ABSTRACT

AUSTRALIAN FARM WORK INJURIES: A MULTIPLICITY, A LIABILITY

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A telephone survey was conducted of 919 farms from three shires in the sheep/wheat belt of NSW. Data from the cohort study spanning 18 months measured the incidence of farm work related injury, risk factors and the range of costs associated with injury occurrence. On average, 22.6 per cent of farm businesses reported one or more injuries per year.

Seven categories of injury were identified as significant problem areas. These were manual handling, eye, motorcycle related, sheep related, cattle related, tractor related and horse related injuries.

The costs associated with injury occurrence that were measured included medical treatment, transport for treatment, replacement labour, damage to plant and production losses. The average cost of an injury was around $1000.
Background

Australian agriculture is characterised by a combination of factors that have retarded the improvement of occupational health and safety (OH&S) standards. These include:
- the fact that farms are both family home and place of work,
- the high proportion of self employed labour,
- the considerable variety of tasks, work sites and climatic conditions,
- the concomitant range of skills required, and frequently,
- the geographical isolation.

Stanford (1990 in Hegney 1993) suggested that farmers consider work hazards to be natural and acceptable risk of their occupation. This could be due in part to farm workers wishing to uphold a perceived 'tough' image of rural Australians. Emmet (1988 in Hegney 1993) felt that farmers would risk damaging their health for the sake of productivity. This combination of the factors characterising agriculture and the apparent attitude of many farm workers to their own OH&S provides a challenging task for those wishing to improve Australian agriculture's OH&S record.

Since the Farmsafe '88 conference, rural OH&S has been acknowledged increasingly by producer groups, the government and the media as an issue worthy of more attention and resources. Farm-work related injury is a significant part of this problem, and in particular, the cost of such injuries to individuals and to the community. Medical treatment and travel required to receive treatment, disruption to the production cycle resulting in reduced levels of output, replacement labour, damage to plant and equipment, are all ways in which farm-work related injuries incur costs. These costs are reasonably straightforward to measure. Other effects such as pain and suffering to the injured person and their family, the time and resources required to either visit the injured person in hospital or look after them at home, and commonly the burden of extra workload absorbed by family or friends, are more difficult to gauge in terms of dollar cost.

Where producers employ farm workers, another cost directly linked to the rate of injury occurrence is the Workers Compensation premium. The costs of Workers Compensation claims as a proportion of total wages reached a peak in 1990/91 and remain at high levels. Workers Compensation payments include compensation for medical, hospital and rehabilitation treatment, death or permanent disability payments, and expenses such as transport for treatment, investigation expenses, damages and legal costs. McCulloch (1991) extrapolated the average cost of a NSW Workers Compensation claim for 1986/87 to the entire Australian rural labour force. This estimate of the total compensation cost of farm-work related injuries in Australia was around $400 million per annum, or the equivalent of 4.3 percent of the gross value of production of farming in Australia in 1986-87. This extrapolation could be disputed on the grounds of the variation in OH&S systems and types of agriculture among states as well as the possible differences in rates of injury between employees and self employed labour. However, it can be taken as indicative of the burden that poor OH&S standards place on the productivity of Australian agriculture.
Data sources on farm-work related injury and associated costs have been restricted until now, to Workers Compensation Statistics, some hospital records and small local surveys. Workers compensation statistics for NSW 1991/92 show agriculture as having 49 employment injuries (temporary or permanent disability, or fatality) per thousand workers compared to the average over all workers of 25 employment injuries per thousand (WorkCover Authority, 1993). Agriculture had the seventh highest incidence of injury of the 24 industry classifications in the Workers Compensation statistics. The average cost of employment injuries over all industries for 1991/92 was $8,700, while agriculture’s average cost (excluding forestry and logging) was $9,200. While there is room for improvement in these figures, providing some justification for programs to improve farm safety, it should be remembered that they only represent one section of the rural work force, excluding self-employed farmers and unpaid family helpers.

The survey reported in this paper was undertaken as a part of the Economics of Farm Safety in Australian Agriculture (EFSAA) project. Focussing on three traditional broadacre agricultural enterprise types in Australia, sheep wool, beef cattle and dryland broadacre cropping (cereals, coarse grains and oilseeds), it estimated the incidence and a profile of, farm work related injury types and the costs associated with injuries.

This information will be utilised by the Farm Safety Action Group network in several ways. It is the first cross-sectional measure of farm-work related injury that covers the entire rural labour force (both employees, self-employed and unpaid family labour) in the traditional mixed farming context, confirming the main problem areas for farm injuries. The incidence of injury and an assessment of the costs associated with injury occurrence, together provide the evidence to validate farm-work injuries as an issue of concern. Not only from an OH&S perspective, but also from a production efficiency point of view. The survey results will also provide baseline data for injury occurrence in mixed farming from which to monitor the effect of farm safety promotions.

**Methodology**

Following a pilot survey carried out over 1990/91 in the Armidale Rural Lands Protection Board District (Low et al 1992), the main survey was designed to combine retrospective and prospective observation. The data collected cover a period of 18 months from January 1992 to July 1993. Collection started in July 1992, retrospective for the first six months, then prospective for the remaining 12 months.

Three shires in the NSW wheat sheep belt, Yallaroi, Gilgandra and Carrathool, were chosen to reflect the focus on sheep wool, beef cattle and traditional dryland broadacre cropping. Although samples were not taken from the entire population, the three shires selected were considered representative by two criteria. First, the types of production were representative of the region as a whole. Each of the shires chosen was a significant producer of at least two of the three areas of interest (see Table 1). Second, these shires (see Figure 1)
provided a representative range of climate, topography and farming intensity for the wheat/sheep belt.

Table 1. The Value of Agricultural Production by Shire

<table>
<thead>
<tr>
<th>COMMODITY</th>
<th>YALLAROI (%)</th>
<th>GILGANDRA (%)</th>
<th>CARRATHOOL (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wool</td>
<td>11.3</td>
<td>41.1</td>
<td>35.0</td>
</tr>
<tr>
<td>Sheep meat</td>
<td>0.5</td>
<td>2.5</td>
<td>1.3</td>
</tr>
<tr>
<td>Beef Cattle</td>
<td>18.5</td>
<td>12.8</td>
<td>7.6</td>
</tr>
<tr>
<td>Wheat</td>
<td>29.3</td>
<td>27.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Total</td>
<td>59.6</td>
<td>83.4</td>
<td>63.9</td>
</tr>
<tr>
<td>Total Value of Shire Production ($Millions)</td>
<td>$79.080M</td>
<td>$48.879M</td>
<td>$105.486M</td>
</tr>
</tbody>
</table>

* Regional value of Agricultural commodities - Agricultural Census Data Australian Bureau of Statistics 1990-91

Figure 1. Farm Injury Survey Shires
A proportionate stratified random sample, stratifying by shire, was the sample design chosen, because of interest in any difference that may exist in injury rates between shires. Using the Australian Bureau of Statistics Agricultural Census (1990-91) figures for the number of farm businesses in each shire and adding 10 percent for those farms with an Estimated Value of Operations (EVO) under $20,000, the samples in this survey provided greater than 80 percent coverage of each shire’s farm businesses.

Telephone interviewing was chosen as the mode of data collection, having achieved a significantly higher response rate in the pilot survey than the mail questionnaire. Before starting the telephone interviews, each sampling unit (registered owner of a selected rural rates listing) was sent an introductory letter that briefly advised of the impending phone call and explained its purpose. A media campaign was undertaken in each shire in the week before interviewing. The adjusted response rate (i.e., those who participated divided by those who were approached and identified as eligible) was 83.5 percent. The significant increase in response rate from the telephone component of the pilot survey (68.2 percent) was partly attributed partly to the support shown by prominent local producers and to the publicity campaign.

For the purposes of the survey an injury was defined as where any of the following occurred as a result of farm work:
- usual activities were suspended for one day or more,
- usual activities were restricted for five days or more (cannot work at the same pace or with the same ease as usual) or
- professional medical care was sought.

At the time of the interview, respondents’ co-operation was sought to record injuries in the farm diary if they kept one. Any injuries could then be related to interviewers when they called back at four monthly intervals, during the prospective phase.

All of the 425 injuries on which information was available were used in estimates of the incidence of injuries, the profile of injury characteristics and the assessment of the costs of injury.

However only a subset of all the injuries were appropriate to include in the case-control analysis. The case control (cohort) analysis of farm injuries was used to identify personal risk factors (i.e., attributes such as age or farm-work experience) that may increase an individual’s risk of sustaining a farm-work related injury. Cases were those reporting an injury during the period of observation and controls were those initial respondents participating from properties that did not report any injuries. As the controls were all initial respondents, (i.e., owner operators, managers or the person who had the most to do with the day-to-day running of the property), they form a subset of the farm population. Consequently it was only valid to use data from cases who were also of the same labour status. This analysis used 76 cases and 835 controls.
Incidence of Injury

The rates of injury reported in the survey are likely to be an underestimate of the actual rates. It is possible that participants withheld information on some injuries because:

- they did not recall the injury at the time of the telephone interview,
- they felt embarrassed or guilty about the circumstances that led to an injury,
- they believed it would reflect poorly on their management skills, or
- they wished to avoid the extra questions (the injury questionnaire) that they realised would follow.

Also, it is unlikely that participants would manufacture injuries that did not occur. Further, formal drought declarations (based on Rural Lands Protection Board (RLPB) areas) were in force in the surveyed shires for at least half of the survey period. These circumstances are likely to have influenced the rates or types of farm-work related injuries reported.

Fatalities

No farm-work related fatalities were reported during the survey, although the WorkCover Authority recorded 18 farm-work related fatalities in NSW over that time. As there seemed to be very few permanent disabilities or otherwise serious injuries reported in the survey, a check with ambulance records was carried out on two of the three shires. No unreported ambulance services relating to farm injuries on any of the properties involved in the survey were identified.

Overall Average

Of the 919 properties that completed the 18 month survey period, a weighted annual average rate of 22.6 per cent of properties (see Table 2) reported one or more injuries (more than one in five properties). The rate of injury varied among shires (see Table 2).

Serious Injury Average

Serious injuries were defined for the purposes of the survey as those that required five or more days off work. This definition eliminated those injuries that were often considered superficial by farmers, did not cause a great amount of disruption to the farm work schedule and utilised either none or only a small amount of professional medical care.

The estimated annual average rate over the three shires was 8.3 per cent of properties reporting one or more serious injuries, that is, close to one in twelve properties.
Table 2. Rates of Injury Over Shires

<table>
<thead>
<tr>
<th>Shire</th>
<th>Average Annual Rate of Injury (All injuries) %</th>
<th>Average Annual Rate of Serious Injury (&gt; = 5 days off work) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yallaroo</td>
<td>26.5</td>
<td>9.9</td>
</tr>
<tr>
<td>Gilgandra</td>
<td>19.3</td>
<td>6.3</td>
</tr>
<tr>
<td>Carrathool</td>
<td>22.8</td>
<td>9.3</td>
</tr>
<tr>
<td>Average</td>
<td>22.6</td>
<td>8.3</td>
</tr>
<tr>
<td>NB: Sample size = 919 properties.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Personal Risk Factors**

The personal variables considered most likely to have a significant influence were measured and assessed for their association with, or possible causal influence on, injury occurrence. This assessment was carried out as a case control study.

Age, gender, body mass, education, farm work experience, previous injury status, handedness, hours of work, hours of sleep, sleep quality, and stress were the factors tested. The two factors that showed a statistically significant difference (to a 95 per cent confidence level) between the distributions of cases and controls were age and previous injury status. The sleep quality measure (Epworth Sleepiness Scale) showed a significant difference between the distribution of cases and controls to a 90 per cent level of confidence.

Other factors that were thought likely as risk factors did not display significant differences and this was attributed to inaccurate measurement tools. These factors were hours of work, stress and hours of sleep. None of the remaining factors tested showed significant differences between distributions of cases and controls. A more in depth discussion of these factors see Low and Griffith (1994).

**Injury Profile**

**Notable Injury Groups**

Injury categories useful in terms of formulating preventive strategies are presented in Table 3, as Notable Injury Groups. These classifications are not mutually exclusive, for example a motorcycle related injury may also involve a sheep or a cow.
### Table 3. Notable Groups from 425 Reported Injuries

<table>
<thead>
<tr>
<th>Type of Injury</th>
<th>% of Total Injuries</th>
<th>Type of Activity</th>
<th>% Female</th>
<th>Location %</th>
<th>Body Part Injured %</th>
<th>Nature of Injury</th>
<th>&gt; =5 days off work %</th>
<th>% of Injuries Identified as Preventable by Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Handling</td>
<td>12.0</td>
<td>lifting, pushing, pulling</td>
<td>5.6</td>
<td>24% workshop, 24% pasture paddock</td>
<td>51% back</td>
<td>71% strain/sprain, 12% fracture / dislocation</td>
<td>31.2</td>
<td>19.6 (indicated preventable by Authors)</td>
</tr>
<tr>
<td>Eye Injuries</td>
<td>10.1</td>
<td>operating, grinder, welder</td>
<td>4.7</td>
<td>74.4% won shop</td>
<td>eye</td>
<td>65% foreign body injury / soft tissue</td>
<td>19.5</td>
<td>74.4</td>
</tr>
<tr>
<td>Agricultural Motorcycle</td>
<td>8.7</td>
<td>fall from motorcycle</td>
<td>5.4</td>
<td>pasture paddock</td>
<td>48.6% lower extremities</td>
<td>32.4% fractures or dislocations, 24.3% strains / sprains</td>
<td>24.3</td>
<td>24.3</td>
</tr>
<tr>
<td>Agricultural Sheep</td>
<td>8.7</td>
<td>handling sheep, 16.2% shearing, 32.4% stockyards</td>
<td>2.8</td>
<td>10.5% shearing shed, 32.4% stockyards</td>
<td>54% upper extremities, 19% knee, 19% lower back</td>
<td>40% strain / sprain, 18.2% fracture, 16.2% dislocations, 16.2% lacerations</td>
<td>45.9</td>
<td></td>
</tr>
<tr>
<td>Agricultural Cattle</td>
<td>8.0</td>
<td>handling, loading cattle</td>
<td>8.8</td>
<td>64.7% stockyards</td>
<td>41% lower extremities, 32.4% upper extremities</td>
<td>29.4% haematoma, 23.5% sprain strains</td>
<td>31.2</td>
<td></td>
</tr>
<tr>
<td>Agricultural Tractor</td>
<td>5.9</td>
<td>aligning, 20% sitting</td>
<td>1.2</td>
<td>30% cultivated paddock, 24% workshop / shed</td>
<td>36% lower extremities, 24% upper extremities</td>
<td>24% strain / sprain, 20% fracture / dislocate, 20% lacerations</td>
<td>43.5</td>
<td></td>
</tr>
<tr>
<td>Agent Horse</td>
<td>5.4</td>
<td>fall from horse</td>
<td>17.3</td>
<td>34.8% pasture paddock, 26% house paddock</td>
<td>30.4% lower extremities, 26% upper extremities, 26% trunk.</td>
<td>34.8% sprain / strain, 26% haematoma, 26% lacerations</td>
<td>42.9</td>
<td>8.7</td>
</tr>
</tbody>
</table>
**Time of Day**

The distribution of injuries follows a gradually increasing trend from 8am to 5pm, with a dip in rates over the 11 til 2pm or lunch time period. The rate of injury outside these hours is much lower, with fewer people on the job. However, the 5pm til midnight period exhibits almost twice the injury rate than the period from midnight to 8am.

Sprain-strain injuries were the only major nature of injury category that displayed a higher rate of injury occurrence in the period from 8 til 11am than for the period 2 til 5pm. The inference drawn from this observation is that workers are more vulnerable to sprain-strain injuries in the morning, when the body has not had sufficient activity to "warm up".

**Cost of Injury**

The cost of medical treatments were valued at the Medicare scheduled fee where applicable, or the relevant Association's scheduled fee where the service was not covered by Medicare (e.g., chiropractic). The hospital bed day rate used was the rate charged for Workers Compensation cases in 1993. This rate better reflects the true cost of hospital bed days for the survey period. Medical services were not recorded in detail, so an average cost for some services classified by bodily location was used (such as X-rays and surgery). Ambulance services were included in the medical treatment costs.

The cost of private vehicle transport to receive treatment was calculated using the NSW Government rate for official business in a vehicle with a 1600-2700CC (medium sized) engine, $0.53/KM. This compensates for fuel, oil, maintenance, registration, insurance and depreciation costs. Where public or charter transport was used, these were valued at the retail price of the journeys undertaken.

Where the actual cost of replacement labour was not obtained, the cost was estimated using the Pastoral Employees State Award as of 24 8 92.

**Medical Treatment**

Medical treatment included hospital bed days and outpatients services, general practitioners, specialists, x-ray services, physiotherapy, chiropractic, ambulance, and pharmaceuticals. The average cost of medical treatment for the 425 injuries reported was $437. This makes up slightly more than half of the average total cost of injury. In comparison, the median value ($751) for medical cost listed in Table 4 is evidence of a left skewed distribution. This type of distribution is repeated over all cost categories, indicating that the majority of values lie under the mean in each case.

The average cost of medical treatment for serious injuries (those requiring five or more days off work) was $1,281, just over half of the average total cost of serious injury. Serious injury cost categories can be seen in Table 5.
### Table 4. Cost Categories - All Injuries

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>$ Average over All Injuries n = 425</th>
<th>$ Standard Deviation</th>
<th>$ Minimum Value</th>
<th>$ Maximum Value</th>
<th>$ Median Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport (excl ambulance)</td>
<td>150</td>
<td>320</td>
<td>0</td>
<td>3155</td>
<td>59</td>
</tr>
<tr>
<td>Medical (incl ambulance)</td>
<td>497</td>
<td>1789</td>
<td>0</td>
<td>25918</td>
<td>75</td>
</tr>
<tr>
<td>Extra Labour</td>
<td>142</td>
<td>769</td>
<td>0</td>
<td>9999</td>
<td>0</td>
</tr>
<tr>
<td>Damage to Plant</td>
<td>39</td>
<td>464</td>
<td>0</td>
<td>9000</td>
<td>0</td>
</tr>
<tr>
<td>Production Losses</td>
<td>149</td>
<td>932</td>
<td>0</td>
<td>9999</td>
<td>0</td>
</tr>
<tr>
<td>Total Farm Cost</td>
<td>330</td>
<td>1365</td>
<td>0</td>
<td>11199</td>
<td>0</td>
</tr>
<tr>
<td>Average Total Cost</td>
<td>977</td>
<td>2637</td>
<td>0</td>
<td>26174</td>
<td>174</td>
</tr>
</tbody>
</table>

### Table 5. Cost Categories - Serious Injuries

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Serious Injury &gt; 4 days off work n = 134</th>
<th>$ Standard Deviation</th>
<th>$ Minimum Value</th>
<th>$ Maximum Value</th>
<th>$ Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport (excl ambulance)</td>
<td>312</td>
<td>505</td>
<td>0</td>
<td>3155</td>
<td>148</td>
</tr>
<tr>
<td>Medical (incl ambulance)</td>
<td>1281</td>
<td>2999</td>
<td>0</td>
<td>25918</td>
<td>269</td>
</tr>
<tr>
<td>Extra Labour</td>
<td>392</td>
<td>1282</td>
<td>0</td>
<td>9999</td>
<td>0</td>
</tr>
<tr>
<td>Damage to Plant</td>
<td>94</td>
<td>806</td>
<td>0</td>
<td>9000</td>
<td>0</td>
</tr>
<tr>
<td>Production Losses</td>
<td>411</td>
<td>1610</td>
<td>0</td>
<td>9999</td>
<td>0</td>
</tr>
<tr>
<td>Total Farm Cost</td>
<td>897</td>
<td>2220</td>
<td>0</td>
<td>11199</td>
<td>0</td>
</tr>
<tr>
<td>Average Total Cost</td>
<td>2489</td>
<td>4191</td>
<td>0</td>
<td>26174</td>
<td>871</td>
</tr>
</tbody>
</table>
Travel for Medical Treatment

The estimated cost of transport for medical treatment averaged $150, or 15 percent of the average total cost of injury. For serious injuries, transport costs averaged $312 or 12 percent of the average total cost. Geographical isolation compounded the cost of injuries requiring repeated visits to service centres for medical treatment.

Damage to Plant and Equipment

Estimates of the cost of damage to plant and equipment for all injuries and for serious injuries comprised approximately 4 percent of the average total cost in each case. However, 95 percent of all injuries recorded no cost for damage to plant and equipment as did 93 percent of serious injuries. For those injuries (22/425) reporting a cost of damage greater than zero, the average cost was $750.

Replacement Labour

The definition of injury included those who sought professional medical attention, worked at restricted capability for five days or more, or took one or more full days off work. Thirty-four percent of injuries reported did not take any full days off work. For these there would be little need to find replacement labour except in some timely operations (e.g., shearing) where very little labour force flexibility existed.

While any replacement labour used has been valued at purchase price or the Pastoral Employees State Award, the time taken off work is also presented. As discussed in Low and Griffith (1993) the average number of days off work is a more relevant measure to the individual farmer than applying an arbitrary and constant value per day to lost days of labour. This approach rests on the assumption that labour in this case does not have a constant marginal value and the productivity losses depend on how crucial the timing is of the work being done at the time of injury.

For all injuries, the average time taken off work was 8.4 days, with a further 15 days on average, working at a restricted capability. For serious injuries (defined as requiring five or more days off work) the average number of days off was 23, with a further average of 21 days working at a restricted capability.

The flexibility of the family farm operation is shown by the small proportion of injuries where the employment of extra workers was necessary. Only 9 percent of injuries reported employing extra labour. For those that did not employ extra labour, no cost in this category was recorded. The average cost of extra labour over the 9 percent that did, was $1,548.

For 38 percent of reported injuries, the work waited until the injured person returned to work. Family and friends coped with the extra workload left by the injured person in 15.5 percent of cases, while the other usual staff dealt with the work load in 17 percent of cases.
Priced Production Losses

This variable only indicates those production losses that producers felt they could quantify and attribute to the occurrence of the injury with some confidence. For both 'i' injuries' and 'serious injuries' priced production losses comprised between 15 and 16 percent of their average total cost (magnitudes shown in Tables 4. and 5.i. However, for 93 percent of all injuries, no priced production losses were indicated. For the 7 per cent of injuries that provided a dollar figure for production losses, the average amount was $2,039.

Unpriced Production Losses

Production cycles in agriculture are usually at least six months where a farm-work related injury impacts at the beginning of a production cycle. variation in weather conditions and market prices over the remainder of the cycle make it difficult to accurately estimate the value of production losses resulting from the injury. Where this situation arose, a description of the impact on farm work was recorded. Table 6. presents some of the unpriced productivity effects of injury occurrence.

<table>
<thead>
<tr>
<th>Number of Responses</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Delayed ground preparation and cultivation</td>
</tr>
<tr>
<td>6</td>
<td>Delayed sowing</td>
</tr>
<tr>
<td>1</td>
<td>Didn't sow</td>
</tr>
<tr>
<td>1</td>
<td>Delayed joining ewes 1 month</td>
</tr>
<tr>
<td>6</td>
<td>Lost sheep to fly-strike</td>
</tr>
<tr>
<td>4</td>
<td>Delayed shearing</td>
</tr>
<tr>
<td>6</td>
<td>Delayed general farm maintenance and improvements</td>
</tr>
</tbody>
</table>

Cost Category Comparison

In comparing the average cost for various types of injury, an interesting contrast appeared between injuries that occurred in cultivated or in pasture paddocks. While the proportions of transport, medical and farm cost (damage to plant and equipment, replacement labour and production losses) are similar, there is a significant difference in the magnitude of the total cost. For the 54 injuries that occurred in a cultivated paddock the average cost of injury was $548, while for injuries that occurred in pasture paddocks the average cost was $1407.

The difference in average cost is attributed to the higher proportion of fracture injuries occurring in pasture paddocks (20 percent versus 6 percent) and the corresponding higher number of days in hospital. Injuries occurring in pasture paddocks were mainly attributed to sheep, cattle and non-specific enterprises.
while those occurring in cultivated paddocks were predominantly related to cropping and non-specific enterprises. Ride fall, impact/collision and lifting weight were the main activities at the time of injury for pasture paddocks, while the use of hand or power tools, twist stretch bend and impact collision were the main activities for cultivated paddocks.

Between these two injury locations, the difference in cost was most pronounced in the Carrathool Shire where the cost of a pasture paddock injury was 5.7 times that of a cultivated paddock injury while Yallarloi and Gilgandra were 1.7 and 2.2 times respectively.

The cost of injury for the five of the seven notable injury categories was similar to the overall average cost of injury. These were sheep, cattle and horse related injuries, motorcycle and tractor linkage related injuries. The remaining two notable categories, eye and manual handling injuries cost less than the average, at $274 and $365 respectively.

**Time Taken for Travel, Waiting and Treatment**

There is an opportunity cost to the person injured for the time taken to travel to the site of medical treatment, await consultation and be treated. For travelling time, an average speed of 90 kilometres per hour has been assumed. For accident and emergency cases, an average waiting time of 45 minutes and an average treatment time of 90 minutes was estimated. For other medical treatments, average waiting and treatment times of 30 minutes each have been assumed. On this basis the average time taken for travel, waiting and treatment per injury was estimated at 7.3 hours.

There are also opportunity costs of time and actual cost of travel involved where family members and friends travel to visit a hospitalised person. No estimates of these costs have been made.

**Farm-work Related Injury Insurance**

**Workers Compensation**

For the Year July 1991 to June 1992, there was a total of 31,000 agricultural employers paying workers compensation premiums. Of these, 9 percent were category A employers with an annual premium of more than $2,000 and remainder were Category B employers with an annual premium of under $2,000 (A. Macky 1993, Pers Comm). For the majority of agricultural employers (i.e., category B employers), there is no penalty for a high rate of claim, as previous claim experience is not factored into the individual employer's premium. Conversely, there is also no incentive to reduce claims for the same reason.

Workers Compensation premium rates for farming and grazing have increased from 5.2 percent of wages paid in 1987/88 to 5.8 percent in 1988/89 and have remained at 5.6 percent for the three years to 1992/93. The basis for these rates can be seen in Figure 2 showing the cost of workers compensation claims as a percentage of wages paid.
For the year 1991/92 the average gross incurred cost for a workers compensation claim in agriculture was $9,200 (WorkCover Authority 1993). This amount is significantly higher than $2,489, the average cost of serious (more than 4 days off work) injury in the survey. This is partly due to the workers compensation average figure including the costs compensation of 17 fatalities and 179 permanent disabilities, whereas the survey, because of its limited size, did not record any fatalities or any confirmed permanent disabilities. Also, as explained in the background section of the paper, Workers Compensation pay-outs can include investigation and legal expenses, and compensation for pain and suffering, none of which are included in the survey injury cost estimates. Another reason for the lower average cost of injury in the survey was the small proportion of replacement labour relative to time taken off work. If the reported cost of actual replacement labour was replaced with a valuation of the time taken off work at the 1992 NSW Pastoral Employees Award rate of $325.40 per week, the average cost of a Serious Injury in the survey would increase by more than $1,100 to $3,637.

**Personal Accident Insurance**

Over the case control group, 40.6 per cent indicated that they had no form of either workers compensation or personal accident insurance (including life, personal accident, disability income, total and permanent disability). For a group who are in the main self-employed, this is a high proportion without any apparent form of income protection. This situation could be explained by several factors. It appears that farm workers' perceptions of their risk of serious occupational injury is somewhat lower than the actual risk indicated by the survey. This could be due to their perceptions being based on personal and
neighbouring rural workers experience. This breadth of experience is unlikely to comprise a representative sample of the rural labour force and the frequency and severity of work-related injury, therefore a biased view of their own risk of work-related injury results. For less serious injuries, whether or not their perception of the risk they face is accurate, there is generally a stoic acceptance of minor injuries as an occupational hazard.

Of this same group 70 per cent indicated that they had some form of private medical health insurance such as HCF, MBF or Medibank Private. This is significantly higher than the proportion of the New South Wales population with private health cover which stands at 50 per cent (Castles 1993). This proportion was shown to be similar for residents of the state capital to that of residents of other areas of the state.

Conclusions and Implications

The results of the farm injury survey have confirmed several things that were previously only suspected by rural OH&S professionals. The recorded frequency of farm-work related injuries shows them not only as a significant rural OH&S issue, but also as worthy of concern from a production efficiency point of view. The disruption to farm work programs affected more than one in five properties in the survey who reported at least one farm related injury per year. Each injury averaging 8 days off work and 15 days working at restricted capability. Similarly, one in twelve properties reported at least one serious injury per year averaging 23 days off work plus 21 days at restricted capability.

The effects of these injuries are wide ranging and include the pain and suffering of the injured person, the opportunity cost of the time taken for travel, waiting and medical treatment, and the pressure of the extra work load taken on by family or friends or by the injured person returning to work. Financial expenses such as medical treatment, travel for treatment, replacement labour, damage to plant and equipment, and production losses. The average cost to the community for one injury is around $1000, while the average cost of a serious injury comes close to $2,500.

In the past many farmers have not been moved to improve the safety of work practices by the risk of physical pain and suffering alone. All of the information on the effects of farm work related injury collected in the survey can be used to make primary producers more aware of the level of risk they face and of the consequences such as disruption to work program, the cost of medical treatment and rehabilitation, and losses in production associated with the occurrence of an injury.

Workers Compensation data for agriculture in NSW 1991 92 shows the ratio of farm-work related injuries (temporary disability less than 6 months) to fatalities at 95:1. Applying this ratio to the survey data where 143 injuries equivalent to the Workers Compensation temporary disability five or more days and less than
6 months occurred, 1.4 fatalities would be expected. However, none were reported. While the injuries reported in the survey provide a profile of less serious farm work related injury for mixed farming, a substantially larger sample of injuries is needed to give an insight into the occurrence of permanent disabilities and fatalities.

References


Macky, A. (1993), Manager, Statistics Branch, WorkCover Authority NSW, Personal communication


