

Monitoring land degradation in south east Queensland and north east New South Wales

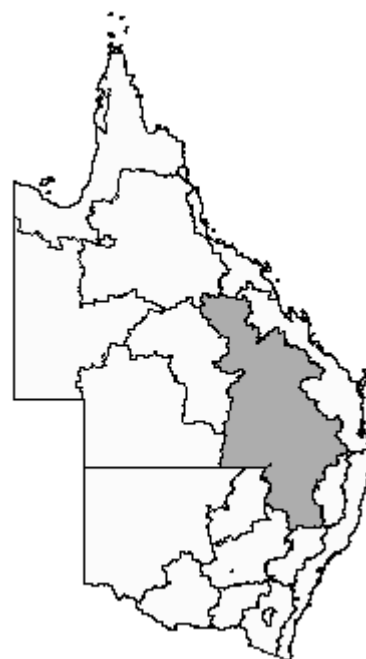
Fiona Alexander, Athena Blias, Lisa Chapman and Rohan Nelson
Australian Bureau of Agricultural and Resource Economics

Queensland Regional Outlook Conference
Toowoomba, 21 May 2003

In favorable seasons, year round rainfall and deep soils make the region encompassing south east Queensland and north east New South Wales a significant producer of agricultural commodities. ABARE's resource management survey of 2001-02 provides some insights into the type of land degradation problems reported in the region, and participation by farmers in resource management programs such as Landcare. The unique attributes of the region contribute to a different set of land degradation issues than those reported in similar industries nationally.

The focus in this paper is the region stretching from Gunnedah and Tamworth in north east New South Wales, through the Darling Downs in south east Queensland, to north of Emerald in central Queensland (figure A). Over 150 farmers from the region participated in ABARE's 2001-02 resource management survey, representing a total population of around 9000 farms.

A Focus region



ABARE project 1193
ISSN 1447 3666

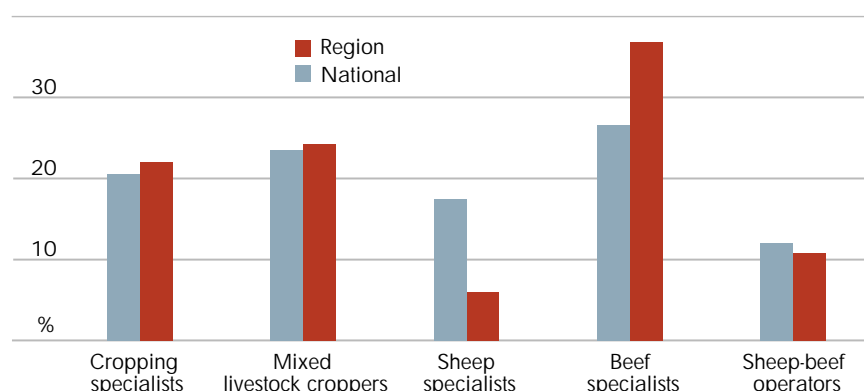


abareconomics

Characteristics of the case study region

The predominant industries across the region are beef cattle production and cropping, with a significant number of farm businesses combining the two. Beef is the main enterprise for 37 per cent of farms in the region, while cropping is the main enterprise for 22 per cent of farms (figure B). Around 24 per cent of farms combine these two activities. The analysis presented here is focused on the responses from crop and beef farming specialists to draw out differences between these two industries.

B Distribution of agricultural industries



Crop farms in the region are significantly smaller than beef farms, with an average operating area around a third that of beef farms (table 1). However, the intensity of farming is signif-

1 Average characteristics of broadacre farms

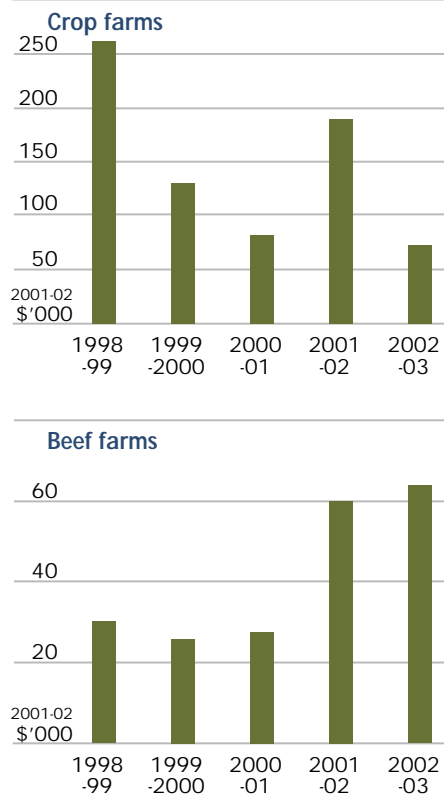
		Case study region				All Australia			
		Crop		Beef		Crop		Beef	
		average	rse	average	rse	average	rse	average	rse
			%		%		%		%
Area operated	ha	1 486	17	4 560	19	1 618	5	8 804.7	12
Area cropped	ha	683	13	–	–	809	4	–	–
Cattle at 30 June	hd	–	–	699	9	–	–	667	6
Farming intensity	dse	6.2	–	1.5	–	6.7	–	0.7	–
Farm cash income	\$	188 947	23	59 960	16	202 740	6	50 721	14
Income per hectare cropped	\$/ha	277	–	–	–	251	–	–	–
Income per head of cattle	\$/hd	–	–	86	–	–	–	76	–
Age of operator	yrs	49.2	5	54.7	3	50.6	2	59	2
Education									
– attended or completed									
primary school	%	0	83	6	85	4	46	8	42
– completed 1–4 yrs high school	%	16	41	35	30	37	11	35	15
– completed 5–6 yrs high school	%	49	26	28	36	34	14	23	18
– completed trade apprenticeship / technical / vocational	%	7	77	10	70	11	25	12	25
– completed university/ other tertiary	%	28	39	21	37	13	19	22	22

icantly greater for cropping farms, averaging more than 6 dry sheep equivalents per hectare compared with 1.5 for beef farms. This is reflected in farm cash income, which averaged \$127 per hectare for crop farms in 2001-02, compared with \$13 per hectare for beef farms. Overall farm cash incomes averaged \$189 000 for crop farms in 2001-02, compared with just under \$60 000 for beef farms in the region.

Average farm cash incomes in the region vary significantly with seasonal conditions, and were high in 2001-02 relative to the previous two years (figure C). High incomes projected for beef farms in 2002-03 reflect the sale of breeding stock in response to drought conditions, which is likely to reduce incomes in future years as herds are rebuilt.

The small proportion of farms on which sheep are the main enterprise distinguish the case study region from the national pattern of farming industries (figure B). The proportion of farms with cropping as the main enterprise is similar to the national proportion at just over 20 per cent. Beef cattle and sheep are the main enterprise on 27 per cent and 18 per cent of farms nationally, compared with 37 per cent and 6 per cent of farms in the region.

C Average farm cash income
SE Queensland and NE New South Wales



Comparison with the national average

Crop farms

Crop farms in this region are slightly smaller than the national average, with a similar average farm cash income for 2001-02 and farming intensity measured in dry sheep equivalents (table 1). The average age of crop farmers in the region was similar to the national average for this industry, while a greater proportion of crop farmers had undertaken tertiary education. When asked their future intentions five years from now, 30 per cent of the crop farmers interviewed in this region indicated that they intended to have a greater involvement in this industry, compared with 16 per cent nationally. Correspondingly, only 5 per cent of crop farmers in the region were planning to be semiretired in five years, compared with 19 per cent nationally.

Beef farms

Beef farms in the region are only half the size of beef farms nationally (table 1). Farm size at the national level is influenced by the large cattle properties that dominate the northern pastoral zone. Despite being smaller, beef farms in the region generated higher farm cash income. The lower average income across beef farms nationally reflects the influence of small subcommercial producers concentrated in the high rainfall zone.

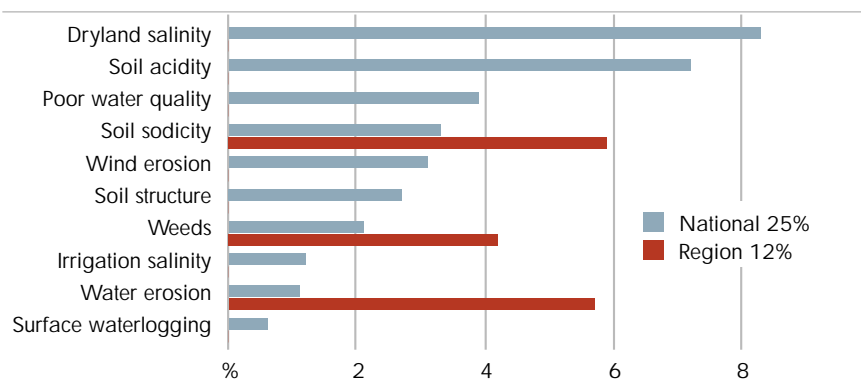
The productivity of beef producers in the region is reflected by a farming intensity, when measured using dry sheep equivalents, of nearly twice the national average. On average, beef farmers in the region were younger than the national average for this industry, but older than crop farmers in the same region. Education levels were similar to those for the national beef industry. When asked their future intentions five years from now, 36 per cent of beef farmers in the region indicated that they intended to have a greater involvement in this industry compared with only 13 per cent nationally. Correspondingly, only 8 per cent of beef farmers in the region were planning to be semiretired, compared with 19 per cent nationally.

Land degradation

Crop farms

Only 12 per cent of crop farmers in the region reported a *significant* land degradation problem, compared with 25 per cent of crop farmers nationally. The three most significant types of land degradation reported by crop farmers in the region were soil sodicity (6 per cent), water erosion (6 per cent) and weeds (4 per cent) (figure D). An even greater proportion of crop farmers in the region reported some water erosion (30 per cent) and loss of soil structure (15 per cent), but did not consider these problems to be significant on their properties.

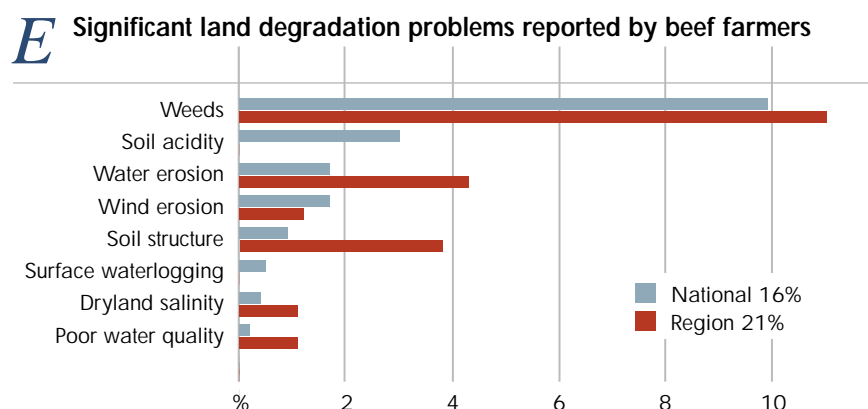
D Significant land degradation problems reported by crop farmers



In contrast, dryland salinity (8 per cent), soil acidity (7 per cent) and poor water quality (4 per cent) were the three most significant types of land degradation reported by crop farmers at a national level (figure D). Around 14 per cent of crop farmers at the national level reported some signs of wind erosion of their farms, although only 3 per cent considered that this problem was significant on their property. None of these types of degradation were reported as significant by crop farmers surveyed in the case study region. Only a small proportion of crop farmers in the region reported signs of these types of land degradation on their properties, with only 3 per cent reporting some signs of dryland salinity.

Beef farms

Over 21 per cent of beef farmers in the region reported *significant* land degradation, compared with 16 per cent of beef farmers nationally. The three most significant types of land degradation reported by beef farmers in the region were woody weeds (11 per cent), water erosion (4 per cent) and loss of soil structure (4 per cent) (figure E). An even greater proportion of beef farmers in the region reported some woody weeds (27 per cent) and water erosion (22 per cent), but did not consider these problems to be significant on their properties.

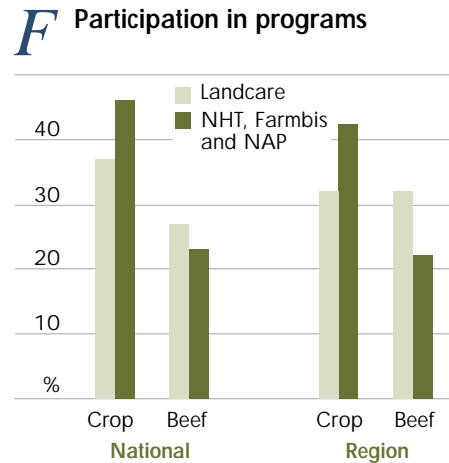


Woody weeds were also by far the most significant land degradation problem reported by beef farmers at a national level, affecting 10 per cent of beef farms. An even greater proportion of beef farmers across Australia reported some woody weeds (19 per cent), water erosion (15 per cent) and soil acidity (11 per cent), but did not consider the problems significant. Soil acidity was much less of an issue for beef farmers in this region, with very few farmers even reporting any sign of it on their properties.

Participation in programs

The Commonwealth government has developed a range of initiatives and programs to encourage sustainable agriculture and protect Australia’s natural resources. The long

running Landcare program supports the development of sustainable farming systems through the management of land degradation. Roughly a third of crop farms had a representative who was a member of a Landcare or similar group in 2001-02, at both a national level and in the case study region (figure F). A third of beef farms in the case study region also had a Landcare member, similarly to crop farms in the region, but somewhat higher than the national average membership for beef farms.



Farmers across Australia reported a range of benefits from Landcare membership including understanding, recognising and treating land degradation problems. The most important benefits of Landcare membership reported by crop farmers in this region included information on how to recognise and monitor degradation, understand the causes, as well as management practices to treat or avoid degradation. Beef farmers in the region reported that the most significant benefit of Landcare membership was techniques to monitor the condition of land and water.

A number of Commonwealth initiatives and programs other than Landcare have been introduced in more recent years. These include a suite of programs under the Natural Heritage Trust (NHT) as well as the FarmBis program and the National Action Plan for Salinity and Water Quality (NAP). Over 40 per cent of crop farmers nationally and in this region indicated that they had been involved in at least one of these programs during the previous two years (figure F). Participation by beef farmers in these programs was lower at just over 20 per cent at both the national and regional levels.

Farmers report significant benefits from these programs, with over 90 per cent of participating farmers reporting that they had gained something from their involvement. The majority of farmers at both the national and regional level reported that they had gained skills and information from their involvement in NHT, FarmBis and NAP programs. At the national level, farmers also reported gaining improved community interaction through their participation. In the case study region the benefits were more tangible, with over half the farmers participating in these programs reporting the implementation of onground works on their property as a result of their involvement.

Conclusions

Crop farmers in south east Queensland and north east New South Wales are not currently facing some of the significant types of land degradation that are widespread in cropping systems elsewhere in the country. Dryland salinity has not emerged as a significant type

of degradation, because of the soils and catchment hydrology of the region. The most significant land degradation problem faced by beef farmers in the region is woody weeds, a problem shared with beef farmers nationally. As the costs imposed by woody weeds, and the benefits of their eradication, are likely to be fully reflected in the value of the farm enterprise there is not a strong case for public intervention or investment to control this problem. In contrast, water erosion can lead to significant sedimentation and nutrient runoff into streams, imposing potential costs on both downstream water users and the environment. As a result there may be a case for public intervention to limit this problem.

Despite the low incidence of significant land degradation issues on crop farms, farmers in this region participate strongly in Commonwealth programs designed to monitor and avoid land degradation. There is a strong commitment to the future of farming in the region, and a keen appreciation of maintaining the natural resource base on which the future of agriculture depends.