



Risk management during harvest

Every season we balance the budget to get that return when the header finally gets into the paddock, but do we think about the risks during harvest? Header fires are far too frequent across the cropping belt, threatening crops, machinery, property and life.

What can growers and contractors do to reduce these risks?

The GRDC have recently released the "Reducing Harvester Fire Risk Back Pocket Guide". This provides a simple checklist to help minimise the risk of header fires during harvest. (<http://www.grdc.com.au/GRDC-BPG-ReducingHarvesterFireRisk>).

The list highlights machine hygiene and the need to minimise the build-up of flammable material on the manifold, turbo charger or exhaust system. Research has shown that muffler temperatures under normal working conditions start at approximately 280°C and can easily accelerate to temperatures adequate to cause spontaneous ignition when covered with debris.

There are a number of approaches which growers and contractors can take to improve hygiene and reduce debris build up. One is the Fire Prevention Shield (Patent No. 2013904960) a regionally designed and manufactured device which is available through HRFT transport in Mungindi.

The Fire Prevention Shield came about after Heath Rowe had firsthand experience of how easily fires can start during harvest. During the

2012 harvest, Heath was driving a header where there was a fire. Over the next six months he decided to see what he could do to help reduce the risk for growers and contractors.

By the time the 2013 harvest was underway, Heath was trialling the prototype of the Fire Prevention Shield. The prototype was fitted to Max Buchanan's headers in Mungindi and to Ben Traynor and Glenn Fernance's headers in Moree. During the 2013 harvest the Fire Prevention Shield worked brilliantly on the three headers. Temperatures on the silencer were reduced from 280°C to 67°C when the shield was fitted. With approximately 200 hours trialling Heath was confident he had a useful product and applied for a patent.

How does the Fire Prevention Shield work?

All Harvesters use a cooling fan assembly. This draws air through the engines heat exchange and circulates it past hot engine components such as the exhaust manifold and the engine silencer (muffler). The Fire Prevention Shield takes advantage of this air current. It captures the air from the cooling fan between the silencer and the Fire Prevention Shield. A high pressure system is created, which increases air velocity past the silencer. This assists in the removal of debris circulating around the silencer. The shield has meant that the area down the side to the battery box is significantly cleaner than in headers without such devices.

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The shield is made out of aluminum which has high thermal conductivity, and is coated in a ceramic-impregnated paint which has been applied to the shield to reduce heat even more and protect the shield for a longer life. The second function of the Fire Prevention Shield is to help protect against personal injury by acting as a safety guard.

Commercialisation

This last season Heath commercialised the Fire Prevention Shield. It has been fitted to headers from Mungindi to Moree, Forbes to Condobolin and Quirindi to Young. The 2014 harvest has been hot and windy, and despite the adverse conditions the Fire Prevention Shield has worked extremely well. 'We have fitted the Fire Prevention Shield to 15 headers and have a further 2000 hours without incident since commercialisation,' said Heath Rowe

Different models of grain harvesters have been accessed, including John Deere, CASE IH, and New Holland, and it is possible to retro fit this product to the majority of current production models.

What are the benefits of the shield?

The shield has successfully reduced the temperature of the muffler and kept debris from around the manifold and exhaust system thus reducing the potential for fires.

As the Fire Prevention Shield is fitted to the muffler it has had the added benefit of protecting workers from muffler burns in the machine bay. There has also been a significant reduction to the noise and increased comfort in the cabin, a plus from an occupational health and safety perspective.

Another huge benefit has been the reduction in the temperature in the gear case drive unit. The Fire Prevention Shield redirects the airflow to the gear case drive, thus reducing the temperature. This decrease in oil temperature is a big plus and will increase the life of the drive equipment.

Heath has been in discussions with insurers and is encouraged by the positive feedback. Fitting the Fire Prevention Shield may be a real plus for owners looking for fire insurance for their headers.

