Appendix 3: Report on the Telephone Survey

SUMMARY

Telephone Survey Findings

A telephone survey was undertaken of producers in the sheep-wheat and beef cattle raising zones of southern Australia. A sample of 800 completed interviews was obtained from the local government areas in these zones are are responsible for 90 per cent of the cereal, sheep and cattle production in southern Australia. The survey contained questions relating to weed awareness, weed control methods, motivations and difficulties with, weed control and a number of standard questions on demographics and farm characteristics.

The analysis of the survey data focussed on the motivations and difficulties reported by interviewees. The data on motivation was obtained from the responses to the question:

> *...when you are thinking about the jobs you have to get done in the coming few days or weeks, what reasons will cause you to put weed control in a particular paddock or place on your property at the top of the list?*

It was found that there were a wide range of motivations reported. Grouping these into 11 main categories, it was found that motivations relating to weed life cycle, fitting in with other farming operations, times of year and high weed levels were mentioned by between 20 and 40 per cent of interviewees. However, interviewees could supply more than one motivation and there were 63 different combinations of motivations given, the most popular of which – the single motivation of fitting in with other farming operations – was given by only 14 per cent of interviewees.

Despite the apparent diversity of motivations, there is some indication as to how motivations might be related to other factors. Fitting weed control in with other farm operations appears to be associated more with sheep-wheat production than with beef cattle production, and the need to fit weed control in with other operations may result in lower priority being placed on weed control. Poorer weed management also appears to be associated with weed levels and time of year as motivations for weed control. On the other hand, those who gave a single motivation relating to weed life cycle appear to be the better weed managers who place a higher priority on weed control.

The barriers that interviewees believed they faced in controlling weed fell into two groups: those that are feasibly within management control, such as lack of time, money or labour; and those that are beyond management control, such as drought, neighbours with weeds, or weeds on adjoining public land. Lack of time and lack of money were the most frequently mentioned (two thirds of interviewees). Neighbours with weeds, lack of labour and drought were mentioned by between two thirds and half of the interviewees.

There is a good deal of evidence in the findings from the telephone interviews that it is the poorer weed managers who believe they are prevented from improving weed control by factors such as lack of time, money and labour – factors that may well be within their own management control. On the other hand, the better weed managers appear to be more troubled by spillover effects from adjoining properties.

Implications for weed management extension strategies

The findings of the telephone survey are broadly consistent with the findings from a previous phase of the research – a face-to-face on-farm and mail-back survey in northern NSW, southern NSW and north eastern Victoria. The findings are also consistent with a number of the findings from a parallel project undertaken by Rural Enablers.

Weed levels on farms represent a balance struck by managers between the barriers and difficulties they face, and how hard and how effectively they are prepared to work to overcome these barriers. The previous phase of research identified three key factors in effective weed management: deliberation (planned, strategic and integrated weed control), diversity (of methods) and diligence (in application of methods). It was also found that there were a number of types of weed managers depending on the extent to which they used deliberation, diligence and a diversity of methods in their weed management.

The motivations and barriers identified in the telephone survey are relevant to different stages on the range of adoption paths that producers might take as they improve their weed management. For example, for the poorest weed managers, the path to better weed management might be via the 'simple diligent' stage – the adoption and diligent application of a few straightforward herbicide-based control methods to some of the more serious and easily recognised broadleaf weeds. This step on the adoption path could be encouraged in extension communication by emphasising that, while livestock production and cropping is never simple, producers can make their weed control simpler by establishing a routine with a few straightforward methods and following it diligently.

The association between better weed management and motivations relating to weed life cycle suggests that information resources on the life cycle and ecology of individual weeds will be important for those producers seeking to move beyond simple routine weed control to more deliberative approaches.

The report also discusses a number of more general extension implications that arise out of the findings of the telephone survey. Of particular importance, and consistent with the findings from the Rural Enablers parallel project, it is very clear that there is a strong preference among producers considering adoption of weed control methods for 'people sources' such as agricultural consultants (particularly among croppers) and field days and workshops. The level of preference for written sources is lower, although fact sheets, weekly newspapers and industry newsletters are regarded as useful by around 90 per cent of producers. This suggests that in the overall scheme of extension programs, the motivation for action may have to come from trusted and credible 'people sources', backed up by readily available, appropriately pitched, written resources that can be drawn upon once a producer is involved in changing their weed control methods.

The report provides regional breakdowns on all the questions in the telephone survey. These tables will be of value to regional weeds extension staff planning extension programs.

A3.1 Telephone Survey Objectives

To supplement the on-farm interviews and mail-back questionnaire with a more detailed and geographically broader understanding of the motivations for, and barriers to, the adoption of effective weed management practices.

To supplement the findings from the on-farm interviews and mail-back questionnaire with figures that can be more validly generalised than those from the small sample of farms visited.

To trial a method of identifying non-adopters in a telephone survey.

A3.2 Telephone Survey Details

A3.2.1 Method

ABS Agricultural Census data was used to prepare a list of the local government areas in New South Wales, Victoria, South Australia, Tasmania and Western Australia which contained 90 per cent of the total number of cereal-sheep and cattle establishments in those States. The list was adjusted to ensure that only local government areas in the southern cereal and higher rainfall zones were included. GIS software was used to obtain a list of postcode areas covering these local government areas. Telephone interviews were carried out by a market research firm, Taverner Research of Sydney, drawing telephone numbers randomly from within these postcodes. Only respondents with more than 500 sheep and/or 60 cattle were included in the survey. The interview schedule is provided in section A3.8.1. Sampling was stratified by State to provide the best possible confidence intervals on estimates of proportions for each State, while maintaining a total sample size of 800. With a sample of 48 in Tasmania and samples of 188 in each of the remaining States, it was possible to obtain confidence intervals on estimates of proportions around ±10 per cent (calculated with the finite population correction) in each of the States. Unless otherwise noted, the figures in tables in this report are weighted to the actual distribution of establishments across States.

A3.2.2 Nature of the sample

The following tables provide some basic demographics and farm characteristics for the sample.

A3.2.2.1 Demographics

Table A3.2.1 Proportion of business partners in each of three age groups.

Region	Proportion in age group (%)		
	Less than 35 years	Between 35 and 55 years	Over 55 years
Nthn NSW	16	61	22
Sthn NSW	10	66	24
Nth eastern Vic	5	80	16
Central and Western Vic	12	66	22
Tas	12	71	16
SA	14	71	15
WA	11	73	16
All regions	12	68	20

Table A3.2.2 Proportion of interviewees with formal learning experience at a university or college, TAFE or high school.

Region	Proportion with formal learning in category (%)		
	Uni or College	TAFE	High school
Nthn NSW	18	32	67
Sthn NSW	23	34	65
Nth eastern Vic	17	27	88
Central and western Vic	19	36	77
Tas	26	23	80
SA	10	42	65
WA	21	16	75
All regions	18	31	71

Table A3.2.3 Proportion of interviewees with informal learning experience through growing up on a farm, working in a farming partnership with their parents, or regularly attending field days.

Region	Proportion of interviewees (%)		
	Grew up on farm	Partnership with parents	Regularly attends field days
Nthn NSW	87	74	72
Sthn NSW	88	68	74
Nth eastern Vic	85	67	66
Central and western Vic	89	75	76
Tas	94	82	75
SA	90	82	76
WA	88	81	82
All regions	88	75	75

A3.2.2.2 Farm characteristics

Table A3.2.4 Proportion of interviewees with beef, sheep and cropping enterprises.

Region	Proportion of interviewees (%)		
	Beef	Sheep	Cropping
Nthn NSW	95	68	53
Sthn NSW	75	85	79
Nth eastern Vic	86	40	46
Central and Western Vic	71	70	66
Tas	86	76	71
SA	60	82	66
WA	43	92	90
All regions	72	76	69

Table A3.2.5 Size distribution of properties

Region	Proportion of properties in each size category (%)						
	500 to 1,000 ha	2,500 to 5,000 ha	2,500 to 5,000 ha	5,000 to 10,000 ha	10,000 to 25,000 ha	25,000 to 50,000 ha	50,000 to 100,000 ha
Nthn NSW	37	40	15	8	1	0	0
Sthn NSW	45	34	7	5	6	2	0
Nth eastern Vic	87	11	2	0	0	0	0
Central and Western Vic	58	27	8	4	2	1	0
Tas	48	23	14	2	12	2	0
SA	47	32	8	6	3	2	1
WA	21	46	20	12	2	0	0
All regions	44	34	11	7	3	1	0

A3.3 Telephone Survey Findings

A3.3.1 Weed awareness and identification

Consistent with the findings of the farm visits and mail-back survey, producers are generally aware of the common broadleaf weeds and confident that they can identify them. However, the levels of awareness and confidence are much lower for grass weeds. The proportions of interviewees aware of the existence of various weed species and their confidence in identifying these weeds are shown for each region in section 0.

A3.3.2 Attitudes to weed control

The attitude statements used in the mail-back survey were used in the telephone survey, with refinements to some statements, the omission of others and the addition of several new statements. The results of factor analysis (principal components) on these statements was largely consistent with the findings from the mail-back survey. It was found that 43 per cent of the variation in the responses to the 12 attitude statements could be captured with the three strongest attitudinal dimensions. The correlations between attitude statements and the three attitudinal dimensions are shown in Table A3.3.1.

The three dimensions can be summarised as:

- dimension 1: “Weeds – nothing to worry about”,
- dimension 2: “Weed control – a habitual routine”, and
- dimension 3: “Weed control – worth trying new methods”.

A3.3.3 Motivations for weed control

A3.3.3.1 Types of motivations

A wide range of motivations were mentioned by interviewees when asked:

> *...when you are thinking about the jobs you have to get done in the coming few days or weeks, what reasons will cause you to put weed control in a particular paddock or place on your property at the top of the list?*

The responses were grouped into 11 main categories (Table A3.3.2).

Table A3.3.1 Correlations between individual attitude statements and the three attitudinal dimensions

Attitude statement	Correlations with dimensions		
	1	2	3
In my view, you are better off looking after your stock, than worrying too much about weeds.	**.689**	.261	
Fortunately, weed control is something you can put off in difficult times, and catch up on later.	**.631**	.223	
Of all the jobs on the farm, weed control is probably one of the most important	**-.589**		.207
Weed control is more a matter of economics than having a weed-free property you can be proud of.	**.580**	-.114	.253
The satisfaction of having no weeds on your property makes up for the time and money you have to spend on weed control.	**-.533**	.368	.231
With weed problems, it's best to get in and fix them yourself, rather than talking to others about what to do.		**.726**	
With weed control, it's better to stick to what you know works well, rather than trying new methods.		**.613**	-.104
Weed control is one part of running a property that hasn't changed much over the years.		**.573**	
In this district, it's just the same few weeds that are the problem – you don't have to worry about new weeds appearing.	.184	**.540**	.105
With most weeds around here, it's possible to change your grazing management so they don't get a chance to take hold.	.235		**.664**
If you see a plant on your place you haven't seen before, you should get it identified straight away.	-.203	-.131	**.662**
Generally, the benefits of new weed control methods outweigh the costs in trying them out.	-.225	.299	**.337**

Correlation3 less than 0.100 omitted

Interviewees could give more than one motivation (the average number given across all interviewees was 1.6), however it was found that there were no strong correlations among particular motivations for those who gave more than one motivation. In addition, there was no tendency for interviewees to fall into a small number of distinct groups defined by particular combinations of motivations.

Table A3.3.2 Frequency of responses to the question about what would cause interviewees to place weed control at the top of their list of jobs.

Motivation	Proportion of interviewees (%)
Related to weed life cycle (e.g before flowering or seeding)	39
Fitting in with other farming operations (e.g. stock movement)	34
Certain times of year (e.g. early in spring)	29
High weed levels	24
If a weed is competitive or invasive	18
Weather-related (e.g. after rain)	17
When productivity is impacted	16
When product quality is impacted	5
When chemicals are cheap	3
When aesthetics are impacted	1
When there is pressure from weed authorities	0

Percentages add to more than 100 because interviewees could nominate more than one motivation. Zero values indicate proportions less than 0.5 per cent.

The first seven categories in Table A3.3.2, above, comprised 95 per cent of the responses given. The combinations of one or more of the seven categories given in responses were ranked in order of most frequent to least frequent combination. In all, 63 different combinations of categories were represented in the responses given by interviewees. The top ranking combination, in terms of how frequently it was given by interviewees, was given by 14 per cent of interviewees. The 13 highest ranking combinations accounted for the responses of just under 75 per cent of interviewees. At the other end of the ranking, there were 14 combinations of catgories each given by just one interviewee. The frequencies for the 13 highest ranking combinations are shown in Table A3.3.3.

For the more common combinations of motivations, it is possible to determine whether there are statistically significant relationships between the combination of motivations and the responses to other questions. The following sections describe these relationships (all relationships are significant at the 0.05 level or better, as shown by a chi-squared test, Fisher's exact test or analysis of variance). Only the first four combinations of motivations in Table A3.3.3 are described, as the numbers of interviewees in each combination of motivations below the first four were too small for drawing generalisable inferences.

A3.3.3.2 Factors related to fitting in with other farming operations

Interviewees in Western Australia were more likely to give a single motivation related to fitting in with other farming operations (18 per cent compared to the national average of 11 per cent), while those in north eastern Victoria were least likely to give this motivation (3 per cent). Among Western Australian interviewees, those who gave a single motivation related to fitting in with other farming operations were more likely to regard Brome Grass as easy to identify (97 per cent compared to 82 per cent among other West Australian interviewees).

Table A3.3.3 Most common combinations of motivations in responses to the question about what would cause interviewees to place weed control at the top of their list of jobs.

Combination of motivation categories	Proportion of interviewees (%)
One motivation only: fitting in with other farming operations	14
One motivation only: weed life cycle	13
One motivation only: high weed levels	10
One motivation only: certain times of year	7
One motivation only: whether the weed is competitive or invasive	5
Two motivations: certain times of year and weed life cycle	5
One motivation only: weather-related	5
One motivation only: when productivity is impacted	5
Two motivations: weed life cycle and high weed levels	3
Two motivations: certain times of year and fitting in with other farming operations	2
Two motivations: weather-related and fitting in with other farming operations	2
Two motivations: high weed levels and whether weed is competitive or invasive	2
Two motivations: weed life cycle and fitting in with other farm operations	2

Nationally, those who gave a single motivation related to fitting in with other farming operations were:

- more likely to regard better ground cover for weed control as not worth doing (10 per cent compared to 4 per cent among other interviewees),
- more likely to regard holding yards and other quarantine measures as not worth doing (40 per cent compared to 22 per cent among other interviewees),
- more likely to regard using fertiliser to outcompete weeds as not worth doing (28 per cent compared to 17 per cent among other interviewees),
- more likely to nominate herbicide resistance as a difficulty they faced with weed control (38 per cent compared to 21 per cent among other interviewees),
- less likely to run beef cattle (55 per cent compared to 69 per cent among other interviewees),
- less likely to agree or strongly agree with the statement that: *The satisfaction of having no weeds on your property makes up for the time and money you have to spend on weed control* (67 per cent compared to 76 per cent among other interviewees),

- less likely to agree or strongly agree with the statement that: *Weed control is one part of running a property that hasn't changed much over the years* (33 per cent compared to 43 per cent among other interviewees),
- less likely to agree or strongly agree with the statement that: *Of all the jobs on the farm, weed control is probably one of the most important* (52 per cent compared to 63 per cent among other interviewees),
- more likely to regard agricultural consultants as very useful sources of information (62 per cent compared to 48 per cent among other interviewees), and
- less likely to give *Vigilance and diligence* as the key to keeping weed levels low (22 per cent compared to 54 per cent among other interviewees).

Those who gave a single motivation related to fitting in with other farming operations also had a higher mean score on the first attitudinal dimension (*Weeds – nothing to worry about*), denoting a lower priority placed on weed control.

A3.3.3.3 Factors relating to weed life cycle

Interviewees in southern NSW were most likely to give a single motivation related to weed life cycle (14 per cent), while those in central and western Victoria and in Tasmania were least likely to give this motivation (4 per cent in each case). Among South Australian interviewees, those who gave a single motivation relating to weed life cycle were more likely to regard Paterson's Curse as a weed (100 per cent compared to 84 per cent among other South Australian interviewees). Among central and western Victorian interviewees, those who gave a single motivation relating to weed life cycle were less likely to regard Vulpia as easy to identify (25 per cent compared to 81 per cent among other central and western Victorian interviewees).

Nationally, interviewees who gave a single motivation relating to weed life cycle were:

- more likely to nominate drought as a difficulty they faced in weed control (60 per cent compared to 47 per cent among other interviewees),
- more likely to nominate a shared boundary with public land as a difficulty they faced in weed control (56 per cent compared to 33 per cent among other interviewees),
- more likely to say that their weed levels were higher than they would like but lower than in their district (39 per cent compared to 25 per cent among other interviewees),
- more likely to agree or strongly agree with the statement that: *Generally, the benefits of new weed control methods outweigh the costs in trying them out* (65 per cent compared to 49 per cent for other interviewees),
- less likely to agree or strongly agree with the statement that: *Fortunately weed control is something you can put off in difficult times and catch up on later* (10 per cent compared to 20 per cent among other interviewees),

- less likely to agree or strongly agree with the statement that: *In my view, you are better off looking after you stock than worrying too much about weeds* (13 per cent compared to 24 per cent among other interviewees),

- more likely to disagree or strongly disagree with the statement that: *Weed control is more a matter of economics than having a weed-free property you can be proud of* (43 per cent compared to 31 per cent among other interviewees), and

- more likely to regard visits from the local weeds officer as a very useful source of information (38 per cent compared to 27 per cent among other interviewees).

Those who gave a single motivation relating to weed life cycle also had a smaller mean number of sheep (3003 compared to 5008 for other interviewees). Consistent with this, they also had a lower mean percentage of income from wool (13 per cent compared to 18 per cent for other interviewees) and a higher mean percentage of income from crop sales (25 per cent compared to 18 per cent for other interviewees).

Those who gave a single motivation relating to weed life cycle had a lower mean number of persons in their household (2.6 compared to 2.9 for other interviewees). While the relationship with age was not significant, the differences in proportions in various age groups for those who gave a single motivation relating to weed life cycle would suggest that the smaller household size is more likely to be due to children having left home than to young couples with no childrend.

Those who gave a single motivation related to weed life cycle also had a lower mean score on the first attitudinal dimension (*Weeds – nothing to worry about*), denoting a higher priority placed on weed control.

A3.3.3.4 Factors relating to weed levels

There were no significant differences across regions in the proportion of interviewees who gave a single motivation related to weed levels. Those who did give this motivation were:

- more likely to be unfamiliar with spray grazing (26 per cent compared to 14 per cent among other interviewees),

- less likely to disagree or strongly disagree with the statement that: *In my view you are better off looking after your stock than worrying too much about weeds* (46 per cent compared to 60 per cent among other interviewees),

- more likely to agree or strongly agree with the statement that: *With weed control, it's better to stick to what you know works well, rather than trying new methods* (52 per cent compared to 36 per cent among other interviewees),

- less likely to regard advisers employed by fertiliser or chemical companies as a very useful source of information (11 per cent compared to 24 per cent among other interviewees), and

- less likely to regard retailers, merchandisers aor stock and station agents as a very useful sources of information (14 per cent compared to 29 per cent among other interviewees).

Those who gave a single motivation relating to weed levels had a higher mean score on the second attitudinal dimension (*Weed control – a habitual routine*), suggesting a greater tendency to see weed control as a necessary routine rather than strategic management.

A3.3.3.5 Factors relating to time of year

There were no significant differences across regions in the proportions of interviewees giving a single motivation relating to time of year. However, in southern NSW, interviewees who gave this motivation were less likely to regard Serrated Tussock as a weed (67 per cent compared to 100 per cent among other interviewees).

Interviewees who gave a single motivation relating to time of year were:

- less likely to agree with the statement that: *Weed control is one part of running a property that hasn't changed much over the years* (26 per cent compared to 42 per cent among other interviewees),

- more likely to regard daily or local newspapers as not useful sources of information (56 per cent compared to 41 per cent among other interviewees),

- more likely to regard leaflets and booklets from retailers as not useful sources on information (33 per cent compared to 16 per cent among other interviewees), and

- more likely to be in the minimal control group as defined by use of weed control practices (28 per cent compared to 12 per cent among other interviewees).

Those who gave a single motivation relating to time of year had a higher mean number of people in the household (3.4 compared to 2.9 for other interviewees).

A3.3.4 Motivation differences between croppers and graziers

The motivations given by interviewees who had no cropping and interviewees who had crops and livestock were compared. Interviewees who had livestock only and no cropping were:

- more likely to give motivations relating to weather (17 per cent compared to 11 per cent among those with crops and livestock), and

- less likely to give motivations relating to fitting in with other farm operations (21 per cent compared to 29 per cent among those with crops and livestock).

A3.3.5 Motivation differences between those with high and low predicted weed incidence

As described in section A2.2 in the report on the farm visits and mail-back survey, it was possible to use the data from the mail-back survey, together with the ratings of weed incidence provided by the weeds officers assisting with the farm visits, to identify a small set of questions (not about weed incidence) which provided good predictive measure of weed incidence.

Table A2.2.1 in the report on the farm visits and mail-back survey listed a set of questions, the answers to which would correctly predict whether or not a respondent was in the lower or upper half of the distribution of weed incidence ratings in 82 per cent of cases.

By applying the predictive equation developed from the mail-back survey data and weeds officer ratings to the same set of questions in the telephone survey, it was possible to predict whether or not telephone interviewees might lie in the lower or upper half of the unknown distribution of weed incidence levels on their properties.

Comparison of the motivations of the half of interviewees with higher predicted weed incidence and the half with lower predicted weed incidence revealed that those with higher predicted weed incidence levels were less likely to give motivations related to weed life cycle (22 per cent compared to 31 per cent among the half of interviewees with lower predicted weed incidence).

A3.3.6 Barriers to effective weed control

A3.3.6.1 Types of difficulties

The items about difficulties with weed control used in the mail-back survey were used in the telephone survey, with the addition of several new items. The frequencies with which these difficulties were reported are shown in Table A3.3.4.

Using factor analysis (principal components) on these items found that 44 per cent of the variation in the responses to the 14 items could be captured with the four dimensions. The correlations between items and the four dimensions are shown in Table A3.3.5.

The groups of items indicated by the bolded correlations and row shading in Table A3.3.5 suggest that barriers may fall into four different types. The first, represented by dimension 1, is a group of barriers which are theoretically amenable to management control (perhaps with the exception of *Difficult country*), even if the items represent fairly severe difficulties. The second type, represented by dimension 2, is a group of barriers that are mostly beyond the management control of the individual. These are genuine barriers or a rationalisation for lack of weed control by an external locus of control personality. The remaining factors are more difficult to interpret and represent a residue of difficulty items that are generally unrelated and more reflective of the choice of items in the survey, rather than inherent attitudinal dimensions.

Table A3.3.4 Proportions of interviewees reporting various difficulties with weed control.

Difficulty with weed control	Proportion of interviewees (%)
Lack of time	67
Lack of money	66
Neighbours with weeds	60
Lack of labour	59
Drought	55
Other priorities	51
Difficult country	46
Dislike using chemicals	40
Methods don't work well	35
Shared boundary with public land	35
Herbicide resistance	21
Medical problems	16
Lack of information	13
Live off-farm	7
When there is pressure from weed authorities	0

Percentages add to more than 100 because interviewees could nominate more than one difficulty.

Table A3.3.5 Correlations between individual difficulty items and the four difficulty dimensions.

Difficulty item	Correlations with dimensions			
	1	2	3	4
Lack of time.	**.773**			
Lack of labour	**.674**	.224		
Other priorities	**.638**	-.101		.203
Lack of money	**.528**	.115	.195	
Difficult country	**.355**	.315		-.310
Shared boundary with public land		**.587**	-.261	
Medical problems		**.580**	.379	
Neighbours with weeds		**.528**	.173	
Drought	.290	**.510**		
Live off-farm		.144	**.704**	-.264
Herbicide resistance			**.594**	.397
Dislike using chemicals	.292		**.430**	.152
Methods don't work well	.153		.124	**.642**
Lack of information		.163		**.634**

Correlation3 less than 0.100 omitted

For convenience of reference in the following section the first two dimensions are described as:

- dimension 1: difficulties amenable to management, and

- dimension 2: difficulties beyond management control.

A3.3.6.2 Difficulties amenable to management

There were higher mean scores on *Difficulties amenable to management* across interviewees in southern NSW and in Tasmania and lower mean scores across interviewees in north eastern Victoria.

More generally, higher mean scores on *Difficulties amenable to management* were associated with:

- not being familiar with maintaining groundcover as a method of weed control,
- self-reported weed levels being higher than the interviewee would like and higher than in the district,
- regularly attending field days,
- having done agriculture courses at high school,
- having done TAFE courses in agriculture,
- disagreeing with the statement that: *The satisfaction of having no weeds on your property makes up for the time and money you have to spend on weed control*,
- agreeing with the statement that: *Weed control is more a matter of economics than having a weed-free property you can be proud of*,
- agreeing with the statement that: *Fortunately weed control is something you can put off in difficult times and catch up later*,
- disagreeing with the statement that: *With weed problems, it's best to get in and fix them yourself, rather than talking to others about what to do*,
- disagreeing with the statement that: *With weed control, it's better to stick to what you know works well, rather than trying new methods*,
- having a higher score on the attitudinal dimension: *Weeds - nothing to worry about*,
- having a lower score on the attitudinal dimension: *Weed control - a habitual routine*,
- regarding field days as useful sources of information, and
- regarding weekly rural newspapers as very useful sources of information,

A3.3.6.3 Difficulties beyond management control

There were higher mean scores on *Difficulties beyond management control* across interviewees in north eastern Victoria and lower mean scores across interviewees in Western Australia.

More generally, higher mean scores on *Difficulties beyond management control* were associated with:

- regarding quarantine measures as worth doing,
- self-reported weed levels being higher than the interviewee would like but lower than in the district,
- running beef cattle and not having any crops,
- having a higher proportion of income from cattle sales,
- not having worked in partnership with parents,
- agreeing with the statement that: *The satisfaction of having no weeds on your property makes up for the time and money you have to spend on weed control*,
- disagreeing with the statement that: *In my view, you are better off looking after your stock than worrying too much about weeds*,
- agreeing with the statement that: *Of all the jobs on a farm, weed control is probably one of the most important*,
- having a lower score on the attitudinal dimension: *Weeds - nothing to worry about*, and
- being in the group who gave a single motivation related to weed life cycle as causing them to place weed control at the top of their farm jobs.

A3.3.7 Differences in barriers nominated by cropper and graziers

The difficulties encountered in weed control nominated by those with no cropping and those with both crops and livestock were compared. Interviewees with livestock only and no cropping were:

- more likely to nominate lack of information (20 per cent compared to 10 per cent among those with both crops and livestock),
- less likely to nominate herbicide resistance (13 per cent compared to 27 per cent among those with both crops and livestock),
- more likely to nominate medical problems (19 per cent compared to 12 per cent among those with both crops and livestock), and
- more likely to nominate dislike of using chemicals (46 per cent compared to 39 per cent among those with both crops and livestock).

A3.3.8 Differences in barriers between those with high and low predicted weed incidence

Comparison of the difficulties nominated by the half of interviewees with higher predicted weed incidence and the half with lower predicted weed incidence found a number of differences. Interviewees in the half with higher predicted weed incidence were:

- more likely to nominate lack of time as a difficulty they faced in weed control (70 per cent compared to 62 per cent among interviewees in the half with lower predicted weed incidence)
- more likely to nominate lack of money as a difficulty (59 per cent compared to 49 per cent among interviewees in the half with lower predicted weed incidence),
- more likely to nominate lack of labour as a difficulty (69 per cent compared to 60 per cent among interviewees in the half with lower predicted weed incidence),
- more likely to nominate medical problems as a difficulty (17 per cent compared to 11 per cent among interviewees in the half with lower predicted weed incidence),
- more likely to nominate as a difficulty they face in weed control that control methods do not work well (40 per cent compared to 30 per cent among interviewees in the half with lower predicted weed incidence), and
- more likely to nominate other priorities as a difficulty (59 per cent compared to 48 per cent among interviewees in the half with lower predicted weed incidence),

A3.4 Self-Reported Weed Levels

Self-reported weed levels and how the levels compared with levels in the district are shown in Table A3.4.1.

Table A3.4.1 Self-reported weed levels

Self-reported weed level	Proportion of interviewees (%)
Weeds at a level that it is not worth reducing them further	32
Weed levels higher than preferred but lower than the district	26
Weed levels higher than preferred and same as the district	35
Weed levels higher than preferred and higher than the district	7

It is difficult to establish the level of weed infestation on a property by simply asking its owner in a telephone interview. As described in section A3.3.5, the predictive equation developed from the mail-back survey data and weeds officer ratings could be applied to

the same set of questions in the telephone survey, and so predict whether or not telephone interviewees might lie in the lower or upper half of the unknown distribution of weed incidence levels on their properties.

This was then compared with telephone interviewees self-reported weed levels (whether weed levels were higher than they preferred, or were at a level such that it was not worth reducing them further). The relationship between predicted and self-reported weed levels is shown in Table A3.4.2.

Table A3.4.2 Relationship between predicted weed incidence and self-reported weed levels.

Self-reported weed levels	Proportion of interviewees (%)	
	Predicted to be in the lower half of the weed incidence distribution	Predicted to be in the upper half of the weed incidence distribution
Not worth reducing them further	32	32
Higher than preferred	68	68

Table A3.4.2 shows that the proportions of interviewees reporting their weed levels to be higher than preferred is the same for each of the two groups defined by predicted weed incidence. In other words, there is no relationship between what people report their weed levels to be and what their actual levels might be as predicted from a range of other question which proved to have good predictive power in the mail-back survey.

There was also no relationship between predicted weed incidence and self-reported weed levels when the analysis was restricted to just those interviewees in the same regions as where the farm visits and mail-back survey were carried out. This supports the view that the lack of relationship is due more to how interviewees report their weed levels than to a failure of the predictive equation derived from the mail-back survey to generalise to a broader population.

A3.5 Discussion

As described in A3.1, the telephone survey aimed to provide broader geographical coverage than the farm visits and mail-back survey, examine the motivations and barriers in weed control and trial a method of identifying non-adopters in a telephone survey.

A3.5.1 Identifying non-adopters

With regard to the latter aim, it appears that there may be little relationship between actual and self-reported weed levels. The evaluation of the ultimate impact of weed extension programs requires the use of some measure of weed levels and it is clear from this study that self-reported levels in phone interviews will be a very imprecise measure. However, as the report on the farm visits and mail-back survey describes, a simple eight point scale used by weeds officers familiar with weed levels in the region had strong and readily interpreted relationships with respondents views on weed control and their weed control practices. The local knowledge of weeds authority staff is therefore a valuable resource for the evaluation of weeds extension programs. As weeds authorities adopt the use of geographical information systems, an additional resource for evaluation

will become available, subject of course to the privacy guidelines under which the authorities operate.

The predictive equation developed from the mail-back survey data appears to have some potential as a means of predicting the incidence of weeds on properties through telephone interviews. However, it is likely to lose predictive power over time as the circumstances that influence weed incidence on properties change from those that pertained at the time of the farm visits. It is also likely, for similar reasons, to be inaccurate if applied to small numbers of properties in a specific region.

A3.5.2 Motivations

The telephone survey has confirmed that there are a number of attitudinal dispositions towards weeds that will have an influence on the levels of knowledge and skill possessed by producers, and upon the particular motivations that might result in decisions to control weeds at a point in time. Firstly, weed control has to be afforded an overall level of priority among all the tasks that compete for the producer's time and attention. If weeds and weed control are not seen as important, then it is likely less effort will be made to keep informed about control methods and new weed threats. In addition, weed control decisions are more likely to be reactive than planned, and motivated by whatever might elevate weed control to temporary priority, such as observing that is weed is going to seed, or routinely undertaking control measures at a particular time of year.

Secondly, an attitudinal disposition to simplify the inherent complexity of farm management by following routines is also likely to reduce the amount of interest in new or improved weed control methods, particularly if it is believed that the routines being followed are achieving effective control. For those who have weed control routines, the motivations that trigger particular control decisions are more likely to be related to times of year or fitting in with other farm management routines.

Thirdly, consistent with the seminal work of Rogers (1962), a disposition to innovativeness may lead a producer to seeking information on new weed control methods, trialing these methods, and increasing their knowledge and skills in the use of these methods. In such a case, the availability of information on new methods may, of itself, provide sufficient motivation.

The set of attitude statements used in the telephone survey was constrained by the interview time available and was by no means exhaustive of all the possible attitudinal orientations towards weeds and weed control. Other attitudinal dispositions encountered in the farm visits include pride in the appearance of one's property, a tendency to observe closely, and reflect upon, what is happening in crops and pastures and a tendency to give weight to future consequences (often expressed as one year seed, seven years weed). Each of these dispositions can be associated with particular motivations.

For example, when particular species of weeds become highly visible in the farm landscape, this may motivate control activity among those who have pride in the appearance of their farm. For the person with an intense interest in pasture composition, small changes in composition that would be invisible to others may be sufficient to motivate changes to grazing pressure for weed control purposes. For the person who gives weight to future consequences and is confident in their ability to obtain desired outcomes on their property in the future, a weed at the flowering stage

may motivate control activities, while another person with a fatalistic view that their efforts will be in vain may not attempt any weed control.

This suggests that there will be a wide range of possible motivations for embarking upon weed control at a particular time and place. The telephone survey findings were consistent with this expectation – even taking just the seven most frequently given categories out of the 11 categories into which motivations were grouped, there were 63 different combinations of the seven motivations given by interviewees. The most commonly given combination of motivations – a single motivation related to fitting in with other farm operations – was given by only 14 per cent of interviewees.

Despite the apparent diversity of motivations, there is some indication from the telephone interview data of how motivations might be related to other factors. Fitting weed control in with other farm operations appears to be associated more with sheep-wheat production than with beef cattle production, and the need to fit weed control in with other operations may result in lower priority being placed on weed control. Poorer weed management also appears to be associated with weed levels and time of year as motivations for weed control.

On the other hand, those who gave a single motivation relating to weed life cycle appear to be the better weed managers who place a higher priority on weed control.

A3.5.3 Barriers

The barriers that interviewees believed they faced in controlling weed fell into two groups: those that are feasibly within management control, such as lack of time, money or labour; and those that are beyond management control, such as drought, neighbours with weeds, or weeds on adjoining public land. Lack of time and lack of money were the most frequently mentioned (two thirds of interviewees). Neighbours with weeds, lack of labour and drought were mentioned by between two thirds and half of the interviewees.

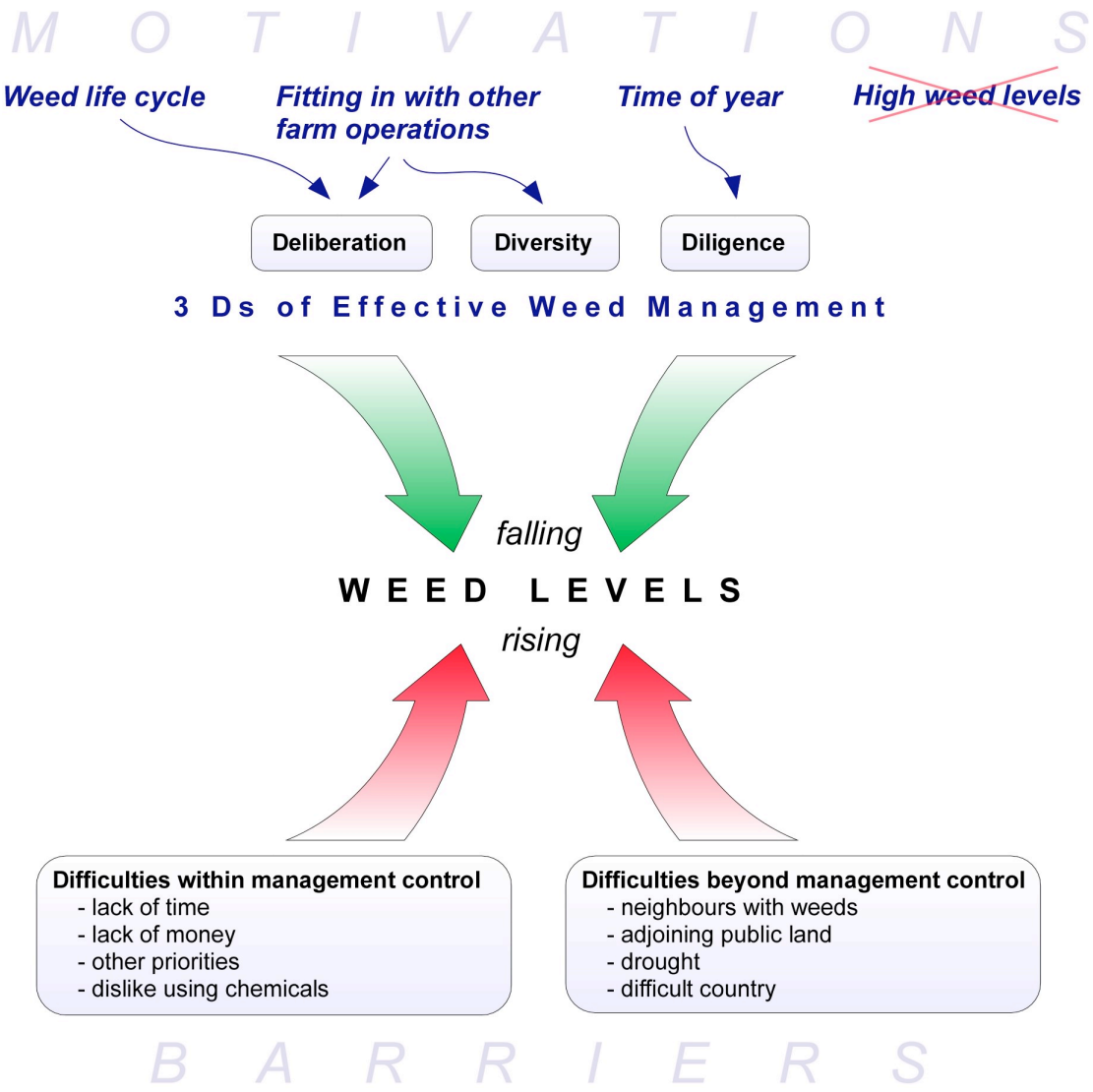
There is a good deal of evidence in the findings from the telephone interviews that it is the poorer weed managers who believe they are prevented from improving weed control by factors such as lack of time, money and labour – factors that may well be within their own management control. On the other hand, the better weed managers appear to be more troubled by spillover effects from adjoining properties.

A3.5.4 Implications for extension

A3.5.4.1 Relationship between motivations and the 3Ds of weed management

These findings are broadly consistent with, and complement, the findings from the farm visits and mail-back survey. The weed levels on farms represent a balance struck by managers between the barriers and difficulties they face (lower part of Figure A3.5.1), and how hard and how effectively they are prepared to work to overcome these barriers (upper part of Figure A3.5.1). For example, the manager of a sub-viable property with mostly steep inaccessible terrain and re-infestation from neighbouring land will have to work much harder to control weeds effectively than the manager of a profitable property on good agricultural land that can all be accessed easily by tractor or quad-bike.

Figure A3.5.1 Schematic of the relationship between motivations, barriers and the 3Ds of effective weed management.



However, for a given property with whatever inherent difficulties might be associated with it, the level of weeds will be determined by skills of the manager. As discussed in the report on the farm visits and mail-back survey, three key aspects of effective weed management are deliberation (planned, strategic and integrated weed control), diversity (of methods) and diligence (in application of methods). Whether or not weed management is undertaken with deliberation, diligence and a diversity of methods depends on the extent to which the manager is motivated to do this.

The findings from the telephone survey suggest that motivations are many and varied, such that weed management extension efforts that seek to tap into these motivations will need to be similarly diverse. At a minimum, there are four main groups of motivations that could be utilised in weed management extension: those relating to

weed life cycle, to fitting in with other farm operations, to time of year and to level of infestation. Weed life cycle related motivations appear to be important among the better managers and a knowledge of weed life cycles is obviously necessary for a planned, strategic and integrated approach to weed management (Figure A3.5.1).

Fitting in with other farm operations is also necessary for this deliberative approach (Figure A3.5.1). Such an approach can make use of the opportunities for weed control offered by farm operations that are being undertaken for purposes other than weed control, and so be part of good weed management. However, the findings from the telephone survey suggest that this motivation may also occur among the poorer managers who place a lower priority on weed control, such that weed control is *only* undertaken when it fits in with other operations.

Motivations relating to time of year are characteristic of a group of weed managers identified in the farm visits and mail-back survey. This group, termed 'simple diligents' achieve good levels of weed control through the diligent and vigilant application of a few straightforward weed control methods such as boom spraying, spot spraying and hand chipping. The routinisation of weed control is, in part, a means of simplifying the inherent complexity of farm management and linking weed control activities to a time of year assists in this.

Motivations relating to high weed levels were also reported by a number of interviewees. As the red cross in Figure A3.5.1 indicates, weed control based on acting only when weed levels become severe does not contribute to effective weed management. This reactive approach is characteristic of some of the poorer weed managers. However, there are situations where successful and cost-effective weed control might be based upon taking action when weed incidence reaches certain thresholds that are well before the severe infestation stage.

A3.5.4.2 Motivation, adoption paths and extension message content

The report on the farm visits and mail-back survey suggested that there were a number of types of weed managers depending on the extent to which they used deliberation, diligence and a diversity of methods in their weed management. It was argued that, for the poorest weed managers, the path to better weed management might be via the 'simple diligent' stage – the adoption and diligent application of a few straightforward herbicide-based control methods to some of the more serious and easily recognised broadleaf weeds. This step on the adoption path could be encouraged in extension communication by emphasising that, while livestock production and cropping is never simple, the farmer and grazier can make their weed control simpler by establishing a routine and following it diligently. Appropriate routines need to be region specific and developed in collaboration with weed and pasture agronomists. The production and dissemination of regional calendars of weed control activities would assist those moving from ineffective reactive weed management to a routine, and provide timely reminders for those following weed control routines.

A necessary part of extension communication for the 'simple diligents' is to publicise via local radio and newspapers when unseasonal conditions necessitate departures from the routine followed in most years. As discussed in the report on the farm visits and mail-back survey, those who are diligently following fixed routines and are achieving good weed control may also need to be alerted to emerging issues, such as new weed threats or particular weeds becoming resistant to herbicides.

It was suggested in the report on the farm visits and mail-back survey that there may be potential in extension efforts to encourage in the 'simple diligent' group to include grass weeds in their routines. As the telephone survey has confirmed the generally lower levels of awareness about grass weeds, such an approach would need to be supported with credible research that showed the loss of production due to grass weeds, and tools to aid in the identification of grass weeds and assessment of their incidence in pastures.

There is a substantial difference in the management of grazing-only properties and those with both crops and livestock. The latter have an inherent diversity which lends itself to the use multiple weed control methods in an integrated fashion. However, as noted above, the many tasks competing for the farmer's attention and the need for timeliness in cropping operations can result in weed control in pastures taking a low priority. For those in this situation, extension communication that emphasises the weed control opportunities generated by other farm operations may be of value. In addition, as those with mixed crop and livestock enterprises can be younger and possibly working off-farm, any information about more time-effective weed control methods is likely to receive consideration by those in this group.

A3.5.4.3 Other extension and communication considerations

There are a number of other considerations arising from the findings from the telephone survey which are applicable to all producers, regardless of where they might be situated on the adoption paths for poor to effective weed management.

Firstly, the telephone survey has confirmed that substantial proportions of producers regard a lack of time and money as a difficulty they face in weed management. This means that emphasis on the time and money saving aspects of weed control methods is likely to gain the attention of a large number of producers.

Secondly, all primary production is subject to the high variability of the Australian climate. The belief that one's best efforts will come to nought because of the vagaries of the weather is a potent justification for neglecting weed control, especially among external locus of control personality types. The challenge for weeds research and extension is to discover and publicise the opportunities for weed control that emerge as a consequence of seasonal fluctuations.

Thirdly, the commonsense idea that 'a stitch in time saves nine' or 'one year's seed, seven years weed' is widely accepted among primary producers. There are a number of areas where this idea can form the basis of extension messages. These include buying clean feed and confined feeding areas during drought, on-farm quarantine meaures such as vehicle washdown areas, and use of certified seed in cropping. Of course, it is implicit in this approach that the relatively small costs of the 'stitch' and the extensive benefits of the 'nine saved stitches' are promoted in a credible way.

Lastly, and consistent with the findings both from the report on the farm visits and mail-back survey and the Rural Enablers project, it is very clear that there is a strong preference among producers considering adoption of weed control methods for 'people sources' such as agricultural consultants (particularly among croppers) and field days and workshops. The level of preference for written sources is lower, although fact sheets, weekly newspapers and industry newsletters are regarded as very useful or of some use by around 90 per cent of producers. This suggests that in the overall scheme of extension programs, the motivation for action may have to come from trusted and

credible ‘people sources’, backed up by written resources that can be drawn upon once a producer is involved in changing their weed control methods.

A3.6 References

Rogers EM 1962. *Diffusion of Innovations.* Free Press, New York.

A3.7 Detailed regional frequency tables

The tables below provide detailed breakdowns by region of the responses to each question in the telephone interview.

A3.7.1 Demographic Data

Table A3.7.1 Size of farm households.

Region	Proportion of farm households (%)					
	1 member	2 members	3 members	4 members	5 members	6 or more members
Nthn NSW	16.7	41.7	16.7	13.5	3.1	8.3
Sthn NSW	15.5	42.3	15.5	18.6	7.2	1.1
Nth eastern Vic	12.7	46.8	14.9	16	8.5	1.1
Central and Western Vic	11.2	37.7	18.4	17.4	7.1	8.2
Tas	7.7	24.6	30.8	16.9	7.7	12.3
SA	7.9	41.1	22.1	15.8	7.9	5.3
WA	7.4	45.3	13.2	21.6	6.3	6.3
All regions	12.4	42.4	16.6	17.2	6.3	5.1

Table A3.7.2 Number of farm household members who are also business partners.

Region	Proportion of farm households (%)			
	1 member	2 members	3 members	4 or more members
Nthn NSW	24.0	60.4	9.4	6.3
Sthn NSW	24.7	62.9	7.2	5.2
Nth eastern Vic	21.3	67.1	6.4	5.3
Central and Western Vic	22.4	60.2	9.2	8.2
Tas	20.0	69.2	4.6	6.2
SA	18.4	68.4	8.9	4.2
WA	17.4	62.6	14.2	5.8
All regions	21.7	63.2	9.4	5.7

Table A3.7.3 Number of farm business partners aged less than 35 years.

Region	Proportion of farm households (%)			
	1 member	2 members	3 members	4 or more members
Nthn NSW	52.2	43.4	0.0	4.3
Sthn NSW	61.1	38.9	0.0	0.0
Nth eastern Vic	71.2	28.8	0.0	0.0
Central and Western Vic	56.4	39.2	0.0	4.4
Tas	61.5	30.8	7.7	0.0
SA	61.9	33.3	4.7	0.0
WA	61.5	28.2	10.2	0.0
All regions	58.7	36.9	2.7	1.7

Table A3.7.4 Number of farm business partners aged between 35 and 55 years.

Region	Proportion of farm households (%)			
	1 member	2 members	3 members	4 or more members
Nthn NSW	11.9	76.3	6.8	5.1
Sthn NSW	12.5	84.4	3.1	0.0
Nth eastern Vic	8.0	81.3	6.6	4.0
Central and Western Vic	17.2	78.1	0.0	4.7
Tas	14.9	83.0	2.1	0.0
SA	13.3	81.5	2.9	2.2
WA	12.3	79.0	8.0	0.7
All regions	12.4	80.2	4.9	2.4

Table A3.7.5 Number of farm business partners aged greater than 55 years.

Region	Proportion of farms (%)			
	1 member	2 members	3 members	4 or more members
Nthn NSW	70.4	25.9	3.7	0.0
Sthn NSW	66.7	33.3	0.0	0.0
Nth eastern Vic	82.2	11.9	5.9	0.0
Central and Western Vic	56.7	39.9	3.4	0.0
Tas	75.0	25.0	0.0	0.0
SA	59.0	35.9	0.0	5.1
WA	52.2	43.2	4.6	0.0
All regions	64.2	32.7	2.5	0.6

Table A3.7.6 Number of farm households with members employed off-farm.

Region	Proportion of farm households (%)			
	1 member	2 members	3 members	4 or more members
Nthn NSW	85.0	10.0	5.0	0.0
Sthn NSW	80.0	20.0	0.0	0.0
Nth eastern Vic	82.5	17.5	0.0	0.0
Central and Western Vic	72.8	27.2	0.0	0.0
Tas	77.3	18.2	4.5	0.0
SA	76.4	22.3	0.0	1.3
WA	81.7	18.3	0.0	0.0
All regions	80.4	18.1	1.2	0.2

A3.7.2 Agricultural Education

Table A3.7.7 Whether participant has completed a university of agricultural college degree.

Region	Proportion in each region (%)	
	Yes	No
Nthn NSW	17.7	82.3
Sthn NSW	22.7	77.3
Nth eastern Vic	17.0	83.0
Central and Western Vic	19.4	80.6
Tas	26.2	73.8
SA	10.0	90.0
WA	20.5	79.5
All regions	18.4	81.6

Table A3.7.8 Whether participant has completed a TAFE course in agriculture.

Region	Proportion in each region (%)	
	Yes	No
Nthn NSW	32.3	67.7
Sthn NSW	34.0	66.0
Nth eastern Vic	26.6	73.4
Central and Western Vic	35.7	64.3
Tas	22.7	77.3
SA	41.6	58.4
WA	15.8	84.2
All regions	30.8	69.2

Table A3.7.9 Whether participant has completed a high school unit in agriculture.

Region	Proportion in each region (%)	
	Yes	No
Nthn NSW	33.3	66.7
Sthn NSW	35.1	64.9
Nth eastern Vic	11.7	88.3
Central and Western Vic	23.5	76.5
Tas	20.0	80.0
SA	35.3	64.7
WA	25.2	74.8
All regions	29.5	70.5

Table A3.7.10 Whether participant grew up on a farm.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	86.5	13.5
Sthn NSW	87.6	12.4
Nth eastern Vic	85.1	14.9
Central and Western Vic	88.8	11.2
Tas	93.8	6.2
SA	90.0	10.0
WA	88.4	11.6
All regions	87.8	12.2

Table A3.7.11 Whether participant has worked in a farm partnership with his or her parents.

Region	Proportion in each region (%)	
	Yes	No
Nthn NSW	74.0	26.0
Sthn NSW	68.0	32.0
Nth eastern Vic	67.0	33.0
Central and Western Vic	74.5	25.5
Tas	81.5	18.5
SA	82.1	17.9
WA	81.6	18.4
All regions	74.6	25.4

Table A3.7.12 Whether participant regularly attends field days.

Region	Proportion in each region (%)	
	Yes	No
Nthn NSW	71.9	28.1
Sthn NSW	74.2	25.8
Nth eastern Vic	66.0	34.0
Central and Western Vic	75.5	24.5
Tas	75.4	24.6
SA	75.8	24.2
WA	82.1	17.9
All regions	74.7	25.3

A3.7.3 Farm Data

Table A3.7.13 Land tenure arrangements.

Region	Proportion of property (%)	
	Freehold title (%)	Leasehold title (%)
Nthn NSW	77.1	22.9
Sthn NSW	79.4	20.6
Nth eastern Vic	83.0	17.0
Central and Western Vic	77.6	22.4
Tas	89.4	10.6
SA	75.3	24.7
WA	84.2	15.8
All regions	79.3	20.7

Table A3.7.14 Whether respondents run beef cattle.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	94.8	5.2
Sthn NSW	75.3	24.7
Nth eastern Vic	86.2	13.8
Central and Western Vic	71.4	28.6
Tas	86.2	13.8
SA	59.5	40.5
WA	42.6	57.4
All regions	72.1	27.9

Table A3.7.15 Whether respondents run sheep.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	67.7	32.3
Sthn NSW	84.5	15.5
Nth eastern Vic	40.4	59.6
Central and Western Vic	70.4	29.6
Tas	75.4	24.6
SA	81.6	18.4
WA	91.6	8.4
All regions	76.0	24.0

Table A3.7.16 Whether respondents grow crops.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	53.1	46.9
Sthn NSW	79.4	20.6
Nth eastern Vic	45.7	54.3
Central and Western Vic	66.3	33.7
Tas	71.2	28.8
SA	65.8	34.2
WA	90.0	10.0
All regions	68.8	31.2

A3.7.4 Regional Weeds

A3.7.4.1 Northern NSW

Table A3.7.17 Whether blackberry (Rubus spp.) is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	No	Unsure
Is it in the region?	59.4	39.6	1.0
Do you regard it as a weed?	88.6	8.3	3.1
Is it easy to identify?	94.8	1.0	4.2

Table A3.7.18 Whether African lovegrass (Eragrostis curvula) is: in the region; considered a weed; and if it is easy to identify.

	Proportion of respondents in each category (%)		
	Yes	No	Unsure
Is it in the region?	39.6	44.8	15.6
Do you regard it as a weed?	56.3	10.4	33.3
Is it easy to identify?	39.6	19.8	40.6

Table A3.7.19 Whether Chilean needle grass (Nassella neesiana) is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	No	Unsure
Is it in the region?	17.7	60.4	21.9
Do you regard it as a weed?	52.1	4.2	43.7
Is it easy to identify?	20.8	20.8	58.3

A3.7.4.2 Southern NSW

Table A3.7.20 Whether Serrated tussock (Nassella trichotoma) is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	No	Unsure
Is it in the region?	29.9	64.9	5.2
Do you regard it as a weed?	90.7	1.0	8.2
Is it easy to identify?	47.7	17.5	35.1

Table A3.7.21 Whether Saffron thistle (Carthamus lanatus) is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	**No**	**Unsure**
Is it in the region?	95.9	4.1	0.0
Do you regard it as a weed?	97.9	2.1	0.0
Is it easy to identify	97.9	2.1	0.0

Table A3.7.22 Whether St John's wort (Hypericum perforatum) is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	**No**	**Unsure**
Is it in the region?	63.9	35.1	1.0
Do you regard it as a weed?	94.8	1.0	4.1
Is it easy to identify?	79.4	8.2	12.4

A3.7.4.3 North eastern Victoria

Table A3.7.23 Whether Blackberry is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	**No**	**Unsure**
Is it in the region?	72.2	26.6	2.1
Do you regard it as a weed?	97.2	2.1	0.0
Is it easy to identify?	98.9	1.1	0.0

Table A3.7.24 Whether Sweet briar (Rosa rubiginosa) is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	No	Unsure
Is it in the region?	59.6	34.0	6.4
Do you regard it as a weed?	71.2	11.7	17.0
Is it easy to identify?	71.3	4.2	24.5

Table A3.7.25 Whether Yorkshire fog (Holcus lanatus) is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	No	Unsure
Is it in the region?	56.4	37.2	6.4
Do you regard it as a weed?	39.4	31.9	28.7
Is it easy to identify?	61.7	7.4	30.9

A3.7.4.4 Central and Western Victoria

Table A3.7.26 Whether Cape weed (Arctotheca calendula) is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	No	Unsure
Is it in the region?	99.0	1.0	0.0
Do you regard it as a weed?	89.9	6.1	4.0
Is it easy to identify?	97.9	1.0	1.0

Table A3.7.27 Whether Vulpia (Vulpia spp.) is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	**No**	**Unsure**
Is it in the region?	59.2	31.6	9.2
Do you regard it as a weed?	66.3	9.2	24.5
Is it easy to identify?	52.0	15.3	32.7

Table A3.7.28 Whether Yorkshire fog is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	**No**	**Unsure**
Is it in the region?	69.4	28.6	2.1
Do you regard it as a weed?	60.2	18.4	21.4
Is it easy to identify?	75.5	2.1	22.4

A3.7.4.5 South Australia

Table A3.7.29 Whether Paterson's curse (Echuim spp.) is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	**No**	**Unsure**
Is it in the region?	821.	16.9	1.0
Do you regard it as a weed?	84.2	13.7	2.1
Is it easy to identify?	97.4	0.0	2.6

Table A3.7.30 Whether Vulpia is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	**No**	**Unsure**
Is it in the region?	75.3	21.0	3.7
Do you regard it as a weed?	81.0	5.3	13.7
Is it easy to identify?	74.7	10.5	14.7

Table A3.7.31 Whether Yorkshire fog is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	**No**	**Unsure**
Is it in the region?	32.1	48.9	19.0
Do you regard it as a weed?	24.2	21.6	54.2
Is it easy to identify?	37.4	2.6	60.0

A3.7.4.6 Western Australia

Table A3.7.32 Whether Cape weed is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	**No**	**Unsure**
Is it in the region?	98.9	1.1	0.0
Do you regard it as a weed?	64.7	32.6	2.6
Is it easy to identify?	98.4	1.6	0.0

Table A3.7.33 Whether Barley grass (Hordeum leporinum) is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	**No**	**Unsure**
Is it in the region?	97.4	1.6	1.1
Do you regard it as a weed?	75.8	18.4	5.8
Is it easy to identify?	93.2	5.3	1.6

Table A3.7.34 Whether Brome grass (Bromus spp). is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	**No**	**Unsure**
Is it in the region?	82.1	14.7	3.2
Do you regard it as a weed?	75.3	14.7	10.0
Is it easy to identify?	73.2	13.7	13.2

A3.7.4.7 Tasmania

Table A3.7.35 Whether Gorse (Ulex europaeus) is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	**No**	**Unsure**
Is it in the region?	87.7	12.3	0.0
Do you regard it as a weed?	98.5	1.5	0.0
Is it easy to identify?	100.0	0.0	0.0

Table A3.7.36 Whether Barley grass is: in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	No	Unsure
Is it in the region?	92.3	6.2	1.5
Do you regard it as a weed?	72.7	22.7	4.5
Is it easy to identify?	98.8	0.0	1.5

Table A3.7.37 Whether Brown top bent (Agrostis capillaris): in the region; considered a weed; and easy to identify.

	Proportion of respondents in each category (%)		
	Yes	No	Unsure
Is it in the region?	69.2	18.5	12.3
Do you regard it as a weed?	53.0	24.2	22.7
Is it easy to identify?	77.3	6.1	16.7

A3.7.5 Weed Levels

Table A3.7.38 Farmers' opinion of the weed level on their property.

Region	Proportion of respondents (%)	
	Weed level is higher than preferred	Not worth reducing weed level any further
Nthn NSW	66.7	33.3
Sthn NSW	71.1	28.9
Nth eastern Vic	62.8	37.2
Central and Western Vic	66.3	33.7
Tas	77.3	22.7
SA	67.4	32.6
WA	69.0	31.0

All regions	67.9	32.1

Table A3.7.39 Farmers' opinion of the weed level on their property compared to that of the surrounding district.

Region	Proportion of respondents (%)		
	A bit higher	About the same	Lower
Nthn NSW	7.8	45.3	46.9
Sthn NSW	11.6	52.2	36.2
Nth eastern Vic	5.1	44.1	50.8
Central and Western Vic	13.9	52.3	33.8
Tas	8.0	50.0	42.0
SA	10.9	47.7	41.4
WA	8.4	64.9	26.7
All regions	9.7	51.6	38.7

A3.7.5.1 Reasons for high weed levels

Table A3.7.40 Farmers' reasons for having high weed levels.

Region	Proportion of respondents stating reason (%)				
	Natural phenomena (e.g. drought)	Nature of the farm enterprise (e.g. sheep spread weeds)	Chemical issues (e.g. long holding period)	Other people (e.g. neighbours have weeds)	Own management (e.g. weeds are not a high priority)
Nthn NSW	0.0	50.0	0.0	50.0	25.0
Sthn NSW	57.1	42.9	14.3	14.3	42.9
Nth eastern Vic	66.7	100.0	0.0	0.0	0.0
Central and Western Vic	50.0	62.5	12.5	0.0	12.5
TAS	33.3	66.7	33.3	33.1	33.3
SA	21.4	57.1	0.0	28.6	0.0
WA	33.3	33.3	8.3	16.7	8.3
All regions	36.3	50.2	7.4	20.7	19.5

A3.7.5.2 Reasons for low weed levels

Table A3.7.41 Farmers' opinions on factors important to maintaining low levels of weeds.

Reason	Proportion of respondents stating reason (%)							
	Nthn NSW	Sthn NSW	Nth eastern VIC	Central and Wstn Vic	TAS	SA	WA	All Regions
Advice and learning	6.7	4.2	0.0	0.0	0.0	0.0	2.8	3.2
Vigilance	56.7	45.8	74.1	45.0	68.8	57.7	36.1	52.5
Timing	16.7	29.2	18.5	20.0	12.5	21.2	22.2	21.4
Pasture management	23.3	16.7	11.1	25.0	6.3	5.8	2.8	14.9
Grazing management	20.0	12.5	7.4	15.0	12.5	19.2	36.1	18.6
Using chemical control methods	30.0	45.8	29.6	20.0	25.0	28.8	30.6	32.7
Biological control	16.7	25.0	14.8	5.0	31.3	11.5	22.2	17.5
An integrated approach	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.4
Hygiene practices	0.0	0.0	0.0	0.0	0.0	1.9	2.8	0.7
Financial commitment	3.3	0.0	3.7	0.0	0.0	7.7	8.3	3.7
Pride in property	0.0	0.0	0.0		25	1.9	0.0	0.4
Particular attention to problem weed	3.3	12.5	0.0	15.0	6.3	5.8	5.6	6.7

A3.7.5.3 When weed control becomes a priority

Table A3.7.42 Factors that motivate farmers to make weed control a high priority.

Reason	Proportion of respondents stating each reason (%)							
	Nthn NSW	Sthn NSW	Nth eastern VIC	Central and Wstn Vic	TAS	SA	WA	All regions
Weeds don't need to be a priority	7.1	3.5	4.7	1.1	0.0	4.7	5.6	4.8
Always a priority	9.5	9.3	15.3	5.7	6.5	7.1	5.6	8.5
Certain times of year	21.4	20.9	28.2	27.3	41.3	23.7	20.9	22.8
At vulnerable stage of weeds life cycle	28.6	38.4	43.5	26.1	26.1	29.6	20.3	30.6
When there are a lot of weeds	14.3	24.4	27.1	36.4	30.4	20.7	19.2	22.0
If a weed is competitive or invasive	11.9	16.3	23.5	21.6	21.7	13.6	19.8	16.8
When other farming operations allow	28.6	19.8	17.6	27.3	32.6	26.6	41.2	27.5
When chemicals are cheap	3.6	1.2	3.5	2.3	4.3	3	0.6	2.2
When product quality is impacted	7.1	3.5	0.0	1.1	0.0	5.3	5.1	4.3
When productivity is impacted	8.3	8.1	5.9	22.7	10.9	11.8	15.8	11.4
When aesthetics are impacted	1.2	0.0	2.4	3.4	4.3	1.2	1.7	1.3
When there is pressure from weed authorities	0.0	0.0	0.0	1.1	2.2	0.6	0.6	0.3

A3.7.6 Weed Control Methods

Table A3.7.43 Farmers' opinion of the importance of improving ground cover in order to control weeds.

Region	Proportion of respondents (%)		
	Well worth doing	Not worth doing	Not familiar
Nthn NSW	94.8	3.1	2.1
Sthn NSW	89.7	6.2	4.1
Nth eastern Vic	93.6	3.2	3.2
Central and Western Vic	90.7	4.1	5.2
Tas	93.7	0.0	6.3
SA	92.3	3.8	3.8
WA	89.8	6.4	3.8
All regions	91.8	4.7	3.6

Table A3.7.44 Farmers' opinion of the usefulness of spray grazing as a method of weed control.

Region	Proportion of respondents (%)		
	Well worth doing	Not worth doing	Not familiar
Nthn NSW	49.5	17.2	33.3
Sthn NSW	63.9	20.6	15.5
Nth eastern Vic	57.0	17.2	25.8
Central and Western Vic	73.2	9.3	17.5
Tas	66.2	10.8	23.1
SA	82.0	10.1	7.9
WA	87.8	8.0	4.2
All regions	68.0	14.4	17.5

Table A3.7.45 Farmers' opinion of the usefulness of slashing as a method of weed control.

Region	Proportion of respondents (%)		
	Well worth doing	Not worth doing	Not familiar
Nthn NSW	53.8	37.6	8.6
Sthn NSW	56.8	36.8	6.3
Nth eastern Vic	50.0	45.6	4.4
Central and Western Vic	52.1	38.5	9.4
Tas	54.7	39.1	6.3
SA	59.1	33.9	7.0
WA	40.4	45.2	14.4
All regions	52.3	39.1	8.6

Table A3.7.46 Farmers' opinion of the usefulness of holding yards and other quarantine techniques.

Region	Proportion of respondents (%)		
	Well worth doing	Not worth doing	Not familiar
Nthn NSW	57.9	22.1	20.0
Sthn NSW	44.6	31.5	23.9
Nth eastern Vic	60.7	9.6	29.8
Central and Western Vic	39.2	22.7	38.1
Tas	43.8	26.6	29.7
SA	55.5	20.3	24.2
WA	42.2	31.9	25.9
All regions	49.9	24.7	25.4

Table A3.7.47 Farmers' opinion of using fertiliser to help useful plants to outcompete weeds.

Region	Proportion of respondents (%)		
	Well worth doing	Not worth doing	Not familiar
Nthn NSW	72.1	18.3	9.7
Sthn NSW	69.5	22.1	8.4
Nth eastern Vic	84.0	9.6	6.4
Central and Western Vic	86.6	8.3	5.1
Tas	77.8	11.1	11.1
SA	63.0	23.7	13.3
WA	71.4	21.1	7.6
All regions	72.5	18.7	8.8

A3.7.7 Difficulties encountered in weed control

Table A3.7.48 Whether a lack of time is a factor hindering weed control.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	62.5	37.5
Sthn NSW	78.4	21.6
Nth eastern Vic	58.7	41.3
Central and Western Vic	64.3	35.7
Tas	75.4	24.6
SA	68.8	31.2
WA	60.5	39.5
All regions	66.7	33.3

Table A3.7.49 Whether a lack of money is a factor hindering weed control.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	63.5	36.5
Sthn NSW	75.3	24.7
Nth eastern Vic	50.0	50.0
Central and Western Vic	53.1	46.9
Tas	67.2	32.8
SA	71.6	28.4
WA	65.6	34.4
All regions	65.7	34.3

Table A3.7.50 Whether a lack of information is a factor hindering weed control.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	14.7	85.3
Sthn NSW	12.5	87.5
Nth eastern Vic	11.7	88.3
Central and Western Vic	11.2	88.8
Tas	14.5	85.5
SA	13.3	86.7
WA	13.7	86.3
All regions	13.2	86.8

Table A3.7.51 Whether a lack of labour is a factor hindering weed control.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	63.5	36.5
Sthn NSW	74.2	25.8
Nth eastern Vic	48.9	51.1
Central and Western Vic	50.5	49.5
Tas	59.1	40.9
SA	55.3	44.7
WA	44.7	55.3
All regions	58.7	41.3

Table A3.7.52 Whether difficult country (e.g. rocky, hilly, treed etc.) is a factor hindering weed control.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	42.7	57.3
Sthn NSW	55.8	44.2
Nth eastern Vic	52.7	47.3
Central and Western Vic	43.9	56.1
Tas	59.1	40.9
SA	41.6	58.4
WA	36.5	63.5
All regions	45.5	54.5

Table A3.7.53 Whether drought conditions are a factor hindering weed control.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	71.4	28.6
Sthn NSW	78.9	21.1
Nth eastern Vic	53.2	46.8
Central and Western Vic	47.3	52.7
Tas	49.2	50.8
SA	35.7	64.3
WA	30.7	69.3
All regions	56.0	44.0

Table A3.7.54 Whether herbicide resistance makes weed control difficult for farmers.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	12.8	87.2
Sthn NSW	21.5	78.5
Nth eastern Vic	7.6	92.4
Central and Western Vic	17.7	82.3
Tas	12.7	87.3
SA	25.3	74.7
WA	38.8	61.2
All regions	21.6	78.4

Table A3.7.55 Whether medical problems are a factor hindering weed control.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	14.7	85.3
Sthn NSW	29.9	70.1
Nth eastern Vic	18.3	81.7
Central and Western Vic	12.3	87.7
Tas	20.0	80.0
SA	10.1	89.9
WA	6.4	93.6
All regions	16.2	83.8

Table A3.7.56 Whether ineffective weed control methods are a factor hindering weed control.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	34.4	65.6
Sthn NSW	39.3	60.7
Nth eastern Vic	27.8	72.2
Central and Western Vic	26.8	73.2
Tas	36.9	63.1
SA	42.1	57.9
WA	38.7	61.3
All regions	36.2	63.8

Table A3.7.57 Whether weed spread from neighbours is a factor hindering weed control.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	63.5	36.5
Sthn NSW	59.8	40.2
Nth eastern Vic	71.3	28.7
Central and Western Vic	53.6	46.4
Tas	50.0	50.0
SA	62.2	37.8
WA	49.5	50.5
All regions	59.6	40.4

Table A3.7.58 Whether dislike of chemical control methods is a factor hindering weed control.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	38.9	61.1
Sthn NSW	39.2	60.8
Nth eastern Vic	32.6	67.4
Central and Western Vic	41.8	58.2
Tas	53.3	46.7
SA	42.2	57.8
WA	43.0	57.0
All regions	40.0	60.0

Table A3.7.59 Whether living off-farm is a factor hindering weed control.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	7.3	92.7
Sthn NSW	8.3	91.7
Nth eastern Vic	7.4	92.6
Central and Western Vic	2.1	97.9
Tas	8.2	91.8
SA	9.6	90.4
WA	5.9	94.1
All regions	7.1	92.9

Table A3.7.60 Whether other priorities reduce the effort farmers can put into weed control.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	43.0	57.0
Sthn NSW	60.8	39.2
Nth eastern Vic	48.4	51.6
Central and Western Vic	59.8	40.2
Tas	72.6	27.4
SA	52.4	47.6
WA	47.8	52.2
All regions	51.9	48.1

Table A3.7.61 Whether sharing a boundary with public land is a factor hindering weed control.

Region	Proportion of respondents (%)	
	Yes	No
Nthn NSW	29.5	70.5
Sthn NSW	38.1	61.9
Nth eastern Vic	51.1	48.9
Central and Western Vic	29.6	70.4
Tas	36.9	63.1
SA	35.8	64.2
WA	28.6	71.4
All regions	34.4	65.6

A3.7.8 Sources of information

A3.7.8.1 People

Table A3.7.62 Whether family members are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	27.2	46.8	26.1
Sthn NSW	40.4	35.1	24.5
Nth eastern Vic	19.6	45.7	34.8
Central and Western Vic	17.5	41.2	41.2
Tas	25.4	42.9	31.7
SA	26.3	52.2	21.5
WA	30.3	49.2	20.5
All regions	29.1	44.6	26.3

Table A3.7.63 Whether neighbouring producers are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	27.1	51.0	21.9
Sthn NSW	34.4	42.7	22.9
Nth eastern Vic	22.6	61.3	16.1
Central and Western Vic	19.6	66.0	14.4
Tas	13.8	66.2	20.0
SA	26.1	56.9	17.0
WA	33.7	55.1	11.2
All regions	28.7	53.1	18.2

Table A3.7.64 Wwhether well-regarded local producers are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	50.6	31.8	17.6
Sthn NSW	52.7	33.3	14.0
Nth eastern Vic	34.1	55.7	10.2
Central and Western Vic	29.5	55.8	14.7
Tas	31.7	55.0	13.3
SA	35.0	56.1	8.9
WA	36.4	53.4	10.2
All regions	42.4	44.6	13.0

Table A3.7.65 Whether staff of the local shire or town council are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	15.1	36.6	48.4
Sthn NSW	11.6	28.4	60.0
Nth eastern Vic	2.3	19.1	78.6
Central and Western Vic	3.4	18.9	77.7
Tas	1.6	14.8	83.6
SA	23.1	35.3	41.6
WA	5.6	19.1	75.3
All regions	11.3	27.9	60.8

Table A3.7.66 Whether visits from the local weeds officer are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	46.2	31.2	22.5
Sthn NSW	34.9	40.7	24.4
Nth eastern Vic	13.7	38.3	47.9
Central and Western Vic	21.7	33.3	45.0
Tas	20.5	30.8	48.7
SA	31.5	42.8	25.8
WA	21.6	41.2	37.3
All regions	31.8	38.1	30.2

Table A3.7.67 Whether staff of government departments (such as agriculture or soil conservation) are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	36.7	44.5	18.9
Sthn NSW	47.8	29.4	22.8
Nth eastern Vic	18.9	57.8	23.3
Central and Western Vic	25.0	47.8	27.2
Tas	25.0	51.6	23.4
SA	24.0	52.6	23.4
WA	39.8	45.7	14.5
All regions	35.2	43.9	20.9

Table A3.7.68 Whether agricultural consultants are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	47.1	36.8	16.1
Sthn NSW	58.9	28.9	12.2
Nth eastern Vic	30.9	38.3	30.9
Central and Western Vic	44.4	43.3	12.2
Tas	41.7	46.7	11.7
SA	46.9	34.3	18.9
WA	60.7	32.0	7.3
All regions	50.8	34.4	14.8

Table A3.7.69 Whether advisors employed by fertiliser or chemical companies are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	27.2	48.9	23.9
Sthn NSW	32.6	49.5	17.9
Nth eastern Vic	14.3	59.3	26.4
Central and Western Vic	18.6	59.8	21.6
Tas	26.2	61.5	12.3
SA	19.6	57.5	22.9
WA	24.6	50.3	25.1
All regions	24.8	52.7	22.5

Table A3.7.70 Whether retailers, merchandisers or stock and station agents are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	34.4	49.0	16.7
Sthn NSW	34.4	51.0	14.6
Nth eastern Vic	17.4	63.0	19.6
Central and Western Vic	29.9	59.8	10.3
Tas	22.7	66.7	10.6
SA	27.0	55.5	17.5
WA	27.4	56.3	16.3
All regions	29.9	54.2	15.9

Table A3.7.71 Whether farmer discussion groups are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	39.5	41.9	18.6
Sthn NSW	55.9	33.3	10.7
Nth eastern Vic	33.3	52.2	14.4
Central and Western Vic	42.1	50.5	7.4
Tas	33.3	58.7	7.9
SA	45.0	45.5	9.5
WA	51.9	42.6	5.5
All regions	46.3	42.4	11.3

Table A3.7.72 Whether field days and workshops are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	50.6	37.6	11.9
Sthn NSW	61.1	31.4	7.6
Nth eastern Vic	30.1	56.1	13.9
Central and Western Vic	39.8	55.0	5.2
Tas	35.6	59.0	5.5
SA	39.7	50.2	10.2
WA	48.5	45.4	6.1
All regions	48.0	42.9	9.1

A3.7.8.2 Written sources

Table A3.7.73 Whether weed books are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	26.6	54.3	19.2
Sthn NSW	47.4	39.2	13.4
Nth eastern Vic	17.4	56.5	26.1
Central and Western Vic	28.4	54.7	16.9
Tas	29.2	66.2	4.6
SA	20.0	61.1	18.9
WA	34.0	47.9	18.1
All regions	31.3	50.8	17.9

Table A3.7.74 Whether daily or local newspapers are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	20.2	44.7	35.1
Sthn NSW	24.7	38.1	37.1
Nth eastern Vic	9.6	52.1	38.3
Central and Western Vic	9.3	51.6	39.2
Tas	10.8	41.5	47.7
SA	14.0	40.5	45.4
WA	15.0	39.0	46.0
All regions	17.3	42.8	39.9

Table A3.7.75 Whether weekly rural newspapers are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	35.4	54.2	10.4
Sthn NSW	44.3	45.4	10.3
Nth eastern Vic	26.1	58.7	15.2
Central and Western Vic	29.9	63.9	6.2
Tas	40.9	54.5	4.5
SA	29.1	60.8	10.1
WA	41.0	48.4	10.5
All regions	36.3	53.4	10.4

Table A3.7.76 Whether farmer and industry newsletters are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	34.0	57.5	8.5
Sthn NSW	45.4	44.3	10.3
Nth eastern Vic	25.8	61.3	12.9
Central and Western Vic	30.6	66.3	3.1
Tas	28.8	66.7	4.5
SA	26.5	60.8	12.7
WA	40.0	53.2	6.8
All regions	35.6	55.3	9.1

Table A3.7.77 Whether fact sheets and booklets from government departments are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	43.0	47.3	9.7
Sthn NSW	45.3	46.3	8.4
Nth eastern Vic	20.5	58.1	21.5
Central and Western Vic	28.0	60.2	11.8
Tas	38.1	49.2	12.7
SA	31.9	55.7	12.4
WA	40.9	50.0	9.2
All regions	37.9	51.0	11.0

Table A3.7.78 Whether leaflets and booklets from agricultural retailers are a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	27.7	53.2	19.2
Sthn NSW	34.8	47.4	17.9
Nth eastern Vic	11.7	66.0	22.3
Central and Western Vic	22.9	61.5	15.6
Tas	16.9	75.4	7.7
SA	18.1	64.3	17.6
WA	21.6	64.2	14.2
All regions	24.8	57.6	17.6

A3.7.8.3 Other sources

Table A3.7.79 Whether radio is a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	18.3	39.8	41.9
Sthn NSW	24.0	43.8	32.3
Nth eastern Vic	11.1	40.0	48.9
Central and Western Vic	6.4	40.4	53.2
Tas	12.7	44.4	42.9
SA	13.3	43.1	43.6
WA	25.4	53.5	21.2
All regions	18.4	43.9	37.7

Table A3.7.80 Whether television is a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	18.8	37.5	43.7
Sthn NSW	12.4	40.2	47.4
Nth eastern Vic	9.6	37.2	53.2
Central and Western Vic	7.2	35.1	57.7
Tas	10.8	26.2	63.1
SA	7.1	37.1	55.7
WA	10.4	32.8	56.8
All regions	12.0	36.9	51.1

Table A3.7.81 Whether the Internet is a useful source of information on weed control.

Region	Proportion of respondents (%)		
	Very useful	Of some use	Not useful
Nthn NSW	20.5	32.9	46.6
Sthn NSW	24.7	34.2	41.1
Nth eastern Vic	17.2	35.9	46.8
Central and Western Vic	17.1	36.6	46.3
Tas	17.0	52.8	30.2
SA	17.7	39.0	43.3
WA	17.4	48.4	34.2
All regions	19.8	37.9	42.3

A3.8 Supporting Documentation

A3.8.1 Telephone interview schedule

Format conventions:

Numbers and capital letters in bold are markers for indicating question sequences that are contingent upon answers to a preceding question

Text in square brackets is instructions for call management, for interviewer and/or for the entry of the schedule into the CATI software.

[1] Good ..... My name is ..... from ..... and we're conducting a survey for the University of New England at Armidale, New South Wales.

[2] Before I continue, I just need to know whether or not you are on a grazing property with more than 500 sheep or 60 cattle.

[if doesn't have more livestock than the threshold, thank and terminate]
[if over the threshold, continue]
[if some other meat producer, e.g. goats, and they have more than 500, assure them that their views will be welcome and continue]

[3] The University has been asked by Meat and Livestock Australia to find out ways they could help meat producers to keep on top of weed problems and reduce the losses to production from weeds in pastures.

[4] Would it be possible to speak to a person in your household who has a major role in the running and decision-making on your property?

[if current interviewee has major role, continue at **5**, below]
[if person with major role is not available, arrange call back]
[if another person has major role and is available, continue at **6**, below]

[5] Would you be willing to answer some questions about any weed problems you might be having and what might be done to help reduce production losses from weeds in pastures? The questions take about 15 minutes, your answers are kept completely anonymous, that is we don't keep any information about who provided the answers. For training purposes, the interview may be monitored by my supervisor. If at the end of the interview you would like more information about the project, we can email or post it to you. Are you happy to start the interview now?

[if agreed, continue at **7**, below]
[if refused, thank and terminate]

[6] [Repeat **1**, **3** and **5**, above, then continue at **7**, below]

[7] Thanks for agreeing to take part.

The first question is about plants that cause problems for producers.

I'll read out a list of plants and can you please tell me for each one:

- firstly, does it occur in your region, [yes, no - record if not sure but don't volunteer]
- secondly, do you yourself regard it as a weed, [yes, no - record if not sure but don't volunteer]
- thirdly, whether it is easy or difficult to recognise. [yes, no - record if not sure but don't volunteer]

[choose weed list corresponding to location of interviewee - see end of schedule]
[may need to prompt with first one or two weeds, e.g. Saffron thistle... Does it occur in your district? And do you yourself regard it as a weed? And would you say it is easy or difficult to identify.]
[rotate order of weeds]

Producers use a range of practices to control pasture weeds. Of course, not all practices are worth doing in all situations. I'll read out a list of weed control methods. Could you please tell me for each one whether, in your experience, it is well worth doing, not worth doing or is something you are not familiar with using.[rotate order]

- Using fertiliser specifically to get pastures to out-compete weeds.
- Getting better ground cover with healthy native pastures or sown improved pastures
- Holding yards and other forms of quarantine to stop weed importation and spread
- Spray grazing, that is, using low doses of herbicides to make weeds more palatable to stock
- Slashing

Controlling weeds is just one of the many things that producers have to deal with, and it's often hard to keep up with weed control. Do any of the following make controlling weeds difficult on your property? [yes, no] [rotate order]

- Lack of time
- Lack of money
- Lack of information about weed control
- Lack of labour to help with weed control
- Difficult country, such as steep or rocky country
- Drought
- Herbicide resistance problems
- Medical problems such as injury or illness
- Control methods don't work well
- Dislike of using chemicals
- Live off-farm and rarely have time to control weeds
- Shared boundary with a national park, vacant crown land, forestry reserve or other type of reserve
- Neighbouring producers with weed problems
- Other priorities

Everyone accepts that weed levels over time on a property vary a fair bit, depending on the seasons and the demands of other jobs that have to be done. At the moment, would you say that the weed levels on your property are
[A] higher than what you would prefer them to be, or
[B] at a level where it wouldn't be worthwhile trying to reduce them any further?

> **[If A]** And in comparison to the general level of weeds on surrounding properties in your district, are the levels of weeds on your place
> **[C]** a bit higher,
> **[D]** about the same, or
> **[E]** lower?
>
> > **[If C]** And is there any particular reason for this? [record response verbatim]
> > **[If E]** What is the key to keeping low levels of weeds on your place? [record response verbatim]
>
> **[If B]** And what's the main reason that it's not worthwhile reducing them any further? [record response verbatim]

The reasons people control weeds can vary from one property to the next, depending on the particular situation and people's preferences. In your situation, when you are thinking about the jobs you have to get done in the coming few days or weeks, what reasons will cause you to put weed control in a particular paddock or place on your property at the top of the list? [record response verbatim].

To make sure we have information from most types of farms, we need a few brief details about your farm.

What is the total area of your property?
[record number and whether answer is in acres or hectares]

And is this all freehold or is some or all of it under lease, agistment or share farming arrangements?
[if not all freehold, record aggregate area under lease, agistment and/or share farming]

Do you run any beef cattle?
[if yes] How many head would you run in an average year?

Do you run any sheep?
[if yes] How many head would you run in an average year?

Do you grow any crops?
[if yes] And on average, about what area is cropped?

A few details about your household will help us make sure that all types of households are represented. As mentioned before, your response is completely confidential and anonymous.

First of all, I'll read out a list of possible income sources and can you tell me for each one approximately what percentage of your farm's total net income comes from that source? [rotate order]

- Cattle sales
- Wool sales
- Sheep sales, for example, culls or lambs
- Crop sales, including hay sales
- Off-farm income

[don't check for summing to 100]

And how many people live in your household?

And how many of these are adults involved in farm decision making and receive income from the business. [response=N]

And how many [use "are either" for N=2] of the [N] partners are under 35 years old?

And how many are over 55?

In the last 12 months, did any [use "either" for N=2] of the [N] partners work off-farm either full-time or part time?
[if no go to next question]
[if yes] And how many worked off farm?

Now I'll read out a list of different ways in which people gain their experience in running farming and grazing properties. For each one can you tell me whether you have this type of experience or not. [don't rotate order]

- Growing up on a farm
- Working in partnership with parents
- Regularly attending field days or group meetings related to agriculture
- High school course in agriculture
- TAFE course relating to agriculture
- University or ag college degree in agriculture

Thanks for those household details. We're just about finished now.

In our discussions with producers, we have been given various opinions on what's important in weed control. I'll read out some of the things we've been told by producers. For each one, can you please tell me whether you agree or disagree, or if it's something you don't have a firm opinion about. [don't rotate order]

The satisfaction of having no weeds on your property makes up for the time and money you have to spend on weed control.
In this district, it's just the same few weeds that are a problem – you don't have to worry about new weeds appearing.

Generally, the benefits of new weed control methods outweigh the costs in trying them out.
With most weeds around here, it's possible to change your grazing management so they don't get a chance to take hold.
Weed control is one part of running a property that hasn't changed much over the years.
If you see a plant on your place you haven't seen before, you should get it identified straight away.
Fortunately weed control is something you can put off in difficult times and catch up later.
In my view, you are better off looking after your stock than worrying too much about weeds.
Weed control is more a matter of economics than having a weed-free property you can be proud of.
With weed problems, it's best to get in and fix them yourself, rather than talking to others about what to do.
With weed control, it's better to stick to what you know works well, rather than trying new methods.
Of all the jobs on a farm, weed control is probably one of the most important.

Finally two questions about weed information.

I'll read out a list of various sources of information about weeds and weed control. For each can you please tell me whether you regard it as very useful, of some use, or not useful. [rotate order]

- Other family members
- Neighbouring producers
- Producers recognised as experts in your region
- Farmer discussion groups
- Field days and workshops
- Staff of the local shire or town council
- Visits from the local weeds officer
- Staff of government departments such as agriculture or soil conservation
- Agricultural consultants, for example private agronomists
- Advisers employed by fertiliser or chemical companies
- Retailers, merchandisers or stock and station agents

Now last of all, I'll read out some sources of published information about weed control? For each can you please tell me once again whether you regard it as very useful, of some use, or not useful. [rotate order]

- Books
- Daily or local newspapers
- Weekly rural newspapers
- Farmer and industry newsletters and magazines
- Fact-sheets and booklets from government departments (agriculture, soil conservation)
- Field days and workshops

- Leaflets and booklets from retailers, merchandisers, and stock and station agents
- Radio
- TV
- Internet

That's the last question. Thank you very much for you help with this. If there are any weed control issues that we haven't covered that you'd like to tell us about, I can arrange for a person from the University of New England to call you.

If you would like to receive a summary of the findings from this project, you can leave your postal or email address with me, and it will be sent to you later this year.

REGIONAL WEED LISTS

Northern NSW
Blackberry
African Love Grass
Chilean Needle Grass

Southern NSW
Serrated Tussock
Saffron Thistle
St John's Wort

North eastern Victoria
Blackberry
Sweet Briar
Yorkshire Fog, also known as Fog Grass

Central and western Victoria
Capeweed
Silver Grass, also known as Vulpia or Rat's Tail Fescue
Yorkshire Fog, also known as Fog Grass

South Australia - postcodes
Paterson's Curse, also known as Salvation Jane
Silver Grass, also known as Vulpia or Rat's Tail Fescue
Yorkshire Fog, also known as Fog Grass

Western Australia
Capeweed
Barley Grass
Brome Grass, also known as Soft Brome or Rip Gut Brome

Tasmania
Gorse
Barley Grass
Browntop Grass, also known Browntop Bent Grass