



CARING
FOR
OUR
COUNTRY

Land management practice trends
in Western Australia's
horticulture industry



Introduction

Horticulture is an important industry in Western Australia which contributed almost 14 per cent to the gross value of agricultural production in the state, and 2 per cent to the gross value of Australia's agricultural production in 2009–10 (ABS 2011). Figure 1 shows the location of horticulture in Western Australia. There are also a number of horticulture businesses in the Rangelands natural resource management region of Western Australia located around Kununurra (the Ord scheme) and Carnarvon.

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 reduce the land's ability to provide productive soils, protect biodiversity, maintain clean air and water and withstand the effects of climate change, while 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 30 May 2012, \$448 million had been approved for projects to improve soil and biodiversity management practices on farm. On farm practice change is 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 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 Western Australia had 2320 horticultural businesses, a decrease of almost 4 per cent since 2007–08. In 2009–10 the average age of Western Australian managers of horticultural businesses was 54 years; on average they

had managed their holdings for 20 years and farmed in their local region for 24 years. An estimated 7 per cent of horticultural businesses (160) had a Landcare group member.

Figure 1

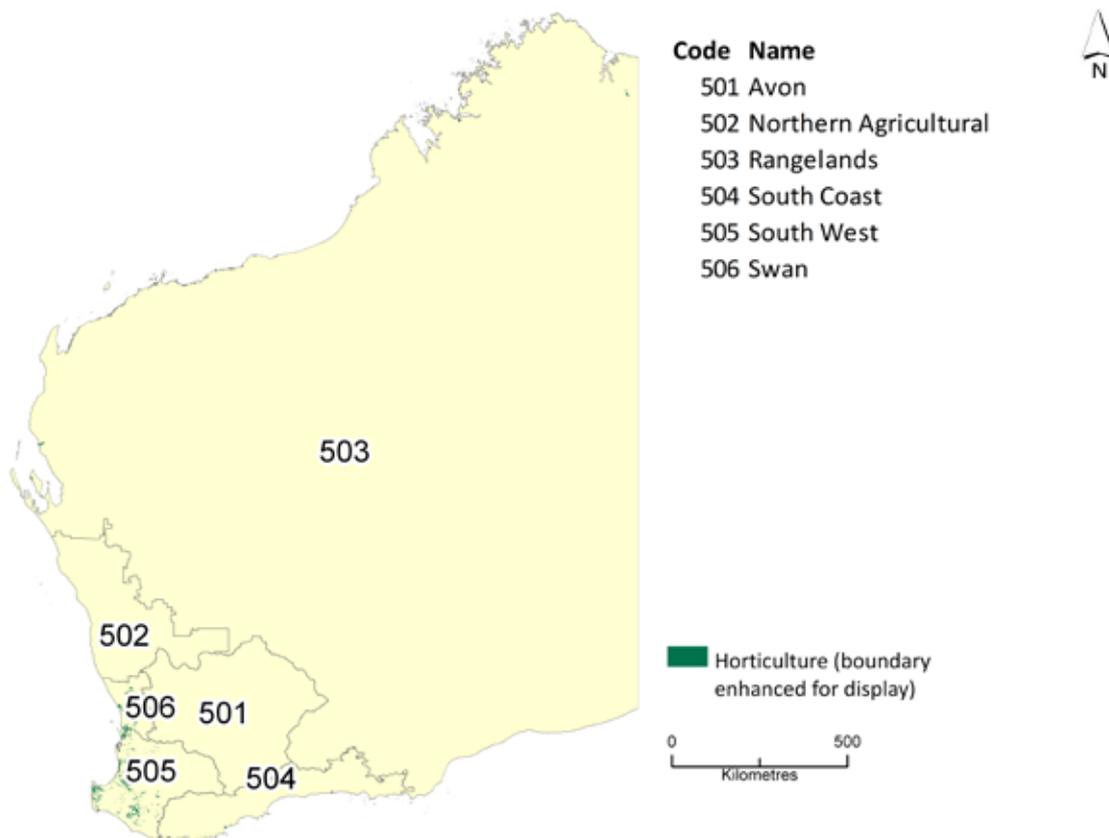


Figure 1. Horticulture in Western Australian natural resource management regions. Note: Boundaries have been greatly enhanced for display; the Rangelands natural resource management region has a number of horticulture businesses centred around Kununurra (the Ord scheme) and Carnarvon. Source: Catchment scale land use map of Australia, as at March 2010, Australian Collaborative Land Use and Management Program (ABARE–BRS 2010).

Land management practices

Caring for our Country provided project funding to encourage farmers to better manage ground cover and to test and lime soils regularly where needed. This funding 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 adoption of these practices. The percentage of farmers reporting use of particular practices can exceed 100 where more than one method (such as matting used to protect ground cover in some areas, cover crops in others) is used on a holding.

Managing soil acidity

About half of Australia’s agricultural land is estimated to have a surface soil pH of 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 soil pH is 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

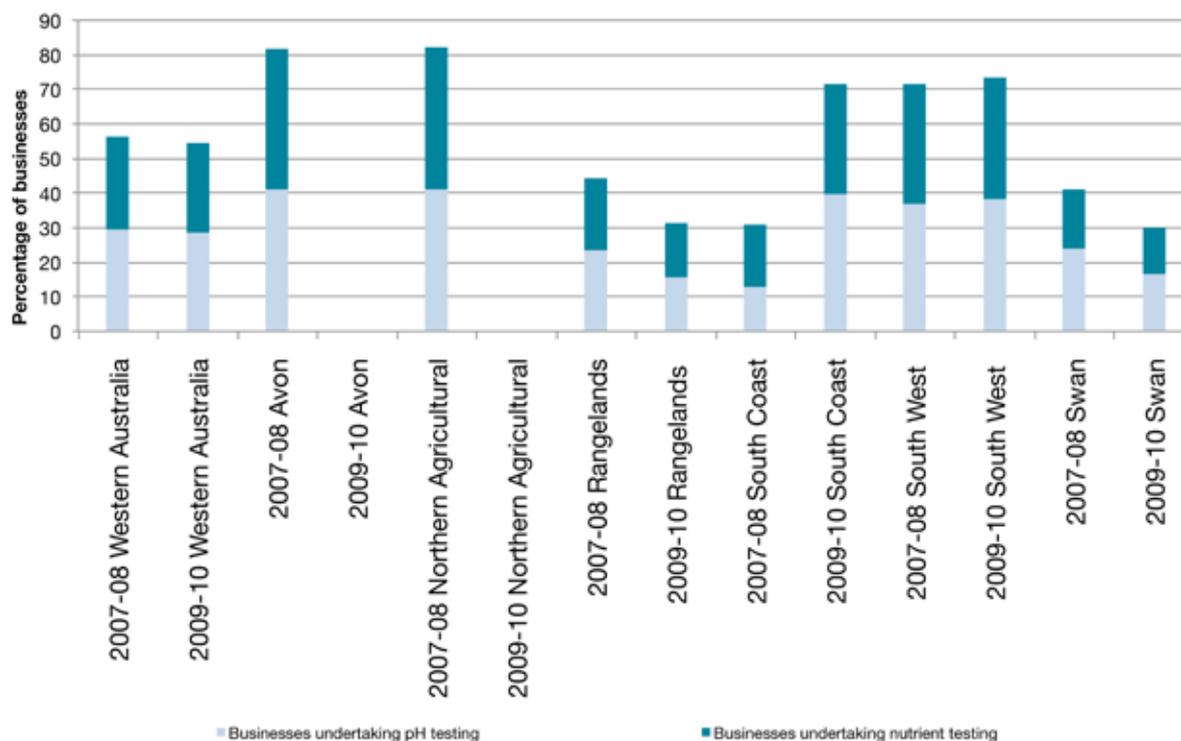


Figure 2. Percentage of horticultural businesses in Western Australian natural resource management regions undertaking pH and soil nutrient testing, 2007–08 and 2009–10. Note: Results were not publishable for the Avon (2009–10) and Northern Agricultural (2009–10) regions.

Figure 3

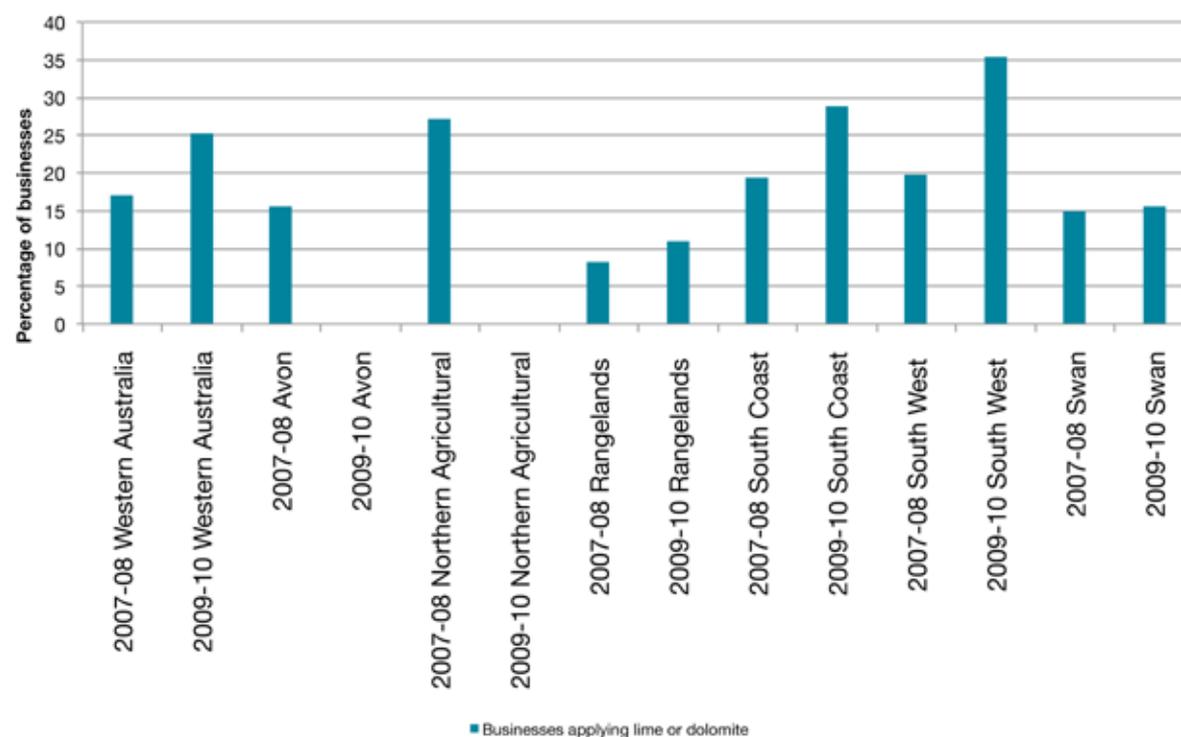


Figure 3. Percentage of horticultural businesses in Western Australian natural resource management regions applying lime and dolomite to their holdings, 2007–08 and 2009–10. Note: Results were not publishable for the Avon (2009–10) and Northern Agricultural (2009–10) regions.



Regular testing of soil pH and applications of lime and/or dolomite can be used to manage acidification risk. Testing soil nutrient levels to better match fertiliser applications to crop requirements can also help slow soil acidification.

There was an estimated slight decrease (from 30 per cent to 29 per cent) in the percentage of Western Australian horticultural businesses undertaking pH testing between 2007–08 and 2009–10. Estimated increases were reported for the South Coast (from 13 per cent to 40 per cent) and South West (from 37 per cent to 38 per cent) regions. The largest estimated decrease in pH testing occurred in the Rangelands (from 24 per cent to 16 per cent; Figure 2).

The estimated percentage of Western Australian horticultural businesses undertaking nutrient testing also decreased slightly (from 27 per cent to 26 per cent), although in the South Coast region testing increased from 18 per cent to 32 per cent (Figure 2).

The percentage of Western Australian horticultural businesses applying lime and/or dolomite to their holdings to manage soil acidity increased from 17 per cent to 25 per cent between 2007–08 and 2009–10. Increases were reported for the Rangelands and the South West, South Coast and Swan regions, with the largest estimated increase (from 20 per cent to 35 per cent) in the South West (Figure 3).

Longer-term ABS data show that overall, the percentage of horticultural businesses in Western Australia applying lime and/or dolomite to their holdings to manage soil acidity increased from 1995–96 to 2009–10, although the level in 2009–10 is slightly down from its peak in 2000–01 (Figure 4).

Table 1 shows the rates of lime and dolomite application for Western Australian 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)
Western Australia	17 953	1.78	0	0.00
Avon	3 003	1.28	np	n/a
Northern Agricultural	2 834	1.29	np	n/a
Rangelands	392	1.43	np	n/a
South Coast	5 300	1.61	np	n/a
South West	0	0.00	0	0.00
Swan	6 423	3.26	np	n/a

na Not applicable. np Not publishable.

Table 1. Rates of lime and dolomite application by Western Australian horticulture businesses on their holdings, 2007–08.

Figure 4

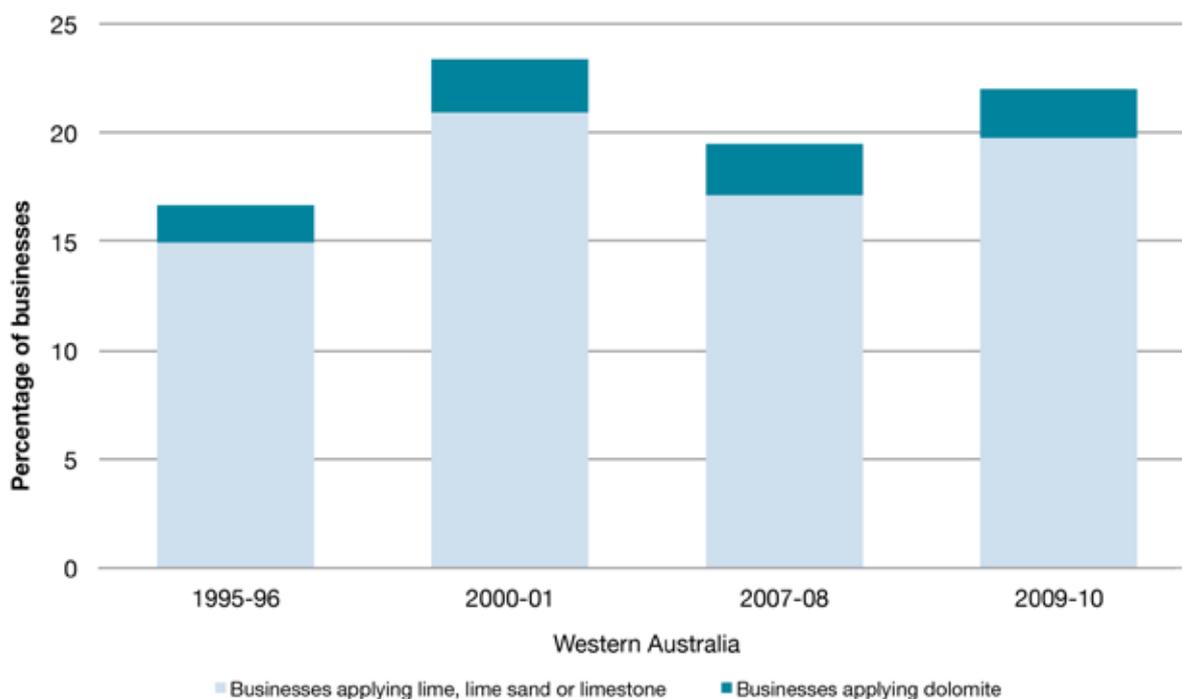


Figure 4. Percentage of horticultural businesses in Western Australia applying lime and/or dolomite to their holdings, 1995–96, 2000–01, 2007–08 and 2009–10. Note: 2007–08 and 2009–10 data are slightly different from those in Figure 3; different data items were used in the calculations to match the information collected in the censuses.

Figure 5

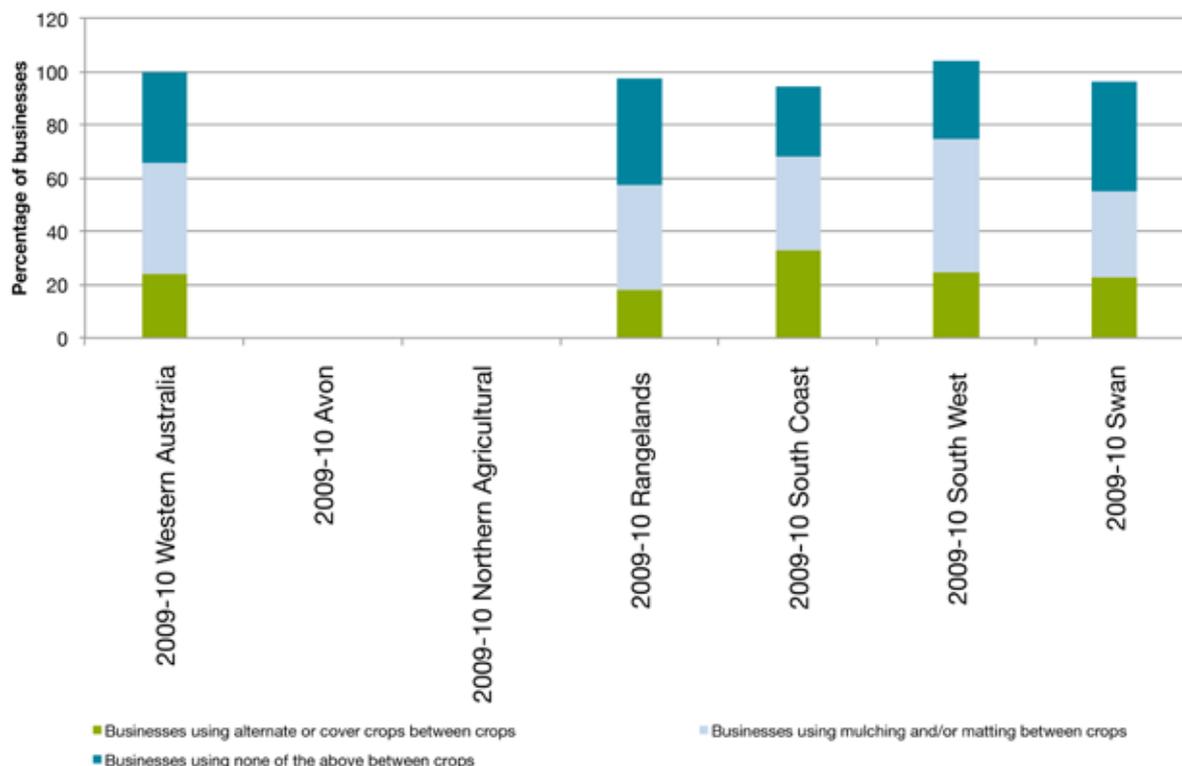


Figure 5. Percentage of horticultural businesses in Western Australian natural resource management regions using different methods to maintain ground cover levels between horticultural plantings, 2009–10. Note: No data were available for 2007–08. Results were not publishable for the Avon and Northern Agricultural regions.



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. An estimated 24 per cent of all horticulturalists in Western Australia

used alternate or cover crops to maintain ground cover levels between their main horticultural plantings in 2009–10, and 42 per cent used mulching and/or matting in the same period (Figure 5). The estimated greatest proportion of horticulturalists using alternate or cover crops was in the South Coast region (33 per cent), and the greatest proportion using mulching and/or matting was in the South West region (50 per cent; Figure 5).

Conclusions

The data suggest that more than one-quarter of horticulturalists in Western Australia use pH and nutrient testing, and one-quarter also apply lime and/or dolomite to manage soil acidity. Given the extensive and insidious nature of soil acidification, it may be necessary to increase soil testing and liming in some regions to protect against further pH decline and productivity losses.

In 2009–10 about two-thirds of horticulturalists in Western Australia 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 in order to identify opportunities for increasing the rates of adoption of this practice.

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