

**SUBMISSION TO THE RURAL AND REGIONAL SERVICES AND DEVELOPMENT
COMMITTEE**

PARLIAMENT OF VICTORIA

INQUIRY- DEATH AND INJURY ON VICTORIAN FARMS

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Signed: _____ Date _____

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This written submission should be considered as supplementary to the material provided by Dr Lesley Day at the Committee hearing on November 17, 2003, and is organised around the six terms of reference. Although the terms of reference for the inquiry include primary industries other than agriculture, this submission relates exclusively to the agricultural industry.

Terms of Reference 1 and 2: Main causes of fatality and injury, the matter and type of injury, compared with other industries and other jurisdictions

General comments and suicide rates

There are a number of publications available in the public domain from which this information could be collated. A list of these appears below. Data was extracted from some of these publications for presentation at the hearing. In that presentation, the matter of Victoria's relatively high annual rate for suicide among male farmers 15-64 years of age was noted (38.7 per 100,000 for 1992-1995). The question was raised as to whether this rate was higher than that experienced by the population in general. Annual suicide rates for males all ages living in rural and remote towns and centres in Australia ranged between 22.2 and 23.0 per 100,000 for 1990-1992 (Moller, 1994). For males living in rural and remote areas (outside towns and centres), the range was 24.2-30.2 per 100,000. It would therefore appear that the suicide rate for male farmers is higher than that experienced by the rural population in general.

Denominator data

One other important issue raised at the hearing was that of denominator data. Injury and fatality occurrence is best measured using a rate i.e., the number of deaths or injuries which occur in a population of a known size. For example, the number of deaths per 100,000 people employed in agriculture. Another perhaps more accurate measure would be the number of deaths per 100,000 hours worked, as this takes into account the part time, seasonal nature of agricultural work, and facilitates comparisons. We have reasonably good information on the numbers of deaths and serious injuries which occur on farms each year in Victoria, but do not have comparable denominator data available over time. Ideally, we should have numbers of workers on farms per year, numbers of hours worked on farms per year, numbers of children living on farms per year (each year, or perhaps at regular intervals of say every 2-3 years). The Australian Centre for Agricultural Health and Safety (ACAHS) through the National Farm Injury Data Centre have a general brief to improve the quality of farm injury data in Australia. The ACAHS has explored various options to obtain better denominator data with the Australian Bureau of Statistics, the Australian Bureau of Agricultural and Resource Economics, and the various state departments that may conduct relevant regular surveys. Their work in this area should be supported and strengthened if possible.

Victorian farmer survey

In addition to the publicly available material listed below, a survey of Victorian farmers was conducted in the winters of 1998 and 2001. This is one of the largest surveys of Victorian farmers in which information on injury experience, and injury risk management, has been collected. A similar survey conducted in Queensland in 1998 provided the basis for some interstate comparisons. The report of this work has been submitted to the funding body, the Rural Industries Research and Development Corporation, and is currently waiting publication. Some information from this work was presented at the hearing. The executive summary is reproduced below to provide additional information and recommendations arising from that work.

Day L. and Stathakis V. Evaluation of farm injury prevention programs. 2002. Canberra: Rural Industries Research and Development Corporation.

Executive Summary

Introduction

Monitoring and evaluation of farm health and safety programs plays an important role in reaching the common goal of improving health outcomes for farmers, farm workers and their families. This role includes contributing to development and refinement of programs, determining their effectiveness, identifying unanticipated disadvantages and providing an evidence base for prioritisation of resource allocation. Program based evaluation of farm injury prevention activities has been occurring sporadically throughout Australia. However, there is also a need for evaluation and monitoring of regional programs at the state and national levels. Such work has been initiated in New South Wales, where baseline data has been collected. In Queensland, the impact of prevention activities has been monitored in a series of farmer surveys that provide a summary of the status of farm safety management practices in Queensland and demonstrate that injury reductions have occurred in some agricultural sectors.

This project was undertaken to monitor changes to farm safety practices and behavior, and injury rates, in Victoria to support state-wide and regional programs. As similar monitoring also occurred in Queensland, there appeared to be an opportunity to compare results between two states where different approaches to farm injury prevention existed.

The *objective* of this study was to compare the impact of differing approaches to farm injury prevention in Victoria and Queensland. *The main outcomes* were intended to be:

- documentation of farm injury prevention activities and approaches in Victoria and Queensland
- the determination of changes in attitudes, knowledge and practice over time
- the exploration of possible associations between changes in these parameters and exposure to farm injury prevention activities
- the determination of any differences between the major commodity groups
- the exploration of any differences in farm safety progress between the two states.

Additional outcomes were anticipated to include:

- critical information for interpreting trends in farm injury death and hospitalisation rates in Victoria
- self reported non fatal farm injury data which would supplement analysis of health sector and workers compensation data in Victoria

Methods

Two complementary methodological approaches were employed:

1. Qualitative and quantitative documentation of prevention activities in Victoria and Queensland, achieved by discussion with the key stakeholders in each state, participant observation of Farmsafe meetings, and referral to documents and reports.
2. Major quantitative surveys of Victorian farmers

Two random cross-sectional postal surveys of Victorian farmers were conducted in the winters of 1998 (1,223 respondents) and 2001 (1,382 respondents). The primary aims of these surveys were to determine:

- Changes in safety related behaviour and practices, or in the safety of the physical environment of the farm, over time in Victoria
- Factors associated with any improvement observed
- Any association between being exposed to farm safety programs and improvements in safety related behaviour, and practices, or in the safety of the physical environment of the farm
- Which farm safety programs or activities are most strongly associated with any observed improvements
- Differences in the results for the major commodity groups represented in the sample

Independent samples were drawn for the 1998 (3,200) and 2001 (3,400) surveys from a commercially available list. The questionnaire, developed collaboratively with Keith Ferguson (Department of Industrial Relations, Queensland), was constructed to collect data on the common core variables of:

- Work related injury and illness in the previous 12 months
- Tractor safety features
- Farm safety training
- Recall of prevention campaigns
- Farm safety practices
- Exposure to farm work (hours worked per week)
- Purchase of farm safety items
- Child safety
- Demographic characteristics
- Property characteristics

In addition to the common variables, state specific questions, particularly in relation to recall of prevention campaigns, were included.

Comparisons were made between the two time points in Victoria, between the four major commodity groups at the two time points, and between Victoria and Queensland for 1998. Comparisons were also made between those who had and had not been exposed to various farm safety activities and programs, to examine the association with improvements in safety related behavior, and practices, and injury occurrence.

Results

In addition to the obvious differences in geography, size and agricultural activity, Queensland and Victoria also differed on their history of occupational health and safety legislation. The key organisations involved in farm safety are similar in both states, and the major farm safety strategies were similar. However, a key difference exists in that legislation has been used in Queensland to create an environment for change, whereas in Victoria, legislation actually required change and has been coupled with enforcement campaigns. Implementation in Victoria has tended to focus on single key issues such as tractor roll-overs, while in Queensland implementation has tended to take a broader focus.

The Victorian surveys revealed that there were statistically significant improvements during the study period in six variables measured:

- the proportion of owner operators among those attending farm health and safety training or seminars: increased from 67.0% (480/716) to 81.9% (664/811)
- the proportion of tractors with ROPS: increased from 77.4% (2288/2057) to 81.0% (2560/3160)
- the proportion of properties reporting that a formal safety check had been conducted in the previous 12 months: increased from 15.2% (186/1223) to 18.9% (261/1382)
- the frequency of wearing a seat belt when fitted to a tractor with a ROPS increased from 15% of the time to 17% of the time
- the frequency of wearing respiratory protection when handling chemicals increased from 55% of the time to 58% of the time
- the frequency of wearing safety goggles during workshop tasks from 75% of the time to 77% of the time

At the same time there were statistically significant decreases in five variables measured:

- the proportion of respondents reporting that they had seen or heard farm safety material in the media decreased from 93% (1137/1223) to 89% (1230/1382)
- the proportion of properties reporting that anyone had attended an health and safety seminar or training decreased from 25% (308/1223) to 21% (294/1382)
- the proportion of family members among those attending farm health and safety training or seminars decreased from 12% (82/716) to 9% (71/811)
- the proportion of employees among those attending farm health and safety training or seminars decreased from 22% (154/716) to 9% (76/811)
- the proportion of properties purchasing a ROPS in previous 12 months decreased from 21% (262/1223) to 4% (58/1382)
- the maintenance of farm machinery according to a regular or manufacturer's recommended schedule decreased from 74% of the time to 71%.

Note that the decrease in ROPS purchases is due to earlier widespread uptake.

There were no changes in the following variables:

- attendance at health and safety seminars or training per 100 staff
- the level of seat belts, evenly adjusted brakes, PTO guards and neutral start switches on tractors
- the proportion of properties purchasing safety items other than ROPS
- the proportion of properties making safety related changes in the previous 12 months
- the overall farm safety behavior index (the summary statistic of the ten individual farm safety behaviors)
- the proportion of properties with young children reporting a secure fence
- the proportion of properties with 5-14 year old children attending farm safety lessons in previous 12 months

These relatively modest changes were accompanied by a statistically significant 14% reduction in the rate of serious self-reported non-fatal injury from 8.5 per 100,000 hours worked in 1998 to 7.3 per 100,000 hours worked in 2001.

Recall of the 2001 VWA farm safety advertising campaign, attendance of at least one field day, seeking safety advice, and attendance at a safety seminar or course were all independently associated with the presence of at least one safety related action, over the 12 months prior to the survey. Attendance of at least one field day, seeking safety advice, and attendance at a safety seminar or course were also independently associated with average or above average performance of farm safety behaviours. These results indicate an association only and no conclusions can be drawn about the temporal relationships or a possible causal nature of the association.

The purchase of at least one safety item and making at least one safety related change were both independently associated with an increased odds of having had at least one serious injury on the property in the previous 12 months. Again, no conclusions can be drawn about the temporal nature of the associations. These results could mean that purchasing a safety item, or making a safety related change on the property, occurred after the occurrence of an injurious event. Alternatively, the results could mean that these safety actions were already in place on properties on which an injury was subsequently reported.

Among the four major commodity groups (milk cattle, beef cattle, cereal grains, sheep for wool and meat), the milk cattle commodity group showed statistically significant improvements across the largest number of variables measured. This could partly be explained by the fact that this group, along with meat cattle, were the largest in the survey, resulting in increased power for the statistical testing. However, the size of the improvement for some variables was much greater than those for the other groups. The milk cattle commodity group was also the leading group in 2001 on a large proportion of the parameters measured. Rates of serious injury per 100,000 hours worked decreased by 5% and 4% for milk and meat cattle respectively, and by 1% for cereal grains. None of these decreases were statistically significant.

With respect to the state comparison in 1998, Queensland farms were significantly higher on measures for: attendance rate per 100 staff for producer group talks, farm safety behaviour, and children who had been on a school farm safety tour in the previous 12 months. They also had higher proportions of farms conducting a formal safety check ever, or in the last 12 months, and purchasing a safety item in the last 12 months. However, this difference was not found when the four major commodity groups were compared. Victorian farms were significantly higher on measures for: attendance per 100 staff at TAFE courses, ROPS fitment, making safety related changes in the last 12 months, and properties with children under 5 years with secure fences.

There was no significant difference between states on measures for: seeking farm safety advice, proportion of properties with someone attending health and safety training, conducting a formal safety check ever, or in the last 12 months (for the four major commodity groups), or purchasing a safety item in the last 12 months (for the four major commodity groups).

The serious work-related injury rate per 100,000 hours worked for all farms was significantly higher in Victoria (8.5, 95% confidence interval 7.6-9.4) than in Queensland (3.1, 95% confidence interval 2.8-3.3). This difference was also apparent across the four major commodity groups.

Discussion

Although the survey data could not be considered to be directly generalisable to all Victorian farms, the majority of respondents in the surveys were similar enough to the majority of all Victorian farms, to consider the survey data as at least broadly indicative of Victorian farms. Non-response bias did not appear to be present based on the limited information gathered in a telephone follow-up of a sample of non-responders.

The period to which the Victorian farmer surveys relate covers from mid 1997 to mid 2001. This period was characterised by increasing farm safety activities and programs. The overall impression from the survey results for this period was one of small to modest changes in a relatively small number of farm safety behaviours and practices. The level of observed changes in farm safety behaviours and practices were associated with a 14% reduction in the rate of self-reported serious work related injury. However, the link between these changes and the injury reduction is unclear. The surveys were cross-sectional and therefore the temporal relationship between changes in behavior and practice, and injury reduction cannot be firmly established.

Among the four major commodity groups, milk cattle demonstrated statistically significant change across the greatest number of variables, and also had the highest levels of performance in 2001 on the greatest number of variables. It may seem curious then, that this group did not achieve a statistically significant injury reduction, and that the reduction (5%) was of a similar magnitude to that achieved by the meat cattle group (4%). The surveys may not be measuring all the variables associated with injury outcome. In addition, the baseline dairy specific injury rate (ie., 1998) was not significantly different to that for all farms, whereas the baseline injury rate for meat cattle was significantly higher than that for all farms (twice the all-farm rate, in fact). This being the case, it is possible that larger changes would be required by the dairy group, than by the meat cattle group, to have the same order of magnitude impact on injury rate.

The serious work-related injury rate per 100,000 hours worked for all farms, and for the four major commodity groups, was significantly higher (two to three times higher) in Victoria in 1998 when compared with Queensland. This appears to be somewhat unexpected, given that dramatic differences between the two states on farm safety practice and behavior as measured in the 1998 survey were not observed. It could be that the surveys did not measure those factors which influence injury occurrence, and therefore did not capture the factors responsible for lower rates in Queensland. Alternatively, systematic errors in estimating the rate numerators and denominators could also account for such a difference. The total average weekly hours worked per property in Queensland was higher than in Victoria (132.2 hours, 80.9 hours respectively). It is difficult to determine whether this is due to differences in reporting, or whether it reflects different agricultural practices and labour requirements. However, differences of this magnitude were also observed in the average hours worked per week per property for each of the four major commodity groups, suggesting a systematic difference in reporting.

The cross-sectional nature of this comparison, and the possible influence of state-specific factors outside those considered in this study, limit the conclusions which can be drawn about the association between the differing approaches and outcomes in the two states.

Recommendations

- That the impact of respondent perceptions of the organisation conducting research on participation and data accuracy and quality be explored
- That the feasibility of prospective cohort or longitudinal intervention studies to determine whether improved safety behaviour and practice leads to injury reduction be explored
- That ways to improve response rates to mailed and telephone surveys on safety be developed and tested
- That a systematic literature review of the *effectiveness* of farm safety intervention programs be conducted and informative summaries of successful programs be widely disseminated, to capitalise on the increased number of intervention studies published in the peer-reviewed literature since this project was commenced
- That the literature on *uptake* of farm safety interventions be examined and summarised to inform farm safety programs, and to identify research gaps
- That consideration be given to targeting the following issues in intervention programs which were identified as having low uptake in the 2001 survey:

- Power take off guards
- Formal safety checks
- Use of hearing protection
- Machinery maintenance
- Correct lifting technique
- Respiratory protection when handling chemicals
- Managing Farm Safety training

Seat belt wearing was also noted as being relatively low. However, fitment of tractors with seat belts is low, and there may be ergonomic problems with some seat belt configurations.

- That the meat cattle and sheep industries receive some targeted interventions in view of the higher injury rates and lower safety performance
- That the presence of innovative and interactive safety displays and activities at farm field days be continued, given that approximately 40% of respondents attended field days in the last 12 months. Even if those attending may be already actively interested in farm safety it would appear to be worthwhile to provide good quality advice and information to encourage continued and increasingly effective action.
- That the need for, and feasibility of, an ongoing farm safety training program for rural suppliers and dealers be explored, given that approximately 30% of respondents sought farm safety advice in the last 12 months, and that rural suppliers and dealers were the two main sources of advice
- That the feasibility of establishing a formal network of farmers trained in providing farm safety advice to their peers be explored, on the basis that other farmers were another important source of advice.
- That a set of standard indicators of farm safety management and performance in Australia be developed and validated
- That the feasibility of using a more reliable sampling frame for future monitoring and surveillance in Victoria be explored
- That measures of changes of risk exposure for the major commodity groups be developed
- That significant resources not be allocated to detailed state-based comparisons

- That broad level, ecological, associations noted by comparing different groups form the basis for hypotheses which may be tested using appropriate study design
- That this report be disseminated to the key stakeholder organisations in the Victorian agricultural industry, to members of the Victorian Farmsafe Alliance, and other interested parties
- That this report be disseminated to the key organisations in the agricultural industry in other states and territories.
- That the results of this report be disseminated in an appropriate format to rural media
- That opportunities to present the results of these surveys to appropriate audiences be sought

References for causes of fatality and injury on farms

Day L. (1999). Farm work related fatalities among adults in Victoria, Australia: The human cost of agriculture. *Accident Analysis and Prevention*, 31, 153-159.

Day, L., Ashby, K. & Stathakis, V. (1997). Unintentional farm injury. *Hazard*. Edition No. 33. Victorian Injury Surveillance System: Monash University Accident Research Centre.

Fragar L. and Franklin R. (2000). The health and safety of Australia's farming community. Moree: ACAHS, RIRDC

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Moller J. 1994. The spatial distribution of injury deaths in Australia: urban, rural and remote areas. Australian Injury Prevention Bulletin. Issue 8. Australian Institute of Health and Welfare.

National Occupational Health and Safety Commission. Work-related fatalities involving tractors in Australia, 1989 to 1992. Sydney: The Commission; 2000.

Term of Reference 3: Current programs and initiatives designed to improve occupational health and safety on Victorian farms

Monash University Accident Research Centre does not generally deliver farm safety programs directly. The Centre conducts basic research to identify prevention priorities, underpin the development of prevention programs, and the evaluation of programs. The Centre is aware that there are a number of organizations and agencies conducting programs to improve occupational health and safety on farms. In a recent review of Farmsafe Victoria and the Victorian Farmsafe Alliance Activities (Day and Wallace, 2002) for example, an overview of the activities of the Alliance was produced as outlined below.

Activities of the Victorian Farmsafe Alliance

In reviewing the activities of the Alliance, it should be acknowledged that those working to reduce injuries on farms are doing so with a very limited evidence base on the effectiveness of prevention strategies and programs. A small number of specific prevention measures with good evidence for effectiveness have been identified, including roll over protective structures for tractors, guarding of moving parts on machinery, and personal protective equipment. There is a considerable gap, however, in the area of implementation of these and other prevention strategies.

During the period 1998-2001, the Alliance created a strong foundation for farm safety through high level promotion in the media and by fostering the development of farm safety action groups. Promotion was achieved via publications and newsletters distributed through several networks, creating stories in the media via media releases, using farm safety week and farm safety days to raise the profile of farm safety, and by an annual meeting of the Alliance members and other interested parties. The development of farm safety action groups was supported by a resource manual, seed funding, dissemination of written materials, and guidelines and resources for special projects.

Awareness raising activities provided the climate for the implementation of specific projects to reduce farm hazards and risks, including:

- Farm and home safety parties project
- Child safety on farms pilot project
- Rural Injury Prevention Primary Education Resource (RIPPER)
- Safe shearing shed demonstration project
- Small business safety audit project
- All terrain vehicle safety
- Roll-over protective structure rebate scheme
- Safe tractor access platform project

The success in attracting funding for these projects has been vital to the Alliance. These projects have targeted child farm safety, musculo-skeletal injuries among shearers, all-terrain vehicle injuries, tractor roll-over incidents, and tractor run-over incidents. The projects have targeted several of the major causes of adult farm injury death and hospital treated injury, in addition to child injury (a well recognised priority) and the overall management of farm injury risk.

These projects have generally adopted the sound health promotion principles of addressing the predisposing (knowledge, attitudes, beliefs), enabling (skills, resources, barriers), and reinforcing (rewards, feedback, encouragement) factors known to influence behaviour change (Green and Lewis, 1989). These initiatives implemented by the Alliance have generally addressed more than one of these categories. Five projects addressed all three categories, and a further project addressed two categories. Four of the projects included a specific design or engineering solution. The projects developed a wide range of partnerships at the local, state and national levels with industry, government, academic, health services, farmer, and farm worker organisations, in addition to local level groups. A summary profile of each major project is provided in Appendix A.

Process and impact evaluation of some projects indicated an excellent level of satisfaction among those who participated, and offered some evidence for changes occurring as a result of participation (Appendix A). With the exception of the general promotion of farm safety and the roll-over protective structures rebate scheme, relatively small numbers of the farming community have been reached by Alliance activities (Appendix A), considering that there are some 36,000 agricultural properties in Victoria.

Safe Tractor Access Platforms

Mounting and dismounting a tractor has been identified as a common antecedent to tractor run-over events. In response to the apparent risks associated with mounting and dismounting older tractors, the Australian Centre for Agricultural Health and Safety produced a guidance note for the construction of safe access platforms for tractors, the design of which addresses a number of the factors found to be associated with run-over events. This guidance note has been used in Victoria by the Wellington and Colac Farm Safety Action Groups to retro-fit tractors with safe access platforms. We undertook an evaluation of the uptake and implementation of this initiative. The evaluation focussed on the operational aspects of the retro-fitted tractors, and the design aspects of the platforms themselves. The evaluation was funded by the Rural Industries Research and Development Corporation, and the information provided here has been extracted from the report to the Corporation (Day and Rechnitzer, 2003).

This initial implementation of safe tractor access platform retro-fitment has proven to be relatively successful.

The step/platform factors associated with decreasing the risk of a fall include the step height and dimensions, handrails, non-slip materials, and lips on step edges. Step dimensions, lip edges, and handrails generally met the specifications. Greater attention to non-slip materials for steps and step nosing, and to step height, would further enhance platform performance.

The step/platform factors associated with decreasing the risk of a run-over should the operator fall from a moving tractor include the positioning of the outer edge of the bottom step, and the guarding of the rear wheel. The key criteria for positioning the bottom was met by only half the tractors. Further, the rear wheel was adequately guarded on only half of the tractors. Closer attention to these two specifications would have increased the estimated potential damage reduction of some retro-fitted tractors.

Any possibility of increased passenger carriage as a result of the retro-fitted platforms may be at least partially offset by the probable decrease in run-over risk, should a passenger fall from a

platform or steps which meets the key criteria of extending level with the outer edge of the rear wheel.

Reduction of the risk of falling and of the risk of a run-over in the event of a fall are two strategies for the reduction of run-over events. Since ineffective park brakes also play a role in run-over events, regular testing and maintenance of the park brake is an advisable adjunct to platform fitment. Further, technical advances increase automatic protection for tractor operators from run-over events would also contribute to future reductions as the tractor park is replaced with newer models.

The retro-fitted tractors performed at about the same level or better than the new tractors on step height and dimensions, rear tyre guarding, extension of bottom step to outer edge of the rear wheel, and front handrails which defined the access path. The impact of the dis-benefits of access design on the new tractors may be tempered by other features and systems which reduce the risk of a run-over, if these are adequately maintained.

This strategy has the potential to significantly reduce the risk of tractor run-over events if adherence to the key criteria can be achieved, to also reduce the physical work demand of frequent mounting and dismounting tractors. Platform retro-fitment could be considered to be current best practice in the management of tractor run-over risk, and mechanisms for promoting, encouraging and facilitating uptake may need to be considered by the relevant organizations. This study has implications also for the design of new tractors.

Recommendations arising from this work include:

- Safe tractor access platforms should be promoted through a wide range of networks including rural media, farmer organisations and groups, local government, local offices of relevant organizations and government departments such as the Victorian WorkCover Authority, engineers, and farm machinery dealers.
- Promotion should include opportunities for farmers to actually try out retro-fitted platforms by having displays at field days and shows, engineer workshops, farm machinery dealers and other relevant locations.
- Promotional material should emphasize ease of access, reduced physical demand, reduction of run-over risk and the relatively low cost.
- Promotion during traditionally quiet seasons could be considered as a means of increasing uptake as both farmers and tractors would be more available.
- Currently available non-slip materials should be reviewed and tested for suitability in construction of safe tractor access platforms.
- Engineers are experienced and skilled at design and installation of modifications like the access platforms and there is considerable advantage in seeking their advice and assistance.

- Farmers and engineers should be provided with guidance on the critical characteristics of the platforms (bottom step extending to edge of rear wheel, adequate guarding of rear wheel). Attention should particularly be drawn to ensuring that no parts are welded onto the roll-over protective structure. This could be in the form of a one page summary distributed with the standard guidance note, and including a list of suitable tested non-slip materials.
- Farmers choosing to have their tractors retro-fitted should receive written advice regarding use of the tractor following fitment, including advice against the carriage of passengers.
- The fitting of a no passenger decal on retro-fitted platforms could be considered.
- The process(es) for retro-fitting safe tractor access platforms may best be designed or selected at regional or local levels to provide mechanisms appropriate to local needs.
- A mechanism for sharing of platform designs among farmers and engineers considering retro-fitment should be developed.
- Other aspects of run-over prevention, particularly park brake maintenance could also be addressed at the time of platform fitment.
- New un-cabined tractors which do not meet the guidelines for safe access may need to be retrofitted prior to purchase.
- The issue of safe access on tractors with cabins should be further examined, before recommendations can be made.

Safe tractor assessment and rating system (STARS)

A safe tractor assessment and rating system has been developed at MUARC as a tool to assist farmers and others determine the relative safety inherent in the design of tractors. (www.general.monash.edu.au/muarc/stars/htm).

References for Term of Reference 3

Day L and Rechnitzer G. (2003). Evaluation of the safe tractor access platform. Canberra: Rural Industries Research and Development Corporation. Report No to be assigned.

Day L. and Wallace A. (2002). Review of Farmsafe Victoria and Victorian Farmsafe Alliance Activities. Report to the Rural and Regional Health Services Branch, Department of Human Services, Victoria.

Green L. Lewis F. *Measurement and Evaluation in Health Education and Health Promotion*. Mayfield Publishing Co, California. 1986

Term of Reference 4: Impediments to sustaining improvements in farm safety

I am not aware of any recent research into this issue. I would expect that the farming community would be able to provide some insights into this issue.

Term of Reference 5: The financial and social cost of death and injury on Victorian farms

As far as I am aware the financial cost of death and injury on Victorian farms has not been specifically collated. A number of resources however could be combined to derive an estimate. The numbers of deaths and serious injuries on farms per year are available from the Coronial information system, the Victorian WorkCover data systems, the Victorian Admitted Episodes Database (hospitalisations) and the Victorian Emergency Minimum Dataset (emergency department presentations). The Murray Plains Division of General Practice also has some data on general practice presentations for farm injury in their area.

These numbers can be multiplied by some standard injury costs to obtain the estimates. Standard economic values for injury deaths, costs for WorkCover claims, and average costs per episode of treatment for hospital inpatients, hospital outpatients and general practice attendances are available.

Term of Reference 6: Further strategies for prevention, particularly codes of practice or education and training programs

A review of the scientific literature on farm safety program evaluations shows that intervention strategies to reduce the incidence of injury and fatality on farms have generally taken two forms – education interventions and multifaceted interventions. One of the problems encountered whilst evaluating the literature was the lack of informative results due to poor study designs. There were studies with no pre-testing which make it difficult to assess the effect of the intervention. There were also studies with no control groups, or no evaluations. The best study design for any injury prevention intervention would be a randomised control trial.

Education interventions

Different types of education interventions included workshops, seminars, media advertisements, booklets, safety fairs, day camps, certification programs, mail outs, and courses. Ideally, pre and post testing should be undertaken to assess the effect of the intervention program, however this was not always the case. Questions relating to attitudes and knowledge which are assessed pre and post intervention may only provide information on farmers' attitudes and knowledge, not necessarily on their safety habits.

One of the difficulties in assessing the effectiveness of education is the transfer of knowledge and attitudes to a change in behaviour. Whilst respondents may display an increase in knowledge and attitudes to farm safety after the education intervention (Rodriguez et al, 1997; Clarahan, 1995; Chapman, 2003), there is little evidence provided by these studies that this increase resulted in increased safety practices or a decrease in injuries and fatalities. Indeed the post test time ranged from the day of the education program (Clarahan, 1995) to 12 months (Rodriguez et al, 1997; Chapman, 2003). From these studies (and others pre-dating 1995), the positive effect of education campaigns alone appears to have little effect on implementing safety initiatives (Murphy et al, 1996). As noted by Cole (2002), despite most farmers understanding the safety messages delivered to them, they continue to engage in risky behaviours. The latest challenge is to educate the farmers in a way that will result in a modification of their behaviour.

Multidisciplinary interventions

Recent studies have promoted a more active approach to farm safety interventions. The use of control groups was more prevalent in this type of intervention study. One of the differences with this type of intervention is the implementation of safety audits and the resultant provision of safety recommendations. This allows the farmer to make an informed decision about implementing changes to increase safety.

Financial assistance can often assist the farmer in undertaking safety improvements. Different methods of assistance included a rebate on worker compensation / health insurance premiums (Jaspersen et al, 1999; Abend et al, 1998) and cash incentives of US\$150 to cover the cost of installing a ROPS (Stone et al, 1998). The cost of implementing safety initiatives could potentially prevent many farmers from doing so. In the Stone et al (1998) study, 61% of farmers reported that the financial assistance was the most important factor in their decision to purchase a ROPS.

The evidence to date indicates that the most promising interventions are multi-faceted and include tailored advice from a credible advisor (DeRoo et al, 2000). Findings from two programs with robust evaluation research designs are worth noting. The Pennsylvania Central Region Farm Safety Pilot Project found that self-audits coupled with advice from an extension agent significantly reduced hazards. Self-audit in this study involved two self-audits of the farm (6 months apart), which were returned to the county agent who scored them. The agent then identified which hazards should be rectified immediately, in the near future or when time permits. Hazard audits were conducted by trained auditors at pre and post intervention. Properties with a high hazard baseline score achieved a 30% reduction in hazards. Further, the authors reported that a community coalition approach was almost as effective as self-audit on properties with a low hazard baseline score, achieving a 14% reduction (Landsittel et al., 2001).

A Danish randomised trial evaluated an intervention which included an on-farm safety check by an agricultural engineer, followed by an immediate verbal and a short written report of recommendations. Farmers then attended a one day safety course, during which a farm specific action plan was prepared. A second safety check by the engineer was carried out 6-12 months post-intervention (Glasscock et al., 1997). Preliminary results suggested that the intervention was effective in actually reducing the number of injurious events and the number of medically treated injuries (Carstensen et al., 1998). The outcome variable of injury incidence in the intervention group reduced significantly from 33.4 to 20.1 injuries per 100,000 hours worked ($p < 0.05$). Control groups observed no significant reductions in injury incidence and no improvement in safety behaviours.

Conclusion

Regardless of the type of intervention employed, studies which rely on self-reporting and knowledge / attitudes on issues of safety may be somewhat irrelevant unless they can relate to a reduction in injury incidence, or of hazards around the farm. To check the accuracy of self-reporting, Abend et al (1998) conducted random inspections of 25% of the farms finding that 95% of hazard reductions had been made as reported.

Some recommendations for methodology of intervention strategies are:

- Focus on outcomes such as behaviour change and injury incidence rather than knowledge / attitude
- Objectively measure outcomes or verify self-reports
- Conduct post-intervention tests months after the intervention
- Control or comparison groups should be used
- Participants should be randomly assigned to intervention and non-intervention groups.
-

The studies that implemented educational interventions only, returned mixed results and should be viewed with caution. Interventions involving education only, are less likely to result in a decrease in injury and fatality rates on farms, than multi-faceted interventions (provided the study design is sound).

While the evidence on the effectiveness of farm injury interventions is sparse, this does not mean that farm injury prevention programs should not be conducted, at the same time as further research and demonstration trials. A number of well founded frameworks, such as the hierarchy of controls, Haddon's matrix and Haddon's top ten strategies, and various health promotion models (eg., Aherin et al., 1992; Murphy, 1992; National Committee for Injury Prevention and

Control. Injury Prevention, 1989; Green and Lewis, 1986), provide good guidance on a systematic and sound approach to the design and implementation of programs. Further, we know from other areas of injury prevention research, that the most effective prevention programs combine education, engineering and design changes, and legislation and enforcement (National Committee for Injury Prevention and Control, 1989).

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APPENDIX 1

Major activities of the Farmsafe Victoria Alliance, 1998-2000

Activity: Formation and support of Farm Safety Action Groups (FSAG)

Brief Outline of Activity:

The purpose of these groups is to involve the farming community in injury prevention at the grass roots level and give them ownership of local farm safety programs. The Farmsafe Alliance project officer role has been to encourage the development of farm safety action groups and to support their local activities with a Resource Manual (including Guidelines for the formation of farm safety action groups), seeding funding, information provided via a newsletter, dissemination of other written materials, presence at farm safety days and other local initiatives, guidelines and resources for specific projects (eg., safe tractor access platforms), and linkage into the state and national frameworks. The FSAGs across Victoria have also been supported by 4 regional farm safety officers each working one day per week.

Target Safety Issue:

Farm safety in general, with projects targeting specific issues.

Target Population:

Farmers and their families

Ranking of Target Safety Issue:

Not relevant- holistic approach

Type of Approach:

Education and promotion; predisposing (knowledge, attitudes, beliefs, values), enabling (skills, resources, barriers helping or hindering change), and reinforcing (rewards, feedback, encouragement) factors encouraging behaviour change are addressed.

Evidence Base for Activity:

Community participation by individuals, communities and action groups in determining their health priorities ensures a good basis for successful programs and services to maintain and improve their health (National Rural Health Policy Forum & the National Rural Health Alliance, 1999). Linking integrated, locally based research with action by community groups can be an effective mechanism to advance change in the prevention of injuries on farms (Barnett et al, 1996). In fact, in a randomised controlled trial in the United States, a community coalition approach to farm injury prevention achieved a 14% reduction in the farm hazard score (Landsittel et al., 2001).

Partnerships Initiated/Developed:

Those between Farmsafe Alliance project officer, regional project officers, and the farm safety action groups. Others within the broader network of the Farmsafe Alliance.

Potential for Sustainability:

FSAG require funding to implement substantial projects, and some groups have been successful in this regard. In the absence of such funding most FSAGs are limited to relatively small scale local projects which can be achieved with resources of local organisations or the individuals themselves. Sustainability also depends on local champions who drive the action, and ongoing central support.

Summary of Evaluation:

No specific evaluation conducted.

Activity: Promotion of farm safety

Brief Outline of Activity:

Vicfarmer magazine: the Victorian Farmers Federation member magazine, distributed to 15,000 members and includes regular farm safety section provided by the Alliance

Farmsafe Alliance Bulletin: regular bulletin which provides information on farm safety activities, articles on farm safety and other current information; disseminated 3-4 times per year since 1996 to the now 400 Alliance members.

Occupational health and safety bulletins: 7 bulletins (each on different topic) produced by the Victorian Farmers Federation with funding from Victorian Workcover Authority and the Department of Justice (Firearm safety), disseminated to members, available on Victorian Farmers Federation website

Farm safety week: used to highlight specific target issues

Farm safety days: Alliance officer or regional officers attend to provide expertise and resources

Promotion of Managing Farm Safety course: using bulletin, brochures and media opportunities

Farmsafe Alliance Forum: annual meeting of Alliance members held each year since 1997 (60 attended); in 2001, 120 attended.

Media releases: opportunistic use of media as issues arise

Demonstration safe farm: developed as site for the 2001 Alliance Forum; number of changes made to existing research farm run in association with the Dept of Natural Resources and Environment and the dairy industry (Gipsdairy).

Target Safety Issue:

Farm safety in general, with some promotional activities relating to specific issues

Target Population:

Farmers, farm families, farm workers

Ranking of Target Safety Issue:

Not relevant - holistic approach

Type of Approach:

Education and promotion: mainly predisposing (knowledge, attitudes, beliefs, values) factors addressed, with some reinforcing (rewards, feedback, encouragement) factors addressed.

Evidence Base for Activity:

The evidence base for education and promotion conducted in isolation from other kinds of intervention is very weak. However, education and promotion are recognised as important components of integrated injury prevention strategies (National Committee for Injury Prevention and Control, 1989).

Partnerships Initiated/Strengthened:

Victorian Farm Safety Training Centre (University of Ballarat)

Australian Centre for Agricultural Health and Safety

Farmsafe Australia

Victorian WorkCover Authority

Media, especially the rural media

Potential for Sustainability:

Sustainability depends on the continued support for the Farmsafe Alliance project officer position, the availability of resources, and the availability of funds for production and re-production of resource materials.

Summary of Evaluation:

A state-wide survey, funded by the Rural Industries Research and Development Corporation, conducted in 1998 and again in 2001 showed a relatively high level of recall of farm safety material in the media, with 93% and 89% of respondents in 1998 and 2001 respectively reporting having seen or heard farm safety items in the media (regardless of the source) in the 12 months preceding the survey. More than one third of Victorian farmers surveyed had attended a field day in the preceding 12 months (40% in 1998, and 38% in 2001) (Day et al., 2002).

Activity: Farm and Home Safety Parties Project

Brief Outline of Activity:

The concept of the Home Safety Parties Project is based on Tupperware parties. However, instead of selling a product, the parties promote child safety, particularly to parents of children under the age of 5 years. Child safety products are available for sale and information is promoted to control environmental risks within the home and the surrounding work sheds. The aim of this project was to provide 10 educators over a period of three (3) months to deliver home safety parties. Twenty parties were conducted with approximately 100 people attending in total.

Target Safety Issue:

Child safety in farm homes and surrounding work sheds

Target Population:

Parents of children under the age of 5

Ranking of Target Safety Issue:

Injuries and traumatic deaths to children on farms is an internationally acknowledged public health problem, with numerous countries adopting specific strategic approaches to reducing the problem [1-9]. Approximately 20% of all deaths on farms in Australia are children aged 0-14 years with dams, vehicles, and machinery being the most common causes (Fraklin et al, 2000). Similarly, in Victoria, 21% of deaths on farms from 1996-1999 were to children (Lough and Day, 2001). A higher proportion of children, compared with adults, presenting to hospital emergency departments for a farm injury are admitted to hospital (29%, compared with 22% in 1999/2000) (Lough and Day, 2001). Farm injury hospital admission rates for emergency department presentations among children (32%) are higher than that for all childhood injury (11%) (Day et al, 1997).

Type of Approach:

Education and promotion; predisposing (knowledge, attitudes, beliefs, values), enabling (skills, resources, barriers helping or hindering change), and reinforcing (rewards, feedback, encouragement) factors addressed.

Evidence Base for Activity:

No specific evidence base as applied in farming community. Peer education is commonly used tool in health promotion and education.

Partnerships Initiated/Strengthened:

East Grampians Community Health Service
The Safety Centre (Royal Childrens Hospital)
Victorian Farmers' Federation
VicHealth

Potential for Sustainability:

Unlikely to be sustainable in long term without support and ongoing training for the educators, and possibly some payment of educators.

Summary of Evaluation:

Evaluation was conducted by the Safety Centre and Farmsafe Alliance Project Officer.
Feedback was very positive.

Activity: Child Safety on Farms Pilot Project

Brief Outline of Activity:

This project aims to reduce child injury on farms by providing greater awareness of farm safety, providing safety strategies to children and providing information to parents and teachers. Interactive farm safety field days are conducted for primary school children, and take-home resources provided.

Target Safety Issue:

Child injury on farms

Target Population:

Parents of primary school aged students

Primary school aged students

Teachers of primary school students

Ranking of Target Safety Issue:

Injuries and traumatic deaths to children on farms is an internationally acknowledged public health problem, with numerous countries adopting specific strategic approaches to reducing the problem [1-9]. Approximately 20% of all deaths on farms in Australia are children aged 0-14 years with dams, vehicles, and machinery being the most common causes (Fraklin et al, 2000). Similarly, in Victoria, 21% of deaths on farms from 1996-1999 were to children (Lough and Day, 2001). A higher proportion of children, compared with adults, presenting to hospital emergency departments for a farm injury are admitted to hospital (29%, compared with 22% in 1999/2000) (Lough and Day, 2001). Farm injury hospital admission rates for emergency department presentations among children (32%) are higher than that for all childhood injury (11%) (Day et al, 1997).

Type of Approach:

Education and promotion; predisposing (knowledge, attitudes, beliefs, values), and reinforcing (rewards, feedback, encouragement) factors addressed.

Evidence Base for Activity:

The evidence regarding the effectiveness of training programs aimed at children is limited. It appears that pedestrian skills training programs do work in improving crossing behaviour among school aged children (Harbourview Injury Prevention and Research Centre, University of Washington). The translation of these behaviour changes to injury reduction has not been demonstrated (Dowswell et al., 1996). Among very young children (under 5 years of age), injury prevention training programs have shown an increase in knowledge, but not behaviour change, and doubts remain regarding the benefits of education and training of very young children (Towner et al., 2001).

Partnerships Initiated/Strengthened

Farm Safety Action Groups

Partnerships Developed: Rural primary schools

Potential for Sustainability:

Requires ongoing funding

Summary of Evaluation:

Evaluation of this approach conducted in one region indicated positive feedback from children, teachers and parents about the value of the field day (Pendergast, 1999). Pre and post questionnaires completed by the children indicated improvements in awareness of farm hazards and some self reported changes in safety behaviour. Parents reported being influenced to enforce safety rules, and making safety related changes on the farm. Teachers reported being influenced to conduct farm safety lessons in the classroom and to use the RIPPER resource (see next activity). These results, while encouraging, should be treated as preliminary due to the design of the evaluation (potential for volunteer bias).

Activity: Rural Injury Prevention Primary Education Resource (RIPPER)

Brief Outline of Activity:

This Primary School education resource (curriculum materials) has been designed to assist teachers in providing children who live on or visit farms and rural blocks with learning experiences which will help reduce their risk of injury. The program contains information about the risks of injury on farms and provides children with strategies to prevent injuries. The learning outcomes and activities are linked to the Education Department Curriculum and Standards Framework. The RIPPER package has been promoted to every Victorian primary school. The number of RIPPER packages purchased in Victoria is currently 373. A total of 157 Victorian rural primary schools have purchased at least one copy of the package, some purchasing multiple copies.

Target Safety Issue:

Childhood injuries on farms

Target Population:

Children from prep to year 6

Teachers of children from prep to year 6

Ranking of Target Safety Issue:

Injuries and traumatic deaths to children on farms is an internationally acknowledged public health problem, with numerous countries adopting specific strategic approaches to reducing the problem [1-9]. Approximately 20% of all deaths on farms in Australia are children aged 0-14 years with dams, vehicles, and machinery being the most common causes (Fraklin et al, 2000). Similarly, in Victoria, 21% of deaths on farms from 1996-1999 were to children (Lough and Day, 2001). A higher proportion of children, compared with adults, presenting to hospital emergency departments for a farm injury are admitted to hospital (29%, compared with 22% in 1999/2000) (Lough and Day, 2001). Farm injury hospital admission rates for emergency department presentations among children (32%) are higher than that for all childhood injury (11%) (Day et al, 1997).

Type of Approach:

Education and promotion: predisposing (knowledge, attitudes, beliefs, values) factors addressed

Evidence Base for Activity:

The whole education system is based on the improving knowledge and understanding of a whole range of subject matter. The issue for farm injury prevention is whether increasing knowledge is translated into behaviour change and ultimately to injury reduction.

Partnerships Initiated/Strengthened

Department of Education, Employment & Training (DEET)

Rural Industry and Research Development Corporation (RIRDC)

Potential for Sustainability:

The Victorian Farmers Federation has been successful in securing funding from RIRDC to

modify the RIPPER package for national dissemination. However, this intervention will not be sustainable unless schools and teachers are committed to routinely including it in their programs.

Summary of Evaluation:

No specific evaluation has been conducted. A trial of the package with 20 rural primary schools prior to completion indicated that the package was suitable for teachers, is simple to use and was seen as a valuable resource. A state-wide survey, funded by the Rural Industries Research and Development Corporation, conducted in 1998 and again in 2001 showed a relatively small (but not statistically significant) increase in the proportion of properties whose children (5-14 years) received farm safety lessons in the previous 12 months (35.4% in 1998, 37.9% in 2001) (Day et al., 2002).

Activity: Safe Shearing Shed Demonstration Project

Brief Outline of Activity:

A shearing shed in the Western District of Victoria was modified according to the research results of a project on shearing shed design. Design changes were intended to reduce musculo-skeletal strain during shearing and to reduce the physiological work demand of shearing. Farmers, shearers and other interested people were then invited to visit the shed and inspect the modifications while shearing was underway. The project was co-ordinated through a farm safety action group in the Western District.

Target Safety Issue:

Musculo-skeletal injuries among shearers

Target Population:

Shearing shed owners, shearing contractors, shearers

Ranking of Target Safety Issue:

Musculo-skeletal injuries are the leading compensated farm injury in Victoria, and the wool industry is a major source of these injuries. These injuries may initially be acute, but many become chronic injuries, limiting the capacity to work and sometimes forcing retirement from the industry.

Type of Approach:

Education and promotion; predisposing (knowledge, attitudes, beliefs, values), enabling (skills, resources, barriers helping or hindering change), and reinforcing (rewards, feedback, encouragement) factors addressed.

Evidence Base for Activity:

Design modifications were developed in a research project which found that simple modification to catching pen floors, drag paths and release chutes could significantly reduce risk and increase productivity.

Partnerships Initiated/Developed

Macarthur Farm Safety Action Group

University of Ballarat

Australian Workers Union

Potential for Sustainability:

Funded as pilot project and modified sheds still available as demonstrations. Further funding required for more widespread implementation, and it is understood that the Australian Workers Union has secured such funding. The modified sheds have the potential to be effective in reducing injury for many years.

Summary of Evaluation:

Approximately 40 visitors attended this shed on the demonstration day. Visitors were generally supportive of the modifications believing them to be worthwhile and feasible, and reported that attendance at the day had been worthwhile. The majority of farmers attending were unsure as to whether they would be making similar modifications to their sheds, although

the contractors and shearers indicated they would be trying to influence shed modifications. All shearers who actively took part in shearing in the modified shed reported that the modifications reduced physical strain during the shearing process (Cowley et al., 1999).

Activity: Small Business Safety Audit Project

Brief Outline of Activity:

This project was instigated by the Victorian WorkCover Authority as a trial to develop an auditing tool for small business that will contribute to the reduction of work-related injury in a number of targeted small business groups, including the agricultural sector. The aim of the project was to provide 25 dairyfarmers 23 horticulturalists with risk management solutions for their farms by offering the farmers a subsidised 2-day 'Managing Farm Safety' (MFS) course held in their local area. Following this training, farmers were visited by the Victorian Farmers Federation Industrial Department and the Victorian Farm Safety Training Centre, and assisted to implement their health and safety plan.

Target Safety Issue:

Farm hazards

Target Population:

Dairy and horticultural industry

Ranking of Target Safety Issue:

Not relevant – targets range of safety issues through risk management

Type of Approach:

Education and promotion; predisposing (knowledge, attitudes, beliefs, values), enabling (skills, resources, barriers helping or hindering change), and reinforcing (rewards, feedback, encouragement) factors addressed.

Evidence Base for Activity:

Self-audits coupled with advice from an extension agent significantly reduced hazards, particularly on properties with a high hazard baseline score in a randomised controlled trial in the United States (Landsittel et al., 2001).

Partnerships Initiated/Developed

Victorian Farmers Federation
United Dairyfarmers of Victoria
Victorian WorkCover Authority
Victorian Farm Safety Training Centre

Potential for Sustainability:

Funding required for more widespread implementation. Training of farmers in risk management has an ongoing effect, as does reduction of hazards and hazardous work practices on farms.

Summary of Evaluation:

Participation in the project was associated with self-reported increases in the proportion of participants with an endorsed OHS policy statement, an employee induction program, material safety data sheets, maintenance documentation, a completed hazard checklist, and an increase in OHS training. Ten dairy farms were randomly selected by the Victorian WorkCover Authority and visited to evaluate the level of compliance by farmers with their risk

management or farm safety action plan. These audits verified the accuracy of data on safety changes supplied by farmers in the pre and post surveys (Farmsafe Victoria, 2000).

Activity: Rollover Protective Structure Rebate Scheme

Brief Outline of Activity:

The strategy involved a combination of regulatory amendments, a ROPS rebate scheme and widespread publicity. This project facilitated fitment of ROPS to previously unprotected tractors, via a rebate of \$150 for each pre-1981 tractor fitted with a ROPS meeting the Australian Standard 1636. The rebate scheme was funded by the Victorian WorkCover Authority and administered by the Victorian Farmers Federation. It ran from April 1997 to November 1998, and provided rebates for 12,129 roll-over frames.

Target Safety Issue:

Tractor rollover incidents on farms

Target Population:

Farmers with previously unprotected tractors

Ranking of Target Safety Issue:

During the period 1992-1996, tractors accounted for 61% of farm work related fatalities among adults in Victoria. Rollover events accounted for 33% of these tractor-related fatalities, and were the leading cause of farm work-related fatalities in Victoria (Day, 1999).

Type of Approach:

Education and promotion, regulation and enforcement, engineering solution

Evidence Base for Activity:

The effectiveness of rollover protective structures (ROPS) in preventing tractor roll-over death has been demonstrated in Sweden, Great Britain and Norway (Springfeldt, 1993). In the event of a rollover, a driver in an unprotected tractor is at least six times more likely to be killed than a driver in a ROPS fitted tractor (Day, 1995).

Partnerships Initiated/Developed

Victorian WorkCover Authority
Farm Machinery Dealers Association
Monash University Accident Research Centre

Potential for Sustainability:

The tractors fitted in this scheme will be in operation for at least 10 years, and some possibly up to 20 years. Therefore, this initiative will continue to impact on farm injury deaths for quite some time. The combination of increased awareness of the importance of farm safety, and the strengthened partnerships between key organisations, may provide a springboard from which additional farm safety initiatives can be launched.

Summary of Evaluation:

Evaluation was conducted by Monash University Accident Research Centre. The 1997/98 scheme was extremely successful when measured against a number of criteria. The scheme reduced the number of unprotected tractors in Victoria by 70% from an estimated 17,420 to 5,290. The proportion of unprotected tractors in Victoria at the end of the scheme was estimated at 7%, compared with an estimated 24% at the commencement of the scheme. The

demand for the ROPS rebates was substantially higher than in any previous scheme.

A state-wide survey, funded by the Rural Industries Research and Development Corporation, conducted in 1998 and again in 2001, provides slightly different estimates of ROPS fitment. However, the consistent finding is of a dramatic increase of ROPS fitment. The survey data indicate that the proportion of tractors fitted with ROPS increased from 50.0% in 1993 (information recalled retrospectively by 1998 respondents), to 77.4% in 1998. A smaller further increase was noted between 1998 and 2001 (81.0%) (Day et al., 2002).

Activity: Safe Tractor Access Platform Project

Brief Outline of Activity: This project aimed to initiate the retro-fitting of safe access platforms to older (primarily uncabined tractors) by promotion of the Safe Tractor Access Platform Guidelines, which provide guidance to farmers on the correct fitting of these platforms. The idea was promoted to the farm safety action groups and the guidance notes were disseminated. Twenty platforms have been fitted to older model tractors in the Sale and Colac districts through the local farm safety action groups.

Target Safety Issue:

Run-over injuries and deaths from tractors

Target Population:

Farmers with tractors with poorly designed access

Ranking of Target Safety Issue:

Tractors account for 15% of work related fatalities among those employed in agriculture in Australia (Franklin et al., 2000). Historically, roll-over events have comprised the large majority of tractor fatalities. Following roll-overs, run-over events comprise the next largest proportion of tractor fatalities (National Occupational Health and Safety Commission, 2000). In Victoria, run-overs accounted for 27% of adult work-related tractor fatalities in 1989-90, compared with 44% in 1997-2001 (Lough and Day, 2001; Eric Young, Victorian WorkCover Authority, personal communication). Overall for the period 1999-2001, tractor run-overs were the leading cause of farm work related deaths among adults.

Type of Approach:

Education and promotion, advocacy/facilitation of design solutions, with enabling and reinforcing factors addressed.

Evidence Base for Activity:

Run-over events are associated with a variety of circumstances. One common scenario is falling under the rear wheel of a moving tractor while mounting or dismounting the tractor (Day 1999; Davidson 1994/95). Analysis of tractor access design revealed that access steps are placed in such a manner as to place the operator in a hazardous location should he or she fall. Design specifications for adequate access were then developed from first principles by agricultural engineers. Appropriate design changes are known to be effective injury prevention measures, once implemented (National Committee for Injury Prevention and Control, 1989)

Partnerships Initiated/Developed

Wellington Farm Safety Action Group
Colac Farm Safety Action Group
Australian Agricultural Health Unit
Farmsafe Victoria

Potential for Sustainability:

Safe access platforms have the potential to provide protection for the remaining work life of the tractor. The skills acquired during fitting have the potential to be transferred to other farm safety issues. Funds are required for widespread implementation. In 2002-2003, Worksafe

Victoria has funded an Alliance project to retrofit 120 safe access platforms via the Colac and Wellington farm safety action groups.

Summary of Evaluation:

The process of platform retrofitment via farm safety action groups is currently being evaluated by the Monash University Accident Research Centre.