



An Australian Government Initiative



Traumatic Deaths in Australian Agriculture

The Facts – 2007

Facts and Figures on Farm Health and Safety Series #11



Australian Centre for Agricultural Health and Safety

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Traumatic Deaths in Australian Agriculture – The Facts

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Foreword

The information contained in this booklet summarises currently available data on deaths relating to agricultural production in Australia.

This document is a product of the National Farm Injury Data Centre which aims to improve the data and evidence base for agencies and individuals working to reduce risk associated with working and living on farms in Australia. The publication is available electronically for use by educators and speakers to raise awareness and promote farm safety, and for those whose role is the development of public and industry policy to improve safety in agriculture.

The information contained within the document will also be useful for:

- Defining key hazards associated with agricultural production in Australia
- Defining program needs for agricultural industries throughout Australia
- Development of effective health and safety programs that address key risks.

The project was funded by the research and development corporations contributing to the Joint Research Venture in Farm Health and Safety: Rural Industries Research and Development Corporation, Grains Research and Development Corporation, Australian Wool Innovation Limited, Cotton Research and Development Corporation, Sugar Research and Development Corporation and Meat and Livestock Australia. The Joint Venture is committed to improving the well-being and productivity of the agricultural industries through careful investment in research and development programs that assist industry to manage Occupational Health and Safety risks in a cost effective way.

This report, an addition to RIRDC's diverse range of over 1600 research publications, forms part of our Joint Research Venture in Farm Health and Safety R&D program, which focuses on the adoption of improved systems for Farm Health and Safety.

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Peter O'Brien

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Executive summary

What the report is about

This report summarises currently available data on deaths relating to agriculture production in Australia.

Who is the report targeted at?

This report has been produced to provide guidance to those agencies and individuals who are working to reduce high rates of serious injury and deaths on Australian farms. It is also targeted to educators and developers of public and industry policy to improve safety.

Background

High rates of serious injury and deaths on Australian farms are of concern to agricultural industry bodies, farmers, workers and farm enterprises and federal and state governments. 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.

Aims and objectives

While there are limitations to the various data sets used to source 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.

Methods used

Deaths data was extracted by the National Farm Injury Data Centre from the National Coroner's Information System, the Australian Workers Compensation Scheme and Australian Bureau of Statistics (ABS).

Results/Key findings

Tractors continue to be the most reported cause of un-intentional farm related fatalities, remaining significantly higher than the second most frequent cause of death.

Farm vehicles continue to remain prominent causes of death and injury. However, the new study sees the emergence of **ATVs** as a key cause of fatalities. During the 1989–92 study, there were only four recorded ATV fatalities. This figure has significantly increased to 51 over the 2000–04 period and reflects the increasing use of ATVs on farms in Australia.

While **dam drowning** remains important, the number of **horse-related deaths** have declined.

Implications for relevant stakeholders

This document summarises all current fatalities data available to the National Farm Injury Data Centre. It has been produced to provide guidance to agencies and individuals working to reduce risk associated with living and working on farms in Australia. The publication is available electronically for use by educators and those whose role is the development of public and industry policy to improve safety.

Recommendations

It is recommended that this document be used to provide guidance to agencies and individuals working to reduce serious injuries and deaths on Australian farms.



1. Introduction

Agriculture and horticulture enterprises produce commodities of more than \$30 billion value per annum on around 130,000 enterprises spread across all states of Australia. However, that production is associated with a high cost in terms of human injury to people who work, live on and visit farms. High rates of serious injury and deaths on Australian farms are of concern to agricultural industry bodies, farmers, workers and farm enterprises and federal and state governments.

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 aims to update information presented in the report *Farm related fatalities in Australia, 1989 to 1992* (Franklin R, et al 2000) by collating information on all traumatic deaths known to have occurred on Australian farms for the period 2001 to 2004. It represents deaths occurring to workers, managers, family members, children and farm visitors. The data was sourced from the National Coroner's Information System, the Australian Workers Compensation Scheme and Australian Bureau of Statistics (ABS).

While there are limitations to the various data sets used to source 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 summarises all current fatalities data available to the National Farm Injury Data Centre. It has been produced to provide guidance to agencies and individuals working to reduce risk associated with living and working on farms in Australia. The publication is available electronically for use by educators and speakers and those whose role is the development of public and industry policy to improve safety.

2. The Australian agriculture industries

Injury deaths are associated with farms that undertake a wide range of activities in the course of producing many different commodities. Each production system can be associated with its own set of hazards to health and safety. Table 1 shows the number of agricultural establishments according to the commodity produced for the years 2002 to 2004.

The Australian agriculture sector has experienced continual restructuring over many years as a result of changing technical, economic and social conditions. The number of farms has been declining over time as farm size increases to achieve economies of scale.

Figure 1: The decline in number of agricultural establishments with AVAO <\$5000 in Australia 1996/97–2003/4



Source: ABS, *Agricultural Commodities, Australia, 2002–03* (7121.0)

Table 1: Number of agricultural establishments with AVAO <\$5000 Australia 2002–2004

	2003	2004	2005
Horticulture and fruit growing			
Plant nurseries	1 974	1 648	1 884
Cut flower and flower seed growing	833	685	778
Vegetable growing	4 391	4 297	4 090
Grape growing	6 377	6 535	6 385
Apple and pear growing	891	971	912
Stone fruit growing	1 309	1 244	1 224
Kiwi fruit growing	48	33	50
Fruit growing n.e.c.	5 390	4 875	4 763
Grain, sheep and beef cattle farming			
Grain growing	11 960	14 614	12 719
Grain-sheep/beef cattle farming	17 104	16 308	17 195
Sheep-beef cattle farming	10 097	8 541	8 309
Sheep farming	13 250	12 018	12 956
Beef cattle farming	36 208	35 501	35 979
Dairy cattle farming			
Dairy cattle farming	11 003	10 359	9 881
Poultry farming			
Poultry farming (meat)	735	781	666
Poultry farming (eggs)	457	474	423
Other livestock farming			
Pig farming	1 009	870	882
Horse farming		1757	1819
Livestock farming n.e.c.	1 637	807	593
Other crop growing			
Sugar cane growing	4 762	4 560	4 563
Cotton growing	520	566	620
Crop and plant growing n.e.c.	1 655	1 710	1 721
Total Agricultural Industries	131 609	129 154	128 515

Source: ABA Agricultural Commodities, Australia, 2003–04 (7121.0) AVAO= Annual Value of Agricultural Output

Although the number of farms has declined, the volume of production has been increasing over the last three decades, however the prolonged drought between 2002 and 2007 has seen a recent reduction in some commodity outputs. Between 1996 and 2004 there was an upward trend in the total value of Australia's agricultural production. Figure 2 demonstrates this trend.

Figure 2: Value of agricultural production (\$b), Australia 1996/97–2003/04



Source: ABS, *Agricultural Commodities, Australia, 2002–03* (7121.0).

The number of people employed in agriculture and services to agriculture (Table 2) has also declined over the last five years, as a result of ongoing economic conditions and the major drought that affected the large proportion of Australia's agriculture area.

The decline in number of persons employed has bearing on exposure to injury risk. For some industries a reduction in numbers of workers may reflect increased mechanisation, and hence reduced overall exposure to risk. On the other hand, if economic conditions have put pressure on farms to reduce the labour-force, it may be assumed that those remaining in the industry are working longer hours, putting themselves at increased risk of injury.

It should be noted that the employed workforce is not the only population at risk of farm injury. As Australian farms are predominantly family-owned and operated businesses, family members and visitors to farms are also at risk of death and serious injury on farms.

Table 2: Persons employed* in agriculture and services to agriculture, Australia 2000–2006

Year	Males ('000)	Females ('000)	Total Persons ('000)
2000	284.8	130.8	415.6
2001	269.0	132.4	401.4
2002	278.6	133.6	412.2
2003	239.8	110.0	349.8
2004	236.5	109.2	345.7
2005	227.0	109.7	336.7
2006	224.1	106.8	330.9

Source: *Labour Force, Australia* (6291.0.55.001)

Note * Employed persons include persons who worked without pay for at least 1 hour per week in a family business or on a farm. Persons working in another industry and in agriculture are classified to the industry of predominant activity.

3. Deaths of farmers and farm workers 1990 to 1998

The Australian Bureau of Statistics (ABS) compiles statistics for deaths in Australia. These statistics have been compiled from data made available by the Registrar of Births, Deaths and Marriages in each state or territory. ABS Mortality data has been extracted through the NSW Department of Health HOIST system, for all deaths where occupation at time of death was *Farmer* or *Farm Manager* (1400) and *Agricultural Labourers* or *Related Worker* (8200). Table 3 summarises non-intentional injury deaths of farmers and agricultural workers for each of the years 1990 to 1998. *It should be noted that these deaths include deaths that occurred on roads and other settings including farms.*

More than 40 percent of non-intentional injury deaths were road traffic accident deaths. Falls accounted for 16.7 percent of deaths, and machinery, including tractors, for 12.7 percent of deaths.

Table 3: Cause of non-intentional injury death by year for farm managers and workers, Australia, who died between 1990–1998 (ICD9-CM)

E-codes	Descriptions	90	91	92	93	94	95	96	97	98	Total	%
E800–807	Railway Accidents	0	*	0	*	*	*	0	*	*	6	0.3
E810–819	Motor Vehicle Traffic Accidents	95	93	74	110	81	77	85	83	79	777	41.3
E812	<i>Collision with motor vehicle</i>	37	32	27	42	30	37	28	24	25	282	15.0
E813	<i>Collision with other vehicle</i>	0	0	*	*	*	*	3	0	0	9	0.1
E814	<i>Collision with pedestrian</i>	4	11	14	10	8	5	10	12	11	85	4.5
E815	<i>Collision on the highway</i>	25	20	16	29	26	20	21	26	20	203	10.8
E816+E818	<i>Other non-collision accident</i>	27	27	15	24	15	12	17	17	19	173	9.2
E820–825	Motor Vehicle Non traffic Accidents	8	11	10	9	8	5	6	11	4	72	3.8
E826–829	Other Road Vehicle Accidents	4	4	3	*	8	4	*	*	4	32	1.7
E828	<i>Animal being ridden</i>	3	4	*	*	8	4	*	*	4	29	1.5
E830–838	Water Transport Accidents	2	3	*	4	4	3	*	4	*	25	1.3
E840–845	Air and Space Transport Accidents	8	6	5	4	4	3	4	6	5	45	2.4
E850–858	Accidental Poisoning by Drugs, Medicinal Substances, Biologicals	3	3	0	4	*	*	*	3	6	25	1.1
E860–869	Accidental Poisoning by Other Solids, Liquids, Gases, Vapors	*	*	*	3	4	*	*	*	4	20	1.1
E880–888	Accidental Falls	44	35	36	33	50	51	40	28	36	353	16.7
E890–899	Accidents Caused by Fires and Flames	9	10	4	9	4	7	2	7	7	59	3.1
E900–909	Accidents due to Natural and Environmental Factors	6	7	6	*	6	7	6	6	*	47	2.5
E910–915	Accidents Caused by Submersion, Suffocation, and Foreign Bodies	18	11	10	16	13	8	14	13	9	112	5.9
E916–928	Other Accidents	33	38	41	26	37	32	30	29	44	310	16.5
E919	<i>Accidents caused by machinery</i>	9	19	17	11	19	12	15	10	18	130	6.9
E919.0	<i>Agricultural machines</i>	8	17	13	10	14	11	12	10	14	109	5.8
E922	<i>Firearm</i>	4	5	6	1	3	3	5	3	6	36	1.9
E925	<i>Electric current</i>	4	*	7	3	5	3	*	5	*	31	1.6
	Total	231	224	192	222	222	201	194	195	202	1883	100.0

* = small number = 1 or 2

4. Deaths of farmers and farm workers 1999–2002

From 1999, the Cause of Death coding system used to code Australian deaths changed from ICD9-CM to ICD10-AM. Further difficulty in extracting deaths data for Australian farmers is associated with the fact that from 2002 the ABS was unable to provide data by occupation, which prevents analysis of deaths associated with the agriculture sector from that time.

The following table summarises causes of non-intentional injury deaths of farmers, farm managers and agricultural workers for the years 1999 to 2002, by gender.

Table 4: Agent of Fatality for farmers/farm managers and agricultural labourers/related workers, Australia 1999–2002 (ICD10-AM)

ICD9 E-Code	Description	Male	Female	Total	%
	Transport Accidents				
V01–09	Pedestrians	43	*	44	5.5
V20–29	Motorcycle	33	*	34	4.3
V40–49	Car	199	29	228	28.5
V50–69	Ute/Van/Truck	15	0	15	1.9
V80	Animal Ridden	4	*	5	0.6
V84	Agricultural Vehicle (Tractor)	33	0	33	4.1
V86	All Terrain Vehicle (ATV)	18	*	20	2.5
	Other Transport	18	*	20	2.5
V90–94	Water Transport	5	*	6	0.8
V95–97	Air Transport	11	0	11	1.4
W00–19	Falls	57	6	63	7.9
W20–49	Inanimate Mechanical Forces				
W30	Agricultural Machinery	13	0	13	1.6
W31	Other Machinery	*	0	*	0.4
W32–34	Firearms	15	*	16	2.0
	Other	29	0	29	3.6
W50–64	Animate Mechanical Forces				
W55	Injured by animal	*	0	*	0.3
X20–29	Venomous Animal/Plant	*	0	*	0.4
	Other	*	0	*	0.4

Table 4: Continued...

ICD9 E-Code	Description	Male	Female	Total	%
W65-97	Drowning	25	0	25	3.1
X00-09	Fire, Smoke and Flame	21	*	23	2.9
X30-39	Forces of Nature	*	*	4	0.5
X40-49	Poisoning	35	*	37	4.6
X59	Unspecified	110	23	133	16.6
	Other injury	29	0	29	3.6
	TOTAL	727	72	799	100.0

* = small number = 1, 2 or 3.

Source: NFIDC ABS Mortality Data (HOIST NSW Health)

Motor vehicle accidents were the leading cause of injury deaths for farmers and farm employees for the four years. It is assumed that the majority of these deaths occurred on roads and highways, although some may have occurred on-farm.

Tractors and machinery were associated with 50 of around 800 deaths over the four years. All-terrain vehicles were associated with 20 deaths for these occupational groups.

Table 5 displays cause of all non-intentional injury deaths of male and female farmers and farm workers by year of death for the years 1999 to 2002.



Table 5: Causes of injury deaths of those whose occupation was farm manager or agricultural worker, Australia 1999–2002 (ICD10-AM)

ICD9 E-Code	Description	1999	2000	2001	2002	Total
V01–97	Transport Accidents					
V01–09	Pedestrians	8	14	15	7	44
V20–29	Motorcycle	9	4	11	10	34
V40–49	Car	50	57	54	68	229
V50–69	Ute/Van/Truck	3	2	8	2	15
V80	Animal Ridden	1	1	2	1	5
V84	Agricultural Vehicle (Tractor)	10	7	10	6	33
V86	All Terrain Vehicle (ATV)	5	2	5	8	20
	Other Land Transport	11	2	3	4	20
V90–94	Water Transport	0	3	1	2	6
V95–97	Air Transport	2	3	5	1	11
W00–19	Falls	15	10	25	13	63
W20–49	Inanimate Mechanical Forces					
W30	Agricultural Machinery	3	5	2	3	13
W31	Other Machinery	0	1	1	2	4
W32–34	Firearms	6	6	0	4	16
	Other	7	6	5	7	25
W50–64	Animate Mechanical Forces					
W55	Injured by animal	3	0	2	0	5
X20–29	Venomous Animal/Plant	1	0	1	1	3
	Other					
W65–97	Drowning	5	4	11	5	25
X00–09	Fire, Smoke and Flame	4	5	8	6	23
X30–39	Forces of Nature	1	2	0	1	4
X40–49	Poisoning	16	9	9	4	38
X58–59	Unspecified	28	38	26	42	134
	Other injury	4	8	6	11	29
	TOTAL	192	189	210	208	799

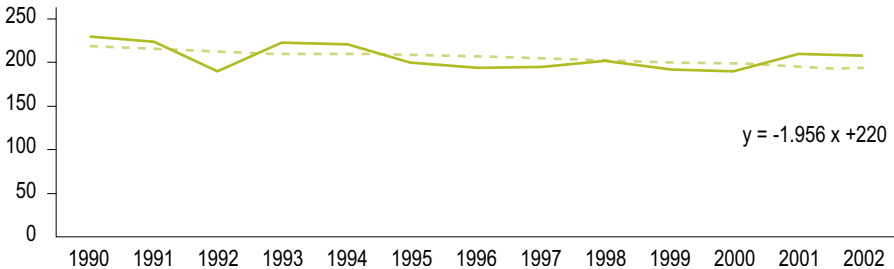
Source: NFIDC ABS Deaths (HOIST NSW Health)

Falls were the leading cause of non-vehicle deaths, with between 20 and 25 such deaths occurring annually.

5. Trends for farmer and farm worker deaths 1998 to 2002

Considering ABS collated Cause of Deaths by Occupation data, there has been an apparent decline in all non-intentional injury deaths of between 1990 and 2002.

Figure 3: Total non-intentional injury deaths farmers and agricultural workers 1990 to 2002, with trendline.



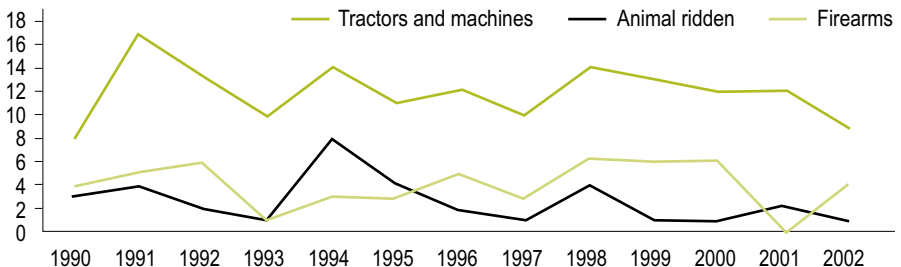
Source: NFIDC ABS Mortality Data (HOIST NSW Health)

While it is not possible to define declines or increases for all causes of deaths, the following indicates the trends for three causes of death:

- Deaths caused by tractors, agricultural and other machinery
- Deaths due to animals ridden
- Deaths due to firearms (non-intentional)

Deaths due to these groups show no significant downward trend over the 13 years.

Figure 4: Non-intentional injury deaths farmers and agricultural workers due to tractors and machines, animals ridden, firearms, 1990 to 2002, with trendline.



Source: NFIDC ABS Mortality Data (HOIST NSW Health)

6. On-farm injury deaths

Farm-Related Fatalities in Australia, 1989–1992

The 1989–92 Fatalities Study was a component of a large study of all work-related traumatic deaths in Australia. The research reviewed original coronial records and collected, coded and analysed the details surrounding each case. The study was extremely labour intensive and due to its complexity, not one that can be easily replicated. Table 6 indicates the number of on-farm non-intentional injury deaths reported for the years 1989 to 1992.

Table 6: Number of on-farm injury deaths on Australian farms 1989–1992

Year	No. work-related deaths	No. bystander/ other farm injury deaths	Total deaths incl. unknown work status	No. agric. establishments*	Rate farm deaths per 10000 agric. establishments
1989	89	53	147	155 000 E	9.5
1999	94	49	149	155 000 E	9.6
1991	97	64	163	154 380	10.6
1992	93	48	148	151 966	9.7

*Agricultural establishments producing an EVAO > \$5000 pa E = estimates as changed definitions for value of production
Source: Franklin et al, 2000*

NCIS on-farm deaths data 2001–2004

The National Farm Injury Data Centre has used the internet based National Coroners Information System (NCIS) to extract farm related fatalities for the period 2001–2004. The method of extraction was laborious, involving several data sweeps, and is not without its limitations.

The first sweep involved searching for all non intentional cause of deaths where location of incident was specified as on farm. Subsequent sweeps involved searching using key words, based on the Farm Injury Optimal Data Set, and also occupation fields. Finally, every non intentional death on NCIS during 2001–04, had its key fields individually scanned, to ensure no cases were overlooked.

Whilst the extraction procedure was comprehensive, it is limited by the information available on the system – as it is possible to only search through cases that have been closed by the Coroner. As at June 30, 2005, there were 92,559 cases on NCIS. Of these, only 72,667 (78 percent) were closed.

NOTE: It is essential not to make direct comparisons with the 1989–92 study, but rather look at emerging trends. It is also expected that these figures, particularly during 2004, will rise as more closed cases appear on NCIS.

Cases were re-coded using the Farm Injury Optimum Dataset (Fragar et al, 2000).

Of the total number of deaths, for 2001 to 2004 59.8% were classified as work-related (Table 7). Between 1989 and 1992 60.7 percent of on-farm injury deaths were considered to be work-related.

Table 7: Number of non-intentional on-farm injury deaths by year and work status, Australia 2001–2004

Year	No. work-related deaths	No. bystander injury deaths	Total deaths incl. other and unknown work status	No. agric. establishments*	Rate farm deaths per 10000 agric. establishments
2001	70	16	107	135500 E	7.9E
2002	63	7	101	133868	7.5
2003	52	7	96	131609	7.3
2004#	43	10	77	129154	5.9#
TOTAL	228	40	381		

* Agricultural establishments producing an EVAO > \$5000 pa E = estimates as changed definitions for value of production
 # Most likely under-enumerated, with further cases to be added.

The number of deaths has fluctuated over time in the different states with NSW and Queensland averaging over 25 fatalities per year, and Victoria averaging 21 fatalities per year. Table 8 indicates the number of deaths by state. Using the number of deaths per 10000 farms it would appear that there is a wide variation in rates between states, with Tasmania experiencing a higher rate than other states for the study period.

Table 8: Non-intentional injury deaths by state, Australia 2001–2004

	2001	2002	2003	2004	TOTAL	Number farms 2002	Deaths per 10000 farms pa
New South Wales	38	25	29	14	106	41 092	6.4
Northern Territory	3	4	3	2	12	395	7.6
Queensland	26	24	30	19	99	27 900	8.9
South Australia	3	7	6	6	22	14 654	3.8
Tasmania	4	5	10	11	30	3 953	19.0
Victoria	28	24	14	19	85	33 282	6.4
Western Australia	6	7	5	9	27	12 499	5.4
TOTAL	108	96	97	80	381	133 775	7.1

7. On-farm deaths 2001–2004 – age and gender

Of the total on-farm deaths recorded in the coronial system for the period 2001–2004, 85% occurred to males and 15% to females. Close to 18 percent of all deaths occurred in the under 15 age group and 41percent occurred to people aged over 55 years.

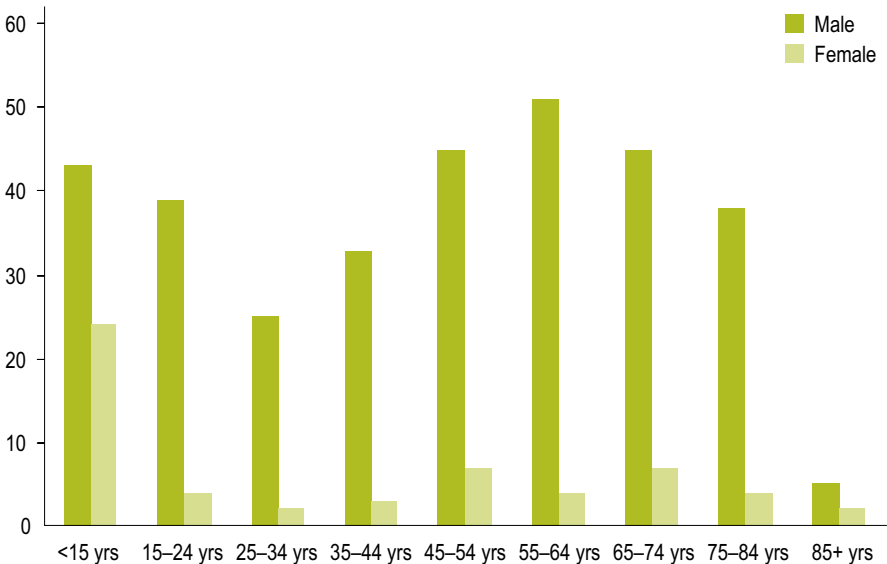
Table 9: Number of on-farm deaths by age and gender. Australia 2001–2004

	Male (No.)	Male Percent	Female (No.)	Female Percent	Total	Percent
< 15 yrs	43	13.3	24	42.1	67	17.6
15–24 yrs	39	12.0	4	7.0	43	11.3
25–34 yrs	25	7.7	2	3.5	27	7.1
35–44 yrs	33	10.2	3	5.3	36	9.4
45–54 yrs	45	13.9	7	12.3	52	13.6
55–64 yrs	51	15.7	4	7.0	55	14.4
65–74	45	13.9	7	12.3	52	13.6
75–84	38	11.7	4	7.0	42	11.0
84+	5	1.5	2	3.5	7	1.8
TOTAL	324	100	57	100	381	100

Source: NCIS database

Figure 5 illustrates the age/gender distribution of reported deaths graphically.

Figure 5: Number of on-farm deaths by age. Australia 2001–2004



Source: NCIS database

8. Agent of on-farm deaths of adults 2001–2004

The agents associated with on-farm non-intentional injury deaths of persons aged 15 years and over are shown in Table 10. The leading causes of deaths for this group from 2001 to 2004 are:

- Tractors 73
- ATVs (four wheel motorbikes) 39
- Farm utilities and cars 27
- Two wheel motorbikes 13
- Horse related 11

**Table 10: Agent of on non-intentional injury death of persons aged 15 years and over.
Australia 2001–2004**

Category	Agent	No.	%
Farm Vehicle	Truck	9	2.9
	Utility	17	5.4
	Car	10	3.2
	Motorcycle 2 Wheel	13	4.1
	Motorcycle 4 Wheel	39	12.4
	Aircraft	10	3.2
	Gyrocopter	1	0.3
	Helicopter	3	1.0
	Farm Vehicle other NEC	5	1.6
	Unknown	1	0.3
	Subtotal		108
Mobile Farm Machinery / Plant	Tractor	73	23.2
	Auger	4	1.3
	Power Take Off (PTO)	2	0.6
	Cherry Picker	1	0.3
	Earth Moving Equipment	5	1.6
	Fertiliser Spreader	1	0.3
	Forklift	2	0.6
	Grader	1	0.3
	Harvesting machine	1	0.3
	Mobile Sheep Crush	1	0.3
	Ride on Mower	1	0.3
	Seeder/ planter	1	0.3
	Slasher	1	0.3
	Tillage/ cultivating equipment	2	0.6
	Mobile Farm Machinery/ Plant other NEC	1	0.3
	Subtotal		97
Fixed Plant / Equipment	Dairy Plant	1	0.3
	Banana Bagging Plant	1	0.3

Table 10: Continued...

Category	Agent	No.	%
	Generator	1	0.3
	Pump	4	1.3
	Subtotal	7	2.2
Workshop Equipment	Angle Grinder	3	1.0
	Oxyacetylene welder	1	0.3
	Power saw incl. circular saw	1	0.3
	Subtotal	5	1.6
Other	Firearms	7	2.2
	Locomotive	1	0.3
	Safe	1	0.3
	Subtotal	9	2.9
Materials	Hay Bales other	2	0.6
	Materials other NEC	1	0.3
	Tyres	2	0.6
	Subtotal	5	1.6
Farm Structure	Channel/ water crossing	2	0.6
	Creek/ River	3	1.0
	Dam	4	1.3
	Fence	3	1.0
	Fuel store	1	0.3
	House	1	0.3
	House Yard	1	0.3
	Lane/ road/ track/ driveway	2	0.6
	Other Shed	4	1.3
	Pond		0.0
	Powerlines	8	2.5
	Sheep/Cattle Dip		0.0
	Swimming Pool		0.0
	Tank	3	1.0
	Water Trough		0.0

Table 10: Continued...

Category	Agent	No.	%
	Windmill	5	1.6
	Subtotal	37	11.8
Animal	Cattle	6	1.9
	Horse	11	3.5
	Insect	2	0.6
	Mammal (not horse or dog)	1	0.3
	Sheep	2	0.6
	Subtotal	22	7.0
Farm Chemicals	Pesticides – herbicide	1	0.3
	Pesticides – insecticide		
	Subtotal	1	0.3
Working Environment	Fire / Smoke / Flame	10	3.2
	Lightening	1	0.3
	Tree, Stick branch	7	2.2
	Trees being felled	5	1.6
	Subtotal	23	7.3
TOTAL		314	100

Source: NCIS Data

9. On-farm deaths of children

Table 11 shows the number of injury deaths of children under 15 years of age on Australian farms according to the agent of injury. The leading causes of unintentional deaths on-farm are:

- Dam drownings 15
- ATVs (four wheel motorbikes) 12
- Farm vehicles (utilities, cars, other) 9
- Fire/smoke/flame 6

Table 11: On-farm injury deaths of children by agent of injury, Australia 2001–2004

Category	Agent	No.	%
Farm Vehicle	Utility	5	7.5
	Car	2	3.0
	Motorcycle 2 Wheel	3	4.5
	Motorcycle 4 Wheel	12	17.9
	Farm Vehicle other NEC	2	3.0
	Subtotal	24	35.8
Mobile Farm Machinery/Plant	Tractor	2	3.0
	Mobile Farm Machinery/ Plant other NEC	2	3.0
	Subtotal	4	6.0
Fixed Plant/Equipment	Dairy Plant	1	1.5
	Subtotal	1	1.5
Farm Structure	Channel/ water crossing	2	3.0
	Creek/ River	1	1.5
	Dam	15	22.4
	Pond	1	1.5
	Sheep/Cattle Dip	1	1.5
	Swimming Pool	3	4.5
	Water Trough	1	1.5
	Subtotal	24	35.8
Animal	Cattle	1	1.5
	Horse	3	4.5
	Subtotal	4	6.0
Farm Chemicals	Pesticides – insecticide	1	1.5
	Subtotal	1	1.5
Working Environment	Fire / Smoke / Flame	6	9.0
	Tree, Stick branch	2	3.0
	Trees being felled	1	1.5
	Subtotal	9	13.4
TOTAL		68	100

Source: NCIS Data

Of the 67 deaths occurring to children aged under 15 years of age, 16 (23 percent) occurred to children who were visitors to the farm (see Table 12).

The prime agents associated with deaths of children living on farms were bodies of water (36 percent), ATVs (11 percent) and vehicles (11 percent).

The prime agents associated with deaths of children visiting farms were ATVs (37 percent), bodies of water (25 percent) and vehicles (19 percent).

Fifty percent of ATV deaths occurring to children on farms occurred to children who were visiting the farm at the time.

Table 12: On-farm deaths of children by agent of injury and residential status, Australia 2001–2004

Agent of injury	Resident	Visitor	Unknown	Total
Water body	15	6	2	23
ATV	5	6	1	12
Vehicle	5	3	1	9
Motorcycle 2W	3	0	0	3
Machinery	3	0	0	3
Horse	2	0	1	3
Fire/smoke	4	2	0	6
Other	6	0	0	6
TOTAL	43	16	8	67

Source: NCIS Data

Drowning and ATVs are prime risks for children visiting farms.

10. On-farm deaths of older people

Table 13 indicates the number of on-farm deaths of people aged 55 years and over according to agent of death. The leading causes of unintentional deaths on-farm were tractors (47 fatalities), ATVs (24 fatalities) and farm vehicles (16 fatalities) followed by cattle (5 fatalities).

Table 13: On-farm deaths of people aged > 55 years by agent of injury, Australia 2001–2004

Category	Agent	No.	%
Farm Vehicle	Truck	6	3.8
	Utility	8	5.1
	Car	6	3.8
	Motorcycle 2 Wheel	1	0.6
	Motorcycle 4 Wheel	24	15.4
	Aircraft	3	1.9
	Helicopter	1	0.6
	Farm Vehicle other NEC	2	1.3
	Subtotal	51	32.7
Mobile Farm Machinery / Plant	Tractor	47	30.1
	Auger	2	1.3
	Cherry Picker	1	0.6
	Grader	1	0.6
	Harvesting machine	1	0.6
	Mobile Sheep Crush	1	0.6
	Ride on Mower	1	0.6
	Tillage/ cultivating equipment	1	0.6
	Subtotal	55	35.3
Fixed Plant / Equipment	Generator	1	0.6
	Pump	1	0.6
	Subtotal	2	1.3
Workshop Equipment	Angle Grinder	2	1.3
	Oxyacetylene welder	1	0.6
	Subtotal	3	1.9
Other	Firearms	1	0.6
	Locomotive	1	0.6
	Subtotal	2	1.3
Materials	Hay Bales other	1	0.6
	Materials other NEC	1	0.6

Table 13: Continued...

Category	Agent	No.	%
	Tyres	1	0.6
	Subtotal	3	1.9
Farm Structure	Creek/ River	3	1.9
	Dam	2	1.3
	Fence	2	1.3
	Fuel store	1	0.6
	House	1	0.6
	House Yard	1	0.6
	Lane/ road/ track/ driveway	1	0.6
	Other Shed	2	1.3
	Powerlines	1	0.6
	Tank	2	1.3
	Windmill	2	1.3
	Subtotal	18	11.5
Animal	Cattle	5	3.2
	Horse	2	1.3
	Insect	1	0.6
	Mammal (not horse or dog)	1	0.6
	Sheep	2	1.3
	Subtotal	11	7.1
Farm Chemicals	Pesticides – herbicide	1	0.6
	Subtotal	1	0.6
Working Environment	Fire / Smoke / Flame	5	3.2
	Tree, Stick branch	2	1.3
	Trees being felled	3	1.9
	Subtotal	10	6.4
TOTAL		156	100

Source: NCIS Data

Falls

Of the 156 deaths recorded for persons aged 55 years and over, 12 were associated with falls. These represented 66.7 percent of all fall injuries causing deaths on-farm.

All-terrain vehicles

Twenty four (24) of 51 ATV deaths on farms were of people aged 55 years or older.

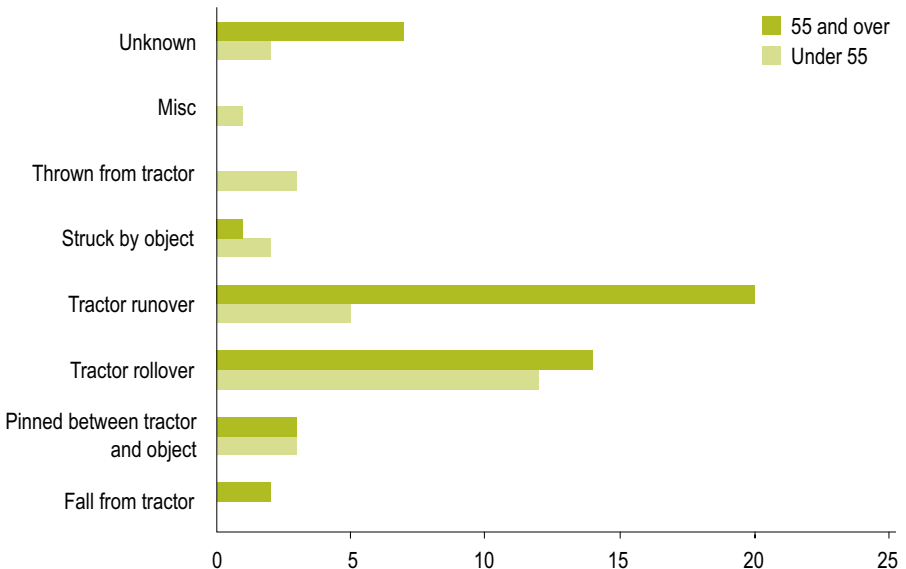
Work with animals

Five (5) of 7 cattle related injury deaths were of older people.

Tractors

Forty Seven (47) of the 75 tractor deaths were of older people. Figure 6 indicates the number of tractor deaths by age group of deceased and mechanism of tractor event.

Figure 6: Number of tractor deaths by age group and mechanism of injury event. 2001–2004



11. Workers' compensation data – deaths of agricultural workers

Worker's compensation insurance claims statistics relate only to persons employed as salaried or wage earning employees. It does not include the majority of the agricultural workforce that is self-employed.

Across Australia there was an average of 15.5 claims for fatalities per year in the agriculture industries for the 2001–2004 period (Table 14). Of the total 62 fatal claims 6 were associated with non traumatic cause of death (Table 15). The majority of fatal claims related to workers in the grain/sheep/beef cattle farming industries (Table 16).

Table 14: Number of fatal and non-fatal injury workers' compensation claims in agriculture industries by year, Australia 2001–2004

Year	Fatal	Non-fatal*	Total	Claims fatality rate. Fatalities per 1000 claims)
2001	18	4388	4406	4.1
2002	12	4337	4349	2.8
2003	16	4096	4112	3.9
2004	16	3751	3767	4.3
Total	62	16 572	16 634	3.7

Source: NOSI Database. www.ascg.gov.au * =Where duration of absence: 1 week or more

Table 15 Number of fatal workers' compensation claims in agriculture industries by year and nature of injury, Australia 2001–2005p

Nature of injury	2001	2002	2003	2004	2005p	Total
Injury and poisoning	18	11	14	13	10	66
Infectious and parasitic diseases	0	0	1	1	0	2
Diseases of the respiratory system	0	1	0	1	0	2
Diseases of the circulatory system	0	0	1	1	0	2
Total	18	12	16	16	10	72

2005p = preliminary 2005 data.

Table 16: Number of fatal and non-fatal injury workers compensation claims in agriculture industries by industry, Australia 2001–2005p

Agriculture industry	Fatal	Non-fatal*	Total	Case fatality rate. (fatalities per 1000 claims)
Horticulture & Fruit Growing	17	6 884	5 537	2.5
Grain, Sheep & Beef Cattle Farming	34	8 247	6 780	4.1
Dairy Cattle Farming	5	1 153	966	4.3
Poultry Farming	3	1 131	947	2.6
Other Livestock Farming	5	1 575	1 282	3.2
Other Crop Growing	8	1 122	896	7.1
All Agriculture	72	20 112	16 408	3.6
Services to Agriculture	27	3 384	3 411	7.9
All Industry	1 378	717 416	718 794	1.9

Source: NOSI Database. www.ascg.gov.au * = Where duration of absence: 1 week or more

Tractors, vehicles and motorcycles (including ATVs) remain the prime agents associated with fatal workers' compensation cases (Table 17).

Table 17: Number of fatal workers compensation claims in agriculture industries by agency of injury, Australia 2001–2005p

Breakdown Agency	2001	2002	2003	2004	2005p	Total
Machinery and (mainly) fixed plant	0	0	1	1		2
Mobile plant and transport	10	4	8	8		37
Self-propelled & semi portable plant	0	1	0	0		1
Other mobile plant	3	1	1	4		9
<i>Tractors, agricultural or otherwise</i>	2	1	1	3	0	7
<i>Other mobile plant</i>	1	0	0	1	0	2
Road transport	7	3	7	4	4	25
<i>Trucks, semi-trailers, lorries</i>	2	0	3	1	4	10
<i>Cars, stationwagons, vans, utilities</i>	5	1	2	1	0	9
<i>Motorcycles & sidecars, scooters, trailbikes</i>	0	2	2	2		6
Rail transport	0	0	1	0	0	1
Air transport	1	0	0	0	0	1
Powered equipment, tools & appliances	1	0	0	1	2	4
Non-powered hand tools, appliances & equipment	2	0	1	0	2	5
Materials & substances	0	2	1	1	1	5

Table 17: Continued...

Breakdown Agency	2001	2002	2003	2004	2005p	Total
Environmental agencies	1	0	1	2		4
Animal, human & biological agencies	0	1	2	0		3
Other & unspecified agencies	3	4	1	3	1	12
Not stated	0	0	0	0		0
Total	18	12	16	16	10	72

Source: NOSI Database. www.ascg.gov.au

The workers' compensation claims data confirms the importance of mobile plant and vehicles as hazards of high risk on Australian farms.

The range of farm structures that are associated with on-farm injury for all persons on farms are not represented in the workers' compensation data to the same extent.

Table 18 indicates the age of workers who are the subject of compensation claims.

Table 18: Number of fatal and non-fatal injury workers' compensation claims * in agriculture industries by year, and age Australia 2001–2004

Age	2001			2002			2003			2004		
	Fatal	Non-fatal	Total	Fatal	Non-fatal	Total	Fatal	Non-fatal	Total	Fatal	Non-fatal	Total
< 20	4	421	425	0	388	388	3	377	380	3	309	312
20–24	1	630	631	1	592	593	1	552	553	1	501	502
25–29	0	588	588	1	506	507	0	491	491	1	424	425
30–34	0	512	512	1	542	543	1	473	474	0	399	399
35–39	1	547	548	0	513	513	1	482	483	1	395	396
40–44	1	501	502	0	503	503	1	469	470	0	435	435
45–49	2	408	410	0	415	415	0	400	400	1	364	365
50–54	3	427	430	1	370	371	2	325	327	3	299	302
55–59	2	288	290	3	263	266	4	240	244	0	257	257
60–64	1	144	145	1	139	140	1	139	140	0	131	131
65+	0	59	59	0	57	57	1	43	44	4	35	39
Total	15	4 525	4 540	8	4 288	4 296	15	3 991	4 006	14	3 555	3 569

Fatality rates on a per claims basis indicates higher death rates to young workers and older workers in the agricultural industries.

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