Land management practice trends in Australia’s dairy industry
Introduction

Dairy farming is an important Australian industry which contributed almost 10 per cent to the gross value of agricultural production in 2009–10 (Australian Bureau of Statistics (ABS) 2011). The area of grazing land owned by dairy businesses is estimated by the ABS at almost 4 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 (NRM) 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.

Dairy industry profile

According to ABS estimates, in 2009–10 there were 10 048 dairy businesses (farmers) in Australia which reported 3 950 862 hectares of grazing land. The average age of managers of dairy businesses was 54; on average they had managed their holdings for 24 years and farmed in their local region for 30 years. An estimated 23 per cent of dairy businesses (2266) had a Landcare group member.

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.
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Managing soil acidity

About 21 per cent of Australia’s more intensively managed grazing land (including dairy pastures) 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.

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 Australia undertaking pH testing declined slightly (from 29 to 25 per cent) between 2007–08 and 2009–10, as did the number of dairy businesses undertaking nutrient testing (from 27 to 24 per cent); (Figure 3). The percentage of dairy businesses applying lime or dolomite to manage soil acidity increased by 4 per cent from 1995–96 to 2000–01, declining slightly to 19 per cent in 2009–10 (Figure 4).

Figure 2

![Soil acidification risks for more intensively managed grazing land](image)

Figure 2. Soil acidification risks for more intensively managed grazing land in natural resource management (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) 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

<table>
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<th>State</th>
<th>Low risk</th>
<th>Moderate risk</th>
<th>High risk</th>
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<tbody>
<tr>
<td>WA</td>
<td>19%</td>
<td>14%</td>
<td>67%</td>
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<tr>
<td>VIC</td>
<td>40%</td>
<td>23%</td>
<td>37%</td>
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<tr>
<td>ACT</td>
<td>64%</td>
<td>7%</td>
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<td>TAS</td>
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<tr>
<td>Total</td>
<td>63%</td>
<td>17%</td>
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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.

Figure 3

![Percentage of businesses undertaking pH and nutrient testing](image)

Figure 3. The percentage of dairy businesses undertaking pH and soil nutrient testing in 2007–08 and 2009–10.
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**Figure 2**

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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 percentage of dairy businesses monitoring ground cover levels in paddocks has increased from 72 percent in 2007–08 to 88 per cent in 2009–10; the percentage setting ground cover targets has decreased from 38 percent to 27 percent in the same period (Figure 5).

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 managing to groundcover targets appropriate to their location. Additionally, given the extensive and insidious nature of soil 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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