

Fatigue R&D discussion paper



Snapshot February 2023: an overview with opinion

There seems to be two prongs to reducing fatigue-associated harms:

- The farm business has the appropriate protective structures in place (may be seasonal eg busy times of year, may be situational eg family or business pressures).
- Individuals are convinced of the risks to themselves, others and the business, and confident to make appropriate decisions on how to act.

“Fatigue is a key concern during harvest as the desire to keep the harvester, chaser bin and truck moving to meet time pressures increases.”

- Birchip Cropping Group

Why take action on fatigue

The universal drivers for taking action to reduce fatigue in all industries and businesses are safety and productivity.

An additional driver described in agriculture is the affect worker fatigue can have on animal welfare - such as hen welfare during depopulation [166] and the welfare of pigs at slaughter [201].

The relationship between fatigue and safety

Many people have travelled the path from fatigue to reduced performance at some point. Overtiredness can result in physical impairment (reduced energy and lethargy) and cognitive impairment (lack of concentration, slower reactions and indecisiveness). These have implications for safety in any setting - be it on the road, in the home or in the workplace.

The risk of workplace fatigue in mining, construction and agriculture is higher as a function of the work environments and types of tasks involved [187, 203].

The potential for fatigue increases: (1) when tasks are repetitive, monotonous, require sustained attention, or are mentally or physically intense; and (2) when work arrangements involve long or irregular work hours, seasonally high workloads or chaotic environments. Combinations of these are regularly encountered in the agricultural sector [166,195, AFSC].

What is driving RSHA's interest

Fatigue is often identified as a WHS priority for Australian agriculture by those working in the domain including regulators (NHVR, AIHS), researchers [10] and the RSHA Committee (Meeting 15).

In the absence of information on incidence or severity of fatigue in Australian agriculture, the sense of priority is likely to come from the understanding that fatigue is a recognised and predictable issue for many farm scenarios. It is also regularly described as a predisposing factor in case studies of injuries involving vehicle and equipment.

An investment in Fatigue R&D is of interest to many RSHA members and potentially other rural RDCs and collaborators.

Situation scan for agriculture

Prevalence of fatigue. Hours worked (or hours of sleep) is often used as a proxy indicator for fatigue.

The 2021 Regional Wellbeing Survey found long work hours and high levels of work-related stress to be the most common WHS risks in Australia's agricultural workforce (34%) [182]. While almost half (47%) of people experienced long working hours, less than 10% reported poor safety outcomes such as work-related injury or illness, near misses, harassment or bullying, or inappropriate use of machinery/equipment.

The association between hours of work/sleep and fatigue may not be strong [195, 204], which is not unexpected as many other factors can influence whether a person becomes fatigued.

Interventions for fatigue. Advice on fatigue management for farmers is largely centred around dealing with stress and seasonality [eg 186] and organising sufficient, good quality sleep (eg [NCFH](#), [AIHS](#), [SWA](#) [190], [AgHealth](#) [191]). Recommended actions have changed little in the last 40 years (USDA 1982).

Checklists, such as Safe Ag System's [Asleep At The Wheel](#), are available to help individuals identify when they may be at risk.

Extension resources. Some of the more powerful messaging around fatigue is how it impacts cognitive ability, for example:

- 20 hours awake equates to 0.1% blood alcohol, [Safe Ag Systems](#) [192] (also [AgSafe Alberta](#)).
- Resources created from scenario tests showing how fatigue can affect decision-making ([University of Aberdeen](#)) [168].
- Online case examples of people with (overly) full workloads who knowingly took a risk with poor outcomes and are discouraging others from doing the same (eg [NZ's ACC](#)).

New Zealand's [Farmstrong](#) program is a rare example of turning a negative into a positive construct and has great tips and tools. It was launched in 2015 to help farmers improve their wellbeing by sharing practical information and tools based on the latest science.

Current research areas (Australia & elsewhere)

In 2021, the US National Institute for Occupational Safety and Health ([NIOSH](#)) started exploring how to 'flip the script' on fatigue for Agriculture, Forestry and Fisheries so sleep is seen as a strength rather than a weakness [194]. They are aiming for interventions that align with the following principles:

- Community-based development, consultation and evaluation.
- A focus on fatigue management, not sleep.

- Come from a place of harm reduction, not best practices.
- Be easily implemented by individuals and small business.
- Culturally competent and sympathetic.

Psychologists from CQ University have a research interest in fatigue; authoring the latest chapter in the Australian Institute of Health and Safety's Book of Knowledge [234], and the Appleton Institute's Director [Professor Drew Dawson](#) having a special interest in [shift work](#) in aviation, mining and manufacturing (not ag).

The transport and health care industries in Australia are exploring fatigue (distraction) detection technologies to enable objective self-assessment. Examples include the current road freight sector assessment of eye movement technology [221] and the NSW Government [Test Your Tired Self](#) app.

R&D gaps

As the risks and advice for fatigue are 'broad brush' while the mechanisms of harm and solutions are more situation-specific (eg the factors associated with machinery use at cropping are different to animal handling and to [driver fatigue](#)), there may be value in having a more targeted approach. This could involve identifying profiles/scenarios that are at higher risk of fatigue and developing customised, relatable interventions for these.

This would align with Recommendation 4 of the RSHA03 WHS Overlaps project [10]. Their approach to "assess and reduce the negative impacts of fatigue on WHS in the agriculture and fisheries sectors" was to identify specific options that may reduce the impacts of fatigue with each RSHA partner, crosscheck validity with what is known in the literature, and where appropriate conduct a pilot that assess the impact of fatigue on safety and the acceptability of the intervention to farmers.

Another line of research would be to explore ways to assess fatigue in the farm workforce beyond hours worked. Subjective tests show promise (eg [205]), although psychometric scales for fatigue seem to be validated for specific medical conditions (eg [UPenn FAS](#) for Chronic Fatigue Syndrome).

References

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What is meant by fatigue

There is no single definition of fatigue. This paper adopts Safe Work Australia's description of it being 'a state of mental and/or physical exhaustion that reduces a person's ability to work safely and effectively' [190]. Alternatives include NCFH's 'a feeling of constant tiredness or weakness' or a more academic 'biological drive for recuperative rest' [187]. If RSHA sponsors research in this area it would be important to differentiate between (eg) fatigue and burnout.

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A RSHA snapshot report

The RSHA improves WHS on Australian farms through the partners joint action and resource-sharing. This paper provides background to the Committee discussion of the next priority area for cross-sector R&D investment.

Rural Safety Health Alliance, February 2023