

Public response to plantation forestry on farms in south-western Victoria

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Summary

The region of south-western Victoria has experienced significant land use change over the past decade. Traditional grazing enterprises have decreased, while crop production, dairy farming and timber production have increased. This change has been associated with public expression of concern, much of it directed at the developing plantation timber industry. Research was undertaken to identify the level and nature of concern within the population of south-western Victoria. Results indicated that dairy farming and crop growing were viewed more favourably than plantation forestry. Residents of smaller townships and rural areas were more likely to believe plantation forestry had an overall negative impact on their area. Their concerns were related most strongly to beliefs about impacts on local employment and population retention. The findings help identify strategies for more successful integration of tree growing in rural landscapes.

Keywords: public opinion; surveys; land use; forest plantations; farm forestry; Victoria; Australia

Introduction

There has been rapid change in land use across south-western Victoria over the past decade (Petheram *et al.* 2000). The area of land under wool production has fallen and sheep numbers have declined from 10 to 8 million from 1990 to 2000. The greatest expansion has been in crop growing (from 62 000 ha in 1990 to 205 000 ha in 2000), much of this occurring in the northern part of the region. Dairying has expanded in the south of the region, dairy cow numbers increasing from 307 000 to 424 000 over a ten-year period. Timber plantations have also increased. Before 1990, plantations comprised mainly pines (*Pinus radiata*) planted during the 1960s and 1970s. In the past decade around 40 000 ha of Tasmanian blue gum (*Eucalyptus globulus* subsp. *globulus*) plantations have been established on farmland, and these are generally concentrated in higher rainfall (>650 mm y⁻¹) areas in the south-west of the region, within 150 km of Portland.

Although expanding crop enterprises represent the major shift in land use away from wool production, media coverage and experiences of the Regional Plantation Committee have indicated

that community concerns about land use change are being primarily directed toward the plantation timber industry. Public expressions of concern in this region have appeared consistent with experiences in other parts of Australia where plantation forestry has been introduced into rural landscapes. A survey conducted by Rose and associates (1996) in the Bridgetown-Greenbushes and Boyup Brook areas of Western Australia was one of the earlier indicators of community concern. They found most farmers thought whole-farm plantations had a negative impact on their district, but they were more supportive of attempts to integrate forestry with more traditional enterprises on farms. Schirmer (2000) conducted a number of case studies in south-eastern Australia (Tasmania and north-eastern Victoria) and reported wide-ranging concerns about plantation industries. People were concerned about the potential for loss and changes to community services, rural cultures and employment opportunities, as well as about the structure and practices of some plantation companies. There was also unease over difficulties in negotiating with plantation companies as neighbours on issues of shading, fencing, weeds and herbicide use.

Kelly and Lymon (2000) conducted an assessment of the social impact of the plantation industry in the Shire of Plantagenet, Western Australia. Using surveys and interviews, the researchers found mixed views regarding plantation forestry. For example, 39% of survey respondents (the number of respondents is not clear in the report) considered the plantation industry to be a threat to the community, yet 47% considered it brought opportunity to the area. Tonts *et al.* (2001) also examined social impacts of plantations in south-western Australia, conducting interviews with a total of 25 stakeholders and 80 residents across four municipalities. The small number of participants in each area makes it difficult to draw conclusions from the study, but the results suggest that public views vary across localities. For example, 60% of the 20 residents surveyed in Boyup Brook local government area (LGA) considered farm plantation forestry had a negative impact on levels of local employment. In Bridgetown-Greenbushes, where unemployment levels were actually higher, only 10% thought the industry had a negative impact in this area. Interviews conducted in both studies revealed a wide range of concerns about the plantation industry, similar to those identified by Schirmer (2000).

Research overseas has also suggested considerable resistance to plantation industries within rural communities. In a Finnish study of landscape preferences, Karjalainen and Komulainen (1998) found that field afforestation was considered disturbing, particularly to local residents, even when forested areas were quite small. Similarly, Selby and Petäjistö (1995) suggested that Finnish farmers resisted subsidised afforestation of fields, which was viewed as a loss to rural industry rather than diversification of agricultural production.

Much of the recent increase in Australian plantation forestry can be attributed to the enabling policies associated with implementing the joint Federal Government–industry initiative called ‘2020 Vision’. This initiative sought to ‘treble the effective area of Australia’s plantation between 1996 and 2020’ (Ministerial Council on Forestry, Fisheries and Aquaculture *et al.* 1997, p. 2). The initiative anticipated significant benefits to rural communities including increase in farm incomes and creation of rural employment opportunities. Yet national and international findings that there is community resistance to expanding forestry in rural areas suggest that the factors contributing to rural residents’ appraisals of land use change need to be better understood. This article reports on a study by Petheram *et al.* (2000), which investigates the nature and level of concerns about land use change in south-western Victoria. By comparing community responses to plantation forestry with responses to other large-scale changes in land use, we are able to more effectively explore the complex beliefs and values that shape social responses to landscape change.

Methods

The research design used group interviews to identify the key issues raised by residents in areas experiencing rapid change in land use. Then a telephone survey was used to capture a representative picture of the level and types of concerns expressed by residents across the region.

Group interviews

Six group interviews, involving a total of 49 people, were conducted across the region. Separate interviews were held in six townships or districts (Ararat, Hamilton, Mortlake, Casterton, Macarthur–Bessiebelle and Digby–Dartmoor) selected to represent a range of geographical and land use types and a range of town sizes. Participants were recruited through a wide range of community groups including farming, business and progress organisations, sporting and service clubs, schools and environment groups. Interviews took about two hours each and were tape-recorded and partially transcribed for analysis. Participants were asked to describe recent land use changes in their area, and positive and negative impacts of these changes.

Telephone survey

Procedure

Respondents were telephoned at home and asked to answer some questions about land use change in their area. Interviews, designed by the authors and conducted by the company Quantum Market Research, were about seven minutes long and were conducted during the evenings over a seven-day period at the end of June 2000.

Respondents were asked to describe land use changes they had noted in their Shire. Further questions elicited beliefs about three land use changes: increased dairy farming, crop growing and timber plantations. Participants were asked about their beliefs regarding the impact of changes in land use on six economic, social and environmental indicators: population loss, job creation, business for local traders, involvement in community groups, protection of soil and water resources, and risk of exposure to hazardous chemicals. These impacts were selected on the basis of key issues raised by participants in group interviews. Beliefs about the overall impact (positive or negative) of each land use change were also examined.

The interview examined beliefs about impacts of land use change on two levels. First, respondents were asked whether the change had any impact on the towns and rural areas closest to where they lived. Where respondents considered there was no impact, interviewers sought no further information regarding that change. Each respondent was asked about the impacts of two land uses. All respondents were asked about the impacts of blue gum plantations. Respondents living in the Shires of Corangamite, Warrnambool and Moyne were asked about the impacts of dairy farming, while residents of the Shires of South Grampians, Glenelg, Ararat and Pyrenees were asked about the impacts of crop growing. This distinction was based on the major changes in land use occurring in each Shire (Petheram *et al.* 2000).

Finally, all respondents provided basic demographic information and answered a question concerning regulation of changes in land use.

Participants

A total of 551 adult residents of south-western Victoria were interviewed (247 males and 304 females). The region was defined by Shires of Glenelg, Corangamite, Moyne, Southern Grampians, Ararat and the southern statistical local area (SLA) of the Pyrenees Shire. The sampling frame consisted of households listed in regional telephone directories, stratified according to town size. Four categories of town size were defined and are shown in Table 1, along with the number of respondents in each category.

Table 1. Sampling structure: four sub-populations based on town size, estimated size of these relative to whole population, and the number of respondents selected from each group

Town size	Estimated proportion of population (%)	Number of respondents in this category
20 000+ (Warrnambool)	24	100
6000–20 000 (Hamilton, Portland, Ararat)	23	151
500–6000	16	150
<500*	37	150

* Rural population including residents of towns smaller than 500 people, and people living outside towns.

Stratified random sampling ensured more accurate representation of views within categories of town size, considered important since a report on the impact of State plantations (Centre for Farm Planning and Land Management 1989) suggested the impacts of pine plantations were greater for smaller towns. While for ease of interpretation overall responses have been presented in tables, responses should only be viewed as representative within these categories.

Results

Group interviews

Analysis of interview transcripts suggests that new land uses and particularly dairy farming, crop growing and plantation forestry are regarded in quite distinct ways. Beliefs about dairy farming were dominated by positive evaluations; dairying was seen to create employment, provide high returns for farmers and enhance social stability. Potential environmental problems were given little attention. Comments in an interview conducted in Macarthur suggested that plantation forestry provided a primary point of comparison for dairy farming (rather than previous land uses) and this may have acted to enhance perceptions of the dairy industry. For example:

We have only got two dairy farms in our area, and one in particular has increased significantly in size. The positive thing about dairy farms in our area is that they are the only farmers at the present time who can compete with the money that the blue gums are paying because they are getting a better return for their money. Dairy farmers would consider paying \$1200 an acre whereas beef and sheep farmers can't. We can't buy any more land, but fortunately dairy farmers can and that will be retained as farmland.

Participants expressed relatively few strong attitudes regarding increased crop growing, and these were balanced between positive and negative perceptions. Crop growing was most often valued for diversification of income and employment of contractors. Participants were concerned about the high costs of inputs for crop growing (fertilisers and pest management). Most concerns, however, were related to environmental impacts of crop growing, for example risks of chemical use, loss of biodiversity through introduction of a monoculture system and clearing of native vegetation, and greater risk of soil salinity.

The impacts of blue gum production were discussed extensively in most interviews. Table 2 summarises the key beliefs about positive and negative impacts of this land use. It is important to note that many participants were keen to distinguish between the range of forms that agroforestry can take. Many outlined the range of environmental and social benefits of integrated farm plantations and revegetation for environmental repair. Participants were most keen, however, to discuss the range of impacts of commercial blue gum plantations and, in particular, whole-farm plantations.

A few findings are highlighted here, but a full description of study findings can be found in the complete project report (Petheram *et al.* 2000). First, commercial blue gum forestry was the only land use considered to have a direct influence on rural decline. Participants described a number of cases where sudden, localised population loss had occurred in areas intensively developed for

blue gum plantations. Blue gum plantations were also seen to increase land prices to levels sometimes considered unrealistic by the resident community. This increase was often viewed as creating a new social dichotomy between those who had sold or could sell their property and benefit from higher land prices, and those wishing to expand their enterprises but who must compete with purchasers planning enterprises with higher returns. For example:

The blue gums have come in and they have pushed up the prices high. It's probably been a godsend for a lot of the older people. Given them an opportunity to get out with a bit of money and dignity. By the same token, for those of us who are younger and are trying to get established and get a little bit bigger, it's made it doubly hard going from \$800 per acre to \$1400–1500.

Participants expressed a range of concerns regarding the environmental impacts of blue gum plantations. The introduction of a monoculture system and potential loss of wildlife habitat were raised as important issues. A number of participants expressed concern about the impact of blue gum plantation on watertables and about a perceived increase in the use of hazardous chemicals. Risk of wildfire was also discussed. This danger was related to both the perceived flammable nature of eucalypts and the depletion of CFA fire-fighting capacity through population losses. One respondent commented:

There just seems to be so much uncertainty about blue gums. We are told fibs — in the CFA we were told that these things don't burn — well that's rubbish.

Well it's wiped out one small community already: because the people sell their property and there's nobody left to render the vehicle, those families have been removed ... All the men — the properties are sold and they move out of the area — and so there's nobody left.

Beliefs about the negative influence of blue gum plantations on social cohesion were described in a number of ways. For example, when whole properties were sold for commercial forestry, the resulting vacant houses were seen to result in cheap housing that attracted less desirable or committed residents into the area. A respondent explained:

We have got a little school. It is actually increasing in size, but what we are finding is our farming families are going and are being replaced by townies. That is not a nice word, but it is right. People coming out of towns. There are quite a few rental houses because people have shifted and some are owned by timber companies ... We are getting this group of people into our areas that are not committed to the community. Our experience over the last 7 or 8 years is that they come because it's cheap housing; they are not committed to anything ... well some are, but not the way that farming families are. That has really changed the dynamics of our school community.

Overall, participants' evaluation of land use change appeared to be most strongly influenced by their beliefs about the relationship between land use and local employment opportunities. Some land uses were perceived to increase regional employment opportunities, while others were considered to have a negative or neutral impact. For example, pine plantations were often seen to have more positive impact on employment than blue gum plantations:

Table 2. Beliefs about impacts of establishing commercial blue gum plantations on farmland

Positive impacts	Negative impacts
Employment for planting, harvesting	Less employment available in smaller communities
Companies have taken up shop fronts (Hamilton)	Localised population loss associated with intensive whole-farm purchases by timber companies
Forest companies initially spend locally (Hamilton)	Local suppliers sometimes seen to be excluded from supplying to timber companies in smaller communities
Financial benefits for landholders who sell	Smaller communities perceive proceeds of sale being spent outside the district
Native forests protected in long term because plantations provide fibre/ timber	Uncertainties about market for blue gum products in the future
Increased land prices provide benefits for landholders who sell — upgrade or exit farming with dignity	Increasing land prices prevent sheep and beef farmers from expanding
Increased land prices give farmers more borrowing power	No evidence of plans for value-adding activities in the region
Plantations may assist salt-affected areas	Uncertainty about impact on water table
Plantations exclude stock and so protect soils in some areas	Perceived lack of planning
May lead to value-adding opportunities in future	Blue gum is a monoculture — lacks biological diversity, habitat
Chemical use is no higher than in crop growing	Some clearing of Landcare works
	Damage to roads currently and in future
	Fire danger increased
	Chemical use is high and hazardous
	Fear fragmenting community — loss of trust between neighbours
	Loss of family and friends from the district
	Difficult and expensive to convert land back to farmland once trees are harvested
	Uncertainties about who maintains the additional infrastructure required to support the timber industry
	Loss of employment opportunities for workers associated with more traditional agricultural enterprises
	Loss of valuable farmland for food production
	Increased number of foxes
	Decreased appeal for tourism

I really believe we are going to see a drop in population because of unemployment. With the pine industry you have a lot of thinning which creates a lot of work, but with blue-gums once they are established, they're not touched till harvest.

Similarly, wool production was considered to create higher employment opportunities in smaller towns:

Overall employment will be less in the forestry industry now that farms are being taken over: no shearers, contractors, builders working on these farms all the year.

The perceived flow-on effects of land use change, particularly the indirect creation of service sector employment in the area, were also a critical aspect of evaluating land use change, as can be seen in this comparison of dairy farming and blue gum plantations:

Dairy farmers are at least in the area. They still go to town to buy their groceries, supplies and fencing materials. They are spending money back in the community. With the forestry

industry there are no people there a lot of the time. A lot of those people come from Hamilton.

Telephone survey

Responses to the open-ended question regarding land use change revealed a disproportionately high awareness of expanding blue gum plantations. Although plantations made up a relatively small proportion of new land use, this was the land use change most frequently noted by respondents from every Shire other than Ararat and the city of Warrnambool.

Ratings of the overall impact of land use changes also revealed strong differences in the way changes in land use were perceived. Table 3 summarises the responses of participants in the Shires of Glenelg, Southern Grampians and Moyne (the areas where most recent plantation development had occurred). Perceptions of plantation forestry were quite diverse. In the large industrial town of Portland, very few people perceived forestry to have any impact on the township. In Hamilton, views were split. Around one-third

Table 3. Perceptions (percentage) of impact of blue gum plantations among residents of Shires of Glenelg, Moyne and Southern Grampians

Perception	All respondents* (N = 255)	Residence*			
		Portland (n = 51)	Hamilton (n = 50)	Towns 500–6000 residents (n = 84)	Towns <500 residents (n = 70)
		Positive impact	12	14	24
Negative impact	27	18	38	20	34
Little or no impact	57	67	34	70	51
Uncertain of overall impact	3	2	4	1	6

* Some column totals may not equal 100% due to rounding of percentages

of respondents considered the plantations had little or no impact, another third considered the overall impact to be negative, while a smaller proportion viewed the overall impacts as positive. In smaller towns and rural areas, most respondents considered forestry had little or no impact on their area, not surprising given the sparse and uneven development of forestry across the surveyed region. Where an impact was perceived, it was more likely to be considered negative.

These perceptions of blue gum plantations contrast strongly with views of expansion in dairy and cropping industries. Perceptions of the overall impact of increased cropping are shown in Table 4. Across all areas interviewed, cropping was generally seen to have little or no impact. Where impact was perceived, it was most likely to be considered positive, particularly in the larger towns of Hamilton and Ararat. Views of expansion in the dairy industry are summarised in Table 5. Most respondents saw little or no impact, but where impacts were noted they were overwhelmingly considered to be positive.

Caution is needed in comparing the land use changes examined in this component of the study, since the impacts were examined in separate Shires and respondents did not directly compare the land uses. It is possible, however, to make some observations about the level of negative beliefs held regarding land use changes within the region. Table 6 summarises the number and percentage of respondents who considered changes in land use to have negative impacts on their area. For this analysis, percentages are calculated with regard to all respondents from the relevant Shires, including those who considered the land use to have no impact in their area. Although such respondents provided no information

Table 5. Perceptions (percentage) of impact of increased dairy farming among residents of Shires of Warrnambool, Corangamite and Moyne

Perception	All respondents (N = 264)	Residence		
		Warrnambool (n = 100)	Towns 500–6000 residents (n = 102)	Towns <500 residents (n = 62)
Positive impact	32	39	28	27
Negative impact	5	3	6	6
Little or no impact	60	57	60	65
Uncertain of overall impact	3	1	6	2

about specific impacts, we have assumed no negative impact was experienced.

First, it is clear that the level of negative perception differs across the three types of land use. This suggests that current community concern about change in land use cannot be attributed to change in land use *per se*, but is related to specific types of change in land use. Transition to crop growing and dairy farming are associated with relatively low levels of community concern, while blue gum plantations are associated with the highest levels. Between 20% and 35% of respondents considered plantations had a negative impact on the six areas of concern shown in Table 6. The greatest concerns for respondents related to loss of population and community involvement. Perceptions of negative environmental impacts of blue gum plantations and dairy farming were reported at similar levels.

Discussion

Group interviews and the telephone survey provided a remarkably consistent picture of community response to change in land use in south-western Victoria. Beliefs about change in land use were clearly different across the three land uses investigated. Thus it is not change in land use — the movement away from traditional commodities and enterprises — that was seen to have negative impacts for the region. Rather, some land uses were seen to have positive impacts for the community while others were viewed less favourably. During the year 2000 when this study was undertaken, change toward dairy farming was widely considered to have an overall positive impact on communities and change in crop growing was considered to have little or no impact, while perceptions of blue gum plantations tended to be more negative.

Table 4. Perceptions (percentage) of impact of crop growing among residents of Shires of Ararat, Glenelg, Pyrenees and Southern Grampians

Perception	All respondents (N = 287)	Residence				
		Ararat (n = 50)	Portland (n = 51)	Hamilton (n = 50)	Towns 500–6000 residents (n = 48)	Towns <500 residents (n = 88)
Positive impact	12	20	4	26	2	10
Negative impact	3	0	0	2	6	6
Little or no impact	84	80	96	72	92	83
Uncertain of overall impact	1	0	0	0	0	1

Table 6. Perceptions of negative impacts of land use change: comparison of reported levels of impacts of blue gum plantations, dairy farming and crop growing

Perception	Blue gum plantations	Dairy farming	Crop growing
<i>N</i>	255	264	287
Shires	Glenelg, Moyne, Southern Grampians	Corangamite, Moyne Warrnambool	Ararat, Glenelg, Southern Grampians, Pyrenees
<i>No impact in local area</i>	118	138	219
Fewer jobs in local area	56 (21%)	25 (9%)	18 (6%)
Fewer people living in area	90 (35%)	28 (11%)	22 (8%)
Less business for local traders	63 (25%)	10 (4%)	19 (7%)
Fewer people involved in community groups	77 (30%)	19 (7%)	17 (6%)
More damage to soil and water resources	54 (21%)	54 (20%)	23 (8%)
More risk of contact with dangerous chemicals	50 (20%)	52 (20%)	32 (11%)

Why has plantation forestry been singled out for such criticism? A central consideration in understanding community response to change in land use is identifying the meaning and management of prior land uses. In south-western Victoria we are witnessing a shift from traditional wool growing to a wide range of land uses. Traditional sheep farming to a large extent determines community expectations about how agricultural land should be used. Evaluation of new land uses involves a comparison with past uses. Blue gum plantations contrast dramatically with traditional agricultural enterprises in almost every way: landscape patterns, land ownership and land management.

Typical concepts of farmland, based on expectations associated with sheep farming, generally comprise large areas of open landscape sectioned only by fence lines, and the day-to-day involvement of one or more family members, possibly over successive generations. Crop growing and dairy farming are relatively minor deviations from this prototype, retaining the key elements of open landscapes and the presence of a farmer. In contrast, blue gum plantations enclose landscapes, require few fence lines and are owned or leased by corporations who are usually absent from the property. The atypical nature of blue gum 'farming' makes both comprehension and acceptance of plantations more difficult when the trees are established on long-term pasture land.

The key distinguishing feature of the plantation industry in south-western Victoria is without doubt its association with corporate owners and the absence of resident farmers. The implications for adjoining property owners are significant, and create a need for new skills and expectations for communication. New methods must be employed to carry out everyday communication associated with managing adjoining fence lines, stock exclusion, chemical and fire risks, and pest plants and animals. Corporate ownership also has implications for the broader community, particularly with regard to purchase of goods and services. Large organisations are not constrained by the social connections and loyalties that exist for farmers living within the district. Corporate landholders work within a much larger geographical context and are therefore more likely to purchase goods and services from other areas. A socially entrenched means of building trust within a rural community is therefore overlooked. Timber companies often rely on other methods for building the trust of local communities, including corporate sponsorship and the

establishment of a regional centre for their activities. To date it appears these companies have focused such efforts on the community of Hamilton. The research reported here suggests timber companies should be exploring new ways of building trust within smaller communities. Such efforts should focus on the things these communities value: their survival as a community, retention of young people within the district, and establishment of a secure economic base.

It is important to note that participants by and large were not describing all forms of private forestry in a negative light. While respondents in the telephone survey were asked their perceptions regarding 'blue gum plantations', participants in group interviews were quick to distinguish whole-farm corporate plantations from other forms of farm forestry. This suggests some directions for future development of forestry in rural areas. Greater attention to the range of outcomes of forestry — environmental, economic and social — will help develop forms of commercial forestry that are more acceptable to rural residents. Greater integration of forestry into traditional enterprises (rather than whole-farm plantations) may be critical to ensuring the broad sustainability of both industry and communities.

Finally, evaluations of the plantation industry are likely to change over time as outcomes for population, employment and environment become clearer and as commodity prices continue to change. Participant comments made in this study regarding pine plantations make it clear that community attitudes toward land uses do change. Views of the pine industry were certainly more positive than evident in earlier studies by Spencer and Jellinek (1995). It is not just a matter of waiting for community attitudes to change, however. Industry, government and communities must work together to improve planning processes and communication, and to develop new and more integrated models of forestry in rural landscapes.

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