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The Health and Safety of New South Wales Farmers, Farm Families and Farm Workers

by
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Foreword

This report of farm injuries in New South Wales is the most comprehensive compendium of information about the farming community ever produced for NSW.

The report provides a reliable baseline from which future farm health and safety programs will be established and monitored and will be useful for:

- 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.

The report also identifies deficiencies in the current information about occupational health and safety (OHS risks) in NSW and has provided direction for further work in identifying, quantifying and reporting on the OHS risks in agriculture.

The profile is a product of the National Farm Injury Data Collection project, funded by the Research and Development Corporations contributing to the Farm Health and Safety Joint Venture.

The project was funded by the research and development corporations contributing to the Farm Health and Safety Joint Venture - 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, Dairy Australia 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. In addition there was considerable industry support including NSW Health.

This report, a new addition to RIRDC's diverse range of over 1,200 research publications, forms part of our Human Capital, Communications and Information Systems R&D program, which aims to enhance human capital and facilitate innovation in rural industries and communities.

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The Report was produced to inform Farmsafe NSW about the Health and Safety risks in their state.

The authors would like to acknowledge the assistance of the NSW Health Department, WorkCover NSW, the Australian Bureau of Statistics, and all other individuals and organizations which provided advice and guidance developing this profile.

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Executive Summary

This is an overview report of the health and safety of New South Wales (NSW) farmers, farm workers, and farm families. The report presents the most current information about the farming community in NSW that was available at the time of publication.

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 report like other state profiles gathers information from various sources such as the Australian Bureau of Statistics, NSW Coroner, NSW Health Department, Commonwealth Health Department, and field day screening.

This study is based on a series of reports produced by the National Farm Injury Data Centre and complimented by the report on the “*Health and Safety of Australia’s Farming Community*” (Fragar and Franklin, 2000).

There are 41,951 farming establishments in 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.

Between 1990 and 2000 there were 1,094 injury related deaths of farmers and farm workers in NSW of which 94.5% were males. Agricultural machinery related deaths were the most common Farmsafe Australia (FSA) selected E-code deaths, and motor vehicle accidents were the most common E-code grouped deaths. Based on work examining coronial files of agricultural related deaths between 1989 and 1992, the most common agents of fatal injury were tractors, aircraft, trucks, and dams.

There were 26,972 lost-time injury and disease workers compensation claims between 1 July 1992 and 30 June 2001 in NSW. The compensation cost of these claims was over \$315 million (~\$35 million per annum) or on average \$11,687 per claim. The average length of time off work was 7.35 weeks for an injury, which translates to a total of 3,345 years of work missed due to agricultural injuries from 1992-2001.

The section on workers’ compensation injuries examines claims for the following grouped agricultural industries:

- horticulture and fruit growing (on average 439 claims per annum)
 - common grouped agencies were *non-powered hand tools, appliances and equipment*.
- grain, sheep and beef cattle farming (on average 1,070 claims per annum)
 - the most common grouped agency was *animal, human and biological*.
- dairy cattle farming (on average 206 claims per annum)
 - common grouped agencies were *non-powered hand tools, appliances and equipment and animal, human and biological*.
- poultry farming (on average 533 claims per annum)
 - the most common agency was *non-powered hand tools, appliances and equipment*.
- other livestock farming (on average 263 claims per annum)
 - common agency was *animal, human and biological*.
- other crop farming (on average 195 claims per annum)
 - the most common agencies were *non-powered hand tools, appliances and equipment, mobile plant and transport, and materials and substances*.
- services to agriculture (on average 377 claims per annum)
 - the most common agency was *animal, human and biological*.

In NSW there were 15,915 people who sustained an injury on a farm and were hospitalised between 1 July 1990 and 30 June 2000, with the majority being male. Children represented 16.3% of all farm injuries requiring hospitalisation. The most common external cause of injuries were motorcycles, falls and horses.

Given the available data there are relatively few incidents involving exposure pesticides that require hospitalisation (average 14 per annum) or receive workers' compensation claims (aver 55 claims per annum) compared to the large number of hospitalisations and workers' compensation claims for all other causes. However, while pesticides do not rank highly as a priority for farm injury prevention on the number of actual poisonings, there is widespread concern in agricultural industries and the wider community over chemical use and long term effects of pesticides.

Given the importance of grain production and grain handling in NSW, respiratory disease associated with organic dust is probably under reported in deaths data. Between 1990 and 2000, there were 159 deaths per annum due to respiratory disease in NSW of farmers, farm managers and farm workers.

Since the late 1980's a hearing screening program has been conducted by area health services at agricultural field days throughout NSW to educate farmers about noise induced hearing loss. From 1995-2000 a total of 5,013 farmers and farm workers were tested. Tinnitus (a symptom of noise injury) was found to be present in nearly half of the farmers screened. Results indicate a significant decline in hearing with age of farmer. There is also evidence of noise-induced hearing loss in young farmers indicating that noise injury prevention needs to commence at a young age.

Zoonotic diseases reportable to NSW Health Department such as Q Fever (3,044 notifications between 1991 and 2003), and leptospirosis (458 notifications between 1991 and 2003) are significant biological hazards for NSW. Brucellosis, with only 20 notifications between 1991 and 1997 and none thereafter, is not.

The final sections of the report provide a summary of results and recommendations arising from the information collected. The recommendations target injury and illness data collections and management, including the suggestions of appropriate farm injury prevention programs for NSW.

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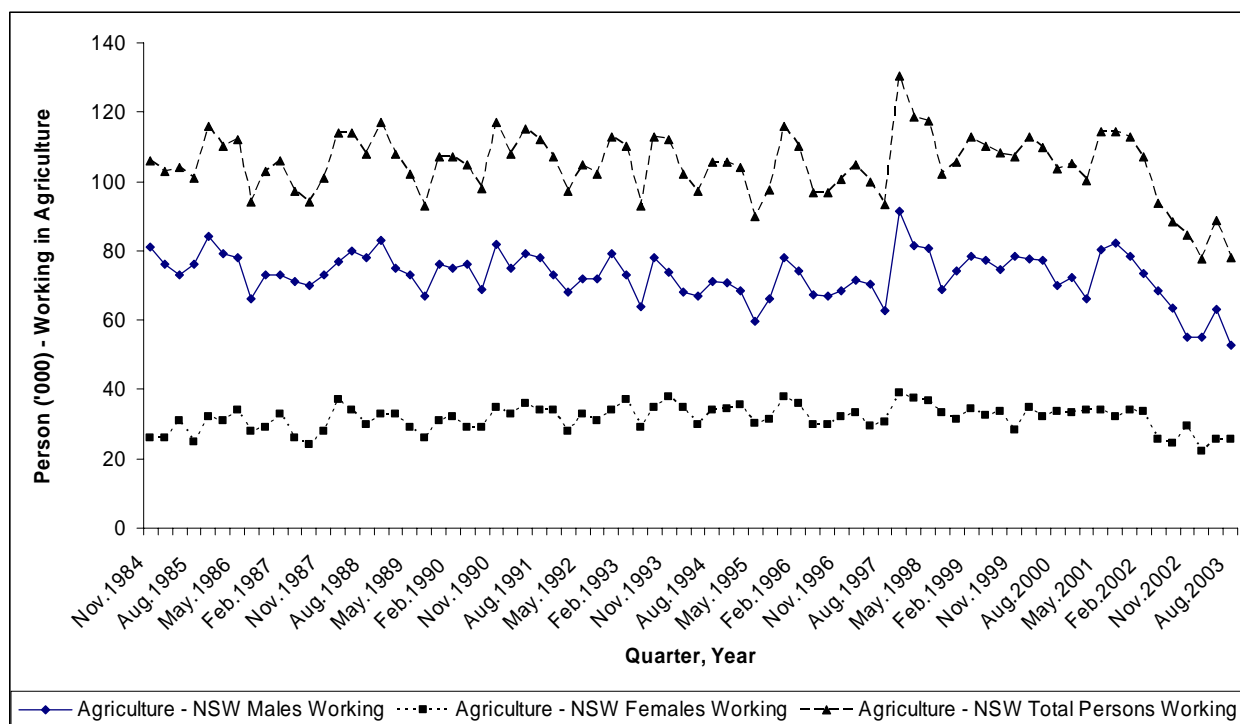
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Section 1 Introduction

New South Wales is Australia's most populous state with a population of 6,640,355 people (June 2002) of which 3,296,998 (49.7%) are males and 3,343,357 are females (ABS, 2003). There were 41,951 farms with an estimated value of agricultural output (EVAO) greater than \$5,000 in 2001 encompassing 61,007,000 ha or 76.2% of the NSW land mass. The number of farms is down by 1.9% from 42,758 in 1997 but the land mass being used for agriculture is up by 106,000 ha (0.2%).

The estimated number of people working in agriculture in NSW in any agricultural industry fluctuates from season to season and year to year. Figure 1 presents the quarterly figures for people working in agriculture between November 1984 and August 2003.

Figure 1-1 People working in agriculture, NSW, Nov 1984-Aug 2003 (quarterly)



Source: Australian Bureau of Statistics (2003b) data

In 1997 the Australian Centre for Agricultural Health and Safety (ACAHS) mapped Australia into agricultural zones based on production data for 1993/94 (Fragar et al, 1997). The mapping of agricultural zones for NSW is reproduced in Figure 1-2 and was achieved by considering the statistical local areas (SLA) for NSW and defining the major commodities for that SLA. In NSW there were 189 SLA, of which 112 (59.3%) had significant agricultural activity. The three most common agricultural zones in descending order are; Sheep/Beef/Grain (27 SLA's), Sheep/Beef (23 SLA's), and Sheep/Beef/Grain/Irrigation (11 SLA's).

In Table 1-1 the number of agricultural establishments for NSW and Australia are displayed by Australian and New Zealand Industry Classification (ANZIC) code as of 30 June 2002. The most common agricultural activity was beef farming in NSW and Australia.

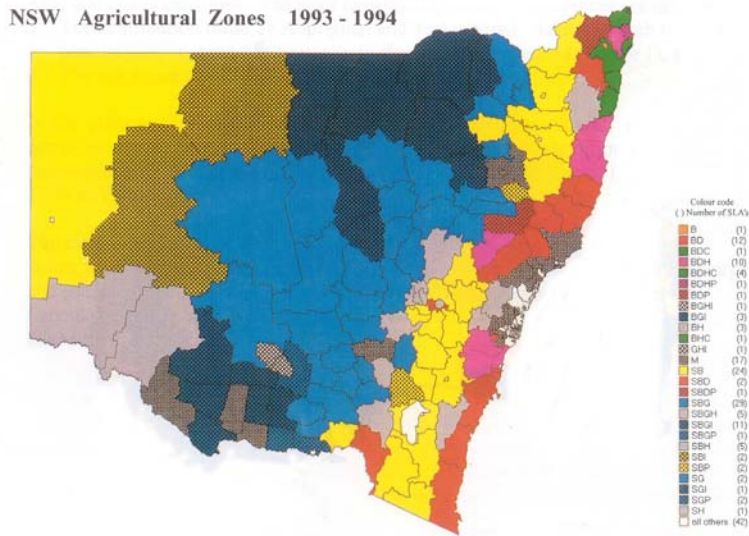
Table 1-1 Establishments with agricultural activity, NSW and Australia – as at 30 June 2002

ANZSIC Code	Description	NSW n	%	Australia n	%
0111	Plant nurseries	858	2.1	2220	1.7
0112	Cut Flowers and flower seed growing	263	0.6	945	0.7
0113	Vegetable growing	831	2.0	4805	3.6
0114	Grape growing	1220	3.0	6833	5.1
0115	Apple and pear growing	^176	0.4	919	0.7
0116	Stone fruit growing	435	1.1	1258	0.9
0117	Kiwi growing	*24	0.1	^34	0.0
0119	Fruit growing NEC.	1881	4.6	5446	4.1
0121	Grain growing	4193	10.2	15911	11.9
0122	Grain-sheep/beef cattle farming	6669	16.2	15610	11.7
0123	Sheep-beef cattle farming	3726	9.1	8424	6.3
0124	Sheep farming	5588	13.6	13911	10.4
0125	Beef cattle farming	10722	26.1	34110	25.5
0130	Dairy cattle farming	1615	3.9	11135	8.3
0141	Poultry farming (meat)	339	0.8	790	0.6
0142	Poultry farming (eggs)	^130	0.3	^481	0.4
0151	Pig farming	^399	1.0	1159	0.9
0152	Horse farming	^631	1.5	1777	1.3
0153	Deer farming	*28	0.1	^125	0.1
0159	Livestock farming NEC.	*311	0.8	^725	0.5
0161	Sugar cane growing	521	1.3	4747	3.5
0162	Cotton growing	321	0.8	697	0.5
0169	Crop and plant growing NEC.	^214	0.5	1806	1.3
Agriculture		41092	100.0	133868	100.0

Note: The symbol, the caret (i.e. ^), is used in relation to the level of sampling error associated with estimates. If an estimate is identified by a caret (e.g. ^8) the relative standard error (RSE) is equal to or greater than 10% but less than 25%. If an estimate is identified by a single asterisk (e.g. *2) the RSE is equal to or greater than 25% but less than or equal to 50%.

Source: Australian Bureau of Statistics (2003b). *7121.0 Agricultural Commodities*. Australian Bureau of Statistics: Canberra

Figure 1-2 NSW agricultural zones 1993-1994



Source:Frager et al 1997

Section 2 Agricultural-Related Deaths in NSW

This section is presented in two parts where the first presents information on farmers and farm workers who died between 1 January 1990 and 30 December 2000, and the second presents information collected over 4 years from the report by Franklin et al (2000). As this report was being compiled, information from the National Coroners Information System was becoming available however complete years of data were not available at the time.

Examination of deaths within agriculture is a complex issue as identified by Franklin et al (2000) and can be examined by location (ie deaths on or associated with the farm) or by occupation (ie farm managers and farm workers), or by particular type of death (eg deaths associated with agricultural equipment). Each of these methods has strengths and weaknesses and as such further exploration of this information is warranted. Two of these methods are presented below, the first uses occupation and external cause classification over an eleven year period, the second provides a detailed analysis over a four year period.

2.1 Farm Manager and Farm Worker Deaths in NSW, 1990-2000

Deaths classified by the ABS with an external cause classification¹ between 1 January 1990 and 31 December 2000 in NSW were included for this analysis where the occupation was farm manager or farm worker². Deaths registered in the years 1999 and 2000 used the ICD10 classification for the cause of death. For those deaths registered before 1999, the ICD9 classification was used as the cause of death. To enable monitoring over time Farmsafe Australia (FSA) has developed a set of E-coded injury groupings (Fragar, 1996). Where ICD10 has been used these codes have been changed to conform to the ICD9 codes. These FSA E-codes are presented in the top part of Table 2-1 followed by the other E-codes at the bottom of the table.

There were 1,094 deaths of farm managers and farm workers in NSW between 1 January 1990 and 31 December 2000. Of these 94.5% were males (Table 2-1). It has previously been identified that classification of occupation for females, particularly in the agricultural industry, has been poor (Burke, 1997) and as such this may represent an under representation of the number of female agricultural workers.

Of the 1,094 deaths of farm managers and farm workers, 144 (13.2%) were classified under the FSA selection of E-codes (Table 2-1). The most common external cause of injuries for the FSA E-codes was *agricultural machinery* (3.7%), *other vehicles* (2.8%) and *fire and flames* (1.7%). For the non FSA E-code *motor vehicle accidents* (23.5%) and *falls* (12.8%) were the most common groups (Table 2-1).

¹ External Cause Classification in ICD9 means the coding began with a 'E', for the deaths classified using ICD10, the coding begins with 'U', 'V', 'W', 'X', or 'Y'.

² If occupation was 'farm manager retired' or 'farm worker retired' they were excluded from the analysis.

Table 2-1 E-code groups, by gender, for farm manager and farm worker fatalities, NSW 01-Jan-1990 to 31-Dec-2000

E-Code	Description	Male	Female	Total	%
E820-829	Motor vehicle non traffic accident & other road vehicle accidents				
	motorcycles	12	-	12	1.1
	other vehicles	31	-	31	2.8
	animal ridden	6	-	6	0.5
E863	Poisoning by agricultural chemicals	1	-	1	0.1
E866-869	Poisoning by other solids, gases & liquids	3	1	4	0.4
E891-899*	Fire and flames	17	2	19	1.7
E905	Venomous animal & plants	5	-	5	0.5
E906.8	Injury by other animal	3	1	4	0.4
E919.0	Agricultural machinery	40	1	41	3.7
E919.1-.9	Other machinery	10	1	11	1.0
E922	Firearms	10	-	10	0.9
	Subtotal	138	6	144	13.2
E810-819	Motor vehicle accidents	235	22	257	23.5
E850-865**	Poisoning	12	-	12	1.1
E880-E888	Falls	129	11	140	12.8
E900-909 [#]	Natural & environmental factors	3	-	3	0.3
E910	Drowning	32	-	32	2.9
	Other E-codes ^{##}	485	21	506	46.3
	Group Total	1034	60	1094	100.0

* 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.

Over the eleven years of farm manager and farm worker deaths, the number of deaths ranged from 88 in 1996 to 116 in 1993, with an average of 99 deaths per annum (Table 2-2). The rate by quarters is presented in Figure 2-1 and shows that although the rate varies by quarter there has been no significant change over time.

Figure 2-1 Injury rate per 100,000 agricultural workers for farm managers and farm workers, NSW 1990-2000 (quarterly)

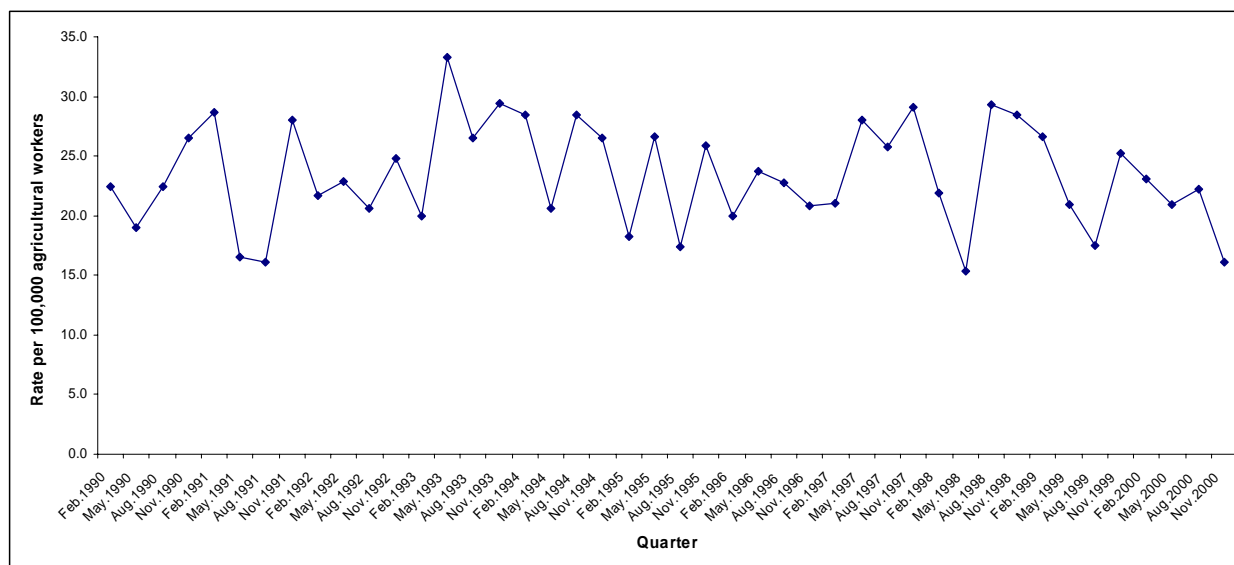
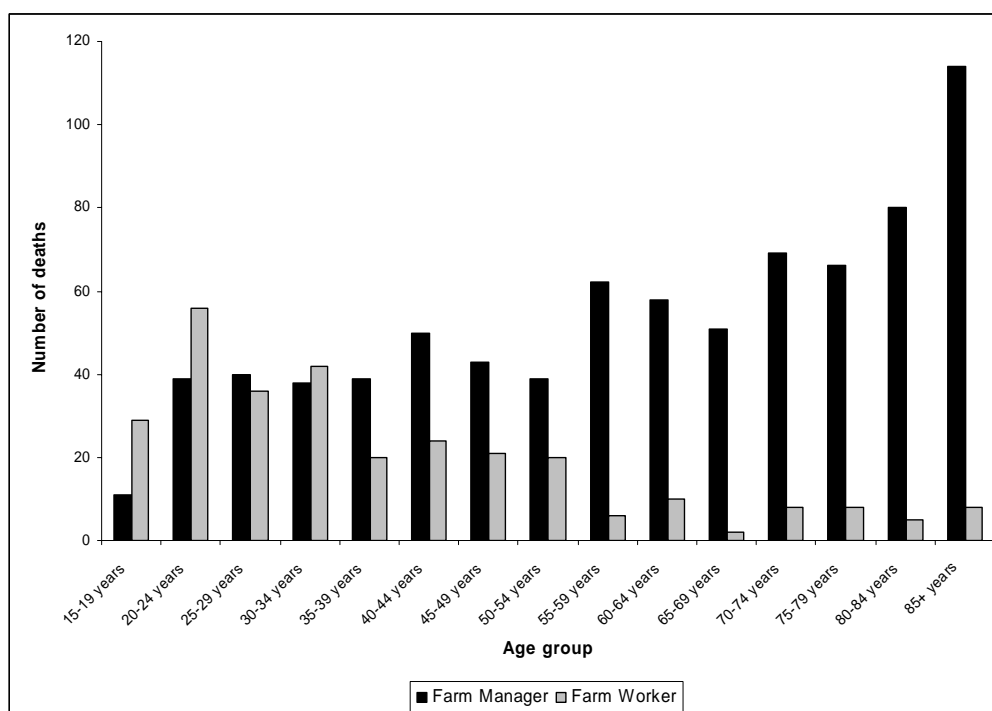


Table 2-2 E-code groups by year for farm manager and farm worker fatalities, NSW 01-Jan-1990 to 31-Dec-2000

E-Code	Description	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Total
E820-829	Motor vehicle non traffic accident & other road vehicle accidents												
	motorcycles	1	1	1	1	1	-	-	4	1	2	-	12
	other vehicles	2	-	5	2	1	-	3	1	4	8	5	31
	animal ridden	2	-	-	-	2	1	-	1	-	-	-	6
E863	Poisoning by agricultural chemicals	-	-	-	-	-	-	-	-	-	1	-	1
E866-869	Poisoning by other solids, gases & liquids	1	-	-	-	2	-	1	-	-	-	-	4
E891-899*	Fire and flames	3	2	2	-	3	-	-	2	2	3	2	19
E905	Venomous animals & plants	-	1	-	1	-	1	-	1	-	1	-	5
E906.8	Injury by other animal	-	1	-	-	1	1	1	-	-	-	-	4
E919.0	Agricultural machinery	2	9	8	3	5	4	2	3	1	2	2	41
E919.1-.9	Other machinery	-	1	2	1	1	-	2	-	3	1	-	11
E922	Firearms	-	3	2	-	-	1	-	1	-	1	2	10
	Subtotal	11	18	20	8	16	8	9	13	11	19	11	144
E810-819	Motor vehicle accidents	31	30	20	27	30	16	15	26	28	15	19	257
E850-865**	Poisoning	2	1	-	-	-	2	1	1	3	1	1	12
E880-E888	Falls	8	10	7	12	21	19	19	15	16	8	5	140
E900-909#	Natural & environmental factors	1	-	-	-	1	1	-	-	-	-	-	3
E910	Drowning	4	2	2	5	2	-	2	4	5	4	2	32
	Other E-codes ##	40	37	45	64	37	44	42	53	41	52	51	506
	Group Total	97	98	94	116	107	90	88	112	104	99	89	1094

* 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.

Figure 2-2 Age grouped farm fatalities by occupation, NSW 01-Jan-1990 to 31-Dec-2000



The number of deaths by age group increase until the 30-34 year age group and then declines and remains constant until the 80-84 year age group where it increase again (Table 2-3). The number of injuries for farm workers peaks in the 20-24 year age group and then declines, where as for farm managers there is a steady increase in the number of injuries with age (Figure 2-2).

Table 2-3 E-code groups by age group for farm manager and farm worker fatalities, NSW 01-Jan-1990 to 31-Dec-2000

E-Code	Description	Age group															Total
		15-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40-44 years	45-49 years	50-54 years	55-59 years	60-64 years	65-69 years	70-74 years	75-79 years	80-84 years	85+ years	
E820-829	Motor vehicle non traffic accident & other road vehicle accidents																
	motorcycles	0	3	1	1	0	2	0	2	0	0	1	1	1	0	0	12
	other vehicles	3	1	2	2	0	2	2	3	1	3	4	0	2	3	3	31
	animal ridden	0	0	0	0	1	1	1	0	0	1	0	0	1	0	1	6
E863	Poisoning by agricultural chemicals	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
E866-869	Poisoning by other solids, gases & liquids	0	2	0	0	0	0	0	1	0	0	0	0	1	0	0	4
E891-899*	Fire and flames	0	1	2	2	1	1	0	2	2	2	0	2	1	1	2	19
E905	Venomous animals & plants	0	1	0	0	0	2	0	0	0	0	1	0	0	1	0	5
E906.8	Injury by other animal	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	4
E919.0	Agricultural machinery	0	1	7	2	1	4	2	5	3	5	2	4	3	2	0	41
E919.1-.9	Other machinery	0	0	0	1	1	1	2	2	2	0	0	1	1	0	0	11
E922	Firearms	0	1	1	0	2	0	0	1	2	0	0	0	1	1	1	10

	<i>Subtotal</i>	3	10	14	8	6	13	7	16	11	13	7	9	13	7	7	144
E810-819	Motor vehicle accidents	17	38	20	22	23	14	8	6	17	13	15	15	23	18	8	257
E850-865**	Poisoning	1	3	1	2	0	2	0	0	0	2	0	0	1	0	0	12
E880-E888	Falls	0	4	3	2	0	1	1	1	1	4	3	4	14	33	69	140
E900-909#	Natural & environmental factors	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	3
E910	Drowning	0	5	3	3	2	2	3	2	1	4	2	4	1	0	0	32
	Other E-codes ##	19	35	35	43	28	42	45	34	38	32	26	44	21	26	38	506
	Group Total	40	95	76	80	59	74	64	59	68	68	53	77	74	85	122	1094

* 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.

The percentage of injury deaths by E-code groups were reasonably consistent between farm managers and farm workers except for *fire and flames*, *other machinery* and *poisoning* where farm workers were higher and *agricultural machinery*, *firearms* and *falls* where farm managers were higher (Table 2-4).

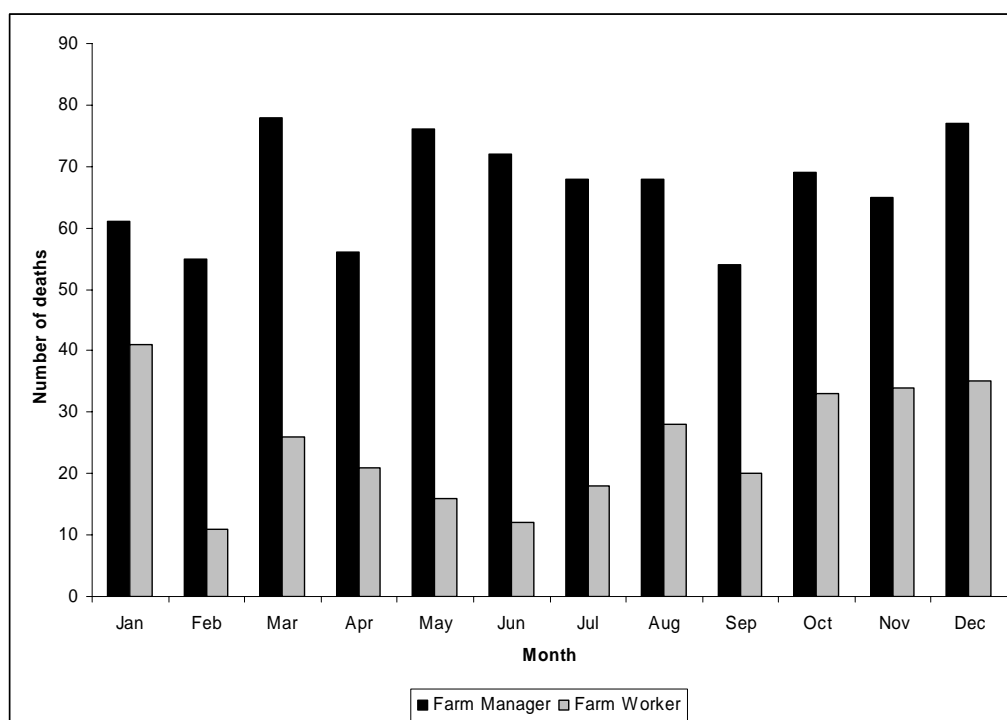
The number of deaths for farm managers was reasonably consistent throughout the year, where as farm worker deaths tended to peak between October and January (Figure 2-3).

Table 2-4 E-code groups by occupation for farm manager and farm worker fatalities, NSW 01-Jan-1990 to 31-Dec-2000

E-Code	Description	Farm Manager		Farm Worker		Total	
		n	%	n	%	n	%
E820-829	Motor vehicle non traffic accident & other road vehicle accidents						
	motorcycles	9	1.1	3	1.0	12	1.1
	other vehicles	24	3.0	7	2.4	31	2.8
	animal ridden	6	0.8	0	0.0	6	0.5
E863	Poisoning by agricultural chemicals	1	0.1	0	0.0	1	0.1
E866-869	Poisoning by other solids, gases & liquids	3	0.4	1	0.3	4	0.4
E891-899*	Fire and flames	8	1.0	11	3.7	19	1.7
E905	Venomous animal & plants	4	0.5	1	0.3	5	0.5
E906.8	Injury by other animal	3	0.4	1	0.3	4	0.4
E919.0	Agricultural machinery	34	4.3	7	2.4	41	3.7
E919.1-.9	Other machinery	6	0.8	5	1.7	11	1.0
E922	Firearms	9	1.1	1	0.3	10	0.9
	Subtotal	107	13.4	37	12.5	144	13.2
E810-819	Motor vehicle accidents	184	23.0	73	24.7	257	23.5
E850-865**	Poisoning	5	0.6	7	2.4	12	1.1
E880-E888	Falls	126	15.8	14	4.7	140	12.8
E900-909#	Natural & environmental factors	2	0.3	1	0.3	3	0.3
E910	Drowning	17	2.1	15	5.1	32	2.9
	Other E-codes ##	358	44.8	148	50.2	506	46.3
	Group Total	799	100.0	295	100.0	1094	100.0

* 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.

Figure 2-3 Month of farm fatality, by occupation, NSW 01-Jan-1990 to 31-Dec-2000



2.2 Farm-Related Fatalities in NSW, 1989-1992

The following information is reprinted with permission from the report: Franklin R, Mitchell R, Driscoll T, and Fragar L (2000) *Farm-Related Fatalities in Australia, 1989-1992* p127-137.

Between 1989 and 1992, there were 158 farm-related fatalities in NSW - an average of 39 fatalities per year. Of the 158 fatalities in NSW, 124 (78.5%) were of persons working at the time of the incident and 34 (21.5%) were bystanders (Table 2-5).

Of the 124 people working, 68 (54.8%) were farmers who were employed in agriculture. This gives a rate of death for farmers of 25.1 per 100,000 per year. There were also 26 (21.0%) farm hands and assistants employed in agriculture fatality injured at work. This gives a rate of death for farm hands and assistants of 20.3 per 100,000 per year.

Table 2-5 Number of farm-related fatalities per year, by work status, NSW 1989-1992

Year	Working	Bystander	Total	%
1989	21	11	32	20.3
1990	30	8	38	24.1
1991	41	12	53	33.5
1992	32	3	35	22.2
Total	124	34	158	100.0

Gender and Age

The age of people fatally injured between 1989 and 1992 is displayed in Table 2-6. Of the 158 fatalities, 24 (15.2%) were children aged less than 15 years and of those 4 (3.2%) were classified as working. More than half (62.5%) of all child fatalities occurred in children under 5 years of age. The age group with the highest number of fatalities was the 55-64 year age group, with 27 (17.1%) fatalities. For workers, the age group with the highest number of fatalities was the 55-64 year group with 23 (18.5%) fatalities. Twenty (58.8%) fatal incidents involving bystanders occurred to children under 15 years of age.

Table 2-6 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 - 74	12	1	13	8.2
75+	5	2	7	4.4
Total	124	34	158	100.0

Farm Enterprise

The type of farm enterprise where fatalities occurred could be identified in 133 (84.2%) incidents. The *cereal grains/sheep/cattle/pigs* (33: 20.9%); *meat cattle* (26: 16.5%); and *sheep* (14: 8.9%) enterprises had the highest number of fatal incidents. For work-related fatalities, *cereal grains/sheep/cattle/pigs* (25: 20.2%); *meat cattle* (25: 20.2%); and *sheep* (10: 8.1%) enterprises had the highest number of fatal incidents. For bystanders, *cereal grains/sheep/cattle/pigs* (8: 23.5%); and *sheep* (4: 11.8%) enterprises had the highest number of fatal incidents (Table 2-7).

Table 2-7 Farm enterprise by work status for farm-related fatalities, NSW 1989-1992

Farm Enterprise	Working	Bystander	Total	%
Agriculture	123	33	156	98.7
<i>Poultry</i>	-	1	1	0.6
<i>Poultry for meat</i>	2	-	2	1.3
<i>Fruit</i>	1	-	1	0.6
<i>Grapes</i>	2	-	2	1.3
<i>Plantation fruit</i>	2	1	3	1.9
<i>Orchard and other fruit</i>	4	1	5	3.2
<i>Vegetables including potatoes</i>	3	2	5	3.2
<i>Cereal grain/sheep/cattle/pigs</i>	25	8	33	20.9
<i>Cereal grains</i>	8	-	8	5.1
<i>Sheep/cereal grains</i>	2	-	2	1.3
<i>Meat cattle/cereal grains</i>	2	-	2	1.3
<i>Sheep/meat cattle</i>	8	-	8	5.1
<i>Sheep</i>	10	4	14	8.9
<i>Meat cattle</i>	25	1	26	16.5
<i>Dairy</i>	4	1	5	3.2
<i>Pigs</i>	2	-	2	1.3
<i>Cotton</i>	5	1	6	3.8
<i>Agriculture NEC</i>	4	-	4	2.5
<i>Aerial agricultural services</i>	1	-	1	0.6
<i>Services to agriculture NEC</i>	1	-	1	0.6
<i>Agriculture not known</i>	12	13	25	15.8
Other	1	1	2	1.3
Total	124	34	158	100.0

Location of Fatal Incident

The most common locations for farm-related fatalities were on *roads and lanes* (27: 17.1%), *paddocks clear for grazing* (26: 16.5%) and *paddocks under crop* (24: 15.2%). For people classified as working at the time of the fatality, the most common sites of injury were *paddocks under crop*, *paddocks clear for grazing* (each 22: 17.7%) and *roads and lanes* (21: 16.9). Water-related fatalities (in particular *dams/water reservoirs/irrigation channels*) occurred most frequently (14: 41.2%) to bystanders (Table 2-8).

Table 2-8 Location of farm-related fatalities, by work status, NSW 1989-1992

Location on Farm	Working	Bystander	Total	%
Paddock under crop	22	2	24	15.2
Paddock clear for grazing	22	4	26	16.5
Natural vegetation	12	2	14	8.9
Unspecified	3	-	3	1.9
Stockyards including horse yards	1	1	2	1.3
Workshop	2	-	2	1.3
Roads & lanes	21	6	27	17.1
Dam/water reservoir/irrigation channel	4	14	18	11.4
River/creek	6	1	7	4.4
Hay shed	2	-	2	1.3
Machinery shed	3	-	3	1.9
Shed/ farm building NEC	3	1	4	2.5
Dairy	1	-	1	0.6
Woolshed shearing shed	1	-	1	0.6
Disposal pit	1	-	1	0.6
Animal shed other including broiler shed	1	-	1	0.6
Sorting packing shed	1	-	1	0.6
Farm excluding residence NEC	4	-	4	2.5
Farm residence	1	-	1	0.6
Farm house	-	1	1	0.6
Farm yard or garden	4	2	6	3.8
Other place associated with agricultural work	4	-	4	2.5
Not relevant	5	-	5	3.2
Total	124	34	158	100.0

Agent and Mechanism of Fatal Incident

The agent most commonly involved in fatal incidents was *tractors* (25: 15.8%). Other common agents included *dams* (15: 9.5%), *aircraft* (14: 8.9%), *firearms* (11: 7.0%), *trucks* (9: 5.7%) and *falling trees* (8: 5.0%). Common agents involved in work-related fatalities included *tractors* (20: 16.1%), *aircraft* (14: 11.3%) and *trucks* (9: 7.3%). The most common agents for bystander fatality were *dams* (13: 38.2%) and *tractors* (5: 14.7%) (Table 2-9).

Table 2-9 Agent of fatal farm-related incident, by work status, NSW 1989-1992

Agent	Working	Bystander	Total	%
Farm Vehicles				
Truck	9	-	9	5.7
Utility	3	2	5	3.2
Car	3	2	5	3.2
Motorcycle 2 wheel	4	1	5	3.2
Motorcycle 3 wheel	1	-	1	0.6
Motorcycle 4 wheel	-	1	1	0.6
Aircraft	14	-	14	8.9
Other farm vehicles NEC	4	-	4	2.5
Total Farm Vehicles	38	6	44	27.8
Mobile Farm Machinery and Plant				
Tractor	20	5	25	15.8
Tillage seeder	1	1	2	1.3
Fertiliser spreader	1	-	1	0.6
Earthmoving equipment	1	-	1	0.6
Harvesting machine	1	-	1	0.6
Grain auger	3	-	3	1.9
Hay baler	1	-	1	0.6
Posthole digger	1	-	1	0.6
Other mobile farm machinery & plant NEC	2	1	3	1.9
Total Mobile Farm Machinery and Plant	31	7	38	24.1
Fixed Plant and Equipment				
Pump	1	-	1	0.6
Feed mixer	1	-	1	0.6
Other fixed plant and equipment NEC	2	-	2	1.3
Total Fixed Plant and Equipment	4	-	4	2.5
Workshop Equipment				
Welder	1	-	1	0.6
Electric drill	1	-	1	0.6
Total Workshop Equipment	2	-	2	1.4
Other Equipment and Materials				
Fencing equipment	-	1	1	0.6
Gun, rifle, shotgun	9	2	11	7.0
Other equipment and materials NEC	1	-	1	0.6
Total Other Equipment and Materials	10	3	13	8.2
Materials				
Timber	1	-	1	0.6
Hay bales other	1	-	1	0.6
Total Materials	2	-	2	1.3

Table 2-9 Agent of fatal farm-related incident by work status, 1989-1992 (cont)

Farm Structures				
House yard	1	-	1	0.6
Fence	-	1	1	0.6
Tank	1	-	1	0.6
Dam	2	13	15	9.5
Creek/river	5	-	5	3.2
Embankment	3	-	3	1.9
Irrigation channel	1	1	2	1.3
Field bin	1	-	1	0.6
Powerlines	3	-	3	1.9
Other farm structures NEC	3	-	3	1.9
Total Farm Structures	20	15	35	22.2
Animals				
Horse	3	1	4	2.5
Snake	1	-	1	0.6
Insect	1	-	1	0.6
Total Animals	5	1	6	3.8
Working Environment				
Fire or smoke	2	-	2	1.3
Ground/rock/stump	2	-	2	1.3
Lumber	-	1	1	0.6
Trees being felled	7	1	8	5.0
Other working environment NEC	1	-	1	0.6
Total Working Environment	12	2	13	8.2
Total	124	34	158	100.0

Table 2-10 shows that vehicle accidents (37: 23.4%) were the most common mechanism of farm-related fatalities across all age groups. Vehicle accidents most commonly involved *aircraft* (14: 37.8%) and *trucks* (6: 16.2%). Other common mechanisms of the fatal incident included *being hit by moving objects* (most commonly tractors) (23: 14.6%), *drowning* (mainly in dams) (23: 14.6%), *being hit by falling objects* (most commonly trees being felled) (15: 9.5%), *rollovers of mobile machinery* (most commonly tractors) (13: 8.2%) and *being shot by firearms* (11: 7.0%). For work-related fatalities, the most common mechanisms were *vehicle accidents* (32: 25.8%), *being hit by moving objects* (18: 14.5%), *being hit by falling objects* (12: 9.7%) and *rollovers of mobile machinery* (11: 8.9%). For bystander fatalities, the most common mechanisms were *drowning* (14: 41.2%) and *being hit by moving objects* (5: 14.7%).

Table 2-10 Mechanism of fatal farm-related incident, by work status, NSW 1989-1992

Mechanism	Working	Bystander	Total	%
Falls from a height	7	1	8	5.1
Hitting stationary objects	1	1	2	1.3
Hit by falling objects	12	3	15	9.5
Bitten by an animal	1	-	1	0.6
Hit by an animal	2	1	3	1.9
Trapped by moving machinery	7	-	7	4.4
Trapped between stationary & moving objects	2	-	2	1.3
Hit by moving objects	18	5	23	14.6
Contact with flames or heat	2	-	2	1.3
Exposure to environmental cold	1	-	1	0.6
Contact with electricity	6	-	6	3.8
Drowning	9	14	23	14.6
Insect & spider bites	1	-	1	0.6
Shot by firearm	9	2	11	7.0
Slide or cave-in	3	-	3	1.9
Vehicle accident	32	5	37	23.4
Rollover	11	2	13	8.2
Total	124	34	158	100.0

Table 2-11 shows that the agent most commonly involved in child fatalities was *dams* (9: 37.5%) and that the majority of dam-related drownings (88.9%) occurred in children aged less than 5 years.

Table 2-11 Agent of fatal farm-related incident for children, by age group, NSW 1989-1992

Agent	0-4 years	5-9 years	10-14 years	Total	%
Farm Vehicles					
Truck	-	1	-	1	4.2
Utility	1	-	1	2	8.3
Motorcycle 2 wheel	-	-	1	1	4.2
Motorcycle 4 wheel	-	-	1	1	4.2
Total Farm Vehicles	1	1	3	5	20.8
Mobile Farm Machinery & Plant					
Tractor	3	-	-	3	12.5
Tillage seeder	1	-	-	1	4.2
Other mobile farm machinery & plant NEC	1	-	-	1	4.2
Total Mobile Farm Machinery & Plant	5	-	-	5	20.8
Farm Structures					
Fence	-	1	-	1	4.2
Dam	8	1	-	9	37.5
Irrigation channel	1	-	-	1	4.2
Other farm structures NEC	-	1	-	1	4.2
Total Farm Structures	9	3	-	12	50.0

Table 2-11 Agent of fatal farm-related incident for children (cont)**Animals**

Horse	-	-	1	1	4.2
Total Animals	-	-	1	1	4.2

Working Environment

Trees being felled	-	1	-	1	4.2
Total Working Environment	-	1	-	1	4.2

Total	15	5	4	24	100.0
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Activity at Time of Fatal Incident

The most common activities being performed at the time of farm-related fatality were *transport for work purposes* (36: 22.8%), *recreation or playing activities* (17: 10.8%), *maintenance activities and working with crops* (each 16: 10.1%). For work-related fatalities, the most common activities at the time were *transport for work purposes* (36: 29.0%), *maintenance activities and working with crops* (each 16: 12.9%). For bystander fatalities, the most common activity at the time was *recreation or playing activities* (17: 50.0%) (Table 2-11).

Table 2-11 Activity at time of farm-related fatality, by work status, NSW 1989-1992

Activity	Working	Bystander	Total	%
Transport for work purposes	36	-	36	22.8
Transport for recreation	-	6	6	3.8
Transport NEC	-	2	2	1.3
Constructing or installing	3	-	3	1.9
Maintenance	16	-	16	10.1
Earthmoving or digging	5	-	5	3.2
Felling trees or clearing land	11	-	11	7.0
Firefighting	1	-	1	0.6
Hunting	6	-	6	3.8
Working with animals	10	-	10	6.3
Working with crops	16	-	16	10.1
Monitoring/observing/inspecting	5	2	7	4.4
Moving goods	10	-	10	6.3
Rescuing	1	-	1	0.6
Recreation or playing	-	17	17	10.8
Working - context unclear	1	-	1	0.6
Other	-	5	5	3.2
Not known/not stated	1	2	2	1.3
Total	124	34	158	100.0

Pathophysiological Cause of Death and Blood Alcohol Content

Overall, the most common pathophysiological causes of death of farm-related fatalities were *head injuries* (39: 24.7%), *multiple injuries* (27: 17.1%) and *drowning* (26: 16.4%). In addition, *chest injuries* (12: 9.7%) and *crush asphyxia* (10: 8.1%) were common causes in work-related cases. *Drowning* (14: 41.2%) and *head injuries* (9: 26.5%) were the most common cause of death for bystanders (Table 2-13).

Table 2-12 Pathophysiological cause of farm-related fatality, by work status, NSW 1989-1992

Pathophysiological Cause of Death	Working	Bystander	Total	%
Head injuries	30	9	39	24.7
Neck injuries	5	1	6	3.8
Chest injuries	12	3	15	9.5
Trunk injuries	5	1	6	3.8
Abdominal injuries	7	1	8	5.1
Limb injuries	1	-	1	0.6
Multiple injuries to head and other body parts	6	2	8	5.1
Multiple injuries - other	18	1	19	12.0
Drowning	12	14	26	16.5
Crush asphyxia	10	-	10	6.3
Electrocution	5	-	5	3.2
Burns	1	-	1	0.6
Inhalation of a chemical substance	1	-	1	0.6
Suffocation	2	1	3	1.9
Envenomation	1	-	1	0.6
Hypothermia	1	-	1	0.6
Aspiration	-	1	1	0.6
Not known	1	-	1	0.6
Medical complications	6	-	6	3.8
Total	124	34	158	100.0

Blood alcohol tests were conducted for 75 (60.5%) of the workers and 15 (44.1%) bystanders. Of those with blood alcohol readings, 5 of the farm workers (6.7%) and 7 of the bystanders (46.7%) had a blood alcohol level greater than 0.05% g/100ml (Table 2-14).

Table 2-13 Blood alcohol level of farm-related fatality cases, by work status, NSW 1989-1992

Blood Alcohol Content	Working	Bystander	Total
Nil blood alcohol reading	65 (86.7%)	7 (46.7%)	72 (80.0%)
Blood alcohol reading 0.001% - 0.05%	5 (6.7%)	1 (6.7%)	6 (6.7%)
Blood alcohol reading greater than 0.05%	5 (6.7%)	7 (46.7%)	12 (13.3%)
Total	75 (100.0%)	15 (100.0%)	91 (100.0%)

Month and Day of Fatal Incident

There was no consistent monthly pattern of fatal incidents. However, December (20: 12.7%), November (18: 11.4%) and March (16: 10.1%) were the months with the highest number of fatalities (Table 2-14).

Table 2-14 Month of farm-related fatality, NSW 1989-1992

Month	1989	1990	1991	1992	Total	%
January	1	6	5	3	15	9.5
February	4	3	2	-	9	5.7
March	1	3	7	5	16	10.1
April	2	5	5	2	14	8.9
May	4	3	5	3	15	9.5
June	2	1	2	3	8	5.1
July	4	2	3	2	11	7.0
August	4	3	2	2	11	7.0
September	1	1	7	2	11	7.0
October	2	1	3	4	10	6.3
November	2	7	7	2	18	11.4
December	5	3	5	7	20	12.7
Total	32	38	53	35	158	100.0

Overall, the most common days of the week for farm-related fatalities were Saturday (33: 20.9%) and Friday (24: 15.2%). For work-related fatalities, Saturday (23: 18.5%) and Friday (20: 16.1%) had the highest number of cases. Saturday (10: 29.4%) and Sunday (9: 26.4%) had the highest number of fatalities involving bystanders (Table 2-15).

Table 2-15 Day of farm-related fatality, by work status, NSW, 1989-1992

Day of Week	Working	Bystander	Total	%
Sunday	12	9	21	13.3
Monday	18	5	23	14.6
Tuesday	17	3	20	12.7
Wednesday	18	2	20	12.7
Thursday	16	1	17	10.8
Friday	20	4	24	15.2
Saturday	23	10	33	20.9
Total	124	34	158	100.0

Farm Visitors

Of the total 158 farm-related fatalities, 45 (28.5%) were of *visitors*, 103 (65.2%) were of *residents* and for 10 (6.3%) their visitor status was *not known or not relevant*. For farm worker deaths, 34 (27.4%) were *visiting at the time*, 82 (66.1%) were *residents* and for 8 (6.5%) their visitor status was *not known or not relevant*. For bystanders, there were 11 (32.3%) *visitors*, 21 (61.8%) *residents* and for 2 (5.9%) bystanders their visitor status was *not known or not relevant*.

2.3 Summary

Farm Manager and Farm Worker Deaths, NSW, 1990-2000

- There were on average 99 farm fatalities per annum.
- Males represented 94.5% of the reported cases.
- Agricultural machinery-related fatalities were the most common FSA E-code deaths and motor vehicle accidents were the most common E-code grouped deaths.
- The death rate per 100,000 remained unchanged except for variations between quarters.
- The number of deaths for farm workers were highest in the 20-24 years age group, whereas the number of deaths of farm managers by age group continued to increase with age.
- The number of deaths for farm workers were highest between October and January, whereas there was no significant pattern for farm manager fatalities.

Farm-Related Fatalities in New South Wales, 1989-1992

- There were on average 39 farm-related fatalities each year involving workers and bystanders in the period 1989-1992 in NSW. The fatality rate for farmers was 25.1 per 100,000 per year and for farm hands and assistants it was 20.3 per 100,000 per year.
- The most common farm enterprises where the fatal incident occurred were cereal grains/sheep/cattle/pigs; meat cattle; and sheep.
- The most common locations of the fatalities were roads or lanes and paddocks.
- For work-related fatalities, tractors, aircraft, and trucks were common agents involved. Dams and tractors were common agents of fatalities for bystanders.
- The common mechanisms of work-related fatalities were vehicle accidents; being hit by moving objects (most commonly tractors); being hit by falling objects (mainly trees being felled); and rollovers of mobile machinery (mainly tractors). Common mechanisms of bystander fatalities were drowning and being hit by moving objects.
- The most common activities undertaken by workers at the time of fatality were travelling for work purposes; maintenance activities; and working with crops. Bystanders were commonly involved in recreational activities.

2.4 Recommendations

1. Programs aimed at preventing deaths on farms and to farm managers and workers should focus on:
 - Vehicles
 - Agricultural machinery (particularly tractors)
 - Falls
 - Firearms
 - Drowning (particularly children under the age of 5 and especially in dams)
 - Fire.
2. There should be regular reporting of farm-related deaths to Farmsafe NSW.
3. Further examination of indicators for analysis of death over time is required, with particular focus on ICD10 codes.
4. Farmers should be encouraged to implement an occupational health and safety plan for their farm which includes farm visitors.
5. There should be access to the National Coroners' Information System to provide detailed information on farm deaths in NSW.

Section 3 Workers' Compensation Reported Injury

Information for this section has been provided by WorkCover NSW.

Workers' compensation information for the financial years 1992/93 to 2000/01 is presented in this section and was extracted from the workers' compensation lost-time claims database in August 2002. Lost-time claims are defined as those resulting in time lost (in weeks) while the claimant was off work due to injury.

WorkCover NSW does not release data including confidential or commercially sensitive information and where the contents of the cell in tabulation or other representation of data, cannot be identified. Where the content of a single cell is 5 or less, the figure is replaced by an asterisk (*) to ensure confidentiality.

The cases covered by the workers' compensation scheme in NSW are those workers who sustain an 'employment injury' or 'occupational disease' and make a claim to the NSW Workers' Compensation Scheme. It does not cover workers in the following circumstances:

- where a claim is not made
- where the period paid for total incapacity was less than 5 days
- most self-employed people
- employees of the Australian Government
- employees suffering from diseases caused by dust inhalation (except in coal mining)
- casual workers employed for one period only of not more than five working days and who are employed for purposes of the employer's trade or business (WorkCover NSW, 2002).

The term agricultural industry/industries used in this section are the sub-divisions of the agriculture industry of the Australia and New Zealand Industry Classification (ANZIC). It refers to the industry in which the worker was employed and not necessarily the work they were undertaking or the location in which the work was being performed at the time of the injury.

The workers' compensation rates for NSW are displayed in Table 3-1. The highest premium rates (13.9%) are for shearing services and the livestock and cropping industries, while lower rates exist for the horticultural industries and some services to agriculture.

Table 3-1 Workers' Compensation premium rates in NSW 2002/2003 – agriculture and services to agriculture

Industry	Premium Rates 2002/03 (%)
Horticulture and Fruit Growing	
Plant nurseries	6.75
Cut flower & flower seed growing	7.24
Vegetable growing	7.33
Grape growing	7.18
Apple & pear growing	7.30
Stone fruit growing	7.30
Kiwifruit growing	7.30
Fruit growing NEC	7.38
Grain, Sheep and Beef Cattle Farming	
Grain growing	11.11
Combined grain growing, sheep farming & beef cattle farming	12.08
Sheep/beef cattle farming	11.88
Sheep farming	12.08
Beef cattle farming	10.52
Beef cattle feedlots	10.18
Dairy Cattle Farming	
Dairy cattle farming	9.85
Poultry Farming	
Poultry farming (meat)	8.28
Poultry farming (eggs)	8.28
Other Livestock Farming	
Pig farming	9.85
Horse farming	9.85
Deer farming	9.85
Other livestock farming NEC	9.85
Other Crop Growing	
Sugarcane growing	9.85
Cotton growing	9.85
Other crop & plant growing NEC	9.03
Services to Agriculture	
Cotton ginning	7.19
Shearing services	13.91
Aerial agricultural services	10.04
Services to livestock farming NEC	11.87
Services to crop farming NEC	11.46
Services to fruit & vegetable growing NEC	8.26
Agricultural land clearing & fencing services	8.28
Other services to agriculture NEC	1.34
Pet boarding & kennels NEC	1.34

Source: WorkCover NSW (2002). *Outline of the NSW Workers Compensation Premium Scheme 2002/2003: How worker' compensation premium is calculated in NSW.* WorkCover NSW (http://www.workcover.nsw.gov.au/NR/rdonlyres/4A1FA196-5606-409A-8B3B-70317BA99A31/0/gen_outline_wcps_4165.pdf)

The following two tables present information on total compensation payments by industry (Table 3-2), and actual time lost (weeks) by industry (Table 3-3). The number, cost and time off work varies by industry, and is explored in greater detail within each section of the industry groupings.

Table 3-2 Total compensation payments by industry for NSW Workers' Compensation claims, 1992/93 to 2000/01

Industry	Mean	Median	Minimum	Maximum	n
Plant nurseries	\$13,085	\$821	\$15	\$730,770	838
Cut flower & flower seed growing	\$14,166	\$1,599	\$121	\$313,513	44
Vegetable growing	\$13,550	\$1,023	\$27	\$248,990	662
Grape growing	\$9,617	\$712	\$14	\$417,005	729
Apple & pear growing	\$9,599	\$1,031	\$39	\$165,666	181
Stone fruit growing	\$5,573	\$617	\$25	\$155,586	159
Kiwifruit growing	\$10,592	\$1,661	\$144	\$48,560	5
Fruit growing NEC	\$9,635	\$816	\$17	\$310,278	1237
Grain, sheep & beef cattle farming NEC	\$22,531	\$2,315	\$93	\$238,492	30
Grain growing	\$11,231	\$1,171	\$29	\$377,457	580
Grain/sheep & grain/beef cattle farming	\$15,698	\$1,554	\$11	\$840,325	3043
Sheep/beef cattle farming	\$13,155	\$1,537	\$14	\$421,721	1668
Sheep farming	\$17,975	\$1,802	\$7	\$434,132	2396
Beef cattle farming	\$12,167	\$1,342	\$12	\$449,165	1588
Dairy cattle farming	\$7,596	\$654	\$14	\$359,409	1825
Poultry farming (meat)	\$6,400	\$472	\$10	\$362,025	3659
Poultry farming (eggs)	\$7,192	\$456	\$10	\$321,194	1038
Pig farming	\$4,080	\$306	\$3	\$276,952	1159
Horse farming	\$6,460	\$638	\$29	\$212,398	520
Deer farming	\$11,466	\$5,216	\$95	\$35,338	4
Livestock farming NEC	\$9,992	\$1,036	\$16	\$496,002	641
Crop & plant growing NEC	\$23,501	\$13,680	\$47	\$88,342	5
Sugar cane growing	\$10,970	\$894	\$45	\$103,821	82
Cotton growing	\$9,384	\$528	\$11	\$379,837	1191
Crop & plant growing NEC	\$11,759	\$1,089	\$18	\$258,094	440
Cotton ginning	\$8,292	\$270	\$15	\$423,802	468
Shearing services	\$26,151	\$3,366	\$29	\$1,366,660	1431
Aerial agricultural services	\$11,987	\$994	\$36	\$294,966	130
Services to agriculture NEC	\$11,695	\$864	\$8	\$395,783	1219
All industries	\$11,687	\$910	\$3	\$1,366,670	26,972

Table 3-3 Actual time lost in weeks due to a compensated injury, by industry, NSW Workers Compensation, 1992/93-2000/01

Industry	Mean	Median	Minimum	Maximum	n
Plant nurseries	9.70	.86	0	1023	747
Cut flower & flower seed growing	35.15	2.36	0	1037	40
Vegetable growing	8.68	1.29	0	712	549
Grape growing	6.53	.86	0	623	651
Apple and pear growing	16.38	1.29	0	1467	161
Stone fruit growing	4.47	.86	0	113	149
Kiwifruit growing	*	*	*	*	*
Fruit growing NEC	9.77	1.14	0	2052	1097
Grain, sheep & beef cattle farming NEC	3.25	2.00	0	13	22
Grain growing	8.26	1.36	0	1413	524
Grain/sheep & grain/beef cattle farming	6.71	1.71	0	1107	2616
Sheep/beef cattle farming	9.12	1.86	0	1357	1442
Sheep farming	7.16	1.86	0	531	1986
Beef cattle farming	8.79	1.43	0	976	1385
Dairy cattle farming	5.47	.86	0	1108	1657
Poultry farming (meat)	4.55	.29	0	633	3392
Poultry farming (eggs)	5.81	.57	0	403	957
Pig farming	4.96	.14	0	1345	1098
Horse farming	6.49	.57	0	638	489
Deer farming	8.39	6.07	0	21	4
Livestock farming NEC	4.66	.86	0	213	579
Crop & plant growing NEC	*	*	*	*	*
Sugar cane growing	3.97	.78	0	61	68
Cotton growing	5.52	.57	0	523	1097
Crop & plant growing NEC	12.77	1.00	0	1008	391
Cotton ginning	4.97	.14	0	644	436
Shearing services	13.92	2.71	0	1751	1163
Aerial agricultural services	3.39	.43	0	60	115
Services to agriculture NEC	10.09	.86	0	1115	1075
All industries	7.35	.86	0	2052	23895

3.1. Horticulture and Fruit Growing

There were 3,951 workers' compensation claims in the horticulture and fruit growing industries of NSW over the period 1 July 1992 to 30 June 2001, averaging 439 compensation claims per annum. The industries included in this grouping include plant nurseries, cut flowers and flower seed growing, vegetable growing, grape growing, apple and pear growing, stone fruit growing, kiwifruit growing and fruit growing NEC. The average compensation claim ranged from \$5,573 for stone fruit growing to \$14,166 for cut flowers and flower seed growing (Table 3-2). The amount of time off work ranged from 4.5 weeks for stone fruit growing to 35.2 weeks for cut flower and flower seed growing (Table 3-3).

More than half (51.1%) of the injuries claimed occurred to males (74.9%) aged 25-44 yrs. The three most common age groups in the horticulture and fruit growing industry were 25-34 yrs (26.4%), 35-44 yrs (24.7%) and 45-54 yrs (17.8%) (see Table 3-4 and Table 3-5).

Table 3-4 Age group for NSW Workers' Compensation claims in horticulture and fruit growing industries, 1992/93-2000/01

Age groups	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
0-14	0	1	0	0	0	2	0	1	0	4	0.1
15-19	29	23	20	35	40	55	40	50	28	320	8.1
20-24	49	58	49	66	60	85	77	77	63	584	14.8
25-34	82	92	64	112	123	159	144	148	118	1042	26.4
35-44	46	79	79	93	122	152	153	142	109	975	24.7
45-54	43	52	47	65	66	121	104	115	90	703	17.8
55-59	11	12	13	19	23	30	34	31	30	203	5.1
60-64	4	6	9	4	6	10	19	22	10	90	2.3
65 +	1	2	0	0	5	11	3	4	3	29	0.7
Unknown	0	1	0	0	0	0	0	0	0	1	0.0
Total	265	326	281	394	445	625	574	590	451	3951	100.0

Table 3-5 Gender for NSW Workers' Compensation claims in horticulture and fruit growing industries, 1992/93-2000/01

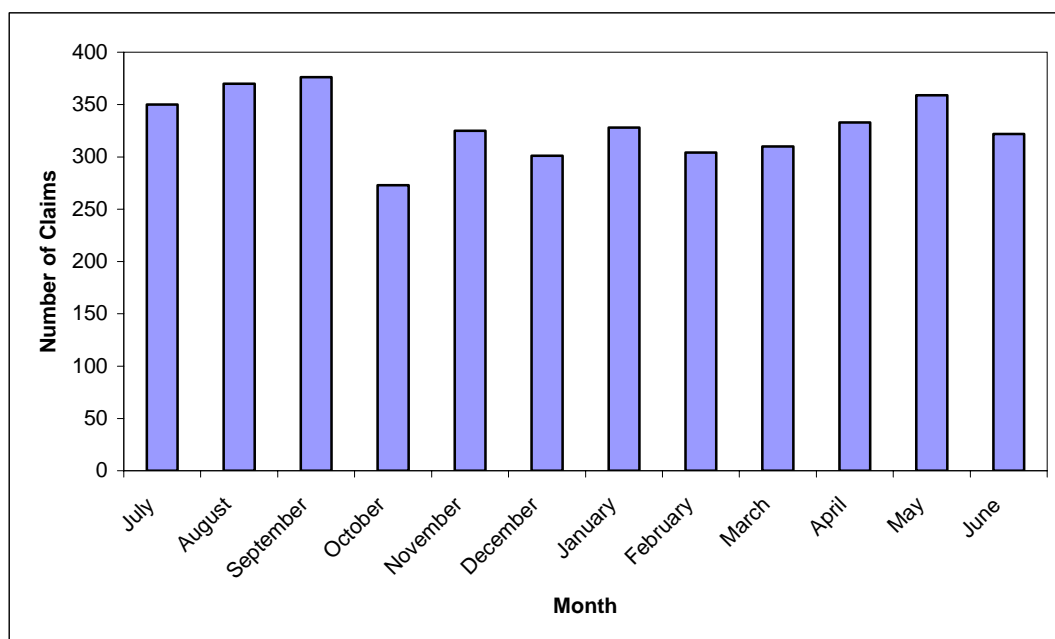
Gender	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Female	59	104	87	111	119	136	130	135	112	993	25.1
Male	206	222	194	283	326	489	444	455	339	2958	74.9
Total	265	326	281	394	445	625	574	590	451	3951	100.0

The number of compensated claims varied in the horticulture and fruit growing industry from 8 to 80 per month (see Table 3-6 and Figure 3-1). September (9.5%), August (9.4%) and May (9.1%) were the months with the highest number of claims, whereas the smallest number of claims were made in October.

Table 3-6 Month for NSW Workers' Compensation claims in horticulture and fruit growing industries, 1992/93-2000/01

Month of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
July	23	25	25	39	41	50	54	44	49	350	8.9
August	21	22	19	51	28	64	50	68	47	370	9.4
September	28	23	38	34	36	80	53	42	42	376	9.5
October	25	28	14	37	27	37	32	45	28	273	6.9
November	31	40	23	26	38	44	44	45	34	325	8.2
December	27	16	32	24	53	51	47	43	8	301	7.6
January	18	19	18	26	34	65	45	53	50	328	8.3
February	25	30	19	39	33	39	39	44	36	304	7.7
March	14	20	29	29	39	49	44	43	43	310	7.8
April	16	51	18	35	41	30	47	55	40	333	8.4
May	19	28	31	30	42	51	56	65	37	359	9.1
June	18	24	15	24	33	65	63	43	37	322	8.1
Total	265	326	281	394	445	625	574	590	451	3951	100.0

Figure 3-1 Number of injuries by month for NSW Workers' Compensation claims in horticulture and fruit growing industries, 1992/93-2000/01



The majority of the claims in the horticulture and fruit growing industry were submitted by *labourers and related workers* (70.75%). The other common occupational groups claiming workers' compensation were *managers and administrators* (11.2%) and *tradespersons* (9.1%) (Table 3-7).

Table 3-7 Major occupation for NSW Workers' Compensation claims in horticulture and fruit growing industries, 1992/93-2000/01

Occupation	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Managers & administrators	18	24	25	32	49	73	91	66	63	441	11.2
Professionals	2	6	0	4	7	7	5	4	6	41	1.0
Para-professionals	4	3	2	5	3	2	4	2	3	28	0.7
Tradespersons	27	34	28	42	39	45	42	58	43	358	9.1
Clerks	0	4	2	2	3	6	3	5	0	25	0.6
Salespersons & personal service workers	2	4	3	4	5	7	5	4	2	36	0.9
Plant & machine operators, & drivers	10	23	10	23	17	28	35	36	27	209	5.3
Labourers & related workers	202	209	211	282	321	457	389	415	307	2793	70.7
Unknown	0	19	0	0	1	0	0	0	0	20	0.5
Total	265	326	281	394	445	625	574	590	451	3951	100.0

In horticulture and fruit growing industry, the largest numbers of claims were made due to injuries from *non-powered hand tools, appliances and equipment* (27.5%), *environmental agencies* (22.0%), *mobile plant and transport* (13.6%), and *materials and substances* (12.2%) (Table 3-8).

Table 3-8 Agency of injury for NSW Workers' Compensation claims in horticulture and fruit growing industries, 1992/93-2000/01

Agency	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Machinery & (mainly) fixed plant	17	11	9	25	24	37	31	40	26	220	5.6
Mobile plant & transport	36	39	33	58	81	89	80	59	63	538	13.6
Powered equipment, tools & appliances	13	11	10	5	13	16	12	22	11	113	2.9
Non-powered hand tools, appliances & equipment	85	111	78	102	113	156	141	167	132	1085	27.5
Chemicals & chemical product	3	25	9	10	12	17	11	10	7	104	2.6
Materials & substances	27	32	37	54	46	80	77	71	59	483	12.2
Environmental agencies	68	77	76	91	91	149	121	117	78	868	22.0
Animal, human & biological agencies	4	5	10	21	18	31	40	26	20	175	4.4
Other & unspecified agencies	12	15	19	28	47	50	61	78	55	365	9.2
Total	265	326	281	394	445	625	574	590	451	3951	100.0

The most common mechanism of injury in the horticulture and fruit growing industry resulted from *body stressing* (29.3%), *falls, trips and slips* (23.1%), *being hit by moving objects* (21.6%), and *hitting objects with a part of the body* (3.9%) (Table 3-9).

Table 3-9 Mechanism of injury for NSW Workers' Compensation claims in horticulture and fruit growing industries, 1992/93-2000/01

Mechanism	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Falls, trips & slips of a person	70	77	57	84	82	164	135	139	104	912	23.1
Hitting objects with a part of the body	45	40	38	44	51	80	73	94	85	550	13.9
Being hit by moving objects	56	66	57	95	113	135	122	116	92	852	21.6
Sound & pressure	0	3	0	3	4	4	0	1	0	15	0.4
Body stressing	68	94	97	115	147	158	172	187	119	1157	29.3
Heat, radiation & electricity	4	3	4	6	3	6	5	4	1	36	0.9
Chemicals & other substances	6	25	12	20	18	35	37	20	11	184	4.7
Biological factors	0	0	2	2	0	0	1	0	2	7	0.2
Mental stress	0	0	0	0	4	2	3	7	1	17	0.4
Other & unspecified mechanism	16	18	14	25	23	41	26	22	36	221	5.6
Total	265	326	281	394	445	625	574	590	451	3951	100.0

Upper limbs (34.7%), *trunk* (26.0%), *lower limbs* (20.7%) and *head* (10.3%) were the commonly injured body location for people claiming workers' compensation claims in horticulture and fruit growing industry (Table 3-10). Nearly half (45.2%) of the claims were *sprain/strain and dislocation* injuries. The other common injuries were *open wound with traumatic amputation* (18.4%), *contusion and crushing injury* (9.6%), and *fractures* (8.4%) (Table 3-11).

Table 3-10 Body location of injury for NSW Workers' Compensation claims in horticulture and fruit growing industries, 1992/93-2000/01

Body Location	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Head	18	27	20	36	52	72	74	63	43	405	10.3
Neck	6	7	8	10	8	13	11	18	10	91	2.3
Trunk	80	89	87	106	111	155	129	151	118	1026	26.0
Upper limbs	94	114	89	123	147	225	201	216	163	1372	34.7
Lower limbs	60	58	59	89	95	128	128	107	95	819	20.7
Multiple locations	7	6	15	25	25	27	28	27	19	179	4.5
Systemic locations	0	24	2	5	3	1	1	1	1	38	1.0
Non-physical locations	0	0	0	0	4	2	2	7	2	17	0.4
Unspecified locations	0	1	1	0	0	2	0	0	0	4	0.1
Total	265	326	281	394	445	625	574	590	451	3951	100.0

Table 3-11 Nature of injury for NSW Workers' Compensation claims in horticulture and fruit growing industries, 1992/93-2000/01

Nature of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Fractures	20	27	14	38	44	53	48	47	41	332	8.4
Sprain/strain & dislocation	112	138	147	176	197	273	253	274	217	1787	45.2
Intracranial injury, including concussion	0	0	0	3	3	2	4	0	2	14	0.4
Internal injury of chest, abdomen & pelvis	0	0	3	0	0	0	0	1	0	4	0.1
Open wound & traumatic amputation	72	68	43	63	77	127	88	105	85	728	18.4
Superficial injury	4	6	5	7	10	12	18	21	13	96	2.4
Contusion & crushing injury	29	27	28	40	45	59	52	54	45	379	9.6
Foreign body	7	10	9	13	19	30	31	25	13	157	4.0
Burns	4	4	7	7	6	9	9	4	2	52	1.3
Poisoning & toxic effects of substances	3	3	4	16	10	21	26	13	8	104	2.6
Multiple injuries	0	0	1	5	2	0	3	2	1	14	0.4
Other injuries NEC	0	3	0	2	1	4	5	2	4	21	0.5
Diseases of nervous system	0	1	2	1	3	2	8	2	3	22	0.6
Diseases of eye & ear	1	1	2	4	6	5	2	3	1	25	0.6
Diseases of the musculoskeletal system & connective tissue	7	8	7	11	9	12	14	15	8	91	2.3
Diseases of the skin & subcutaneous tissue	1	2	5	3	3	7	3	8	2	34	0.9
Hernia	5	6	3	3	3	5	5	6	2	38	1.0
Zoonoses & other infectious & parasitic diseases	0	0	0	1	0	0	0	0	1	2	0.1
Diseases of the respiratory system	0	22	1	0	1	1	0	1	1	27	0.7
Mental disorders	0	0	0	0	4	2	2	7	1	16	0.4
Other diseases	0	0	0	1	2	1	3	0	1	8	0.2
Total	265	326	281	394	445	625	574	590	451	3951	100.0

3.2. Grain, Sheep and Beef Cattle Farming

In the grain, sheep and beef cattle industries of NSW there were 9,631 workers' compensation claims over the period 1 July 1992 to 30 June 2001, averaging 1,070 compensation claims per annum. The industries included in this grouping include grain growing, combined grain growing/sheep farming/beef cattle farming, sheep/beef cattle farming, sheep farming, beef cattle farming and beef cattle feedlots. The average compensation claim ranged from \$11,213 for grain growing to \$22,531 for grain, sheep and beef cattle farming NEC (Table 3-2). The amount of time off work in weeks ranged from 3.25 for grain, sheep and beef cattle farming NEC to 9.12 for sheep/beef cattle farming (Table 3-3).

The employees claiming workers' compensation in the grain, sheep and beef cattle industries were most commonly aged 25-34 yrs (26.4%), 35-44 yrs (22.8%), and 45-54 yrs (18.2%) and were male (94.4%) (see Table 3-13 and 3-13).

Table 3-12 Age group for NSW Workers' Compensation claims in the grain, sheep and beef cattle industries, 1992/93-2000/01

Age groups	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
0-14	1	2	0	1	1	1	3	0	3	12	0.1
15-19	78	75	65	64	43	52	61	52	72	562	5.8
20-24	189	159	185	135	120	123	131	124	132	1298	13.5
25-34	313	323	303	308	264	260	280	267	226	2544	26.4
35-44	243	245	241	236	225	213	267	290	235	2195	22.8
45-54	190	193	195	219	162	180	227	206	185	1757	18.2
55-59	77	60	63	75	73	83	82	92	66	671	7.0
60-64	45	42	36	36	43	50	59	55	43	409	4.2
65 +	14	16	17	20	20	22	29	21	23	182	1.9
Unknown	0	0	0	0	0	0	1	0	0	1	0.0
Total	1150	1115	1105	1094	951	984	1140	1107	985	9631	100.0

Table 3-13 Gender for NSW Workers' Compensation claims in the grain, sheep and beef cattle industries, 1992/93-2000/01

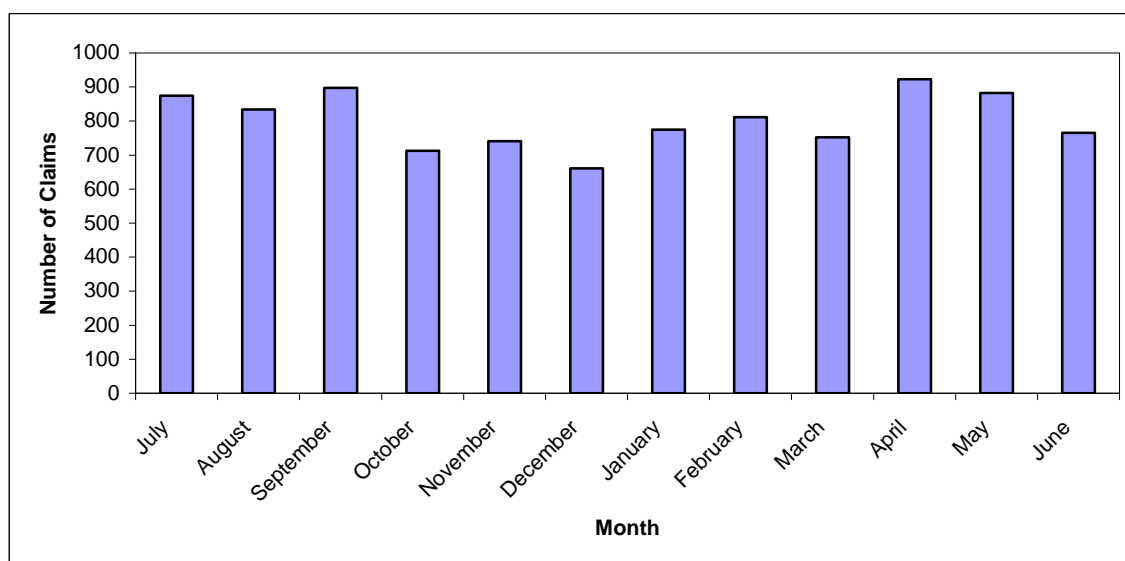
Gender	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Female	57	65	68	54	48	52	61	62	68	535	5.6
Male	1093	1050	1037	1040	903	932	1079	1045	917	9096	94.4
Total	1150	1115	1105	1094	951	984	1140	1107	985	9631	100.0

The number of workers' compensation claims varied from 59 to 119 per month in the grain, sheep and beef cattle industries. April (9.6%), September (9.3%), May (9.2%), and July (9.1%) were the months in which largest numbers of claims, whereas in December (6.9%) had the smallest number of claims (Table 3-14 and Figure 3-2).

Table 3-14 Month of injury for NSW Workers' Compensation claims in the grain, sheep and beef cattle industries, 1992/93-2000/01

Month of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
July	110	124	88	85	85	82	86	99	116	875	9.1
August	107	88	109	110	86	73	72	99	90	834	8.7
September	108	92	97	103	87	112	118	95	85	897	9.3
October	76	92	83	62	79	67	88	84	82	713	7.4
November	78	90	72	99	69	59	96	97	81	741	7.7
December	83	73	81	72	75	92	83	77	25	661	6.9
January	80	67	107	103	75	92	91	92	68	775	8.0
February	114	97	88	102	67	88	77	85	94	812	8.4
March	119	71	75	81	86	76	85	79	80	752	7.8
April	97	95	97	98	85	90	129	114	118	923	9.6
May	97	113	115	97	89	85	112	101	73	882	9.2
June	81	113	93	82	68	68	103	85	73	766	8.0
Total	1150	1115	1105	1094	951	984	1140	1107	985	9631	100.0

Figure 3-2 Number of injuries by month for NSW Workers' Compensation claims in the grain, sheep and beef cattle industries, 1992/93-2000/01



The occupational groups that claimed workers' compensation in the grain, sheep and beef cattle industries were *labourers and related workers* (51.9%), *tradespersons* (22.7%), and *managers and administrators* (19.9%) (Table 3-15).

Table 3-15 Major occupation for NSW Workers' Compensation claims in the grain, sheep and beef cattle industries, 1992/93-2000/01

Occupation	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Managers & administrators	167	181	210	211	174	206	292	248	224	1913	19.9
Professionals	1	2	2	1	3	7	2	6	8	32	0.3
Para-professionals	4	6	3	13	9	7	4	6	9	61	0.6
Tradespersons	316	289	268	282	212	167	227	238	190	2189	22.7
Clerks	3	5	5	3	1	3	6	4	3	33	0.3
Salespersons & personal service workers	1	5	2	4	4	5	6	9	10	46	0.5
Plant & machine operators, & drivers	23	37	24	44	29	37	44	70	51	359	3.7
Labourers & related workers	635	590	591	536	519	552	559	526	490	4998	51.9
Total	1150	1115	1105	1094	951	984	1140	1107	985	9631	100.0

Animal, human and biological agencies (26.0%) was the most common agency of injury for NSW grain, sheep and beef cattle industry workers claiming workers' compensation, followed by *mobile plant and transport* (16.2%), and *environmental agencies* (1,241, 12.9%) (Table 3-16). *Being hit by moving objects* (30.3%) and *body stressing* (24.6%) were the most common mechanisms of injury (Table 3-17).

Table 3-16 Agency of injury for NSW Workers' Compensation claims in the grain, sheep and beef cattle industries, 1992/93-2000/01

Agency	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Machinery & (mainly) fixed plant	132	161	125	117	103	83	110	97	84	1012	10.5
Mobile plant & transport	169	169	189	165	171	179	186	195	141	1564	16.2
Powered equipment, tools & appliances	30	29	42	32	28	27	36	26	28	278	2.9
Non-powered hand tools, appliances & equipment	159	141	128	128	121	116	146	145	139	1223	12.7
Chemicals & chemical product	13	11	11	13	9	12	22	11	13	115	1.2
Materials & substances	115	106	112	118	99	100	129	98	126	1003	10.4
Environmental agencies	130	147	167	154	123	129	135	135	121	1241	12.9
Animal, human & biological agencies	334	298	248	296	245	257	280	293	254	2505	26.0
Other & unspecified agencies	68	53	83	71	52	81	96	107	79	690	7.2
Total	1150	1115	1105	1094	951	984	1140	1107	985	9631	100.0

Table 3-17 Mechanism of injury for NSW Workers' Compensation claims in the grain, sheep and beef cattle industries, 1992/93-2000/01

Mechanism	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Falls, trips & slips of a person	191	197	202	179	164	175	194	199	196	1697	17.6
Hitting objects with a part of the body	141	127	127	134	129	130	141	148	138	1215	12.6
Being hit by moving objects	357	335	310	328	295	286	363	336	305	2915	30.3
Sound & pressure	6	10	3	17	6	9	8	8	5	72	0.7
Body stressing	291	286	297	287	228	246	260	265	206	2366	24.6
Heat, radiation & electricity	18	21	18	17	6	12	21	12	18	143	1.5
Chemicals & other substances	19	17	18	16	16	13	12	24	16	151	1.6
Biological factors	23	28	20	11	10	9	10	4	6	121	1.3
Mental stress	0	0	4	1	1	2	3	4	2	17	0.2
Other & unspecified mechanism	104	94	106	104	96	102	128	107	93	934	9.7
Total	1150	1115	1105	1094	951	984	1140	1107	985	9631	100.0

The body locations that were most commonly injured by people in the grain, sheep and beef cattle industries were *upper limbs* (33.7%), *lower limbs* (24.55), and *trunk* (23.6%) (Table 3-18).

The injuries most commonly sustained were *sprain/strain and dislocations* (39.7%) *open wound with traumatic amputation* (19.1%) and *fractures* (13.6%) (Table 3-19).

Table 3-18 Body location of injury for NSW Workers' Compensation claims in the grain, sheep and beef cattle industries, 1992/93-2000/01

Bodily Location	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Head	112	112	119	113	82	103	129	101	91	962	10.0
Neck	20	10	14	16	7	9	15	16	13	120	1.2
Trunk	266	266	281	273	213	227	280	257	213	2276	23.6
Upper limbs	407	407	325	334	343	322	364	393	347	3242	33.7
Lower limbs	271	241	275	285	243	242	270	275	261	2363	24.5
Multiple locations	49	49	68	55	53	67	67	53	50	511	5.3
Systemic locations	25	28	17	12	7	9	7	4	6	115	1.2
Non-physical locations	0	0	3	1	1	1	3	5	2	16	0.2
Unspecified locations	0	2	3	5	2	4	5	3	2	26	0.3
Total	1150	1115	1105	1094	951	984	1140	1107	985	9631	100.0

Table 3-19 Nature of injury for NSW Workers' Compensation claims in the grain, sheep and beef cattle industries, 1992/93-2000/01

Nature of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Fractures	144	148	138	152	139	141	166	140	140	1308	13.6
Sprain/strain and dislocation	399	409	461	450	372	422	459	458	395	3825	39.7
Intracranial injury, including concussion	10	12	14	6	6	6	5	6	10	75	0.8
Internal injury of chest, abdomen & pelvis	3	4	2	1	4	0	4	1	0	19	0.2
Open wound & traumatic amputation	243	224	195	203	194	172	204	207	195	1837	19.1
Superficial injury	15	18	21	38	24	22	34	30	8	210	2.2
Contusion & crushing injury	117	109	106	84	81	99	101	117	110	924	9.6
Foreign body	36	39	36	29	23	21	33	21	27	265	2.8
Burns	17	23	18	14	13	15	19	13	13	145	1.5
Poisoning & toxic effects of substances	6	10	8	10	5	5	7	17	8	76	0.8
Multiple injuries	7	6	11	5	8	10	13	8	7	75	0.8
Other injuries nec	10	9	8	12	8	12	13	11	17	100	1.0
Diseases of nervous system	2	5	4	5	4	8	1	3	4	36	0.4
Diseases of eye & ear	12	14	7	23	8	11	13	14	9	111	1.2
Diseases of the musculoskeletal system & connective tissue	67	40	30	33	28	18	25	27	15	283	2.9
Diseases of the skin & subcutaneous tissue	14	8	8	5	11	2	6	7	7	68	0.7
Hernia	15	11	15	9	12	9	17	14	7	109	1.1
Zoonoses & other infectious & parasitic diseases	23	21	15	7	5	8	9	3	3	94	1.0
Diseases of the respiratory system	4	1	0	1	3	0	1	0	2	12	0.1
Mental disorders	2	3	2	3	1	1	1	0	2	15	0.2
Other diseases	0	0	3	1	1	1	3	5	2	16	0.2
Fractures	4	1	3	3	1	1	6	5	4	28	0.3
Total	1150	1115	1105	1094	951	984	1140	1107	985	9631	100.0

3.3. Dairy Industry

In the dairy cattle industry of NSW there were 1,853 workers' compensation claims over the period 1 July 1992 to 30 June 2001, averaging 206 compensation claims per annum. The average compensation claim was \$7,596 (Table 3-2) and amount of time off work was 5.5 weeks (Table 3-3).

Of the 1,853 workers' compensation claims made in the dairy industry, over one quarter (28.5%) of claims were from the 25-34 year age group (Table 3-20) and 86.1% were male (Table 3-20). Other age groups commonly claiming workers' compensation were 35-44 years (23.7%) and 45-54 years (16.5%). More than half (52.2%) of the dairy industries' workers' compensation claims were from people aged 25-44 years. Only 8.9% of workers' compensation injury claims were made by employees aged over 55 years.

Table 3-20 Age group of injury for NSW Workers' Compensation claims in the dairy industry, 1992/93-2000/01

Age groups	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
15-19	12	16	14	16	20	19	21	20	15	153	8.3
20-24	35	37	51	46	29	18	15	17	11	259	14.0
25-34	90	93	76	68	76	30	29	36	31	529	28.5
35-44	62	70	67	74	43	32	29	38	24	439	23.7
45-54	47	35	59	43	41	19	20	20	22	306	16.5
55-59	17	9	12	10	13	7	8	4	8	88	4.7
60-64	5	9	5	14	7	5	4	7	2	58	3.1
65 +	3	1	4	0	1	6	0	3	3	21	1.1
Total	271	270	288	271	230	136	126	145	116	1853	100.0

Table 3-20 Gender for NSW Workers' Compensation claims in the dairy industry, 1992/93-2000/01

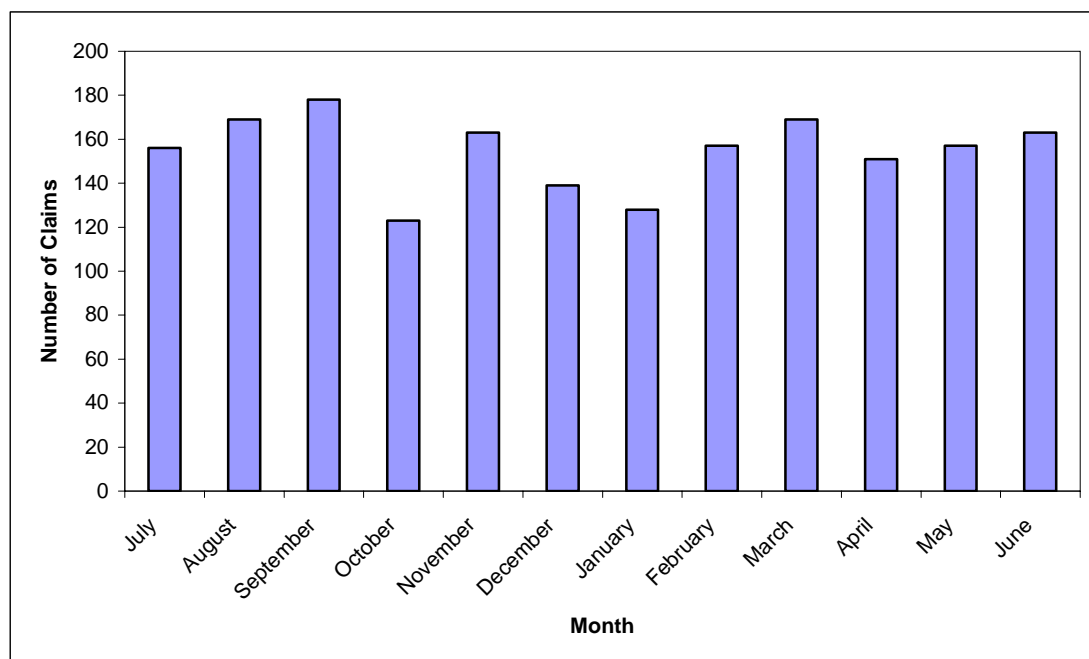
Gender	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Female	34	43	44	39	33	13	17	18	17	258	13.9
Male	237	227	244	232	197	123	109	127	99	1595	86.1
Total	271	270	288	271	230	136	126	145	116	1853	100.0

The number of claims in the dairy industry varied from 4 to 33 per month. The months with the highest numbers of claims were September (9.6%), August (9.1%) and March (9.1%) and the month with the lowest number of claims was October (6.6%) (Table 3-21 and Figure 3-3)

Table 3-21 Month of injury for NSW Workers' Compensation claims in the dairy industry, 1992/93-2000/01

Month of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
July	22	15	25	29	21	11	10	10	13	156	8.4
August	27	30	23	27	14	8	16	14	10	169	9.1
September	25	27	32	28	24	14	11	11	6	178	9.6
October	19	16	14	17	16	14	6	9	12	123	6.6
November	20	26	19	33	17	12	10	14	12	163	8.8
December	22	16	22	26	15	13	9	12	4	139	7.5
January	17	22	23	9	17	12	10	6	12	128	6.9
February	26	17	23	14	20	14	10	17	16	157	8.5
March	22	28	21	23	28	8	12	16	11	169	9.1
April	24	19	28	22	20	11	10	11	6	151	8.1
May	24	22	27	20	15	12	12	16	9	157	8.5
June	23	32	31	23	23	7	10	9	5	163	8.8
Total	271	270	288	271	230	136	126	145	116	1853	100.0

Figure 3-3 Number of injuries by month for NSW Workers' Compensation claims in the dairy industry, 1992/93-2000/01



More than half (59.8%) of the workers' compensation claims in the dairy industry were from *labourers and related workers* occupational group. *Managers and administrators* (16.9%) and *plant and machine operators and drivers* (10.4%) were the other common occupational groups who made workers' compensation claims (Table 3-22).

Table 3-22 Major occupation for NSW Workers' Compensation claims in the dairy industry, 1992/93-2000/01

Occupation	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Managers & administrators	27	22	33	44	35	37	40	37	38	313	16.9
Professionals	5	4	3	0	0	0	0	0	0	12	0.6
Para-professionals	4	2	3	2	0	2	0	1	1	15	0.8
Tradespersons	28	25	26	21	23	6	6	7	1	143	7.7
Clerks	11	5	4	4	4	0	0	2	0	30	1.6
Salespersons & personal service workers	5	3	13	6	7	2	0	3	1	40	2.2
Plant & machine operators, & drivers	46	52	27	30	24	4	1	7	1	192	10.4
Labourers & related workers	145	157	179	164	137	85	79	88	74	1108	59.8
Total	271	270	288	271	230	136	126	145	116	1853	100.0

The largest number of dairy industry workers' compensation claims were associated with *non-powered hand tools, appliances and equipment* (22.3%), followed by *animal, human and biological agencies* (17.7%), *materials and substances* (15.5%), *environmental agencies* (13.6%) and *mobile plant and transport* (13.1%) (Table 3-23).

Table 3-23 Agency of injury for NSW Workers' Compensation claims in the dairy industry, 1992/93-2000/01

Agency	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Machinery & (mainly) fixed plant	27	28	20	14	18	5	3	5	5	125	6.7
Mobile plant & transport	33	34	28	21	33	23	18	26	26	242	13.1
Powered equipment, tools & appliances	8	4	11	11	4	2	3	4	2	49	2.6
Non-powered hand tools, appliances & equipment	64	67	87	76	60	21	14	16	8	413	22.3
Chemicals & chemical product	13	12	15	10	7	3	1	2	4	67	3.6
Materials & substances	49	51	45	42	43	16	21	11	10	288	15.5
Environmental agencies	36	33	38	42	32	18	18	24	11	252	13.6
Animal, human & biological agencies	35	35	32	45	22	36	40	47	36	328	17.7
Other & unspecified agencies	6	6	12	10	11	12	8	10	14	89	4.8
Total	271	270	288	271	230	136	126	145	116	1853	100.0

For workers' compensation claims in the dairy cattle industry the common mechanisms of injury were *being hit by moving objects* (31.9%), *body stressing* (24.9%), and *falls, trips and slips* (18.0%) (Table 3-24).

Table 3-24 Mechanism of injury for NSW Workers' Compensation claims in the dairy industry, 1992/93-2000/01

Mechanism	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Falls, trips & slips of a person	64	48	48	49	43	21	20	21	19	333	18.0
Hitting objects with a part of the body	13	18	24	27	23	12	15	11	9	152	8.2
Being hit by moving objects	77	93	83	84	64	51	46	54	40	592	31.9
Sound & pressure	3	2	4	1	4	1	0	0	1	16	0.9
Body stressing	70	66	83	78	55	26	28	33	23	462	24.9
Heat, radiation & electricity	12	9	8	8	8	3	4	3	1	56	3.0
Chemicals & other substances	14	14	16	13	7	3	1	1	5	74	4.0
Biological factors	3	1	2	1	0	2	2	2	1	14	0.8
Mental stress	1	2	2	0	1	0	0	1	1	8	0.4
Other & unspecified mechanism	14	17	18	10	25	17	10	19	16	146	7.9
Total	271	270	288	271	230	136	126	145	116	1853	100.0

Upper limbs (35.1%), *trunk* (23.6%), and *lower limbs* (21.6%) were the most common locations of injury reported in dairy industry workers' compensation claims (Table 3-25). The nature of injury most commonly associated with those claims were *sprains/strain and dislocation* (38.3%). Other common injury claims were *open wound with traumatic amputation* (14.3%), *contusion and crushing injury* (14.2%) and *fractures* (10.6%) (Table 3-26).

Table 3-25 Body location of injury for NSW Workers' Compensation claims in the dairy industry, 1992/93-2000/01

Body Location	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Head	34	35	44	39	29	15	21	12	13	242	13.1
Neck	4	7	2	7	4	1	1	1	1	28	1.5
Trunk	70	65	63	68	55	33	27	34	22	437	23.6
Upper limbs	82	93	84	96	96	55	42	59	43	650	35.1
Lower limbs	68	54	73	53	35	24	30	32	32	401	21.6
Multiple locations	5	7	13	6	8	4	4	4	3	54	2.9
Systemic locations	7	4	2	1	0	2	1	2	1	20	1.1
Non-physical locations	1	2	2	0	1	0	0	1	1	8	0.4
Unspecified locations	0	3	5	1	2	2	0	0	0	13	0.7
Total	271	270	288	271	230	136	126	145	116	1853	100.0

Table 3-26 Nature of injury for NSW Workers' Compensation claims in the dairy industry, 1992/93-2000/01

Nature of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Fractures	15	19	26	22	29	19	14	30	22	196	10.6
Sprain/strain and dislocation	113	103	102	110	86	49	48	58	41	710	38.3
Intracranial injury, including concussion	1	0	3	0	0	2	2	1	0	9	0.5
Internal injury of chest, abdomen & pelvis	0	2	0	0	0	1	1	0	0	4	0.2
Open wound & traumatic amputation	44	42	40	44	33	17	17	14	14	265	14.3
Superficial injury	3	2	11	13	7	4	7	2	4	53	2.9
Contusion & crushing injury	35	40	44	32	31	25	19	19	18	263	14.2
Foreign body	13	17	16	10	12	3	6	5	2	84	4.5
Burns	13	12	16	15	7	4	5	3	4	79	4.3
Poisoning & toxic effects of substances	4	4	1	4	0	1	0	1	1	16	0.9
Multiple injuries	1	1	2	0	1	0	1	1	0	7	0.4
Other injuries NEC	3	3	5	2	2	4	1	0	3	23	1.2
Diseases of nervous system	0	0	2	1	0	0	0	0	0	3	0.2
Diseases of eye & ear	3	2	4	2	6	1	0	0	1	19	1.0
Diseases of the musculoskeletal system & connective tissue	8	8	7	11	8	2	1	3	3	51	2.8
Diseases of the skin & subcutaneous tissue	3	4	3	1	2	0	2	1	0	16	0.9
Hernia	4	5	1	4	4	2	1	4	0	25	1.3
Zoonoses & other infectious & parasitic diseases	3	2	0	0	0	2	1	2	1	11	0.6
Diseases of the respiratory system	4	2	3	0	1	0	0	0	0	10	0.5
Mental disorders	1	2	2	0	1	0	0	1	1	8	0.4
Other diseases	0	0	0	0	0	0	0	0	1	1	0.1
Total	271	270	288	271	230	136	126	145	116	1853	100.0

3.4. Poultry Industry

In the poultry farming industries of NSW, there were 4,796 workers' compensation claims over the period 1 July 1992 to 30 June 2001, averaging 533 compensation claims per annum. The industries included in this grouping include poultry farming (meat) and poultry farming (eggs). The average compensation claims were \$6,400 for poultry farming (meat) and \$7,192.21 for poultry farming (eggs) (Table 3-2) and the amount of time off work in weeks were 4.5 and 5.8 respectively (Table 3-3).

The workers' compensation injury claims were the largest in 20-24, 25-34, 35-44 and 45-54 year age groups accounting for 89.2% of the total injury in the poultry industry. More than half (55.3%) of the claims were presented by employees aged between 25 and 44 years (Table 3-27) and 61.7% were male (Table 3-289).

Table 3-27 Age group for NSW Workers' Compensation claims in the poultry industry, 1992/93-2000/01

Age groups	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
0-14	0	0	0	0	0	0	0	0	1	1	0.0
15-19	31	36	28	34	32	40	42	31	19	293	6.1
20-24	96	71	66	75	80	104	161	135	46	834	17.4
25-34	174	150	157	152	147	143	234	259	86	1502	31.3
35-44	96	115	101	118	124	141	194	186	75	1150	24.0
45-54	51	70	66	78	75	106	149	126	68	789	16.5
55-59	12	12	17	16	9	28	28	21	9	152	3.2
60-64	5	2	5	13	9	7	10	10	2	63	1.3
65 +	0	0	2	0	3	2	1	2	2	12	0.3
Total	465	456	442	486	479	571	819	770	308	4796	100.0

Table 3-28 Gender for NSW Workers' Compensation claims in the poultry industry, 1992/93-2000/01

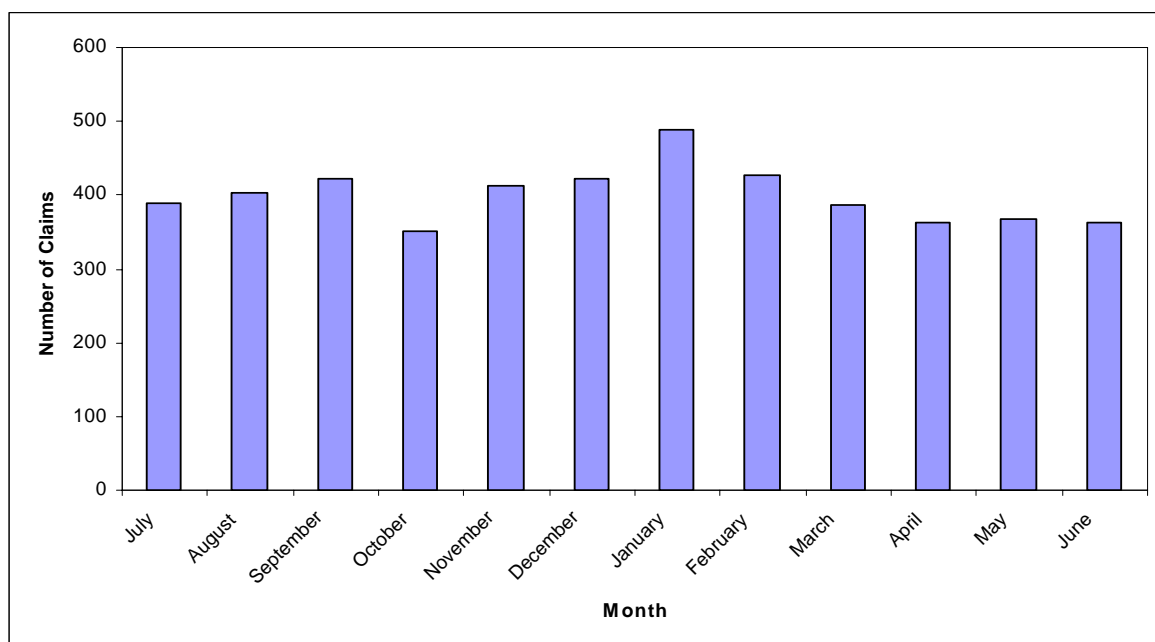
Gender	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Female	170	176	161	192	164	213	342	300	121	1839	38.3
Male	295	280	281	294	315	358	477	470	187	2957	61.7
Total	465	456	442	486	479	571	819	770	308	4796	100.0

The number of poultry industry workers' compensation claims in NSW varied from 17 to 83 per month. On average more claims were made in the month of January (10.2%) and least in October (7.3%) (Table 3-30 and Figure 3-1).

Table 3-30 Month of injury for NSW Workers' Compensation claims in the poultry industry, 1992/93-2000/01

Month of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
July	32	33	35	47	37	54	71	57	23	389	8.1
August	40	37	34	38	33	50	83	67	22	404	8.4
September	45	37	43	46	41	46	64	67	32	421	8.8
October	50	29	36	25	43	43	51	52	22	351	7.3
November	50	21	38	45	29	48	64	83	35	413	8.6
December	50	40	29	47	49	44	82	62	18	421	8.8
January	38	72	51	40	47	50	79	69	42	488	10.2
February	24	57	37	41	51	50	69	63	35	427	8.9
March	35	40	38	45	38	55	57	62	17	387	8.1
April	33	34	38	35	44	43	65	52	20	364	7.6
May	29	33	24	40	37	45	69	67	24	368	7.7
June	39	23	39	37	30	43	65	69	18	363	7.6
Total	465	456	442	486	479	571	819	770	308	4796	100.0

Figure 3-4 Number of injuries by month for NSW Workers' Compensation claims in the poultry industry, 1992/93-2000/01



Seventy seven and a half (77.5%) of poultry industry claims were made by the occupational group *labourers and related workers*. The other common occupational groups claiming workers' compensation were *plant and machine operators, and drivers* (8.4%), *managers and administrators* (6.2%), and *tradespersons* (6.0%) (Table 3-29).

Table 3-29 Major occupation for NSW Workers' Compensation claims in the poultry industry, 1992/93-2000/01

Occupation	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Managers & administrators	23	20	32	40	25	38	42	46	30	296	6.2
Professionals	3	0	0	4	1	0	4	5	1	18	0.4
Para-professionals	1	0	1	0	1	1	3	4	1	12	0.3
Tradespersons	19	24	17	12	21	52	68	57	16	286	6.0
Clerks	2	0	1	3	2	3	8	6	7	32	0.7
Salespersons & personal service workers	3	1	4	4	3	4	4	3	6	32	0.7
Plant & machine operators, & drivers	28	37	27	33	51	39	66	68	52	401	8.4
Labourers & related workers	386	374	360	390	374	434	624	581	195	3718	77.5
Unknown	0	0	0	0	1	0	0	0	0	1	0.0
Total	465	456	442	486	479	571	819	770	308	4796	100.0

The largest number of NSW poultry industry workers' compensation claims were associated with contact with *non-powered hand tools, appliances and equipment* (28.3%). The other common agencies were *animal, human and biological agencies* (17.7%), *environmental agencies* (12.1%), *materials and substances* (10.9%) and *mobile plant and transport* (9.8%) (Table 3-32).

Table 3-32 Agency of injury for NSW Workers' Compensation claims in the poultry industry, 1992/93-2000/01

Agency	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Machinery & (mainly) fixed plant	28	36	32	26	43	54	79	65	20	383	8.0
Mobile plant & transport	40	50	46	42	60	49	82	77	22	468	9.8
Powered equipment, tools & appliances	10	9	11	13	5	14	19	15	10	106	2.2
Non-powered hand tools, appliances & equipment	147	117	127	131	123	183	221	213	93	1355	28.3
Chemicals & chemical product	11	12	12	18	16	19	25	20	6	139	2.9
Materials & substances	74	59	44	65	50	50	66	78	39	525	10.9
Environmental agencies	64	65	62	60	50	60	94	90	37	582	12.1
Animal, human & biological agencies	80	75	83	103	83	98	138	137	53	850	17.7
Other & unspecified agencies	11	33	25	28	49	44	95	75	28	388	8.1
Total	465	456	442	486	479	571	819	770	308	4796	100.0

Body stressing (37.6%) was the most common mechanism of injury claimed by NSW poultry workers. Other common mechanisms of injury included *being hit by moving objects* (22.6%), *falls, trips and slips* (17.2%) and *hitting objects with a part of the body* (12.6%) (Table 3-33).

Table 3-30 Mechanism of injury for NSW Workers' Compensation claims in the poultry industry, 1992/93-2000/01

Mechanism	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Falls, trips & slips of a person	81	75	87	81	75	95	132	137	63	826	17.2
Hitting objects with a part of the body	63	72	46	51	46	70	111	103	42	604	12.6
Being hit by moving objects	121	120	99	116	121	140	146	164	55	1082	22.6
Sound & pressure	3	5	7	4	2	0	2	6	2	31	0.6
Body stressing	161	147	155	183	193	215	334	299	115	1802	37.6
Heat, radiation & electricity	5	2	4	4	3	11	14	7	8	58	1.2
Chemicals & other substances	13	21	20	31	19	21	32	23	10	190	4.0
Biological factors	3	2	6	2	4	3	5	1	0	26	0.5
Mental stress	1	0	1	2	3	2	6	3	1	19	0.4
Other & unspecified mechanism	14	12	17	12	13	14	37	27	12	158	3.3
Total	465	456	442	486	479	571	819	770	308	4796	100.0

The common body parts injured by NSW poultry workers seeking worker's compensation were *upper limbs* (39.9%), *trunk* (25.2%) and *lower limb* (17.3%) (Table 3-31). The majority of injuries were due to *sprains/strain and dislocation* (50.9%). *Open wound with traumatic amputation* (14.2%) and *contusion & crushing injury* (12.8%) were other common injuries (Table 3-32).

Table 3-31 Body location of injury for NSW Workers' Compensation claims in the poultry industry, 1992/93-2000/01

Body Location	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Head	49	52	47	67	46	61	67	74	24	487	10.2
Neck	9	22	11	11	10	10	15	14	4	106	2.2
Trunk	118	84	139	125	125	142	219	178	80	1210	25.2
Upper limbs	197	182	150	178	196	226	340	323	121	1913	39.9
Lower limbs	75	90	77	86	70	94	129	150	59	830	17.3
Multiple locations	13	20	15	13	24	33	40	22	18	198	4.1
Systemic locations	1	3	0	2	2	0	2	3	1	14	0.3
Non-physical locations	1	0	1	2	3	2	6	4	1	20	0.4
Unspecified locations	2	3	2	2	3	3	1	2	0	18	0.4
Total	465	456	442	486	479	571	819	770	308	4796	100.0

Table 3-32 Nature of injury for NSW Workers' Compensation claims in the poultry industry, 1992/93-2000/01

Nature of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%	
Fractures		25	22	22	15	14	25	38	30	15	206	4.3
Sprain/strain and dislocation		211	205	217	236	239	297	458	417	159	2439	50.9
Intracranial injury, including concussion		4	1	3	1	1	2	1	2	0	15	0.3
Internal injury of chest, abdomen & pelvis		0	0	0	0	0	1	0	0	0	1	0.0
Open wound & traumatic amputation		70	76	61	73	64	86	111	94	48	683	14.2
Superficial injury		3	14	7	20	15	6	13	12	3	93	1.9
Contusion & crushing injury		76	58	61	56	56	74	90	104	39	614	12.8
Foreign body		19	26	10	14	21	22	19	32	8	171	3.6
Burns		10	4	9	10	3	18	16	10	11	91	1.9
Poisoning & toxic effects of substances		2	6	8	9	4	4	15	4	4	56	1.2
Multiple injuries		0	2	0	1	3	2	2	4	0	14	0.3
Other injuries NEC		3	4	2	6	6	3	9	8	0	41	0.9
Diseases of nervous system		3	4	2	2	4	2	2	1	2	22	0.5
Diseases of eye & ear		6	7	12	7	5	5	5	7	2	56	1.2
Diseases of the musculoskeletal system & connective tissue		19	13	10	21	21	8	15	25	6	138	2.9
Diseases of the skin & subcutaneous tissue		5	7	7	9	10	6	10	7	3	64	1.3
Hernia		5	3	5	3	6	3	6	6	4	41	0.9
Zoonoses & other infectious & parasitic diseases		2	1	3	0	1	1	1	0	0	9	0.2
Diseases of the respiratory system		0	1	1	1	2	2	1	3	0	11	0.2
Mental disorders		1	0	1	2	3	2	6	3	1	19	0.4
Other diseases		1	2	1	0	1	2	1	1	3	12	0.3
Total		465	456	442	486	479	571	819	770	308	4796	100.0

3.5. Other Livestock Farming

In the other livestock farming category there were 2,365 NSW workers' compensation claims for the period 1 July 1992 to 30 June 2001, averaging 263 compensation claims per annum. The industries included in this grouping are; pig farming, horse farming, deer farming and other livestock farming NEC. The average compensation claim ranged from \$4,080 for pig farming to \$11,466 for deer farming (Table 3-2). The amount of time off work ranged from 4.66 weeks for livestock farming NEC to 8.39 for deer farming (Table 3-3).

Over one quarter of all other livestock farming injuries occurred to the 25-34 year age group (27.4%) and the majority of claims (84.2%) were made by males (Table 3-33 and 3-37). Half (50.1%) of the total injury in this industry category occurred to claimants aged 25-44 years.

Table 3-33 Age group for NSW Workers' Compensation claims in other livestock industries, 1992/93-2000/01.

Age groups	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
0-14	0	1	0	0	0	0	0	0	0	1	0.0
15-19	6	3	9	10	12	41	29	28	48	186	7.9
20-24	13	12	14	31	31	90	85	97	73	446	18.9
25-34	16	18	22	74	57	135	101	134	92	649	27.4
35-44	20	14	15	59	47	104	90	109	80	538	22.7
45-54	9	7	8	42	34	61	72	71	52	356	15.1
55-59	8	1	3	15	5	20	18	17	16	103	4.4
60-64	2	0	1	11	9	11	11	11	12	68	2.9
65 +	0	0	0	1	1	6	3	5	2	18	0.8
Total	74	56	72	243	196	468	409	472	375	2365	100.0

Table 3-347 Gender for NSW Workers' Compensation claims in other livestock industries, 1992/93-2000/01

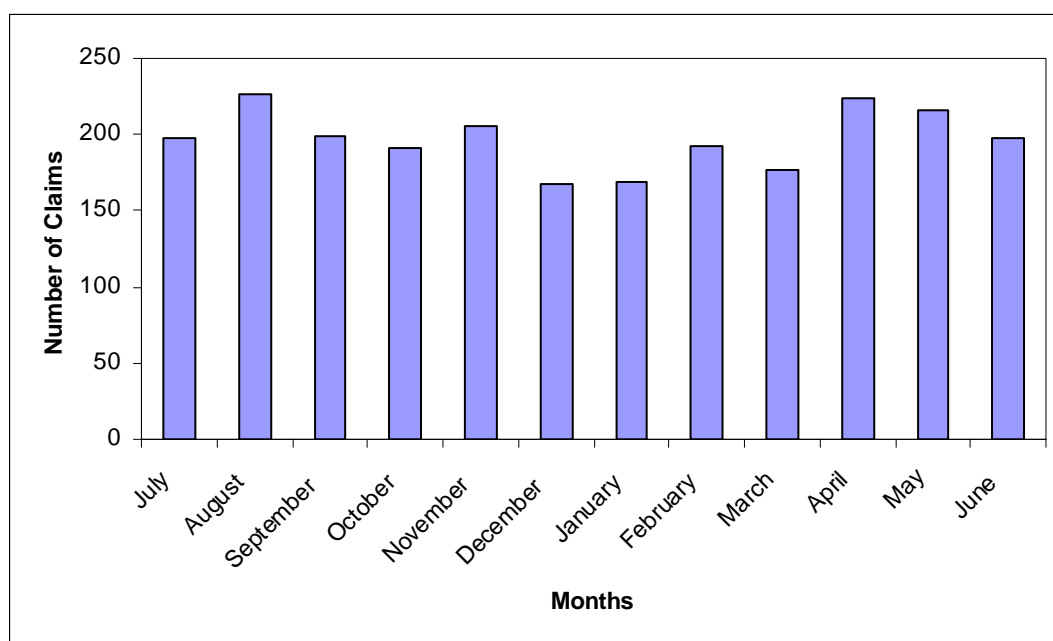
Gender	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Female	4	4	5	25	28	70	74	87	76	373	15.8
Male	70	52	67	218	168	398	335	385	299	1992	84.2
Total	74	56	72	243	196	468	409	472	375	2365	100.0

The number of injuries in other livestock industries varied from 1 to 52 per month. The largest number of injuries occurred in August (9.6%) and April (9.5%) and smallest number of injuries occurred in December and January (7.1% each) (Table 3-35 and Figure 3-5).

Table 3-35 Month of injury for NSW Workers' Compensation claims in other livestock industries, 1992/93-2000/01

Month of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
July	1	6	8	22	17	35	32	48	28	197	8.3
August	5	6	7	17	19	52	39	40	42	227	9.6
September	4	4	10	21	13	44	40	33	30	199	8.4
October	6	3	3	14	17	35	38	46	29	191	8.1
November	6	4	5	15	28	39	35	50	24	206	8.7
December	10	6	8	13	27	31	26	43	4	168	7.1
January	6	4	6	19	12	35	20	33	34	169	7.1
February	7	6	2	36	19	31	25	36	31	193	8.2
March	8	6	3	17	11	30	31	41	30	177	7.5
April	9	3	7	24	11	51	33	40	46	224	9.5
May	7	2	6	25	8	41	58	32	37	216	9.1
June	5	6	7	20	14	44	32	30	40	198	8.4
Total	74	56	72	243	196	468	409	472	375	2365	100.0

Figure 3-5 Number of injuries by month for NSW Workers' Compensation claims in other livestock industries, 1992/93-2000/01



Two-third (66.6%) of the workers' compensation claims in the other livestock industries were from the occupational group *labourers and related workers*. The other occupations to commonly claim workers' compensation were *managers and administrators* (16.4%) and *tradespersons* (12.6%) (Table 3-36).

Table 3-36 Major occupation for NSW Workers' Compensation claims in other livestock industries, 1992/93-2000/01

Occupation	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Managers & administrators	13	11	8	14	19	67	71	120	64	387	16.4
Professionals	0	0	0	0	1	3	4	8	4	20	0.8
Para-professionals	0	0	0	1	1	5	2	5	5	19	0.8
Tradespersons	5	9	10	61	25	47	43	60	39	299	12.6
Clerks	1	0	1	0	2	0	4	1	1	10	0.4
Salespersons & personal service workers	0	0	0	0	0	0	1	10	2	13	0.5
Plant & machine operators, & drivers	1	0	1	0	0	5	10	14	10	41	1.7
Labourers & related workers	54	36	52	167	148	341	274	254	250	1576	66.6
Total	74	56	72	243	196	468	409	472	375	2365	100.0

One-third (33.4%) of claims in other livestock industries were associated with *animal, human and biological agencies*. Other common causal agents/agencies included *non-powered hand tools, and appliances* (15.2%), *environmental agencies* (13.1%), *materials and substances* (11.7%), and *mobile plant and transport* (10.7%) (Table 3-40).

Table 3-40 Agency of injury for NSW Workers' Compensation claims in other livestock industries, 1992/93-2000/01

Agency	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Machinery & (mainly) fixed plant	3	4	3	12	8	14	15	21	11	91	3.8
Mobile plant & transport	11	12	10	13	13	44	52	53	45	253	10.7
Powered equipment, tools & appliances	5	2	5	5	7	12	17	12	4	69	2.9
Non-powered hand tools, appliances & equipment	8	6	8	54	28	81	55	72	48	360	15.2
Chemicals & chemical product	0	1	0	6	3	4	4	9	1	28	1.2
Materials & substances	11	7	19	20	30	49	48	47	45	276	11.7
Environmental agencies	10	9	10	41	27	63	34	56	59	309	13.1
Animal, human & biological agencies	21	15	14	62	65	157	147	178	131	790	33.4
Other & unspecified agencies	5	0	3	30	15	44	37	24	31	189	8.0
Total	74	56	72	243	196	468	409	472	375	2365	100.0

Being hit by moving objects (38.0%) was the most common mechanism of injury, followed by *body stressing* (22.2%), *falls, trips and slips* (16.2%) and *hitting objects with a part of the body* (12.3%) (Table 3-37).

Table 3-37 Mechanism of injury for NSW Workers' Compensation claims in other livestock industries, 1992/93-2000/01

Mechanism	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Falls, trips & slips of a person	15	9	9	31	22	85	49	87	75	382	16.2
Hitting objects with a part of the body	6	5	8	37	32	52	46	61	44	291	12.3
Being hit by moving objects	33	21	31	62	77	191	154	183	146	898	38.0
Sound & pressure	1	1	1	13	1	3	1	0	1	22	0.9
Body stressing	15	11	11	76	45	94	103	97	72	524	22.2
Heat, radiation & electricity	2	2	3	3	5	5	12	8	3	43	1.8
Chemicals & other substances	2	1	2	8	3	8	8	10	4	46	1.9
Biological factors	0	0	0	0	1	1	0	1	1	4	0.2
Mental stress	0	0	0	0	1	2	1	0	2	6	0.3
Other & unspecified mechanism	0	6	7	13	9	27	35	25	27	149	6.3
Total	74	56	72	243	196	468	409	472	375	2365	100.0

The most common body locations of injury in other livestock industries were *upper limbs* (30.7%), *lower limbs* (25.9%) and *trunk* (22.4%). There were 326 (13.8%) compensation claims due to injury to the *head* (Table 3-42). The types of injury were most commonly *sprain/strain and dislocation* (40.3%), followed by *open wound with traumatic amputation* (16.7%), *contusion and crushing injury* (16.7%) and *fractures* (9.1%) (Table 3-38).

Table 3-42 Body location of injury for NSW Workers' Compensation claims in other livestock industries, 1992/93-2000/01

Body Location	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Head	15	7	16	34	24	71	57	53	49	326	13.8
Neck	1	0	1	9	5	6	4	13	6	45	1.9
Trunk	17	11	12	55	43	110	89	107	85	529	22.4
Upper Limbs	18	16	18	81	63	138	129	151	112	726	30.7
Lower Limbs	21	16	21	49	49	121	101	130	104	612	25.9
Multiple Locations	2	5	3	14	8	17	25	16	14	104	4.4
Systemic locations	0	1	1	0	1	1	2	1	1	8	0.3
Non-physical locations	0	0	0	0	1	2	1	0	2	6	0.3
Unspecified Locations	0	0	0	1	2	1	1	1	2	8	0.3
Unknown	0	0	0	0	0	0	0	0	0	1	0.0
Total	74	56	72	243	196	467	409	472	375	2365	100.0

Table 3-38 Nature of injury for NSW Workers' Compensation claims in other livestock industries, 1992/93-2000/01

Nature of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Fractures	2	4	7	10	13	49	44	46	40	215	9.1
Sprain/strain & dislocation	27	19	20	109	70	175	170	201	163	954	40.3
Intracranial injury, including concussion	0	0	0	0	1	6	0	4	1	12	0.5
Internal injury of chest, abdomen & pelvis	0	0	0	0	0	2	1	0	1	4	0.2
Open wound & traumatic amputation	11	10	6	40	29	89	62	90	58	395	16.7
Superficial injury	1	3	3	4	12	6	11	9	6	55	2.3
Contusion & crushing injury	17	10	15	34	37	71	64	77	54	379	16.0
Foreign body	8	3	9	7	9	23	16	12	20	107	4.5
Burns	1	1	1	3	3	5	9	7	4	34	1.4
Poisoning & toxic effects of substances	1	1	2	7	2	3	4	4	3	27	1.1
Multiple injuries	0	1	0	2	0	6	4	2	1	16	0.7
Other injuries NEC	1	0	1	8	5	7	5	4	8	39	1.6
Diseases of nervous system	0	0	1	2	0	1	0	1	0	5	0.2
Diseases of eye & ear	4	2	3	13	4	4	5	4	1	40	1.7
Diseases of the musculoskeletal system & connective tissue	1	1	1	0	2	8	5	5	6	29	1.2
Diseases of the skin & subcutaneous tissue	0	0	0	2	3	6	2	0	1	14	0.6
Hernia	0	1	2	2	4	3	5	5	5	27	1.1
Zoonoses & other infectious & parasitic diseases	0	0	0	0	1	1	0	1	1	4	0.2
Mental disorders	0	0	0	0	1	2	1	0	2	6	0.3
Other diseases	0	0	1	0	0	1	1	0	0	3	0.1
Total	74	56	72	243	196	468	409	472	375	2365	100.0

3.6. Other Crop Farming

In all the other crop farming industries of NSW there were 1,755 workers' compensation claims over the period 1 July 1992 to 30 June 2001, averaging 195 compensation claims per annum. The industries included in this grouping are sugarcane growing, cotton growing, and other crop and plant growing NEC. The average compensation claim ranged from \$9,384 for cotton growing to \$11,759 for crop and plant growing NEC (Table 3-2). The amount of time off work ranged from 4 weeks for cotton farming to 12.8 for crop and plant growing NEC (Table 3-3).

Of workers' compensation claims in other crop farming industries, nearly one-third (31.5%) of claims were from farmers in the 25-34 year age group and most were male (83.5%). Other common age groups for claims were 35-44 years (22.9%), and 20-24 years (14.8%) (see Table 3-39 and Table 3-40).

Table 3-39 Age group for NSW Workers' Compensation claims in other crop farming industries, 1992/93-2000/01

Age groups	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
0-14	0	0	0	0	0	0	1	0	0	1	0.1
15-19	6	7	7	2	26	25	28	19	20	140	8.0
20-24	28	26	15	10	36	43	49	24	28	259	14.8
25-34	57	54	33	49	76	89	77	65	53	553	31.5
35-44	28	21	32	25	47	60	73	68	48	402	22.9
45-54	19	25	16	23	25	43	40	49	39	279	15.9
55-59	7	6	5	5	5	14	9	8	13	72	4.1
60-64	4	1	3	1	6	6	6	4	5	36	2.1
65 +	1	0	2	1	1	1	2	4	1	13	0.7
Total	150	140	113	116	222	281	285	241	207	1755	100.0

Table 3-40 Gender for NSW Workers' Compensation claims in other crop farming industries, 1992/93-2000/01

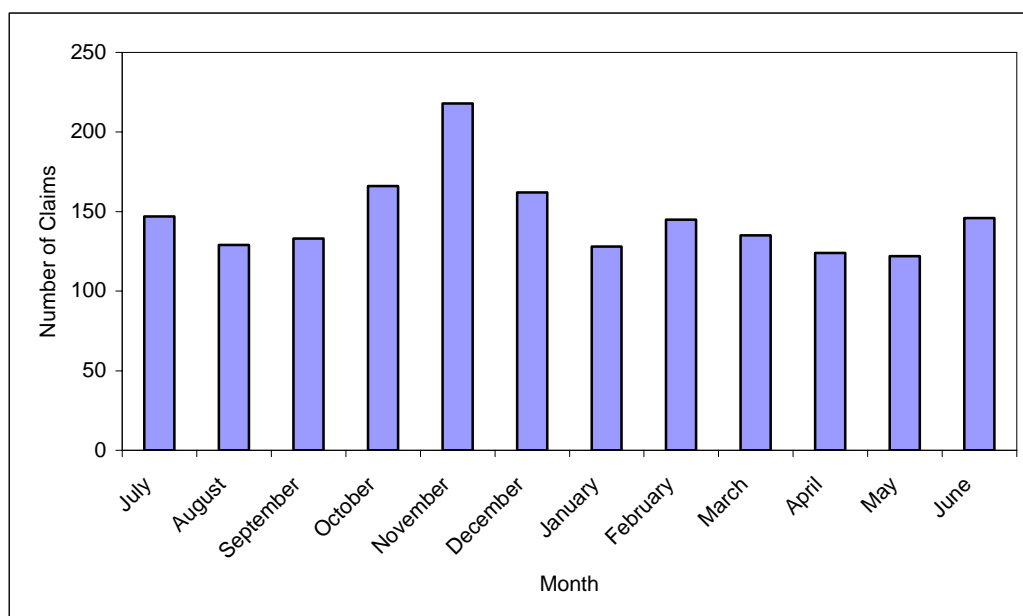
Gender	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Female	19	16	16	16	22	52	53	46	49	289	16.5
Male	131	124	97	100	200	229	232	195	158	1466	83.5
Total	150	140	113	116	222	281	285	241	207	1755	100.0

The number of workers' compensation claims in other crop farming industries varied from 1 to 42 per month. The largest number of claims occurred in November (12.4%) and the smallest number of claims occurred in the months of April (7.1%) and May (7.0%) (Table 3-41 and Figure 3-6).

Table 3-41 Month of injury for NSW Workers' Compensation claims in other crop farming industries, 1992/93-2000/01

Month of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
July	9	6	10	7	27	28	27	20	13	147	8.4
August	8	13	7	9	15	11	27	19	20	129	7.4
September	16	11	6	9	6	27	20	22	16	133	7.6
October	13	14	8	11	25	31	23	23	18	166	9.5
November	21	25	8	22	33	27	42	19	21	218	12.4
December	13	15	17	17	23	24	25	27	1	162	9.2
January	9	8	12	8	16	30	14	13	18	128	7.3
February	19	9	11	9	12	16	21	27	21	145	8.3
March	11	9	9	7	24	22	12	20	21	135	7.7
April	15	10	10	4	13	18	23	12	19	124	7.1
May	9	13	9	5	9	16	30	18	13	122	7.0
June	7	7	6	8	19	31	21	21	26	146	8.3
Total	150	140	113	116	222	281	285	241	207	1755	100.0

Figure 3-6 Number of injuries by month for NSW Workers' Compensation claims in other crop farming industries, 1992/93-2000/01



Of workers' compensation claims in other crop farming industries more than half (53.6) of the claims occurred to the occupational group labourers and related workers. Other common occupational groups included plant and machine operators, and drivers (20.6%), managers and administrators (12.1%), and tradespersons (11.8%) (Table 3-42).

Table 3-42 Major occupation for NSW Workers' Compensation claims in other crop farming industries, 1992/93-2000/01

Occupation	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Managers & administrators	6	7	10	6	14	40	61	38	30	212	12.1
Professionals	0	0	2	0	4	1	0	1	1	9	0.5
Para-professionals	1	0	0	0	2	2	1	0	2	8	0.5
Tradespersons	30	19	21	17	30	27	24	17	22	207	11.8
Clerks	2	0	2	2	0	1	2	0	1	10	0.6
Salespersons & personal service workers	0	0	1	1	0	1	1	1	1	6	0.3
Plant & machine operators, & drivers	32	48	29	33	57	50	43	45	24	361	20.6
Labourers & related workers	78	65	48	57	115	159	153	139	126	940	53.6
Unknown	1	1	0	0	0	0	0	0	0	2	0.1
Total	150	140	113	116	222	281	285	241	207	1755	100.0

In other crop farming industries, *non-powered hand tools, appliances and equipment* (20.1%), *mobile plant and transport* (19.4%), *materials and substances* (17.5%), and *environmental agencies* (14.2%) were the common agencies that contributed to compensated claims in NSW (Table 3-43).

Table 3-43 Agency of injury for NSW Workers' Compensation claims in other crop farming industries, 1992/93-2000/01

Agency	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Machinery & (mainly) fixed plant	15	6	6	8	20	21	19	19	14	128	7.3
Mobile plant & transport	29	28	16	22	41	54	49	61	41	341	19.4
Powered equipment, tools & appliances	15	12	11	5	14	15	15	5	7	99	5.6
Non-powered hand tools, appliances & equipment	35	29	33	24	47	52	49	42	42	353	20.1
Chemicals & chemical product	2	5	1	4	3	5	6	6	4	36	2.1
Materials & substances	26	19	15	28	39	55	45	48	32	307	17.5
Environmental agencies	16	30	19	14	35	33	43	23	36	249	14.2
Animal, human & biological agencies	3	5	5	5	8	20	25	10	12	93	5.3
Other and unspecified agencies	9	6	7	6	15	26	34	27	19	149	8.5
Total	150	140	113	116	222	281	285	241	207	1755	100.0

In other crop farming industries being hit by moving objects (27.9%), body stressing (22.8%), falls, trips and slips (21.4%) and hitting objects with a part of the body (13.9%) were the most common mechanisms of claims (Table 3-44).

Table 3-44 Mechanism of injury for NSW Workers' Compensation claims in other crop farming industries, 1992/93-2000/01

Mechanism	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Falls, trips & slips of a person	30	31	21	19	45	58	61	61	50	376	21.4
Hitting objects with a part of the body	18	16	22	14	41	38	44	30	21	244	13.9
Being hit by moving objects	64	39	32	40	62	73	65	60	54	489	27.9
Sound & pressure	1	0	0	1	3	3	2	0	2	12	0.7
Body stressing	29	27	21	27	44	73	74	55	50	400	22.8
Heat, radiation & electricity	2	7	6	2	4	12	10	4	5	52	3.0
Chemicals & other substances	2	6	3	6	8	6	6	4	6	47	2.7
Biological factors	2	2	0	0	3	0	0	2	1	10	0.6
Mental stress	0	0	0	0	0	0	0	0	0	0	0.0
Other & unspecified mechanism	2	12	8	7	12	18	23	25	18	125	7.1
Total	150	140	113	116	222	281	285	241	207	1755	100.0

The body locations most commonly injured in other crop farming industries compensation claims were the *upper limbs* (30.8%), *lower limbs* (24.0%) and *trunk* (23.4%) (Table 3-50). Nearly two-fifths (39.3%) of injuries were due to *sprain/strain and dislocation*, followed by *open wound with traumatic amputation* (18.6%), *contusion and crushing injury* (12.4%), and *fractures* (8.9%) (Table 3-).

Table 3-50 Body location of injury for NSW Workers' Compensation claims in other crop farming industries, 1992/93-2000/01

Body Location	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Head	30	22	20	19	30	45	22	30	25	243	13.8
Neck	2	2	2	5	7	3	6	3	2	32	1.8
Trunk	28	29	22	26	47	71	77	50	60	410	23.4
Upper limbs	46	45	35	33	73	81	92	81	55	541	30.8
Lower limbs	38	34	24	25	53	61	72	61	53	421	24.0
Multiple locations	5	5	8	5	6	18	16	15	10	88	5.0
Systemic locations	0	2	1	3	4	2	0	1	1	14	0.8
Non-physical locations	0	0	0	0	0	0	0	0	0	0	0.0
Unspecified locations	1	1	1	0	2	0	0	0	1	6	0.3
Total	150	140	113	116	222	281	285	241	207	1755	100.0

Table 3-51 Nature of injury for NSW Workers' Compensation claims in other crop farming industries, 1992/93-2000/01

Nature of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%	
Fractures		8	12	13	6	21	22	25	23	26	156	8.9
Sprain/strain & dislocation		48	53	40	45	72	116	126	100	90	690	39.3
Intracranial injury, including concussion		0	2	1	1	1	2	1	2	0	10	0.6
Open wound & traumatic amputation		36	25	27	23	52	54	46	42	21	326	18.6
Superficial injury		3	3	1	7	3	7	6	5	3	38	2.2
Contusion & crushing injury		23	12	11	14	34	29	41	30	24	218	12.4
Foreign body		20	11	5	5	14	16	9	14	14	108	6.2
Burns		3	8	5	3	5	9	10	8	6	57	3.2
Poisoning & toxic effects of substances		1	4	2	4	7	4	3	1	6	32	1.8
Multiple injuries		1	2	1	0	1	4	3	2	3	17	1.0
Other injuries NEC		1	1	3	0	1	2	0	2	5	15	0.9
Diseases of nervous system		1	0	0	0	1	1	1	3	1	8	0.5
Diseases of eye & ear		3	0	1	1	3	7	3	0	2	20	1.1
Diseases of the musculoskeletal system & connective tissue		1	4	1	1	1	3	4	3	3	21	1.2
Diseases of the skin & subcutaneous tissue		0	1	1	1	1	0	2	1	1	8	0.5
Hernia		0	0	0	1	2	4	5	1	1	14	0.8
Zoonoses & other infectious & parasitic diseases		1	2	0	0	2	0	0	1	0	6	0.3
Diseases of the respiratory system		0	0	1	1	0	0	0	2	1	5	0.3
Other diseases		0	0	0	3	1	1	0	1	0	6	0.3
Total	150	140	113	116	222	281	285	241	207	1755	100.0	

3.7. Agricultural Services

In the agricultural services industries of NSW there were 3,390 workers' compensation claims over the period 1 July 1992 to 30 June 2001, averaging 377 compensation claims per annum. The industries included in this grouping include cotton ginning, shearing services, aerial agricultural services, and services to agriculture NEC. The average compensation claim ranged from \$8,292 for cotton ginning to \$26,151 for shearing services (Table 3-2). The amount of time off work ranged from 13.9 weeks for shearing services to 3.4 weeks for aerial agricultural services (Table 3-3).

Of the workers' compensation claims in the agricultural services industries, nearly one-third (31.1%) occurred to 25-34 year olds, and 89.1% were male. The other commonly compensated age groups were 20-24 years (12.2%), 35-44 years (24.5%), and 45-54 years (17.4%) (Table 3-52 and Table 3-).

Table 3-52 Age group for NSW Workers' Compensation claims in the agricultural services industries, 1992/93-2000/01

Age groups	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
0-14	0	1	0	1	2	0	0	0	0	4	0.1
15-19	9	4	8	9	19	46	35	23	16	169	5.0
20-24	35	33	25	34	59	77	70	47	34	414	12.2
25-34	88	79	89	83	115	221	156	114	108	1053	31.1
35-44	42	40	50	79	99	157	127	138	97	829	24.5
45-54	30	34	36	43	69	128	103	83	64	590	17.4
55-59	15	16	15	24	31	40	32	28	19	220	6.5
60-64	2	4	3	9	8	23	18	11	11	89	2.6
65 +	0	1	1	2	4	4	2	5	2	21	0.6
Unknown	0	0	0	0	0	0	1	0	0	1	0.0
Total	221	212	227	284	406	696	544	449	351	3390	100.0

Table 3-53 Gender for NSW Workers' Compensation claims in the agricultural services industries, 1992/93-2000/01

Gender	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Female	22	16	18	12	39	89	75	57	43	371	10.9
Male	199	196	209	272	367	607	469	392	308	3019	89.1
Total	221	212	227	284	406	696	544	449	351	3390	100.0

The number of compensated claims from the agricultural services industries varied from 9 to 65 per month. April (9.3%), November (9.3%), September (9.2%), and May (9.0%) were the months with the highest number of claims, whereas the smallest number of claims occurred in June (6.7%) (Table 3-45).

Table 3-45 Month of injury for NSW Workers' Compensation claims in the agricultural services industries, 1992/93-2000/01

Month of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
July	18	15	16	26	31	63	27	37	34	267	7.9
August	20	16	22	28	33	61	53	41	32	306	9.0
September	27	20	21	27	34	68	45	32	38	312	9.2
October	19	12	15	29	30	46	52	46	29	278	8.2
November	17	15	17	18	42	62	62	40	41	314	9.3
December	16	19	14	19	46	49	52	37	12	264	7.8
January	18	9	17	20	32	60	39	41	38	274	8.1
February	19	22	22	33	32	44	41	34	26	273	8.1
March	19	22	18	20	26	57	36	28	27	253	7.5
April	17	25	20	20	42	64	52	39	36	315	9.3
May	17	20	21	27	39	65	46	46	25	306	9.0
June	14	17	24	17	19	57	39	28	13	228	6.7
Total	221	212	227	284	406	696	544	449	351	3390	100.0

The majority of compensation claims were from workers registered as *tradespersons* (39.0%), *labourers and related workers* (32.0%) and *plant and machine operators, and drivers* (13.0%) (see Table 3-46).

Table 3-46 Major occupation for NSW Workers' Compensation claims in the agricultural services industries, 1992/93-2000/01

Occupation	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Managers & administrators	12	6	10	19	24	61	24	40	27	223	6.6
Professionals	2	1	4	1	9	28	33	10	8	96	2.8
Para-professionals	7	10	10	10	8	38	33	30	17	163	4.8
Tradespersons	107	108	105	126	172	255	165	173	111	1322	39.0
Clerks	2	0	3	2	3	9	6	5	3	33	1.0
Salespersons & personal service workers	2	4	1	3	2	11	2	1	1	27	0.8
Plant & machine operators, & drivers	27	18	17	17	61	96	102	49	53	440	13.0
Labourers & related workers	62	65	76	106	127	198	179	141	131	1085	32.0
Unknown	0	0	1	0	0	0	0	0	0	1	0.0
Total	221	212	227	284	406	696	544	449	351	3390	100.0

In the agricultural services industries, the largest number of claims were associated with *animal, human and biological agencies* (21.1%). Other common agencies included *machinery and (mainly) fixed plant* (16.1%), *non-powered hand tools, appliances and equipment* (15.8%), *environmental agencies* (12.9%) and *mobile plant and transport* (10.5%) (Table 3-47).

Table 3-47 Agency of injury for NSW Workers' Compensation claims in the agricultural services industries, 1992/93-2000/01

Agency	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Machinery & (mainly) fixed plant	52	41	41	53	64	97	82	62	53	545	16.1
Mobile plant & transport	21	22	14	29	51	83	57	36	44	357	10.5
Powered equipment, tools & appliances	7	4	10	7	12	25	11	15	14	105	3.1
Non-powered hand tools, appliances & equipment	36	26	36	43	56	108	103	78	50	536	15.8
Chemicals & chemical product	5	4	3	2	5	12	9	5	4	49	1.4
Materials & substances	16	22	19	27	40	75	46	43	31	319	9.4
Environmental agencies	31	18	25	30	51	105	78	57	41	436	12.9
Animal, human & biological agencies	40	60	62	75	90	132	93	95	67	714	21.1
Other & unspecified agencies	13	15	17	18	37	59	65	58	47	329	9.7
Total	221	212	227	284	406	696	544	449	351	3390	100.0

The most common mechanism of injury was *body stressing* (34.6%). Other common mechanisms of injury were *being hit by moving objects* (23.8%), falls, trips and slips (14.8%) and *hitting objects with a part of the body* (12.4%). *Upper limbs* (36.0%), *trunk* (26.7%) and *lower limbs* (18.3%) were the common injured body locations (Table 3-48 and Table 3-49). Nearly half (45.2%) of workers' compensation claims for the nature of injury were *sprain/strain and dislocations*. Other common nature of injuries were *open wound and traumatic amputation* (17.7%) and *fractures* (7.9%) (Table 3-509).

Table 3-48 Mechanism of injury for NSW Workers' Compensation claims in the agricultural services industries, 1992/93-2000/01

Mechanism	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Falls, trips & slips of a person	27	23	25	44	68	114	79	61	62	503	14.8
Hitting objects with a part of the body	29	16	32	28	56	73	76	62	50	422	12.4
Being hit by moving objects	59	62	53	63	92	170	138	101	69	807	23.8
Sound & pressure	2	4	2	5	3	12	4	3	2	37	1.1
Body stressing	76	72	90	110	128	238	178	160	121	1173	34.6
Heat, radiation & electricity	3	6	1	2	6	9	11	6	2	46	1.4
Chemicals & other substances	5	7	4	2	8	17	12	6	5	66	1.9
Biological factors	5	6	5	4	8	4	3	6	3	44	1.3
Mental stress	0	1	0	0	2	12	6	7	3	31	0.9
Other & unspecified mechanism	15	15	15	26	35	47	37	37	34	261	7.7
Total	221	212	227	284	406	696	544	449	351	3390	100.0

Table 3-49 Body location of injury for NSW Workers' Compensation claims in the agricultural services industries, 1992/93-2000/01

Body Location	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%
Head	26	25	21	32	24	76	54	33	20	311	9.2
Neck	3	2	1	3	8	15	8	9	7	56	1.7
Trunk	43	61	71	95	98	175	149	120	92	904	26.7
Upper limbs	91	68	80	84	147	225	201	177	147	1220	36.0
Lower limbs	33	39	37	46	87	136	94	82	66	620	18.3
Multiple locations	19	11	13	20	30	47	28	16	14	198	5.8
Systemic locations	6	5	4	3	9	7	2	3	1	40	1.2
Non-physical locations	0	1	0	0	2	12	6	7	3	31	0.9
Unspecified locations	0	0	0	1	1	3	2	2	1	10	0.3
Total	221	212	227	284	406	696	544	449	351	3390	100.0

Table 3-50 Nature of injury for NSW Workers' Compensation claims in the agricultural services industries, 1992/93-2000/01

Nature of injury	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	Total	%		
Fractures			18	22	12	21	33	57	40	33	31	267	7.9
Sprains/strain & dislocation			78	77	96	132	183	331	246	216	174	1533	45.2
Intracranial injury, including concussion			1	0	0	1	1	3	1	1	1	9	0.3
Internal injury of chest, abdomen & pelvis			0	1	0	1	1	0	1	1	1	6	0.2
Open wound & traumatic amputation			48	35	43	38	78	120	101	82	56	601	17.7
Superficial injury			6	3	3	3	8	12	10	8	9	62	1.8
Contusion & crushing injury			19	16	24	22	35	48	52	37	34	287	8.5
Foreign body			10	6	5	15	8	24	22	10	5	105	3.1
Burns			3	8	3	2	8	6	9	6	3	48	1.4
Poisoning & toxic effects of substances			1	3	0	1	3	12	4	1	4	29	0.9
Multiple injuries			1	1	4	1	4	2	5	0	1	19	0.6
Other injuries NEC			2	1	3	1	4	7	7	4	3	32	0.9
Diseases of nervous system			1	4	2	5	5	3	2	3	1	26	0.8
Diseases of eye and ear			2	5	5	5	3	15	7	2	2	46	1.4
Diseases of the musculoskeletal system & connective tissue			18	14	17	23	14	24	16	13	17	156	4.6
Diseases of the skin & subcutaneous tissue			2	3	2	3	2	5	6	6	1	30	0.9
Hernia			4	6	3	4	3	9	4	14	4	51	1.5
Zoonoses & other infectious & parasitic diseases			3	6	4	2	6	3	1	3	1	29	0.9
Diseases of the respiratory system			2	0	0	0	1	2	4	0	0	9	0.3
Diseases of the circulatory system			2	0	1	2	2	0	0	0	0	7	0.2
Mental disorders			0	1	0	0	2	12	6	7	3	31	0.9
Other diseases			0	0	0	2	2	1	0	2	0	7	0.2
Total	221	212	227	284	406	696	544	449	351	3390	100.0		

3.8 Summary

There were 27,741 workers' compensation claims between 1 July 1992 and 30 June 2001.

Horticulture and Fruit Growing

- There were on an average 439 injuries resulting in a workers' compensation claim in the horticulture and fruit growing industries in NSW per annum.
- More than two-third (70.7%) of the injured occupational group in horticulture and fruit growing were *labourers and related workers*.
- The most common agency of injury was *non-powered hand tools, appliances and equipment*.
- The most common mechanism of injury for was *body stressing*.
- The most common nature of injury for horticulture and fruit growing industries was *sprain/strain and dislocation*.

Grain, Sheep and Beef Cattle Farming

- There were on an average 1,070 injuries resulting in a workers' compensation claims in the grain, sheep and beef cattle industries of NSW per annum.
- The most common agency of injury in grain, sheep and beef cattle farming industries was *animal, human and biological agencies*.
- The most common mechanism of injury for grain, sheep and beef cattle farming industries was *being hit by moving objects*.
- The most common nature of injury for grain, sheep and beef cattle farming industries was *sprain/strain and dislocation*.

Dairy Industry

- There were on an average 206 injuries resulting in a workers' compensation claim in the dairy industry of NSW per annum.
- The most common agency of injury for dairy cattle farming was *non-powered hand tools, appliances and equipment and animal, human and biological agencies*.
- The most common mechanism of injury was *being hit by moving objects*.
- The most common nature of injury was *sprain/strain and dislocation*.

Poultry Industry

- There were on an average 533 injuries resulting in a workers' compensation claims in the poultry industry of NSW per annum.
- More than three-fourth (77.5%) of the injuries occurred to the occupational group *labourers and related workers*.
- The most common agency of injury for the poultry industry was *body stressing*.
- The most common nature of injury was *sprain/strain and dislocation*.

Other Livestock Farming

- There were on an average 263 injuries resulting in a workers' compensation claims in other livestock farming industries of NSW per annum.
- The most common agency of injury was *animal, human and biological agency*.
- The most common mechanism of injury was *being hit by moving objects*.
- The most common nature of injury for other livestock farming industries was *sprain/strain and dislocation*.

Other Crop Farming

- There were on an average 195 injuries resulting in a workers' compensation claim in the other crop farming industries of NSW per annum.
- The most common agencies of injury were *non-powered hand tools, appliances and equipment, mobile plant and transport, and materials and substances*.
- The most common mechanism of injury for other crop farming industries was *being hit by moving objects*.
- The most common nature of injury for other crop farming industries was *sprain/strain and dislocation*.

Agricultural Services Industry

- There were on an average 377 injuries resulting in a workers' compensation claim in the agricultural services industry of NSW per annum.
- The most common agency of injury was *animal, human and biological agencies*.
- The most common mechanism of injury was *body stressing*.

3.9 Recommendations

1. Further investigation of workers' compensation information needs to be undertaken to determine the agents and mechanisms involved in causing injuries that result in a claim.
2. Work needs to be undertaken to link workers' compensation information with exposure information to be able to determine the scale of the problem and areas for prevention.
3. Workers' compensation information should be made available in an electronic format sufficiently detailed to assess changes in the agricultural industries on a yearly basis, especially where specific prevention programs are being delivered.
4. Prevention programs aimed at reducing workers' compensation claims should:
 - be targeted at specific agricultural industries eg sheep, beef cattle, cotton, etc
 - be targeted to reduce injuries involved in animal and manual handling
 - be targeted at reducing injuries associated with agricultural machinery.
5. Farmers should be encouraged to undertake the Farmsafe Australia Managing Farm Safety Course to manage the range of hazards associated with injury and illness that occur on farms.

Section 4 NSW Hospitalisations

The information for this section has been downloaded from the NSW Health Inpatient Statistics Collection (ISC) by selecting all cases where the primary diagnosis was an injury and the external cause location code was classified as 'Farm'. No cleaning or modifications have been made to the data. Tables where there are cells with three or less cases have been hidden for ethical reasons.

4.1 Hospitalised Farm Injuries

There were 15,915 people who sustained an injury on a farm and were discharged from a NSW hospital between 1 July 1990 and 30 June 2000. Of the 15,915 people injured, the majority were male (74.9%).

FSA E-codes (refer Section 2 of this report) are presented in the top part of Table 4-1 followed by the other E-codes at the bottom. Of the 15,915 injuries on farms that were hospitalised, 9,324 (58.6%) were classified under the FSA selection of E-codes.

Table 4-1 E-Code groups, by gender, for people injured on farms and discharged from NSW hospitals between 1 July 1990 and 30 June 2000

E-Code	Description	Males	Females	Total	%
E820-829	Motor vehicle non-traffic accident & other road vehicle accidents				
	<i>animal ridden</i>	829	877	1706	10.7
	<i>motorcycles</i>	1713	263	1976	12.4
	<i>other vehicles</i>	889	227	1116	7.0
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 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
E919.1-.9	Other machinery	339	36	375	2.4
E920	Cutting and piercing	848	108	956	6.0
E922	Firearms	94	10	104	0.7
	Subtotal	7266	2058	9324	58.6
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	11917	3998	15915	100.0

* 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.

The most common external cause of injuries requiring hospitalisation for the FSA identified E-codes were *motorcycles* (12.4%), *animal ridden* (10.7%), *agricultural machinery* (7.5%), *other vehicles* (7.0%), and *injury by other animals* (6.3%). *Falls on farms* also caused 1,983 (12.5%) injuries (Table 4-1).

Ten years (1990/91 to 1999/00) of farm injury hospital separation data was analysed. On an average 1,590 persons were discharged from NSW hospitals due to farm injuries per annum. From 1991 to 1997, the rate of farm injuries per year was higher than average. There was a reduction in the number of farm injuries in 1998 and 1999 (Table 4-2).

Table 4-2 Year of injury, by E-code group, for people discharged from NSW hospitals between 1 July 1990 and 30 June 2000

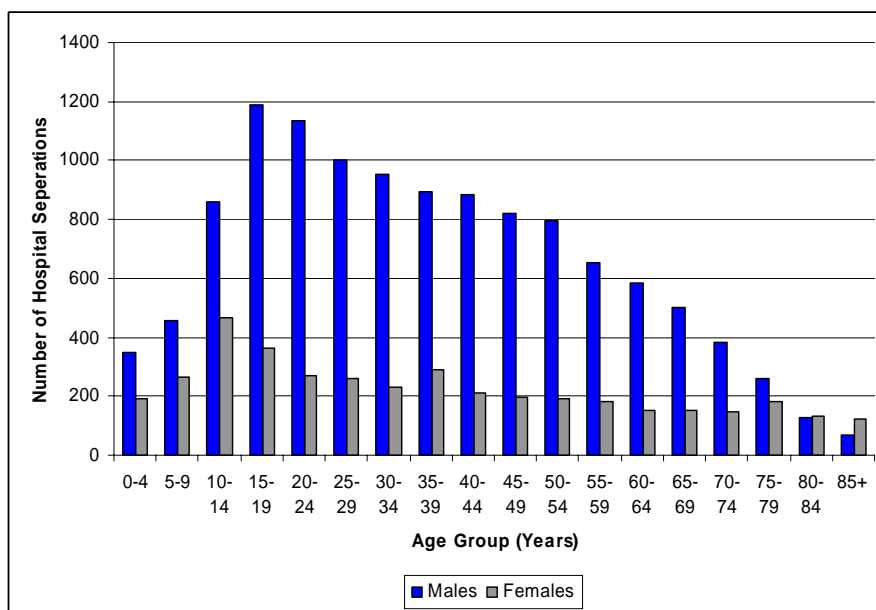
E-Code	Description	90 ^a	91	92	93	94	95	96	97	98	99	00 ^b	Total	%
E820-829	Motor vehicle non-traffic accident & other road vehicle accidents													
	<i>animal ridden</i>	86	220	278	214	229	211	184	181	76	17	10	1706	10.7
	<i>motorcycles</i>	94	208	244	256	228	271	261	267	144			1973	12.4
	<i>other vehicles</i>	56	154	136	122	136	133	126	142	71	25	12	1113	7.0
E862	Poisoning by petroleum products	1	1	4	1		5		1				13	0.1
E863	Poisoning by agricultural chemicals	1	17	12	23	16	11	14	19	14	9	5	141	0.9
E864	Poisoning by corrosives & caustics		2	1	2				1				6	0.0
E866-869	Poisoning by other solids, gases & liquids	2	2	4	3	5	6		3	8	10	3	46	0.3
E891-899*	Fire & flames	12	30	20	19	15	20	16	24	6	17	9	188	1.2
E905	Venomous animal plants	14	53	57	46	46	42	45	54	55	33	15	460	2.9
E906.0	Dog bite	2	10	7	7	1	2	7	3	5	2		46	0.3
E906.8	Injury by other animal	48	113	131	122	135	127	142	111	64	2	3	998	6.3
E919.0	Agricultural machinery	49	115	110	114	110	120	150	125	132	117	47	1189	7.5
E919.1-.9	Other machinery	9	36	47	33	33	37	40	44	39	38	19	375	2.4
E920	Cutting and piercing	41	117	116	122	83	96	109	99	77	68	28	956	6.0
E922	Firearms	6	18	15	18	11	15	5	5	4	3	4	104	0.7
E810-819	Motor vehicle traffic accidents	43	93	89	91	89	83	90	66	41	21	16	722	4.5
E850-865**	Poisoning	2	55	55	19	5	11	3	12	5	1	2	170	1.1
E880-E888	Falls	81	292	320	184	179	197	191	183	169	129	57	1982	12.5
E900-909 [#]	Natural & environmental factors	9	24	24	22	33	36	30	41	87	142	80	528	3.3
E910	Drowning	1	4	4	4		2	5	2			1	23	0.1
	Other E- codes ^{###}	86	298	338	292	270	270	390	425	298	318	151	3136	19.7
	Unknown		3							11	14		28	0.2
Total		643	1865	2012	1714	1624	1695	1808	1808	1306	966	462	15903	100.0

* 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. a July to December. b January to June

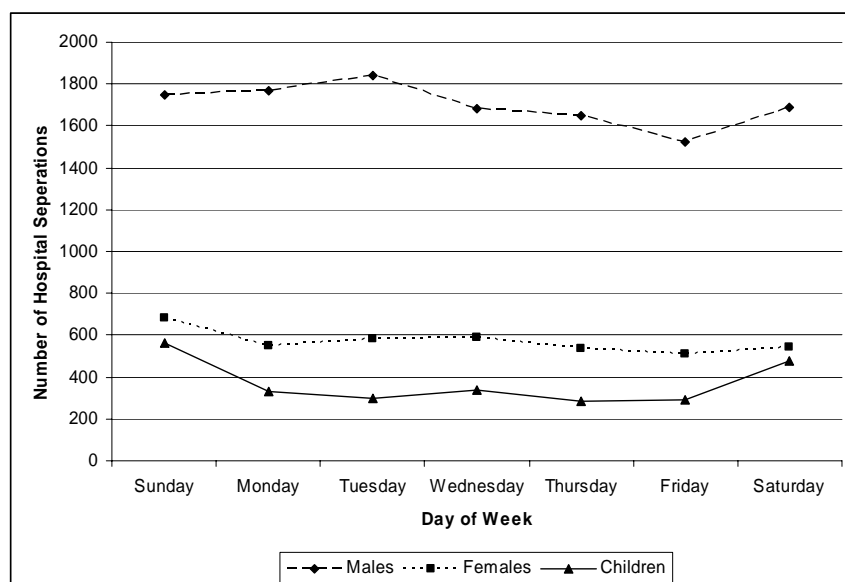
For males injured on farms and hospitalised the most common age groups were 15-19 years (10.0%), 20-24 years (9.5%), and 25-29 years (8.4%). There was an increase in the number of injuries from 0-4 yrs up to 15-19 yrs and then there was a decline in the number of injuries as people aged. For females injured on farms and hospitalised the most common age groups were 10-14 years (11.7%), 15-19 yrs (9.1%) and 35-39 years (7.2%). (Figure 4-1).

Figure 4-1 Age groups of people injured on farms, by gender, who were discharged from NSW hospitals between 1 July 1990 and 30 June 2000



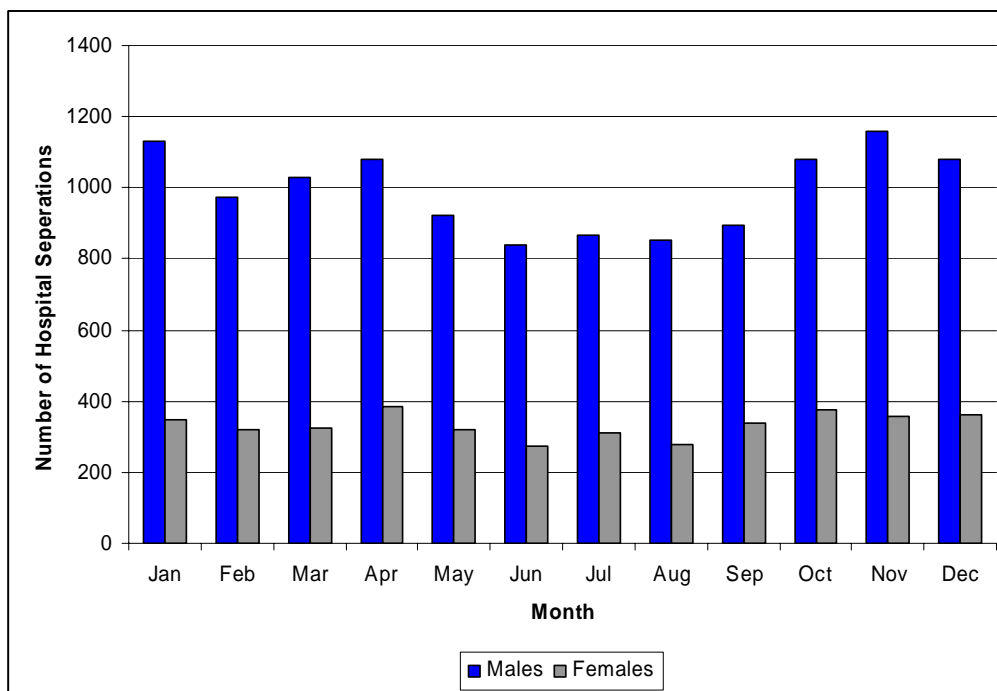
The number of injuries on farms requiring hospitalisation for males was more common on Tuesday (15.5%), Monday (14.8%) and Sunday (14.7%). The number of injuries on farms requiring hospitalisation for females was more common on Sunday (17.0%) (Figure 4-2).

Figure 4-2 Day of week of farm injury of people discharged from NSW hospitals between 1 July 1990 and 30 June 2000



For males injured on farms requiring hospitalisation November (9.8%) and January (9.5%) were the most common months, for females April (9.7%) and October (9.4%) were the most common months. (Figure 4-3).

Figure 4-3 Month of hospital admission for people injured on farms and discharged from NSW hospitals between 1 July 1990 and 30 June 2000



More than a quarter (29.1%) of people hospitalised following a farm injury spent between 2 and 4 days in hospital, however most commonly (47.9%) people were hospitalised for one day or less. Ten and a half percent (10.5%) of farm injury cases spent more than nine days in hospital (Table 4-3). The longest average length of stay in hospital was due to *falls* (6.6 days) followed by *fires and flames* (6.5 days), and *agricultural machinery* (5.0 days). The longest hospital admission was a result of *falls* (921 days). Overall the average length of stay in the hospital was four days (Table 4-4).

Table 4-3 Length of hospital stay resulting from farm injury, of people discharged from NSW hospitals between 1 July 1990 and 30 June 2000

Days in Hospital	No of Hospital	
	Separations	%
1	7622	47.9
2-4	4636	29.1
5-9	1991	12.5
10-20	1041	6.5
21+	501	3.1
Unknown	124	0.8
Total	15915	100.0

Table 4-4 Length of hospital stay resulting from farm injury, by E-code group, of people discharged from NSW hospitals between 1 July 1990 and 30 June 2000

E-Code	Description	Frequency	Mean	Minimum	Maximum	Sum
E820-829	Motor vehicle non-traffic accident & other road vehicle accidents					
	<i>animal ridden</i>	1702	3.6	1	188	6127
	<i>motorcycles</i>	1966	3.6	1	78	7047
	<i>other vehicles</i>	1110	4.6	1	96	5057
E862	Poisoning by petroleum products	13	1.0	1	1	13
E863	Poisoning by agricultural chemicals	141	1.8	1	25	247
E864	Poisoning by corrosives & caustics	6	1.3	1	2	8
E866-869	Poisoning by other solids, gases & liquids	46	1.6	1	9	73
E891-899	Fire & flames	188	6.5	1	59	1215
E905	Venomous animal plants	458	1.3	1	25	580
E906.0	Dog bite	45	2.9	1	18	132
E906.8	Injury by other animal	995	4.6	1	731	4581
E919.0	Agricultural machinery	1178	5.0	1	84	5947
E919.1-.9	Other machinery	373	3.8	1	35	1436
E920	Cutting and piercing	950	2.5	1	30	2402
E922	Firearms	104	4.4	1	31	462
	Motor vehicle traffic accidents	719	4.0	1	66	2853
E810-819	Poisoning	169	2.0	1	16	342
E850-865	Falls	1978	6.6	1	921	12980
E880-888	Natural & environmental factors	526	3.4	1	91	1769
E900-909	Drowning	23	1.7	1	5	38
E910	Other	3073	4.7	1	174	14591
	Unknown	28	5.1	1	17	142
	Total	15791	4.3	1	921	68042

* 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.

4.2 Children Hospitalised with a Farm Injury

Children (less than 15 years of age) represented 16.3% of all farm injuries in NSW between 1 July 1990 and 30 June 2000. Children are placed at high injury risk on farms due to hazardous nature of farms and ease of access to dangerous areas/equipment. The most common external cause of injury for children in NSW was *motorcycles* (19.2%), *animal ridden* (17.3%), *falls* (11.3%), and *other vehicles* (10.8%). The occurrence of the number of injuries increased with the increase of age (Table 4-5).

Table 4-5 E-Code groups, by age, for children who were injured on farms and discharged from NSW hospitals between 1 July 1990 and 30 June 2000

E-Code	Description	Age Group			Total	%
		0-4	5-9	10-14		
E820-829	Motor vehicle non-traffic accident & other road vehicle accidents					
	<i>animal ridden</i>	35	130	289	454	17.5
	<i>motorcycles</i>	17	122	357	496	19.2
	<i>other vehicles</i>	50	77	153	280	10.8
E862	Poisoning by petroleum products	7	1		8	0.3
E863	Poisoning by agricultural chemicals	14	2	2	18	0.7
E864	Poisoning by corrosives & caustics	4		1	5	0.2
E866-869	Poisoning by other solids, gases & liquids	5		1	6	0.2
E891-899*	Fire & flames	6	12	22	40	1.5
E905	Venomous animal plants	26	17	30	73	2.8
E906.0	Dog bite	20	2	4	26	1.0
E906.8	Injury by other animal	28	33	51	112	4.3
E919.0	Agricultural machinery	20	33	31	84	3.2
E919.1-.9	Other machinery	14	4	9	27	1.0
E920	Cutting and piercing	18	30	34	82	3.2
E922	Firearms		2	11	13	0.5
	Subtotal	264	465	995	1724	66.6
E810-819	Motor vehicle traffic accidents	16	41	109	166	6.4
E850-865**	Poisoning	40	1	3	44	1.7
E880-E888	Falls	81	122	89	292	11.3
E900-909 [#]	Natural & environmental factors	26	14	15	55	2.1
E910	Drowning	19	1		20	0.8
	Other E- codes ^{##}	98	74	115	287	11.1
	Group Total	544	718	1326	2588	100.0

* 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.

The number of injuries per annum for children has been declining from 1991 onwards with a dramatic decline in 1998-2000, this decline is unlikely to be reflective of reduction in injuries rather changes in hospitalisation practices and coding frames from ICD9 to ICD10 in July 1998 (Table 4-6).

Table 4-6 Year of farm injury, by age group, by gender, of children discharged from NSW hospitals between 1 July 1990 and 30 June 2000

Age group	Sex	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Total
0-4	Male	14	56	74	40	33	32	40	25	20	9	7	350
	Female	10	38	41	25	18	16	14	18	7	1	6	194
	All	24	94	115	65	51	48	54	43	27	10	13	544
5-9	Male	20	71	68	40	47	51	57	52	28	14	6	454
	Female	12	28	40	25	30	34	29	27	22	10	6	263
	All	32	99	108	65	77	85	86	79	50	24	12	717
10-14	Male	39	106	114	117	114	97	93	95	56	22	7	860
	Female	23	58	76	55	64	53	52	46	29	8	2	466
	All	62	164	190	172	178	150	145	141	85	30	9	1326
Total		118	357	413	302	306	283	285	263	162	64	34	2587

Table 4-7 Month of farm injury, by age group, by gender, of children discharged from NSW hospitals between 1 July 1990 and 30 June 2000

Age group		January	February	March	April	May	June	July	August	September	October	November	December	Total	%
0-4	Male	34	27	22	42	30	21	20	24	38	32	33	27	350	13.5
	Female	12	14	8	20	18	13	18	11	18	17	28	17	194	7.5
	All	46	41	30	62	48	34	38	35	56	49	61	44	544	21.0
5-9	Male	53	25	34	46	28	27	43	26	42	38	44	48	454	17.5
	Female	33	18	18	38	26	14	21	18	26	22	13	16	263	10.2
	All	86	43	52	84	54	41	64	44	68	60	57	64	717	27.7
10-14	Male	111	58	69	96	47	52	88	45	60	83	71	80	860	33.2
	Female	52	38	38	55	23	28	44	32	42	45	32	37	466	18.0
	All	163	96	107	151	70	80	132	77	102	128	103	117	1326	51.3
Total		295	180	189	297	172	155	234	156	226	237	221	225	2587	100.0

The most common months for children injured on farm and admitted to hospital were January (11.4%) and April (11.5%) and the least common months were June (6.0%), August (6.0%) and May (6.6%). (Table 4-7). Children who were injured on a farm and subsequently hospitalised were more likely to injure themselves on the weekend than during the week (Figure 4-4). The average length of stay was longest in children due to *fire and flames* (7.1) followed by *agricultural machinery* (4.8), and *other machinery* (4.8) (see Table 4-6).

Figure 4-4 Day of week of farm injury of children discharged from NSW hospitals between 1 July 1990 and 30 June 2000

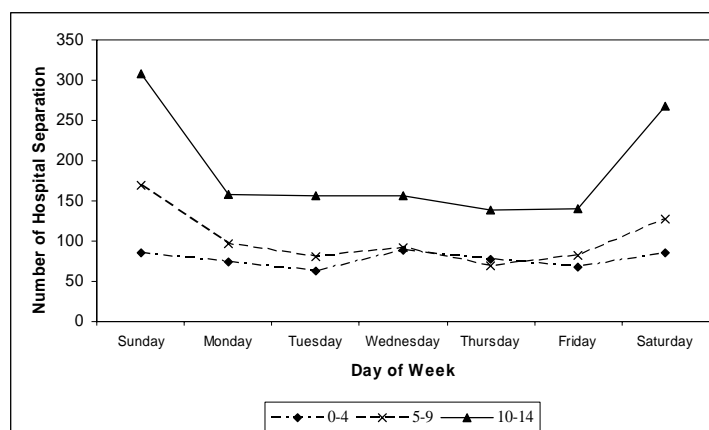


Table 4-8 Length of hospital stay resulting from farm injury, by E-code group, of children discharged from NSW hospitals between 1 July 1990 and 30 June 2000

E-Code	Description	No of days	Mean	Minimum	Maximum	Sum
E820-829	Motor vehicle non-traffic accident & other road vehicle accidents					
	<i>animal ridden</i>	454	2.5	1	188	1146
	<i>motorcycles</i>	494	3.3	1	78	1650
	<i>other vehicles</i>	279	3.1	1	75	871
E862	Poisoning by petroleum products	8	1.0	1	1	8
E863	Poisoning by agricultural chemicals	18	1.2	1	2	21
E864	Poisoning by corrosives & caustics	5	1.4	1	2	7
E866-869	Poisoning by other solids, gases & liquids	6	2.3	1	9	14
E891-899*	Fire & flames	40	7.1	1	23	282
E905	Venomous animal plants	72	1.2	1	9	87
E906.0	Dog bite	26	2.0	1	7	52
E906.8	Injury by other animal	112	2.6	1	49	288
E919.0	Agricultural machinery	84	4.8	1	51	401
E919.1-.9	Other machinery	27	4.8	1	31	129
E920	Cutting and piercing	82	2.0	1	10	167
E922	Firearms	13	2.3	1	7	30
E810-819	Motor vehicle traffic accidents	165	3.8	1	66	626
E850-865**	Poisoning	43	1.2	1	3	50
E880-888	Falls	292	2.2	1	49	655
E900-909 [#]	Natural & environmental factors	55	1.8	1	12	99
E910	Drowning	20	1.4	1	5	28
	Other E- codes ^{###}	286	2.5	1	44	710
	Total	2581	2.8	1	188	7321

* 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.

4.2 Summary

- Between 1 July 1990 and 30 June 2000 there were a total of 15,915 people presenting to NSW hospitals with an injury sustained on a farm. This was an average rate of 1,592 hospitalisations per annum.
- Three-quarters of people injured on farms and admitted to hospital were male (74.9%).
- The most common age group hospitalised for a farm-related injury were 15-19 year old males, and in females it was the 10-14 year age group.
- In males Tuesday was the most common day the injuries on farms requiring hospitalisation occurred, whereas in females Monday and Sunday were the most common days.
- Larger numbers of farm injuries requiring hospitalisation were associated with the summer months ie October through to April.
- Ten percent of people injured on farms spent more than nine days in the hospital.
- The longest average length of stay was associated with fire/flames and falls.
- The most common external causes of farm injuries resulting in admission to NSW hospitals were motorcycles, falls and horses.
- Children represented 16.3% of all farm injuries requiring hospitalisation in NSW. Motorcycles, horses, falls and other vehicles were the four common external causes of injury for children.
- As the child aged on a farm they were more likely to be injured and require hospitalisation.
- Children were more likely to be admitted to hospital following a farm injury in January and April, and on weekends.
- The longest average length of stay in hospital for a farm related injury in children was a result of fire or flames.

4.3 Recommendations

1. Farm injury prevention programs in NSW should concentrate on motorcycle safety, safe horse riding/handling, fall prevention, and child safety on farms.
2. Work needs to be undertaken examining ICD10 classification and its usefulness for monitoring and prevention of farm-related injuries.
3. Further work needs to be undertaken to examine the circumstances surrounding fall related injury and fall prevention.
4. Regular reporting of hospital information should be obtained and reported to Farmsafe and the National Farm Injury Data Centre.
5. Rural Medical Programs should include information about farm-related injuries, especially for General Practitioners and nurses who are going to work or who are working in rural district hospitals. This information should be aimed at improving rural practitioner skills and injury prevention.

Section 5 Other Health Issues

5.1 Pesticides and Human Health

Pesticides are defined as substances used to destroy, prevent, control, attract or repel pests or to regulate plant growth. They include insecticides, herbicides, fungicides, bactericides, plant growth regulators, defoliants, rodenticides and biological control agents.

Pesticides, by definition, exert adverse effects on living organisms, including humans.

The properties that determine the nature and degree of toxicity include:

- Chemical properties
- Physical properties
- Interaction with other chemicals
- Environmental transformation
- Specificity of the pesticide

Pesticides are usually grouped according to purpose and chemical characteristics.

The dose-response relationship is a fundamental principle in toxicology. It is the relationship between the degree of response of a biological system and the amount of a substance received by the system, and implies that a change in the dose results in a concurrent change in the response of the organism.

The **LD₅₀** (lethal dose 50) is the dose at which half the given test population (mostly rodents) would be killed.

LD₅₀ data are used to provide a comparison of relative acute toxicities of pesticides.

The **NOEL** (no-observable-effect-level) is the exposure level at which no adverse health effects occur, and is often used to establish acceptable contaminant or exposure levels of substances in the environment. These levels are determined by applying a safety factor to account for possible differences between test animals and humans, and to provide protection for sensitive human subgroups.

This relationship is used extensively to quantify the toxicity of substances and to determine the **ADI** (Acceptable Daily Intake) and the **MRL** (Maximum Residue Level).

Toxic effects of pesticides may be:

- Acute effects, having a rapid onset and relatively rapid recovery. These include skin and respiratory tract irritation, gastrointestinal effects, neurological symptoms and death.
- Chronic and delayed effects may occur after a lapse of time or following multiple exposures. They may include:
 - Behavioural changes
 - Peripheral neuropathy
 - Cancer
 - Reproductive effects
- Subclinical effects which may not be revealed as signs or symptoms, but may be detected by biological tests - eg cholinesterase inhibition due to chronic exposure to organophosphate exposure. Other effects may only be defined by behavioural and psychomotor testing.

Health effects that may not be so clearly dose-related are those where allergic type responses cause symptoms. In some cases symptoms become so severe that workers must avoid handling particular products.

Routes of human exposure are:

- Dermal - the common route associated with work related toxicity
- Inhalation - where pesticides are applied as mists, sprays or gases, and especially important in confined spaces
- Ingestion - through either contamination of hands, food, drinking water and more commonly, through accidental or intentional poisoning.

Exposure to the odours associated with pesticides application may be a significant problem to some hypersensitive people. Some pesticides release a range of volatile mercaptans with strong and sometimes offensive odours.

While all those who handle pesticides are at risk of exposure, NSW agricultural industries that have been identified as exposing significant numbers of workers or others in the community to risk of pesticide exposure include (Faulkner, 1993):

Tree fruit production – insecticides, fungicides, herbicides
Viticulture – insecticides, fungicides, herbicides
Vegetable production - insecticides
Sheep – insecticides in ectoparasite control
Greenhouse crop production – fungicides, insecticides

In addition to these industries, operators in the broadacre cropping industries are using herbicides in increasing amounts as part of the conservation farming process.

The people at risk of exposure, in general decreasing order of degree of risk, include:

- Mixers, loaders and handlers of concentrated forms of pesticides
- Pesticide applicators
- In-field markers, for directing application (less commonly used)
- Workers who enter sprayed crops - eg bug checkers, cotton chippers
- Family of workers who handle pesticides - by pesticides residues on surfaces and clothes
- Families whose homes are adjacent to paddocks or crops being sprayed - by pesticides residues on outdoor surfaces, and spray drift
- Other bystanders who may be exposed by spray drift
- Communities may be exposed by occasional spray drift or drift of odours.
- Consumers of agricultural products may be exposed to pesticide residues in food or fibre.

The risk level of any pesticide will depend on the pesticide's toxicity, the concentration of the chemical, the duration of exposure and the route of entry or absorption into the body. The human toxicity of a chemical is generally extrapolated from test animal experiments and can be expressed dermally or orally. Toxicity tests evaluate the following health effects:

1. Acute effects - the immediate effects of single, short term exposure
2. Chronic effects - multiple or long-term exposure effects
3. Reproductive effects - potential impairment of reproductive function
4. Teratogenic effects - effects on foetal development
5. Mutagenic effects - structural or functional impairment to genetic material
6. Carcinogenic effects - potential to cause tumours and cancer

Acute Poisoning from Pesticide Exposure in New South Wales

During the period 1 July 1992 to 30 June 2001, there were 495 workers' compensation claims due to chemical substances in NSW (see Section 2). The industries that made the most number of claims were poultry farming (meat), dairy cattle farming and plant nurseries (Table 5-1). There were also 141 cases requiring hospitalisation in NSW due to poisoning by agricultural chemicals between 1 July 1990 and 30 June 2000. Of these hospitalisations, 128 (90.8%) were male, 18 (12.8%) were of children aged less than 15 years and the average length of stay was 1.8 days (refer Section 4, Table 4-7).

Table 5-1 Number of NSW Workers' Compensation claims associated with chemical substances, July 1992/June 2001 – agriculture and services to agriculture

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	Total
Plant nurseries	0	24	3	3	6	*	4	*	0	43
Vegetable growing	*	0	*	*	*	*	3	0	0	9
Grape growing	0	0	*	*	3	4	*	*	0	12
Stonefruit growing	0	0	0	0	0	*	*	3	0	5
Fruit growing NEC	*	0	4	*	*	6	*	4	*	23
Grain growing	*	*	*	0	0	*	*	*	0	8
Grain/sheep & grain/beef cattle farming	3	7	*	*	5	*	3	4	4	32
Sheep/beef cattle farming	0	0	*	6	4	4	3	*	0	21
Sheep farming	6	4	3	3	3	0	*	*	0	23
Beef cattle farming	*	0	4	*	*	3	*	*	*	14
Dairy cattle farming	12	11	14	11	7	3	*	*	4	64
Poultry farming (meat)	9	10	8	17	10	14	20	19	3	110
Poultry farming (eggs)	4	7	6	4	5	3	*	*	*	32
Pig farming	*	*	0	6	*	4	3	3	*	20
Horse farming	0	0	0	0	0	*	0	*	0	*
Livestock farming NEC	0	0	0	0	0	0	*	*	0	5
Crop & plant growing NEC	0	*	0	0	0	0	0	0	0	*
Cotton growing	*	4	*	4	3	4	5	*	*	25
Crop & plant growing NEC	0	0	*	0	*	0	0	*	*	5
Cotton ginning	*	0	0	0	*	*	3	*	0	9
Shearing services	0	*	0	*	0	*	*	0	*	7
Aerial agricultural services	*	0	0	0	*	0	*	0	0	4
Services to agriculture NEC	*	4	3	*	*	6	0	3	0	20
Total	45	75	55	63	57	62	61	57	20	495

* Indicates a number less than three

A more comprehensive discussion of the health issues for pesticides and human health in Australia is found in Fragar and Franklin (2000).

Summary

- Workers in most agricultural industries in NSW are exposed to pesticides at some stage in the process of mixing, handling, applying and storing pesticides and cleaning equipment.
- There were 495 workers who submitted a workers' compensation claim due to a chemical exposure between 1 July 1992 and 30 June 2001 in NSW.
- There were 141 people admitted to NSW hospitals due to poisoning from an agricultural chemical between 1 July 1990 and 30 June 2000.

Recommendations

1. It is recommended that increased attention be given to defining the nature and extent of pesticide exposure to agricultural operators in NSW.
2. Priority attention should be given to:
 - Workers in vineyards
 - Workers in tree crop industries
 - Workers in the grain produce industries
 - Sheep industry workers during sheep jetting and dipping
 - Workers in vegetable crop industries
 - Greenhouse workers

5.2 Organic Dusts and Respiratory Disease

In the years 1990 to 2000, there were 1,754 respiratory disease related deaths to people working in agricultural industries in NSW as identified by the ABS. This was on average 159 deaths per annum (Table 5-2).

Table 5-2 Farm managers and farm worker for deaths from diseases of the respiratory system, NSW 1990-2000

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Total
Farm managers	112	107	138	108	132	124	151	186	151	116	121	1446
Farm workers	23	24	32	21	32	26	31	40	37	16	26	308
Total	135	131	170	129	164	150	182	226	188	132	147	1754

Source: ABS

Exposure to dusts associated with agricultural production can cause both short and long term respiratory problems.

The following agricultural processes undertaken in NSW are associated with respiratory problems caused by agricultural dusts:

- Grain harvesting, storage, crushing and handling;
- Hay and silage handling; and
- Animal handling in confined spaces - piggeries, poultry, dairies.

Dusts, which are associated with respiratory problems, include:

- Particles of hair;
- Feathers;
- Dander;
- Pollens;
- Grains dust;
- Bacteria; and
- Fungi spores.

These dusts originate in the soil, animals and their breakdown products, animal feeds, plant materials and fungi, insects and decaying stored plant material.

Other substances on farms, including fumes and gases, can also cause respiratory problems.

Grain Dusts

Grain dusts are generated during sowing, harvesting, storing and handling of grains in NSW. Dusts from grain consist of a complex mixture of organic and inorganic particles from sources as diverse as leaves, soil and insect parts. The mixture varies with the type of grain, where it is grown, growing conditions and methods of harvest, storage and processing.

Most grain dust particles are biologically active vegetable dusts and significant amounts can be breathed into the lungs. Dusts of certain grains such as durum wheat and barley are reported to be more irritating than others. Adverse health effects also increase as moisture content and spoilage increase.

Most particles are from fruits of grasses such as wheat, legumes (such as soybeans), or oil seeds (such as rape seed). Bits of leaves and stems may also be present. There are many non-plant contaminants. Animal material (bits of insects, rodents, or birds or their excreta), mites, chemical residues (pesticides used to grow or later treat the grain), and inorganic matter (soil including silica particles) all may be intermixed in small quantities. A variety of fungi and bacteria, their spores and their by-products also pose a respiratory hazard. Species of micro-organisms vary with regional climate and change from harvest through storage. Many of the components of grain dust are capable of affecting the respiratory tract individually, together, they produce a wide variety of biological effects.

Anyone involved in production, storage, transportation, or processing of grain can suffer the effects of regular inhalation of grain dusts. Exposure starts with farmers and farm workers, who grow, harvest, sometimes store, and then transport grain to local storage facilities. These farmers are exposed to grain dust on occasion. Exposure extends far beyond the farm to workers in feed mills, grain elevators and grain transportation industries. These workers, who are routinely exposed to grain dust, suffer from respiratory responses more commonly and more severely than do farmers. Exposure to grain can occur at any stage of the production process. Clouds of grain dusts are most evident whenever grain is moved, and especially heavy exposures can occur among any grain handlers during dumping and loading grain.

As with grain dusts, hay dusts and other organic dusts are a complex mixture of plant, fungi, bacteria and insect material.

Mouldy or spoiled hay and silage are known to increase the risk of all the different types of respiratory responses, including hypersensitivity pneumonitis.

Silos

The atmosphere in confined spaces on farms such as grain silos can be dangerous. Ventilated silos allow enough airflow through to prevent build up of toxic gases. Even after fumigating, toxic concentrations are generally reduced to a safe level after a week.

However, grain dusts in silos can result in all the conditions associated with grain dusts mentioned above. In particular, persons whose asthma is triggered by grain dusts have a high risk of suffering an attack in an enclosed silo. A number of life threatening asthma attacks have been associated with entry to grain silos.

Fully sealed silos present quite a different situation and are becoming more common because they allow efficient fumigation for the destruction of insects. These silos not only retain toxic concentrations of fumigants longer, but may also allow a build up of carbon dioxide generated by the natural respiration of grain.

In a silo with a dusty atmosphere for example, one being filled from a feed mill, the atmosphere might become explosive, particularly if the humidity is low. A spark from metal striking metal, an electric switch or a match could cause a dust explosion.

Less common in Australia are silage silos that can contain a highly toxic gas, nitrogen dioxide. If sludges are present in old, disused silos, flammable methane might also be present.

Farm workers who smoke cigarettes are at an increased risk of respiratory disease. Those people who work with organic material, which is damp and subsequently contaminated by fungi, are at increased risk of respiratory disease.

In medical terms, respiratory responses to exposure to organic dusts are:

1. Airway inflammatory response to organic dust exposure

- Rhinitis (inflammation of the lining of the nose);
- Pharyngitis, laryngitis (inflammation of the throat);
- Tracheitis, bronchitis (inflammation of the upper airways);
- Asthma/ hyperactive airways;
- Bronchiolitis (inflammation of the lower airways); and
- Toxic organic dust syndrome (TODS).

2. Airway immunological responses to organic dust exposures

- Allergic rhinitis (runny nose and eyes, itchy eyes, nose and throat); and
- Extrinsic asthma (asthma triggered by the environment).

3. Interstitial (tissue) immunological responses to certain fungi (moulds) and bacteria

- Hypersensitivity pneumonitis (extrinsic allergic alveolitis; Farmer's Lung).

In NSW, the dust-induced asthma assumes a higher relative importance, although there is probably a widespread lack of recognition of other conditions such as toxic organic dust syndrome (TODS) and hypersensitivity pneumonitis.

Asthma is a problem to many farmers because:

- Many farmers have asthma which is triggered by farm dusts (organic dusts) and pollens - grain dusts, especially wheat dust, hay, grasses and many other farm dusts;
- Many farmers with severe asthma caused by farm dusts may not wish, or be able, to leave the industry;
- Farm families are usually a long distance from medical help when a severe asthma attack occurs;
- There is no one easy way of reducing exposure to organic dusts. Face masks may be of limited use; and
- Some farmers may have a cough or chest tightness and may not be aware they have asthma.

Summary

- Respiratory disease associated with organic dusts in agriculture is probably under reported in death data in NSW, given the importance of grain production and grain handling in the state.
- There were 159 deaths per annum in NSW to farm managers and farm workers due to respiratory disease. This does not take into account deaths of grain handlers at grain handling and transport facilities in NSW and at ports. It should be noted that females who may have contracted a farm-related respiratory disease are also under-reported in the data due to poor occupation-related information.

Recommendations

1. It is recommended that farm health and safety promotions and education programs address the issues of respiratory disease due to farm dusts. Target groups should include rural doctors and farm workers, particularly those handling grain, hay and silage.

5.3 Hearing

Farmers work in an environment where there is significant noise on a continuing basis. A recent study by Depczynski et al (2002) found significant noise hazards that farmers are exposed to on a regular basis often exceeding standards set by WorkCover NSW. The results of this report showing noise levels and exposure times is reproduced with permission and found in Table 5-3.

Table 5-3 Average noise level and recommended exposure times for major machinery/ activity types (Depczynski *et al*, 2002 p19)

Machinery or Worker Position [n = no. of items measured]	Age of machinery (yrs) Average & Range (95% CI)	Noise level at ear of operator/ normal working conditions Average & Range (95% CI) L _{Aeq} dB(A)	Recommended exposure limits, without hearing protection NB: Noise exposure risk for each activity in the day is <u>cumulative</u> toward overall noise exposure risk.**
Air compressors [n=10]	15 (10 - 19)	86 (77- 95)	7 hrs (15 mins - 8 hrs+)
All terrain vehicles [n=13]	7 (4 - 9)	86 (84 - 87)	7 hrs (4 - 8 hrs)
Angle grinders [n=12] Others in workshop [n=6 at 6 grinders]	9 (4 - 14)	98 (96 - 100) 90 (87 - 93)	20 mins (15 - 30 mins) 2 hrs (1 - 5 hrs)
Augers	13 (6 - 20)	93 (89-96)	1 hr (30 mins - 3 hrs)
Bench grinders [n=6] Others in workshop [n=5 at 5 grinders]	13 (1 - 24)	99 (94 - 104) 89 (82 - 96)	18 mins (5 mins - 1 hr) 3 hrs (40 mins - 8 hrs)
Bulldozers [n=6]	27 (13 - 42)	99 (97 - 100)	18 mins (15 - 30 mins)
Chainsaws [n=11] Others stacking wood [n=6 at 6 chainsaws]	11 (6 - 15)	106 (104 - 107) 96 (93 - 99)	3 mins (2 - 5 mins) 40 mins (15 - 50 mins)
Circular saws [n=12] Others in workshop [n=11 at 11 saws]	12 (7 - 15)	99 (98 - 101) 89 (84 - 94)	18 mins (10 - 20 mins) 3 hrs (1- 8 hrs)
Cotton module presses [n=14] Others in field (rakers) [n=23 at 14 presses]	12 (6 - 17)	86 (85 - 88) 84 (82 - 86)	6 hrs (4 - 8 hrs) 8 hrs (6 - 8 hrs)
Cotton pickers [n=6 of 8 pickers] Av. <u>increase</u> with radio on [n=4 for 4 pickers]* Others in field (machines idle) [n=4 at 2 pickers]* Others in field (machines turning) [n=2 at 2 pickers]*	5 (2 - 5)	81 (78 - 85) 1 - 3 dB 83 (77 - 89) 94	8 hrs (8 - 8 hrs+) 4 hrs - 8 hrs+ 8 hrs (4 - 8 hrs+) 1hr
Dairies - herringbone (16-24) bay, in pit [n=10 at 5 dairies]		73 (71 - 75)	no limit
Farm trucks [n=11]	24 (16 - 32)	85 (83 - 88)	8 hrs (4 - 8 hrs)
Firearms [n=10]	17 (9 - 24)	Lpk 140+ dB	no exposure
Forklifts [n=4]*	16 (10 - 21)	84 (81-88)	8 hrs (4 - 8 hrs)
Harvesters [n=7] Av. <u>increase</u> with radio on [n=2 for 2 harvesters]* Others in field [n=2 for 1 harvester]*	20 (6 - 34)	83 (75 - 91) 2 - 5 dB 90	8 hrs (2 - 8 hrs +) 40mins - 8 hrs+ 2 hrs
Irrigation pumps [n=7]	17 (5 - 29)	100 (96 - 104)	15 mins (5 -30 mins)
Motorbikes - 2 wheel [n=2]*	4 (0-6)	81 (70 - 92)	8 hrs (1.5 - 8 hrs+)
Packing shed workers [n=28 in 6 packing sheds]		80 (78 - 82)	8 hrs+ (8 - 8 hrs+)
Pig handling - suckers [n=1shed in 1 piggery]*		109	1 - 2 mins
Pig sheds - manual feeding [n=3 sheds in 1piggery]*		87 (74 - 99)	5 hrs (15 mins - 8 hrs+)
Shearers [n=15 in 6 shearing sheds] Others in shed [n=11 in 7 sheds]		86 (84 - 87) 80 (77 - 83)	7 hrs (4 - 8 hrs) 8 hrs+ (8 - 8 hrs+)
Sugarcane harvester [n=1]* <u>increase</u> with radio on	4	86 2	7 hrs 4 hrs
Tractors with cabins [n=30] Av. <u>increase</u> with radio on [n=22] Others in field [n=9 at 6 tractors]	7 (4 - 10)	76 (75 - 78) 3 - 5 dB 85 (80 - 90)	no limit 8 hrs - 8 hrs+ 8 hrs (2 - 8 hrs+)
Tractors without cabins [n=26] Others in field [n=13 at 10 tractors]	20 (15 - 24)	92 (90 - 93) 82 (78 - 86)	1.5 (1 - 2) hrs 8 hrs (6 - 8 hrs+)

* Sample sizes less than 5

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

Noise injury includes noise induced hearing loss and tinnitus (ringing or noise in the ears). The true incidence of noise injury is not reflected in compensation claims made through various state compensation bodies.

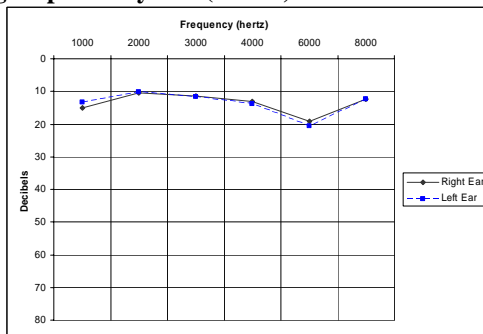
In the early 1980's, nurse audiometrists working in rural communities in NSW recognised that farmers, due to the nature of their work were likely to have significant hearing loss. It was also evident from Community Health Records, that this client group did not access hearing health services for testing, prevention, education and support services.

To address this issues the New England Area Health Services, in conjunction with the Australian Centre for Agricultural Health and Safety (previously Moree Agricultural Health Unit) developed a program of screening and education of farmers at agricultural field days. In the early 1990's the information began to be collected and by 1994 was being entered into a database.

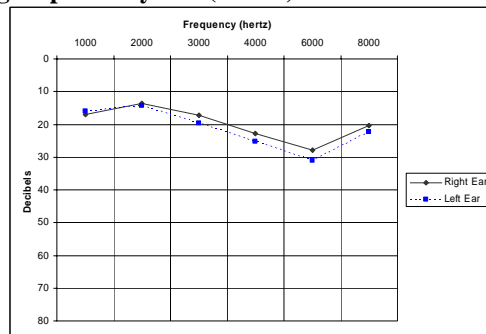
The following information comprises the collection of information on farmers at field days from the 1 January 1995 to 30 June 2000. During this period there were 5,013 farmers and farm workers screened by area health services for noise injury at field days around NSW. The screening were undertaken by trained nurse audiometrists and audiologists, accompanied by individual counselling regarding hearing conservation and using standardised methods.

Figure 5-1 Mean values for hearing thresholds of male farmers/farm workers at NSW field days, 1995- 30 June 2000

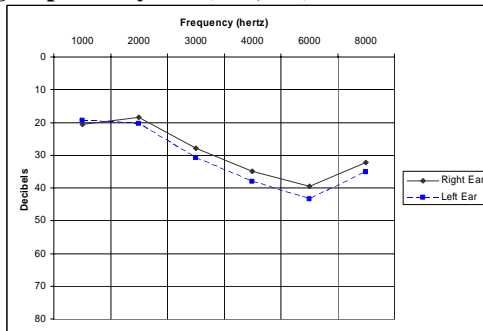
Age group 15-24 years (n=660)



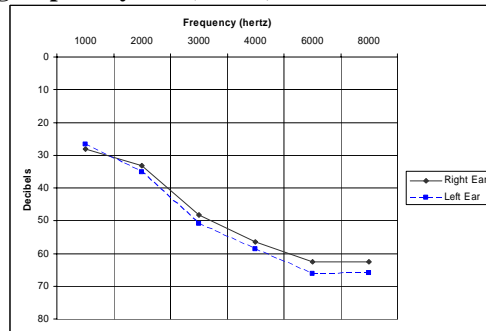
Age group 30-39 years (n=999)



Age group 45-54 years (n=1,033)



Age group 65+ years (n=508)



Source: Farmsafe Australia, 2002

Figure 5-1 indicates the mean values for hearing thresholds for various age groups of farmers and farm workers participating in the screening program between 1 January 1995 and 30 June 2000. Normal hearing thresholds are considered to be less than 20-25 dB for all frequencies. The 'dip' in the graphs around 4000-6000 Hertz is characteristic of noise injury (noise induced hearing loss).

The age groups displayed show a decrease in hearing ability with age. There is a noticeable increase in hearing thresholds across all frequencies screened in the left ear. From observation this is the result of the posture adopted during noisy agricultural work. Driving tractors and checking towed implements by looking over the right shoulder, operating workshop equipment and discharging firearms with the right hand all contribute to left ear/right ear differences by exposing the left ear to the greatest noise impact.

In a recent report by Franklin et al (2002) young farmers and farm workers aged 15-24 years showed evidence of noise injury, with nearly a quarter of those screened showing some degree of hearing loss.

There is a need to educate farmers at an early age of the importance of hearing protection, as hearing loss is irreversible.

Tinnitus

Tinnitus is a ringing or sensation of noise in the ear, ears or head when no external sound is present and is a commonly reported symptom of a noise injury.

Of the 5,013 hearing screenings of farmers and farm workers undertaken between 1995 and 30 June 2000 ((Depczynski *et al*, 2002), 46.7% had tinnitus. Of those, 77.0% had tinnitus in both ears, 75.5% were affected intermittently and 43.7% found the symptom an annoyance.

Noise exposure

Farmers and farm workers are exposed to loud noise on a regular basis.

Table 5-4 show the number of farmers and farm workers that had been exposed to noise from a range of sources.

Table 5-4 Noise exposure of farmers and farm workers screened at NSW field days, 1995–30 June 2000 (n=5,013).

Noise Exposure	No (%)	Yes (%)
Tractor (No Cabin)	26.8	73.2
Firearms	37.9	62.1
Chainsaw	16.4	83.6
Workshop tools	15.7	84.3
Heavy Machinery	45.8	54.2
Tractor (cabin)	53.4	46.6

Source; Depczynski *et al*, 2002

Summary

- Farmers and farm workers are showing evidence of noise injury at very early age (15 years).
- Farmers and farm workers mean hearing thresholds deteriorate as they age.
- Nearly half (46.7%) of farmers and farm workers screened have experienced tinnitus.
- Farmers and farm workers are exposed to a wide range of harmful noise sources.

Recommendations

1. The hearing screening service already provided by area health services should continue, ensuring that young farmers in particular are targeted.
2. The information collected from the screening programs should continue to be provided to Farmsafe NSW and the ACAHS to monitor hearing loss in farmers and farm workers and provide relevant information back to the participants.
3. Farmers should be encouraged to implement hearing protection strategies including the reduction of noise in areas such as the workshop.

5.4 Zoonosis

There are four major zoonotic diseases that farmers, farm workers and farm families are at risk of contracting, and information regarding these four diseases are collected in Australia through the Communicable Diseases Network Australia.

The National Notifiable Diseases Surveillance System (NNDSS) was established in 1990 under the auspices of the Communicable Diseases Network Australia New Zealand (CDNANZ). The System coordinates the national surveillance of more than 40 communicable diseases or disease groups, endorsed by the National Health and Medical Research Council (NHMRC). Under this scheme, notifications are made to the State or Territory health authority under the provisions of public health legislation in their jurisdiction. Computerised, de-identified unit records of notifications are supplied to the Network secretariat at the Commonwealth Department of Health and Aged Care for collation, analysis and publication in *CDI (Communicable Disease–Australia, 2001)*.

The quality and completeness of data compiled in the NNDSS are influenced by various factors. Each State or Territory health authority determines which diseases will be notifiable within its jurisdiction, and which notifications are accepted as satisfying criteria which in some cases may differ from NHMRC cases definitions. In addition, the mechanism of notification varies between the States and Territories. Notifications may be required from treating clinicians, diagnostic laboratories, or hospitals. In some cases different diseases are notifiable by different mechanisms. The proportion of cases seen by health care providers, which are the subject of notification to health authorities, is not known with certainty for any disease, and may vary among diseases, between jurisdictions and over time (*Communicable Disease–Australia, 2001*).

Q Fever

Q Fever or Query Fever is caused by *Coxiella burnetii*, an organism with environmental stability and which is highly resistant to drying. Most human infection arises from direct or indirect association with cattle, sheep and goats, but can also be contracted from bandicoots, kangaroos and wallabies. Transmission of the disease to humans can be via dust, contaminated placental tissue, birth fluids, unpasteurised milk, and excreta of infected animals. (Benenson, 1985; Parmeggiani, 1983).

People at risk from infection from Q Fever include: abattoir workers, farmers, farm families, veterinarians, meat inspectors, biological researchers working with pregnant animals, shearers and those living in the vicinity of abattoirs and feedlots. There have been a total of 7,702 notifications nationwide since 1991 (Table 5-5).

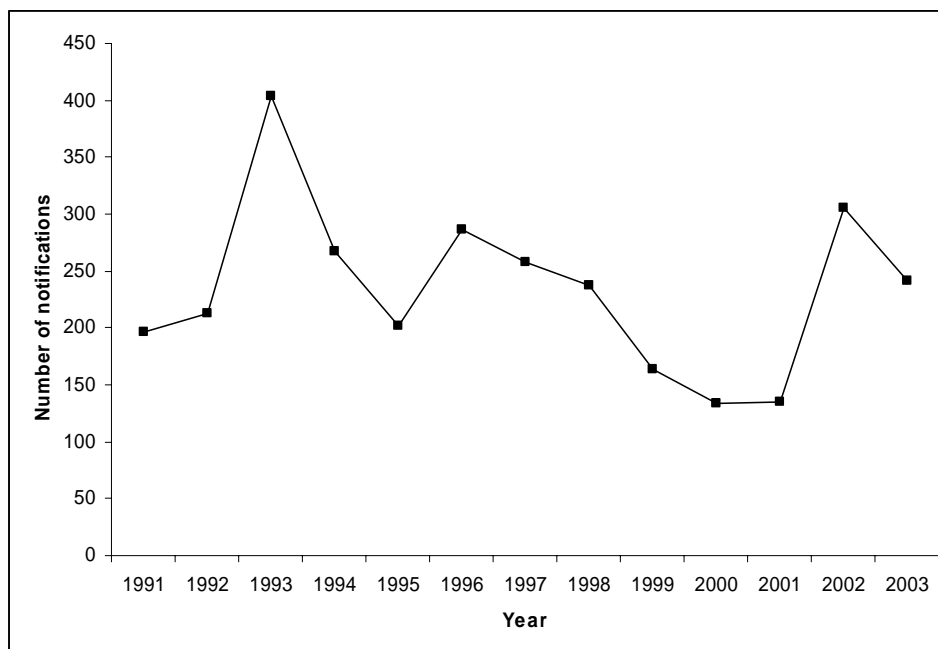
Table 5-5 Notifications of Q Fever received by State and Territory health authorities in the period 1991-2002 and year-to-date notifications for 2003 by year-month

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
1991	41	49	70	53	63	46	60	37	30	28	35	32	544
1992	39	42	42	41	28	50	57	53	46	60	52	51	561
1993	46	79	76	82	80	95	75	82	84	71	61	39	870
1994	61	61	68	48	75	68	44	35	59	48	48	41	656
1995	33	31	36	33	36	44	32	42	36	53	42	38	456
1996	40	35	49	35	63	48	51	37	43	38	61	44	544
1997	47	39	38	48	60	60	45	39	49	47	35	38	545
1998	41	37	48	46	46	46	51	37	63	46	58	42	561
1999	34	40	43	38	41	51	35	34	54	57	41	47	515
2000	39	46	59	51	43	36	41	58	57	45	57	46	578
2001	70	73	69	51	65	53	42	48	53	59	56	29	668
2002	61	78	48	73	77	64	59	59	56	86	56	44	761
2003	77	72	57	54	29	38	27	27	27	35	0	0	443

Source: http://www1.health.gov.au/cda/Source/Rpt_3.cfm, 23/11/2003

There have been 3,044 cases (nearly 40% of national notifications) of Q Fever in NSW since 1991 representing 234 cases per annum (Figure 5-2). Without information about the occupation of the infected person it is difficult to propose prevention strategies.

Figure 5-2 Notifications of Q Fever received by the NSW health authority in the period 1991-2002 and year-to-date notifications for 2003



Source: http://www1.health.gov.au/cda/Source/Rpt_4.cfm, 23/11/2003

Leptospirosis

Leptospirosis is a zoonotic disease produced by numerous antigenically distinct and morphologically identical bacteria called leptospire. People can contact the disease through contaminated water, contact via the skin, eyes or nose, and from contact with urine from infected animals. Leptospirosis can be found in pigs, cattle, sheep, dogs and rats (Benenson, 1985; Parmeggiani, 1983). People at risk from leptospirosis include; abattoir workers, dairy farmers, cattle farmers, veterinarians, piggery workers, cane farmers, rice growers, banana growers and bush walkers. There have been a total of 2,383 notifications nationwide since 1991 (Table 5-6).

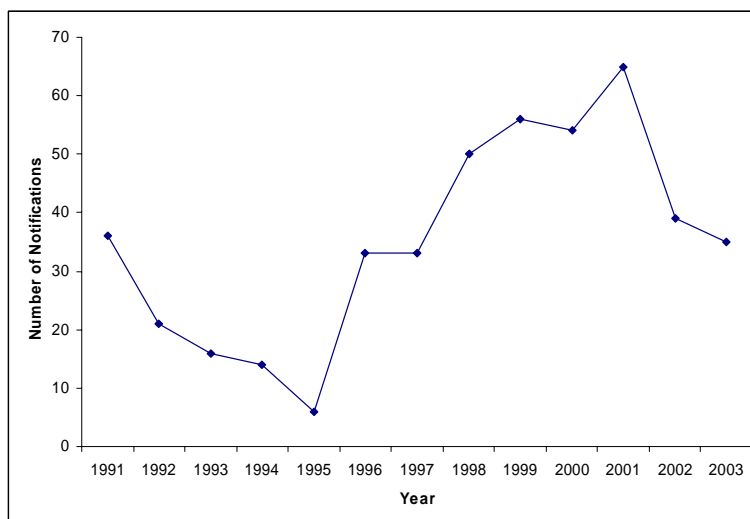
Table 5-6 Notifications of leptospirosis received by State and Territory health authorities in the period 1991-2002 and year-to-date notifications for 2003 by year-month

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1991	18	14	13	13	13	8	8	7	26	17	22	4	163
1992	14	14	6	8	7	12	8	13	14	27	31	16	170
1993	21	16	15	18	6	14	9	12	11	24	16	12	174
1994	23	13	16	9	10	8	2	11	6	10	10	4	122
1995	14	6	15	6	4	16	10	10	12	15	25	31	164
1996	7	24	31	23	15	13	22	10	9	26	20	14	214
1997	7	9	8	8	18	8	10	5	7	13	11	10	114
1998	14	14	11	14	12	14	19	11	17	25	29	22	202
1999	29	28	54	56	50	14	16	8	13	14	18	23	323
2000	16	12	38	20	39	16	10	12	15	22	24	21	245
2001	20	32	33	22	30	21	17	16	5	15	12	7	230
2002	25	21	27	19	19	6	3	9	6	9	9	5	158
2003	3	19	25	8	14	6	7	9	8	5	0	0	104

Source: http://www1.health.gov.au/cda/Source/Rpt_3.cfm 23//2003

There have been 458 cases (19% of national notifications) of leptospirosis in NSW since 1991, representing on average 35 cases per annum. The numbers of cases per annum increase to a peak in 2001 (Figure 5-3).

Figure 5-3 Notifications of leptospirosis received by the NSW Health Authority in the period 1991-2002 and year-to-date notifications for 2003



Source: http://www1.health.gov.au/cda/Source/Rpt_4.cfm, 23/11/2003

Brucellosis

Brucellosis is also known as Undulant Fever, Malta Fever, Mediterranean Fever, Bang’s Fever and Abortus Fever. Infection is spread by cattle, pigs, goats and sheep via ingestion of raw milk, contact with tissues, blood, urine, vaginal discharges, aborted foetuses and placentas, and through the respiratory tract by airborne infection (Benenson, 1985; Hungerfords, 1990). People at risk of infection include: veterinarians, meat workers, people working in infected premises, dairy farmers, and sheep farmers. There have been 409 notifications nationwide since 1991 (see Table 5-7).

Table 5-7 Notifications of brucellosis received by State and Territory health authorities in the period 1991-2002 and year-to-date notifications for 2003 by year-month

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1991	1	2	3	2	1	1	1	5	2	3	4	0	25
1992	1	2	2	0	0	5	4	1	4	3	4	6	32
1993	0	4	0	1	1	0	0	2	2	1	1	1	13
1994	1	1	0	1	3	1	1	4	7	6	7	6	38
1995	2	2	0	1	5	2	1	0	2	3	3	3	24
1996	2	8	2	3	0	3	0	4	5	4	4	5	40
1997	5	1	1	2	2	1	2	6	6	2	6	5	39
1998	8	5	0	1	2	3	6	2	4	9	2	3	45
1999	1	1	4	0	4	1	5	10	8	6	9	3	52
2000	2	0	3	0	1	1	0	5	5	3	4	3	27
2001	6	1	1	1	0	3	2	0	2	2	1	1	20
2002	8	3	1	2	3	3	6	1	1	5	6	0	39
2003	2	1	1	2	2	3	3	0	0	1	0	0	15

Source: http://www1.health.gov.au/cda/Source/Rpt_3.cfm 23//2003

There has been a total of only 20 cases (5% of national notifications) of brucellosis reported in NSW since 1991, with no cases reported since 1997 (Communicable Diseases Network, 2003). Bovine brucellosis (*Brucella abortus*) was eradicated from Australia since 1989 through a national eradication scheme administered by the Department of Agriculture and Fisheries, and most human cases occurring now are due to other *Brucella* species such as *B. melitensis* which comes into Australia with people and *B. suis* which can occur in pig hunters.

Summary

- Zoonotic diseases remain a significant biological hazard for NSW.
- There were 3,044 notifications of Q Fever in NSW since 1991 (40% of national notifications).
- There were 458 notifications of leptospirosis in NSW since 1991 (19% of national notifications).
- There were 20 notifications of brucellosis since 1991 (5% of national notifications).

Recommendations

1. Information regarding occupation and industry of employment for the person infected by a zoonotic disease should be collected as part of the data collected by the Communicable Diseases Network.
2. Zoonotic prevention programs should be maintained to protect NSW farmers and farm workers from infection by zoonotic diseases.

Section 6 Summary

6.1 Deaths

Farm Manager and Farm Worker Deaths, NSW, 1990-2000

- There was on average a rate of 99 deaths per annum over the 10 year period .
- Males represented 94.5% of the deaths.
- Agricultural machinery related deaths were the most common FSA E-code deaths, and motor vehicle accidents were the most common E-code grouped deaths.
- The death rate per 100,000 remained unchanged except for variations between quarters.
- Farm worker fatalities were highest in the 20-24 year age group and were more likely to occur between October and January and with seasonal work.
- Farm manager fatalities increased with age and were more likely to occur at any time throughout the year.

Farm-Related Fatalities in NSW, 1989-1992

- There were on average 39 farm-related fatalities per year to workers and bystanders recorded during the 4 year period. The fatality rate for farmers was 25.1 per 100,000 per year and for farm hands and assistants it was 20.3 per 100,000 per year.
- The most common farm enterprises where the fatal incident occurred were cereal grains/sheep/cattle/pigs, meat cattle, and sheep.
- The most common locations of the fatal incident were roads and lanes and paddocks.
- The common agents involved in work-related fatalities were tractors, aircraft, and trucks. Dams and tractors were common agents associated with fatalities of bystanders.
- The common mechanisms of work-related fatalities were vehicle accidents, being hit by moving objects (most commonly tractors), being hit by falling objects (mainly trees being felled), and rollovers of mobile machinery (mainly tractors). Common mechanisms of bystanders fatalities were drowning and being hit by moving objects.
- The most common activities undertaken by workers at the time of the fatal incident were work-related transport, maintenance activities, and working with crops. Bystanders were commonly involved in recreational activities.

6.2 Workers' Compensation

There were 27,741 workers' compensation claims between 1 July 1992 and 30 June 2001.

Horticulture and Fruit Growing

- There were on an average 439 injuries per annum in NSW resulting in a workers' compensation claim in the horticulture and fruit growing industries.
- More than two-third (70.7%) of the injured occupational group in horticulture and fruit growing were *labourers and related workers*.
- The most common agency of injury in horticulture and fruit growing industries was *non-powered hand tools, appliances and equipment*.
- The most common mechanism of injury for horticulture and fruit growing industries was *body stressing*.
- The most common nature of injury for horticulture and fruit growing industries was *sprain/strain and dislocation*.

Grain, Sheep and Beef Cattle Farming

- There were on an average 1,070 injuries per annum in NSW resulting in a workers' compensation claims in the grain, sheep and beef cattle industries.
- The most common agency of injury in grain, sheep and beef cattle farming industries was *animal, human and biological agencies*.
- The most common mechanism of injury for grain, sheep and beef cattle farming industries was *being hit by moving objects*.
- The most common nature of injury for grain, sheep and beef cattle farming industries was *sprain/strain and dislocation*.

Dairy Cattle Farming

- There were on an average 206 injuries per annum in NSW resulting in a workers' compensation claim in the dairy cattle farming.
- The most common agency of injury for dairy cattle farming was *non-powered hand tools, appliances and equipment and animal, human and biological agencies*.
- The most common mechanism of injury for the dairy cattle farming was *being hit by moving objects*.
- The most common nature of injury for the dairy cattle farming was *sprain/strain and dislocation*.

Poultry Farming

- There were on an average 533 injuries per annum in NSW resulting in a workers' compensation claims in the poultry farming industries.
- More than three-fourth (77.5%) of the injuries occurred to the occupational group labourers *and related workers* in poultry farming industries.
- The most common agency of injury for the poultry farming industries was *non-powered hand tools, appliances and equipment*.
- The most common nature of injury for the poultry farming industries was *sprain/strain and dislocation*.

Other Livestock Farming

- There were on an average 263 injuries per annum in NSW resulting in a workers' compensation claims in other livestock farming industries.
- The most common agency of injury for other livestock farming industries was *animal, human and biological agency*.
- The most common mechanism of injury for other livestock farming industries was *being hit by moving objects*.
- The most common nature of injury for other livestock farming industries was *sprain/strain and dislocation*.

Other Crop Farming

- There were on an average 195 injuries per annum in NSW resulting in a workers' compensation claim in the other crop farming industries.
- The most common agencies of injury were *non-powered hand tools, appliances and equipment, mobile plant and transport, and materials and substances*.
- The most common mechanism of injury for other crop farming industries was *being hit by moving objects*.
- The most common nature of injury for other crop farming industries was *sprain/strain and dislocation*.

Services to Agriculture

- There were on an average 377 injuries per annum in NSW resulting in a workers' compensation claim in the services to agriculture industries.
- The most common agency of injury for services to agriculture industries was *animal, human and biological agencies*.
- The most common mechanism of injury for services to agriculture industries was *body stressing*.

6.3 Hospitalisations

- There was a total of 15,915 people discharged from NSW hospitals between 1 July 1990 and 30 June 2000 who had an injury sustained on a farm. This was an average of 1,592 hospitalisations per annum.
- Three-quarters of the persons injured on farms and admitted to hospital were males (74.9%).
- The most common external causes of injuries on NSW farms where the person was admitted to hospital were *motorcycles, falls* and *animal ridden*.
- Children represented 16.3% of all farm injuries requiring hospitalisation in NSW. *Motorcycles, animal ridden, falls* and *other vehicles* were the four common external causes associated with child injury.
- As the child aged on a farm they were more likely to be injured and require hospitalisation.
- Children were more likely to be admitted to hospital with a farm injury in the months of January and April and on the weekend.
- The longest average length of stay in hospital for a farm-related injury in children was due to *fire and flames*.
- The most common age group hospitalised for a farm-related injury were males aged 15-19 years. In females it was the 10-14 years age group.
- In males Tuesday was the most common day the injuries on farms requiring hospitalisation occurred, whereas in females Monday and Sunday were the most common days.
- Larger number of farm injuries requiring hospitalisation were recorded from October to April.
- Ten percent of people injured on farms spent more than nine days in the hospital.
- The longest average length of stay was due to *fire/flames* and *falls*.

6.4 Pesticides

- Workers in most agricultural industries in NSW are exposed to pesticides in the process of mixing, handling, storing and cleaning down pesticides.
- There were 495 workers who made a workers' compensation claim due to a chemical exposure between 1 July 1992 and 30 June 2001.
- There were 141 people admitted to hospital due to poisoning from an agricultural chemical in NSW between 1 July 1990 and 30 June 2000.

6.5 Organic Dusts and Respiratory Disease

- Respiratory disease associated with organic dusts in agriculture is probably under reported in death data in NSW, given the importance of grain production and grain handling in the state.
- There were 159 deaths per annum in NSW to farm managers and farm workers due to respiratory disease which does not take into account deaths of grain handlers at grain handling and transport facilities in NSW and at ports. It should be noted that females may be under-reported in the data due to poor occupation-related information.
-

6.6 Hearing

- Farmers and farm workers display sign of noise injury at a very early age.
- Farmers and farm workers mean hearing thresholds deteriorate as they age.
- Nearly half (47%) of farmers and farm workers screened have had tinnitus.
- Farmers and farm workers are exposed to a range noise sources.

6.7 Zoonotic Diseases

- Zoonotic diseases remain a significant biological hazard for NSW.
- There were 3,044 notifications of Q Fever in NSW since 1991.
- There were 458 notifications of leptospirosis in NSW since 1991.
- There were 20 notifications of brucellosis in NSW since 1991.

Section 7 Recommendations

7.1 Deaths

1. Programs aimed at preventing deaths on farms and to farm managers and workers should focus on:
 - Vehicles
 - Agricultural machinery (particularly tractors)
 - Falls
 - Firearms
 - Drowning (particularly children under 5 and especially in dams)
 - Fire.
2. There should be regular reporting of farm-related deaths to Farmsafe NSW
3. Further examination of indicators for analysis of death over time, in particular focusing on ICD10, is required.
4. Farmers should be encouraged to put into place an occupational health and safety plan for their farm that includes people who visit the farm.
5. There should be access to the National Coroners Information System to provide detailed information on farm deaths in NSW.

7.2 Workers' Compensation

1. Further investigation of workers' compensation data needs to be undertaken to determine the agents and mechanisms involved in causing injuries that result in a claim.
2. Work needs to be undertaken to link workers' compensation information with exposure information to determine the size of the problem and areas for prevention.
3. Workers' compensation information should be available yearly in an electronic format detailed enough to see changes in specific agricultural industries, especially where specific prevention programs are being delivered.
4. Prevention programs aimed at reducing workers' compensation claims should:
 - be targeted at specific agricultural industries eg beef cattle, cotton, etc
 - be targeted to reduce injuries involved in animal handling and manual handling
 - be targeted at reducing injuries associated with agricultural machinery.
5. Farmers should be encouraged to undertake the Managing Farm Safety Course to manage the range of hazards associated with injury and illness that occur on farms.

7.3 Hospitalisations

1. Farm injury prevention programs in NSW should concentrate on motorcycle safety, safe horse riding/handling, fall prevention, and child safety on farms.
2. Work needs to be undertaken examining ICD10 classification and its usefulness for monitoring and prevention of farm-related injuries.
3. Further work needs to be undertaken to examine the circumstances surrounding a fall and how falls can be prevented.
4. Regular reporting of hospital information should be obtained and reported to Farmsafe and the National Farm Injury Data Centre.
5. Rural Medical Programs should include information about farm injuries, especially for General Practitioners and nurses who are planning to work or are currently working in rural district hospitals. The information should be aimed at improving skills and information about how to prevent these injuries.

7.4 Pesticides

1. It is recommended that increased attention be given to defining the nature and extent of pesticide exposure to agricultural operators in NSW.
2. Priority attention should be given to:
 - Workers in vineyards
 - Workers in tree crop industries
 - Workers in the grain produce industries
 - Sheep industry workers during sheep jetting and dipping
 - Workers in vegetable crop industries
 - Greenhouse workers.

7.5 Organic Dusts and Respiratory Disease

1. It is recommended that farm health and safety promotions and education programs address the issues of respiratory disease associated with farm dust. Target groups should include rural doctors and farm workers, particularly those handling grain, hay and silage.

7.6 Hearing

1. The hearing screening service already provided by area health services should continue, ensuring that young farmers in particular are targeted.
2. The information collected by such screening programs should be provided to Farmsafe NSW and the ACAHS to monitor farmer and farm worker noise-induced injury and be able to provide relevant information back to the participants.
3. Farmers should be encouraged to put into place hearing protection strategies including the reduction of noise in areas such as the workshop.

7.7 Zoonotic Diseases

1. Data relating to occupation and industry of employment of all individual cases should be collected as part of the information compiled by the Communicable Diseases Network.
2. Zoonosis prevention programs should be maintained to protect NSW farmers and farm workers from infection by zoonotic diseases.

Glossary

AAHU	Australian Agricultural Health Unit
ABS	Australian Bureau of Statistics
ACAHS	Australian Centre for Agricultural Health and Safety
ACT	Australian Capital Territory
ANZIC	Australia and New Zealand Industry Classification
FSA	Farmsafe Australia
ha	hectare
ICD9	International Classification of Diseases 9 th Revision
ICD10	International Classification of Diseases 10 th Revision
LD₅₀	Lethal Dose 50
NEC	Not Elsewhere Classified
nec	Not Elsewhere Classified
NOHSC	National Occupational Health & Safety Commission
Other rural areas	Are the remaining SLA's in the rural zone that are not 'Large Rural Centres' (ie population resides in urban centre of population of 25,000 or more) or 'Small Rural Centres' (ie rural zones containing urban centre population of 10,000 to 24,999)
NSW	New South Wales
NT	Northern Territory
Qld	Queensland
RIRDC	Rural Industries Research & Development Corporation
SA	South Australia
SLA	Statistical Local Area
Tas	Tasmania
Vic	Victoria
WA	Western Australia
Yrs	Years
*	In tables, unless otherwise stated, the star indicates number less than 3, to protect individuals from identification.

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