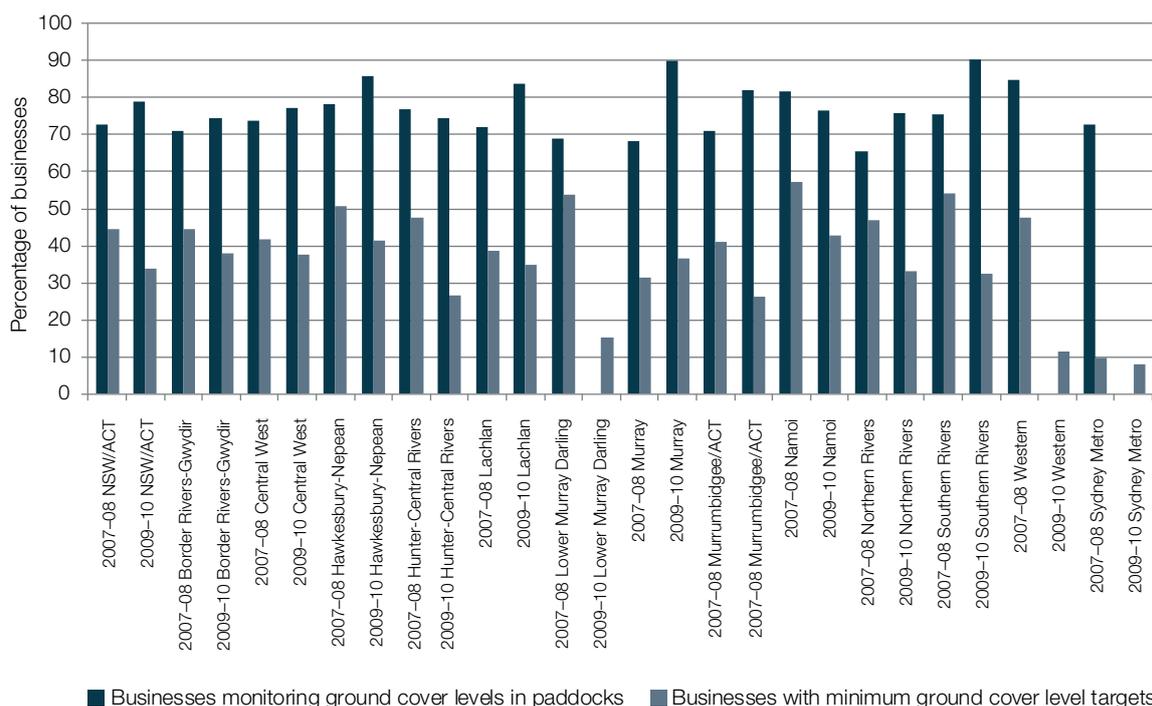


Figure 5. The percentage of beef cattle/sheep businesses monitoring ground cover and with targets for minimum ground cover levels in 2007–08 and 2009–10. Results for the number of businesses monitoring ground cover levels in paddocks in 2009–10 were not publishable for Lower Murray Darling, Western and Sydney Metro regions.

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 soil loss through wind and water erosion, whilst helping to build soil carbon. Maintaining good ground cover also improves drought resilience by ensuring pastures can respond quickly to rain.

The proportion of grazing (beef cattle/sheep) businesses both in and outside the rangelands monitoring ground

cover levels increased from 73 per cent in 2007–08 to 79 per cent in 2009–10. Increases occurred in 8 of the 13 regions, with the greatest increase (from 68 to 90 per cent) in the Murray region (Figure 5). The percentage of businesses setting ground cover targets decreased from 45 to 34 per cent in the same period. This decrease was reported for all regions except the Murray, where there was an increase from 31 to 37 per cent (Figure 5).

Conclusions

These data suggest that more beef cattle/sheep 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. The reduction in the percentage of businesses reporting setting ground cover targets may have been due to changes in the survey 2009–10 question; respondents may have had difficulty providing the additional information requested. Further work is needed to encourage grazing businesses in most NRM regions to set

and manage to ground cover targets appropriate to their location.

Given the extensive and insidious nature of soil acidification, with almost one third of all land grazed outside the rangelands in NSW/ACT at moderate to high risk of acidification, there may be a need to increase regular testing and, where necessary, liming of more intensively managed pastures in some regions, especially in the Central West, Lachlan and Murrumbidgee regions.

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