



CARING  
FOR  
OUR  
COUNTRY

Land management practice  
trends in New South Wales and  
the Australian Capital Territory's  
dairy industry



## Introduction

Dairy farming is an important industry in New South Wales (NSW) contributing over \$500 million to the gross value of agricultural production in the state in 2009–10 (ABS 2011). This estimate for NSW includes the very small number of dairy businesses in the Australian Capital Territory (ACT) which have been included in the results for the Murrumbidgee Natural Resources Management (NRM) region. The dairy industry in NSW/ACT contributed 1.3 per cent to the gross value of Australia's agricultural production in 2009–10 (ABS 2011).

The area of grazing land operated by dairy businesses in NSW/ACT is estimated by the ABS at almost 1.6 million hectares. The major locations of dairy businesses are shown in 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 farm 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 region levels (ABS 2009). The numbers reported are estimated from a sample of almost one quarter of all agricultural businesses, so the results are subject to sampling error. This is most pronounced for questions with lower response rates, more likely in smaller industries such as the dairy industry. Data were not publishable for some practices in regions where the numbers of dairy businesses were small.

## Dairy industry profile

According to ABS estimates, in 2009–10 there were 2181 dairy businesses in NSW/ACT which reported 1 583 413 hectares of grazing land. The average age of managers of dairy businesses was 56; on average

they had managed their holdings for 24 years and farmed in their local region for 31 years. An estimated 18 per cent of dairy businesses (398) had a Landcare group member.

Figure 1

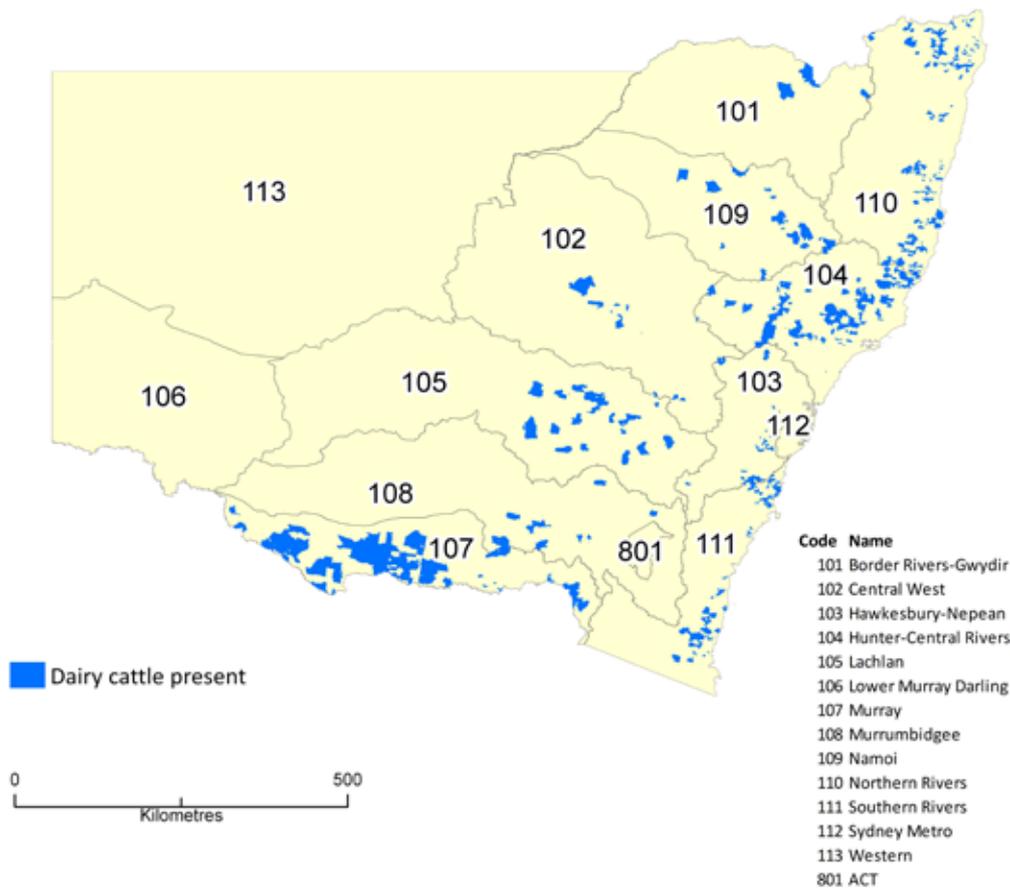


Figure 1. Indicative distribution of dairy businesses in NSW/ACT. Source data: 2005–06 Agricultural Census, Australian Bureau of Statistics (mesh blocks containing dairy farms).

## Land management practices

Project funding has been available from Caring for our Country to encourage dairy farmers to better manage ground cover (by monitoring the proportion of soil covered by plants and using minimum level targets) and to test and lime soils regularly where needed. This funding has complemented the

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

### Managing soil acidity

Approximately 16 per cent of NSW/ACT's more intensively managed grazing land is thought to have a high risk of soil acidification, and 12 per cent a moderate risk (Figure 2, Table 1). This includes some of the land used for dairying. 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.

For dairy pastures 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.

The number of dairy businesses across NSW/ACT undertaking pH testing declined (from 27 to 17 per cent) between 2007–08 and 2009–10, as did the number of dairy businesses undertaking nutrient

Figure 2

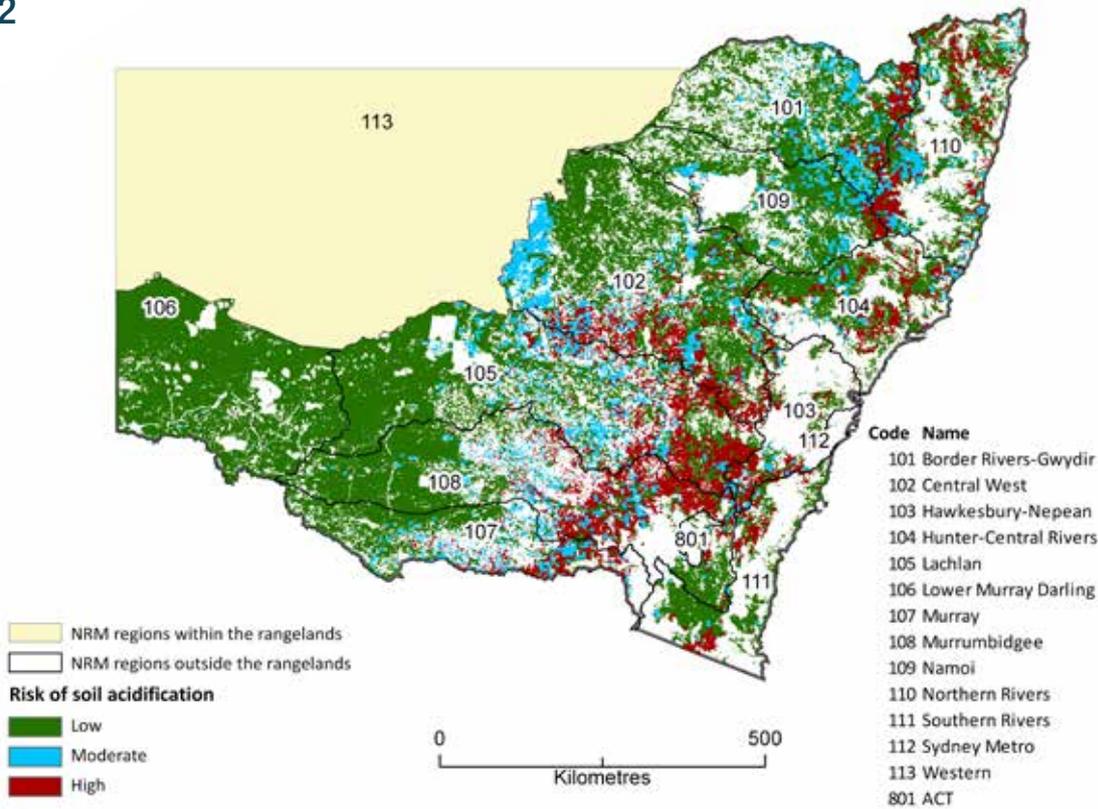


Figure 2. Soil acidification risks for more intensively managed grazing land in NSW/ACT natural resource management (NRM) regions outside the rangelands. This map and the estimates for Table 1 were produced by intersecting grazing land (on native or modified pastures including irrigated) from the Land 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.

Figure 3

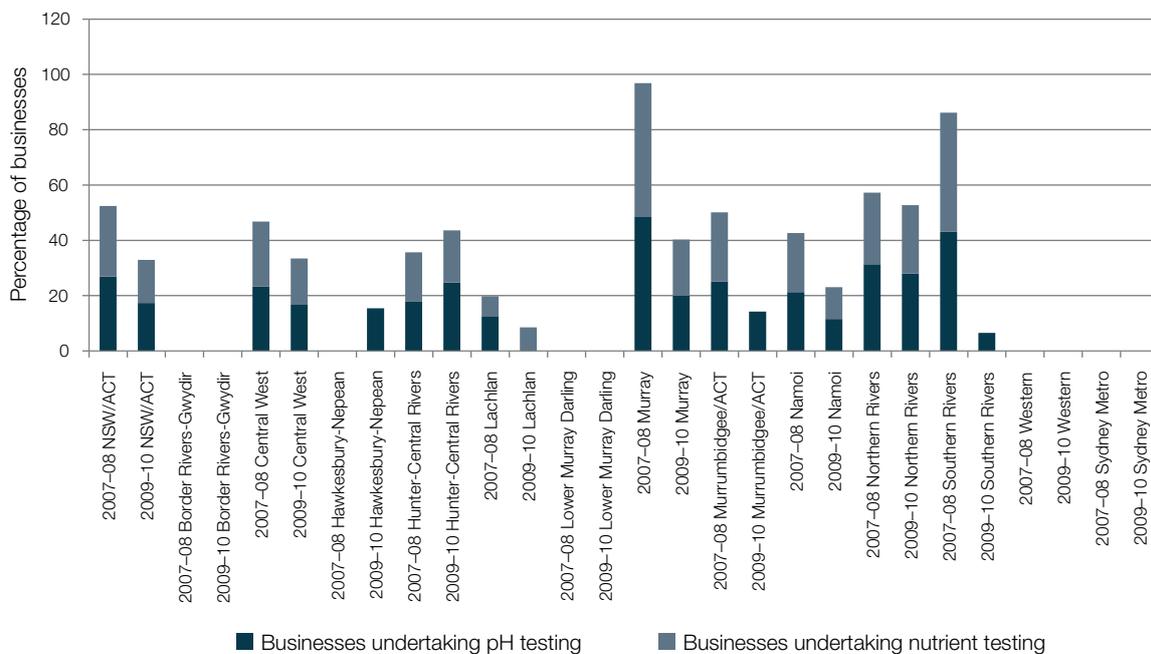


Figure 3. The percentage of dairy businesses in NSW/ACT undertaking pH and soil nutrient testing in 2007–08 and 2009–10. Results for pH testing were not publishable for Hawkesbury-Nepean (2007–08), Lachlan (2009–10), Western (2009–10) and Sydney Metro (2007–08) regions. Results for nutrient testing were not publishable for Border Rivers-Gwydir (2007–08), Hawkesbury-Nepean, Murrumbidgee/ACT (2009–10), Southern Rivers (2009–10), Western (2009–10) and Sydney Metro (2007–08) regions.

testing (from 25 to 16 per cent; Figure 3). The number of dairy businesses testing soil pH increased in the Hunter-Central Rivers region (from 18 to 25 per cent) and the number testing soil nutrients also increased slightly in the Hunter-Central Rivers region (from 18 to 19 per cent) as well as in the Lachlan region (7 per cent to 9 per cent; Figure 3). The biggest decrease in the number of dairy businesses testing soil pH occurred in the Southern Rivers region (from 43 to 7 per cent); the greatest decrease in nutrient testing occurred in the Murray region (48 to 20 per cent; Figure 3).

The percentage of dairy businesses applying lime or dolomite to manage soil acidity increased in NSW/ACT

from 13 to 20 per cent between 2007–08 and 2009–10 (Figure 4). Large increases occurred in the Central West (from 0 to 23 per cent) and Hunter-Central Rivers (from 9 to 31 per cent) regions, and a smaller increase (from 16 to 22 per cent) in the Northern Rivers region (Figure 4). Longer term data for dairy businesses in NSW show that an estimated 16 per cent applied lime or dolomite in 1995–96 and 2000–01; this decreased to 12 per cent in 2009–10 (Figure 5). Table 2 shows the rates of lime application for NSW/ACT dairy businesses in 2007–08.

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

The percentage of dairy businesses monitoring ground cover levels in paddocks increased from 71 per cent in 2007–08 to 75 per cent in 2009–10; the percentage setting ground cover targets has

decreased from 41 per cent to 35 per cent in the same period (Figure 6). The percentage of dairy businesses monitoring ground cover in paddocks increased in the Hawkesbury-Nepean, Murray, Northern Rivers and Southern Rivers regions, with the greatest increase (from 52 to 96 per cent) in the Hawkesbury-Nepean region (Figure 6). The greatest decrease in the percentage of dairy businesses monitoring ground cover levels (from 80 to 41 per cent) was seen in the Lachlan region, although there was an increase (from 17 to 24 per cent) in the percentage of businesses setting ground cover targets in this region (Figure 6).

**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%
<b>Total</b>	<b>72%</b>	<b>12%</b>	<b>16%</b>

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

**Figure 4**

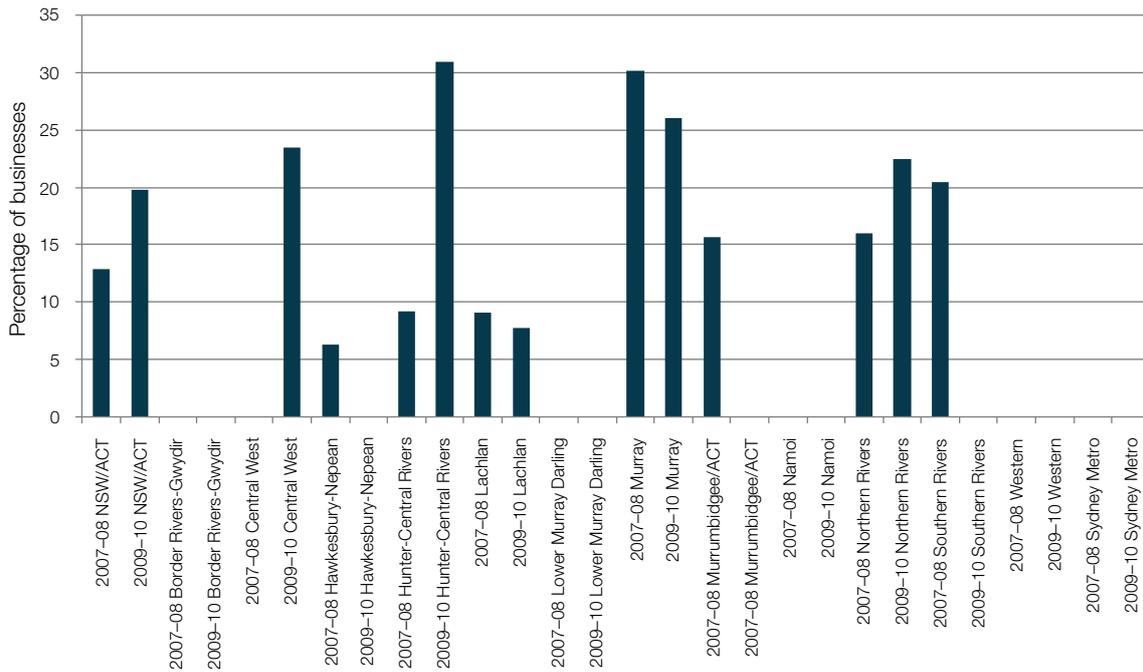


Figure 4. The percentage of dairy businesses in NSW/ACT applying lime and dolomite to their holdings in 2007-08 and 2009-10. Results for the number of businesses applying lime and dolomite were not publishable for Hawkesbury-Napean (2009-10), Lower Murray Darling (2009-10), Murrumbidgee/ACT (2009-10), Namoi and Southern Rivers.

**Figure 5**

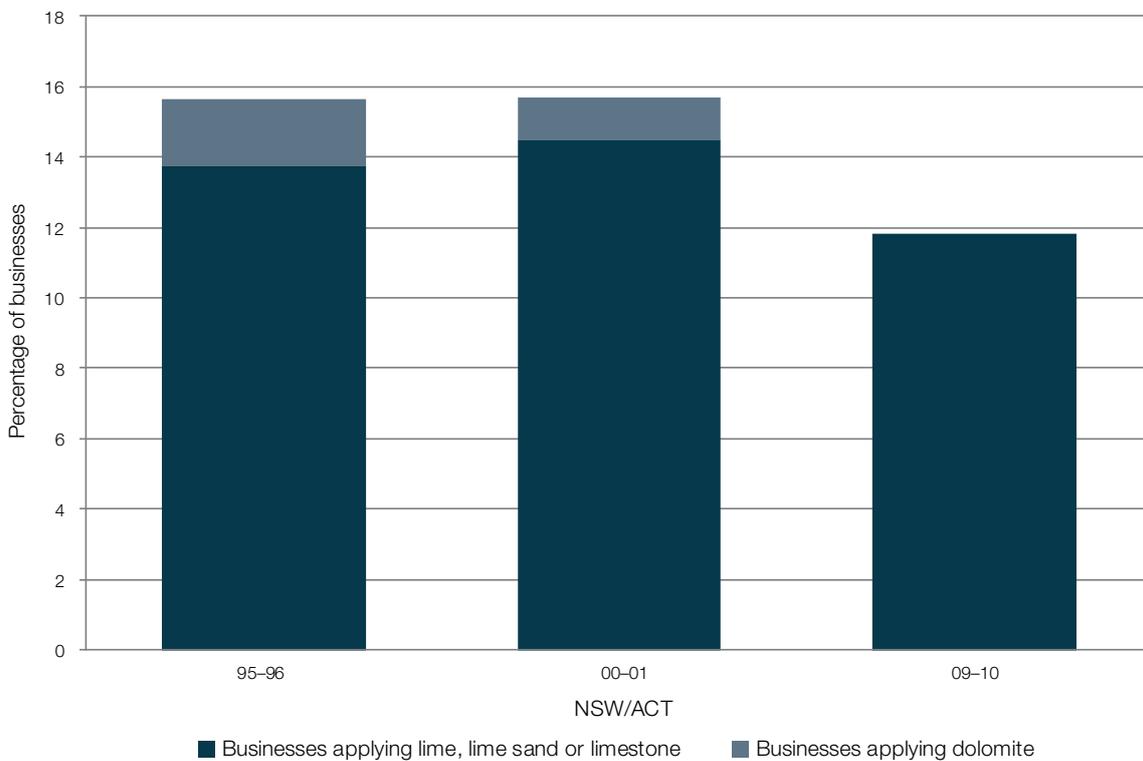


Figure 5. The percentage of dairy businesses in NSW/ACT applying lime and dolomite to their holdings in 1995-96, 2000-01 and 2009-10.

**Figure 6**

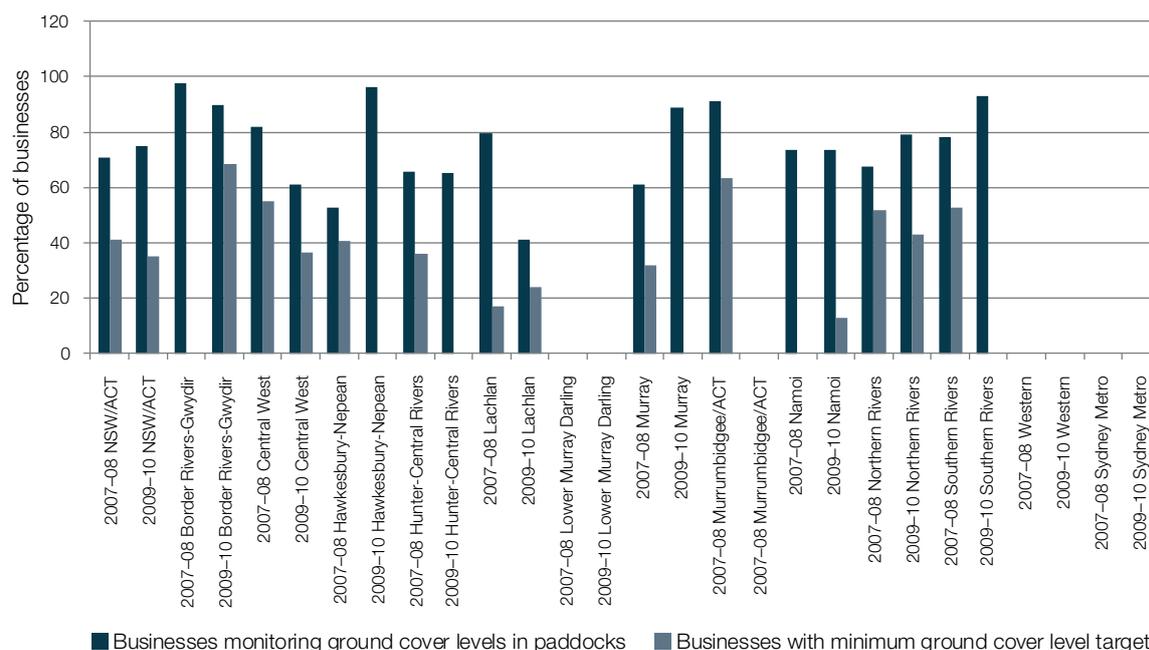


Figure 6. The percentage of dairy businesses in NSW/ACT monitoring ground cover in paddocks and with targets for minimum ground cover levels in 2007-08 and 2009-10. Results for the number of businesses with minimum ground cover levels were not publishable for Border Rivers-Gwydir (2007-08), Hawkesbury-Nepean (2009-10), Hunter-Central Rivers(2009-10), Lower Murray Darling (2009-10), Murray (2009-10), Murrumbidgee/ACT (2009-10), Namoi (2007-08), Southern Rivers (2009-10), Western and Sydney Metro (2007-08) regions. Results for the number of businesses monitoring ground cover levels in paddocks were not publishable for Murrumbidgee/ACT (2009-10), Western and Sydney Metro (2007-08) regions.

**Table 2**

	Tonnes (t) of lime and/or dolomite applied	Lime and/or dolomite application rate (t/ha)
NSW	29 025	0.90
Central West	0	0
Hawkesbury-Nepean	np	n/a
Hunter-Central Rivers	1 878	1.59
Lachlan	1 408	1.13
Lower Murray Darling	0	0
Murray	15 817	1.69
Murrumbidgee and ACT	1 546	1.33
Namoi	np	n/a
Northern Rivers	6 232	1.48
Southern Rivers	3 690	1.79
Western	0	0

Table 2. Rates of lime application for NSW/ACT dairy businesses in 2007-08.

## Conclusions

These data suggest that more dairy 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 dairy businesses to set and manage to groundcover targets appropriate to their location.

Additionally, given the extensive and insidious nature of soil acidification, with almost one third of all grazing land in NSW/ACT at moderate to high risk of acidification, there may be a need to increase regular testing and, where necessary, liming of dairy pastures in some regions.

# References

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