





Research Venture
Rural Industries R&D Corporation
Grains R&D Corporation
Meat & Livestock Australia
Australian Wool Innovation Ltd
Sugar R&D Corporation
Cotton R&D Corporation
Dairy Australia



Injury on Farms in New South Wales

-THE FACTS -

2005

Facts and Figures on Farm Health and Safety Series No 7





© 2005 Rural Industries Research and Development Corporation and Australian Centre for Agricultural Health and Safety All rights reserved.

ISBN 1741511461 ISSN 1440-6845

Injury on farms in New South Wales Publication No. 05/048; Project No. US-121A

Authors: Fragar LJ, Thomas P, Morton C.

The information contained in this publication is intended for general use to assist public knowledge and discussion and to help improve the development of sustainable industries. The information should not be relied upon for the purpose of a particular matter. Specialist and/or appropriate legal advice should be obtained before any action or decision is taken on the basis of any material in this document. The Commonwealth of Australia, Rural Industries Research and Development Corporation, the authors or contributors do not assume liability of any kind whatsoever resulting from any person's use or reliance upon the content of this document.

This publication is copyright. However, RIRDC and ACAHS encourage wide dissemination of this research, providing they are clearly acknowledged. For any other enquiries concerning reproduction, contact the RIRDC Publications Manager on phone 02 6272 3186.

Researcher Contact Details

ACAHS contact details: Australian Centre for Agricultural Health and Safety University of Sydney PO Box 256 Moree NSW 2400

Tel: 02 6752 8210 Fax: 02 6752 6639

Email: aghealth@health.usyd.edu.au

In submitting this report, the researcher has agreed to RIRDC publishing this material in its edited form.

RIRDC Contact Details

Rural Industries Research and Development Corporation
Level 1, AMA House
42 Macquarie Street
BARTON ACT 2600
PO Box 4776
KINGSTON ACT 2604

Phone: 02 6272 4819
Fax: 02 6272 5877
Email: rirdc@rirdc.gov.au.
Website:http://www.rirdc.gov.au

Printed by Union Offset Printing, Canberra

Contents

1.	Introduction	4
2.	Deaths of farmers and farm workers	5
3.	Causes of farmer and farm worker fatality	6
4.	On-farm fatality (1989-1992)	7
5.	Agent of on-farm fatality (1989-1992)	8
6.	Hospital admissions in NSW	9
7.	Hospital admissions and injury causing agents	10
8.	Workers' compensation claims	11
9.	Other health hazards	13
Refe	erences & Contacts	16

1. Introduction

New South Wales is Australia's most populous state with one third of the nation's population (6,716,277 people as at December 2003). Approximately 86,835 people (ABS 2001 census), or 1.3 percent of the state's population, are employed in agriculture and services to agriculture. As at June 2002 there were 41,651 farming establishments throughout NSW using 61 million ha (76.2%) of the NSW land mass. The three most common agricultural establishments are beef cattle farming, grain/sheep/beef cattle farming and sheep farming.

There is no single database that holds all the information necessary to define the nature and scale of health and safety problems in the farming community. This document summarises information presented in a more detailed report on *The Health and Safety of New South Wales Farmers, Farm Families and Farm Workers*. This report was produced by the National Farm Injury Data Centre which sourced data from agencies including the Australian Bureau of Statistics (ABS), NSW Coroner, NSW Department of Health, Commonwealth Department of Health and Aging, and field day screening.

While there are limitations to the various data sets used to present information, in particular the lag period of data collection, it is hoped that this summary can assist farm health and safety programs by:

- defining the key OHS risks and program needs for specific agricultural industries in NSW
- defining the key OHS risks that are generic across all key agricultural industries in NSW
- development of effective health and safety programs that address key risks.

This document has been produced to provide guidance to those agencies and individuals who are working to reduce risk associated with living and working on farms in NSW. The publication is available electronically for use by educators and speakers in their efforts to raise awareness and promote farm safety, and for those whose role is the development of public and industry policy to improve safety.

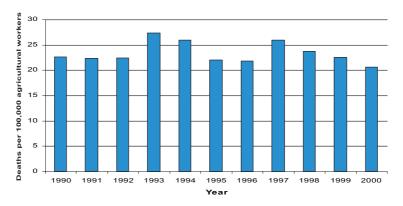


2. Deaths of farmers and farm workers

There were 1,094 fatalities to farmers and farm workers (where 94.5% were males) recorded by the ABS from January 1990 to December 2000 with an average of 99 deaths per annum. Figure 1 shows the annual fatality rate of farm managers and workers combined over eleven years.

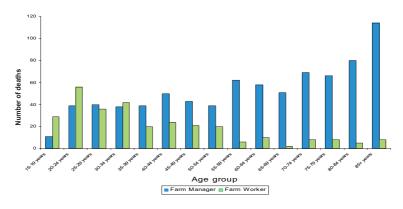
Figure 2 shows the number of farm manager and farm worker fatalities by age group. The number of deaths to farm managers increased with age while farm worker fatalities were highest in the 20-24 year age group. Farm manager deaths were more likely to occur at any time throughout the year while farm worker fatalities were more common between October and January.

Figure 1 Annual fatality rates of farm managers and farm workers, NSW 1990-2000



Source: Franklin et al (2004)

Figure 2 Farm manager and farm worker fatalities, by age group, NSW 1990-2000



Source: Franklin et al (2004)

3. Causes of farmer and farm worker fatality

ABS data from 1999-2002 indicates that the most common causes of traumatic fatality in farmers and farm workers were vehicles, falls, and tractors, followed by motorbikes and ATVs (Table 1). Some transport accidents, in particular the car-related fatalities, would have occurred on highways and roads rather than on-farm.

Table 1 Agents associated with non-intentional farm manager and worker traumatic fatality, NSW 1999-2002

	Description	Male	Female	Total	%
V01-V59	Transport accidents*				
V40-V49	car	61	3	64	24.2
V01-V09	pedestrian	11	0	11	4.2
V20-V29	motorcycle	10	0	10	3.8
V50-V59	truck, ute, van	2	0	2	0.8
V80-V89	Other land transport accidents				
V84	tractors	12	0	12	4.5
V86	ATVs	8	0	8	3.0
V80	animal ridden	1	1	2	0.8
V85-V89	other	5	0	5	1.9
V90-V94	Water transport accidents	3	0	3	1.1
V95	Air transport accidents	1	0	1	0.4
W00-W19	Falls	29	1	30	11.4
X21	Venomous animal	1	0	1	0.4
W55	Injury by other animal	1	0	1	0.4
W20-W49	Inanimate mechanical forces				
W30	agricultural machinery	5	0	5	1.9
W31	other machinery	3	0	3	1.1
W34	firearms	3	0	3	1.1
W20-24	other equipment or objects	13	0	13	4.9
X40-X49	Poisoning	7	0	7	2.7
X00-X09	Fire and flames	9	1	9	3.8
W75-W84	Other accidental threats to breathing	7	0	7	2.7
W65-W74	Drowning	9	0	9	3.4
X59	Unspecified	41	7	48	18.2
W86,Y26-86	Other injury	9	0	9	3.4
	Group Total	251	13	264	100.0

Source: NFIDC (NSW Health HOIST database)

^{*}Includes motor vehicle traffic & non traffic accidents

4. On-farm fatality (1989-1992)

More detailed data is available from the National Coroners Information System relating to all fatalities (people working, living and visiting) that occurred on farms in NSW from 1989 to 1992. Bystanders are nonworking people fatally injured (such as children or visitors) in association with farm equipment or structures (such as a dam or tractor).

There were a total of 158 on-farm fatalities in NSW, an average of 39 farm-related fatalities per annum, during the 4 year period. The calculated fatality rate for farmers was 25.1 deaths per 100,000 per year and for farm hands and assistants 20.3 deaths per 100,000 per year.

Of the 158 fatalities, 78.5% people were involved in work at the time of the incident and 21.5% were bystanders.

Nearly 10% of fatalities occurred to children under the age of 5, and over 15% to children under the age of 15 which is comparable to national statistics on farm child fatalities.

Table 2 Age group of farm-related fatalities, by work status, NSW 1989-1992

Age Group	Working	Bystander	Total	%
<5	-	15	15	9.5
5 -14	4	5	9	5.7
15 - 24	17	3	20	12.7
25 - 34	21	3	24	15.2
35 - 44	21	-	21	13.3
45 - 54	21	1	22	13.9
55 - 64	23	4	27	17.1
65 +	17	3	20	12.6
Total	124	34	158	100.0
		-		

Source: Franklin et al (2000)

Child safety (particularly for children under 5) is a priority for injury prevention in NSW.



5. Agent of on-farm fatality (1989-1992)

The agents most frequently associated with on-farm work related fatalities from 1989 to 1992 were tractors (15.8%), dams or other bodies of water (15.8%), and aircraft (8.9%). Dams and tractors were frequently associated with fatalities of bystanders. The tractor was the single most hazardous agent causing death of both on-farm workers and non workers.

Analysis of the mechanism of injury indicated that work-related fatalities were frequently associated with vehicle accidents, being hit by moving objects (usually tractors) or falling objects (mainly trees being felled) and rollovers of mobile machinery (mainly tractors). Common mechanisms of bystander fatalities were drowning (64% to children under 5) and being hit by moving objects.

Table 3 Agents of farm-related fatality in NSW 1989-1992

Agent of non-intentional death	Work related deaths	Bystander deaths	Total	%
Farm vehicles	24	6	30	19.0
trucks	(9)	-	(9)	(5.7)
motorcycles	(5)	(2)	(7)	(4.4)
Aircraft	14	0	14	8.9
Mobile farm machinery & plant	31	7	38	24.1
tractor	(20)	(5)	(25)	(15.8)
Fixed plant & equipment	4	-	4	2.5
Workshop equipment	2	-	2	1.3
Firearms	9	2	11	7.0
Dams & other bodies of water	11	14	25	15.8
Other farm structures	9	2	11	7.0
Horse and other animals	5	1	6	3.8
Trees being felled	7	1	8	5.1
Other materials	3	1	4	2.5
Other working environment	5	1	5	3.2
Total	124	34	158	100

Source: Franklin et al (2000)

Priorities for injury prevention based on this data include:

- tractor, aircraft, vehicle and drowning related fatalities for people working on farms in NSW
- tractor and drowning fatalities (particularly in children under 5) for nonworking people on NSW farms

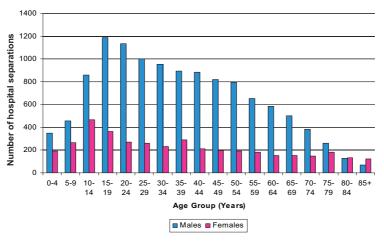
Implementation of ROPS legislation will reduce tractor rollover deaths. Runover hazard remains a high risk with tractors.

6. Hospital admissions in NSW

Information is available about people admitted to NSW hospitals due to farm injury. A total of 15,915 people who had sustained an injury on farm were admitted to NSW hospitals between July 1990 and June 2000, equating to an average of 1,592 hospitalisations per annum. Three-quarters of those injured were males (74.9%) and 16.3% were children under the age of 15 years. Males aged 15-24 years and females aged 10-19 were more frequently hospitalised with a farm injury (Figure 3).

Ten percent of people injured on farms spent more than nine days in hospital.

Figure 3 Age and sex of people injured on farms and admitted to NSW hospitals, July 1990–June 2000



Source: Franklin et al (2004)

Young males aged between 15 and 24 are more commonly treated in NSW hospitals. Priorities for action should address the high numbers of young people injured on farms.



7. Hospital admissions and injury causing agents

The most common agents associated with non-intentional farm injuries resulting in hospitalisation were *motorcycles* (12.4%), *falls* (12.5%), *horses* (10.7%) and *agricultural machinery* (7.5%) (see Table 4).

Males were most frequently injured in association with *motorcycles, falls* and *agricultural machinery*. Females were most frequently injured in association with *horses* and *falls*.

Motorcycles, horses, falls and other vehicles were the four common external causes associated with child injury.

 Table 4
 Agents associated with farm injuries admitted to NSW hospitals, July 1990-June 2000

E-Code	Description	Males	Females	Total	%
E820-829	Motor vehicle non-traffic & other road vehicle accidents	3,431	1,367	4,798	30.1
	motorcycles	(1,713)	(263)	(1,976)	(12.4)
	other vehicles	(889)	(227)	(1,116)	(7.0)
	animal ridden	(829)	(877)	(1,706)	(10.7)
E862	Poisoning by petroleum products	11	2	13	0.1
E863	Poisoning by agricultural chemicals	128	13	141	0.9
E864	Poisoning by corrosives & caustics	4	2	6	0.0
E866-869	Poisoning by other solids, gases & liquids	39	7	46	0.3
E891-899*	Fire & flames	171	18	189	1.2
E905	Venomous animal or plants	357	103	460	2.9
E906.0	Dog bite	27	19	46	0.3
E906.8	Injury by other animal	735	266	1001	6.3
E919.0	Agricultural machinery	1082	107	1189	7.5
E919.19	Other machinery	339	36	375	2.4
E920	Cutting and piercing	848	108	956	6.0
E922	Firearms	94	10	104	0.7
E810-819	Motor vehicle traffic accidents	591	131	722	4.5
E850-865**	Poisoning	74	96	170	1.1
E880-E888	Falls	1223	760	1983	12.5
E900-909#	Natural & environmental factors	396	132	528	3.3
E910	Drowning	14	9	23	0.1
	Other E- codes##	2336	801	3137	19.7
	Unknown	17	11	28	0.2
	Group Total	11,917	3,998	15,915	100.0

Source: Franklin et al (2004)

Priorities for action should include **motorcycle**, **agricultural machinery**, **horse** and **fall injury** on farms in NSW. Target groups should include **young men aged 15-19 years** and **girls aged 10-19 years** (in particular in association with horses).

^{*} Excluding E893.0, E895 and E898.0 (if included are in other E-codes).

^{**}Excluding E863, E863, and E864.

[#] Excluding E905, E906.0 and E906.8. ## Includes all E-codes not represented elsewhere.

8. Workers' compensation claims

In NSW there are around 3,000 workers' compensation claims made each year for injury across all agricultural industries. The majority of claims are made by workers in the grain/sheep/beef cattle farming industries (Table 5).

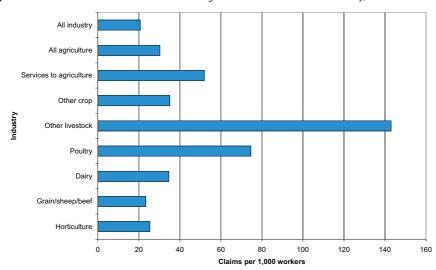
Figure 4 shows the incidence of claims for each NSW agricultural industry against all industry, demonstrating that the number of claims submitted per 1,000 workers for each agricultural industry is higher than the sum of all industry in 2002.

Table 5 Numbers of workers' claims by industry, NSW 1992/93-2000/01

Industry	No of claims	Male :female ratio	Average per annum	% of all claims
Horticulture and Fruit Growing	3,951	3:1	439	14
Grain, Sheep and Beef Cattle Farming	9,631	17:1	1,070	35
Dairy Cattle Farming	1,853	1:1.3	206	7
Poultry Farming	4,796	1.6:1	533	18
Other Livestock Farming	2,365	5.3:1	263	9
Other Crop Farming	1,755	5:1	195	6
Services to Agriculture	3,390	8:1	377	11
Total	27,741		2,693	100

Source: Franklin et al (2004)

Figure 4 Incidence of workers' claims for various agriculture industries and all industry, NSW 2002



Source: ///www.nohsc.gov.au

8. Workers' compensation claims (continued)

Table 6 shows the agent of injury associated with claims for each agricultural industry.

Table 6 Number of worker's claims by industry and agent of injury, NSW 1992/93-2000/01

Agency	Horti- culture & Fruit Grow- ing	Grain, Sheep & Beef Cattle	Dairy Cattle	Poultry	Other Live- stock	O t h e r Crop	Services to Agri- culture	Total
Machinery & (mainly) fixed plant	220	1,012	125	383	91	128	545	1,959
Mobile plant & transport	538	1,564	242	468	253	341	357	3,406
Powered equipment, tools & appliances	113	278	49	106	69	99	105	714
Non-powered hand tools, appliances & equipment	1,085	1,223	413	1,355	360	353	536	4,789
Chemicals & chemical products	104	115	67	139	28	36	49	489
Materials & substances	483	1,003	288	525	276	307	319	2,882
Environmental agencies	868	1,241	252	582	309	249	436	3,501
Animal, human & biological agencies	175	2,505	328	850	790	93	714	4,741
Other & unspecified agencies	365	690	89	388	189	149	329	1,870
Total	3,951	9,631	1853	4796	2365	1755	3390	24,351

Source: Franklin et al (2004)

While the above provides information on the number of claims and associated agents for each agricultural industry, the data demonstrates the importance of each commodity group organization examining industry-specific data to establish priorities for action.

Workshop safety to prevent injury associated with non-powered hand tools, appliances and equipment remain priorities for action in most agricultural industries.



9. Other health hazards

Hearing

Noise on farms has been well established as posing risk of noise induced hearing loss and tinnitus in farmers and farm workers. The following table indicates noise levels associated with various machinery, equipment and activities on rural properties with recommended exposure limits.

Table 9 Average noise levels and recommended exposure limits for common farm machinery and activities

Machinery/worker position during normal operating conditions	Noise level at operator's ear Average & Range (95% CI) LAeq dB(A)	Recommended exposure limits with- out hearing protection. NB: Noise exposure risk for each activity in the day is cumulative toward the overall noise exposure risk.***.
Air compressors	86 (77- 95)	7 hrs (15 mins - 8 hrs+)
All terrain vehicles (ATVs)	86 (84 - 87)	7 hrs (4 - 8 hrs)
Angle grinders	98 (96 - 100)	20 mins (15 - 30 mins)
Others in workshop	90 (87 - 93)	2 hrs (1 - 5 hrs)
Augers	93 (89-96)	1 hr (30 mins – 3 hrs)
Bench grinders	99 (94 - 104)	18 mins (5 mins - 1 hr)
Others in workshop	89 (82 -96)	3 hrs (40 mins - 8 hrs)
Bulldozers	99 (97 - 100)	18 mins (15 - 30 mins)
Chainsaws	106 (104 - 107)	3 mins (2 - 5 mins)
Others stacking wood	96 (93 - 99)	40 mins (15 - 50 mins)
Circular saws	99 (98 - 101)	18 mins (10 - 20 mins)
Others in workshop	89 (84 - 94)	3 hrs (1- 8 hrs)
Farm trucks	85 (83 - 88)	8 hrs (4 - 8 hrs)
Forklifts	84 (81-88)	8 hrs (4 - 8 hrs)
Firearms	Lpk 140+ dB	no exposure
Harvesters	83 (75 - 91)	8 hrs (2 - 8 hrs)
Irrigation pumps	100 (96 - 104)	15 mins (5 -30 mins)
Motorbikes - 2 wheel	81 (70 - 92)	8 hrs (1.5 - 8 hrs+)
Packing shed workers	80 (78 - 82)	8 hrs (8 hrs+)
Shearers	86 (84 - 87)	7 hrs (4 – 8 hrs)
Others in shed	80 (77-83)	8 hrs (8 hrs+)
Sugarcane harvester	86	7 hrs
Tractors with cabins	76 (75 - 78)	no limit
Av. increase with radio on	3 - 5 dB	8 hrs (8 hrs+)
Others in field	85 (80 - 90)	8 hrs (2 - 8 hrs+)
Tractors without cabins	92 (90 - 93)	1.5 (1 - 2) hrs
Others in field	82 (78 - 86)	8 hrs (6 - 8 hrs+)

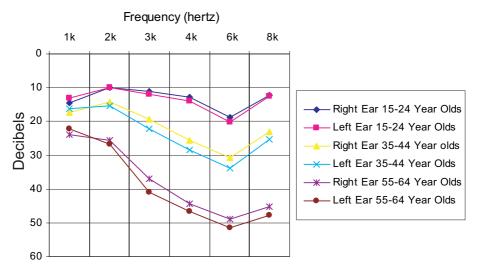
Source: Farmsafe Australia. Noise injury prevention strategy. (2002)

^{**} For example: If exposed to a noisy activity for half the recommended daily limit {e.g. Angle grinder for 10 min of a 20 min daily limit}, the remaining noise exposure in the day should not exceed half the recommended daily limit for another activity (e.g. A limit of 4 hrs instead of 8hr on a tractor with a radio).

9. Other health hazards (continued)

Hearing tests conducted at NSW field days since the 1980s have demonstrated that farmers and farm workers in NSW are suffering significant reduction in mean hearing thresholds from an early age (15-24 years). Of the 6,373 farmers and farm workers tested between 1994 and 2001, two thirds have a significant degree of hearing loss and nearly half have experienced noise injury (tinnitus). Figure 5 demonstrates the dip where hearing ability declines at higher frequencies (4-6K) which is indicative of progressive exposure to excessive noise (Farmsafe 2002).

Figure 5 Mean values for hearing thresholds of farmers/farm workers aged 15-24 years (n=808), 35-44 years (n=1,376), and 55-64 years (n=1,069) at NSW field days, 1994-2001



Source: Farmsafe Australia (2002)

Farm managers need to ensure that workers and farm machinery operators are protected from damaging noise levels. Hearing conservation programs should target young farmers and noise injury prevention so that progression of irreversible hearing loss does not occur.

Organic Dusts and Respiratory Disease

While respiratory disease associated with organic dusts in agriculture is probably under reported, given the importance of grain production and grain handling in the state, ABS data for 1990-2000 indicates that there are approximately 159 respiratory disease related deaths per annum of agricultural industry workers in NSW. This figure does not take into account deaths of grain handlers at grain handling and transport facilities in NSW and at ports.

9. Other health hazards (continued)

Pesticides

Workers in most agricultural industries in NSW are exposed to pesticides in the process of mixing, handling and storing agricultural chemicals and cleaning down spray equipment.

NSW workers' compensation data for the period July 1992-June 2001 indicates that approximately 55 agricultural workers per annum submit a claim associated with all chemical substances (a total of 495 claims over 9 years).

NOSHC data can be analysed for more detail on the type of chemical substance associated with a claim. For the period 1994-2001, less than 20 claims were made by NSW workers employed in agriculture and services to agriculture in association with both plant treatment chemicals and animal treatment chemicals (equating to an average of 5 pesticide claims per annum).

Hospital separation data for the years July 1990-June 2000 indicate that on average 14 people per annum are admitted to hospitals with agricultural chemical poisoning in NSW (a total of 141 cases over 10 years).

Zoonotic Diseases

Zoonotic diseases, in particular Q fever, remain a significant biological hazard for farm workers in NSW. For the period 1991 to 2003 there have been 3,042 notifications of Q Fever, 451 notifications of leptospirosis and only 19 notifications of brucellosis.

450 **Number of notifications** 400 350 300 250 200 150 100 50 ′∂∂_Q 199A 100p 100% ,09¹ '00gg 1000 300 301 30g Year Q Fever Leptospirosis Brucellosis

Figure 6 Notifications of Q fever, leptospirosis and brucellosis to the NSW Health Authority, 1991-2003

Source: www1/health.gov.au/cdil

Priority should be given to reduce the incidence of **Q fever** in agricultural workers in NSW.

References

- 1. Communicable Diseases Australia (2004). Website http://www.health.gov.au/cdil 16/7/2004.
- Farmsafe Australia (2002). Noise Injury Prevention Strategy for the Australian Farming Community. Farmsafe. Australia: Moree.
- 3. Franklin R, Mitchell R, Driscoll T, Fragar L (2000). *Farm related fatalities in Australia, 1989-1992*. ACAHS, NOHSC and RIRDC: Moree.
- 4. Franklin RC, Thomas P, Fragar LJ (2004). *The Health and Safety of New South Wales Farmers, Farm Families and Farm Workers*. ACAHS & RIRDC: Moree.
- National Occupational Health & Safety Commission: The NOHSC Online Statistics Interactive National Workers' Compensation Statistics Databases NOSI1 and NOSI2. Website www.nohsc.gov.au 28/7/2004.

Contacts

Australian Centre for Agricultural Health & Safety and National Farm Injury Data Centre

PO Box 256, Moree NSW 2400 Ph (02) 6752-8210/215

Rural Industries Research & Development Corporation www.rirdc.gov.au/farmhealth

PO Box 4776, Kingston, ACT 2604 Ph (02) 6272-3186 (Publications)

Farmsafe Australia

PO Box 256, Moree NSW 2400 Ph (02) 6752-8210

NSW Farmers Association

Level 10, 255 Elizabeth St Sydney NSW 2001 Ph (02) 8251-700

www.nswfarmers.org.au

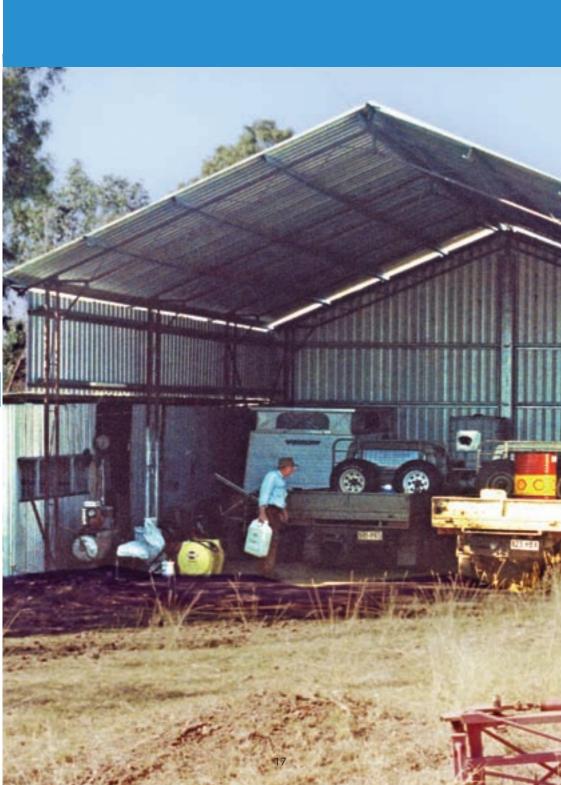
www.farmsafe.org.au

www.acahs.med.usyd.edu.au

www.acahs.med.usyd.edu.au/nfidc

Workcover Authority

Rural Safety Hotline 1800 300 377 Publications 1300 799 033 www.workcover.nsw.gov.au



Injury on Farms in New South Wales

- THE FACTS -

New South Wales is Australia's most populous state with one third of the nation's population (6,716,277 people as at December 2003). Approximately 1.3 percent of the state's population are employed in agriculture and services to agriculture. The three most common agricultural establishments are beef cattle farming, grain/sheep/beef cattle farming and sheep farming.

There is no single database that holds all the information necessary to define the nature and scale of health and safety problems in the farming community. This document summarises information presented in a more detailed report on *The Health and Safety of New South Wales Farmers, Farm Families and Farm Workers*.

This document has been produced to provide guidance to those agencies and individuals who are working to reduce risk associated with living and working on farms in NSW. The publication is also available electronically for use by educators and speakers in their efforts to raise awareness and promote farm safety, and for those whose role is the development of public and industry policy to improve safety.

Downloads can be obtained from:

www.rirdc.gov.au









