



# Preventing Farm Injuries

## Overcoming the Barriers

**A report for the Rural Industries Research  
and Development Corporation**

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## Foreword

Safety has been recognised as a key issue for the rural workforce. With the patterns of farm injury beginning to emerge from several studies, an increasing interest in farm safety, and the increasing momentum developed by the partner organisations of Farmsafe Australia, the scene is set for the development and implementation of farm safety initiatives. However, there are a number of barriers or constraints which are challenging progress in this area.

This publication considers some of the barriers and constraints slowing the adoption of farm safety measures in Australia, and discusses measures to overcome them. It presents the results of an evaluation of a national training program, “Managing Farm Safety”, which was developed to overcome the lack of a framework within which individual farmers can manage safety issues.

It provides some recommendations for future action to reduce the significant deaths and serious injuries which occur in farming in Australia.

The project is part of RIRDC’s Future Agricultural Systems Program which aims to identify key generic cross-sectoral issues confronting the rural sector and devise appropriate R&D programs that will benefit the sector and the nation. Funding was provided by the Farm Occupational Health and Safety Joint Research Venture, with contributions by the Woolmark Company, GRDC, CRDC, MRC and RIRDC.

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# Contents

<b>Foreword</b> .....	<b>iii</b>
<b>Acknowledgments</b> .....	<b>iv</b>
<b>Executive Summary</b> .....	<b>vii</b>
<b>1. Introduction</b> .....	<b>1</b>
<b>2. Objectives</b> .....	<b>3</b>
<b>3. Methodology</b> .....	<b>4</b>
3.1 Evaluation of <i>Managing Farm Safety</i> .....	4
3.2 Documentation of constraints on farm safety, current and new potential initiatives .....	5
<b>4. Results</b> .....	<b>7</b>
4.1 Evaluation of <i>Managing Farm Safety</i> .....	7
4.1.1 Recruitment of intervention and comparison groups .....	7
4.1.2 Response rates for follow-up.....	7
4.1.3 Process evaluation of training day and resource kit by the participants.....	8
4.1.4 Baseline characteristics of intervention and comparison groups.....	9
4.1.5 Impact evaluation of <i>Managing Farm Safety</i> .....	14
4.2 Documentation of constraints on farm safety.....	20
4.2.1 Farmers' values and attitudes .....	20
4.2.2 Economic and cost-related issues.....	21
4.2.3 Shortcomings in education and training .....	21
4.2.4 The age and poor design of farm machinery and safety equipment.....	22
4.2.5 Characteristics of the work force, work practices and farm environment .....	22
4.2.6 Deficiencies in the performance of government departments and other authorities.....	23
4.2.7 Inconsistent support from farmer organisations and rural industry groups.....	23
4.2.8 Competing priorities.....	23
4.2.9 Documentation of current initiatives .....	24
4.3 Documentation of new potential initiatives/strategies.....	27
<b>5. Discussion of Results Compared With Objectives</b> .....	<b>29</b>
<b>6. Implications</b> .....	<b>32</b>
<b>7. Recommendations</b> .....	<b>33</b>
7.1 "Managing Farm Safety" .....	33
7.2 Constraints to the adoption of farm safety measures .....	33
<b>8. References</b> .....	<b>36</b>
<b>Appendix 1 - Questionnaires for the evaluation of Managing Farm Safety</b> .....	<b>39</b>
<b>Appendix 2 - Unadjusted baseline and follow-up data, evaluation of <i>Managing Farm Safety</i></b> .....	<b>68</b>



# Executive Summary

## Introduction

Safety has been recognised as a key issue for the rural workforce. In detailed studies of work related fatalities in Australia for the period 1982-1984, the rural industries group accounted for 19% of all Australian occupational deaths, with 100 deaths annually. Evidence is now emerging to suggest that the position of agriculture has worsened relative to that of other industries. Further, farm injury costs \$A200-300 million annually in Australia, which is 13-20% of the net value of farm production. In addition, farm families and communities are affected, emotionally, economically and socially by the death or serious injury of a member.

The overall goal of this project was to reduce the economic and social costs of farm injury. The specific objective was to address constraints to the adoption of farm safety practices by:

1. Evaluation of the initial implementation of a national farm safety training initiative, *Managing Farm Safety* designed to address the lack of a framework within which individual farmers can manage safety issues
2. Documentation of constraints on farm injury reduction and relevant current initiatives
3. Identification of new potential initiatives

## Methods

The first objective was achieved using a quasi-experimental design with non-equivalent intervention and comparison groups. Farmers participating in *Managing Farm Safety* were invited to participate in the study and asked to complete a short baseline questionnaire prior to the training session. A comparison group of farmers, frequency matched on age and commodity group were selected randomly by telephone and interviewed with similar items from the baseline questionnaire. Both groups were followed up after six months to document farm safety action taken since the baseline survey. Recruitment commenced early in 1996 and all follow up was completed by late 1997.

The baseline questionnaire was used to collect data on current safety practices, and safety features of the property and farm equipment, in addition to demographic and property characteristics. The follow-up questionnaire was used to estimate changes to safety features and practices. The intervention group were also asked about their use of the *Managing Farm Safety* resource package, and about satisfaction with the actual training session.

Following a description of the characteristics of farmers involved in this study, we compared the differences in safety practices between the farmers attending *Managing Farm Safety* (intervention group) and other randomly selected farmers (comparison group) at the time of the first survey (baseline survey) and six months later. The intervention and comparison groups were considerably different at baseline in terms of respondent, farm and safety characteristics, which were likely to influence the outcomes of interest. Therefore, we used the logistic regression model where feasible to control for these differences in our evaluation of the impact of *Managing Farm Safety*.

Objectives 2 and 3 were achieved through a series of semi structured telephone interviews conducted in 1996 with 30 key informants drawn from the range of professions, organisations

and groups that are currently involved in planning and delivering farm health and safety programs, courses and activities to farmers and farm communities across Australia.

## Results

### 1. Evaluation of *Managing Farm Safety*

A total of 224 farmers participating in *Managing Farm Safety* consented to taking part in the follow-up survey (59% of those approached). A total of 216 farmers were recruited for the comparison group, 53% of the estimated number of farmers in the telephone sampling frame. Eighty-seven percent of the intervention farmers (194) and 88% of the comparison farmers (190) completed the telephone interview at the six month follow-up.

High levels of participant satisfaction with the training day and resource kit were observed. For example, the overwhelming majority of participants found the training session content clear and easy to understand (99.0%), useful to their work on the farm (96.4%), and reported that they would recommend the training session to other farmers (97.4%). Key ideas which participants gained from the course included an improved overall awareness (37.6%), information about prevention of specific injuries (23.2%), the importance of a safety check (10.8%), and the importance of personal protective equipment (4.6%). A small proportion of participants reported gaining no key ideas (5.7%).

Sixty-two percent of the participants reported that there were no improvements necessary to the training day, and 69 ways to improve the training day were suggested. The kit had been used since the training session by 47.4% of participants, all of whom reported that it had been useful in managing farm safety. The safety check list had been used by 50 participants, and the resource kit had been used as a reference by 42 participants. The majority of participants (92%) reported no mistakes or errors in the kit materials. Twelve ways were suggested to improve the resource kit.

For the comparison of outcomes during the follow-up period, personal protective equipment use and farm safety training were selected for logistic regression analysis from the range of available variables. The numbers of comparison group farmers who had conducted a safety check at baseline and follow-up was too small to allow for a meaningful logistic regression analysis.

The main effects of *Managing Farm Safety* we were able to detect were that farmers who had completed the program were four times as likely as the comparison farmers to use goggles frequently for workshop activities, eight times as likely to use hearing protection frequently on cabinless tractors, and four times as likely to participate in other farm safety training courses. These effects were particularly pronounced among those who did not report these characteristics at baseline. Among farmers who had not conducted a safety check in the 6 months prior to the baseline survey, we found that 25% of the intervention group had conducted a safety check at follow-up, in contrast to 2% of the comparison group. Among those intervention farmers who had conducted a safety check during the follow-up period, 84% made changes to address the identified potential safety hazards. These changes frequently involved improving the safety features of equipment or the farm environment (70%), as distinct from changes which required safety behaviours to be frequently repeated (30%).

Other property and demographic characteristics were found to influence farm safety practices. Male farmers were less likely than female farmers to use goggles and hearing protection frequently, or to attend farm safety training courses. Cereal growers were more likely than sheep/cattle growers to use hearing protection frequently. Farmers with ten or more years experience, or with four or more employees, were more likely to send workers to farm safety training courses. Younger farmers (under 35 years of age) were more likely to use goggles frequently and were more likely to conduct safety checks.

These results should be considered in the light of two important methodological issues. Firstly, there were considerable baseline differences in influential variables between the intervention and comparison groups. While these differences were adjusted for in the logistic regression analysis of the impact of *Managing Farm Safety* on personal protective equipment use and training program attendance, we were unable to adjust for them adequately in the analysis of the impact on conducting safety checks. Secondly, the low response rates for both the intervention and comparison groups (59% and 53% respectively), threaten the external validity of this study. It is likely that both the intervention and comparison groups are not representative samples and therefore, the extent to which these results can be generalised beyond the study group may be compromised.

## **2. Constraints on farm safety, current and potential initiatives**

The material gathered from the key informants was grouped under broad themes formed around subject topics as listed below:

- farmers' values and attitudes
- economic and cost-related issues
- shortcomings in education and training
- age and poor design of farm machinery and safety equipment
- characteristics of the work force, work practices and farm environment
- deficiencies in the performance of government departments and other responsible authorities
- inconsistent support from farmer organisations and rural industry groups
- competing priorities

An important aspect of the key informant data is that it necessarily reflects the opinions of the key informants. Consequently some of the information presented here reflects beliefs, attitudes and values of the key informants, in addition to more tangible constraints on farm safety. A range of current farm injury prevention initiatives was identified by the key informants and these are documented in Table 3 in the body of the report. Obviously, this would not be a complete listing since the methods were not appropriate to achieve this.

Potential initiatives and policies identified and discussed include:

- targeting of the less depressed segments of the farming industry
- coupling high profile awareness and anxiety raising campaigns with the provision of accessible and workable solutions and with reduced or absent financial barriers
- support for safety training and incentives for low cost do-it-yourself farm safety-related projects as part of 'rural relief' packages

- incentives such as insurance ‘no-claim’ or other bonuses and government subsidies to encourage safety innovations on farms.
- marketing of farm safety in a way that links it to the higher ranked priorities of farmers, such as improved productivity and maintenance of the farm family lifestyle
- inclusion of safety as a focus in all industries and sectors which serve agriculture
- improving the design of personal protective equipment and increasing its accessibility

## Implications

The results presented here from the evaluation of the initial version of *Managing Farm Safety* are very encouraging and suggest that ongoing safety training for farmers has a role to play in improving farm safety. Since this evaluation was conducted, *Managing Farm Safety* has been expanded from a one day program to a nationally accredited two day program of two modules, with a further 2 elective modules available. The accompanying upgrades to the training program may well address the apparent lack of retention of the key steps in hazard management found in the evaluation of the initial version. Improved quality of the *Managing Farm Safety* training presenters is also likely to be addressed by the more extensive training and quality monitoring of presenters of the accredited version of *Managing Farm Safety*. It is important to note that the intervention group in the evaluation were self selected and were more safety aware at baseline than the randomly selected comparison group. The *Managing Farm Safety* program appeared to be effective in assisting these self selected farmers to manage safety on their farms. A major challenge for the future is identifying the measures which increase the proportion of farmers who take advantage of programs such as *Managing Farm Safety*.

However, education for individual action is generally not sufficient to effect change. The more successful injury prevention programs have generally implemented a mixture of education, environmental, design, legislative and enforcement strategies. An important challenge in farm safety is to design the right mix of strategies and countermeasures that produces the safest farm work environment, systems and behaviours which are compatible with the other needs of farmers such as high productivity. This challenge is being met by Farmsafe Australia and others who are bringing a planned systems approach to bear on farm safety, and addressing some of the constraints identified in this research.

In addition to action being taken by the farming community, the general consensus from this research is that governments (through responsible authorities) also need to be more committed and active in providing personnel, funding and other incentives to reduce the unacceptably high rates of death and injury on farms in Australia.

## Recommendations

Suggestions arising from this research are presented here for consideration by agencies and organisations playing a role in farm safety. Farmsafe Australia may wish to review this report, revising these suggested recommendations and making additional recommendations.

### 1. "Managing Farm Safety"

Marketing strategies for ongoing farm safety training should include targeting of farmers with more than ten years experience and more than four employees since these groups are more likely to send workers to safety training courses. Younger farmers should also be targeted since they are more likely to conduct safety checks following farm safety training. Updates of and refresher courses for *Managing Farm Safety* could be conducted in conjunction with major field days.

The provision of a summary sheets for employees in the *Managing Farm Safety* resource kit could be considered.

The participant comments relating to the *Managing Farm Safety* training day and presenters should be circulated to all presenters.

Measures which will increase the proportion of farmers, particularly older male farmers, who take advantage of programs such as *Managing Farm Safety* should be identified and implemented.

Features of *Managing Farm Safety* which would increase the proportion of participants who actually go on to conduct a safety check would be a desirable modification if these could be identified.

The necessity of evaluation of the more developed accredited version of *Managing Farm Safety* should be considered in the light of the magnitude of the changes to the course. Alternative methodologies may be required due to the considerable differences between a self selected intervention group and a randomly selected comparison group.

Although education and awareness raising are important components of injury prevention programs, undue emphasis should not be placed on this strategy alone. Effective injury prevention programs employ a range of strategies and countermeasures.

### 2. Constraints on the adoption of farm safety measures

A coordinated systematic approach should be taken to address the identified constraints, recognising that the partner organisations of Farmsafe Australia have made significant progress since this research commenced. Some of the issues raised by the key informants may require validation prior to the implementation of countermeasures.

System-wide measures for farm injury prevention should continue to be introduced into all aspects of the agricultural industry and those sectors which service the industry, such as hardware retailers, machinery dealers, chemical suppliers, and stock agents. It is recognised that some sectors or the industry eg, commodity groups, are making substantial progress towards improving farm safety.

Campaigns which heighten risk awareness and anxiety should be coupled with accessible and workable solutions and financial barriers should be eliminated to the extent possible.

Farm safety should be marketed in a way that links it to the higher ranked priorities of farmers, including productivity, maintenance of the farm family lifestyle, efficiency, farm management and maintenance of independence.

Insurance incentives should be more broadly negotiated and widely advertised to encourage safety innovations on farms.

Barriers to the use of personal protective equipment, including physical discomfort and design problems, should be explored and addressed.

Design faults and problems with farm machinery and equipment should be fully explored and addressed at the design stage wherever possible, acknowledging that this may involve negotiation with international companies. Specific issues raised in this research include the durability of power take off guards and the placement of machine guards.

General safety awards for innovative solutions to design problems should be continued and encouraged, and consideration given to the development of some specific awards for solutions to particular design problems identified as high priority.

The incorporation of competency-based safety training and risk management principles into formal agricultural training programs and continuing education programs should be continued. Quality control issues for agricultural training should be addressed.

The issue of the cost of farm safety measures needs to be explored and addressed. There appears to be a widespread perception that farm safety is too costly. Accurate costs of farm safety measures coupled with the average lost working time and cost to the farmer for injuries should be included when specific safety measures are being promoted. Other strategies that address cost as a constraint to farm safety should be canvassed and tested.

Specific programs should be targeted to groups identified as adopters of farm safety eg., operators who employ labour, farmers in intensive farming, younger farmers and farm women. This should be complemented by research that identifies triggers for action among farmers not included in these groups.

Strategies that improve the affordability of and access to child care for farm families are needed as a matter of priority.

Examples of activities suitable for local farm safety action groups suggested by this research include:

- surveys of the availability of personal protective equipment in localised areas, followed by action to improve supply where necessary
- training in farm safety for local rural service providers
- machine design workshops which bring together local farmers and machinery manufacturers and dealers to review and document problems with the commonly used

models of various farm machinery; workshop findings could then be distributed to designers and manufacturers of farm machinery

- regional training for unskilled labourers at the commencement of seasonal activities such as picking, harvesting etc



# 1. Introduction

Safety has been recognised as a key issue for the rural workforce (Harrison et al., 1989; Clarke and Wolfenden, 1991; Erlich et al., 1993; Commonwealth Dept of Human Services and Health, 1994; Farmsafe Australia Inc, 1996). In detailed studies of work related fatalities in Australia for the period 1982-1984, farming had the third highest occupational injury fatality rate, after mining and transportation (Erlich et al., 1993; Harrison et al., 1989). The rural industries group accounted for 19% of all Australian occupational deaths, with 100 deaths annually. Since then, evidence is emerging to suggest that the position of agriculture has worsened relative to that of other industries (Fragar, 1996). Non-fatal injury is also significant as there is an average of 30 injuries per 100 farms per annum, with an average loss of 10 working days (Fragar, 1996).

Patterns and leading causes of farm injury mortality and morbidity in Australia have been described, despite limitations with data availability and reliability (Fragar and Coleman, 1996). The most recent estimate of the annual rate for farm injury deaths in Australia was 22 per 100,000 farm workers for the period 1982-1984 (Harrison et al., 1989). Rates for non fatal farm injury vary according to the definition of injury and range from 16-60/100 farms/year (Fragar, 1996). A high male : female ratio has been noted (Griffith, 1994; Ferguson, 1996; Day, 1996). Tractors and powered machinery account for between 55% and 74% of farm work related deaths (Harrison et al., 1989; Fragar and Coleman, 1996). Roll-over and run over incidents respectively account for 47% and 35% of the tractor related deaths (Fragar and Coleman, 1996). Animals, farm machinery and tools, motor vehicles and motor bikes are leading causes of non-fatal farm injury (Fragar and Coleman, 1996; Griffith, 1994, Ferguson 1994 and 1996; Day 1996; Day et al., 1997). Common contexts in which non fatal farm injury occurs include maintenance activities, especially in the farm workshop, agbike or horse riding, and cropping and animal handling (Clarke, 1993; Ferguson, 1994; Griffith, 1994; Valuri and Routley, 1994).

Farm safety is not only an issue for the rural workforce. Members of farm families are also significantly affected. In the 1982-84 work related fatality study, children and older people were found to be over-represented. Among children, drowning (48%), farm equipment (16%) and motor vehicle accidents (13%) are the leading causes of farm deaths (Clarke and Coleman, 1995).

The cost of farm injury are both economic and social. Farm injury costs \$A200-300 million annually in Australia, which is 13-20% of the net value of farm production (Fragar, 1996). Workers compensation, accident insurance, production losses, damage to plant and equipment, permanent impairment or disability, and death of farm workers contribute significantly to the costs of agriculture in Australia. Some health care costs for treatment and rehabilitation are also borne by the health sector. In addition, farm families and communities are affected, emotionally, economically and socially, by the death of, or serious injury to, the farmer, or other family member.

A number of specific prevention measures have been identified for farm injury, including roll over protective structures for tractors, safe machine design, guarding of moving machine parts, personal protective equipment, child safe play areas, and education and training (Thelin, 1990; Clarke and Wolfenden, 1991; National Institute of Occupational Safety and Health, 1993; Springfeldt, 1993; Griffith, 1994; Day, 1995).

The impact of health and safety regulations on farm injury has been limited due to the unpopularity of legislation and difficulties with enforcement. The establishment and development of Farmsafe Australia, an alliance of a number of organisations, provides partnerships for the promotion of farm health and safety issues. The mission of Farmsafe Australia and its partner organisations is to improve well being and productivity in Australian agriculture through enhanced health and safety awareness and practices. Farmsafe organisations have been established in almost all states, in addition to a number of locally based farm safety action groups. An important feature of the Farmsafe movement is the involvement of farmers and their organisations, as well as other key organisations.

With the patterns of farm injury beginning to emerge from several studies, an increasing interest in farm safety and the increasing strength of Farmsafe Australia, the scene is set for the development and implementation of farm safety initiatives. However, one major constraint on the uptake of the various farm injury prevention measures, identified by Farmsafe Australia, has been the lack of an organised structure or framework within which the individual farmer can address safety issues. Effective management of safety has been achieved by quite well developed, and in some cases highly sophisticated, systems within many other industries. Until recently, there have been few such systems in the farming industry.

Farmsafe Australia and the Australian Agricultural Health Unit have produced a training program to assist farmers to manage occupational health and safety in the farm workplace. The program *Managing Farm Safety* has taken into account known occupational health and safety risks for, and legislated responsibilities of, farmers. The program provides training in farm health and safety management for owners/operators and includes a resource package for on-farm use. The five components of the resource package include a generic farm hazard checklist, commodity specific hazard checklists, a register of farm chemicals, a register of training of farm workers and register of farm injury, occupational health and safety guidance notes. The program, launched in September 1994, was initially made available to farmers through each state's Farmsafe organisation. This first version of the program was based on a one-day training course and provision of the resource package. Evaluation of the training program was recognised as important for ongoing development and implementation, and became a specific objective of this project.

## **2. Objectives**

The overall goal of the project was to reduce the economic and social costs of farm injury. The specific objective was to address constraints to the adoption of farm safety practices by:

1. Evaluation of the initial implementation of a national initiative, the Managing Farm Safety Program, designed to address a major constraint of farm injury prevention.
2. Documentation of the known constraints on farm injury reduction and of relevant current initiatives addressing these constraints
3. Identification of new potential initiatives

## 3. Methodology

### 3.1 Evaluation of *Managing Farm Safety*

The first objective was achieved using a quasi-experimental design with non-equivalent intervention and comparison groups. Farmers participating in *Managing Farm Safety* were invited to participate in the study and asked to complete a short baseline questionnaire prior to the training session. A comparison group of randomly selected farmers were interviewed by telephone with similar items from the baseline questionnaire. Both groups were followed up after six months to document farm safety action taken since the baseline survey. Recruitment occurred early in 1996, and follow-up was complete by late 1997.

The sampling frame for the comparison group was formed by the Telstra electronic white pages, excluding readily identifiable metropolitan numbers. Farmers were defined as those living or working on a property greater than 1.5 hectares and regularly producing commodities for sale or trade. Potential comparison farmers who had already participated in *Managing Farm Safety* were excluded. Frequency matching of the comparison group to the intervention group on age (in ten year spans), and major commodity group was intended. Three attempts at differing times were made with each selected number, before discard. Calls were generally made between 12-2pm and 6-8pm on weekdays.

The baseline questionnaire (See Appendix 1) was used to estimate the number of operational tractors and their safety features, exposure to other farm machinery, prevalence and frequency of use of a range of personal protective equipment, current safety practices (including farm hazard checks), and a range of property characteristics such as size and commodities produced. The follow-up questionnaire (See Appendix 1), completed by telephone 6 months after baseline data was collected, was used to estimate changes to safety features of operational tractors, prevalence and frequency of use of a range of personal protective equipment, and current safety practices (including farm hazard checks). The intervention group, ie., those having completed *Managing Farm Safety*, were also asked about their use of the resource package, and about satisfaction with the actual training session.

Computer assisted telephone interviewing, using Epi Info version 6.0, facilitated coding and data entry. Data analyses was undertaken using SPSS. Following a description of the characteristics of farmers involved in this study, we compared the differences in safety practices between the farmers attending *Managing Farm Safety* (intervention group) and other randomly selected farmers (comparison group) at the time of the first survey (baseline survey) and six months after the training sessions. The proportions of tractors equipped with the proper safety devices such as roll over protective frame (ROP) and power take-off guard (PTO), and the frequency of using personal protective equipment, attending safety training courses and conducting safety checks were estimated.

Due to the substantial baseline differences between the intervention and comparison groups on respondent, farm and safety characteristics, we used the logistic regression model to control for these differences in our evaluation of the impact of *Managing Farm Safety*.

The variables of interest indicating safety behaviour are goggle use and hearing protection use reported by farmers at the follow-up interviews six months after the initial survey. The use of goggles was dichotomised as:

- always or almost always using goggles
- or
- use of goggles no more than half the time

The use of hearing protection was dichotomised as:

- use of hearing protection at least half the time
- or
- never or almost never use of goggles.

Participation in safety education was indicated by farmers' attendance of other training courses during the six-month follow-up period.

Five property characteristics were included in the models: age, gender, commodity group, number of workers on the farm, and farming experience. Age of farmers was grouped as young (under 35 years old), middle age (35-54) and older (65 or older). Commodity group categories were cereal (alone or in combination with other commodities), cattle/sheep, and other commodities. Number of workers on farm was categorised into fewer than four, or four or more. Years of farming had three categories, 0-9 years, 10-19 years, or 20 years or more.

Goggle and hearing protection use, and previous attendance of training courses reported by farmers at the initial interviews were also included in the models to account for the differential baseline safety behaviours among farmers. A dichotomous variable, participation in *Managing Farm Safety* was used to indicate the group affiliation of farmers. The estimated parameters of this variable are indicators of the effectiveness of the program. The interaction terms between participation in *Managing Farm Safety* and the baseline safety behaviours were included in the models because it was expected that baseline safety behaviours would be strongly associated with training program impact.

### **3.2 Documentation of constraints on farm safety, current and new potential initiatives**

Objectives 2 and 3 were partially achieved through a series of semi structured telephone interviews conducted with 30 key informants (20 male, 10 female) drawn from the range of professions, organisations and groups that are currently involved in planning and delivering farm health and safety programs, courses and activities to farmers and farm communities across Australia (Table 1).

The interviews, held over a two month period in 1996, were taped (with the agreement of the informants) and took between 35 and 70 minutes, with most lasting approximately 40 minutes. Each interview was loosely structured around four key questions:

- *From your own experience and observation, what are the constraints or barriers that prevent farmers from adopting safety measures on their farms and in their own work practices?*

- *Where do you think safety fits as a priority among farmers?  
-What priorities do you think rank higher?  
-Do you think there has been a change in the priority ranking in the past five years? If yes, how has the ranking changed?*
- *Have you been involved in or observed any programs/activities that have successfully implemented safety measures on farms?  
-Why would you class the program/activity as successful  
-What key factors contributed to the success of these programs/activities*
- *Can you tell me about any current programs for farmers that address farm safety issues?*

All interviews were conducted by the same interviewer who transcribed, analysed and tabulated the key themes that emerged from the interviews.

**Table 1: Distribution of key informants by background and state**

<b>Organisation</b>	<b>QLD</b>	<b>NSW</b>	<b>VIC</b>	<b>TAS</b>	<b>SA</b>	<b>WA</b>	<b>NT</b>	<b>Total</b>
Farmsafe organisation	1	2	1			1		5
Health and safety Organisation	2		1					3
Agricultural education		2			1	1	1	5
Farm machinery manufacturer			1					1
Country Women's Association			1	1				2
Farm safety action groups		1						1
Nursing		1						1
Young Farmers' Association			1					1
Women in Agriculture	1		1					2
Growers' Association				1				1
Agricultural extension officer		2	1	1	2		2	8
<b>Total</b>	<b>4</b>	<b>8</b>	<b>7</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>30</b>

## 4. Results

### 4.1 Evaluation of *Managing Farm Safety*

#### 4.1.1 Recruitment of intervention and comparison groups

Information sheets and baseline questionnaires were distributed to 379 farmers participating in *Managing Farm Safety*. A total of 238 (63%) completed questionnaires were returned, with 224 farmers (59%) consenting to follow-up. The proportion consenting to follow-up varied by state and ranged from 65% in Victoria to 31% in Queensland.

The sampling frame for the comparison group still retained a considerable proportion of ineligible respondents, even after removal of readily identifiable metropolitan numbers (Table 2). Assuming that the proportion of farmers among those not contacted was the same as among those who were contacted, then 53% of farmers in the sampling frame participated in the survey (Table 3). Of farmers contacted, 83% participated in the survey. This ranged from 100% for the small number recruited from South Australia to 62% in Western Australia.

**Table 2: Comparison group recruitment, *Managing Farm Safety* evaluation**

	<b>n</b>	<b>Percent</b>
Total numbers called	1092	100
Not contactable*	396	36.3
Contacted	696	63.7
Ineligible contacts <sup>+</sup>	435	39.8
Eligible contacts (farmers)	261	23.9

\* includes: no answer, answering machine, disconnected, engaged

+ includes: businesses, non farming households

**Table 3: Comparison group response rates, *Managing Farm Safety* evaluation**

	<b>n</b>	<b>Percent</b>
Farmers in sampling frame#	410	100
Farmers contacted	261	63.7
Farmers participating	216	52.7

# estimated assuming proportion of farmers among those not contacted is same as among those contacted

#### 4.1.2 Response rates for follow-up

Eighty-seven percent of the 224 intervention farmers and 88% of the 216 comparison farmers completed the telephone interview at the six month follow-up. Reasons for attrition at this point included the respondent having moved, telephone disconnection and a small number who did

not wish to continue with the follow-up interview (1 in the intervention group, 13 in the comparison group). A high profile legal case relating to a farm injury death influenced the willingness of respondents in one state to complete the follow-up interviews.

**4.1.3 Process evaluation of training day and resource kit by the participants**

The overwhelming majority of participants found the training session content clear and easy to understand (99.0%), and useful to their work on the farm (96.4%). A similar proportion (97.4%) reported that they would recommend the training session to other farmers. The training presenters were found to speak clearly and coherently (99.5%), in an interesting way (97.4%) and answered questions satisfactorily (99.0%). Key ideas which participants gained from the course included an improved overall awareness (37.6%), information about prevention of specific injuries (23.2%), the importance of a safety check (10.8%), and the importance of personal protective equipment (4.6%). A small proportion of participants reported gaining no key ideas (5.7%).

Participants were asked to comment on the most and least useful aspects of the training day. The types of responses in relation to the most useful aspects are found in Table 4. In the category of information on specific safety issues, farm machinery ranked the most frequent (26), followed by workshop (21), chemicals (17), and electricity (14). Fewer comments (43) were given on the least useful aspects of the training day. The most common was the presence of other farmers (13), followed by provision of information on specific safety issues (11), the speaker (7), and provision of information on legal and insurance matters (6).

**Table 4: Most useful aspects of *Managing Farm Safety* training day**

<b>Response type</b>	<b>n</b>	<b>Percent of responses</b>
Provision of information on specific safety issues	96	40.1
All aspects useful	50	20.9
Conduct of actual farm safety check	30	12.6
Presence of other farmers	20	8.4
Provision of information on legal and insurance matters	14	5.9
Provision of first aid information	5	2.1
Other	24	10.0
Total comments	239	100

Sixty-two percent of the participants reported that there were no improvements necessary to the training day. Of the 69 ways suggested to improve the training day, the most common were improve the speakers (11), improve the venue (11), increase the number of participants (7), and increase the course time (6). Venue problems included not being able to see or hear, and being too cold.

More than half the participants reported having read at least part of the resource kit since the training day (64.4%), with 42.8% reporting that they had read it through. The kit had been used since the training session by 47.4% of participants, all of whom reported that it had been useful in managing farm safety. The safety checklist had been used by 50 participants, and the resource kit had been used as a reference by 42 participants. Fourteen participants reported that they had

discussed the kit with, and/or shown the kit to, other farmers. The majority of participants (92%) reported no mistakes or errors in the kit materials. Twelve ways, listed below, were suggested to improve the resource kit:

- simplify the kit or aspects of it (4)
- kit updates, re-enforcement and refresher courses are needed eg., at field days(2)
- kit needs to be smaller or more condensed (2)
- didn't cater for old tractor
- print needs to be bigger
- topics in kit were not well covered in the talks
- provide a summary page for employees

#### **4.1.4 Baseline characteristics of intervention and comparison groups**

The intervention and comparison groups were different in terms of respondent, farm and safety characteristics. The intervention group included higher proportions of males, family members, and farmers with more than 21 years experience farming. Higher proportions of the intervention group farmers were members of farmer organisations such as state farming federations, Landcare and the Kondinin Group. There was no statistical difference on age decade, a reflection of frequency matching of the comparison group (Table 5).

**Table 5: Characteristics of respondents at baseline, *Managing Farm Safety* evaluation**

	Intervention Group		Comparison group		z-test
	n	%	n	%	
<b>Age Group</b>					
15-24	6	3.4	5	3.2	-0.210
25-34	26	14.7	29	15.3	0.020
35-44	65	36.7	56	30.6	1.120
45-54	51	28.8	53	28.2	0.010
55-64	22	12.4	24	12.5	-0.140
65-74	6	3.4	17	7.9	1.680
75-84	1	0.6	5	2.3	0.990
<b>Gender</b>					
male	172	89.1	116	62.4	5.98*
female	21	10.9	70	37.6	5.98*
<b>Years of Farming</b>					
0-4	11	5.7	17	9.2	1.100
5-9	15	7.8	20	10.8	0.830
10-20	48	24.9	57	30.6	1.120
21+	119	61.7	92	49.5	2.29*
<b>Position on Property</b>					
owner	138	71.1	147	79.0	1.660
family member	33	17.0	16	8.6	2.29*
manager	11	5.7	12	6.5	0.100
share farmer/employee	12	6.2	11	5.9	-0.100
<b>Member Organisation<sup>a</sup></b>					
state farmers federation	131	67.5	65	34.2	6.43*
Landcare	81	41.8	55	29.0	2.52*
Kondinin Group	46	23.7	22	11.6	2.98*
Farm Management 500	13	6.7	8	4.2	0.850
none	13	6.7	26	13.7	2.10*
<b>Total</b>	<b>194</b>		<b>190</b>		

\*z > 1.96, indicating statistically significant differences; (a) A farmer can be a member of more than one organisation.

The intervention group tended to have larger properties with a higher proportion of 500-2499 hectare properties. Difficulties in achieving frequency matching on the basis of major commodity produced are reflected in the larger proportions of cereal producers in the intervention group. Differences were also apparent in the less frequent commodity groups contained in the “others” category. There was no statistically significant difference in the number of workers employed (Table 6).

**Table 6: Characteristics of farms at baseline, *Managing Farm Safety* evaluation**

	Intervention Group		Comparison Group		z-test
	n	%	n	%	
<b>Type of Farming</b>					
Sheep or cattle only	61	31.6	55	30.4	0.14
Cereals alone or in combination with sheep/beef	79	40.9	45	24.9	3.19*
Dairy	25	13.0	35	19.3	1.54
Others	21	10.9	40	22.1	2.80*
<b>Property Size (hectares)</b>					
1-99	26	13.6	74	39.2	5.55*
100-499	69	36.1	57	30.2	1.11
500-999	32	16.8	16	8.5	2.28*
1000-2499	37	19.4	20	10.6	2.26*
2500+	27	14.1	22	11.6	0.57
<b>Number of Workers</b>					
1-3	90	47.1	87	45.8	0.15
4-6	68	35.6	55	28.9	1.29
6+	33	17.3	48	25.3	1.78
<b>Years of Farming</b>					
0-4	11	5.7	17	9.2	1.11
5-9	15	7.8	20	10.8	0.83
10-20	48	24.9	57	30.6	1.12
21+	119	61.7	92	49.5	2.29*
Total	194		190		

\*z > 1.96, indicating statistically significant differences

The intervention group had higher proportions of properties with personal protective equipment, particularly heavy duty gloves, welding masks and chemical handling equipment. Intervention properties reported higher usage of hearing protection on cabinless tractors, higher attendance at safety courses, and higher proportions having conducted safety checks. Intervention properties reported lower proportions of tractors with power take off guards, having a training register, and having a secure fenced play area for young children. (Tables 7-9).

**Table 7: Distribution of tractor safety equipment at baseline, *Managing Farm Safety* evaluation**

Tractors equipped with the following devices	Intervention Group		Comparison Group		z-test
	n	%	n	%	
roll over protective structures	436	68.2	317	71.9	1.21
power take off guards	391	61.2	297	67.5	2.04*
neutral start switch	441	67.0	318	72.2	1.10
first aid kit	29	4.6	19	4.4	0.02
hazard signs	188	29.4	158	35.7	2.11*

\*z > 1.96, indicating statistically significant differences

**Table 8: Distribution and use of personal protective equipment at baseline, *Managing Farm Safety* evaluation**

	<b>Intervention Group</b>		<b>Comparison Group</b>		<b>z-test</b>
	n	%	n	%	
<b>Workshop Activities</b>					
hearing protection	168	90.8	168	90.3	-0.02
safety goggles	182	96.3	177	95.2	0.29
heavy duty gloves	168	90.3	149	80.1	2.62*
heavy duty apron	57	32.8	44	23.7	1.81
welding mask	174	95.1	164	88.2	2.21*
<b>Dealing with Chemicals</b>					
face mask/dust mask	139	76.8	100	67.1	1.84
respirator	113	65.7	69	46.0	3.44*
water proof gloves	166	89.7	124	82.7	1.72
water resistant boots	168	90.8	129	86.0	1.20
goggles	135	75.4	75	50.0	4.66*
overalls	144	80.0	91	60.3	3.82*
<b>Getting Around</b>					
helmet for agbikes	109	71.2	89	70.6	-0.02
helmet for horse riding	39	66.1	39	76.5	0.98
<b>Use of Hearing Protection while Driving Cabinless Tractors</b>					
most of the time	81	48.8	65	43.9	0.76
about half the time	41	24.7	24	16.2	1.72
almost never/never	44	26.5	59	39.8	2.39*
<b>Use of Goggles for Workshop Activities</b>					
most of the time	119	62.6	134	72.4	1.91
about half the time	52	27.4	27	14.6	2.91*
almost never/never	19	10.0	24	12.9	0.72

\*z > 1.96, indicating statistically significant differences

**Table 9: Safety practices and characteristics at baseline, *Managing Farm Safety* evaluation**

	<b>Intervention Group</b>		<b>Comparison Group</b>		<b>z-test</b>
	n	%	n	%	
<b>Attended Other Safety Courses</b>					
yes	78	41.1	48	25.8	3.02*
no	112	59.0	138	74.2	3.02*
<b>Has Place to Record Training Courses Attendance</b>					
yes	41	21.6	75	40.5	3.86*
no	149	78.4	110	59.5	3.86*
<b>Place with Secure Fence for Children under 15#</b>					
yes	57	53.8	61	70.1	2.17*
no	49	46.2	26	29.9	2.17*
<b>Safety Check within Previous Six Months</b>					
yes	19	9.8	2	1.1	3.54*
no	175	90.2	188	99.0	3.54*
<b>Safety Check any time in past</b>					
yes	29	15.2	9	4.8	3.16*
no	162	84.8	177	95.2	3.16*
<b>Changes Made due to Safety Check</b>					
yes	26	89.7	5	55.6	1.81
no	3	10.3	4	44.4	1.81

#only for those with children living on property; \*z > 1.96, indicating statistically significant differences

The majority of the intervention group were from Victoria (Table 10), a reflection of the distribution of *Managing Farm Safety* training days at the time of recruitment into this study.

**Table 10: Distribution of intervention and comparison group participants by State, *Managing Farm Safety* evaluation**

	<b>Intervention group</b>				<b>Comparison group</b>			
	<b>Baseline</b>		<b>Follow-up</b>		<b>Baseline</b>		<b>Follow-up</b>	
	n	%	n	%	n	%	n	%
VIC	153	68.3	134	69.1	153	70.8	140	73.7
QLD	17	7.6	15	7.7	16	7.4	13	6.8
WA	50	22.3	42	21.6	43	19.9	33	17.4
SA	4	1.9	3	1.5	4	1.9	4	2.1
Total	224	100	194	100	216	100	190	100

#### 4.1.5 Impact evaluation of *Managing Farm Safety*

Personal protective equipment use and farm safety training were selected for logistic regression analysis from the range of available variables. The numbers of comparison group farmers who had conducted a safety check at baseline and follow-up was too small to allow for a meaningful logistic regression analysis. Tables showing the unadjusted baseline and follow-up data can be found in Appendix 2. Logistic regression analysis results and a descriptive analysis of the safety check results are presented below.

Output from the logistic regression analysis is summarised in the tables. The parameter estimate and the odds ratio are both measures of association of the independent variables (eg., age, gender, commodity group etc) with the dependent variable (eg., goggle use). The parameter estimate indicates no association when equal to 0, with a negative value indicating a negative association and a positive value indicating a positive association. The standard error indicates the extent of the variation of the parameter estimate around the point value, and is used to judge its statistical significance. The odds ratio, calculated from the parameter estimate, indicates no association when equal to 0, and indicates a positive association if greater than 1.00 and a negative association if less than 1.00. The odds ratio estimates the likelihood of a person with the characteristics of interest (eg., age, gender, commodity etc) also having the outcome of interest (eg., goggle use). The results of each logistic regression model are interpreted for the reader in the text.

##### **Impact of *Managing Farm Safety* on personal protective equipment use and farm safety training.**

Table 11 shows the results of the logistic regression analysis for the use of goggles for workshop activities. Clearly, the baseline use of goggles was strongly associated with the follow-up use of goggles. Farmers were 17 times more likely to report the always/almost always use of goggles if they reported the use of goggles at baseline. The effect of the training program was also significant. Participation in the training program was associated with a 3.9 increase in the odds of using goggles. The significant interaction term between the baseline use of goggles and *Managing Farm Safety* supports our hypothesis that the observable effectiveness of the training program depends on the baseline safety behaviours of farmers. *Managing Farm Safety* was significantly associated with an increased use of goggles among those farmers who reported not using goggles at baseline. In addition, age group and gender of farmers was associated with the follow-up use of goggles. Compared to the mid-age group, younger farmers were 5.3 times more likely to use goggles, and older farmers were least likely to use goggles (OR=0.5). The effect of gender was marginally significant. Male farmers appeared less likely to use goggles than female farmers.

Table 13 shows the results of the logistic regression analysis for hearing protection use while driving a cabinless tractor. The baseline use of hearing protection was strongly associated with the follow-up use of hearing protection with an odds ratio of 146.5. There was evidence for a significant and strong effect of *Managing Farm Safety*. The odds ratio indicated that participation in *Managing Farm Safety* was associated with an 8 fold increase in using hearing protection. The interaction term between the baseline use of hearing protection and the training program was significant and negative. Hence the training program was significantly associated

with an increased use of hearing protection among those farmers who reported not using hearing protection at baseline. Other characteristics that were associated with significant effects were gender and commodity group. Male farmers were much less likely to report use of hearing protection than female farmers. The effect of commodity group was marginally significant. Farmers growing cereals were five times more likely to use hearing protection than farmers involved in cattle/sheep activities.

**Table 11: Logistic regression model: goggle use for workshop activities, *Managing Farm Safety* evaluation**

	Parameter Estimate		Standard Error	Odds Ratio <sup>a</sup>
<b>Constant</b>	1.74	<sup>b</sup>	0.61	5.68
<b>Age group of farmer</b>				
under 35	1.33	<sup>b</sup>	0.57	5.28
35-54	-0.33			1.00
65 or Older	-1.00	<sup>b</sup>	0.39	0.51
<b>Gender of farmer</b>				
male	-1.04	<sup>c</sup>	0.57	0.36
female	0.00			1.00
<b>Commodity group</b>				
cereal	0.38		0.39	2.59
cattle/Sheep	-0.57			1.00
others	0.19		0.44	2.14
<b>Number of workers on farm</b>				
fewer than 4	0.28		0.40	1.33
4 or More	0.00			1.00
<b>Years of farming</b>				
0-9	-0.27		0.41	0.68
10-19	0.11			1.00
20 or More	0.16		0.31	1.05
<b>Goggle use at baseline</b>				
yes	2.86	<sup>b</sup>	0.59	17.39
no	0.00			1.00
<b><i>Managing Farm Safety</i> participation</b>				
yes	1.36	<sup>b</sup>	0.54	3.91
no	0.00			1.00
<b>Interaction</b>				
program participation and baseline use	-2.24	<sup>b</sup>	0.81	0.11

(a) referent categories set at 1.00; (b)  $p < 0.05$ ; (c)  $p < 0.10$

**Table 12: Logistic regression model: hearing protection use while driving a cabinless tractor, *Managing Farm Safety* evaluation**

	Parameter Estimate	Standard Error	Odds Ratio <sup>a</sup>
<b>Constant</b>	1.42	0.88	4.12
<b>Age group of farmer</b>			
under 35	1.37	0.89	8.16
35-54	-0.73		1.00
65 or Older	-0.65	0.61	1.09
<b>Gender of farmer</b>			
male	-1.91	<sup>b</sup> 0.91	0.15
female	0.00		1.00
<b>Commodity group</b>			
cereal	0.95	<sup>c</sup> 0.57	5.03
cattle/Sheep	-0.66		1.00
others	-0.29	<sup>c</sup> 0.55	1.45
<b>Number of workers on farm</b>			
fewer than 4	1.07	0.60	2.91
4 or More	0.00		1.00
<b>Years of farming</b>			
0-9	-0.11	0.41	1.02
10-19	-0.13		1.00
20 or More	0.24	0.31	1.45
<b>Hearing protection use at baseline</b>			
yes	4.99	<sup>b</sup> 0.97	146.5
no	0.00		1.00
<b><i>Managing Farm Safety</i> participation</b>			
yes	2.10	<sup>b</sup> 0.91	8.15
no	0.00		1.00
<b>Interaction</b>			
program participation and baseline use	-3.48	<sup>b</sup> 1.27	0.03

(a) referent categories set at 1.00; (b)  $p < 0.05$ ; (c)  $p < 0.10$

Table 13 shows the results of the logistic regression analysis for attendance at training courses other than “*Managing Farm Safety*”. Training course history at baseline was associated with follow-up attendance of other training courses. If a farmer ever attended training courses before the initial interviews, he or she would be more likely to attend other training courses during the study period (OR=4.8). The effect of *Managing Farm Safety* is significant and positive. Farmers completing *Managing Farm Safety* would be 4.3 times more likely to attend other training courses than the comparison farmers. The significant and negative effect of the interaction term between the baseline attendance of training courses and participation in *Managing Farm Safety* suggests that this training program had greater impact among farmers who never attended other safety training courses. The gender of farmers was significantly associated with attendance at safety training courses. Male farmers were less likely to attend safety training courses. Number of workers on the farm and years of farming showed marginally significant effects. Farms with four or more employees or ten or more years of farming appeared to be more likely to send their workers to safety training courses than those with fewer than four employees or less than ten years of farming.

**Table 13: Logistic regression model: attending other training courses, *Managing Farm Safety* evaluation**

	Parameter Estimate	Standard Error	Odds Ratio <sup>a</sup>
<b>Constant</b>	-1.31 <sup>b</sup>	0.35	0.27
<b>Age group of farmer</b>			
under 35	0.23	0.27	1.42
35-54	-0.12		1.00
65 or Older	-0.10	0.25	1.02
<b>Gender of farmer</b>			
male	-0.79 <sup>b</sup>	0.33	0.45
female	0.00		1.00
<b>Commodity group</b>			
cereal	-0.17	0.21	0.70
cattle/Sheep	0.19		1.00
others	-0.02	0.25	0.81
<b>Number of workers on farm</b>			
fewer than 4	-0.50 <sup>c</sup>	0.26	0.61
4 or More	0.00		1.00
<b>Years of farming</b>			
0-9	-0.54 <sup>c</sup>	0.30	0.45
10-19	0.26		1.00
20 or More	0.28	0.23	1.02
<b>Training course history at baseline</b>			
yes	1.56 <sup>b</sup>	0.40	4.77
no	0.00		1.00
<b><i>Managing Farm Safety</i> participation</b>			
yes	1.45 <sup>b</sup>	0.37	4.27
no	0.00		1.00
<b>Interaction</b>			
program participation and baseline history	-1.10 <sup>b</sup>	0.53	0.33

(a) referent categories set at 1.00; (b)  $p < 0.05$ ; (c)  $p < 0.10$

### **Impact of *Managing Farm Safety* on safety checks and subsequent action**

Conducting a formal safety check has been an important component of *Managing Farm Safety*. Since logistic regression analysis of its impact on conducting safety checks was not feasible, we examined the unadjusted data for differences at follow-up between intervention and comparison farmers who had not conducted a safety check in the 6 months prior to the baseline survey. A substantially higher proportion of the intervention group had conducted a safety check at follow-up (Table 14).

**Table 14: Follow-up safety checks among those who had not done safety check in 6 months prior to baseline survey, *Managing Farm Safety* evaluation**

Conducted safety check at follow-up	Intervention Group		Comparison Group		z-test
	n	%	n	%	
Yes	40	24.84	4	2.26	6.00*
No	121	75.16	173	97.74	6.00*

\*z > 1.96, indicating statistically significant difference

Evidence from the unadjusted data indicates that participation in *Managing Farm Safety* was also associated with a change in the nature of the guidance farmers used in conducting safety checks. At baseline, 58% of the intervention farmers relied on their common sense to conduct safety checks, and 42% relied on external resources (Table 15). After participation in *Managing Farm Safety*, the resource kits supplied in the training program were used by the majority of intervention farmers (82%) as a guidance for conducting a formal safety check (Table 15).

**Table 15: Guidance used for conducting formal safety check, *Managing Farm Safety* evaluation**

	Intervention Group		Comparison Group	
	n	%	n	%
<b>Baseline</b>				
instruction from Relevant Agencies	8	33.3	4	44.4
site visit from Relevant Agencies	2	8.3	3	33.3
common Sense	14	58.3	2	22.2
<b>Follow-up</b>				
<i>Managing Farm Safety</i> kit	45	81.8	0	0.00
other	9	16.4	4	66.7
none	1	1.8	2	33.3

Among those intervention farmers who had conducted a safety check during the follow-up period, a large proportion (84%) had made changes to address the identified potential safety hazards. Table 16 summarises these major changes. Most of these changes (70%) involved a change to equipment or the farm environment, as distinct from changes which required safety behaviours to be frequently repeated (30%).

**Table 16: Safety actions taken by farmers after participation in *Managing Farm Safety***

Action taken	n	Percent of farmers*
installed guards on equipment	32	69.57
improved chemical storage	17	36.96
bought new items of personal protective equipment	14	30.43
flooring modified	14	30.43
behavioural changes/safety rules revised	11	23.91
general clean-up	9	19.57
fire extinguisher installed/electric wires replaced	8	17.39
equipment maintenance & replacement (including replacement of parts)	6	13.04
storage tanks modified	2	4.35

\*Farmers could nominate more than one change

We examined, by logistic regression, the predictors of having conducted a safety check at baseline from the pooled data for the intervention and comparison groups. The relationship between the conduct of a formal safety check and property characteristics was weak. Age of farmers was the only significant factor predicting the conduct of a formal safety check (Table 17). Young farmers were more likely to conduct a safety check, while older farmers were least likely to conduct a safety check.

**Table 17: Logistic regression model: predictors of conducting a formal safety check at baseline, *Managing Farm Safety* evaluation**

	Parameter Estimate	Standard Error	Odds Ratio <sup>a</sup>
<b>Constant</b>	-2.62	0.48	0.07
<b>Age group of farmer</b>			
under 35	0.88	<sup>b</sup> 0.39	2.13
35-54	0.13		1.00
65 or Older	-1.01	<sup>b</sup> 0.45	0.32
<b>Sex of farmer</b>			
male	0.03	0.44	1.03
female	0.00		1.00
<b>Commodity group</b>			
cereal	-0.27	0.302	0.76
cattle/Sheep	0.01		1.00
others	0.26	0.32	1.29
<b>Number of workers on farm</b>			
fewer than 4	0.14	0.38	1.15
4 or More	0.00		1.00
<b>Years of farming</b>			
0-9	-0.38	0.39	0.74
10-19	-0.079		1.00
20 or More	0.46	0.32	1.72

(a) referent categories set at 1.00;(b) p<0.05

## 4.2 Documentation of constraints on farm safety

The material gathered from the key informants was grouped under 8 broad themes formed around subject topics. These are listed in Table 18 and discussed in more detail below.

An important aspect of the key informant data is that it necessarily reflects the opinions of the key informants. Consequently some of the information presented here reflects beliefs, attitudes and values of the key informants, in addition to tangible constraints on farm safety.

**Table 18: Themes emerging from key informant interviews, constraints on the adoption of farm safety measures, Australia, 1995.**

• Farmers' values and attitudes
• Economic and cost-related issues
• Shortcomings in education and training
• Age and poor design of farm machinery and safety equipment
• Characteristics of work force, work practices and farm environment
• Deficiencies in the performance of government departments and other responsible authorities
• Inconsistent support from farmer organisations and rural industry groups
• Competing priorities

### 4.2.1 Farmers values and attitudes

Three-quarters of key informants identified the low perception of personal risk of farm accidents among farmers (*'it won't happen to me'*) coupled with reluctance to change traditional work practices as the most significant constraint to the adoption of safety innovations on farms. Resistance to changing to safer work systems and practices was reported as particularly strong among older farmers on small- to medium- size holdings. A general lack of safety awareness (partly based on a low perception of personal risk) and a tolerant attitude towards risks in the workplace was noted.

The traditional machismo attitude, relatively common in many aspects of Australian culture, was reported to also constrain farm safety improvements. One key informant believed that farmers viewed workplace injury, such as the loss of a body part, as a mark of service or a sacrifice to the industry.

However, key informants assessed that some groups of farmers were more amenable to adopting farm safety measures; namely, operators that employed labour (motivated by rising workers' insurance premiums), farmers involved in intensive rather than broad-acre farming, innovative (usually younger) farmers, and farm women. These groups of farmers were more likely to view safety risk management as an integral part of good farm management and, therefore, to introduce safer systems and practices and work force safety training. Informants also predicted that there would be a beneficial shift in attitude among the next generation of

farmers, who will have more exposure to formal training in agriculture including the safety aspects and risk assessment and management.

Independence was identified as another key characteristic of farmers in a culture where self reliance and autonomy were highly valued. One-third of informants reported that farmers were ruggedly independent and resented governments and their departments telling them what to do.

Also, a number of informants reported that there was a widespread belief among farmers that workplace occupational health and safety legislation does not apply to owner-operated farms.

#### **4.2.2 Economic and cost-related issues**

Three-quarters of key informants noted that reduced farm income, combined with farmers' perception that farm safety measures are an additional cost which they just can't afford, act as a significant constraint to the adoption of safety measures by farmers. The current lack of investment capital was seen to delay major improvements to efficiency on farms which generally have safety spin-offs, for example, the installation of circular cattle yards with safer gates. Investment in large pieces of farm equipment and machinery (which often incorporate new and improved safety features) had also slowed significantly in recent years.

The ageing stock of farm machinery and equipment was assessed as poorly maintained, subject to makeshift do-it-yourself repairs (*'learnt by trial and error'*) and unsafe alterations including the removal of protective shields and guards on machinery and equipment to save time 'on the

Cost constraints were reported to affect farmers' ability to employ farm workers which resulted in farm owner-operators having to work long hours and to engage in unsafe work practices, for example, lifting heavy objects unaided. Family members (including women and children) were also drafted to assist with farm jobs which were sometimes beyond their skills or physical capacity. Even less expensive items such as protective clothing and equipment were reported to be beyond the current budgets of some farmers who were in *'basic survival'* mode.

Although there was a general acceptance among informants that the cost of safety measures was a real barrier to safety, a small proportion of respondents were of the opinion that cost had always been raised by farmers as an excuse for inaction, even in 'good times'.

#### **4.2.3 Shortcomings in education and training**

Over one-half of the key informants believed that education and training about farm safety practices is lacking or has shortcomings in terms of quality and reach. Informants identified that the most successful safety courses are those designed specifically for farmers, promoted and supported by farmers' organisations, highly practical in nature (employing adult learning principles) and delivered in the farmers' own environment.

One informant had found from his own extensive experience that safety training was more appealing to farmers if it was integrated into courses and sessions from which farmers gained new or advanced skills or a certificate that qualified them for off-farm work (for example, a fork-lift driver's licence). Others mentioned that an alliance between farm safety organisations and insurance companies to offer incentives—such as reduced premiums or 'no claim'

bonuses—to farmers who completed safety training is a strategy that has good potential for increasing farmers' participation in safety training. The incorporation of safety 'across the board' in all agricultural training programs was considered desirable. In addition, key informants recommended the institution of quality control measures for courses and instructors.

The high turnover of unskilled labour in rural industries and low level of English language and literacy skills among the farm work force were also cited as barriers to the transmission of safety knowledge and safe practices. Further, geographic and social isolation prevented farmers accessing safety courses and hampered the transfer of good practice between peers, especially for the substantial group of farmers who are not linked into farmers' organisations.

Nearly one-quarter of informants identified farm women as an important target group for safety training because they were judged to be more receptive and capable of stimulating safety-related changes on farms. They were also the most appropriate target audience for particular courses, for example first aid courses, because males are more likely to be the injured party in farm accidents.

#### **4.2.4 The age and poor design of farm machinery and safety equipment**

Two-fifths of the informants identified that the ageing stock of farm machinery, plant and equipment currently in use on Australian farms was a barrier to safety. It was reported that imported equipment was sometimes adapted for use in Australian conditions without sufficient field testing—the use of adapted row croppers in broad acre farming, for example. Also, some dealers in second-hand equipment and manufacturers of machinery 'add-ons' did not meet their full obligations to ensure that equipment was safe. A number of informants reported that farm machinery was commonly adapted and/or used for purposes for which it was not designed. An example given related to the change in the shape of hay bales from smaller rectangular to larger round bales. An older model tractor fitted (sometimes unsafely) with a front end loader is not designed to carry the large round bales which obscure the tractor operator's line of vision. This causes the operator to raise the front end loader which dangerously alters the tractor's centre of gravity and increases the risk of hay bales rolling back onto the operator.

Design faults and problems with safety equipment, particularly machinery guards, were identified as issues. An example was given in relation to power take-off guards; farmers were apparently not prepared to fit them because of their poor durability even though they were relatively inexpensive (\$80). Other problems with equipment design may result in farmers making unsafe modifications.

Unsuitable design of personal protective equipment (especially for work in hot conditions) was also identified as a major issue. Problems with the supply of safety equipment through rural retail outlets were also said to decrease the likelihood of farmers using safety products.

#### **4.2.5 Characteristics of the work force, work practices and farm environment**

A number of characteristics of the farm work environment were identified by some informants as impediments to safety, including the inherently risky nature of farm work, the difficulty of instituting safety systems when the workday covers a number of tasks performed in different

locations, seasonal rush and long hours in busy times, the physical ageing of farmers, working alone, isolation from peers and geographic remoteness.

A unique feature of the agricultural industry is the presence of children in the workplace and, at times, their direct involvement in farm work. The need for child care options in rural areas was raised and a number of pilot programs trialing different means of providing child care for farm families were cited. Economic pressures were reported to be forcing the increased participation of children in farm work.

#### **4.2.6 Deficiencies in the performance of government departments and other authorities**

Approximately one-third of the key informants perceived that government departments and authorities lacked commitment to farm safety which translated into a lack of funding and staff to address the critical issues. The regulatory approach (supported by education) was assessed as an effective strategy by these informants but an historical reluctance of governments to enforce existing legislation was noted.

Informants identified that occupational health and safety authorities need to consult farmers prior to the introduction of regulations to ensure their practicability and to provide education to the farming community about their legislative obligations.

#### **4.2.7 Inconsistent support from farmer organisations and rural industry groups**

One-fifth of informants reported that the low level of support within some farmer organisations was an impediment to the adoption of safety innovations on farms. Farmer organisations were seen in some cases to be unwilling to tackle safety due to lack of support for the area from their members.

Farm machinery dealers and other rural retailers—such as chemical agents and stock and station agents—were not always seen to be responsible or well informed in relation to the safe use of their products. They reportedly provided incorrect information to farmers at times or sold inappropriate products. Some cases of circumvention of safety regulations by equipment manufacturers and dealers were noted.

#### **4.2.8 Competing priorities**

Informants reported a range of farming priorities that compete with safety for attention and resources. Of the 30 informants, 12 (40%) ranked safety as a low priority for farmers, 8 (26.7%) low to medium, 2 (6.7%) medium. Only one informant (3.3%) ranked safety as a high priority. Seven informants (23.3%) were unwilling to generalise. Factors listed as priorities that farmers ranked higher than safety included (in rank order): making a living; maintaining their rural/family lifestyle; the imperative of getting the job done; minimising costs; and farm management issues.

Although safety was reported as a relatively low priority, there was a shared opinion that farmers are not unconcerned about safety but their concern is not necessarily translated into safer behaviours or environmental changes.

Nineteen of the informants (63.3%) perceived that farm safety had become a higher priority for farmers over the past five years. They mainly ascribed this upgrading to community awareness raising campaigns (particularly media publicity about farm accidents) and educational activities undertaken by government authorities and farm safety organisations. Improvements in the safety of farm machinery and equipment, and the increased professionalism of the farming sector were also mentioned as beneficial influences.

Six informants (20.0%) reported that there had been a small improvement in attitude from a low level, which they mainly attributed to publicity about legal liability and negligence cases and farm safety education. One informant (3.3%) noted a recent positive change in attitude but not in farmers' ranking of safety. Four informants (13.3%) perceived no improvement in farmers' priority ranking of safety over the past five years, one of whom had detected a deterioration as the economic situation for farmers worsened.

#### **4.2.9 Documentation of current initiatives**

A range of current farm injury prevention initiatives was identified by the key informants (Table 19). Obviously, this would not be a completed listing since the methods were not appropriate to achieve this. Most of these initiatives were considered to be successful by the key informants and criteria for judging success included personal observation, anecdotal evidence of behaviour change, increased demand for courses, numbers attending events and receiving resource materials, and positive feedback from participants. One media campaign had been formally evaluated and decreased injuries were noted following implementation of *Managing Farm Safety* by two large farming corporations. However, one key informant made a cautionary comment:

*“I don't believe that I've seen a change in behaviour, even after a fatality there's some behaviours that still aren't changed in farming families. As far as programs are concerned I haven't got anything in front of me to say 'that's the one that's right', I haven't read anything that's convincing me, I think everyone's having a go...There has been an element [of success in terms of] awareness raising everywhere, but there's not behaviour change as*

Key factors believed to contribute to success included:

- farmer involvement in the design and implementation of programs with an emphasis on supporting farmers to solve their own local health and safety problems
- ensuring greater uptake and acceptance of farm safety through linking safety initiatives to other issues of importance to the rural community, especially at field days and Agfests
- education and awareness raising campaigns that are thoroughly pre-tested with farmers for effectiveness through consultation and focus groups
- legislation and enforcement, combined with incentives (“carrot and stick approach”)
- the need for training material to be realistic
- project officer support
- accessible training and education courses with an emphasis on “hands-on” learning
- practical training by skilled and experience trainers which concentrates on group learning in farmer's own environment
- rebate of costs (an indication of government concern and commitment)

- the involvement of farmers' peak bodies (peer pressure)
- enthusiasm of dedicated individuals
- public acknowledgment through safety award schemes

Approaches believed to be successful and worthy of consideration included:

- targeting farm women
- using media, especially rural media, regularly and systematically
- using rural media particularly after serious accidents have occurred and to publicise legal cases involving farm OHS breaches
- "shock" tactics using graphic material
- legislation and enforcement combined with insurance incentives, and various disincentives such as fines, penalties and higher insurance premiums
- use of adult learning principles in training courses
- train the trainer approach
- education of manufacturers, importers, dealers about safety requirements and duty of care
- quality assurance approach
- education of rural youth
- change in OHS authority approach from policing to education and assistance
- involving the local community especially service groups
- linking with associated industries for training
- use of program champions
- working through farmer organisations especially young farmers' groups

**Table 19: Farm injury prevention initiatives\* from key informant interviews, constraints on the adoption of farm safety measures, Australia, 1995.**

<b>Farm injury prevention initiative</b>	<b>Specific examples</b>
Community-based farm safety groups	Farm safety action groups Women in Agriculture Tasmanian project Rural Women's Network
Field days and AgFests	
Farm Safety Days/Health Days	
Awareness raising activities	"It's a bloody dangerous job", Victorian Workcover Authority campaign Qld tractor safety campaign Safety bulletins Safety warning notices School based resource kits Resources for children ("Home alone on the farm",  Regular columns in rural newspapers
On-farm continuing education	<i>Managing Farm Safety</i> Farm Walks Workshop/shed meetings
Other continuing education	National Farm Chemical User Course First Aid Emergency Care Courses Front end load training Forklift training Manual handling course Horse safety course Four wheel drive training course Bushfire training Bush survival training Small boat handling course Firearm training Chainsaw training Rural Women's Pesticide Program
Formal agricultural training programs	Farm traineeships/apprenticeships Certificate of Farming Practice Certificate of Rural Office Practice
Safety audit of all agricultural educational institutions	Western Australia
Roll over protection campaigns for safer tractor use	Victorian rebate scheme
Design changes in machinery and equipment	Shearers back support Features of the newer tractor models
Commodity specific programs	Health and Safety in Shearing Industry Program Dairy farm discussion groups

<b>Farm injury prevention initiative</b>	<b>Specific examples</b>
	Australian Dairy Farmers Federation Safety Strategy Fruit Grower's Association instruction on correct footwear and ladder use for casual pickers Beef, dairy, pig, grain programs
Hearing conservation program	
Farm Safety awards	State Bank sponsored awards
Provision of child care	Trial of rural child care models
Farm safety advisers	
Farmsafe data collection and research	National Farm Injury Data Centre State and local area collections

\*Note: this is not an exhaustive list but is indicative of the types of programs and projects being conducted at the time

### **4.3 Documentation of new potential initiatives/strategies**

The significant economic barriers to the adoption of safety innovations on farms are, to some extent, beyond immediate control. Policies and programs that are designed to increase farm productivity and market share should overtly recognise that the human element is the most important resource in the farming industry and integrate 'system-wide' measures to reduce farm injuries and introduce health and safety risk management into re-structured farming enterprises.

Organisers of farm safety awareness raising activities and publicity campaign would be well advised to target the less depressed segments of the farming industry. Carefully and skilfully designed media campaigns and other strategies which draw attention to farm injury risk and heighten farmers' awareness and anxiety about the personal risk of injury appear warranted. However, this strategy must be coupled with the provision of accessible and workable solutions and with reduced or absent financial barriers, wherever possible. Practical low cost farm safety solutions will be better received in the current economic climate. Incentives—such as insurance 'no-claim' or other bonuses and government subsidies should also be negotiated to encourage safety innovations on farms.

Farm safety should be marketed in a way that links it to the higher-ranked priorities of farmers. Priority should be given to promoting safety measures that improve productivity, or at least do not decrease it, and have demonstrable benefits over costs that can be effectively marketed to the farming community. Safe farming practices could also be promoted as protecting and maintaining the highly valued farm family lifestyle.

A systems approach to farm safety would appear beneficial, including safety as a focus in all industries and sectors which serve agriculture such as machinery manufactures and dealers, chemical suppliers, and hardware retailers. It is acknowledged that much progress has already been made by producer groups and other sectors of the industry. Improving the design of personal protective equipment to be more suitable in agricultural applications and increasing its

accessibility are additional strategies. The use of the internet and mail-order to get safety products and protective equipment to farmers could be considered.

The incorporation of safety training and risk management skills development into formal agricultural training programs, and the availability of accessible, practical courses, preferably delivered on farms, are measures supported by this research.

The issue of compliance must also be addressed. Regulatory change accompanied by enforcement may need to be considered if voluntary methods prove ineffective.

## 5. Discussion of Results Compared With Objectives

**Objective (1): Evaluation of the initial implementation of a national initiative, the *Managing Farm Safety* designed to address a major barrier to farm injury prevention.**

This objective was substantially achieved.

Process evaluation of the *Managing Farm Safety* training day and resource kit showed high levels of participant satisfaction. Information relating to the most and least useful aspects, and suggestions for improvements of both the training session and the resource kit, were gathered and can be taken into account by farm safety training providers. It is somewhat disappointing that the full range of SAFE principles (seeing a hazard, assessing its risk, fixing the hazard and evaluating the action taken) were not listed among the key ideas that participants reported gaining from the training session, since the understanding and application of these principles is a key component of *Managing Farm Safety*.

The main effects of *Managing Farm Safety* that we were able to detect were increased frequency of goggle and hearing protection use, and participation in other farm safety training courses, particularly among those who did not report these characteristics at baseline. Among farmers who had not conducted a safety check in the 6 months prior to the baseline survey, we found that a substantially higher proportion of the intervention group had conducted a safety check at follow-up. This result, however, does not take into account the baseline differences in demographic, farm and safety characteristics between the intervention and comparison groups. Among those intervention farmers who had conducted a safety check during the follow-up period, a large proportion made changes to address the identified potential safety hazards. These changes frequently involved improving the safety features of equipment or the farm environment, as distinct from changes which required safety behaviours to be frequently repeated.

A number of other results are of relevance to farm safety. Male farmers were less likely than female farmers to use goggles and hearing protection frequently, or to attend farm safety training courses. Cereal growers were more likely than sheep/cattle growers to use hearing protection frequently. Farmers with ten or more years experience, or with four or more employees, were more likely to send workers to farm safety training courses. Younger farmers (under 35 years of age) were more likely to use goggles frequently and were more likely to conduct safety checks.

These results should be considered in the light of two important methodological issues. Firstly, there were considerable baseline differences in influential variables between the intervention and comparison groups. While these differences were adjusted for in the logistic regression analysis of the impact of *Managing Farm Safety* on personal protective equipment use and training program attendance, we were unable to adjust for them adequately in the analysis of the impact on conducting safety checks. Secondly, the low response rates for both the intervention and comparison groups (59% and 53% respectively), threaten the external validity of this study. It is likely that both the intervention and comparison groups are not representative samples and therefore, the extent to which these results can be generalised beyond the study group may be compromised.

## **Objective (2): Documentation of the known constraints on farm injury reduction and of relevant current initiatives addressing these constraints**

The first part of this objective fully achieved. This study indicates that two clusters of factors are the most potent constraints operating against the adoption of safety measures on Australian farms. First, a prevailing complacency about safety among farmers. This appears to be based on a low perception of personal risk, or a machismo attitude toward risk-taking, interlinked with a general resistance to changing traditional work practices and to outside influences that threaten farmers' independence. However, respondents reported that farmers were not unconcerned about safety, but it was not a high priority and so this concern is not necessarily translated into action. Second, the uncertain economic conditions in most sectors of agriculture are impacting on farmers' ability to maintain and replace outdated farm machinery and equipment, employ labour (which leads to increases in farmers' workload and stress levels) and outlay the direct costs of safety innovations and protective equipment.

These major findings are consistent with previous studies noting a prevailing machismo attitude to risk-taking among farmers (Murphy 1981; Elkind 1993). Farmers have been shown previously to believe themselves to be invulnerable to severe injury and view themselves as gamblers willing to take high levels of risk (Witte et al 1992-93; Peterson et al., 1994). Canadian farmers who have incurred a farm-related injury are reportedly more likely to score higher on a measure of personal risk-taking and to have a fatalistic attitude to farm accidents (Harrell, 1995).

However, there appears to be only a tenuous relationship, if any, between 'good' safety knowledge or attitudes and accident involvement (Murphy 1981) or safety-related behaviours (Elkind 1993) among farmers. Similar findings have been reported from other injury areas (McLoughlin et al 1982; Mawson and Brundo 1985; Assum, 1997) contributing to the growing body of evidence that changes in knowledge, attitudes and beliefs do not necessarily correlate with changes in actual behaviour and injury reductions.

The capital and maintenance cost of farm machinery and equipment, including safety equipment, reported here as a significant barrier to farm safety is consistent with the findings of previous small surveys of Australian farmers. In these, cost was identified as a disincentive to the adoption of a range of safety equipment including tractor rollover protective structures (ROPS) and safe lifting devices even when they were recognised by injured farmers as effective in preventing re-injury (Low et al 1994; Australian Agricultural Health Unit 1995; South Australian Farm Safety Committee 1989).

Other factors impeding the adoption of safe practices identified previously in small surveys among farmers in regional areas in South Australia (South Australian Farm Safety Committee 1989) are indicated by this research to be widespread. These include: inconvenience, seasonal rush, carelessness, time pressure, machine equipment design issues, lack of training and poor organisational skills.

Additional constraints to farm safety reported from this study include: specific shortcomings in safety education and training; the poor design of safety and personal protective equipment; some innate characteristics of the farm workforce, farm work and the farm environment; competing

priorities; and deficiencies in the commitment and performance of governments, government departments and some farmer and agricultural organisations.

The consensus of key informants was that, despite recent signs that farmers were responding positively to injury prevention initiatives, farm safety remains a low or low-to-medium priority for most farmers. They reported that the overwhelming priority for most farmers was maintaining the economic viability of their farm and that safety was viewed by farmers as a cost which would not bring any tangible benefits to 'the bottom line' profit. These observations are consistent with other research (Elkind 1993; Box Emery and Partners 1995).

An important possibility implied in these results is that the culture within some sectors represented by the key informants may itself be a constraint to progress in farm safety. For example, the belief that farmers are resistant to change, if widespread within a sector interacting with farmers, may serve to constrain the nature of those interactions to the point that the belief becomes a self-fulfilling prophecy. Therefore, the current findings need to be balanced against research from studies that more directly investigate factors that impact on farmers' uptake of safety initiatives. There are few published studies in this area. Two current projects, the "Managing Farm Safety" training program and the research on farmers' perceptions of risk recently completed at the University of New England (unpublished), have the capacity to provide such insights based on interviews and discussions with sizeable groups of farmers.

The second part of this objective was partly achieved and the listing provided should be regarded as indicative rather than exhaustive. Further, while the list includes some of the specific projects being undertaken by a range of organisations and groups, other documents exist which describe safety strategy frameworks and program goals and objectives. These include national and state Farmsafe documents, and national and state injury prevention strategy documents, some of which are referenced here (Farmsafe Australia Inc, 1996, 1998; Commonwealth Department of Human Services and Health, 1994; Victorian Department of Health and Community Services, 1996).

### **Objective (3): Identification of new potential initiatives/strategies**

This objective was achieved to some extent. The strategies are identified in the Results section and discussed in implications and recommendations.

## 6. Implications

The results presented here from the evaluation of the initial version of *Managing Farm Safety* are very encouraging and suggest that ongoing safety training for farmers has a role to play in improving farm safety. Since this evaluation was conducted, *Managing Farm Safety* has been expanded from a one day program to a two day program of two modules, with a further 2 elective modules available. The accompanying upgrades to the training program may well address the apparent lack of retention of the key steps in hazard management found in the evaluation of the initial version. Suggestions from the participants to improve the quality of the *Managing Farm Safety* training presenters are also likely to be addressed by the more extensive training and quality monitoring of presenters of the more developed accredited version of *Managing Farm Safety*. It is important to note that the intervention group in the evaluation were self selected and were more safety aware at baseline than the randomly selected comparison group. The *Managing Farm Safety* program appeared to be effective in assisting these self-selected farmers to manage safety on their farms. A major challenge for the future is identifying the measures which increase the proportion of farmers who take advantage of programs such as *Managing Farm Safety*.

However, education for individual action is generally not sufficient to effect change. The more successful injury prevention programs—for example, the road safety program—have generally implemented a mixture of education (mostly mass media), environmental (including product re-design) and legislative and enforcement strategies. An important challenge in farm safety is to design the right mix of strategies and countermeasures that produces the safest farm work environment, systems and behaviours which are compatible with the other needs of farmers such as high productivity. This challenge is being met by Farmsafe Australia and others who are bringing a planned systems approach to bear on farm safety.

A number of the significant constraints identified in this research are beginning to be addressed, particularly through the efforts of the partner organisations of Farmsafe Australia. A major focus on improved training gave rise to the initial version of *Managing Farm Safety* evaluated in this project. More recently, core competencies have been introduced into formal agricultural education programs and a more developed version of *Managing Farm Safety* is now an accredited course of the National Training Register. Specific programs on chemical safety, front end loader and tractor operations have been designed, and additional research is being conducted where necessary, for example, on farm motorcycle injury <sup>(22)</sup>.

In addition to action being taken by the farming community, the general consensus from this research is that governments (through responsible authorities) also need to be more committed and active in providing personnel, funding and other incentives to reduce the unacceptably high rates of death and injury on farms in Australia.

## 7. Recommendations

Suggestions arising from this research are presented here for consideration by agencies and organisations playing a role in farm safety. Farmsafe Australia may wish to review this report, revising these suggested recommendations and making additional recommendations.

### 7.1 "Managing Farm Safety"

Marketing strategies for ongoing farm safety training should include targeting of farmers with more than ten years experience and more than four employees since these groups are more likely to send workers to safety training courses. Younger farmers should also be targeted since they are more likely to conduct safety checks following farm safety training. Updates of and refresher courses for *Managing Farm Safety* could be conducted in conjunction with major field days.

The provision of a summary sheets for employees in the *Managing Farm Safety* resource kit could be considered.

The participant comments relating to the *Managing Farm Safety* training day and presenters should be circulated to all presenters.

Measures which will increase the proportion of farmers, particularly older male farmers, who take advantage of programs such as *Managing Farm Safety* should be identified and implemented.

Features of *Managing Farm Safety* which would increase the proportion of participants who actually go on to conduct a safety check would be a desirable modification if these could be identified.

The necessity of evaluation of the more developed accredited version of *Managing Farm Safety* should be considered in the light of the magnitude of the changes to the course. Alternative methodologies may be required due to the considerable differences between a self selected intervention group and a randomly selected comparison group.

Although education and awareness raising are important components of injury prevention programs, undue emphasis should not be placed on this strategy alone. Effective injury prevention programs employ a range of strategies and countermeasures.

### 7.2 Constraints to the adoption of farm safety measures

A coordinated systematic approach should be taken to address the identified constraints, recognising that the partner organisations of Farmsafe Australia have made significant progress since this research commenced. Some of the issues raised by the key informants may require validation prior to the implementation of countermeasures.

System-wide measures for farm injury prevention should continue to be introduced into all aspects of the agricultural industry and those sectors which service the industry, such as hardware retailers, machinery dealers, chemical suppliers, and stock agents. It is recognised that some sectors or the industry eg., commodity groups, are making substantial progress towards improving farm safety.

Campaigns which heighten risk awareness and anxiety should be coupled with accessible and workable solutions and financial barriers should be eliminated to the extent possible.

Farm safety should be marketed in a way that links it to the higher ranked priorities of farmers, including productivity, maintenance of the farm family lifestyle, efficiency, farm management and maintenance of independence.

Insurance incentives should be more broadly negotiated and widely advertised to encourage safety innovations on farms.

Barriers to the use of personal protective equipment, including physical discomfort and design problems, should be explored and addressed.

Design faults and problems with farm machinery and equipment should be fully explored and addressed at the design stage wherever possible, acknowledging that this may involve negotiation with international companies. Specific issues raised in this research include the durability of power take off guards and the placement of machine guards.

General safety awards for innovative solutions to design problems should be continued and encouraged, and consideration given to the development of some specific awards for solutions to particular design problems identified as high priority.

The incorporation of competency-based safety training and risk management principles into formal agricultural training programs and continuing education programs should be continued. Quality control issues for agricultural training should be addressed.

The issue of the cost of farm safety measures needs to be explored and addressed. There appears to be a widespread perception that farm safety is too costly. Accurate costs of farm safety measures coupled with the average lost working time and cost to the farmer for injuries should be included when specific safety measures are being promoted. Other strategies that address cost as a constraint to farm safety should be canvassed and tested.

Specific programs should be targeted to groups identified as adopters of farm safety eg., operators who employ labour, farmers in intensive farming, younger farmers and farm women. This should be complemented by research that identifies triggers for action among farmers not included in these groups.

Strategies that improve the affordability of and access to child care for farm families are needed as a matter of priority.

Examples of activities suitable for local farm safety action groups suggested by this research include:

- surveys of the availability of personal protective equipment in localised areas, followed by action to improve supply where necessary
- training in farm safety for local rural service providers
- machine design workshops which bring together local farmers and machinery manufacturers and dealers to review and document problems with the commonly used models of various farm machinery; workshop findings could then be distributed to designers and manufacturers of farm machinery
- regional training for unskilled labourers at the commencement of seasonal activities such as picking, harvesting etc

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## **Appendix 1 –**

### **Questionnaires for the Evaluation of Managing Farm Safety**

**MONASH UNIVERSITY ACCIDENT RESEARCH CENTRE  
FARM INJURY PREVENTION:**

**EVALUATION OF MANAGING FARM SAFETY KIT**

*Telephone survey for the comparison group (cfarm)*

Time of interview: \_\_\_\_\_ am/pm

Date of interview: \_\_\_\_ / \_\_\_\_ / 97

Hello, I'm \_\_\_\_\_ calling from the Accident Research Centre, at Monash University, and we want to talk to farmers about farm safety.

Are you currently living and/or working on a farm?

ÿ 1 *Continue with interview*

ÿ 2 *Thank & end interview*

We would like to hear about your experiences in managing farm safety and it involves answering a few questions now over the phone and some more in several months time. It should take a bit over 5 minutes and the information you provide will be treated as strictly private and confidential.

Are you interested in helping us out now?

ÿ 1 *Continue with interview*

ÿ 2 *Thank & end interview*

Have you recently bought or received the Farmsafe Australia "Managing Farm Safety Kit"?

ÿ 1 *Thank & end interview*

ÿ 2 *Continue with interview*

1. What are the current main agricultural activities on your property ? (*Respondent may choose more than one. Prompt if necessary*).

Poultry	Poultry for meat	ÿ 1	
	Poultry for eggs	ÿ 2	
Fruit	Grapes	ÿ 3	
	Plantation	ÿ 4	
	Orchard & other fruit	ÿ 5	
Vegetables	Potatoes		ÿ 6
	Other vegetables	ÿ 7	
Cereal Grains	Cereal Grains	ÿ 8	
Animals	Sheep for wool	ÿ 9	
	Sheep for meat	ÿ 10	
	Cattle for meat	ÿ 11	
	Cattle for milk	ÿ 12	
	Pigs	ÿ 13	
Other Agriculture	(Specify)		ÿ 14
_____			

2. What is your age? \_\_\_\_\_ years

**Tractors**

3. How many operational tractors greater than 560 kilograms are located on your property?

None	ÿ 0	<span style="border: 1px solid black; padding: 2px;">Go to Q5</span>
One or more ( <i>specify number</i> )	_____	

4. How many of those tractors have the following features?

Roll over protective frame	_____
Power take off (PTO) master shield/output guard	_____
Neutral start switch	_____
First aid kit	_____
Hazard alert symbol or other safety signs	_____
How many are fitted with a front end loader	_____ ( <i>If 0, skip to Q5</i> )
How many have roll back protection	_____

**Machinery**

5. Apart from tractors & motor vehicles, which two items of machinery or implements do you use the most on your property?

5.1 \_\_\_\_\_

5.2 \_\_\_\_\_

**Personal protective equipment**

6. Now I'd like to ask about personal protective equipment on your property (*For each one ask: How many do you have?*)

<i>Activity</i>	<i>Equipment</i>	<i>Yes</i>	<i>No</i>	<i>Number or pairs</i>
For workshop activities	Ear muffs/plugs	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	Safety goggles	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	Heavy duty gloves	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	Heavy duty apron	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	Welding mask	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
For mixing and preparing chemicals	Face mask/Dust mask	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	Respirator (filters gasses & particles)	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	Water proof gloves	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	Water resistant boots	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	Goggles	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	Overalls	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
For getting around	Helmet for agbikes	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	Don't have bikes		ÿ <sub>3</sub>	
	Helmet for horse riding	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	Don't have horses		ÿ <sub>3</sub>	

7.1 How often would you say, are Ear muffs or plugs used when driving a cabin-less tractor on your property? (*Read out categories*)

- |                      |     |
|----------------------|-----|
| All instances        | ÿ 1 |
| Almost all instances | ÿ 2 |
| About half the time  | ÿ 3 |
| Almost never         | ÿ 4 |
| Never                | ÿ 5 |
| Not applicable       | ÿ 6 |

7.2 How often would you say, are Safety goggles used when performing workshop tasks on your property? ie for grinding (*Read out categories*)

- |                      |     |
|----------------------|-----|
| All instances        | ÿ 1 |
| Almost all instances | ÿ 2 |
| About half the time  | ÿ 3 |
| Almost never         | ÿ 4 |
| Never                | ÿ 5 |
| Not applicable       | ÿ 6 |

### ***Training***

8. In the last 12 months has anyone on your property, including yourself, attended any health and safety seminars or training courses?

- |                           |     |
|---------------------------|-----|
| Yes                       | ÿ 1 |
| No                        | ÿ 2 |
| Don't know/Can't remember | ÿ 3 |

9. Do you have a place where you record training sessions attended by you or others working on your property?

- |                           |     |
|---------------------------|-----|
| Yes                       | ÿ 1 |
| No                        | ÿ 2 |
| Don't know/Can't remember | ÿ 3 |

### ***Child safety***

10. Are there any children under 15 years of age living on your property?

- |                                  |                      |
|----------------------------------|----------------------|
| <input type="text" value="Yes"/> | ÿ 1 <i>Go to Q11</i> |
| <input type="text" value="No"/>  | ÿ 2 <i>Go to Q13</i> |

11. Please indicate how many children there are in each of the following age groups;

Under 5 years            \_\_\_

5 to 9 years             \_\_\_

10 to 14 years         \_\_\_

12. Is there a place with a secure fence for young children to play?

Yes                             $\ddot{y}$  1

No                              $\ddot{y}$  2

Don't know/Can't remember    $\ddot{y}$  3

**Safety & Checks**

We are getting towards the end. Now a question about managing farm safety:

13. What steps do you think can be taken to manage risks or hazards on farms?

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14. Have you ever conducted a formal safety check throughout your property?

Yes                             $\ddot{y}$  1 *Go to Q15*

No                              $\ddot{y}$  2 *Go to Q19*

15. When did you do the last check?

Under 1 month ago             $\ddot{y}$  1

1 - 3 months ago              $\ddot{y}$  2

3 - 6 months ago              $\ddot{y}$  3

6 - 12 months ago            $\ddot{y}$  4

Over 12 months ago          $\ddot{y}$  5

16. What did you use as a guide? \_\_\_\_\_

17. Did you take any actions or make any changes as a result of the check to improve safety?

Yes                             $\ddot{y}$  1 *Go to Q18*

No                              $\ddot{y}$  2 *Go to Q19*

18. What were those actions or changes?

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**Property characteristics**

19. Which local government area (s) is your property in?

\_\_\_\_\_

20. What size is your property? \_\_\_\_\_ hectares or \_\_\_\_\_ acres

21. How many people in the following groups are currently working on your property?

Family members (including yourself) \_\_\_\_\_

Other permanent full-time employees \_\_\_\_\_

Other permanent part-time employees \_\_\_\_\_

Other seasonal employees \_\_\_\_\_

Other employees \_\_\_\_\_ (*Specify*) \_\_\_\_\_

22. What is your position on the property?

Owner  $\ddot{y}_1$

Manager  $\ddot{y}_2$

Share farmer  $\ddot{y}_3$

Employee  $\ddot{y}_4$

Family member  $\ddot{y}_5$

Other (*Specify*)  $\ddot{y}_6$  \_\_\_\_\_

25. How many years have you been farming? (*roughly*)

Under 1 year  $\ddot{y}_1$

1 - 4 years  $\ddot{y}_2$

5 - 9 years  $\ddot{y}_3$

10 - 20 years  $\ddot{y}_4$

Over 20 years  $\ddot{y}_5$

24. Which of the following farming organisations are you a member of? (*Read through list. Respondent may indicate more than one*).

State farmers federation  $\ddot{y}_1$

Landcare  $\ddot{y}_2$

Kondinin group  $\ddot{y}_3$

Women in Agriculture  $\ddot{y}_4$

Farm Management 500  $\ddot{y}_5$

Local farm safety action group  $\ddot{y}_6$

Commodity group  $\ddot{y}_7$  (*specify*) \_\_\_\_\_

Other  $\ddot{y}_8$  (*specify*) \_\_\_\_\_

None  $\ddot{y}$  9

25. Which of the following organisations do you think should be providing information to farmers about occupational health and safety? (*Read through list. Respondent may indicate more than one*).

- State farmers federation  $\ddot{y}$  1
- Landcare  $\ddot{y}$  2
- Kondinin group  $\ddot{y}$  3
- Women in Agriculture  $\ddot{y}$  4
- Farm Management 500  $\ddot{y}$  5
- Local farm safety action group  $\ddot{y}$  6
- State workers compensation body  $\ddot{y}$  7
- State health and safety body  $\ddot{y}$  8
- State Department of Agriculture  $\ddot{y}$  9
- Commodity group  $\ddot{y}$  10 (*specify*) \_\_\_\_\_
- Other  $\ddot{y}$  11 (*specify*) \_\_\_\_\_
- None  $\ddot{y}$  12

Thank you for taking the time to do this survey. Can we call you in another 6 months time to ask you some shorter questions. Again, it should only take about five to ten minutes.

Yes

$\ddot{y}$  1 *Continue with interview*

No

$\ddot{y}$  2 *Thank & end interview*

What's the best time to call you?

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Daytime							
Evening							

Could I get a contact name for when we call back please? \_\_\_\_\_

Thanks again for your help.

*End Interview*

*Sex of Respondent*

Male  $\ddot{y}$  1

Female  $\ddot{y}$  2

RECORD TELEPHONE NUMBER USED: ( ) -

*Interviewer comments:* \_\_\_\_\_

**MONASH UNIVERSITY ACCIDENT RESEARCH CENTRE  
FARM INJURY PREVENTION:**

**EVALUATION OF MANAGING FARM SAFETY KIT**

**Telephone survey for the comparison group (6 month follow-up) (c6farm)**

ID: \_\_\_\_\_ TELEPHONE NUMBER: ( \_\_\_\_\_ ) \_\_\_\_\_ NAME: \_\_\_\_\_  
CALLER: \_\_\_\_\_ DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_ TIME: \_\_\_\_:\_\_\_\_

Hello, my name is \_\_\_\_\_ and I'm calling from the Accident Research Centre, at Monash University. You might remember we called you (or your property) about 6 months ago, in \_\_\_\_\_ and asked a few questions about farm safety. We would just like to ask you a few short questions now on phone. It should take under five minutes. All information is treated as strictly private and confidential.

- |    |   |  |   |
|----|---|--|---|
| 1. | Are you happy to help us out now?   | Yes<br>No  | ÿ 1 <i>Go to Q4</i><br>ÿ 2 <i>Go to Q2</i>                          |
| 2. | Could I just ask one question? Did you use the kit in any way since the training session? | Yes<br>No<br>Wouldn't answer   | ÿ 1 <i>Go to Q3</i><br>ÿ 2 <i>Go to END</i><br>ÿ 3 <i>Go to END</i> |
| 3. | In what way did you use it?   | Just read parts of it<br>Read though it all<br>Did safety check<br>Other | ÿ 1<br>ÿ 2<br>ÿ 3<br>ÿ 4 ( <i>Specify</i> )                         |

\_\_\_\_\_

***Go to End***

***Tractors***

- |    |  |  |                           |   |
|----|--|--|---------------------------|---|
| 4. | Have you bought, sold or ceased to use any operational tractors over 560 kgs in the last 6 months? | (No) None<br>(Yes) <b>Bought</b> one or more ( <i>specify how many?</i> )<br>(Yes) <b>Sold</b> one or more ( <i>specify how many?</i> )<br>(Yes) <b>Ceased</b> to use one or more ( <i>specify how many?</i> ) | 0<br>____<br>____<br>____ | <i>Go to Q8</i><br><i>Ask Q5</i><br><i>Ask Q6</i> |
|----|--|--|---------------------------|---|

Why did you cease to use them?

\_\_\_\_\_ *Ask Q7*

- |    |  |  |
|----|--|--|
| 5. | How many of those <b>new</b> tractors have the following features? |  |
|----|--|--|

Roll over protective frame	_____	
Power take off (PTO) master shield/output guard	_____	
Neutral start switch	_____	
First aid kit	_____	
Hazard alert symbol or other safety signs	_____	
Fitted with front end loaders	_____	<i>If 0 skip to Q6</i>

Roll back protection \_\_\_\_\_

6. How many of those **sold** tractors had the following features?

Roll over protective frame \_\_\_\_\_  
Power take off (PTO) master shield/output guard \_\_\_\_\_  
Neutral start switch \_\_\_\_\_  
First aid kit \_\_\_\_\_  
Hazard alert symbol or other safety signs \_\_\_\_\_  
Fitted with front end loaders \_\_\_\_\_ *If 0 skip to Q7*  
Roll back protection \_\_\_\_\_

7. How many of those tractors you **ceased to use** had the following features?

Roll over protective frame \_\_\_\_\_  
Power take off (PTO) master shield/output guard \_\_\_\_\_  
Neutral start switch \_\_\_\_\_  
First aid kit \_\_\_\_\_  
Hazard alert symbol or other safety signs \_\_\_\_\_  
Fitted with front end loaders \_\_\_\_\_ *If 0 skip to Q8*  
Roll back protection \_\_\_\_\_

8. Have you made any alterations to your existing tractor(s) in the last 6 months?

Yes                    ÿ 1      *Go to Q9*  
No                     ÿ 2      *Go to Q10*

9. What was done and to how many?

Roll over protective frame added \_\_\_\_\_  
PTO master shield/output guard installed \_\_\_\_\_  
Neutral start switch installed \_\_\_\_\_  
First aid kit put in \_\_\_\_\_  
Hazard alert symbol or other safety signs added \_\_\_\_\_  
Fitted with front end loaders \_\_\_\_\_  
Roll back protection added \_\_\_\_\_  
Other (*Specify*): \_\_\_\_\_

***Personal protective equipment***

10. Have you bought or received any items of personal protective equipment in the last 6 months?

Yes                    ÿ 1      *Go to Q11*  
No                     ÿ 2      *Go to Q12*

11. What did you buy (receive)?:

Equipment	Yes	Number or pairs bought
Ear muffs/plugs	ÿ 1	_____
Safety goggles	ÿ 2	_____
Heavy duty gloves	ÿ 3	_____
Heavy duty apron	ÿ 4	_____
Welding mask	ÿ 5	_____
Face mask/Dust mask	ÿ 6	_____
Respirator (filters gasses/particles)	ÿ 7	_____
Water proof gloves	ÿ 8	_____
Water resistant boots	ÿ 9	_____
Goggles (Chemical)	ÿ 10	_____
Overalls (Chemical)	ÿ 11	_____
Helmet for agbikes	ÿ 12	_____
Helmet for horse riding	ÿ 13	_____
Filters/Cartridges	ÿ 14	_____
Safety/work boots	ÿ 15	_____
Spray hood/suit/mask	ÿ 16	_____
First aid kit	ÿ 17	_____
Guards for grinders	ÿ 18	_____
Electrical safety switch	ÿ 19	_____
Helmet (Chain saw)	ÿ 20	_____
Sun glasses	ÿ 21	_____
Other 1 _____	ÿ 22	_____
Other 2 _____	ÿ 23	_____
Other 3 _____	ÿ 24	_____

12. How often are Ear muffs/plugs used when driving a cabin-less tractor on your property?

- All instances ÿ 1
- Almost all instances ÿ 2
- About half the time ÿ 3
- Almost never ÿ 4
- Never ÿ 5
- Not applicable ÿ 6

13. How often are Safety goggles used when performing workshop tasks on your property?

- All instances ÿ 1
- Almost all instances ÿ 2
- About half the time ÿ 3
- Almost never ÿ 4
- Never ÿ 5
- Not applicable ÿ 6

**Training**

14. In the last 6 months has anyone working on your property, including yourself, attended any **other** health & safety seminars or training courses?

- Yes ÿ 1 *Go to Q15*
- No ÿ 2 *Go to Q16*
- Don't know/Can't remember ÿ 3 *Go to Q16*

15. What was that course?: \_\_\_\_\_
16. Do you have a place where you record training sessions attended by you or others working on your property?
- |     |     |           |
|-----|-----|-----------|
| Yes | ÿ 1 | Go to Q17 |
| No  | ÿ 2 | Go to Q18 |

17. Where? : \_\_\_\_\_

**Safety checks**

Now for some questions about managing farm safety;

18. What steps do you think can be taken to manage risks or hazards on farms?
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

19. Have you conducted a formal safety check throughout your property during the last 6 months ?
- |     |     |           |
|-----|-----|-----------|
| Yes | ÿ 1 | Go to Q20 |
| No  | ÿ 2 | Go to Q25 |

20. What did you use as a guide?
- |             |               |       |
|-------------|---------------|-------|
| The MFS kit | ÿ 1           |       |
| Other       | ÿ 2 (Specify) | _____ |
| Nothing     | ÿ 3           |       |

21. Did you take any actions or make any changes as a result of the check to improve safety?
- |     |     |           |
|-----|-----|-----------|
| Yes | ÿ 1 | Go to Q22 |
| No  | ÿ 2 | Go to Q25 |

22. What were the actions or changes?
- \_\_\_\_\_
- \_\_\_\_\_

23. Did you work out a longer term plan for fixing any problems you found?
- |     |     |           |
|-----|-----|-----------|
| Yes | ÿ 1 | Go to Q24 |
| No  | ÿ 2 | Go to Q25 |

24. What was that plan?: \_\_\_\_\_

**Property characteristics**

25. Have there been any major changes on or to your property in the last 6 months?
- |     |     |           |
|-----|-----|-----------|
| Yes | ÿ 1 | Go to Q26 |
|-----|-----|-----------|

No

ÿ 2

*Go to END*

26. What were those changes?
- |                          |     |   |
|--------------------------|-----|---|
| Moved                    | ÿ 1 | <i>Go to appropriate section(s) for each change</i> |
| Retired                  | ÿ 2 |   |
| Number employees         | ÿ 3 |   |
| Changed farming activity | ÿ 4 |   |
| Position                 | ÿ 5 |   |
27. Which local government area(s) is your property now in? \_\_\_\_\_
28. What is the new size of your property? \_\_\_\_\_ hectares or \_\_\_\_\_ acres
29. Please provide the new number of people now working on your property:
- |                                     |                                |
|-------------------------------------|--------------------------------|
| Family members (including yourself) | _____                          |
| Other permanent full-time employees | _____                          |
| Other permanent part-time employees | _____                          |
| Other seasonal employees            | _____                          |
| Other employees                     | _____ ( <i>Specify</i> ) _____ |
30. What are the new main agricultural activities on your property?: \_\_\_\_\_
31. What is your new position on the property?
- |               |                              |
|---------------|------------------------------|
| Owner         | ÿ 1                          |
| Manager       | ÿ 2                          |
| Share farmer  | ÿ 3                          |
| Employee      | ÿ 4                          |
| Family member | ÿ 5                          |
| Retired       | ÿ 6                          |
| Other         | ÿ 7 ( <i>Specify</i> ) _____ |

Thank you for taking the time to do this survey and for filling out the questionnaire earlier. The results of this study will not be available until next year and we are planning to release the results through the rural press and newsletters of the state farmers federation and other farming organisations. So you should get to hear about it then.

Thanks again for your help

**END INTERVIEW**

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_

**MONASH UNIVERSITY ACCIDENT RESEARCH CENTRE**  
**FARM INJURY PREVENTION:**  
**EVALUATION OF MANAGING FARM SAFETY KIT**  
**PRE-INTERVENTION SURVEY**

Date: \_\_\_\_\_

**A. Current features of your property*****Tractors***

1. How many operational tractors greater than 560 kilograms are located on your property?

None	0
One or more (specify)	___

2. How many operational tractors greater than 560 kilograms on your property have the following features?

- |     |   |     |
|-----|---|-----|
| 2.1 | Roll over protective frame                                      | ___ |
| 2.2 | Power take off (PTO) master shield/output guard                 | ___ |
| 2.3 | Neutral start switch  | ___ |
| 2.4 | First aid kit   | ___ |
| 2.5 | Hazard alert symbol or other safety signs                       | ___ |
| 2.6 | Roll back protection on tractors fitted with a front end loader | ___ |

***Machinery***

3. Apart from tractors and motor vehicles, which two items of machinery/implements do you use the most on your property?

3.1 \_\_\_\_\_

3.2 \_\_\_\_\_

**Personal protective equipment**

4. For the following activities, which items of personal protective equipment do you have? For each one please state how many you have.

Activity	Equipment	Yes	No	Number or pairs
For workshop activities	4.1 Ear muffs/plugs	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	4.2 Safety goggles	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	4.3 Heavy duty gloves	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	4.4 Heavy duty apron	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	4.5 Welding mask	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
For mixing & preparing chemicals	4.6 Face mask/Dust mask	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	4.7 Respirator (filters gasses & particles)	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	4.8 Water proof gloves	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	4.9 Water resistant boots	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	4.10 Goggles	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
For getting around	4.11 Overalls	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	4.12 Helmet for agbikes	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	Don't have bikes		ÿ <sub>3</sub>	_____
	4.13 Helmet for horse riding	ÿ <sub>1</sub>	ÿ <sub>2</sub>	_____
	Don't have horses		ÿ <sub>3</sub>	_____

5.1 How often are Ear muffs/plugs used when driving a cabin-less tractor on your property?

- All instances ÿ<sub>1</sub>
- Almost all instances ÿ<sub>2</sub>
- About half the time ÿ<sub>3</sub>
- Almost never ÿ<sub>4</sub>
- Never ÿ<sub>5</sub>
- Not applicable ÿ<sub>6</sub>

5.2 How often are Safety goggles used when performing workshop tasks on your property?

- All instances ÿ<sub>1</sub>
- Almost all instances ÿ<sub>2</sub>
- About half the time ÿ<sub>3</sub>
- Almost never ÿ<sub>4</sub>
- Never ÿ<sub>5</sub>



No  $\ddot{y}$  2 Go to Q17

13. When did you do the last check?

- Under 1 month ago  $\ddot{y}$  1
- 1 - 3 months ago  $\ddot{y}$  2
- 3 - 6 months ago  $\ddot{y}$  3
- 6 - 12 months ago  $\ddot{y}$  4
- Over 12 months ago  $\ddot{y}$  5

14. What did you use as a guide?

\_\_\_\_\_

15. Did you take any actions or make any changes as a result of the check to improve safety?

Yes  $\ddot{y}$  1 Go to Q16

No  $\ddot{y}$  2 Go to Q17

16. What were the actions or changes?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### C. Property characteristics

17. Which local government area (s) is your property in?

\_\_\_\_\_

18. Please tick the current main agricultural activities on your property (You may choose more than one).

- |               |                       |              |
|---------------|-----------------------|--------------|
| Poultry       | Poultry for meat      | $\ddot{y}$ 1 |
|               | Poultry for eggs      | $\ddot{y}$ 2 |
| Fruit         | Grapes                | $\ddot{y}$ 3 |
|               | Plantation            | $\ddot{y}$ 4 |
|               | Orchard & other fruit | $\ddot{y}$ 5 |
| Vegetables    | Potatoes              | $\ddot{y}$ 6 |
|               | Other vegetables      | $\ddot{y}$ 7 |
| Cereal Grains | Cereal Grains         | $\ddot{y}$ 8 |

Animals	Sheep for wool	ÿ 9	
	Sheep for meat	ÿ 10	
	Cattle for meat	ÿ 11	
	Cattle for milk	ÿ 12	
	Pigs	ÿ 13	
Other Agriculture	(Specify)		ÿ 14
_____			

19. What size is your property? \_\_\_\_\_ hectares or \_\_\_\_\_ acres

20. Please provide the number of people currently working on your property:

- 20.1 Family members (including yourself) \_\_\_\_\_
- 20.2 Other permanent full-time employees \_\_\_\_\_
- 20.3 Other permanent part-time employees \_\_\_\_\_
- 20.4 Other seasonal employees \_\_\_\_\_
- 20.5 Other employees \_\_\_\_\_

21. What is your age group?

Under 15	ÿ 1	55 - 64	ÿ 6
15 - 24	ÿ 2	65 - 74	ÿ 7
25 - 34	ÿ 3	75 - 84	ÿ 8
35 - 44	ÿ 4	85+	ÿ 9
45 - 54	ÿ 5		

22. What is your sex?

Male	ÿ 1
Female	ÿ 2

23. What is your position on the property?

Owner	ÿ 1
Manager	ÿ 2
Share farmer	ÿ 3
Employee	ÿ 4
Family member	ÿ 5
Other _____	ÿ 6

24. How many years have you been farming?

- Under 1 year             $\ddot{y}$  1
- 1 - 4 years              $\ddot{y}$  2
- 5 - 9 years              $\ddot{y}$  3
- 10 - 20 years          $\ddot{y}$  4
- Over 20 years          $\ddot{y}$  5

25. Which farming organisations are you a member of? (You may indicate more than one).

- 25.1 State farmers federation             $\ddot{y}$  1
- 25.2 Landcare                                 $\ddot{y}$  2
- 25.3 Kondinin group                         $\ddot{y}$  3
- 25.4 Women in Agriculture                 $\ddot{y}$  4
- 25.5 Farm Management 500                 $\ddot{y}$  5
- 25.6 Local farm safety action group       $\ddot{y}$  6
- 25.7 Commodity group                       $\ddot{y}$  7     (*specify*) \_\_\_\_\_
- 25.8 Other                                       $\ddot{y}$  8     (*specify*) \_\_\_\_\_
- 25.9 None                                         $\ddot{y}$  9

26. Which organisations do you think should be providing information to farmers about occupational health and safety? (You may indicate more than one).

- 26.1 State farmers federation             $\ddot{y}$  1
- 26.2 Landcare                                 $\ddot{y}$  2
- 26.3 Kondinin group                         $\ddot{y}$  3
- 26.4 Women in Agriculture                 $\ddot{y}$  4
- 26.5 Farm Management 500                 $\ddot{y}$  5
- 26.6 Local farm safety action group       $\ddot{y}$  6
- 26.7 State workers compensation body     $\ddot{y}$  7
- 26.8 State health and safety body         $\ddot{y}$  8
- 26.9 State Department of Agriculture     $\ddot{y}$  9



**MONASH UNIVERSITY ACCIDENT RESEARCH CENTRE  
FARM INJURY PREVENTION:**

**EVALUATION OF MANAGING FARM SAFETY KIT  
POST INTERVENTION SURVEY (6 MONTHS FOLLOW-UP)**

ID: \_\_\_\_\_ TELEPHONE NUMBER: ( \_\_\_\_\_ ) \_\_\_\_\_ NAME: \_\_\_\_\_  
CALLER: \_\_\_\_\_ DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_ TIME: \_\_\_\_:\_\_\_\_

Hello, my name is \_\_\_\_\_ and I'm calling from the Accident Research Centre at Monash University. You might remember when you received your copy of the "Managing Farm Safety" kit about six months ago, you filled in a questionnaire about farm safety. We would just like to ask you a few short questions about farm safety now on the phone. It should take under five minutes. Any information you provide is treated as strictly private and confidential.

- |    |   |  |   |
|----|---|--|---|
| 1. | Are you happy to help us out now?   | Yes<br>No  | ÿ 1 <i>Go to Q4</i><br>ÿ 2 <i>Go to Q2</i>                          |
| 2. | Could I just ask one question? Did you use the kit in any way since the training session? | Yes<br>No<br>Wouldn't answer   | ÿ 1 <i>Go to Q3</i><br>ÿ 2 <i>Go to END</i><br>ÿ 3 <i>Go to END</i> |
| 3. | In what way did you use it?   | Just read parts of it<br>Read though it all<br>Did safety check<br>Other | ÿ 1<br>ÿ 2<br>ÿ 3<br>ÿ 4 ( <i>Specify</i> )                         |

\_\_\_\_\_

***Go to End***

***Tractors***

- |    |  |     |                 |
|----|--|-----|-----------------|
| 4. | Have you bought, sold or ceased to use any operational tractors over 560 kgs in the last 6 months? |     |                 |
|    | (No) None  | 0   | <i>Go to Q8</i> |
|    | (Yes) <b>Bought</b> one or more ( <i>specify how many?</i> )                                       | ___ | <i>Ask Q5</i>   |
|    | (Yes) <b>Sold</b> one or more ( <i>specify how many?</i> )   | ___ | <i>Ask Q6</i>   |
|    | (Yes) <b>Ceased</b> to use one or more ( <i>specify how many?</i> )                                | ___ |                 |

Why did you cease to use them?

\_\_\_\_\_ *Ask Q7*

5. How many of those **new** tractors have the following features?

Roll over protective frame	___	
Power take off (PTO) master shield/output guard	___	
Neutral start switch	___	
First aid kit	___	
Hazard alert symbol or other safety signs	___	
Fitted with front end loaders	___	<i>If 0 skip to Q6</i>
Roll back protection	___	

6. How many of those **sold** tractors had the following features?

Roll over protective frame	_____	_____
Power take off (PTO) master shield/output guard	_____	
Neutral start switch	_____	
First aid kit	_____	
Hazard alert symbol or other safety signs	_____	
Fitted with front end loaders	_____	<i>If 0 skip to Q7</i>
Roll back protection	_____	

7. How many of those tractors you **ceased to use** had the following features?

Roll over protective frame	_____	_____
Power take off (PTO) master shield/output guard	_____	
Neutral start switch	_____	
First aid kit	_____	
Hazard alert symbol or other safety signs	_____	
Fitted with front end loaders	_____	<i>If 0 skip to Q8</i>
Roll back protection	_____	

8. Have you made any alterations to your existing tractor(s) in the last 6 months?

Yes	ÿ 1	<i>Go to Q9</i>
No	ÿ 2	<i>Go to Q10</i>

9. What was done and to how many?

Roll over protective frame added	_____	
PTO master shield/output guard installed	_____	
Neutral start switch installed	_____	
First aid kit put in	_____	_____
Hazard alert symbol or other safety signs added	_____	
Fitted with front end loaders	_____	
Roll back protection added	_____	
Other ( <i>Specify</i> ): _____	_____	

***Personal protective equipment***

10. Have you bought or received any items of personal protective equipment in the last 6 months?

Yes	ÿ 1	<i>Go to Q11</i>
No	ÿ 2	<i>Go to Q12</i>

11. What did you buy (receive)?:

Equipment	Yes	Number or pairs bought
Ear muffs/plugs	ÿ 1	_____
Safety goggles	ÿ 2	_____
Heavy duty gloves	ÿ 3	_____
Heavy duty apron	ÿ 4	_____
Welding mask	ÿ 5	_____
Face mask/Dust mask	ÿ 6	_____
Respirator (filters gasses/particles)	ÿ 7	_____
Water proof gloves	ÿ 8	_____
Water resistant boots	ÿ 9	_____
Goggles (Chemical)	ÿ 10	_____
Overalls (Chemical)	ÿ 11	_____
Helmet for agbikes	ÿ 12	_____
Helmet for horse riding	ÿ 13	_____
Filters/Cartridges	ÿ 14	_____
Safety/work boots	ÿ 15	_____
Spray hood/suit/mask	ÿ 16	_____
First aid kit	ÿ 17	_____
Guards for grinders	ÿ 18	_____
Electrical safety switch	ÿ 19	_____
Helmet (Chain saw)	ÿ 20	_____
Sun glasses	ÿ 21	_____
Other 1 _____	ÿ 22	_____
Other 2 _____	ÿ 23	_____
Other 3 _____	ÿ 24	_____

12. How often are Ear muffs/plugs used when driving a cabin-less tractor on your property?

- All instances ÿ 1
- Almost all instances ÿ 2
- About half the time ÿ 3
- Almost never ÿ 4
- Never ÿ 5
- Not applicable ÿ 6

13. How often are Safety goggles used when performing workshop tasks on your property?

- All instances ÿ 1
- Almost all instances ÿ 2
- About half the time ÿ 3
- Almost never ÿ 4
- Never ÿ 5
- Not applicable ÿ 6

**Training**

14. Apart from the Managing Farm Safety session you attended, in the last 6 months has anyone working on your property, including yourself, attended any **other** health & safety seminars or training courses?

- Yes ÿ 1 *Go to Q15*
- No ÿ 2 *Go to Q16*
- Don't know/Can't remember ÿ 3 *Go to Q16*

15. What was that course?: \_\_\_\_\_
16. Do you have a place where you record training sessions attended by you or others working on your property?

Yes	ÿ 1	Go to Q17
No	ÿ 2	Go to Q18

17. Where? : \_\_\_\_\_

**Safety checks**

Now for some questions about managing farm safety;

18. What steps do you think can be taken to manage risks or hazards on farms?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

19. Have you conducted a formal safety check throughout your property during the last 6 months ?

Yes	ÿ 1	Go to Q20
No	ÿ 2	Go to Q25

20. What did you use as a guide?

The MFS kit	ÿ 1	
Other	ÿ 2 (Specify)	_____
Nothing	ÿ 3	

21. Did you take any actions or make any changes as a result of the check to improve safety?

Yes	ÿ 1	Go to Q22
No	ÿ 2	Go to Q25

22. What were the actions or changes?

\_\_\_\_\_

\_\_\_\_\_

23. Did you work out a longer term plan for fixing any problems you found?

Yes	ÿ 1	Go to Q24
No	ÿ 2	Go to Q25

24. What was that plan?: \_\_\_\_\_

**Property characteristics**

25. Have there been any major changes on or to your property in the last 6 months?

Yes	ÿ 1	<i>Go to Q26</i>
No	ÿ 2	<i>Go to Q32</i>

26. What were those changes?
- |                          |     |   |
|--------------------------|-----|---|
| Moved                    | ÿ 1 | <i>Go to appropriate section(s) for each change</i> |
| Retired                  | ÿ 2 |   |
| Number employees         | ÿ 3 |   |
| Changed farming activity | ÿ 4 |   |
| Position                 | ÿ 5 |   |
27. Which local government area(s) is your property now in? \_\_\_\_\_
28. What is the new size of your property? \_\_\_\_\_ hectares or \_\_\_\_\_ acres
29. Please provide the new number of people now working on your property:
- |                                     |                                |
|-------------------------------------|--------------------------------|
| Family members (including yourself) | _____                          |
| Other permanent full-time employees | _____                          |
| Other permanent part-time employees | _____                          |
| Other seasonal employees            | _____                          |
| Other employees                     | _____ ( <i>Specify</i> ) _____ |
30. What are the new main agricultural activities on your property?: \_\_\_\_\_
31. What is your new position on the property?
- |               |                              |
|---------------|------------------------------|
| Owner         | ÿ 1                          |
| Manager       | ÿ 2                          |
| Share farmer  | ÿ 3                          |
| Employee      | ÿ 4                          |
| Family member | ÿ 5                          |
| Retired       | ÿ 6                          |
| Other         | ÿ 7 ( <i>Specify</i> ) _____ |

***Evaluation of the MFS training day***

Thinking about the training course you did 6 months ago when you got the “Managing Farm Safety” kit,

32. What were some of the key ideas you took away from the course?  
\_\_\_\_\_
33. Was the training session’s content clear and easy to understand?
- |     |     |
|-----|-----|
| Yes | ÿ 1 |
| No  | ÿ 2 |
34. What specifically was not easy to understand?  
\_\_\_\_\_
35. Was the content useful to your work on the farm?
- |     |     |                  |
|-----|-----|------------------|
| Yes | ÿ 1 | <i>Go to Q35</i> |
| No  | ÿ 2 | <i>Go to Q36</i> |
36. Which part of the training did you find the most useful?

---

37. Which part was the least useful?

---

38. How could the session have been improved?

---

39. Would you recommend the training session to other farmers?

Yes            ÿ 1  
No             ÿ 2

Thinking about the actual main presenter,

40. Were questions satisfactorily answered?

Yes            ÿ 1  
No             ÿ 2

41. Did the main presenter speak clearly and coherently?

Yes            ÿ 1  
No             ÿ 2

42. Was the presenter interesting?

Yes            ÿ 1  
No             ÿ 2

***The Kit***

Lastly, thinking about the kit itself,

43. Have you read through it since the training session?

- Yes            ÿ 1
- No             ÿ 2        *Go to Q47*
- Parts of       ÿ 3

44. Have you used the kit in any way since the training session?

- Yes            ÿ 1
- No             ÿ 2

45. In what way did you use it?

\_\_\_\_\_

46. Was the kit useful for you in managing farm safety?

- Yes            ÿ 1
- No             ÿ 2

47. Did you have any problems with the kit/Were there any errors or mistakes etc?

\_\_\_\_\_

48. Do you have any suggestions to improve the kit?

\_\_\_\_\_

49. Any further comments?

\_\_\_\_\_

Thank you for taking the time to complete this survey and for filling out the questionnaire earlier. The results of the overall survey will not be available until next year and we are planning to release the results through the rural press and newsletters of the VFF and other farming organisations. So you should get to hear about it then.

*END INTERVIEW*

*COMMENTS:* \_\_\_\_\_  
\_\_\_\_\_

**Appendix 2 - Unadjusted baseline and follow-up data, evaluation of *Managing Farm Safety***

**Table 1: Distribution of tractor safety equipment at baseline, *Managing Farm Safety* evaluation**

Tractors equipped with the following devices	Intervention Group		Comparison Group		z-test
	n	%	n	%	
roll over protective structures	436	68.2	317	71.9	1.21
power take off guards	391	61.2	297	67.5	2.04*
neutral start switch	441	69.0	318	72.2	1.10
first aid kit	29	4.6	19	4.4	0.02
hazard signs	188	29.4	158	35.7	2.11*

\*z > 1.96, indicating statistically significant differences

**Table 2: Distribution of tractor safety equipment at follow-up, *Managing Farm Safety* evaluation**

Tractors equipped with the following devices	Intervention Group		Comparison Group		z-test
	n	%	n	%	
roll over protective structures	462	70.7	325	73.3	0.87
power take off guards	414	63.4	299	67.6	1.37
neutral start switch	449	68.8	322	72.8	1.37
first aid kit	32	4.9	19	4.4	0.31
hazard signs	207	31.7	164	36.9	1.72

**Table 3: Distribution and use of personal protective equipment at baseline, *Managing Farm Safety* evaluation**

	<b>Intervention Group</b>		<b>Comparison Group</b>		<b>z-test</b>
	n	%	n	%	
<b>Workshop Activities</b>					
hearing protection	168	90.8	168	90.3	-0.02
safety goggles	182	96.3	177	95.2	0.29
heavy duty gloves	168	90.3	149	80.1	2.62*
heavy duty apron	57	32.8	44	23.7	1.81
welding mask	174	95.1	164	88.2	2.21*
<b>Dealing with Chemicals</b>					
face mask/dust mask	139	76.8	100	67.1	1.84
respirator	113	65.7	69	46.0	3.44*
water proof gloves	166	89.7	124	82.7	1.72
water resistant boots	168	90.8	129	86.0	1.20
goggles	135	75.4	75	50.0	4.66*
overalls	144	80.0	91	60.3	3.82*
<b>Getting Around</b>					
helmet for agbikes	109	71.2	89	70.6	-0.02
helmet for horse riding	39	66.1	39	76.5	0.98
<b>Hearing Protection while Driving Cabinless Tractors</b>					
most of the time	81	48.8	65	43.9	0.76
about half the time	41	24.7	24	16.2	1.72
almost never/never	44	26.5	59	39.8	2.39*
<b>Use of Goggles for Workshop Activities</b>					
most of the time	119	62.6	134	72.4	1.91
about half the time	52	27.4	27	14.6	2.91*
almost never/never	19	10.0	24	12.9	0.72

\*z > 1.96, indicating statistically significant differences

**Table 4: Distribution and use of personal protective equipment at follow-up, *Managing Farm Safety* evaluation**

	Intervention Group		Comparison Group		z-test
	n	%	n	%	
<b>Devices for Workshop Activities</b>					
hearing protection	171	92.4	172	92.5	-0.18
Safety Goggles	183	96.8	179	96.2	0.03
Heavy Duty Gloves	170	91.4	152	81.7	2.58*
Heavy Duty apron	61	35.1	46	24.7	2.03*
Welding Mask	174	95.1	166	89.3	1.90
<b>Devices for Dealing with Chemicals</b>					
Face Mask/Dust Mask	144	79.6	103	69.1	2.05*
Respirator	124	72.1	76	50.7	3.84*
Water Proof Gloves	171	92.4	126	84.0	2.24*
Water Resistant Boots	168	90.8	133	88.7	0.46
Goggles	136	76.0	77	51.3	4.54*
Overalls	146	81.1	94	62.3	3.70*
<b>Devices for Getting Around</b>					
Helmet for Agbikes	109	71.2	91	72.2	0.05
Helmet for Horse Riding	39	66.1	39	76.5	0.98
<b>Hearing Protection while Driving Cabinless Tractors</b>					
Most of the Time	101	64.7	78	55.7	1.46
About Half the Time	21	13.5	22	15.7	0.37
Almost Never/Never	34	21.8	40	28.5	1.19
<b>Goggles while Workshop Activities</b>					
Most of the Time	171	90.0	160	87.4	0.63
About Half the Time	10	5.3	10	5.5	-0.14
Almost Never/Never	9	4.7	13	7.1	0.76

\*z > 1.96, indicating statistically significant differences

**Table 5: Safety practices and characteristics at baseline, “Managing Farm Safety” evaluation**

	Intervention Group		Comparison Group		z-test
	n	%	n	%	
<b>Attended Other Safety Courses</b>					
yes	78	41.1	48	25.8	3.02*
no	112	59.0	138	74.2	3.02*
<b>Has Place to Record Training Courses Attendance</b>					
yes	41	21.6	75	40.5	3.86*
no	149	78.4	110	59.5	3.86*
<b>Place with Secure Fence for Children under 15#</b>					
yes	57	53.8	61	70.1	2.17*
no	49	46.2	26	29.9	2.17*
<b>Safety Check within Previous Six Months</b>					
yes	19	9.8	2	1.1	3.54*
no	175	90.2	188	99.0	3.54*
<b>Safety Check any time in past</b>					
yes	29	15.2	9	4.8	3.16*
no	162	84.8	177	95.2	3.16*
<b>Changes Made due to Safety Check</b>					
yes	26	89.7	5	55.6	1.81
no	3	10.3	4	44.4	1.81

#only for those with children living on property; \*z > 1.96, indicating statistically significant differences

**Table 6: Safety practices and characteristics at follow-up, “Managing Farm Safety” evaluation**

	Intervention Group		Comparison Group		z-test
	n	%	n	%	
<b>Attended Other Safety Courses</b>					
yes	77	39.9	42	22.1	3.65*
no	116	60.1	148	77.9	3.65*
<b>Record Kept of Training Courses</b>					
yes	90	46.6	109	57.7	2.06*
no	103	53.4	80	42.3	2.06*
<b>Safety Check within Six Months</b>					
yes	55	28.5	6	3.2	6.64*
no	138	71.5	184	96.8	6.64*
<b>Changes Made due to Safety Check</b>					
yes	46	83.6	6	100.0	#
no	9	16.4	0	0.00	#

\*z > 1.96, indicating statistically significant differences; # z-test not possible

