

# Sentinel Health and Safety Data for Australian Cotton Farms

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A study undertaken for the Cotton Research and Development Corporation



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## **Introduction**

This brief provides an update of an initial review (Cotton Industry Injury and Safety Profile),<sup>1</sup> that was commissioned by the Cotton Research and Development Corporation in 2014. The purpose of the document is to provide contemporaneous data to gauge progress against key work health and safety benchmarks that the industry is seeking to attain.

## **Method**

Information sources for this review, have been restricted to the national coronial and workers compensation datasets. In addition, information relating to the economic costs associated with these data are presented.

### ***National Coroners Information System***

The National Coroners Information System (NCIS) is the sentinel repository of all deaths in Australia. Operating since 2001, it provides data from each of the state/territory jurisdictions into a national electronic database. Following a fatality, a case file is made for each incident. These are uploaded, usually within seven days of the incident, with additional details (police reports, autopsy reports, toxicology etc.) added as they become available. Coronial findings are eventually uploaded once the relevant coroner has assessed the case. When this is done and the case is “closed” (which in some instances can take 3-5 years or longer), AgHealth Australia has access to the “closed” reports to inform its safety recommendations. AgHealth Australia is the only agriculturally focused agency with this access and is subject to strict ethical requirements in terms of data access and use.

While the NCIS is a genuinely valuable repository of factual information, this information is sometimes incomplete and/or may be limited in detail (as opposed to the hard copy records maintained on file which are more comprehensive and include where applicable witness statements, photos of the incident scene and reports from Work Health Authorities if a work-incident). Consequently, a full assessment of the incident may be difficult to evaluate from the records maintained electronically.

Although there is an industry coding field (in which cotton would usually be identified - ANZSIC 0152), this is often incomplete or not specified in the records. As such determining precisely those events that have occurred on a cotton property is frequently difficult to ascertain.

To overcome this issue the following process was adopted.

1. The postcodes of all areas in Australia where cotton has been commercially grown during the period 2014-19 were identified.
2. Data held by AgHealth Australia and drawn from NCIS were accessed with fatalities in the relevant post code areas being retained.
3. These records were then assessed on a case-by-case basis by entering the NCIS and examining either the police report or case findings handed down by the coroner.
4. From these records the cases that stipulated that they occurred on a cotton property were identified. A further sub-classification was also made for those incidents where it was unclear if the location of the incident was a cotton property (i.e. it may or may not have been a cotton property). Additionally, cases that were clearly not cotton related were removed from the data e.g. cattle or grain production deaths. While there will undoubtedly be some properties that have mixed enterprises, these cases that were excluded specifically occurred in undertaking other commodity sector tasks.
5. Finally, to add further validity to the data a subsequent check on the NCIS was made using the search term "cotton". This identified all cases where this was present and included ginning and other related services. All of these cases were reviewed to ensure that only on-farm incidents were included in the data (i.e. these data exclude ginning related cases).

#### *Economic Costs Associated With Deaths*

The economic model adopted has been previously used with other agricultural death related costings.<sup>4</sup> In summary, the model includes loss of future earnings, loss of household contributions, insurance payouts, workcover investigations, police investigations, premature funeral costs, coronial costs, ambulance and hospital expenditure. Findings were also subject to a sensitivity analysis. Earlier data costs (expressed in 2012 dollars), were updated to reflect 2018 Australian dollars. There are also well documented limitations to this costing process, hence it is reasonable to assume that these estimates are conservative and are at a lower rate than the true costs. Additionally, the model does not consider the significant social costs associated with such fatal events.

### ***Workers Compensation Data***

Workers compensation data were accessed through Safe Work Australia for the five-year period 2012-13 to 2016-17 (Australian and New Zealand Standard Industrial Classification - ANZSIC 0152). Given some minor data collection changes and further data cleansing, the information for the 2008-09 to 2011-12 period within the initial report, were also re-collated. This ensured that any comparison across time is valid (modifications made to the initial report are highlighted in Annex 1). As with the previous study, the available data for the most recent year where data are available (2016-17), is provisional in nature. It is expected that further cases will be added in time. The information includes the numerical data on cases plus the estimated direct economic impost of the injury.

Available information is categorised into two distinct groupings based on time lost as a result of the injury i.e. 0-4 days or 5+ days. Typically, those injuries requiring 5+ days are more severe and debilitating, plus have a greater impact on the individual and the business operations. Data are provided on overall number of claims, the leading types (nature) of injuries, the mechanism of how injury occurred, length of time off work (weeks), total and median costs.

In respect to the workers compensation data there are known limitations in terms of the limited detail for each specific incident which allows only broad observations to be made. Additionally, no calculation of injury rates has been undertaken due to the lack of robust denominator data regarding the number of individuals working in the sector. Furthermore, the data are unlikely to include information on injuries to owner-operators and hence significantly under-represent the true burden of injury in the agricultural sector generally.

## **Results**

### ***Deaths Data***

The initial review identified a total of nine deaths that definitely occurred within cotton production in the 2001-13 period. The mechanism of the nine cases involved the following: - aeroplane, cotton picker, dam drowning (child), farm ute, forklift, module builder (x2), plant (nec\*) and irrigation pump. Since the initial review, two additional cases were identified to have occurred during this period. In the more recent period (2014 - Oct 2019), there have been a further six cases that can positively be defined as occurring on a cotton property. These also involved similar causal factors: - aeroplanes, vehicles, machinery. While cases where it was clear that the fatality involved another

sector (e.g. cattle or grains) were deleted from the analysis, a further five cases could have possibly occurred in cotton production.

*\* Not Elsewhere Classified*

*Fatality Economic Costs*

The six cases that were definitively determined as being cotton related in the period under examination, were placed into the economic model along with the eleven cases in the earlier period (2001-12). All figures have been updated to reflect costs in 2018 Australian dollars (previously expressed in 2012 dollars). As indicated in Table 1, the total direct impact of the seventeen fatal incidents since 2001 surpasses \$48 million, with an overall average of \$2.8 million per case.

**Table 1:** Estimated economic cost of farm-related fatalities (\$ millions, 2018 dollars)

<b>Year</b>	<b>Total Economic Cost</b>	<b>Av. Per Fatality</b>
<b>2001</b>	3.0	3.0
<b>2002</b>		
<b>2003</b>	3.0	3.0
<b>2004</b>		
<b>2005</b>		
<b>2006</b>	6.7	3.4
<b>2007</b>	6.7	3.4
<b>2008</b>		
<b>2009</b>		
<b>2010</b>	1.7	1.7
<b>2011</b>	8.0	2.7
<b>2012</b>	1.7	1.7
<b>2013</b>		
<b>2014</b>		
<b>2015</b>	3.3	3.3
<b>2016</b>	4.6	2.3
<b>2017</b>	9.6	3.2
<b>2018</b>		
<b>2019</b>		
<b>TOTAL</b>	<b>48.3<sup>#</sup></b>	<b>2.8</b>

<sup>#</sup> Discount Rate 3.93%

### Workers Compensation Data

As outlined in Tables 2 and 3, the cotton sector has a relatively equal distribution of short term (0-4 day) and more serious workers compensation claims. There has been a small decrease in the mean number of claims in the more recent period. To align with the cotton sustainability reporting targets that use five-year reporting intervals, data have been collated to best reflect that timeframe to the extent possible.

**Table 2:** Workers compensation annual number of claims by year

Time Lost (Days)	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17 <sup>p</sup>	TOTAL
0-4 days	21	19	53	60	49	25	26	35	288
Mean	40.4					28.7			
5+ (serious)	25	45	45	58	45	33	32	49	332
Mean	43.6					38			

p - denotes provisional data

**Table 3:** Workers compensation annual mean number of claims by time lost

Time Lost (Days)	Total 2009/10-2013/14 (Annual Mean)	Total 2014/15-2016/17 (Annual Mean)
0-4 Days	202 (40)	86 (29)
5+ (Serious Claims)	218 (44)	114 (38)
<b>TOTAL</b>	<b>420 (84)</b>	<b>200 (67)</b>

When examining the nature of injury for claims processed, soft tissue injuries continue to be the most frequent. The annual median for soft tissue injuries has remained stable. Other types of injuries have also remained relatively stable, with lacerations fractures and crushing being common.

**Table 4:** Leading workers compensation claims by nature of injury (all claims)

Nature of injury/disease	Total 2009/10-2013/14 (Annual Mean)	Total 2014/15-2016/17 (Annual Mean)
Soft tissue disorders due to trauma or unknown mechanisms	90 (18)	52 (17.3)
Laceration or open wound not involving traumatic amputation	65 (13)	28 (9.3)
Other fractures, not elsewhere classified	56 (11.2)	24 (8)
Contusion, bruising and superficial crushing	39 (7.8)	20 (6.6)
Trauma to muscles and tendons, unspecified	12 (2.4)	10 (3.3)
Foreign objects on or in the body	15 (3.6)	7 (2.3)
Trauma to muscles	18 (3.6)	4 (1.3)
Trauma to joints and ligaments, unspecified	11 (2.2)	9 (3)
Trauma to joints and ligaments, not elsewhere classified	9 (1.8)	4 (2)
Unspecified injuries	8 (1.6)	4 (1.3)
Dislocation	5 (1.0)	5 (1.6)
Hot burn	6 (1.2)	5 (1.6)
Deafness	6 (1.2)	2 (0.6)
Other	80 (0.2)	26 (8.6)
<b>TOTAL</b>	<b>420</b>	<b>200</b>

Falls on the same level are the main mechanism of injury, with little variation observable between the mechanisms involved in injury in the two periods.

**Table 5:** Leading workers compensation claims by mechanism of injury (all claims)

Mechanism of injury/disease	Total 2009/10-2013/14 (Annual Mean)	Total 2014/15-2016/17 (Annual Mean)
Being hit by moving or flying objects	55 (5.0)	16 (3.0)
Falls on the same level	40 (8.0)	33 (11.0)
Falls from a height	40 (8.0)	17 (5.6)
Muscular stress while handling objects	33 (6.6)	15 (5.0)
Muscular stress while lifting, carrying, or putting down objects	35 (7.0)	14 (4.6)
Hitting stationary object	38 (7.6)	12 (4.0)
Being hit by falling objects	19 (3.8)	21 (7.0)
Hitting moving objects	20 (4.0)	11 (3.6)
Muscular stress with no objects being handled	18 (3.6)	7 (2.3)
Vehicle accident	22 (4.4)	7 (2.3)
Being trapped between stationary and moving objects	19 (3.8)	6 (2.0)
Being trapped by moving machinery or equipment	11 (2.2)	7 (2.3)
Being hit by an animal	10 (2.0)	4 (1.3)
Other	60 (12.0)	30 (10.0)
<b>TOTAL</b>	<b>420</b>	<b>200</b>

### Workers Compensation Time Off and Economic Costs

Information on the duration of time off work and the related costs are provided in Table 6. These data indicate that the median time off work has remained stable. On an annual basis, workers compensation claims have increased from a median of \$2.18 million to just over \$3.4 million in the more recent period.

**Table 6:** Workers compensation all accepted claims by time and cost

Year	Total Time (All Accepted) (Weeks)	Median Time (All Accepted) (Weeks)	Total Cost (All Accepted) (\$,000)	Median Cost (All Accepted) (\$,000)
<b>Cotton (2009/10 to 2013/14)</b>				
<b>2009-10</b>	721	1.2	1,170.0	1.1
<b>2010-11</b>	724	2.8	2,414.0	5.6
<b>2011-12</b>	770	0.8	2,763.0	1.1
<b>2012-13</b>	998	0.8	1,823.0	1.5
<b>2013-14</b>	842	0.6	1,678.0	1.6
<b>TOTAL</b>	<b>4,055</b>	<b>1.3</b>	<b>9,848.0</b>	<b>2.18</b>
<b>Cotton (2014/15 to 2016/17p)</b>				
<b>2014-15</b>	860	1.2	1,691.0	3.8
<b>2015-16</b>	454	1.4	1,145.0	3.6
<b>2016-17p</b>	446	1.4	1,157.0	3.0
<b>TOTAL</b>	<b>1,759</b>	<b>1.3</b>	<b>3,993.0</b>	<b>3.46</b>

p - denotes provisional data

Serious injury claims (5+ days), comprised virtually all of the time lost (~99%) and compensation costs (~90%) in the 2014/15 to 2016/17 period. This emphasises the need to prioritise the reduction of severe injury.

## **Summary**

This brief provides summary data for the Cotton Research and Development Corporation to report on progress in relation to sentinel work health and safety indicators.

While the industry appears to be making progress there are several limitations to this study and the data within, that need to be considered. Firstly, accurate denominator data to ascertain rates of injury and death are not available and have not been presented in this report. This is particularly important as the impact of the extended drought and reduction in water allocations on the cotton cropping area planted is likely significant. This has implications in terms of both the volume of work undertaken and indeed the number of people working within the commodity sector. Without question, this reduces the overall exposure of workers to potential risks and may be partly reflected in the lower number of weeks lost in the last two years of this study period.

## **References**

1. Lower T, Temperley L. Cotton Industry Injury and Safety Profile. Australian Centre for Agricultural Health & Safety, Moree: 2014.

## Annex 1

Tables below are revised data provided by Safe Work Australia for the initial study period 2008-12.

**Table 2:** Workers compensation annual number of claims by industry

Time Lost (Days)	Industry class	2008-09	2009-10	2010-11	2011-12
<b>0-4</b>					
	Cotton growing	<i>(43) 41</i>	<i>(21) 20</i>	<i>(19) 14</i>	<i>(53) 52</i>
	Grain growing	24	33	27	51
	All Agriculture	2,143	1,920	1,960	2,278
<b>5+ (Serious claims)</b>					
	Cotton growing	<i>(26) 28</i>	<i>(25) 25</i>	<i>(45) 46</i>	<i>(45) 43</i>
	Grain growing	71	66	54	80
	All Agriculture	3,137	2,858	2,832	2,883

Figures italicised and in brackets (#) are revised data provided by Safe Work Australia for the initial study period

**Table 5:** Workers compensation all accepted claims by time and cost

Year	Total Time (All Accepted) (Weeks)	Median Time (All Accepted) (Weeks)	Total Cost (All Accepted) (\$,000)	Median Cost (All Accepted) (\$,000)
<b>Cotton</b>				
2008-09	473.3 <i>(553)</i>	0.4	2,312.0 <i>(2,415.0)</i>	0.8
2009-10	591.5 <i>(721)</i>	1.2	641.6 <i>(1,170.0)</i>	1.1
2010-11	622.7 <i>(724)</i>	3.0 <i>(2.8)</i>	1,301.2 <i>(2,410.0)</i>	5.6
2011-12	389.9 <i>(770)</i>	0.8	750.3 <i>(2,763.0)</i>	1.1
<b>TOTAL</b>	<b>2,077.4 <i>(2768.0)</i></b>	<b>1.35 <i>(1.3)</i></b>	<b>5,005.1 <i>(8758.0)</i></b>	<b>2.15</b>

Figures italicised and in brackets (#) are revised data provided by Safe Work Australia for the initial study period

**Table 6:** Cumulative incidence of weeks lost for all claims by sector (2008-09 to 2011-12)

Industry class	Total All Claims (Weeks Lost)	Incidence of Weeks Lost / 1,000 employees
Cotton	2,077 <i>(2,768)</i>	387 <i>(516)</i>
Grain growing	3,696	135
<b>All Agriculture</b>	182,559	310

Source: ABS & Safe Work Australia 2014<sup>7</sup>

Figures italicised and in brackets (#) are revised data provided by Safe Work Australia for the initial study period