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Adoption of Health and Safety Change on Australian Farming and Fishing Enterprises

RIRDC Publication No. 10/222



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Adoption of Health and Safety Change on Australian Farming and Fishing Enterprises

by Lyn Fragar, Tony Lower and John Temperley

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Foreword

Over several years there has been considerable investment in defining and analysing causal factors associated with common hazards of high risk on farms, plus the development of guidelines to assist in the adoption of health and safety measures. In many instances these have resulted in national programs of work that have contributed to improving the health and safety status of farming populations. However, there has been little work undertaken in relation to the fishing sector and in respect to mental health more broadly. While approaches based on evidence and best practice have been developed, efforts to further enhance the adoption of these by farmers and fishermen remain central to the overall success of these interventions.

This research builds on earlier work assessing the available evidence regarding adoption and will assist the Collaborative Partnership for Farming and Fishing Health and Safety to undertake the necessary work that will inform a program of farm and fishing health and safety research that is underpinned by “best practice”.

The research has updated earlier literature searches of programs of relevance to farm safety and cardiovascular health and cancer prevention; assessed program reports addressing mental health in farming; examined reports on health, safety and mental health in the fishing industries; reviewed the evidence for effectiveness; and based on the best evidence, defined the key features that should underpin future programs promoting change for improved health, mental health and safety in the farming and fishing sectors.

The importance of this report is that it will provide an evidence-based framework for the Collaborative Partnership for Farming and Fishing Health and Safety upon which to base future priorities. This will further strengthen the direction and cost-effectiveness of the research agenda relating to health and safety.

This project was funded by the Collaborative Partnership for Farming and Fishing Health and Safety.

This report is an addition to RIRDC’s diverse range of over 2000 research publications and it forms part of our Collaborative Partnership for Farming and Fishing Health and Safety R&D program.

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About the Author

The three authors are researchers of the Australian Centre for Agricultural Health and Safety, a centre of the University of Sydney. They have been involved in farm safety and health promotion through their work with the Farmsafe Australia network, and have undertaken applied research and development work to underpin their promotion and extension work.

Together they bring public health and health promotion, agricultural science and extension, medical, and occupational health and safety expertise to the study.

Acknowledgments

Representatives attending the project workshop from the Cotton, Fishing, Grains, Rural and Sugar Research and Development Corporation's along with Farmsafe, provided invaluable contributions in sharing their observations and knowledge gained over years of experience in the industry. That information has been pivotal to the study's findings.

The Australian Centre for Agricultural Health and Safety received a grant from the Collaborative Partnership for Farming and Fishing Health and Safety to undertake the study.

Abbreviations

ACAHS	Australian Centre for Agricultural Health and Safety
OHS	Occupational Health and Safety
PTO	Power Take Off
RCD	Residual Current Device
ROPS	Roll Over Protection Systems

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Executive Summary

What the report is about

This research report extends the evidence base regarding effective interventions and adoption in relation to the farming and fishing industries. Specifically, it aligns with the objectives of the Collaborative Partnership for Farming and Fishing Safety addressing physical and mental health, along with the safety environment and work practices. The findings of this report will assist the Collaborative Partnership for Farming and Fishing Safety to undertake the necessary work that will inform a portfolio of farm and fishing health and safety programs that are underpinned by “best practice”.

Who is the report targeted at?

The data will provide an evidence-based framework for the Collaborative Partnership for Farming and Fishing Health and Safety upon which to base their future priorities. In turn, this will stimulate governments, research providers and policy-makers in focusing on best-practice approaches to address issues of most relevance to the farming and fishing industries.

Where are the relevant industries located in Australia?

The study was carried out as a desk study and all primary industries will benefit from the work. Perhaps more immediately those industries represented in the Collaborative Partnership - cotton, fisheries, grains and sugarcane, will derive benefits more rapidly.

Background

The authors responded to a call by the Rural Industries Research and Development Corporation to undertake a study that would inform the Collaborative Partnership for Farming and Fishing Health and Safety to ensure that its projects and programs are underpinned by “best practice” in program delivery.

A review of safety and health issues for promotion in the farming and fishing industries determined the following national priorities for change:

Farm safety priorities

The following will significantly reduce deaths:

- On-farm vehicle safety and seat belt restraint
- Helmet wearing for motorcycle, quad bike and horse riding
- Quad bike safety including selection of safer vehicles, no passengers
- Guarding augers, pumps and machines
- Roll Over Protection Systems (ROPS) on tractors
- Guarding of tractor power take-off PTO system with master-guard and shaft guard
- Fall arrest systems for working at heights
- Residual Current Device (RCD) protection against electrocution
- Ensuring safe play area for protection of children from farm hazards including water, reversing vehicles and machinery
- Relocation of electrical powerlines in areas of high traffic flow

Programs to reduce costs of workers claims should include:

- Industry specific risk management programs, including:
 - Sheep and wool industry (inclusive of shearing safety and sheep handling)
 - Cattle industry
 - Horticulture industry
 - Cropping industries
- Workshop and farm machinery maintenance safety

At-risk populations for on-farm injury risk have been identified and programs targeted to these groups should be developed or strengthened.

- Child safety on farms
- Safety of older farmers
- Safety of young people and entry-level workers

Fishery safety priorities

No systematic approach has been taken to identify and address common hazards of high risk in the Australian fishing industries. This is required to define the priority safety issues for promotion in the fishing industries. The most common cause of reported deaths is drowning, with improved vessel maintenance and use of flotation devices being the most common safety issues.

Establishment of fishing industries safety research and development capacity to underpin safety programs should be a priority in light of the scale of the risk for those engaged in the sector. The fishing industry should determine immediate priorities for safety promotion.

Priorities for personal health of farmers and fishermen

Considering the high mortality rates and health disadvantage of farmers, there is a clear need for programs that result in improved physical health of Australia's farming population, including the Indigenous rural workforce.

Programs should focus on the chronic disease prevention priorities for Australians – targeting obesity (nutrition and physical activity), tobacco and the excessive consumption of alcohol.

Priorities for mental health of farmers and fishermen

The farming population in Australia can be expected to experience similar rates of mental health conditions to the wider population. However, suicide rates of male farmers and farm workers are higher than the Australian population and farmers do face periodic pressure that they find hard to manage. Additionally they do not readily access mental health services.

Until findings from studies that are underway are available, the priority mental health issues relate to:- suicide prevention, to promoting effective ways of managing the pressures confronting farmers, fishermen and their families; to provision of mental health first aid training (immediate assistance to a person in crisis until professional assistance is received); to increase mental health literacy; and, to improving access of farmers and fishermen to mental health services.

Aims/objectives

The objectives defined for the study are to support the Collaborative Partnership for Farming and Fishing Health and Safety to achieve its three objectives relating to safety, physical and mental health. This will be achieved by describing the features of effective programs and interventions that maximise safety and health behaviour and practice change. This was to involve:

1. Identification of all research and project evaluation reports of farm and fisheries safety, health and mental health programs of relevance to Australian farmers and fishermen
2. Review of the strength of evidence for effectiveness and findings of relevance to achieving changed behaviour
3. Defining with the Collaboration, the form in which features of effective interventions should be presented in order to inform future activities
4. With the Collaborative Partnership, establishment of an informal Australian Farm and Fishing Health and Safety Research Network of rural research institutions to develop research capacity in this field, and assist these to tender for projects in Stage 2
5. Submission of a review report that describes the features of effective interventions that maximise behaviour and practice change towards improved farming and fishing physical and mental health and safety, and that provides the information and resource base for Stage 2.

Methods used

Building on two earlier reports completed in 2008, a follow-up literature review was completed. This involved:- identifying and describing more recent evaluation reports of implementation and evaluation of farm safety projects; identifying relevant literature and reports relating to safety programs in the fishing industries; identifying and describing reports of promotion programs of relevance to the physical and mental health of the farming and fishing population.

Findings were tabulated as an updated review:- that included a list and description of all programs included in the reviews, by intervention type, along with exclusions and reasons for exclusion; for each program the level of evidence for outcomes; and for each reported program, a description of key features of effectiveness contributed by each report.

A workshop was hosted with the Program and Advisory Committee of the Collaborative Partnership for Farming and Fishing Health and Safety. Research findings were presented and discussions were held in relation to the scope of the study and the target groups to whom the report should be focussed. Recommendations were developed for the Collaborative Partnership.

Results/key findings

Effectiveness of farm safety programs

There is a wide range of promotion program types and pathways available and used for farm safety. Each has been characterised in terms of its level of effectiveness in attracting participation to the program, to increasing levels of necessary knowledge and skill, and in driving change at the farm level.

Selection of the most effective method will depend upon the specified on-farm change that is the goal of a specific program. Some programs will address a single issue, perhaps across all or several agriculture industries; others will attempt to enhance risk management in a particular industry. *One size does not fit all.* Careful planning will identify the program target group, the best method for attracting participation, for development of necessary knowledge and for achieving change at the farm level.

Whatever promotion method/pathway is selected, to be effective in achieving change on farms, all programs must incorporate the 10 clear principles for adoption that have been enunciated from the collective experience of those working with Australian farmers (Table a).

Table a: Ten practical principles for effectively achieving safety change on Australian farms.

1. Use the range of known effective drivers that prompt action – Intent
2. Anticipate and deal in a practical way with any real and perceived barriers to action - Barriers
3. Ensure farmers have the necessary information, skills and capacity to take the recommended action - Skills and Self-efficacy
4. Define the positive outcomes farmers can expect from adopting safety systems and approaches - Outcome expectancies (attitudes and beliefs)
5. Build programs on the characteristics that farmers recognise as positive – for example farmer individualism and autonomy (Social norms and self-standards)
6. Recognise and deal with strongly held feelings held by some farmers about safety - Emotional reactions
7. Industry associations and organisations have key roles to play to ensure adoption of safety on Australian farms
8. Governments have roles to play in partnership with industry to ensure adoption of safety on Australian farms
9. Local community action groups and community organisations have roles to play to promote adoption of safety on Australian farms
10. Empowerment and participatory research continues to be the most relevant manner of development of innovations, strategies, programs and approaches to improve farm safety in Australia.

Effectiveness of fishing industry safety programs

The literature relating to fishing safety initiatives is very limited in terms of its contribution to knowledge of what is effective in driving safety change in these industries. However, the experiences in the agriculture industries seem relevant to the fishing industries (i.e. in addressing either single safety issues or by development of broader risk management skills/systems by individual enterprises), and should be examined further. There are some single issues that could be addressed by campaign-type programs across a number of industry groups, and there appear to be engineering and design issues to be examined and addressed.

The model of safety behaviour change on Australian farms (based on Gielen and Sleet, 2003) used to develop the 10 key principles for safety adoption in the farming sector is relevant, hence these principles should also underpin any safety program in the fishing industries.

Effectiveness of personal physical health promotion programs

There is widespread acceptance of the need for the people in farming and fishing industries to participate in effective health promotion and prevention programs (to include all groups – older farmers, men and women, Indigenous workers, seasonal workers, young people/children non-English speaking farmers etc). The priorities established under the National Preventative Health Strategy incorporated into the National Health Reforms that are in progress are highly relevant to the farming and fishing sectors.

The strongest evidence for achieving long-term behaviour change rests with health promoting and preventive services provided by general practitioners. In light of this, and the nation-wide reforms that

are occurring in establishing Local Primary Health Care Organisations with increased focus on prevention, it is recommended that farmer and fishermen targeted programs aimed at improving health status should focus on ensuring farmers avail themselves of the annual health check with their local general practitioner.

As specific health promoting programs are developed for rural communities, it is important that the farming and fishing population are active participants in programs. Discussions should be initiated with the Commonwealth Department of Health and the yet to be established National Preventive Health Agency and Primary Health Care Organisations, into proposed mechanisms for inclusion of farming and fishing populations in health improvement programs.

Effectiveness of personal mental health promotion programs

Rural mental health promotion programs have focused mainly on farming communities and have been prompted by recognition of the stressors caused by drought, and by the need to better meet the wider mental health service needs of rural communities. Work has been initiated by governments, university centres for rural mental health, Non-Government Organisations, local health service providers and by farmer associations (e.g. NSW Blueprint). Programs have focused on:

1. Building personal, family and business resilience and increasing awareness of mental health; and/or
2. Strengthening mental health services and their capacity to respond to the mental health needs of farming communities.

The program with the best evidence for effectiveness in achieving its proposed outcome is the Mental Health First Aid training program, aiming at raising mental health literacy among non-health professionals. This program should be supported.

Implications for relevant stakeholders:

A key finding of the study has been that there has been significant investment in farm safety programs by a range of agencies (mostly governments), and some of these have demonstrated a significant safety impact. Notwithstanding the role that Farmsafe Australia has played in unifying the farm safety effort, this study suggests a degree of fragmentation that should be addressed for future investment to achieve more visible and meaningful improvements in farm safety.

The fisheries industry has not had the benefit that has been contributed by the National Farm Injury Data Centre that produces reports drawing on coronial records and other sources of data to inform targeted preventive action. Nor has fishing had the benefit of the Farmsafe networks at national and state levels, even though they operate at varying levels of activity between states.

A schema has been proposed placing the range of farming and fishing safety and health programs into an integrated framework aimed at assisting agencies to understand where their program fits/ might fit in the wider effort. Essentially it acknowledges that improving safety is an *ongoing process* on individual business enterprises and across each industry. It is not a one-off venture. There are:- ongoing program requirements for (seasonally relevant) promotions of safety management, using the range of relevant methods; for education, both in the formal systems and using informal approaches; for one-to-one services and provision of advice (most relevant for personal health and mental health); and for ensuring ongoing access to information and tools by farmers and fishermen on a needs basis. At the same time, investment in *key single-issue campaigns* will be a very cost-effective investment for reducing deaths. To be effective, such campaigns will require partnerships between industry and governments, and take into account lessons learned from previous programs. Ensuring maintenance of timely data to identify priorities, provide information support to program development, to monitor outcomes and to identify emerging issues is an essential component.

Recommendations

This study has identified promotion and extension programs that have as their goal to improve the safety, physical health or mental health of people engaged in the farming and fishing industries. It has identified the strengths of programs in attracting participation, in raising awareness and knowledge and in driving behaviour change on farm or fishing enterprises. It has endorsed 10 key principles that should underpin safety promotion and extension programs to optimise the likelihood of adoption. The major recommendations are directed to the Collaborative Partnership for Farming and Fishing Health and Safety in the first instance and include:

1. That the Collaborative Partnership consider the findings and recommendations of this report and, in association with Farmsafe Australia and its member agencies, develop a national strategic plan for effective promotion of safety on Australian farms.
2. That the Fisheries Research and Development Corporation, in association with the Collaborative Partnership, consider the findings of this study and move to develop capacity to support development and maintenance of a national strategic plan for effective promotion of safety.
3. That the specific research and development corporations (cotton, fisheries, grains and sugar), in association with relevant agencies with knowledge and expertise, develop an annual plan of promotion of safety to members, ensuring timely advice in relation to seasonal production activity.
4. That the industry agencies be more actively involved in supporting and sponsoring national single-issue campaigns that address priority safety issues.
5. That the Collaborative Partnership prepare a paper to be submitted to the Minister for Health and Ageing and the National Preventive Health Agency, to indicate the importance of including farming and fishing populations in preventive health programs to be delivered by general practitioners, Primary Health Care Organisations and state-based programs. Mechanisms to ensure inclusion will need to be defined.
6. That the Collaborative Partnership support programs aimed at improving mental health literacy, access to mental health services and management of business stress in the farming and fishing sectors.
7. That the Australian Centre for Agricultural Health and Safety be encouraged to revise its draft Guideline for achieving change on farms in light of comments from members of the Collaborative Partnership for circulation to agencies and individuals undertaking farm safety programs.

Future research should focus on:

1. Reviewing, monitoring and setting benchmarks and priorities for action
2. Formal support to and evaluation of national campaigns and programs:
 - Grain auger guarding and retro-fitment
 - Quad bike safety
 - Helmet wearing promotion program
 - Safety of older farmers program
3. Setting the Research and Development agenda for the fishing industries.

Introduction

Background to the study

Safety and health of the people engaged in agricultural and fishing production has been of concern to Australian governments and relevant industries for over two decades. Farming and fishing industries are subject to states' Occupational Health and Safety Acts, Regulations and Codes; and the *Occupational Health and Safety (Maritime Industry) Act* and associated Code for off-shore fishing. Figure 1 indicates the relative rates of insurance claims for work-related injury and illness in the agriculture, forestry and fishing industries relative to other high risk industries - mining and construction, and all industries for the decade commencing in 1997/89. While the mining industry has halved its claims rates during this period, only modest gains have been made in the agriculture, forestry and fishing industries.

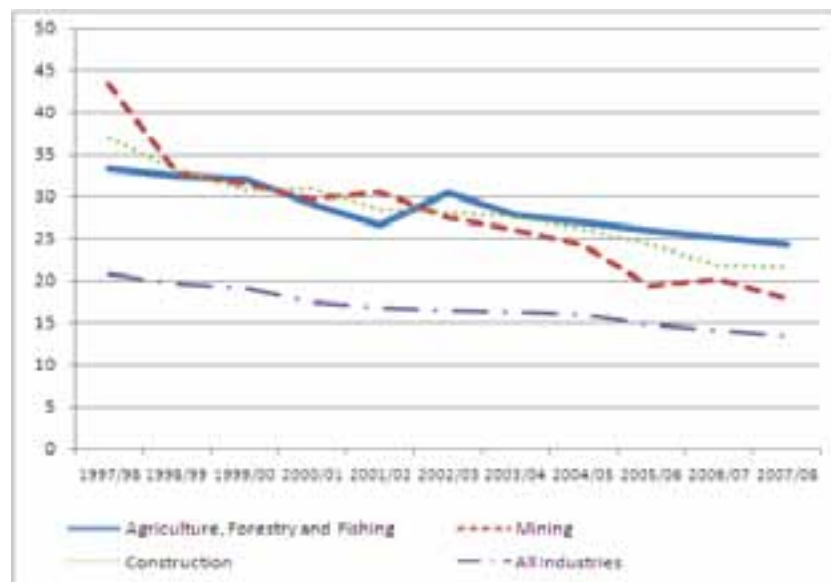


Figure 1: Workers' compensation claims rates of selected Australian industries 1997/98 to 2007/08 (preliminary data) per 1000 employees.

Source: NOSI database Safe Work Australia (downloaded 25/5/10)

There has been significant investment by the Rural Industries Research and Development Corporation and its Collaborative Partnership (including Cotton, Fishing, Grains, Horticulture, Sugar Research and Development Corporations and the Department of Health and Ageing) in:

1. Research that defines the nature and scale of the health and safety problem for the agriculture industries and analyses of causal factors associated with common hazards of high risk on farms;
2. Development of national strategic approaches to address health and safety in specific agriculture industries;
3. Development of national strategic approaches to address key hazards of high risks e.g. farm machinery;
4. Development of national strategic approaches to address risks in key at-risk sub-populations e.g. child safety on farms, safety of older farmers;

5. Development of guidelines to assist in the adoption of health and safety measures on farms. These have been in the form of management tools and are accessed routinely in hard copy, or from the websites of the Rural Industries Research and Development Corporation, Farmsafe Australia and/or the Australian Centre for Agricultural Health and Safety (ACAHS); and,
6. Piloting and evaluation of programs that address health and safety issues in the farming sector.

Flow-on from a number of the research projects has resulted in major national campaigns being initiated and implemented by the Farmsafe Australia network, with funding by the Department of Health and Ageing. The most comprehensive program has addressed risks to child safety on farms, with evidence of changes in awareness and action to reduce risk on farms derived from quota surveys. In a number of instances following involvement of governments, their regulatory authorities and other agencies in studies conducted by the Australian Centre for Agricultural Health and Safety, the information derived from research reports has prompted these agencies to take the lead on subsequent interventions. For example, the NSW Commission for Children and Young People undertakes reviews of child deaths and programs relating to off-road vehicle injuries in young people, using information contained in two relevant Chart Books (Morton C, Fragar L et al. 2008a; Morton C, Fragar L et al. 2008b). Similar action has been occurring in Queensland. The network of state work safety authorities has also adopted the farm machinery priorities established from the Farm Machinery Injury Chart Book (Fragar LJ and Thomas P 2005). They have been engaged with manufacturers, second-hand dealers and farmers to address key concerns, in some instances providing a subsidy for fitment of guards and improved systems.

Personnel of the Australian Centre for Agricultural Health and Safety have undertaken two recent reviews of relevance to this study:

- *Practical principles for effectively achieving safety change on Australian farms- using new and established pathways to improve adoption* (Fragar L, Temperley J et al. 2008)
- *Community programs to improve cardiovascular health and cancer prevention - a preliminary review of programs in rural Australia* (Jones S and Fragar L 2008).

Each examined the strength of evidence for reported outcomes and used the *Schema for Evaluating Evidence on Public Health Interventions; Version 4*. National Public Health Partnership, Melbourne (2002) as the evaluation tool. This tool provides guidance on how to appraise the strength of evidence on public health interventions. The two reports identified bodies of work relevant to those with responsibility for planning and funding promotion and evaluation programs relating to farm safety and farmer health. They did not cover the fishing industries, nor was there consideration of mental health promotion programs.

The authors responded to a call by the Rural Industries Research and Development Corporation to undertake a study that would inform the Collaborative Partnership for Farming and Fishing Health and Safety, to ensure that its projects and programs are underpinned by “best practice” in program delivery. The study planned to:

1. Update literature searches previously undertaken by the Centre of programs relevant to farm safety, cardiovascular health and cancer prevention, and to include programs addressing mental health issues for the farming sector;
2. Undertake literature searches of relevant reports of programs addressing health, mental health and safety in the fishing industries; and

3. Review the evidence for effectiveness and based on the best evidence, define the key features that should underpin future programs promoting change for improved safety, health and mental health in the farming and fishing sectors.

It was accepted that the study should take into account the range of program types and different target groups that play a part in determining the safety performance of the industries, and the adoption of health and mental health recommendations.

Safety and Health – should safety and health be integrated for effective promotion?

Issues relating to improving enterprise safety have been dealt with separately from those relating to ensuring personal physical and mental health. This is NOT because there would be benefit from taking an integrated approach if safety were purely a personal behaviour matter, rather it reflects:

1. The responsibilities that farmers and fishermen bear in their roles as employers and those responsible for the safety of others in their workplace;
2. The complex interaction of workplace environmental and behavioural factors in determining injury risk, and hence risk reduction;
3. The range of agencies that bear responsibility for ensuring workplace safety, including farmers, fishermen, workers, suppliers, contractors, governments and service providers; and
4. The different funding streams and specialised service provider groups involved in ensuring the physical and mental health of rural populations, including those in farming and fishing industries.

Hence an *analytical* approach has been taken in the first instance. A *synthesis* of outcomes is undertaken later in the report.

Agencies playing major roles in farming and fishing health and safety

A project workshop that was hosted with the Rural Industries Research and Development Corporation for members of the Collaborative Partnership for Farming and Fishing Health and Safety, defined the current ‘major players’ in the areas of farming and fishing safety, physical health and mental health. These are displayed in Tables 1 and 2 overleaf.

Table 1: Summary of current agencies actively working to achieve adoption of safety and health change on Australian Farms (not exhaustive – major players only)

	Industry	Government	Service Providers	Other stakeholders
Safety	<ul style="list-style-type: none"> Farmer associations Rural Research and Development Corporations Corporate agricultural companies <p>Role:</p> <ul style="list-style-type: none"> Leadership <ul style="list-style-type: none"> – Farmsafe Information services to members Research and development 	<ul style="list-style-type: none"> Department of Health and Ageing Safe Work Australia Department of Agriculture, Forestry and Fisheries State work safety authorities Australian Pesticides and Veterinary Medicines Authority <p>Role:</p> <ul style="list-style-type: none"> Policy and Standards Regulation Funding programs and projects Workers' compensation claims data 	<ul style="list-style-type: none"> Farmsafe Australia State Farmsafe agencies and workers Australian Centre for Agricultural Health and Safety State work safety authorities Training Organisations <p>Role:</p> <ul style="list-style-type: none"> Information – web based, print Education – OHS risk management, chemical safety Safety promotion Development of guidelines, codes, incentives addressing key safety issues Compliance (Work safety authorities) 	<ul style="list-style-type: none"> Tractor and Machinery Association Country Women's Associations Insurers Workers Compensation, CGU Universities: <ul style="list-style-type: none"> – Australian Centre for Agricultural Health and Safety – National Farm Injury data Centre – Monash Accident Research Centre Other NGOs – Water Safety, Kidsafe <p>Role:</p> <ul style="list-style-type: none"> Data and research National Strategies
Physical Health	<ul style="list-style-type: none"> Rural Research and Development Corporations <p>Role:</p> <ul style="list-style-type: none"> Research and program funding 	<ul style="list-style-type: none"> Department of Health and Ageing State Departments of Health <p>Role:</p> <ul style="list-style-type: none"> Health status and service data Health promotion and prevention policy and funding (of Medicare Locals - Primary Health Care Organisations PHCOs) General health service provision / funding 	<ul style="list-style-type: none"> Rural General Practitioners Community Health Services Medicare Locals (PHCOs) <p>Role:</p> <ul style="list-style-type: none"> One-on-one personal health advice/care Screening and early detection <i>Pit Stop</i> promotions <i>Sustainable farm families</i> workshops Community-wide promotions 	<ul style="list-style-type: none"> University Departments of Rural Health, Australian Centre for Agricultural Health & Safety <p>Role:</p> <ul style="list-style-type: none"> Health services research Teaching and training health service providers
Mental Health	<ul style="list-style-type: none"> Farmers Associations <p>Role:</p> <ul style="list-style-type: none"> NSW Farmers' Mental Health Network/ Blueprint for Farmer Mental Health Support/ coordination Mental Health First Aid education Advocacy for drought support 	<ul style="list-style-type: none"> Department of Health and Ageing States' Departments of Health/Mental Health <p>Role:</p> <ul style="list-style-type: none"> Mental health promotion policy and funding Delivery of mental health services 	<ul style="list-style-type: none"> Rural General Practitioners Rural mental health specialist teams Rural community counsellors Drought support workers <p>Role:</p> <ul style="list-style-type: none"> One-on-one personal diagnosis and care/ therapy Mental health promotion 	<ul style="list-style-type: none"> Centres for Rural and Remote Mental Health – NSW, Victoria, Queensland Beyond Blue Black Dog Institute (NSW) <p>Role:</p> <ul style="list-style-type: none"> Health services research Teaching and training mental health service providers Mental health promotion

Table 2: Summary of current agencies actively working to achieve adoption of safety and health change in Australian fishery enterprises

	Industry	Government	Service Providers	Other stakeholders
5	Safety <ul style="list-style-type: none"> States' Fishing Industry Councils Fishing Co-ops/ Fish markets Sector bodies Role: <ul style="list-style-type: none"> Development of Codes - Western Australian Fisheries Industry Council (WAFIC) 	<ul style="list-style-type: none"> Australian Maritime Safety Authority Department of Agriculture, Forestry and Fisheries Relevant state departments of fishery resources Customs Food Safe/ Food Standards Australia New Zealand (FSANZ) Role: <ul style="list-style-type: none"> Policy and Standards Regulation Funding programs and projects Workers' compensation claims data 	<ul style="list-style-type: none"> Australian Maritime College SA Marine Academy Seafood Rural Training Organisations' Consultants (few) Role: <ul style="list-style-type: none"> Education and training 	<ul style="list-style-type: none"> Contractors – KAL Analysis Safety consultants Role: <ul style="list-style-type: none"> Collection and report baseline data Safety education and training
	Health <ul style="list-style-type: none"> Fisheries Research and Development Corporation Role: <ul style="list-style-type: none"> Research and program funding 	<ul style="list-style-type: none"> Department of Health and Ageing State Departments of Health Role: <ul style="list-style-type: none"> Health status and service data Health promotion and prevention policy and funding (of Medicare Locals - Primary Health Care Organisations) 	<ul style="list-style-type: none"> Rural General Practitioners Community Health Services Medicare Locals (PHCOs) Role: <ul style="list-style-type: none"> One-on-one personal health advice/care Screening and early detection <i>Pit Stop</i> promotions <i>Sustainable farm families</i> workshops Community-wide promotions 	
	Mental Health	<ul style="list-style-type: none"> Department of Health and Ageing States' Departments of Health/Mental Health Role: <ul style="list-style-type: none"> Mental health promotion policy and funding Delivery of mental health services 	<ul style="list-style-type: none"> Rural General Practitioners Rural mental health specialist teams Role: <ul style="list-style-type: none"> One-on-one personal diagnosis and care/therapy Mental health promotion 	

Safety issues for promotion

Farming industries priorities

A review of *on-farm injury deaths* has been undertaken for the years 2001-2004. Details of each death were examined to determine whether the death would have been prevented by a known effective intervention. Table 3 displays the list of 353 on-farm traumatic deaths that occurred on Australian farms in those years and the number of deaths that would have been avoided had the identified intervention been in place on the farm.

Table 3: Number of on-farm unintentional injury deaths by agent of injury (excluding aircraft and household fire deaths) and potentially preventable deaths

Category	Agent	Number	Intervention	Potential number deaths prevented
Farm vehicle	Truck	9	Seat belt restraint	2
	Utility	22	Seat belt restraint	8
	Car	12	Seat belt restraint	5
	Motorcycle 2 wheel	16	Helmets	8
	Motorcycle 4 wheel	51	Helmets	21
			Select alternative vehicle No passengers (2 were head injuries)	7 6
Mobile Farm Machinery & Plant	Tractor	76	ROPS	26
	Auger	4	Guarding of intake	3
	Power Take Off (PTO)	1	Masterguard and shaft guard	1
	Cherry Picker	1	Fall arrest system	1
	Earth Moving Equipment	5		
	Fertiliser Spreader	1		
	Forklift	2		
	Grader	1		
	Harvesting machine	1		
	Mobile Sheep Crush	1		
	Ride on Mower	1		
	Seeder / planter	1		
	Slasher	1		
	Tillage / cultivating equipment	2		
Mobile Farm Machinery / Plant other NEC	3			
Fixed Plant / Equipment	Dairy Plant	2		
	Banana Bagging Plant	1		
	Generator	1		
	Pump	4	Guarding pump intake/exposed parts RCD protection	1 3
Workshop Equipment	Angle Grinder	3		
	Oxyacetylene welder	1		
	Power saw incl. Circular saw	1		
Other	Firearms	8		
	Locomotive	1		
	Safe	1		
Materials	Hay bales other	2		
	Materials other NEC	1		
	Tyres	2		
Farm Structure	Channel / water crossing	4	Safe play area for children	2
	Creek/river	4		
	Dam	20	Safe play area for children	12
	Fence	3		
	Fuel store	1		
	House	1		
	House yard	1		
	Lane/road/track/driveway	2		
	Other shed	4		
	Pond	1		
	Powerlines	8	Powerline relocation in areas of high traffic	7
	Sheep/Cattle Dip	1		
	Swimming Pool	3	Securely fenced pool	3
	Tank	3		
	Water Trough	1		
Windmill	5	Fall arrest system	4	
Animal	Cattle	7	Improved cattle yards	2
	Horse	14	Helmets	13
	Insect	2		
	Mammal (not horse or dog)	1		
	Sheep	2		
Farm Chemicals	Pesticide - herbicide	1		
	Pesticide - insecticide	1		
Working Environment	Fire/Smoke/Flame	8		
	Lightning	1		
	Tree, Stick branch	9		
	Trees being felled	6		
TOTAL		353		135

Source: National Coronial Information System - previously reported (Fragar, Pollock et al. 2008)

In summary

Based on these data, programs that focus on achieving the following will significantly reduce deaths:

- On-farm vehicle safety and seat belt restraint
- Helmet wearing for motorcycle, quad bike and horse riding
- Quad bike safety including selection of safer vehicles, no passengers
- Guarding augers, pumps and machines
- Roll Over Protection Systems (ROPS) on tractors
- Guarding of tractor power take-off (PTO) system with master-guard and shaft guard
- Fall arrest systems for working at heights
- Residual Current Device (RCD) protection from electrocution
- Ensuring safe play area for protection of children from farm hazards including water, reversing vehicles and machinery
- Relocation of electrical powerlines in areas of high traffic flow

When one considers causes of the wide range of *non-fatal injuries* within, say, the workers' compensation claims data for the agriculture industries (Appendix 1), there is support to programs addressing the single hazards of high fatality risk, viz:

- Tractor safety
- Motorcycle safety - 2-wheeled cycles and quad bikes

Programs to reduce costs of workers claims should include:

- Industry specific risk management programs, including:
 - Sheep and wool industry (inclusive of shearing safety and sheep handling)
 - Cattle industry
 - Horticulture industry
 - Cropping industries
- Workshop and farm machinery maintenance safety

At-risk populations for on-farm injury risk have been identified and programs targeted to these groups should be developed or strengthened.

- Child safety on farms
- Safety of older farmers
- Safety of young people and entry-level workers

Fishing industries priorities

There is no question of the need for attention to improving safety in the fishing industries. Figure 2 shows the workers' compensation claims rates for Australian commercial fishing industries in comparison to Agriculture; to Services to Agriculture, Hunting and Trapping; and to All Industries. Additionally, Appendix 2 provides a breakdown of the agents of injury or illness associated with workers' compensation claims. Although the annual number of injuries is not as large as for agriculture, the risk to workers in fishing industries is high.

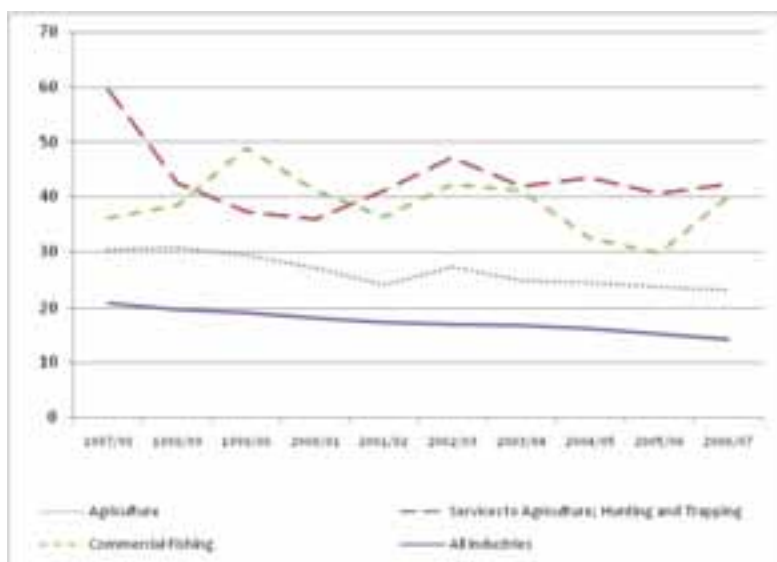


Figure 2: Workers' compensation claims rates (per 1000 employees) in Agriculture; Services to Agriculture, Hunting and Trapping; and Commercial fishing 1997/98 to 2006/07, Australia.

Source: NOSI Data Australian Safety and Compensation Commission

While there is a significant body of information relating to the safety and health status of the agriculture industries in the form of published papers and Chart Books (see Rural Industries Research and Development Corporation, and Australian Centre for Agricultural Health and Safety websites), there is no such body of information readily accessible for the fishing industries.

In terms of *deaths in the Australian fishing industries*, there has not been a rigorous review since that undertaken of deaths during the period 1989-1992 (Driscoll TR, Ansari G et al. 1994). The study was based on coronial files and examined 47 cases. The incidence of fatality was “18 times higher than the incidence of fatality for the entire workforce, and considerably higher than that of the mining and agricultural workforces. Overall 68% of decedents drowned and 13% died from physical trauma. Rough weather, non-seaworthy vessels, inadequate use of personal flotation devices, and inexperience were associated with many of the fatal incidents. *Improved vessel and equipment maintenance, better training of workers, greater use of personal flotation devices, and development of improved clothing and personal flotation devices* were recommended”.

Recent evidence on causes of work-related fatalities in the Australian fishing industries does not exist and should be undertaken (Mayhew C, 2003).

A summary of deaths in commercial fishing industries recorded in the Workers' Compensation data for the period 1997/98 to 2005/06 is shown in Table 4. These 23 cases clearly represent only the employed section of the workforce and excludes self-employed and non-worker deaths, and journey to and from work claims. Examination of information relating to the mechanism of injury or disease associated with these claims for fatalities, supports estimation that at least nine of these 23 deaths were drownings.

The profile of these deaths would suggest a similar pattern to the earlier reported deaths, with similar recommended interventions for prevention. However, as indicated above, a full study of all deaths is needed for the commercial fishing industries.

Table 4: Agencies associated with fatalities reported in Workers Compensation schemes in Australian commercial fishing industries 1997/98 to 2006/07

Breakdown Agency	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	Total
Machinery and (Mainly) Fixed Plant		1			1		1			3
<i>Refrigeration plant</i>					1					1
<i>Electrical plant - Turbines generators</i>							1			1
<i>Electrical plant - Other electrical installation</i>		1								1
Mobile Plant and Transport	1		2			1			1	5
<i>Motorised craft</i>	1					1			1	3
<i>Other water transport</i>			2							2
Chemicals and Chemical Products					1					1
<i>Carbon monoxide</i>					1					1
Environmental Agencies	1			2	1	1		1		6
<i>Weather and water</i>	1			2	1	1				5
<i>Fencing</i>								1		1
Animal, Human and Biological Agencies									1	1
<i>Human agency - condition of affected person</i>									1	1
Other and Unspecified Agencies		2	3		2					7
<i>Other agencies, nec</i>			2		1					3
<i>Agency not apparent</i>			1							1
<i>Agency not known</i>		2			1					3
Total	2	3	5	2	5	2	1	1	2	23

Source: NOSI database Safe Work Australia (2010)

Appendix 2 provides information relating to workers' compensation claims over a ten year period in the fishing industries and may provide some direction for priority areas of intervention.

While there is a paucity of Australian published reports relating to the nature and scale of safety issues in the fishing industries, the international literature provides some relevant information. Globally, the fishing industries are by far the highest risk industry in terms of fatal accidents (Roberts SE, 2010; Lincoln JM, et al, 2008; Chauvin C, and Le Bouar G, 2007; Jin D and Thunberg E, 2005).

Commonly reported causal factors associated with severe and fatal injury in the fishing industries are:

- Foundering of unstable, badly maintained and unseaworthy vessels (Superseding accidents caused by adverse weather in the UK)
- Machinery damage
- Foundering and flooding
- Grounding
- Collisions and contacts
- Fires and explosions
- Capsizing and listing
- Heavy weather damage (Roberts SE, 2010; Wang J, et al, 2005; Antão P, et al, 2008; Mayhew C, 2003).

An analysis of specific risks associated with different fishing methods (bottom trawling, Seine netting, long-line, small-scale fishing) in use in Andalusia, Spain has been undertaken with recommendations that safety policy be tailored to address the key risk/s for each (Piniella F, et al, 2008).

Moreau and Neis (2009), have made a systemic analysis of hazards of high risk in the Atlantic Canadian aquaculture industry and propose the solutions to reduce risk relating to:- work design hazards; slips, trips and falls from height; transportation and trucking; dangerous machinery; electricity and fore; extreme temperature; scuba diving; noise; confined spaces; chemical hazards; biological agents; psychosocial and organisational risk factors.

In Summary

No systematic approach has been taken to identify and address common hazards of high risk in the Australian fishing industries. This is required to define the priority safety issues for promotion in the fishing industries.

The most common cause of reported deaths is drowning, with improved vessel maintenance and use of flotation devices being the most common safety issues (Roberts SE, 2010; Mayhew C, 2003). Establishment of fishing industries safety research and development capacity to underpin safety programs in the fishing industries should be a priority in light of the scale of the risk for those engaged in the sector.

The fishing industry should determine immediate priorities for safety promotion.

Physical and mental health issues for promotion for farmers and fishermen

Physical health

The increase in chronic disease in the wider Australian population and the emergence of evidence for effectiveness of preventive action in reducing chronic diseases, has prompted national and states' departments of health to develop a nationally agreed strategic approach - *Taking Preventative Action – A Response to Australia: The Healthiest Country by 2020 – The Report of the National Preventative Health Taskforce* (Australian Government, 2010). The National Strategy notes the common risk factors associated with key chronic diseases (Figure 3).

Condition	Behavioural				Biomedical		
	Tobacco smoking	Physical activity	Alcohol intake	Obesity	Diabetes	High blood pressure	High blood cholesterol
Ischaemic heart disease	●	●	●	●	●	●	●
Stroke	●	●	●	●	●	●	●
Type 2 diabetes		●	●	●	●		
Kidney disease	●			●	●	●	
Asthma	● (A)	● (B)				● (B)	
Osteoporosis	●	●	●	●			
Lung cancer	●						
Colorectal cancer		●	●	●	●		
Chronic obstructive pulmonary disease	●						
Allergies	●						
Depression		●	●		●		
Oral health	●		●	●			

(A) leads to pneumococcal disease
(B) leads to COPD

Source: AIHW. Indicators for chronic disease and their determinants, 2008.

Figure 3: Common risk factors for selected chronic diseases and conditions

Source: Australian Government. 2010

The Government has accepted key findings of its National Preventative Health Taskforce relating to the importance of targeting obesity, tobacco and the excessive consumption of alcohol as the key

modifiable risk factors driving around 30 per cent of the burden of disease in Australia. Targets have been set to:

1. Halt and reverse the rise in overweight individuals and obesity;
2. Reduce the prevalence of daily smoking from 16.6 per cent to 10 per cent or less;
3. Reduce the proportion of Australians who drink at levels which place them at short term harm from 20 per cent to 14 per cent and the proportion at longer term harm from 10 per cent to 7 per cent; and
4. Contribute to the 'Close the Gap' targets for Indigenous Australians.

The health status of rural residents, as measured by relative rates of deaths from all causes, has been demonstrated to be poorer than the health status of metropolitan residents. However, reports indicate that the poor health status of rural Indigenous populations may account for all differential rates of deaths with the exception of traumatic injury deaths, where death rates of non-indigenous populations is greater than that of metropolitan non-indigenous populations (Phillips A. 2008). The health of Indigenous workers is of importance to agriculture and fishing industries in northern and central Australia.

Farming

The Australian farming workforce continues to age, with more than half of active farmers and farm managers being over the age of 55 years at the last Census. Maintenance of productivity and wellbeing, then, requires that the farming population maintains a high level of health and fitness. There is strong evidence for higher traumatic death rates in the farming population - for non-intentional deaths and suicide deaths. Male farmers and farm workers experience higher death rates due to road traffic injury, other non-intentional injury and suicide in most age groups. Further, while male farmers and farm managers experience similar age-standardised death rates to the Australian male population from 'All Causes' of death, there is evidence that male farmers experience higher death rates from coronary artery disease; for certain cancers including colorectal cancers, prostate cancer, skin cancers, non-Hodgkin's lymphoma (Fragar L et al, 1997; Depczynski J and Fragar L. 2009). Whether higher death rates for these non-injury deaths relate to higher disease incidence or to late use of health services, is not known.

Fishing

There is no published information found regarding the physical health of Australians in the fishing industries. A number of reports from northern hemisphere countries have identified the poor health status of fishermen relative to the wider population (Lawrie T et al. 2004; Matheson C, Morrison S, et al, 2001) and in relation to dietary intake (Piniella FJP et al. 2008).

In summary

These reports lend support to the importance of programs that result in improved physical health of Australia's farming and fishing populations, including the Indigenous rural workforce.

Programs should focus on the chronic disease prevention priorities for Australians – targeting obesity (nutrition and physical activity), tobacco and the excessive consumption of alcohol.

Mental health

In relation to mental health, an overview of available information and the pressures that farmers find difficult to cope with can be found in the chart book *The Mental Health of People on Australian Farms – The Facts* (Fragar L, et al, 2007). It is recognised that around one in five people will experience at some stage, a mental health condition that would benefit from assistance from a health

professional. These conditions range from milder levels of depression and anxiety through to acute psychiatric conditions requiring expert attention (Slade T et al, 2009).

There has been no population-wide study of the incidence of mental health conditions in farming or fishing populations in Australia. A study of 371 farmers in Victoria compared with 380 non-farming rural residents found “no support for the proposition that farmers experience higher rates of mental health problems than do non-farmer rural residents, but the study identified potentially important personality differences between farmers and non-farmers” (Judd F et al, 2006).

Australian farmers and their family members can expect to experience the same rates of mental health conditions. In addition, Australian farmers and fishermen face special challenges in developing and sustaining viable family enterprises that can adversely impact on their mental health and wellbeing. Prolonged unrelieved pressure can reduce mental wellbeing and along with the physical and social isolation experienced by many farmers, can be associated with mental ill-health requiring professional assistance. Suicide rates among male farmers in Australia have been reported as high since the early 1990's (Page A and Fragar L, 2002).

Communities' and service providers' concern over the impact of prolonged drought on mental health and wellbeing of rural populations has prompted recent research initiatives that will define factors associated with mental health of the rural and farming populations (Kelly BJ et al, 2010).

A recent review of the literature relating to the mental health status of Australian farmers in relation to climate change has been prepared for publication (Berry HL et al, submitted for publication 2010). This report finds that “farmers' mental health status and its relationship to climate change-related factors, cannot be assumed but must be empirically tested”.

The review of the many factors associated with adverse mental health outcomes by the NSW Farmers' Mental Health network found that, for maintenance of mental health, there is need for building supportive environments and mental health capacity by a number of different agencies (Fragar L et al, 2008). Key actions for promotion included improving access to a variety of mental health and support services, mental health first aid training, drug and alcohol risk reduction, and reducing social isolation.

In summary

The farming population in Australia can be expected to experience similar rates of mental health conditions to the wider population. However, suicide rates of male farmers and farm workers are higher than the Australian population and farmers do face periodic pressure that they find hard to manage and do not readily access mental health services. Until findings from studies that are underway are available, the priority mental health issues relate to:- suicide prevention; to promoting effective ways of managing the pressures confronting farmers and fishermen and their families; to provision of mental health first aid training; to increase mental health literacy; and to improving access of farmers and fishermen to mental health services.

Objectives

The objectives defined for the study are to support the Collaborative Partnership for Farming and Fishing Health and Safety to achieve its three objectives relating to safety, physical and mental health. This will be achieved by describing the features of effective programs and interventions that maximise safety and health behaviour and practice change. This was to involve:

1. Identification of all research and project evaluation reports of farm and fisheries safety, health and mental health programs of relevance to Australian farmers and fishers
2. Review of the strength of evidence for effectiveness and findings of relevance to achieving changed behaviour
3. Defining with the Collaboration the form in which features of effective interventions should be presented in order to inform Stage 2 of this Project
4. With the Collaborative Partnership, establishment of an informal *Australian Farm and Fishing Health and Safety Research Network* of rural research institutions to develop research capacity in this field, and assist these to tender for projects in Stage 2.

There are two previously published background papers upon which this project was developed:

1. Fragar L, Temperley J, Depczynski J, Pollock K. 2009. *Practical principles for effectively achieving safety change on Australian farms – using new and established pathways to improve adoption*. Rural Industries Research and Development Corporation. Kingston (RIRDC website www.rirdc.gov.au)
2. Jones S, Fragar L. 2008. *Community programs to improve cardiovascular health and cancer prevention – a preliminary review of programs in rural Australia*. Australian Centre for Agricultural Health and Safety (AgHealth website: www.aghealth.org.au).

Scope and focus

For this study ‘farming’ includes all agricultural production industries – food and fibre crops and livestock.

Commercial fishing includes all commercial seafood harvesting and production, including sectors of Rock Lobster Fishing, Prawn Fishing, Finfish Trawling, Squid Jigging, Line Fishing, Marine Fishing, Oyster Farming and Shellfish etc occurring enterprises operating within Australian waters and offshore. It does not include fishing for sport or leisure. Other water safety agencies, under the umbrella of the Departments of Sport and Recreation are addressing risks for this group.

Following discussions at a specially convened workshop it was agreed that the agency groups with interest in the findings are primarily industry bodies, governments, health and safety service providers, and other identified key stakeholders contributing to safety and health in farming and fishing industries (see above).

Methodology

A follow-up literature and report search was undertaken to update information reviewed in the two previously produced reviews *Practical principles for effectively achieving safety change on Australian farms – using new and established pathways to improve adoption* (Fragar L, Temperley J et al. 2008) and *Community programs to improve cardiovascular health and cancer prevention – a preliminary review of programs in rural Australia* (Jones S and Fragar L 2008). This involved:- identifying and describing more recent evaluation reports of implementation and evaluation of farm safety projects; identifying relevant literature and reports relating to safety programs in the fishing industries; identifying and describing reports of promotion programs of relevance to the physical and mental health of the farming and fishing population.

Findings were tabulated as an updated review that included:- a list and description of all programs included in the reviews by intervention type, along with exclusions and reasons for exclusion; for each program the level of evidence for outcomes; and for each reported program, a description of key features of effectiveness contributed by each report.

A workshop was hosted with the Rural Industries Research and Development Corporation for member agencies of the Collaborative Partnership for Farming and Fishing Health and Safety. Research findings were presented in tabulated form from the updated desk studies, and discussions were held in relation to the scope of the study and the target groups to whom the report should be focussed.

Results

The following summarises findings of reviews of the **published literature** relating to effectiveness of programs aimed at improving the safety, physical and mental health of people involved in farming and fishing in Australia.

Factors associated with effectiveness of farm safety programs

Farm Safety Programs/Approaches implemented in Australia

There has been a range of programs addressing farm safety in Australia. Most of these have addressed single hazards of high risk, or at-risk groups (children, older farmers). These are listed below in Table 5 according to the broad program type used. Most have been described more fully in the background report (Fragar L, Temperley J, Depczynski J, Pollock K. 2009). *Practical principles for effectively achieving safety change on Australian farms – using new and established pathways to improve adoption*. Rural Industries Research and Development Corporation, Kingston). Only a small proportion of these programs have been evaluated formally. The references for those are noted.

Table 5: Types of farm safety programs used in Australia.

<p>1. Local community action</p> <ul style="list-style-type: none">• Activity by Local Farm Safety Action Groups <p>2. Development and promotion of information resources and safety tools for managing farm safety risk</p> <ul style="list-style-type: none">• Available in hard copy and on RIRDC and Farmsafe Australia websites for the following industries:<ul style="list-style-type: none">- Sheep and wool- Dairy- Grains- Beef cattle- Horticultural industries- Cotton industry- Sugarcane• State work safety authorities guidelines - codes<ul style="list-style-type: none">- Victoria – shearing, quad bikes- NSW – farm chemical safety <p>3. Education and training</p> <ul style="list-style-type: none">• National vocational competency standards• Managing Farm Safety short course (Houlahan J 2003; Day L, Cassell E et al. 1999)• ChemCert and chemical safety training• Non-formal information/ education activity<ul style="list-style-type: none">- Safety promotions at agricultural field days- On-farm safety field days, ‘safety walks’, safety workshops (Ferguson K 2007)- Older Farmer Workshops/ Resource <i>Making farm work easier as we get older</i>- Entry-level work safety induction program <p>4. Media promotion</p> <ul style="list-style-type: none">• Television medium – Community Service Announcements (CSA’s)<ul style="list-style-type: none">- Child safety on farms national campaign (Depczynski J, Hawkins A et al. 2007)- Giddy Goanna- Quad bike safety- <i>Look up and Live</i> – safety around overhead power lines- Promotion of ROPS rebates- PRIME partnership
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- Farmsafe Australia farm safety promotions
- Radio medium – CSAs supporting TV CSAs
- Interviews
- Print media
 - Regular safety features - *The Land* in NSW, *Queensland Country Life*, *The Countryman* in Western Australia, and the *Weekly Times* in Victoria.
 - The Kondinin Group - *Farming Ahead*
 - *Ground Cover* articles – GRDC
- Web-based promotion
 - Emailed newsletters/alerts

5. Financial incentives

- Subsidy to fit Rollover Protective Structures (ROPS) to prevent deaths from tractor roll-over.
 - The Victorian Government tractor ROPS rebate scheme (Day L and Rechnitzer G 1999)
 - The NSW Government tractor ROPS rebate scheme (Franklin R C, Stark KL et al. 2005)
 - The Queensland Government tractor ROPS rebate scheme
- ShearSafety – NSW Government incentives to improve safety in shearing sheds
- The power take-off (PTO) guard rebate scheme of the NSW Government
- NSW Workers’ compensation premium discount program – cotton industry (Temperley J 2005)

6. OHS regulation

- The NSW Pesticides Act Training Regulation
- The NSW Occupational Health and Safety Act, introduction of revisions in 2002
- Queensland education and enforcement program to address risk from mobile plant

7. Improved inputs and system design

- Machinery
 - Improved Silo standards
 - Guarding of intake on grain augers
 - Safety tractor access to reduce risk of tractor run- over
 - Guarding of hydraulic wool presses
 - Farm machinery guarding guideline
 - Guarding of posthole diggers and post drivers
- Pest tolerant crops
 - GM cotton (Fragar L and Temperley J 2008)

8. Improved services for farmers and farm workers

- Farm Hearing Conservation Programs
 - NSW hearing conservation program (Voaklander D, Franklin R et al. 2006; Voaklander DC, Franklin RC et al. 2009; Depczynski J, Fragar L et al. 2010)
 - Northern Yorke Peninsula hearing conservation program (Williams W, Forby-Atkinson L et al. 2002)
 - Better Hearing for Farming Families Project, 3 communities in NSW (Lower T 2008; Lower T, Fragar L et al. 2010)
- On-farm rescue and first aid (Farmsafe Australia and Royal Australasian College of Surgeons, 1996).
- *AgrAbility Australia* network – assistive technology resources
- “Toolkit” for rural general practitioners - farm injury prevention a significant component

9. Multifaceted initiatives/ changes

- Cotton industry (Fragar L and Temperley J 2008)

Farm Safety programs in Australia to date - what’s worked

Examination of programs and available evaluation reports suggest variation in programs' capacity to (1) attract the attention of participants to stimulate involvement; (2) improve levels of knowledge and awareness, and (3) drive positive safety changes on farm. Table 6 indicates the reported strengths for program types. Table 7 builds on this information by assessing the features of programs that have contributed to their effectiveness for each of these three factors.

Table 6: Strengths of different farm safety program types in terms of attracting participation, raising knowledge and driving change on farms

Program type/ Program	Strength in attracting attention/ participation	Strength in raising knowledge/ awareness	Strength in driving change on farms	Notes
Raising awareness				
Local community promotion eg field days	+++	?	?	No evaluation reports
TV and radio media promotion: Child safety on farms (National Child Safety on Farms Project, Hearing Health Project)	+++	+++	++	These media promotions carefully developed around specific interventions
Print media, eg: - Rural weeklies - Ground Cover - GRDC - Farming Ahead - Kondinin	+++	?	?	No evaluation reports
Providing information				
Development of on-farm safety guidelines and management resources (Industry-specific)	+	++	?	No evaluation reports. Survey of recipients planned
Industry association guidelines: - NSW Farmers IR Essentials - TMA Codes/guides	?	?	?	No evaluation reports
Education and training				
Education and training - <i>Managing farm safety</i> 2-day short course	-/+	+++	++	High participation when required by regulation Best adoption with follow up farm visit, deadline to be met
Education and training - (NSW Chemcert™ and pesticides handling short courses)	-/+	+++	?	High participation when required by regulation
Safety induction program	-/+	+++	?	Uptake variable. Good from labour hire companies, poor from family farms
Tertiary education programs, eg: - UNE Grains course - <i>Managing Grains Production Safety</i> - TAFE and vocation training	+	+++	++	Demonstration of farm application part of assessment process
School education - RIPPER in primary schools - Future Farmers - High School Safety Days	?	?	?	No evaluation reports
Non-formal – action-research/inter-active education				
Older farmers safety program – older farmer workshops and development of resources	+	+++	?	Promotion targeted to older farmers. Workshop feedback positive. No evaluation reports
Benchmarking groups, eg: - Risk Radar - BMP Cotton	?	?	?	Commercial products No evaluation reports
Individual personal service				
Interactive, screening services at field days (Hearing screening, NSW)	+	+++	+++	Positive evaluation reports
Falls Prevention in older farmers	+	+++	?	Evaluated during pilot
Incentives				
Financial incentives (ROPS rebate schemes, Victoria and NSW)	+++	+	+++	Positive changes reported. Best when regulatory action foreshadowed
Financial incentives (Workers compensation premium discount scheme, NSW cotton)	+++	+++	+++	Positive evaluation reports
Regulation				
OHS regulation – Queensland seminars directed at safety of Mobile Plant	++	+++	+++	Positive reports
Improved design of work systems - machinery				
Improved machinery design – guarding of grain auger intakes - NEW AUGERS	+++	-	+++	Positive outcome reported
Improved design work systems - GM cotton				
GM cotton reduced use of pesticides	+++	-	+++	Positive reports
IT communication systems				
Liebe Group Internet meeting project	?	++	?	Not used for safety promotion
Potential systems – eg email newsletters	?	?	?	To be explored

Legend: +++ High strength; ++ Moderate strength; + Some strength; +/- variable strength; ? unknown

Table 7: Summary of information regarding “what has worked” in farm safety programs

Program type/ Program	What worked to gain participation in program?	What worked to increase knowledge/awareness	What changed practice on farms?
Raising awareness			
Local farm safety promotion including on-farm field days, workshops	Local organisations involved in planning and hosting programs		
TV and radio media promotion – child safety on farms (National Child Safety on Farms Project, Hearing Health Project in 3 Communities)	‘In your face’ (and ears) information	TV and radio campaigns with clear recommended action	Media with supported activity and information resources
Providing information			
Development of on-farm safety guidelines and management resources (Industry-specific farm management resources)	Availability of information for download from Farmsafe Australia website at times farmers/others need it	Recent TV promotions	
Education and training			
Education and training - <i>Managing farm safety</i> 2-day short course	Prompted by promotion of regulatory requirement (NSW before revision of OHS Regulations)	Participation in course	Participation in course, provided tools, with on-farm follow-up activity.
Education and training - (NSW Chemcert™ and pesticides handling short courses)	Introduction regulatory requirements of training for access to pesticides - NSW Pesticides Regulation	Participation in course	
Non-formal – action-research/inter-active education			
Older farmers safety program – older farmer workshops and development of resources	Promotion targeted to older farmers. <i>“Making farming easier as we get older”</i>	Participatory workshop approach Sharing experiences/ideas	
Individual personal service			
Interactive, screening services at field days (Hearing screening, NSW)	Program readily accessible to farmers in time and place	One-on-one information provided	Participation in program
Incentives			
Financial incentives (ROPS rebate schemes, Victoria and NSW)	Financial incentive and impending regulatory action (Victoria) Media publicity	Industry and government partnership providing information	Rebate itself Likelihood of regulatory action in Victoria
Financial incentives (Workers compensation premium discount scheme, NSW cotton industry)	Financial incentive	Participation in the farm safety training provided	Audit processes established Deadlines to be met
Regulation			
OHS regulation – Queensland seminars directed at safety of Mobile Plant	Impending audits of compliance Campaign by Queensland Government, with Farmsafe Queensland	Participation in seminars	Audits of targeted plant on farm properties
Improved design of work systems - machinery			
Improved machinery design – guarding of grain auger intake	Data regarding scale of problem	Agencies working together to solve problem	Government partnerships with manufacturers and farmers resulted in new grain augers with improved guarding system.
Improved machinery design – post drivers	Track record with grain augers	Agencies working together to solve problem	Government partnerships with manufacturers and farmers resulted in post driver design for safety
Improved design work systems - GM cotton			
GM cotton reduced use of pesticides	Industry innovation with clear business benefits	Industry investment	Huge safety ‘spin-off’
Multi-faceted changes - Cotton industry			
GM cotton plus range of other initiatives including improved mechanization working to reduce major risks	Industry sponsorship, advocacy	Training, benchmarking, BMP	Interaction all initiatives achieving more than ‘the sum of each’

Primary source: (Fragar L, Temperley J et al. 2008).

Factors associated with behaviour change at the farm level

The report *Practical principles for effectively achieving safety change on Australian farms – using new and established pathways to improve adoption* (Fragar L, Temperley J et al. 2008) proposed, described and used an integrated model of safety behaviour change on Australian farms based on that developed by Gielen and Sleet using behaviour-change theory and community-level theories adapted for injury prevention (Gielen AC and Sleet DA 2003) (Figure 4).

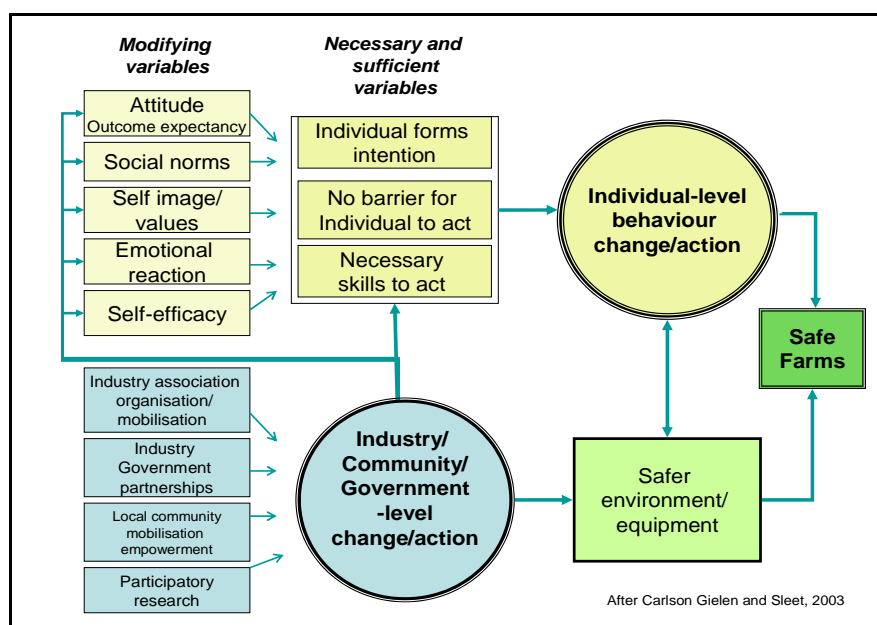


Figure 4: Model of safety behaviour change on Australian farms (based on Gielen & Sleet 2003)

Source: Fragar L, Temperley J et al. 2008.

This model was used as a framework for reporting factors influencing adoption of farm safety interventions on Australian farms. The papers that were reviewed included those cited above relating to evaluation reports of farm safety programs in Australia, along with a further 14 reports of studies that have examined factors associated with adoption of farm safety interventions in Australia. These are referenced in the original report.

Two further reports were identified for inclusion in this set of references:

1. (Fragar L, Temperley J et al. 2009) *Effectiveness of risk control measures to reduce occupational exposure to pesticides* Kingston: Rural Industries Research and Development Corporation.
2. (Lower T, Fragar L et al. 2010) Social network analysis for farmers hearing services in a rural community. *Australian Journal of Primary Health*. 2010; 16 47-51.

A search in the rural extension literature identified a number of relatively recent review reports that address effective extension methods for achieving adoption of innovation in agriculture in Australia, specifically in agricultural research and environmental management.

1. (Guerin LJ and Guerin TF 1994) Constraints to the adoption of innovations in agricultural research and environmental management: a review. *Australian Journal of Experimental Agriculture* 1994;34:549-71.
2. (Black AW 2000) Extension theory and practice: a review. *Australian Journal of Experimental Agriculture* 2000;40:493-502.

3. (Pannell DJ, Marshall GR et al. 2006) Understanding and promoting adoption of conservation practices by rural landholders. Australian Journal of Experimental Agriculture 2006;46:1407-24.
4. (Coutts J, Roberts K et al. 2005) The role of extension in capacity building - what works and why. Kingston: Rural Industries Research and Development Corporation 2005.
5. (Andrew J, Breckwoldt R et al. 2005) Fostering involvement - how to improve participation in learning. Kingsford: Rural Industries Research and Development Corporation, 2005.

The updated review has confirmed the importance of the following 10 principles for programs to be effective in achieving safety (and potentially health) changes on farms (a full description is at Appendix 3).

1. Use the range of known effective drivers that prompt action - Intent

- Safety outcomes to be achieved should be valued by farmers.
- The economics and profitability of the farm business is critical to decision making.
- Any mismatch between farmers' perceptions of risk and actual risk will influence his or her intention to act.
- Much depends upon how the information is presented, packaged, and who presents it
- The target of any safety program should be the decision-maker.
- Meeting regulatory requirements appears to be a powerful driver for adoption.

2. Anticipate and deal in a practical way with any real and perceived barriers to action - Barriers

Farm safety programs must:

- Identify the barriers to adoption of specific recommended safety measures on farms
- Provide practical information, guidelines, templates about how to implement the solution in farm settings, with an estimate of cost and source of key items.
- Where possible provide lower cost options where cost is high for the most effective measure

3. Ensure farmers have the necessary information, skills and capacity to take the recommended action - Skills and Self-efficacy

Farm safety programs should:

- Provide education and training that is relevant to specific groups – local non-formal education using field days, on-farm workshops, benchmarking groups.
- Meet the information needs of all groups – young workers, older farmers, hobby farmers.
- Maintain access to information and practical on-farm guidelines and checklists and templates on the web
- Provide practical information, guidelines, templates about how to implement the safety measure in farm settings, with an estimate of cost and source of key items.
- Provide assistance for follow-up and help for implementation of more difficult measures
- Assist farmers to address the information and skills needs of seasonal and transient workers

4. Define the positive outcomes farmers can expect from adopting safety systems and approaches - Outcome expectancies (attitudes and beliefs)

Safety programs should:

- Identify and promote the benefits of safe work systems and practices, linking to current imperatives for example, labour shortage, costs, market demand for products.

5. Build programs on the characteristics that farmers recognise as positive – for example farmer individualism and autonomy - Social norms and self-standards

Programs will be effective where they:

- Are linked to farmers' values such as autonomy in decision-making
- Build up self-help and awareness
- Involve industry associations and industry leaders who help to unify the industry around development of an enduring shared set of values, beliefs and practices
- Recognise the roles that people play in farm decision-making.

6. Recognise and deal with strongly held feelings held by some farmers about safety - Emotional reactions

- Farm safety programs need to gauge the levels of negativity that may be prevailing and allow farmers the opportunity to work through these where necessary.
- Involving farmers in setting program priorities and designing programs to meet their needs will be helpful
- Industry associations are well placed to play a leadership role in helping farmers see the benefits of safety on farms.

7. Industry associations and organisations have key roles to play to ensure adoption of safety on Australian farms

Industry associations should:

- Take leadership roles in national, state and industry specific farm safety programs.
- Actively promote the benefits of farm safety, linking these to current farming imperatives
- Provide a role model for safety, in line with other companies practice.
- Advocate for resources for programs and approaches that foster adoption
- Seek effective partnerships with Governments to address key safety issues, building on the success of previous partnerships.
- Seek to partner with other industry associations or other agencies who share a common interest in improving safety on Australian farms

8. Governments have roles to play in partnership with industry to ensure adoption of safety on Australian farms

Governments have key roles in supporting adoption of safety measures on farms in Australia.

These are through:

- Provision of data and information upon which to base priorities
- Provision of practical health and safety information
- Setting safety standards that are practical for farm plant and equipment and for chemicals and their containers
- Provision of information about how to meet OHS regulatory requirements in a practical way on farms.
- Governments should work with the industry to plan strategic approaches that take into account the known pathways to adoption of safety measures by the farming sector.

9. Local community action groups and community organisations have roles to play to promote adoption of safety on Australian farms

- Farm safety programs should seek to engage communities in the planning and delivery of safety programs at local level.
- Safety benchmarking groups are being seen as one way of increasing on-farm adoption of safety measures.

10. Empowerment and participatory research continues to be the most relevant manner of development of innovations, strategies, programs and approaches to improve farm safety

in Australia.

- Programs should involve practicing farmers in the development of priorities, strategies and plans

In summary

There is a wide range of promotion programs types and pathways available and used for promotion of farm safety. Each has been characterised in terms of its level of effectiveness in attracting participation to the program, to increasing levels of necessary knowledge and skill, and in driving change at the farm level.

Selection of the most effective method will depend upon the specified on-farm change that is the goal of a program. Some programs will:- address a single issue, perhaps across all or several agriculture industries; others will attempt to enhance risk management in a particular industry. *One size does not fit all.* Careful planning will identify the program target group, the best method for attracting participation, for development of necessary knowledge and for achieving change at the farm level.

Whatever promotion method/pathway is selected, to be effective in achieving change on farms, all programs must incorporate the 10 clear principles for adoption that have been enunciated from the collective experience of those working with Australian farmers.

Factors associated with effectiveness of fishing safety programs

Fishing Industry Safety Programs/approaches relevant to Australia

The literature review has found very little information available relating to the review of program effectiveness targeted to fishermen or the fisheries industries in Australian waters.

The Australian Maritime Safety Authority has developed the *Code of Safe Working Practice for Australian Seafarers* (1999), an adaptation of the International Labour Organisations code of practice - Accident prevention on board ships at sea and in port (1996). The code covers control of risks of work on ships in some detail, however, does not address those that are not specific to fishing. *No information is available to determine the use or effectiveness of the Code in the off-shore fishing industry.*

A systematic program of work to develop fishing industry safety codes of practice has been undertaken, largely as an initiative of the Western Australian Fisheries Industry Council (WAFIC). The codes have been developed to ensure compliance with states' OHS regulations and Maritime Safety requirements. Workshops have been provided to fishing enterprises with variable participation. No evaluation has been reported to indicate the effectiveness of adoption of recommended safe practices.

A range of projects addressing safety have been undertaken within the research programs of the Fisheries Research and Development Corporation. The outputs of these include:- development of an occupational health and safety national extension strategy; production of a severe weather and tropical cyclone education video; and a case study into the development of OHS processes in the Pinctada maxima pearling industry to benchmark world's best industry diving practice. However, none of these are publicly accessible and there are no reports of what has been effective in improving safety in any industry in the fishing sector.

The international literature in fishing safety contributes some perspectives that may be relevant to Australian industries.

Engineering and design improvements are considered important issues to ensure seaworthiness of vessels (Hopper AG and Dean AJ, 1992; Mayhew C, 2003) and a redesign of winches to improve safety has been developed (Lincoln JM et al, 2008).

There has been significant international research into the importance of improving the safety culture of organisations and on vessels (Bye R and Lamvik GM, 2007; Håvoldt JI, 2009), and an Australian study has outlined the importance of assessment of the social and cultural context of safety management to achieve improvements (Brooks B, 2005). A study by Wang J et al (2005) found that safety assessment success depends on 1) development of safety culture through all levels of the organisation and on board, and 2) inclusion of further practical guidance about necessary safety behaviour.

A number of research reports address the importance of the range of regulatory policies on safety in the fishing industries, and regulatory factors influencing risk (Windle MJS et al, 2008). Kaplan IM and Kite-Powell HL (2000) report that fishermen have a legitimate role to play in regulatory processes from the early stages of policy design, and that this is essential to ensure safety is not compromised. Risk management tools (e.g. checklists) have been proposed and developed by Piniella F and Fernández-Engo MA (2009) as part of the Andalusia fishing safety project.

Despite the array of literature, only some of which has been cited here, no published reports have been found that measure any aspect of program effectiveness in relation to safety in the fishing industries.

Factors associated with behaviour change at the fishing enterprise level

While no research reports have been identified that specifically address ‘what works’ for improving fishing safety, a number of the papers provide analogies with safety in the farming industries. For example, a study of small scale fishing (1-3 crew members) in North Carolina reported similar perspectives to safety attitudes and work habits as are commonly reported by Australian family farmers - “we use common sense” and “we have our individual ways of doing things” (McDonald MA, Kucera KL, 2007).

Van Noy (1995) has used an earlier model of safety change proposed by Gielen for development of an integrated planning framework to address fishing safety risks, and has demonstrated that involvement of fishermen in the ongoing establishment and evaluation of professional standards “showed promise”.

In summary

The literature relating to fishing safety initiatives is very limited in terms of its contribution to knowledge of what is effective in driving safety change in these industries.

However, the experiences in the agriculture industries seem relevant to the fishing industries (i.e. in addressing either single safety issues or development of broader risk management approaches by individual enterprises), and should be examined further. There are some single issues that could be addressed by campaign-type programs across a number of industry groups, and there appear to be engineering and design issues to be examined and addressed.

The model of safety behaviour change on Australian farms (based on Gielen and Sleet, 2003) used to develop the 10 key principles for safety adoption in the farming sector is relevant, hence these principles should underpin any safety program in the fishing industries.

Effectiveness of programs promoting physical health in farming and fishing

National Health Reform

There have been major reforms announced Australia-wide for organisation and provision of primary health care, including preventive programs. The National Preventative Health Strategy provides a blueprint for tackling the burden of chronic disease currently caused by obesity, tobacco and excessive consumption of alcohol. The Strategy's recommendations are directed at primary prevention and have been developed by teams of specialists in the areas of health promotion and disease prevention.

The Strategy has incorporated seven directions to ensure a comprehensive approach:

1. Shared responsibility – developing strategic partnerships – at all levels of government, industry, business, unions, the non-government sector, research institutions and communities;
2. Act early and throughout life – working with individuals, families and communities;
3. Engage communities – act and engage with people where they live, work and play; at home, in schools, workplaces and the community. Inform, enable and support people to make healthy choices;
4. Influence markets and develop coherent policies – for example, through taxation, responsive regulation, and through coherent and connected policies;
5. Reduce inequity through targeting disadvantage – especially low socioeconomic status (SES) population groups;
6. Indigenous Australians – contribute to 'Close the Gap'; and
7. Refocus primary healthcare towards prevention.

Australian Commonwealth and States' governments are working to refocus the health system towards prevention and to tackle the identified priorities. The Australian National Preventive Health Agency has been established to coordinate national efforts and will work across jurisdictions and portfolios to drive the necessary changes. This will involve working with the Primary Health Care Organisations that are being established across Australia through the national health reform processes. It is envisaged that this will effectively bring all the primary health care agencies, including all general medical practitioners, to participate in priority preventive action.

Specific Health Promotion Programs/Approaches of relevance to farming and fishing communities that have been implemented in Australia

A total of 52 health promotion programs were identified for the background review on programs that promote personal health (including cardiovascular health and cancer prevention) or were relevant for improving farmer health (Jones S and Fragar L, 2008). These are listed at Appendix 4.

A smaller number of these programs were still available and had been subject to some level of formal evaluation, with a report available.

1. *10 000 Steps Rockhampton* - Central Queensland University, Queensland
2. *Dorrigo Active Community Project* - Mid North Coast Area Health Service, NSW
3. *Foundation 49* - Decades of life health assessments - Cabrini Institute, Victoria (Not-for-profit organisation)
4. *Greater Green Triangle Diabetes Prevention Project* - Greater Green Triangle University Department of Rural Health, Warrambool Victoria
5. *Go For Your Life Diabetes Prevention Program* - Victorian Department of Human Services
6. *Healthy Men Ballarat* - Ballarat and District Division of General Practice, Victoria.
7. *Heart Foundation Walking* - Australian Heart Foundation
8. *Heartmoves* - Australian Heart Foundation
9. *Men's Shed* - Menshed Australia Ltd. A not-for-profit company
10. *Pit Stop* - Gascoyne Public Health Unit. Western Australia Country Health Services.
11. *Sustainable Farm Families* - Western District Health Service Hamilton Victoria
12. *WellingTONNE Challenge*, Wellington NSW

Programs were described using the following preliminary criteria:

- The target population
- Inclusivity of groups in farming - gender, ethnicity etc
- Objectives and interventions
- Level of evidence for effectiveness of interventions being promoted
- Level of evidence of effectiveness of program in achieving objectives
- Linkage to primary health service
- Follow up of people identified as at risk

These programs were critically reviewed against health promotion and preventive health services provided by rural general practitioners.

The following is a summary of findings of the initial review:

1. The common strength of most programs that were described is the sound evidence base of their screening and intervention recommendations addressing prevention of cardiovascular disease.
2. The evidence for effectiveness of strategic approaches across the community-based programs was not so strong, except for the General Practitioner based programs.
3. The evidence suggests that programs that focus on single or just a limited number of issues are more likely to be effective.
4. A major issue for rural communities scattered across the vast area of Australia remains as to how to make programs available that are economic and sustainable. At this stage, the most widely available primary health care services are General Practitioner and Community Health services. Each has been demonstrated to have a role in cardiovascular health promotion and diabetes prevention. The attraction of extending GP based services includes the relatively strong evidence base for effectiveness, and the cost being included in current Medicare rebate

arrangements. However, the obvious problem associated with busy rural GP services means there is probably little room to significantly increase the workload with an expanded cardiovascular health program.

5. A mix of the *Pit Stop* approach, with some modification based on the experiences of other programs, is an attractive option on the following bases:
 - Using the Guidelines, local community health, or other service providers such as Divisions of General Practice, can run the program, and link it with local primary health care services for follow up.
 - The program has the potential to focus on just a few components at a time at any location and this could be defined by community needs assessment that would enhance community ownership. Communities can set their targets and focus on key outcomes. This is a key strength of the *Dorrigo Active Community* program
 - The program can be delivered in a range of local settings to ensure participation of different sectors, such as farmers and different age groups, and has been adapted to include women; and
 - The program is relatively low cost
6. The more specialised programs including the workplace health checks and *Sustainable Farm Families* are probably less accessible and sustainable at this stage of their development. The key issues to be addressed for these are:
 - The need for specially trained, skilled professionals to deliver the program
 - The cost per participant.
 - The less direct linkage to local primary health care services.However the important experiences gained through these programs should inform the whole issue of cardiovascular fitness over time.

Following the publication of the report, there has been a follow up evaluation report produced relating to the *Sustainable Farm Families* program (Storey J, 2009). A modified *Pit Stop* program has been implemented jointly by the Barwon Division of General Practice, Hunter New England Health and the Australian Centre for Agricultural Health and Safety at the AgQuip Field Days in 2009 and an evaluation report is in preparation (Depczynski J, personal; communication).

Table 8 summarises the strengths of different programs in terms of attracting participation, raising health knowledge and modifying health behaviours.

Table 8: Strengths of different health promotion program types in terms of attracting participation, raising knowledge and driving health behaviour change of farmers

Program type/ Program	Strength in terms of attracting attention/ participation	Strength in terms of raising knowledge/ awareness	Strength in terms of driving change	Notes
Universal awareness raising				
TV and radio media programs/segments promotions	Should be +++ But not targeted to men	?	?	Little in rural media/press More in women's media
Print media				
Local community programs				
Activity programs: - WellingTonne - 1000 steps Rockhampton - Heart Foundation Walking	-/+++	+++	+++	Single issue focussed with high impact Not focussed for farm participation
Health Expo's: - Run by local health organisations - mix information, advice, limited screening	?	?	?	
Screening and personal advice promotions for groups				
'Pit Stop' type programs	++	++	++	
Persons at risk programs: - Local diabetes prevention programs	++	++	++	
Older Farmers health and safety program Falls Prevention program	+	++	?	
Health promoting workshops: - Sustainable Farm Families	+	++	++	
Individual personal screening, advisory and treatment service				
General Practitioner services: - 45 and up checks	++	+++	+++	Medicare funded

The strongest evidence for achieving long-term behaviour change rests with health promoting and preventive services provided by general practitioners. In light of this, and of the nation-wide reforms that are occurring in establishing Local Primary Health Care Organisations with increased focus on prevention, it is recommended that programs aimed at improving health status should focus on ensuring farmers and fishermen avail themselves of the annual health check with their local general practitioner.

In relation to the one-on-one service provided by general practitioners, a *Toolkit for Rural General Practitioners* aimed at improving the early detection and prevention services provided to farming clients has been produced. This will be formally evaluated by the Broken Hill Department of Rural Health, University of Sydney during 2010-2011 with Collaborative Partnership funding.

In relation to community-based promotion programs that may be offered by local Primary Health Care Organisations or other groups, as part of national or state initiatives, there are two key questions that have emerged:

1. *Should health prevention/ promotion programs be targeted specifically to farming people in a community, or should community programs take more care to include the farming sector?*

The case can be made that programs that are tailored for farmers will be more effective in engaging farmers and their families. This case has not been proved for health promotion programs, although delivery of generic programs in settings where farmers gather, such as field days and sale yards, do provide opportunity for groups of farmers to participate. On the other hand there is concern that farmers have become more physically and socially isolated and that this has added to the risk of poor mental health outcomes, and ways of providing opportunity to improve and maintain connection with others in their community is important to their health and wellbeing. Community-based programs may offer one such opportunity.

2. *How can the majority of farming people be engaged in health promoting activities?*

This is a key question for those responsible for the health of rural communities. Each rural region and community will have different mechanisms for engaging their farming sector, and action to identify relevant networks and opportunities is required.

In summary

There is widespread acceptance of the need for the people in farming and fishing industries to participate in effective health promotion and prevention programs (to include all groups – older farmers, men and women, Indigenous workers and young people). The priorities established under the National Preventative Health Strategy are highly relevant to the farming and fishing sectors.

The strongest evidence for achieving long-term behaviour change rests with health promoting and preventive services provided by general practitioners. In light of this and of the nation-wide reforms that are occurring in establishing Local Primary Health Care Organisations with increased focus on prevention, it is recommended that programs aimed at improving health status should focus on ensuring farmers and fishermen avail themselves of the annual health check with their local general practitioner.

As specific health promoting programs are developed for rural communities, it is important that the farming and fishing population are active participants in programs. Discussions should be initiated with the Commonwealth Department of Health (National Preventive Health Agency and Primary Health Care Organisations), into proposed mechanisms for inclusion of farming and fishing populations in health improvement programs.

Effectiveness of programs promoting mental health in farming and fishing

Mental Health Promotion Programs/Approaches implemented in Australia

There has been a recent increased interest and focus on mental health in rural communities that has been prompted from two sources:

1. Increased focus of health services on mental health as a national and state priority, with establishment of enhanced mental health services and support centres such as the state-based Centres for Rural and Remote Mental Health – in NSW, Queensland and Victoria, and institution of *Beyond Blue* - a major program of promotion and education aimed at ensuring that people with depression are recognised early, and provided with relevant information and support.
2. The recent extended period of drought that occurred across most of rural Australia has increased the pressure associated with farming for most farm enterprises. State and Federal Governments responded to the drought by provision of a range of initiatives that included counseling and drought support services for farmers. Local health services in rural communities have hosted mental health information programs around rural Australia.

Interventions being promoted to improve mental health for farming communities have focused in two areas - building personal resilience and mental health skills; and increasing the capacity of mental health services to provide relevant and accessible services to meet need.

Building personal, family and business resilience and increasing awareness of mental health.

There have been numerous local workshops, public meetings and forums run in rural communities across Australia with a view to increasing public awareness of mental health (particularly of depression), and of the importance of seeking professional assistance. These have been sponsored by a range of government and local health/medical services, often with *Beyond Blue* sponsorship. They have focused on farming communities rather than fishing communities, where need may be as high. The impact of these in changing awareness and behaviour has not been evaluated.

A major initiative has been taken by the NSW Farmers Association in forming working partnerships with a range of organisations and individuals to establish the NSW Farmers Mental Health Network. The Network has developed a *NSW Farmers' Blueprint for Mental Health* that guides programs aimed at improving and maintaining the mental health of all farmers in that state www.aghealth.org.au/blueprint. This work is a major industry-led initiative and has not yet been evaluated with a view to identifying gaps and strengthening the program.

An important issue being widely addressed relates to the need to develop 'mental health literacy'. A key initiative has been delivery of the *Mental Health First Aid course* to farmers and more importantly, to those who are in contact with farmers including counsellors, agronomists, business advisers etc. The course has been well evaluated in terms of participants being better skilled in identifying and providing immediate response to people with mental health conditions requiring professional assistance.

A robust cluster randomised controlled trial and qualitative evaluation was conducted which determined that Mental Health First Aid was effective in improving mental health literacy, attitudes and behaviour towards people with mental health problems in a rural area (Jorm A et al, 2007). *Managing the Pressures of Farming* (Australian Centre for Agricultural Health and Safety, University of Sydney) is a business tool to assist farmers and farm managers to manage the stresses associated with running a family farming business. There has been strong demand across Australia for the

Managing the Pressures of Farming management tool that is also accessible on the web. The utility of this resource and the best method of its promotion require formal evaluation.

There have been numerous resources produced to assist farmers, families and rural businesses to cope with the drought- e.g. fridge magnets “*Tackling tough times*”, with information about what to do when one is not coping (Centre for Rural and Remote Mental Health, University of Newcastle). *Beyond Blue* has assembled a kit of mental health promotion resources for farming communities.

Strengthening mental health services and their capacity to respond to the mental health needs of farming communities.

States’ rural mental health services have been enhanced over recent years, with focus on providing improved and relevant response to meeting the needs of farming and other rural communities. A program aimed at establishing effective local mental health service networks has been maintained in rural NSW with support of the Centre for Rural and Remote Mental Health, and linked to the NSW Farmers Network for Mental Health. Other states have addressed the issue in various ways. Divisions of General Practice have also been provided with enhanced resources to employ psychology services and Drought Support Workers have been employed by rural Divisions of General Practice under a Rural Health program of the Department of Health and Ageing.

The *Farm Health and Safety Toolkit for Rural General Practices* that has been developed by the Australian Centre for Agricultural Health and Safety includes advice to general practitioners about the relative risk of suicide of male farmers and guidelines to assist practitioners to communicate effectively with farmer patients. At state level, NSW, Queensland and Victoria have established specialist centres for rural mental health to provide professional research and education support to rural mental health services, and to undertake research programs.

In summary

Rural mental health promotion programs have focused mainly on farming communities, and have been prompted by recognition of the stressors caused by drought, and by the need to better meet the wider mental health service needs of rural communities. Work has been initiated by governments, university centres for rural mental health, NGOs, local health service providers and by farmer associations (NSW). Programs have focused on:

1. Building personal, family and business resilience and increasing awareness of mental health; and/or
2. Strengthening mental health services and their capacity to respond to the mental health needs of farming communities.

The program with the best evidence for effectiveness in achieving its aim is the Mental Health First Aid training program, aiming at raising mental health literacy among non-health professionals. This program should be supported. Mental health promotion needs of the fishing sector require further investigation and attention. Other programs require formal evaluation research.

Implications

Action for farming and fishing safety and health

A unified approach that optimises agencies' contribution

A key finding of the study has been that there has been significant investment in farm safety programs by a range of agencies (mostly governments), and some of these have demonstrated a significant safety impact – most notably the tractor ROPS retro fitment campaigns in reducing tractor roll-over deaths. The programs have varied in type, scale and target group. Farmsafe Australia has acted to facilitate coordination of effort by ensuring programs have a relevant evidence base. The Australian Centre for Agricultural Health and Safety provides a repository of Australian research and data reports, programs and activity underpinning these best-practice interventions.

Notwithstanding this, this study suggests a degree of fragmentation of effort that should be addressed for future investment to achieve more visible and meaningful improvements in farm safety.

The fisheries industry has not had the benefit of an agency like the National Farm Injury Data Centre that produces reports on key farm health and safety issues and guides the establishment of priorities for farm safety action (part of the Australian Centre for Agricultural Health and Safety' program). Nor has fishing had the benefit of the Farmsafe networks at national and state levels, even though they operate at varying levels of activity between states.

Figure 5 provides a proposed schema placing the range of farming and fishing safety and health programs into an integrated framework aimed at assisting agencies to understand where their program fits/ might fit in the wider effort. Essentially it acknowledges that improving safety is an *ongoing process* for individual business enterprises and across each industry. It is NOT a one-off venture. There are:- ongoing program requirements for (seasonally relevant) promotions of safety management, using the range of relevant methods; for education, both in the formal systems and using informal approaches; for one-to-one services and provision of advice (most relevant for personal health and mental health); and for ensuring ongoing access to information and tools by farmers and fishermen on a needs basis.

At the same time, investment in *key single-issue campaigns* will be a very cost-effective investment for reducing deaths. To be effective, such campaigns will require partnerships between industry and governments and take into account lessons learned from previous programs.

Ensuring maintenance of timely data to identify priorities, provide information support to program development, to monitor outcomes and to identify emerging issues is an essential component. Maintenance of research capacity to develop new solutions is required. The farming sector has current access to these services from the Australian Centre for Agricultural Health and Safety, however, it is critical and urgent that the fishing sector develop such a capacity, particularly in light of the unacceptably high rates of death and injury in that sector.

If such a schema is accepted, then further mapping of all agencies' current and planned contributions should be undertaken, and a plan should be included to ensure all agencies are made aware of each others work.

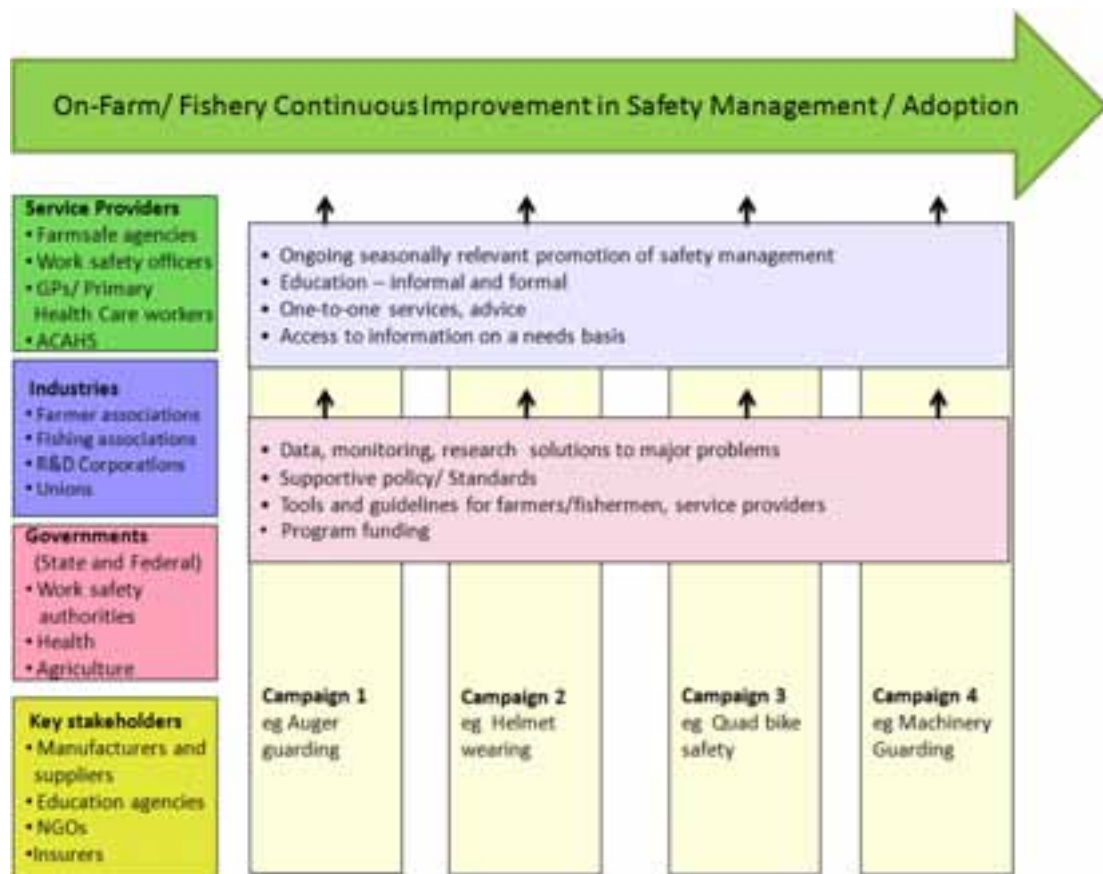


Figure 5: Schema showing program relationships to drive safety and health change on Australian farm and fishing enterprises.

Integration, collaboration or coordination?

Investment is required to ensure non-duplication of effort, to ensure that programs address priority issues for the industries, and that they are underpinned by the best evidence available. This is not to suggest that any one agency should ‘control’ activity. On the contrary, rather there is great benefit from diversity of approach, as long as farmers and fishermen are not confused by conflicting messages and advice. Farmsafe Australia has strived to provide mechanisms to achieve visibility of programs in farm safety to other players, but needs further support and involvement of the Collaborative Partnership to do that better. The fishing industry should examine its options - perhaps coordination of effort is a function to be taken on by the Fisheries Research and Development Corporation itself.

Roles and responsibilities

Figure 6 provides a summary of the roles of key agencies in supporting safety and health change on Australian farms and fishing enterprises. These have been defined in light of the findings of the study, and are described more fully in the section that follows.

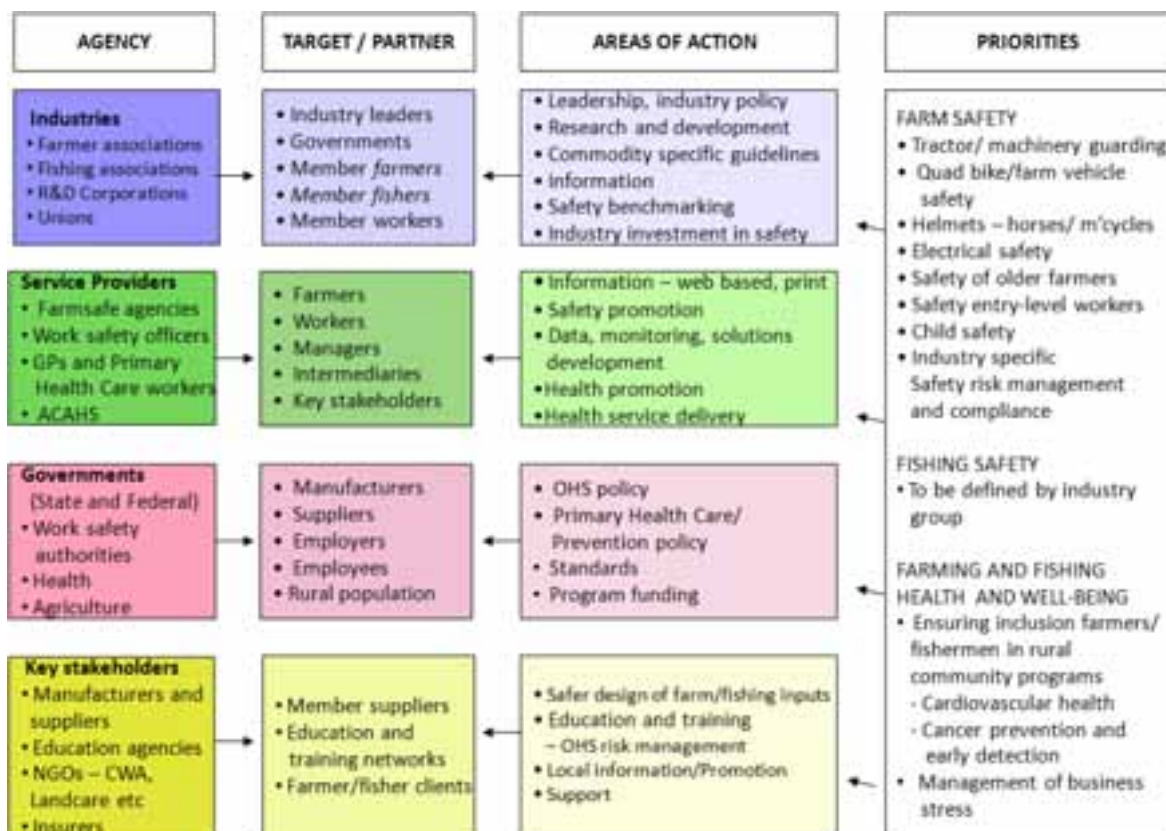


Figure 6: Roles of the key agencies supporting safety and health change on Australian farms and fishing enterprises.

Action to be taken by the farming and fishing industries

'Industry Agencies' include farmer associations, fishing associations, research and development corporations, and relevant worker unions. The groups that can be influenced to assist with improving safety include industry leaders, governments and their members – farmers, fishermen, workers.

Role in safety and physical health promotion

These agencies are critical to the more rapid adoption of safety and personal health changes that is required at this stage. This should be by:- provision of leadership; adoption of safety as industry policy; research and development that supports the promotion and extension effort (including development of commodity-specific tools and guidelines and provision of information at times and places where their members meet or obtain industry information). Setting of industry-specific benchmarks would assist this process. The establishment of national baselines for farming and fishing safety being undertaken as a Collaborative Partnership project will provide a basis for setting and monitoring safety benchmarks.

The industry bodies, primarily through the rural research and development corporations, determine the quantum and direction of industry investment in safety and health, and the Collaborative Partnership currently drives this function for its member agencies.

Recommended Action

There are a number of suggested actions emanating from this study. It is recommended:

1. That the Collaborative Partnership consider the findings of this report and, in association with Farmsafe Australia and its member agencies, develop a national strategic plan for effective promotion of safety on Australian farms.
2. That the Fisheries Research and Development Corporation, in association with the Collaborative Partnership, consider the findings of this study and move to develop capacity to support development and maintenance of a national strategic plan for effective promotion of safety.
3. That further mapping of all agencies' current and planned contributions should be undertaken, and a plan drawn up to ensure all agencies are made aware of each others work.
4. That the specific rural research and development corporations (cotton, fisheries, grains, sugar), in association with relevant agencies with knowledge and expertise, develop an annual plan of promotion of safety to members, ensuring timely advice in relation to seasonal production activity. These programs should identify relevant pathways and personnel that have not, to date, been involved in safety extension – e.g. agronomists, farming and fishing advisors.
5. That specific programs take into account the 10 principles that will improve effectiveness of programs in driving change on farms, and of relevance to fishing enterprises.
6. That the industry agencies be more actively involved in supporting and sponsoring national single-issue campaigns that address priority safety issues.
7. That the Collaborative Partnership prepare a paper to be submitted to, the Minister for Health and Ageing and the National Preventive Health Agency to indicate the importance of inclusion of farming and fishing populations in preventive health programs to be delivered by general practitioners, Primary Health Care Organisations and state-based programs. Mechanisms to ensure inclusion will need to be defined.
8. That the Collaborative Partnership support programs aimed at improving mental health literacy, access to mental health services and management of business stress in the farming and fishing sectors.

Action to be taken by service providers

The agencies included as '*service providers*' are generally those who have direct contact with farmers and fishermen and provide safety and health information, advice, services, education etc. These include state Farmsafe agencies, work safety officers in safety authorities, general medical practitioners and Primary Health Care workers. There are other potential service providers who should be engaged and include farming and fishing advisers (e.g. agronomists and suppliers).

The Australian Centre for Agricultural Health and Safety has been included in this group, providing data and other services including program evaluation support to those planning or delivering safety and health services to farmers.

Role in safety and physical health promotion

These agencies and their personnel have been critical to the farming industries achievements to date. The work undertaken by the Farmsafe organisations in Queensland, Victoria and Western Australia has been exceptional.

The target groups for these agencies are generally farmers, fishermen, workers, managers, other intermediaries and key stakeholders. The services provided include:- provision of information (including web based and print based information); running local safety and health workshops and promotions; and providing one-on-one or group health services. The Australian Centre for Agricultural Health and Safety has provided data, reports, researched strategies and solutions for Farmsafe Australia programs.

Recommended Action

The key recommendations to current service and potential service providers are to:

1. Stay connected and actively engaged in developing and implementing national and state farm and fishing safety and health programs.
2. When planning and implementing safety and health programs, take into account the 10 principles for effectiveness of programs to drive change on farms and fishing enterprises.
3. Ensure inclusion of all industry sectors in programs being planned and implemented. This includes gender inclusivity, inclusion of all non-English-speaking background groups and Indigenous workers.

The Australian Centre for Agricultural Health and Safety should be encouraged to revise its draft Guideline for achieving change on farms in light of comments from members of the Collaborative Partnership, and circulate to agencies and individuals undertaking farm safety programs.

Action to be taken by Governments

Agencies included as '*Governments*' include relevant state and federal governments and agencies, including work safety authorities, health departments and departments of primary industries that include agriculture and fishing industries. Relevant statutory authorities include the pesticides regulatory bodies. For off-shore fishing, the Australian Maritime Safety Authority has responsibility for safety of vessels at sea.

Role in safety and physical health promotion

The target groups, for governments involved in safety and health in farming and fishing industries are wide ranging and include manufacturers, suppliers, farmers and fishermen as employers, as employees (work safety authorities), and the wider rural population (health authorities).

Governments play a determining role in development of industry safety OHS policy, setting standards for safety of machinery and equipment and chemical inputs. Increasingly, governments have played key roles in initiating and funding programs that address key hazards in the farming industry (e.g. child safety on farms, safety of older farmers, ROPS retro-fitting of tractors, grain auger guarding, and quad-bike safety).

The national health reforms being implemented by Commonwealth and states' departments of health, with the priority of refocusing primary health care towards prevention, have been noted above.

Government agencies have been active players in supporting Farmsafe Australia and state Farmsafe programs with funding and other support. Indeed, they have been the primary funding agencies for the vast bulk of farm safety action in Australia to date.

Recommended Action

Governments (Commonwealth and states) and relevant authorities are encouraged to work with the farming and fishing industries to develop and maintain unified approaches to improving the health and safety of these sectors.

Government agencies should ensure that programs funded or sponsored with public funding to improve safety and health are based on the best evidence of effectiveness in changing behaviour and practice. The 10 principles for effectiveness of programs to drive change on farms and fishing enterprises should be promulgated and underpin programs targeting these industries.

Action by other stakeholders

“*Other stakeholders*” include a variety of groups that have demonstrated a key role in promotion of safety and health in farming and fishing sector, and who, if engaged more routinely, could contribute more. They include manufacturers and suppliers (e.g. Tractor and Machinery Association), education agencies, Non-government organisations (e.g. Country Women’s Associations, Women in Agriculture, Landcare groups) and insurance agencies.

Role in safety and physical health promotion

The roles played by these groups are disparate and range from:- active participation and modification of inputs supplied by members (e.g. grain auger guarding systems); to organizing local activities; to active research activity (e.g. CWA branches in surveying stores for Personal Protective Equipment availability); and to funding media campaigns (e.g. CGU TV commercials). Each has a uniquely different role.

Recommended Action

The active engagement of these groups is to be encouraged. They play major roles in development of safety ‘norms’ in local communities and across their own industry group. They should be supported in their participation and rewarded in suitable ways for their efforts and successes.

Recommendations

This study has identified promotion and extension programs that have as their goal to improve the safety, physical health or mental health of people engaged in the farming and fishing industries. It has identified the strengths of programs in attracting participation, in raising awareness and knowledge, and in driving behaviour change on farm or fishing enterprises. It has endorsed 10 key principles that should underpin safety promotion and extension programs to optimise the likelihood of adoption.

Priorities for safety and health program focus have been defined. Specific recommendations directed to the farming and fishing industries, to safety and health service providers, to governments and to other stakeholders have been made in the previous section.

The major recommendations are directed to the Collaborative Partnership for Health and Safety in Farming and Fishing in the first instance and include:

1. That the Collaborative Partnership consider the findings and recommendations of this report and, in association with Farmsafe Australia and its member agencies, develop a national strategic plan for effective promotion of safety on Australian farms.
2. That the Fisheries Research and Development Corporation, in association with the Collaborative Partnership, consider the findings of this study and move to develop capacity to support development and maintenance of a national strategic plan for effective promotion of safety.
3. That the research and development corporations (grains, sugar, cotton, fisheries), in association with relevant agencies with knowledge and expertise, develop an annual plan of promotion of safety to members, ensuring timely advice in relation to seasonal production activity.
4. That the industry agencies be more actively involved in supporting and sponsoring national single-issue campaigns that address priority safety issues.
5. That the Collaborative Partnership prepare a paper to be submitted to the Minister for Health and Ageing and the National Preventive Health Agency, to indicate the importance of inclusion of farming and fishing populations in preventive health programs to be delivered by general practitioners, Primary Health Care Organisations and state-based programs. Mechanisms to ensure inclusion will need to be defined.
6. That the Collaborative Partnership support programs aimed at improving mental health literacy, access to mental health services and management of business stress in the farming and fishing sectors.
7. That the Australian Centre for Agricultural Health and Safety be encouraged to revise its draft Guideline for achieving change on farms in light of comments from members of the Collaborative Partnership for circulation to agencies and individuals undertaking farm safety programs.

Future research should focus on:

1. Reviewing, monitoring and setting benchmarks and priorities for action
2. Formal support to and evaluation of national campaigns and programs:
 - Grain auger guarding and retro-fitment
 - Quad bike safety
 - Helmet wearing promotion program
 - Safety of older farmers program
3. Setting the Research and Development agenda for the fishing industries. An important background paper is Perez-Labajos, C. (2008).

Appendices

Appendix 1: Agent of injury relating to workers' compensation claims in the Agriculture, Services to Agriculture, Hunting and Trapping 1997/98 to 2007/08 (preliminary data), excluding journey claims. Number of claims rounded to 5. (* data not available due to confidentiality restrictions)

Source: NOSI database Safe Work Australia downloaded 25/5/10.

Breakdown Agency	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Machinery and (Mainly) Fixed Plant	455	490	455	415	355	380	345	300	300	275	230
Cutting, slicing, sawing machinery	45	60	65	50	60	55	50	45	40	35	35
<i>Mechanical shears, slicers, guillotines</i>	5	20	20	20	20	15	15	15	20	15	15
<i>Circular saws</i>	*	5	5	*	*	*	*	*	*	*	*
<i>Other powered saws</i>	5	5	*	5	*	10	10	10	*	*	*
<i>Grinders</i>	10	10	10	10	10	10	10	5	*	*	*
<i>Cutting, slicing, mincing food preparation machines</i>	*	10	*	5	10	5	*	*	5	*	*
<i>Other cutting, slicing, sawing machinery</i>	10	10	15	10	15	10	10	10	5	10	10
Crushing, pressing, rolling machinery	35	35	30	35	30	20	25	10	20	15	15
<i>Power presses</i>	15	15	15	15	10	15	5	*	10	10	5
<i>Other crushing, pressing, rolling machinery</i>	15	15	15	15	15	5	15	5	10	5	5
Heating, cooking, baking equipment	10	10	5	10	5	*	*	5	*	*	*
Conveyors and lifting plant	95	85	90	90	80	100	90	65	85	70	65
<i>Mechanical power transfer mechanisms</i>	*	5	5	*	*	*	*	*	*	*	*
<i>Conveyor belts and escalators</i>	10	25	15	20	25	30	20	15	20	20	10
<i>Cane loaders, hay bale stackers</i>	*	*	5	15	10	10	*	*	5	5	*
<i>Power hoists</i>	15	10	10	*	5	15	15	5	15	5	10
<i>Forklift trucks</i>	25	20	30	25	20	25	30	15	25	25	30
<i>Other conveyors and lifting plant</i>	35	20	15	20	20	15	20	20	15	10	10
Electrical installation	10	15	10	15	10	20	5	15	10	10	10
Filling and bottling/packageing plant	*	25	5	10	10	5	10	10	5	10	10
Other plant and equipment	255	260	245	200	150	170	165	150	135	125	95
<i>Sheep shearing plant</i>	205	215	185	150	100	115	125	105	80	80	70
<i>Water mains, pipes, valves, hydrants, taps, and other water reticulation equipment</i>	*	10	15	20	15	20	15	15	15	15	5
<i>Other and unspecified production line type of plant or standalone machinery</i>	40	30	40	25	30	30	20	25	35	30	25
Mobile Plant and Transport	715	710	745	705	685	720	635	640	645	660	645
Self-propelled plant	75	60	65	70	75	75	65	70	60	60	55

Breakdown Agency	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
<i>Self-propelled harvesters</i>	40	30	35	35	35	30	30	40	30	25	25
<i>Graders, dozers, snowploughs, other scraping plant</i>	10	*	5	15	10	15	10	5	5	*	10
<i>Excavators, backhoes, other digging plant</i>	*	10	*	*	5	5	*	5	10	5	10
<i>Front-end loaders, log-handling plant, other loading plant</i>	10	10	10	10	15	10	10	15	10	15	5
<i>Other self-propelled plant</i>	10	*	5	5	5	10	10	*	*	10	*
Semi-portable plant	35	25	35	25	25	20	30	30	25	35	15
<i>Pneumatic tools</i>	*	*	5	*	*	*	10	*	5	10	*
<i>Compressors, pumps</i>	25	20	15	15	15	15	10	20	10	15	10
<i>Hydraulic equipment, not elsewhere classified</i>	5	*	10	5	5	*	5	*	*	10	*
<i>Other semi-portable plant</i>	*	*	5	*	*	*	*	*	*	5	*
Other mobile plant	255	295	300	275	240	275	230	240	235	240	225
<i>Tractors, agricultural+ otherwise</i>	115	150	145	140	115	150	110	115	135	110	120
<i>Ploughs, harrows, cultivators</i>	20	25	20	15	20	15	15	10	10	10	10
<i>Oil, gas and water drilling rigs</i>	10	10	5	5	5	*	*	*	*	*	*
<i>Ride-on mowers</i>	*	5	5	*	5	*	*	*	*	*	10
<i>Wheelbarrows</i>	*	*	5	*	5	10	*	*	*	5	10
<i>Trolleys, handcarts</i>	30	40	55	40	35	40	40	45	30	35	35
<i>Trailers, caravans</i>	40	50	45	60	35	50	55	55	40	50	30
<i>Other mobile plant</i>	40	5	15	10	15	10	10	5	10	15	10
Road transport	335	305	325	315	320	335	290	285	295	310	335
<i>Trucks, semi-trailers, lorries</i>	80	75	75	85	95	95	85	80	60	95	80
<i>Cars, stationwagons, vans, utilities</i>	50	55	65	45	50	70	50	55	55	60	60
<i>Motorcycles, scooters, trailbikes</i>	165	170	180	170	165	160	145	145	170	155	180
<i>Other road transport</i>	30	*	*	10	*	5	10	*	5	*	10
Rail transport	*	*	*	*	5	5	5	*	*	*	*
Air transport	10	*	5	*	*	*	*	5	*	*	5
Water transport	*	*	*	*	*	*	5	*	5	*	*
Other transport	*	10	10	10	15	10	*	*	15	5	*
Powered Equipment, Tools and Appliances	105	105	110	100	110	110	115	125	90	90	90
Workshop and worksite tools/ equipment	55	35	45	40	45	40	45	45	35	40	35
<i>Abrasive, planing, cutting powered tools</i>	20	20	15	20	10	20	15	15	15	20	15
<i>Electric drills</i>	10	*	10	5	10	5	15	10	*	*	10
<i>Arc welding equipment</i>	5	5	10	*	*	*	10	5	*	*	5
<i>Oxy-acetylene equipment</i>	5	*	*	5	5	*	*	*	*	*	*
<i>Other and unspecified powered workshop and worksite</i>	10	*	5	5	10	10	5	5	*	*	*

Breakdown Agency	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
<i>equipment</i>											
Kitchen and domestic equipment	5	10	10	5	5	10	10	5	5	*	5
Office and electronic equipment	5	*	5	*	*	*	5	*	*	*	*
Garden and outdoor powered equipment	25	35	35	35	40	40	45	40	35	30	30
<i>Electric garden appliances</i>	*	*	*	*	*	*	*	10	5	*	*
<i>Lawn mowers</i>	*	5	5	5	5	*	*	*	*	5	*
<i>Chainsaws</i>	20	15	15	15	15	30	20	10	10	10	15
<i>Other powered garden and outdoor equipment</i>	*	5	10	10	10	5	15	10	10	10	10
Pressure based equipment not elsewhere classified	*	10	5	10	15	10	5	20	15	10	10
Other powered tools, appliances	10	10	5	5	5	5	5	5	5	*	5
Non-Powered Hand tools, Appliances and Equipment	815	905	865	885	860	875	775	840	770	735	670
Hand tools, non-powered, edged	195	205	205	205	180	170	175	185	175	170	135
Knives and cutlery	75	85	80	80	80	75	90	80	85	90	65
Scissors	55	65	75	65	50	45	40	55	45	40	30
Chisels, awls, screwdrivers	*	5	*	*	*	*	*	*	*	*	*
Axes, adzes, hatchets	*	5	*	10	*	*	*	*	*	*	*
Shovels, spades, lawnedgers	30	20	20	30	15	25	25	35	25	20	20
Hoes, pickaxes, mattocks	10	*	*	5	*	*	5	*	*	*	*
Other edged equipment	15	10	15	10	20	10	10	10	10	10	15
Other hand tools	90	85	85	75	85	80	65	70	80	70	50
<i>Hammers, mallets</i>	20	25	15	25	20	25	20	15	20	15	10
<i>Wrenches, spanners, sockets</i>	15	*	5	5	5	*	5	5	10	10	5
<i>Crowbars, pinchbars, jemmies</i>	5	*	10	*	*	*	*	*	*	10	*
<i>Hand drills, brace and bit, augers</i>	*	10	5	10	10	10	*	*	10	5	*
<i>Manual lifting equipment</i>	25	25	20	15	25	20	20	15	15	10	10
<i>Other handtools</i>	20	15	20	10	10	15	15	25	10	10	10
Fastening, packing, packaging equipment	280	290	295	300	295	310	235	290	250	250	245
<i>Nails, screws, nuts and bolts</i>	5	5	*	*	5	10	5	15	5	10	5
<i>String, twine, rope</i>	5	10	*	5	10	*	*	10	5	15	*
<i>Wire, wire rope, metal strapping</i>	35	30	40	30	30	40	30	30	40	30	40
<i>Chains</i>	10	10	10	10	10	15	5	10	10	5	5
<i>Crates, cartons, boxes, cases, drums, kegs, barrels, cans</i>	155	130	155	155	155	145	110	135	100	110	105
<i>Pallets</i>	20	25	25	20	25	20	25	15	25	20	30
<i>Bags, bundles and bales</i>	40	65	50	55	55	70	50	55	60	50	40

Breakdown Agency	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
<i>Rolls</i>	*	*	*	*	*	5	5	10	*	5	5
<i>Other packing and fastening equipment</i>	*	10	5	10	5	5	*	5	*	5	5
Furniture and fittings	45	60	40	55	45	60	45	50	45	60	40
Other utensils	*	10	5	10	10	10	15	20	20	15	20
Ladders, mobile ramps and stairways, and scaffolding	125	125	130	115	130	130	95	110	95	85	80
<i>Ladders</i>	125	125	125	105	130	120	75	95	85	70	70
<i>Mobile ramps and stairways</i>	*	*	*	5	*	10	15	15	10	10	10
Other non-powered equipment	80	135	110	125	115	115	140	110	110	90	100
<i>Refuse or waste bins</i>	*	*	*	*	*	5	15	10	5	10	15
<i>Hypodermic syringes</i>	5	*	*	*	*	*	10	5	*	5	5
<i>Vehicle wheels and tyres</i>	15	25	30	25	10	10	10	15	10	15	20
<i>Clothing and footwear</i>	10	*	*	10	*	10	*	*	10	10	*
<i>Other equipment</i>	45	100	75	90	95	80	100	75	80	50	55
Chemicals and Chemical Products	65	55	55	35	45	45	40	25	40	35	25
Other basic chemicals	20	25	25	15	15	15	5	15	10	*	10
Chemical products	40	30	30	15	30	25	35	10	25	25	15
<i>Plant treatment chemicals</i>	20	15	10	10	5	10	20	*	*	10	10
<i>Animal treatment chemicals</i>	*	*	*	*	5	*	*	*	*	*	*
<i>Plastic materials, synthetic resins and rubbers</i>	15	5	*	*	*	*	5	*	*	*	*
<i>Other chemical products</i>	5	5	10	*	10	5	5	10	10	10	5
Materials and Substances	410	460	390	375	400	385	325	365	330	300	280
Non-metallic minerals and substances	55	65	60	45	50	50	35	45	40	35	55
<i>Rocks, stones, boulders</i>	30	25	35	20	20	25	20	20	25	20	30
<i>Bricks and tiles and concrete, cement and clay products, not elsewhere classified</i>	10	20	10	10	15	15	10	15	10	5	10
<i>Dust, not elsewhere classified</i>	10	15	10	5	5	5	*	5	5	10	5
Other materials and objects	250	265	220	220	245	240	200	260	225	215	180
<i>Tree felled for processing or through clearing</i>	10	20	15	20	25	25	10	20	15	10	5
<i>Sawn or dressed timber</i>	50	40	45	45	35	30	30	40	35	40	20
<i>Ferrous and non-ferrous metal</i>	135	120	95	70	70	90	80	100	75	75	75
<i>Fragments</i>	*	*	*	*	*	10	*	10	5	*	5
<i>Detached machine or equipment components</i>	*	*	*	15	15	15	15	20	20	15	10
<i>Other materials and objects</i>	45	70	60	65	100	70	50	60	75	70	55
Other substances	105	135	110	110	105	90	90	60	65	50	50
<i>Fire, flame and smoke</i>	10	15	10	5	10	*	10	5	10	10	10
<i>Hot water, steam</i>	*	10	5	10	5	5	5	*	5	*	*

Breakdown Agency	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
<i>Food</i>	50	80	70	70	70	60	55	45	35	25	30
<i>Stock feed</i>	25	15	20	10	10	15	10	5	10	5	*
<i>Other substances</i>	10	10	*	10	5	10	5	*	*	5	*
Environmental Agencies	890	815	795	810	775	780	755	705	695	685	590
Outdoor environment	725	670	660	675	635	645	665	590	620	595	500
<i>Weather and water</i>	10	*	5	10	10	15	10	5	*	5	*
<i>Holes in the ground</i>	85	75	55	75	80	75	80	55	65	70	50
<i>Wet, oily or icy traffic and ground surfaces</i>	35	40	45	50	45	55	40	30	50	25	55
<i>Traffic and ground surfaces with hazardous objects</i>	70	70	50	65	50	55	70	60	45	50	30
<i>Traffic and ground surfaces other</i>	145	145	135	135	135	150	145	140	185	170	125
<i>Buildings and other structures</i>	20	15	25	30	20	15	20	15	25	25	20
<i>Fencing</i>	110	80	70	95	110	95	100	85	70	85	85
<i>Vegetation</i>	220	220	260	210	170	165	175	175	165	155	125
<i>Other outdoor environmental agencies</i>	25	15	10	10	15	15	20	15	15	10	10
Indoor environment	165	140	135	130	140	135	90	115	75	90	90
<i>Steps and stairways</i>	30	30	35	25	40	40	25	35	25	20	20
<i>Openings in floors, walls or ceilings</i>	*	15	15	20	10	5	5	*	*	*	*
<i>Wet, oily or icy other internal traffic and floor areas</i>	45	25	30	25	20	25	15	15	20	15	25
<i>Other internal traffic and floor areas with hazardous objects</i>	20	20	15	15	15	20	15	25	15	20	10
<i>Other internal traffic and floor areas</i>	35	30	20	25	35	35	20	25	10	20	20
<i>Internal conditions</i>	20	15	15	20	15	5	5	10	*	5	*
<i>Other indoor environment</i>	10	*	5	*	*	*	*	5	*	5	*
Animal, Human and Biological Agencies	1050	1095	1025	1025	1020	925	900	925	900	930	875
Live four-legged animals	810	940	870	860	880	795	765	795	790	820	770
<i>Horses, donkeys, mules</i>	240	240	205	225	265	210	225	205	225	235	190
<i>Cows, steers, cattle, bulls, Buffalo</i>	205	260	225	270	250	235	195	230	205	240	245
<i>Sheep</i>	290	340	355	285	285	245	260	270	265	255	255
<i>Pigs</i>	55	65	60	45	45	65	55	55	60	60	55
<i>Dogs</i>	10	*	15	10	5	10	10	15	15	10	10
<i>Other four-legged animals</i>	10	30	10	20	25	30	15	10	15	15	15
Other live animals	155	60	60	65	55	40	40	45	20	40	30
<i>Snakes and other reptiles</i>	*	*	*	*	*	*	*	5	*	*	10
<i>Spiders and other arachnids</i>	*	5	5	5	5	*	*	10	*	5	*
<i>Insects</i>	5	10	5	5	*	5	5	10	*	5	5

Breakdown Agency	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
<i>Unidentified insects or spiders</i>	*	*	*	*	10	*	*	*	*	5	*
<i>Poultry</i>	45	25	30	30	15	20	15	15	5	15	10
<i>Other birds</i>	*	5	*	5	10	*	*	*	*	*	*
<i>Other animals, not elsewhere classified</i>	90	10	*	10	10	10	5	*	*	*	*
Non-living animals	55	75	65	45	35	30	45	35	55	35	25
<i>Carcass</i>	10	10	10	10	10	10	10	10	15	10	10
<i>Skin, pelt, hair, fur or feathers</i>	35	45	30	30	15	15	25	10	20	10	10
<i>Offal and animal waste products</i>	*	*	*	*	*	*	*	*	5	*	*
<i>Other animal part or product</i>	10	25	20	10	10	5	10	10	10	15	5
Human agencies	25	20	25	40	50	55	45	45	30	30	35
<i>Condition of affected person</i>	10	5	15	15	15	20	15	15	10	10	10
<i>Other person</i>	10	5	10	20	25	35	30	30	20	20	20
<i>Other human agency</i>	*	5	*	10	10	*	*	*	*	*	*
Biological agencies	5	*	*	10	*	5	5	5	*	10	15
Other and Unspecified Agencies	620	710	805	660	655	490	515	385	320	315	270
TOTAL	5235	5350	5380	5010	4905	4715	4425	4310	4095	4045	3690

Appendix 2: Agent of injury relating to workers' compensation claims in the Commercial Fishing Industries 1997/98 to 2006/07, excluding journey claims. Number of claims rounded to 5. (* data not available due to confidentiality restrictions) Source: NOSI database Safe Work Australia.

Breakdown Agency	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
Machinery and (Mainly) Fixed Plant	10	10	5	10	15	10	20	15	10	10
<i>Conveyors and lifting plant</i>	10	*	*	5	5	*	*	5	*	5
Mobile Plant and Transport	35	45	50	50	40	70	50	35	45	30
Semi-portable plant	*	*	*	*	*	5	*	*	*	*
Other mobile plant	*	*	*	10	*	5	*	*	*	*
Road transport	*	5	10	*	*	5	*	*	5	5
<i>Cars, station wagons, vans, utilities</i>	*	*	5	*	*	*	*	*	*	*
Water transport	30	25	35	35	30	50	35	30	35	20
<i>Motorised craft</i>	30	25	30	25	30	40	30	20	30	15
<i>Non-motorised craft</i>				5				5		
Powered Equipment, Tools and Appliances	5	5	10	5	5	10	5	10		5
Non-Powered Handtools, Appliances and Equipment	95	120	100	140	120	120	135	95	55	75
Handtools, non-powered, edged	15	15	20	25	20	25	25	20	5	15
<i>Knives and cutlery</i>	10	10	10	20	15	10	15	10	*	10
<i>Shovels, spades, lawnedgers</i>	*	*	5	*	*	5	*	*	*	*
<i>Other edged equipment</i>	*	*	*	*	*	5	*	*	*	*
Other handtools	10	10	5	10	10	10	15	10	5	5
<i>Hammers, mallets</i>	*	*	*	*	*	5	*	*	*	*
<i>Manual lifting equipment</i>	10	5	*	5	*	*	10	10	*	*
Fastening, packing and packaging equipment	40	50	45	45	40	45	45	35	20	25
<i>String, twine, rope</i>	20	20	15	15	15	15	10	10	np	10
<i>Crates, cartons, boxes, cases, drums, kegs, barrels, cans</i>	15	25	20	25	20	25	20	15	10	10
<i>Pallets</i>	*	*	*	*	*	*	*	5	*	*
Furniture and fittings	5	5	*	*	5	5	5	5	*	5
Ladders, mobile ramps and stairways, and scaffolding	*	*	*	5	*	*	*	*	*	*

Breakdown Agency	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
Other non-powered equipment	15	30	20	50	40	25	35	25	10	15
Chemicals and Chemical Products	5	*	5	*	*	*	*	*	*	*
Materials and Substances	20	20	35	20	30	35	25	25	15	20
Non-metallic minerals and substances	*	*	*	*	*	5	*	*	*	*
Other materials and objects	15	20	20	20	25	20	20	15	10	20
Ferrous and non-ferrous metal	*	10	10	5	10	5	15	*	5	10
Other substances	*	*	10	*	*	5	*	5	*	*
Environmental Agencies	35	55	65	60	60	70	60	50	35	45
Outdoor environment	30	40	50	45	45	55	40	35	30	35
Weather and water	10	15	20	20	15	20	10	10	10	10
<i>Wet, oily or icy traffic and ground surfaces</i>	*	5	10	5	5	10	10	*	*	5
<i>Traffic and ground surfaces with hazardous objects</i>	*	10	*	*	10	5	*	5	*	5
<i>Traffic and ground surfaces other</i>	10	10	10	5	10	10	15	15	5	5
<i>Buildings and other structures</i>	*	*	*	*	5	*	*	*	*	*
Indoor environment	5	15	10	15	15	15	20	10	10	10
<i>Steps and stairways</i>	*	*	*	5	5	*	5	*	*	*
<i>Wet, oily or icy other internal traffic and floor areas</i>	*	5	*	*	5	*	5	*	*	*
Animal, Human and Biological Agencies	40	50	50	55	40	45	50	40	30	20
Marine life	20	30	30	35	25	20	15	20	15	10
Non-living animals	15	15	15	15	15	20	20	15	10	5
<i>Carcass</i>	*	5	5	15	10	15	10	10	5	*
<i>Other animal part or product</i>	10	10	5	*	*	*	5	5	*	*
Human agencies	*	*	*	*	*	5	5	*	5	*
Other and Unspecified Agencies	20	35	55	45	50	50	35	25	20	20
Not Stated	35	*	45	*	*	*	*	*	*	*
Total	305	350	420	395	370	420	380	295	215	230

Appendix 3: Principles identified for programs to be effective in achieving safety changes on farms:

(Source: Fragar L, Temperley J, et al. (2008). Practical principles for effectively achieving safety change on Australian farms – using new and established pathways to improve adoption Kingston, Rural Industries Research and Development Corporation)

1. Use the range of known effective drivers that prompt action - *Intent*

It is evident that different farmers are prompted by different drivers to take action on safety. However, some key principles have been identified from the literature:

- There is need to ensure that the *safety outcomes to be achieved are important and are valued by farmers.*
- The importance of *the economics and profitability of the farm business* is critical to decision making.
- Any mismatch between farmers' *perceptions of risk and actual risk* will influence his or her intention to act.
- For farmers to take action, much depends upon *how the information is presented, packaged, and who presents it*
- *The target of any safety program should be the decision-maker.* Depending on farm women's 'sphere of influence' farm women will be important participants. Care should be taken to include all sectors, including hobby farmers and farmers of non-English speaking background.
- While an unpopular approach with many farmers, *meeting regulatory requirements appears to be a powerful driver for adoption.* Recognition should be made of Australian farmers' respect of the law; however, programs should recognise difficulties in achieving compliance where the law seems difficult to implement, and where it is perceived to be challenging personal, family and business autonomy.

2. Anticipate and deal in a practical way with any real and perceived barriers to action - *Barriers*

Commonly reported barriers have been identified as impacting on whether farmers will put in place safety measures. These include the commonly-held assumption by farmers that safety is costly and too complicated and that many risks are perceived to be uncontrollable. Further, there are practical difficulties associated with the age and poor design of farm machinery, and the ageing farmer workforce. Where practical guidelines and templates have been provided these have been appreciated.

Farm safety programs must:

- *Identify the barriers* to adoption of specific recommended safety measures on farms
- *Provide practical information, guidelines, templates* about how to implement the solution in farm settings, with an estimate of cost and source of key items.
- Where possible *provide lower cost options* where cost is high for the most effective measure

3. Ensure farmers have the necessary information, skills and capacity to take the recommended action - *Skills and Self-efficacy*

There is agreement that provision of information and course participation alone is often insufficient for farmers to be able to implement farm safety risk management processes on the farm. Practical safety changes are often straightforward and don't require special skills - for example, replacement of a guard. However, typical management measures such as safety induction and training are more difficult

for many farmers. This helps explain the effectiveness of single-issue programs such as ROPS retrofitting, compared to adoption of risk management systems on farms.

Farm safety programs should:

- Provide *education and training that is relevant to specific groups* – local non-formal education using field days, on-farm workshops, benchmarking groups.
- *Meet the information needs of all groups* – young people and entry-level workers, women, older farmers, hobby farmers. Weekend events may be necessary as many farming people are involved in off-farm work on week-days.
- *Maintain access to information and practical on-farm guidelines and checklists and templates on the web* – e.g. the Farmsafe Australia website, industry organisation websites
- Provide practical information, guidelines, templates about *how to implement the safety measure in farm settings, with an estimate of cost and source of key items.*
- Provide *assistance for follow-up and help* for implementation of more difficult measures
- Assist farmers to address the information and skills *needs of seasonal and transient workers*

4. Define the positive outcomes farmers can expect from adopting safety systems and approaches - Outcome expectancies (attitudes and beliefs)

A common problem is the difficulty that many farmers have in identifying the benefits of safety. Notwithstanding this, there is evidence that farmers are taking a more positive view of safety and some impressive action on farms is occurring. Safety programs should:

- Identify and *promote the benefits of safe work systems and practices*, linking to current imperatives – for example, labour shortage, costs, market demand for products.

5. Build programs on the characteristics that farmers recognise as positive – for example farmer individualism and autonomy - Social norms and self-standards

There is support for the position that, to be effective, programs should put emphasis on the fact that farmers have a high degree of control of OHS and of how safety is ensured on their individual farm.

Programs will be effective where they:

- *Are linked to farmers' values such as autonomy in decision-making*, recognising that the farmer IS the expert in how things work on his or her farm.
- *Build up self-help and awareness*, rather than primarily focussing on meeting the legislative or normative demands of others.
- *Involve industry associations and industry leaders* who help to unify the industry around development of an enduring shared set of values, beliefs and practices -“*This is how we do it*”.
- Recognise the roles that people play in farm decision-making. These will vary. Decision processes were mostly made by the male owner/operator, and this may still be the case; however, roles change and roles vary. The role of women in farm safety cannot be separated from other roles that they have on the farm and in family life.

6. Recognise and deal with strongly held feelings held by some farmers about safety - *Emotional reactions*

There is a strong degree of antagonism to the need to be involved in OHS amongst some farmers in some areas. Such feelings provide a barrier to forming intent to take up farm safety recommendations. Farm safety practitioners have developed their own strategies for helping farmers deal with these feelings in a rational way.

- Farm safety programs need to gauge the levels of hostility that may be prevailing and allow farmers the opportunity to work through these where necessary.
- *Involving farmers in setting program priorities* and designing programs to meet their needs will be helpful
- *Industry associations are well placed to play a leadership role* in helping farmers see the benefits of safety on farms.

7. Industry associations and organisations have key roles to play to ensure adoption of safety on Australian farms

Generally the effectiveness of major programs appears to be associated, at least in part, by the active support and participation of the agriculture industry associations and agencies. There is general support for the key role that systematic involvement of industry leaders can make to support farm safety action. *Industry associations have capacity to unify an industry around a distinctive set of shared values, beliefs and practices – can raise OHS standards by developing a normative framework for their members.* - “Nurturing an industry OHS morality” (Gunningham N and Rees J 2008)

Industry associations should:

- *Take leadership roles* in national, state and industry specific farm safety programs.
- *Actively promote the benefits of farm safety*, linking these to current farming imperatives – e.g. labour shortage, costs, market demand for products. Opportunities for such promotion include the media, farmer conferences, members newsletters
- *Provide a role model for safety*, in line with other companies practice.
- *Advocate for resources* for programs and approaches that foster adoption of safety measures on Australian farms
- *Seek effective partnerships with Governments* to address key safety issues, building on the success of previous partnerships.
- *Seek to partner with other industry associations* or other agencies who share a common interest in improving safety on Australian farms

8. Governments have roles to play in partnership with industry to ensure adoption of safety on Australian farms

Governments have key roles in supporting adoption of safety measures on farms in Australia. These are through:

- *Provision of data and information upon which to base priorities*
- *Provision of practical health and safety information*
- *Setting safety standards* that are practical for farm plant and equipment and for chemicals and their containers
- *Provision of information about how to meet OHS regulatory requirements* in a practical way on farms.

To be effective, governments should work with the industry to plan strategic approaches that take into account the known pathways to adoption of safety measures by the farming sector.

9. Local community action groups and community organisations have roles to play to promote adoption of safety on Australian farms

The use of farm industry networks and media was useful for most of the effective programs that have been reported, with messages being modified for the target group and membership of each community or agency. Local community groups have worked by using locally available means of disseminating information – local field days, sale days, local media, provision for screening services. Groups include Country Women’s Association branches, service clubs, Land Care groups as well as the local Farm Safety Action groups.

- Farm safety programs should seek to *engage communities* in the planning and delivery of safety programs at local level.
- Supporting some farmers to participate in *safety benchmarking* groups is being seen as an important way of increasing on-farm adoption of safety measures.

10. Empowerment and participatory research continues to be the most relevant manner of development of innovations, strategies, programs and approaches to improve farm safety in Australia.

Many of the programs that are effective have actively involved farmers and key stakeholders in the program design and in development of resources and strategies. This is the routine approach taken by Farmsafe Australia in development of strategies and programs addressing key safety issues at a national level.

- Programs should *involve practicing farmers in the development of priorities, strategies and plans*

Appendix 4: Health promotion programs identified for possible inclusion in review of effectiveness and suitability for farmer participation. Source: Jones S et al (2008)

- 10 000 Steps.
- 10 Ways to a Healthy Heart.
- 45 Year Health Check.
- Adopt a Rural Practice.
- Barraba on the Move.
- Better Health Self Management Course.
- Dorrigo Active Community Project.
- Easy Moves for Active Aging.
- Eat Well be Active.
- Eating for a Happy Mind and Body.
- The Empowerment Program.
- Find Thirty.
- Food for Thought.
- Foundation 49 Men’s Health.
- Go for your Life Diabetes Prevention Program.
- GP Exercise Referral Scheme.
- The Greater Green Triangle Diabetes Prevention Program.
- Healing Program – Healthy Eating Activities for Indigenous Groups
- Healthy Blokes – Sunshine Coast Regional Health Program.
- Healthy Men.
- Heart of the Grampians.
- Heartmoves – Heart Foundation.
- HELP (Healthy Eating and Lifestyle Program).
- Hot Steppers Pedometer Program.
- Just Walk It.
- Kimberly Active Project.
- Life Scripts.
- Life Style Risk Factor Program.
- Life! Initiative.
- Lighten Up.
- Mall Walks, Dandenong.
- The Man Model Program.
- Men’s Shed.
- The “On Track” Program.
- One Step Ahead.
- Parisian Challenge.
- Pedal Power – Ride To Work.
- Proactive.
- Pryme Movers.
- Skin Watch.
- SNAP (Smoking, Nutrition, Alcohol and Physical Activity).
- SPAN (Sustainable Physical Activity In Neighborhoods).
- Starting Block Physical Activity Program.
- Staying Fit and Health – Centre for Physical Activity and Aging.
- Staying Young In Young.
- Steps to a Healthier Life.
- Sun Smart Info Sessions Act.
- Sustainable Farm Families.
- Talk About Weight Group.
- Well Women’s Cancer Screening.
- Wellbeing Wendouree.
- WellingTONNE Challenge.

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Adoption of Health and Safety Change on Australian Farming and Fishing Enterprises

by Lyn Fragar, Tony Lower and John Temperley

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Over several years there has been considerable investment in defining and analysing causal factors associated with common hazards of high risk on farms, plus the development of guidelines to assist in the adoption of health and safety measures. However, there has been little work undertaken in relation to the fishing sector and in respect to mental health more broadly. While approaches based on evidence and best practice have been developed, efforts to further enhance the adoption of these by farmers and fishermen remain central to the overall success of these interventions.

This research builds on earlier work assessing the available evidence regarding adoption and will assist the Collaborative Partnership for Farming and Fishing Health and Safety to

undertake the necessary work that will inform a program of farm and fishing health and safety research that is underpinned by "best practice".

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