



CARING  
FOR  
OUR  
COUNTRY

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



## Introduction

Horticulture is an important industry in New South Wales (NSW) which contributed almost 16 per cent to the gross value of agricultural production in the state in 2009–10 (ABS 2011). This estimate includes the very small number of horticulture businesses in the Australian Capital Territory (ACT); which have been included in the results for the Murrumbidgee Natural Resource Management (NRM) region. The horticulture industry in NSW/ACT contributed 3 per cent to the gross value of Australia's agricultural production in 2009–10 (ABS 2011). The Australian Bureau of Statistics (ABS) estimated that the area of horticulture in NSW/ACT in 2009–10 was over 1 580 000 hectares. Figure 1 shows the location of horticulture in NSW/ACT.

Improving soil condition is important for 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 sheep meat/beef 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 monitored using the biennial 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 were 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, which may be more likely in smaller industries such as horticulture. Data were not publishable for some practices in regions where the numbers of horticulture businesses were small.

## Horticulture industry profile

According to ABS estimates, in 2009–10 there were 6067 horticultural businesses in NSW/ACT, a decrease of just over 2 per cent since 2007–08. In 2009–10 the average age of NSW/ACT managers of horticultural

businesses was 55; on average they had managed their holdings for 20 years and farmed in their local region for 24 years. An estimated 8 per cent of horticultural businesses (512) had a Landcare group member.

Figure 1

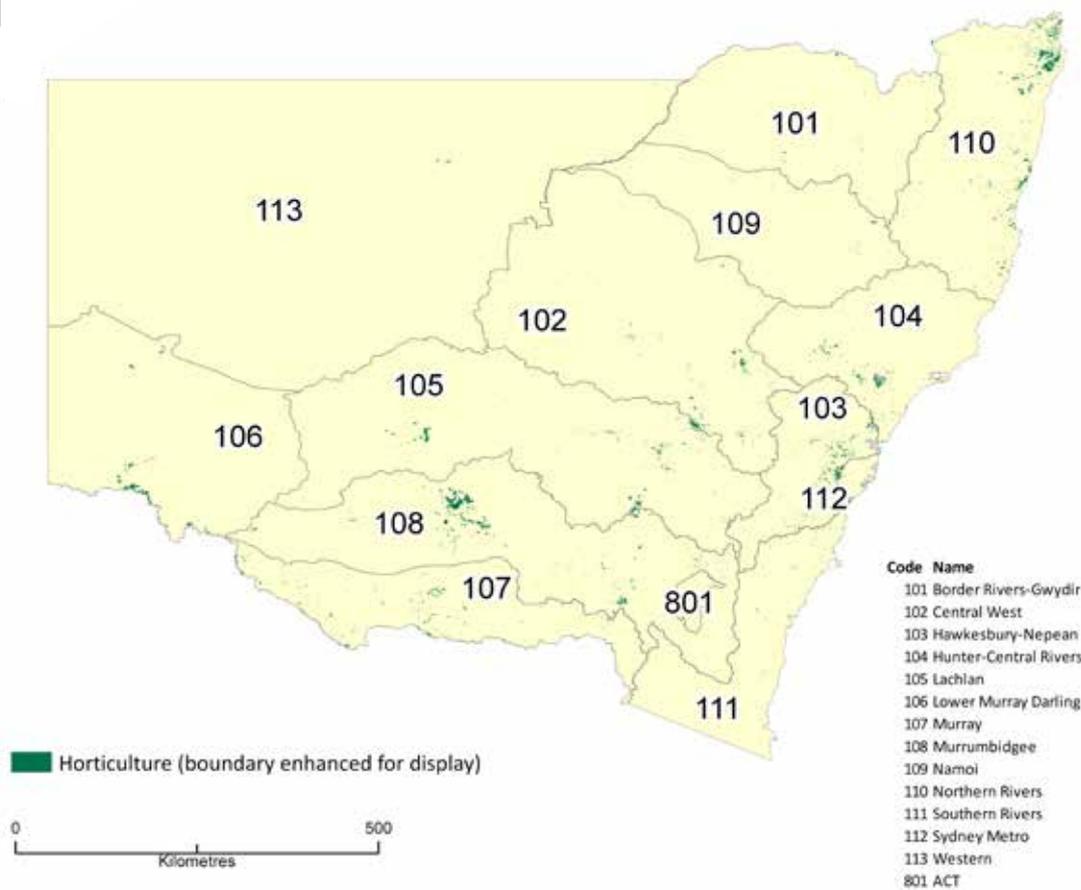


Figure 1. The location of horticulture in NSW/ACT NRM regions (note boundaries have been greatly enhanced for display). Source: Catchment scale land use map of Australia, as at March 2010, Australian Collaborative Land Use and Management Program.

## Land management practices

Project funding provided by Caring for our Country to encourage farmers to better manage ground cover and to test and lime soils regularly where needed, has complemented the activities of state agencies, industry and community groups. Data from the ABS' 2007–08 and 2009–10 ARMS and the 1995–96 and 2000–01 agricultural censuses (which surveyed

all agricultural businesses) help track trends in the adoption of these practices. Note that the percentage of farmers reporting the use of particular practices can exceed 100 where more than one method (e.g. matting used to protect ground cover in some areas, cover crops in others) is used on a holding.

## Managing soil acidity

It is estimated that approximately 50 per cent of agricultural land has a surface soil pH less than or equal to 5.5, which is below optimum for very acid sensitive agricultural crops, 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 also 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.

Regular testing of soil pH and applications of lime and/or dolomite can be used to manage acidification risk.

**Figure 2**

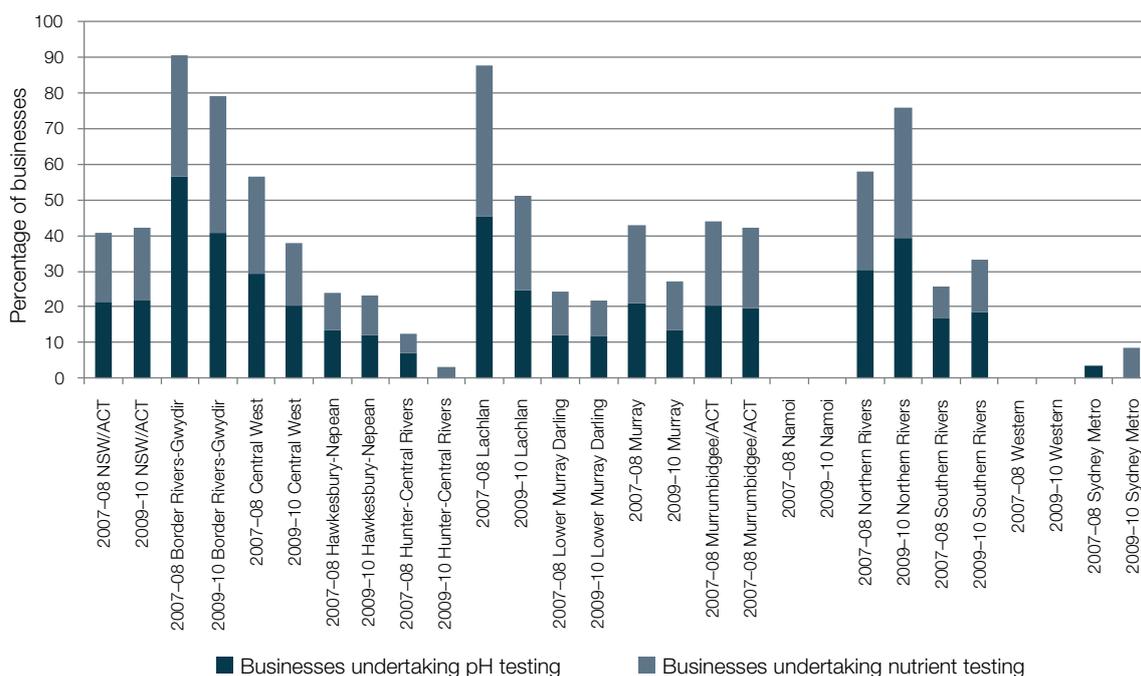


Figure 2. The percentage of horticultural businesses in NSW/ACT NRM regions undertaking pH and nutrient soil testing in 2007-08 and 2009-10. Results for the number of businesses testing soil pH were not publishable for Hunter-Central Rivers (2009-10), Namoi, Western and Sydney Metro (2009-10) regions. Results for the number of businesses testing soil nutrients were not publishable for Namoi, Western and Sydney Metro (2007-08) regions.

**Figure 3**

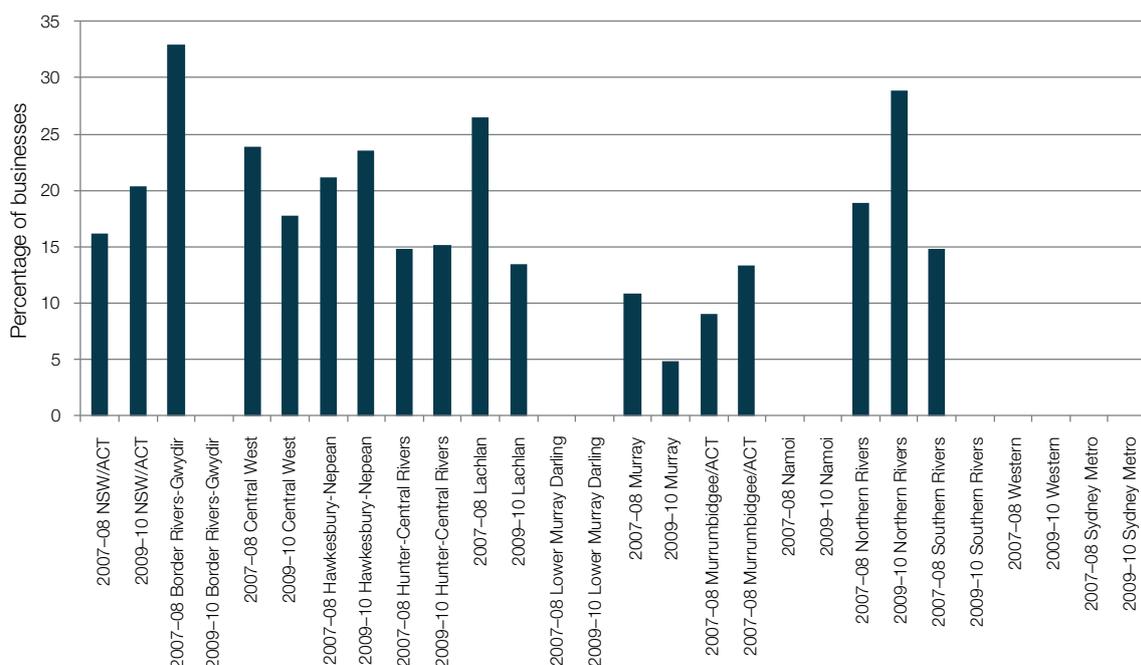


Figure 3. The percentage of horticultural businesses in NSW/ACT NRM regions applying lime or dolomite to their holdings in 2007-08 and 2009-10. Results were not publishable for Border Rivers-Gwydir (2009-10), Namoi, Southern Rivers (2009-10) and Sydney Metro regions.



Testing soil nutrient levels to better match fertiliser applications to crop requirements can also help slow soil acidification. There was a slight increase (from 21 to 22 per cent) in the percentage of NSW/ACT horticultural businesses undertaking pH testing between 2007–08 and 2009–10. Increases occurred in the Northern Rivers (from 30 to 39 per cent) and Southern Rivers (from 17 to 19 per cent) regions. The largest decrease in pH testing occurred in the Lachlan region (from 45 to 25 per cent; Figure 2). The percentage of NSW/ACT horticultural businesses undertaking nutrient testing also increased slightly (from 19 to 20 per cent). Increases were reported for the Border Rivers-Gwydir, Hawkesbury-Nepean, Northern Rivers and Southern Rivers regions, with the largest increase (from 28 to 36 per cent) in the Northern Rivers region (Figure 2).

The percentage of horticultural businesses applying lime and dolomite to their holdings to manage soil acidity has increased from 16 to 20 per cent between 2007–08 and 2009–10. Increases were reported in the Hawkesbury-Nepean, Hunter-Central Rivers, Murrumbidgee/ACT and Northern Rivers regions, with the largest increase (from 19 to 29 per cent) occurring in the Northern Rivers region (Figure 3). The largest decrease (from 26 to 13 per cent) occurred in the Lachlan region (Figure 3). Longer term ABS data show that overall, the percentage of horticultural businesses in NSW/ACT applying lime or dolomite to their holdings to manage soil acidity has declined slightly from 1995–96 to 2009–10 (Figure 4). Table 1 shows the rates of lime and dolomite application for NSW/ACT horticultural businesses in 2007–08.

**Table 1**

	Tonnes (t) of lime applied	Lime application rate (t/ha)	Tonnes (t) of dolomite applied	Dolomite application rate (t/ha)
NSW	27 992	1.31	4 112	1.20
Border Rivers-Gwydir	418	0.34	0	0
Central West	9 017	1.92	np	n/a
Hawkesbury-Nepean	1 677	1.27	1 299	1.32
Hunter-Central Rivers	2 466	1.91	504	0.98
Lachlan	3 990	1.69	0	0
Lower Murray Darling	0	0	0	0
Murray	3 802	0.68	0	0
Murrumbidgee and ACT	0	0	0	0
Namoi	np	n/a	0	0
Northern Rivers	6 172	1.31	2 309	1.20
Southern Rivers	449	2.44	np	n/a
Sydney Metro	np	n/a	np	n/a
Western	0	0	0	0

Table 1. Rates of lime and dolomite application by NSW/ACT horticulture businesses on their holdings in 2007/08.

**Figure 4**

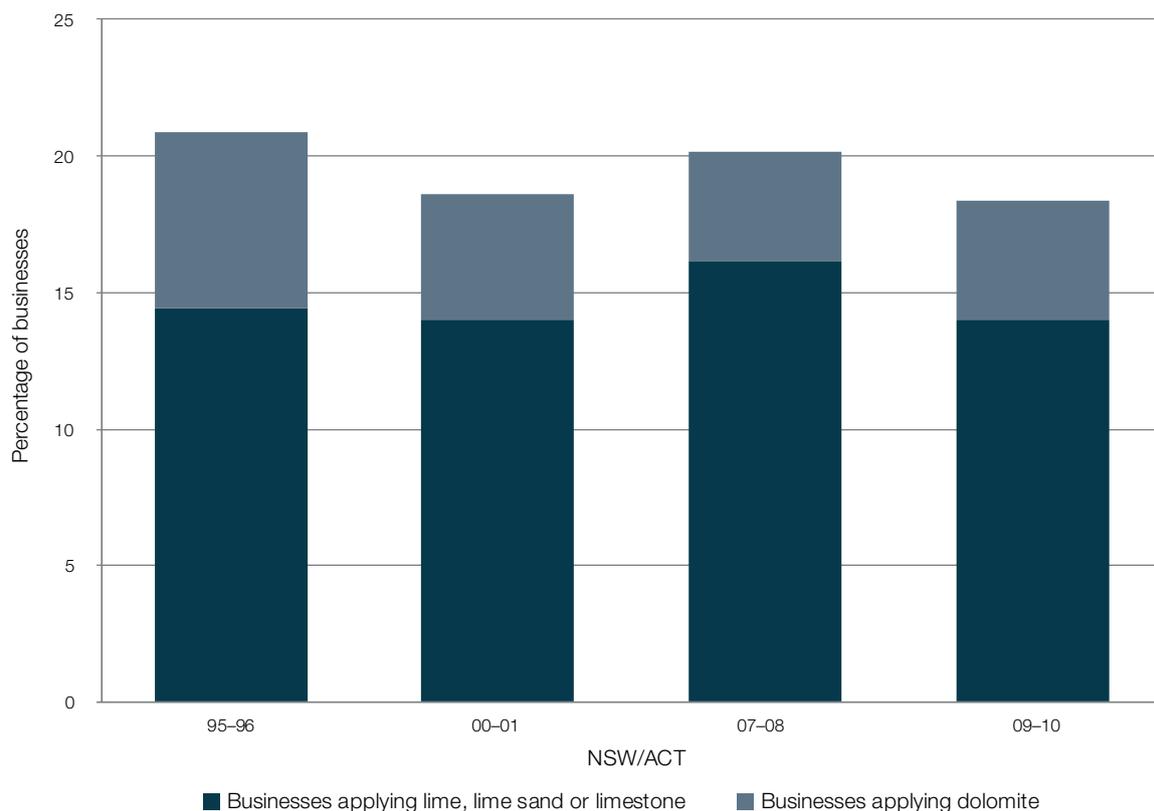


Figure 4. The percentage of horticultural businesses in NSW/ACT NRM regions applying lime or dolomite to their holdings in 1995-96, 2000-01, 2007-08 and 2009-10.

**Figure 5**

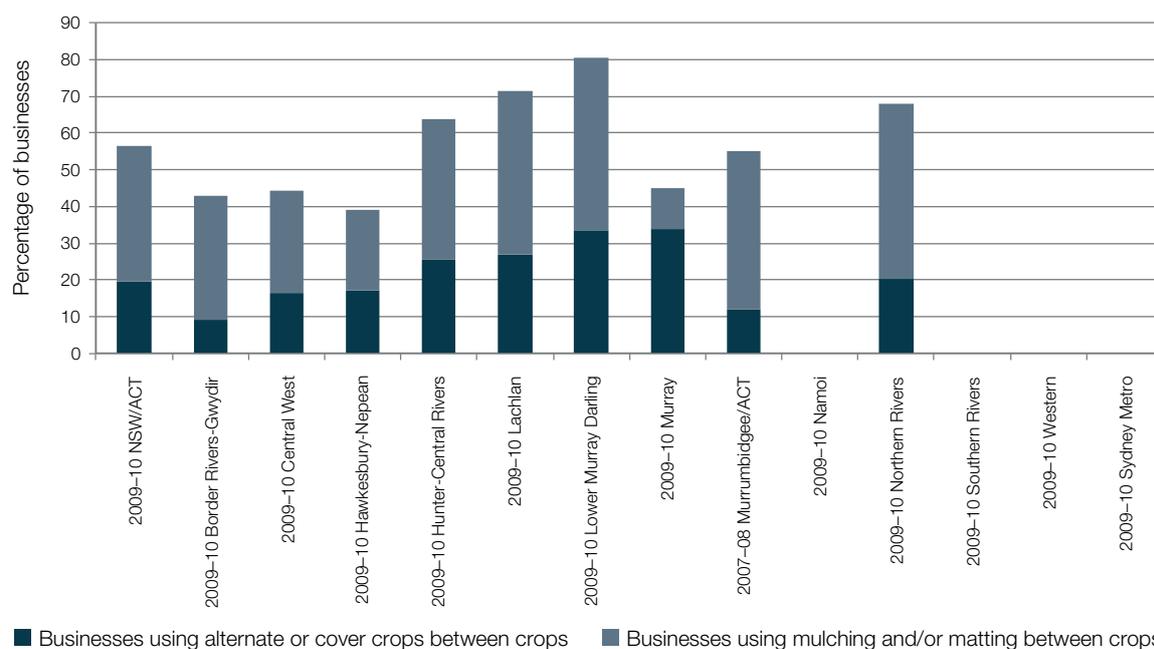


Figure 5. The percentage of horticultural businesses in NSW/ACT NRM regions using different methods to maintain ground cover levels between horticultural plantings in 2009-10. Note that no data are available for 2007-08. Results were not publishable for Namoi, Southern Rivers, Western regions and Sydney Metro.



## Maintaining ground cover

Using alternate or cover crops or mulching and/or matting between the main horticultural plantings helps protect against soil loss from water wind and water erosion. Where organic mulches are used these may also contribute to building soil organic matter. One fifth of all horticulturalists in NSW/ACT used alternate or cover crops to maintain ground cover levels between their main horticultural plantings in 2009–10, and over

one third (37 per cent) used mulching and or matting in the same period (Figure 5). The highest proportion of horticulturalists using alternate or cover crops was in the Lower Murray Darling and Murray regions (34 per cent in both cases), and the highest proportion using mulching and or matting occurred in the Lower Murray Darling and Northern rivers regions (47 per cent in both cases; Figure 5).

## Conclusions

These data suggest that about a fifth of horticulturalists in NSW/ACT use pH and nutrient testing, and a fifth also apply lime or dolomite to manage soil acidity. Given the extensive and insidious nature of soil acidification, there may be a need to increase soil testing and liming in some regions to protect against further pH decline and productivity losses.

In 2009–10 approximately two thirds of horticulturalists in NSW/ACT reported maintaining ground cover between their main plantings, using alternate or cover crops or mulching and/or matting. Some further work may be needed to establish whether suitable methods for ground cover management are available for all horticultural crops to identify opportunities for increasing the rates of adoption of this practice.

## References

Australian Bureau of Agricultural Resource and Economics — Bureau of Rural Sciences (2010), *Catchment Scale Land Use Mapping for Australia — Update March 2010 dataset*, Department of Agriculture, Fisheries and Forestry: Canberra. [http://adl.brs.gov.au/anrdl/metadata\\_files/pa\\_luusr9abl07611a00.xml](http://adl.brs.gov.au/anrdl/metadata_files/pa_luusr9abl07611a00.xml)

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