AUSTRALIAN CENTRE FOR AGRICULTURAL HEALTH AND SAFETY

THE UNIVERSITY OF SYDNEY

Preventing death and serious injury caused by rollover of quad bikes on Australian farms - Policy Paper

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Aim:

This policy paper aims to provide farmers, farm managers and farm workers with practical information to assess risks associated with quad bike rollovers and to put in place effective control measures to reduce the risk of death and serious injury. This paper should be read in conjunction with the update of the Australian Centre for Agricultural Health and Safety publication -"Safety of quad bikes and side-by-side vehicles on Australian farms - A practical management guide".[1]

The nature of the risk:

Quad bikes are a commonly used and important vehicle on Australian farms and fall under the category of "plant" within the existing and proposed Occupational Health and Safety Regulations.[2-4]

In the period 2001 to 2009 quad bikes have resulted in 127 deaths across Australia - an average of 14 per year.[5]

Quad bikes are the second leading agent of injury death on Australian farms, ranking only behind tractors.[6] Of these fatalities, 47% involved the quad bike rolling over and crushing the victim. Farms were the most common location for rollover deaths, with 90% of all rollover cases occurring on farms. In total, rollovers were responsible for 59% of on-farm and 18% of non-farm deaths.[5]

In addition to the physical, social and emotional impacts related to quad bike deaths and serious injuries, there are significant economic implications, with the average cost of a quad bike fatality being estimated as $1.5Million (in 2008 dollars).[7]

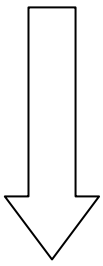
Rollover deaths were caused by crush injury and were primarily associated with asphyxiation or respiratory difficulty (n= 14), head injury (n = 11), chest (n=6) and spinal injuries (n=4). This compares with injuries from non-rollovers where multiple injuries (n=17), head (n=10) and brain injuries (n=4) were most common.[8]

These findings clearly indicate that quad bikes pose a significant risk of rollover and that steps must be taken to reduce the potential for death and serious injury in the event of a rollover.

Regulatory requirements:

All equipment designers and workplaces are required by law to undertake a risk assessment and to reduce the risk of injury from "plant".[3,4] This should include the risk from quad bike rollovers.

Specific efforts to reduce deaths and serious injury from quad bikes should follow the range of actions based on the hierarchy of risk control and identified in the document "Safety of quad bikes and side-by-side vehicles on Australian farms - A practical management guide."[1]

MOST PREFERRED	Hierarchy of Control Measures
	Elimination - may not always be possible but start with this Substitution - use a more stable machine e.g. ute or side-by-side vehicle Engineering Controls - rollover protective device Administrative Controls - training, induction, rider supervision
LEAST PREFERRED	Personal Protective Equipment - helmet

Control options:

The focus of manufacturers to date has been on promoting the lower order, or least effective controls:

- Rider training - known not to be an effective risk control intervention without higher order controls, as quad bikes are prone to rollover.
- Being a "safety conscious individual and rider" offers little protection against quad bike rollovers.[2]
- Use of personal protective equipment - in particular, wearing of a suitable helmet that would provide some protection of the head and neck in the event of a rollover or quad bike crash.

In contrast, ***the two higher level control options that farmers, farm managers and farm workers should put in place to reduce the risk of death and serious injury caused by quad bike rollover are***:

1. Selection of a safer vehicle or machine for the planned farm work
2. And, if a quad bike is to be used, fitting a tested rollover protective device.

a. Selection of the safest machine for the job

Where possible select a machine that has a low risk of rollover. Consider the machines that can be fitted with a suitable operator protective device, including rollover protective structure and operator restraint. Many jobs on Australian farms can be undertaken using alternative small vehicles to quad bikes (e.g. farm utes and side-by-side vehicles).

b. Fitting a tested rollover protective device

Many farmers and other organisations have moved away from using quad bikes because the risk of rollover has been seen to be too high. Others including agricultural training institutions, have looked at the issues and fitted suitably tested protective devices to reduce risks in the event of a rollover.

Manufacturer-supported research has consistently claimed that protective devices to reduce the risks from rollovers are not practical or feasible. Further, they have claimed that any benefit in fitting a device was not statistically significant if a rollover occurs.[9-12]

However, the emerging evidence regarding the legitimacy of modeling assumptions and scenarios used in this manufacturer-supported research, has recently been called into serious question by independent researchers in the field of mechanical and forensic engineering.[13,14]

The body of evidence supporting the potential for some form of rollover protective device for quad bikes is also growing.[15-17]

While the physical nature of tractors and quad bikes is significantly different, work undertaken on tractor rollover protection structures highlights the benefits of these devices in reducing fatalities.[18] Even where seatbelts were not present or used, no or only minor injuries were reported in 71% of cases.[19] Results even approaching these levels for quad bikes, would lead to significant reductions in death and serious injury.

Quad bike rollover protective devices that have been tested to examine their potential effectiveness in reducing deaths and serious injury in the event of a rollover are available to Australian farmers (Attachment 1).

Benefits from fitting a suitably tested protective device, have been estimated to potentially reduce quad bike rollover deaths by up to 30%.[20]

Although further ongoing research is required, based on the most recent evidence and using precautionary principles, there is an exceptionally strong case to recommend the adoption of suitably tested protective devices to minimize the risk of death and serious injury from rollovers of quad bikes.

Farmers and other owners of quad bikes should be encouraged to fit suitably tested protective devices to reduce death and serious injury from rollovers.

The Australian Centre for Agricultural Health and Safety:

Through its own activities and in partnership with its network of stakeholders, the Centre will:

- Continue to promote the adoption of the two higher order controls - (1) selection of the safest machine for the job, and (2) fitting a suitably tested rollover protection device. These will be supplemented by the lower order controls such as use of relevant personal protective equipment including helmets and rider training. This approach is outlined in more detail in the "Safety of quad bikes and side-by-side vehicles on Australian farms - A practical management guide"[1]
- Actively work with farmer networks to advocate for fitting suitably tested protective devices for quad bikes.
- Advocate for the fitting of suitably tested protective devices as a standard component of all new quad bike sales in Australia.
- Work with states' Work Health Authorities to promote the fitting of suitably tested protective devices and to endorse the introduction of financial incentives for retrofitting by farmers.
- Maintain a focus on further developing the evidence on fatalities and serious injuries through the National Farm Injury Data Centre and monitoring changes in fatality and morbidity patterns.
- Encourage further definitive assessments of rollover protective devices for quad bikes to limit deaths and serious injury in the event of a rollover.
- Continue participation in the Trans-Tasman Quads Bike Working Group.

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Attachment 1

Australian devices tested and illustrating potential for rollover protection

1. Quad Bar

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