

UNFS UPDATE



Upper North Farming Systems Newsletter

November 2016

On the cusp of harvest...

Ruth Sommerville

What a spring it has been so far. As many are just getting started on harvest and others are looking at crops asking when they are going to turn and whether the Christmas Break will be a reality this year there are a few key topics to consider going into this busy period, the crux of a whole seasons worth of hard work.

Frost. The frequency and severity of frosts varies hugely across the district, but there is no doubt that we have had some frosts with significant economic impacts over the past 4 weeks and in the 2 months leading up to it. These are late frosts and from the paddocks I've seen their effects have been varied and complex. Take the time to read the GRDC frost information shown on page 3 and understand the implications for your harvest. I've been both pleasantly surprised by how some crops have compensated for frost damage, but also amazed at beautiful heads with not a grain to be seen. Decide early if you are going to change your management plan.

Harvest Fatigue Management. Harvest is the goal for the cropping year, get the grain in the bin and off to the silo or other sale point. Often this means big hours and under hot and dusty conditions. Take the time as an employer and employee to have a discussion around managing fatigue in the business this harvest. There are new laws and legislation around operating trucks and driving other machinery and there are significant penalties for unsafe work practices. This includes hours of operation. Make sure you and all your team get through this harvest in one piece.

Weed Seed Management and Harvest Heights: Harvest is the start of the next season. It is your opportunity to set up the paddocks to perform to their optimum next year. Don't miss the opportunities this presents by rushing through the paddocks, or neglecting to tell a contractor how you would like your stubble and chaff managed. Fast and furious isn't necessarily the best option. The stubble height demonstration paddocks are clearly showing how harvest height and chaff management can effect weed burden the following year. A paddock with barley and brome grass has benefitted from higher cut straw and significant mulching post sowing as the straw broke down, whilst the paddock with annual ryegrass showed much lower populations in the areas cut low and baled, allowing for effective pre-emergent herbicide efficacy. High weed burden paddocks may benefit from narrow windrow burning, or other weed seed management options such as chaff dumps. These actions all take time but will significantly reduce the weed burden in your paddocks and help to control any resistance that is developing too! Take the time to think through the best options for your seeder and the individual paddock to get the best start to 2017.



Nelshaby Hub Stickybeak day. Balco representative addressing group in an export hay crop of Brendon Johns. Sponsorship on the day from Balco, Graincorp, Centrestate Grain, NRM Production and Environment Partnerships, Unique Grain, and EPIC meant the day could be provided to members at no cost.

Also In This Issue

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- Turkish mustard weed

Grains industry welcomes frost susceptibility rankings

Author: GRDC Sharon Watt **Date:** 12.04.2016

Grain growers in Victoria, South Australia and Tasmania will this year, for the first time, be able to factor frost susceptibility of wheat and barley varieties into their cropping programs.

Through the Grains Research and Development Corporation (GRDC) National Frost Initiative, most commercial wheat and barley varieties have been ranked for their relative susceptibility to spring radiation or reproductive frost, which occurs in late winter to early spring.

The rankings for frost susceptibility are being made available to growers and their advisers through the use of an interactive tool on the National Variety Trials (NVT) website at www.nvtonline.com.au.

With frost costing the Australian grains industry about \$400 million annually in direct and indirect yield losses, particularly in the southern and western cropping regions, development of the rankings has been welcomed by growers and the broader industry.

Details about the new rankings have been delivered to growers and their advisers at recent GRDC Grains Research Updates.

Speaking at the Updates, Dr Tim March from the University of Adelaide said benchmarking current wheat and barley varieties for sterility at flowering under frost conditions in trials over recent years had enabled researchers to develop a ranking system in which varieties can be compared for their susceptibility to frost during the reproductive phase of development.



Dr Tim March (left) from the University of Adelaide and Dr Ben Biddulph from the Department of Agriculture and Food, Western Australia (DAFWA), pictured at the GRDC-funded frost screening nursery in Loxton (SA).

Dr March said the three years of data from the trials at GRDC-funded frost screening nurseries in Loxton (SA), Wickepin (Western Australia) and Narrabri (NSW) had shown that overall, barley was more tolerant to frost than wheat and that variation in susceptibility levels did exist between varieties under mild frost events.

“It is important to note that no varieties are completely frost tolerant,” he said.

Dr March said the new rankings were based on sterility measurements and not yield loss.

“So until we can get that data you should first select varieties for local adaptation, yield, optimal flowering time and other key target traits and criteria important for your farming system, and then use the frost rankings to fine tune your risk management of the selected varieties.

“In some cases, it may be that the more frost susceptible varieties are your best option. You don’t want to be on the back foot with yield before you get hit by frost.”

Dr March pointed out that the data used to determine the rankings was based on each variety’s relative susceptibility to reproductive frost at flowering, and not stem frost which occurs early in the growing season.

Assessment of the frost susceptibility of 72 wheat and 48 barley varieties has been carried out under the collaborative Australian National Frost Program (ANFP) which is a key component of the GRDC’s National Frost Initiative – an integrated program addressing genetic, management and environmental approaches to mitigate the effects of frost.

Dr March said breeding new cereal varieties with improved frost tolerance will be one of the solutions to minimising the economic losses resulting from frost, and ongoing research was focused on this goal.

"The GRDC's investment in the ANFP is an example of a significant pre-breeding project which is developing industry capacity and methodologies that will enable not only the independent screening of newly-developed cultivars from commercial breeding companies, but also introduced germplasm to identify increased levels of frost tolerance for Australian growers," Dr March said.

Dr March said it was important to combine genetic, management and environment strategies to overall reduce risk to frost. "As frost exerts a complex production constraint in cropping systems, it requires a package of risk management strategies."

To support growers and their advisers in their frost risk management efforts, the GRDC has just released a *Managing frost risk – tips and tactics* publication which is now available via the [Managing Frost Risk page](#).

The publication offers advice on pre-season management tactics, management tactics within season, post-frost event management tactics, harvesting and marketing frosted grain, retaining seed from frosted crops and recovering from frost. It also provides links to other useful resources.

More information on GRDC's National Frost Initiative and the new frost susceptibility rankings can be found via Ground Cover TV www.grdc.com.au/GCTV15-FrostRatings, the [Ground Cover Frost Supplement](#), at www.grdc.com.au/GRDC-Video-NationalFrostInitiativePlaylist and the NVT website

Resources for identifying & managing frost

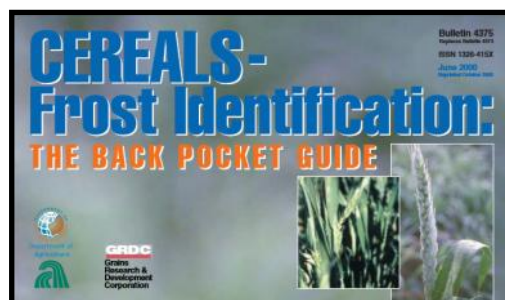
GRDC Grow Notes

Cereals– Frost Identification: The back pocket guide

<https://grdc.com.au/Resources/Bookshop/2012/01/Cereals-Frost-Identification-The-Back-Pocket-Guide-GRDC416>

Frost damage reduces crop yield and grain quality. Early identification of symptoms allows timely crop salvage decisions to be made.

Inspect cereal crops between ear emergence and late grain filling if night air temperature (recorded 1.2m above ground) falls below 2°C and there was a frost. Check low lying, light coloured soil types and known frost prone areas first. Then check other areas.



GRDC Grow Notes

February 2016 - Tips & Tactics: Managing frost risk

www.grdc.com.au/ManagingFrostRisk

Careful planning, zoning and choosing the right crops are the best options to reduce frost risk. Frost damage to cereals is a significant annual production constraint for the Australian grains industry and can result in considerable yield losses. A comprehensive frost management strategy needs to be part of annual farm planning. It should include: pre-season, in-season and post-frost event management tactics.

Key Points

- In some areas the risk of frost has increased due to widening of the frost event window and changes in grower practices.
- The risk, incidence and severity of frost varies between and within years as well as across landscapes, so growers need to assess their individual situation regularly.
- Frosts generally occur when nights are clear and calm and follow cold days. These conditions occur most often during winter and spring.



(Continued from page 3)

- The occurrence of frost and subsequent frost damage to grain crops is determined by a combination of factors including: temperature, humidity, wind, topography, soil type, texture and colour, crop species and variety, and how the crop is managed.
- Greatest losses in grain yield and quality are observed when frosts occur between the booting and grain ripening stages of growth.
- Frost damage is not always obvious and crops should be inspected within five to seven days after a suspected frost event.
- Methods to deal with the financial and personal impact of frost also need to be considered in a farm management plan.

Risk management for frost

The variability in the incidence and severity of frost means that growers need to adopt a number of strategies as part of their farm management plan. These include pre-season, in-season, and post-frost strategies.

Moving Agricultural Machinery at Night

Source: PPSA Factsheet :<http://www.ppsa.org.au/wp-content/uploads/2016/09/PPSA-Fact-Sheet-Night-Travel-for-Ag-Machinery-LR.pdf>

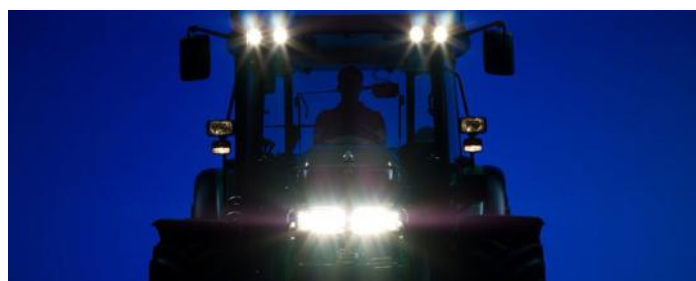
WHO IS ELIGIBLE?

From 1 September, 2016, farmers and operators of agricultural machinery or combinations (including contractors) will be able to apply for a permit (called an exemption) to move at night in Zone 3 (Adelaide Hills) and Zone 4 (Country SA). Eligible vehicles, machines and combinations are those allowed under the South Australian notice Oversize or Overmass Agricultural Vehicles Driven on Roads and the Code of Practice. The permit is for three years and is issued by DPTI under delegation from the National Heavy Vehicle Regulator. It enables travel at night between farm blocks or parcels of land being worked by a farmer or operator – but not over longer distances at night between agricultural regions.

COUNCIL APPROVAL

While most councils have approved night movement of machinery, some councils have not or are yet to provide their response. A list of council current approvals is available online. TRANSPORT REQUIREMENTS The permit will enable farmers and operators to move agricultural vehicles and combinations up to the following sizes:

- Zone 3 (Adelaide Hills): up to 3.7 metres wide and 19m long
- Zone 4 (Country SA): up to 4m wide and 25m long Farmers and operators who are not certain which zone applies to their location should refer to the SA Code of Practice for Oversize and Overmass



Agricultural Vehicles at <http://sa.gov.au/transport/agvehicles>

MOVEMENT REQUIREMENTS

New requirements to move machinery under the permit include:

- One pilot or escort vehicle at the rear of the machine/combination in Zone 4. Two pilots (one at the front and rear) are required in Zone 3 and in the following council areas – District Council of Cleve, District Council of Franklin Harbour, Kangaroo Island Council and District Council of Mallala. Pilot requirements are the same for major and minor roads.
- No travel is allowed during periods of low visibility such as fog, heavy rain, smoke, dust or insect plague.
- For machines and combinations wider than 2.5m, extra lighting must be fitted to the outer extremities to provide further reference points for approaching motorists.
- The permit must be carried in a hardcopy or electronic form by the operator/driver. All other requirements in relation to

movement of oversize agricultural machinery and combinations such as mass limits, height limits, towing requirements, warning lights, flags, delineators and warning signs remain unchanged and are outlined in the Code of Practice. Machinery with tracks are now also included in the permit process.

WHY ARE PERMITS FOR NIGHT MOVEMENT NEEDED?

PPSA has committed to work with DPTI and PIRSA to ensure the productivity and profitability of producers is not impacted by onerous compliance rules. However, there needs to be recognition of the safety of all road users which means ensuring producers are aware of their specific practical and legal responsibilities when moving machinery.

WHY UP TO 4M WHEN SOME MACHINERY IS WIDER?

The decision to limit the width of vehicles travelling at night to 3.7m in Zone 3 and 4m in Zone 4 is primarily related to ensuring the safety of all road users during a traditionally busy time on our roads. Some of the reasons include the varying road widths throughout regional SA, the differing terrain and vegetation which has an impact on visibility for approaching vehicles. PPSA is working with DPTI and in conjunction with the NHVR to better understand how increased widths beyond 4m may work within the national regulatory framework. We will keep growers updated as work progresses.

WHAT IS THE PENALTY FOR MOVEMENT WITHOUT A PERMIT?

Significant penalties exist under the Heavy Vehicle National Law for operating oversize vehicles or machinery on a road without the appropriate approval (permit or notice). Penalties will differ depending on the situation and the manner of the breach. It is also worth noting that in the case of an accident, insurances related to public liability and your equipment may be voided if you are operating without the appropriate approval.

HOW TO APPLY

The permits application process is done through the existing DPTI permits system. Before you start, you will need the registration notices for each machine for which a permit is required, containing the following information:

- Make, model and registration number
- Month and year of manufacture

- Engine number
- VIN or chassis number
- Machine type, dimensions and axle spacings

STEP 1: Your machinery needs to be listed in the EzyReg Permits System. This means you need to fill out the Apply for New Vehicle Listing (Form A)

STEP 2: Once machinery is registered in the EzyReg Permits System, then fill out the Apply for a New Vehicle Permit (Form B) All your machinery can be grouped together on the one permit. To do this, enter one machine registration number on the first page of the permit application (Form B) and in the 'additional comments' field on the next page, enter the registration numbers of all other machinery to be included on the permit.

All of this application information is available online at <http://sa.gov.au/transport/agvehicles> There is a permit application fee of \$70 when applying for permits. MORE INFORMATION: Contact the Vehicle Permits Unit on 1300 882 248, Monday to Friday from 9am to 5pm.

RESOURCES

- SA Code of Practice for Oversize and Overmass Agricultural Vehicles – available under 'Heavy Vehicle National Law - permitbased schemes' at <http://sa.gov.au/transport/agvehicles>
- Escorting Guidelines for Oversize and Overmass Vehicles and Loads – available on DPTI's site search for 'escort guidelines' at <http://sa.gov.au/transport/agvehicles>



Harvester set-up – catch weed seeds and grain

Source: Australian Herbicide Resistance Initiative (AHRI) Insight #73: <http://ahri.uwa.edu.au/harvester-set-up-catch-weed-seeds-and-grain/>

Roger Lowenstein, in his book about Warren Buffett wrote, “Buffett found it extraordinary that academics studied such things. They studied what was measurable, rather than what was meaningful”.

When John Broster from CSU and Michael Walsh from Sydney University set out to measure how many weed seeds were entering the chaff fraction in a modern harvester, they were definitely studying what was meaningful, but man was it difficult to measure!



In 2014, John and Michael set up trials with five different harvesters in NSW and found, much to their distain, that all of the harvesters were throwing a lot of weed seeds out with the straw fraction. This does not auger well for harvest weed seed control (HWSC). Fortunately, in 2015, they tried again with a harvester that was set up to destroy weed seeds with an iHSD fitted and found, that when set up right, the vast majority of weed seeds were directed into the chaff stream and then into the iHSD mills. They also found that harvest speed had little effect on the fate of weed seeds, but it did have a big effect on grain losses.

If you're using a form of harvest weed seed control (HWSC) that removes just the chaff fraction (eg. chaff cart, chaff deck, iHSD) there's a real art to setting up the harvester to maximise the capture of weed seeds. Difficult to measure, but meaningful.

Maximising weed seed capture by setting up the header

John Broster and Michael Walsh measured weed seed losses on five farms in 2014 in NSW. These harvesters were set up for normal wheat harvest. The harvesters were:

Site 1	John Deere	9660 STS
Site 2	New Holland	CR 9080
Site 3	John Deere	9660 STS
Site 4	John Deere	CTS
Site 5	Case	8120

Ryegrass

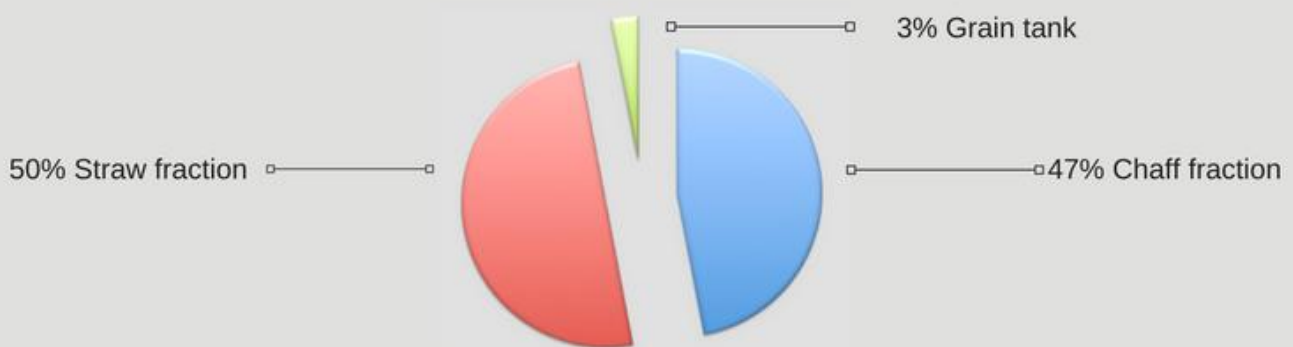
10,000 coloured ryegrass seeds were fed into the front of the harvester and then painstakingly, it was measured where they ended up. On average, across five harvesters, about 50% of the weed seeds went out with the straw fraction (through the rotor). This was a disastrous result for HWSC. About 3% of ryegrass ended up in the grain tank and 47% ending up in the chaff fraction. The remainder was assumed to exit with the straw.

Back to the ol' drawing board. In 2015 they tried again, this time using a Case 9120 harvester fitted with an iHSD that was set up to maximise weed seeds entering the HSD mills. Bingo. This time only 3% of the ryegrass exited with the straw, meaning that 97% of ryegrass entering the front of the harvester could be captured and destroyed. The harvester used was a Case 9120 with the settings Rotor 950, Fan 980 rpm, Concave 10, Sieves; Upper 18 mm, Lower 11 mm.

The fate of ryegrass seeds

2014 trial

10,000 coloured ryegrass seeds were fed into the front of the harvester and it was then measured where they ended up!



2015 trial

In 2015 they tried again, this time using a Case 9120 harvester fitted with an iHSD that was set up to maximise weed seeds entering the HSD mills. BINGO!



ahri.uwa.edu.au

Harvester settings

It is really hard to specify exactly how to set up the harvester for HWSC, but the 2015 trial shows that it is possible to get it right. All we can do is speak generally, and we all have a lot to work out together on how to get the best out of these machines to harvest both the crop and the weeds. To quote Ray Harrington, "We have to get the weed seeds out of the rotor. To do this we have to thresh the grain hard enough to get the weed seeds out of the seed head, and open up the grates of the header to get as much material as possible out of the rotor and onto the sieve". For more on this check out AHRI insight <http://ahri.uwa.edu.au/harvester-setup/>

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Does harvest speed affect weed seed capture?

No. The encouraging thing from this 2015 trial is that harvest speed did not affect the amount of weed seeds exiting in the straw fraction. Harvesting at 4, 6 or 8km/hr resulted in only 3-4% of weed seeds exiting in the straw fraction.

Harvest grain losses – slow down!

There is a large body of evidence that suggests new harvesters have more engine capacity than sieve and rotor capacity. They are all hat, no cattle!

The 2015 trial mentioned above found that harvest losses were significant where the harvester was operating at full engine capacity. They harvested a 2.45t/ha wheat crop at three different speeds. When harvesting at 8km/hr the harvester was at its maximum capacity and rotor losses of wheat were 127kg/ha. Rotor losses were just 6kg/ha when harvesting at 6km/hr. So rotor losses increased by 121kg/ha or about \$30/ha by harvesting at full engine capacity compared to slowing down 2km/hr.

Example 2

A grain grower from the Chapman Valley did a great job of assessing harvest losses in canola a couple of years ago. He said to me, “It is amazing what settings you can change and modifications in the back of the header that you can make, without making any difference whatsoever to harvest losses” (he tried different concaves, grates, wires, sieves, sieve settings etc.). “The only thing that made any difference was slowing down”. He used trays on the ground and a sieving technique to accurately measure his losses from a New Holland 7090 harvester. The results are summarised below

Table 1: Summary of canola harvest losses from a New Holland 7090 in Chapman Valley in 2012.

	Normal speed (full capacity)	Slowing down a bit
Speed (km/hr)	7.5	5.8
Work rate (t/hr)	15	12
Canola yield (t/ha)	1.8	1.8
Grain moisture (%)	8.5	8.5
Front loss (kg/ha)	17	17
Rotor loss (kg/ha)	73	24
Sieves loss (kg/ha)	66	56
Total (Rotor & Sieves) loss (kg/ha)	139	80
Total (Rotor & Sieves) loss (\$/ha)	\$76	\$44

This grower saved \$32/ha by slowing down from 15t/hr to 12t/hr canola harvest. This equates to \$222 per hour that the harvester is working. To see how he did it check out this YouTube [video](#).

Wheat grain loss was a similar story but the losses were lower. In 2012 he also put the New Holland 7090 to the test in wheat with the following results

Table 2: Summary of wheat harvest losses from a New Holland 7090 in Chapman Valley in 2012 operated at different speeds.

Work rate (t/hr)	Loss (kg/ha)	Loss (\$/ha)
20	8	\$2
24	8	\$2
33	10	\$2.50
39	20	\$5

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Does a bigger, newer harvester fix the problem?

The grower mentioned above (who shall remain nameless) recently had a demo harvester on his farm, a Claas 770 which is a class 8 harvester. He applied his measurement technique above and found the same thing. When harvesting canola, slowing down reduces grain losses

Table 3: Summary of harvest losses from a Claas 770 in Chapman Valley in 2016. Canola yield 2.6t/ha, sunny day, 29°C, crop moisture 7-8%.

Speed (km/hr)	Work rate (t/hour)	Loss (kg/ha)	Loss - % of crop yield	Loss - \$/ha
3.5	11.7	65	2.5	36
4.5	15	87	3.3	48
5.5	18.7	128	4.9	70

Summary

Harvesting at the full engine capacity of your harvester is likely to result in significant grain losses. Slowing down seems to be the only reliable solution to this problem. A bitter pill to swallow when you have spent a fortune on your harvester! To maximise weed seed capture for harvest weed seed control tools that remove the chaff fraction only will take some harvester modifications and some specific settings to ensure that the majority of weed seeds are in the chaff fraction. This is difficult to prescribe, but research has shown that it is possible.

Paper – [Harvest weed seed control: the influence of harvester set up and speed on efficacy in south-easter Australia wheat crops](#)

Record-keeping at harvest

Source: GPSA Newsletter October 2016

To manage fatigue, all drivers are required to ensure their work and rest hours are compliant with the Heavy Vehicle National Law (HVNL).

Drivers are not allowed to drive or work more than the maximum work hours or rest less than the minimum rest hours in a certain period set out by law.

A National Driver Work Diary provides evidence that a driver's hours are compliant with the legislation. While most drivers of a fatigue-regulated heavy vehicle are required by law to create a record of time spent working (including driving time) and resting on a daily basis in a work diary, primary producers are exempt in certain circumstances.

If you are driving a fatigue-regulated heavy vehicle, transporting primary produce between a primary production facility and a point of sale, processing or distribution and are working within a 160km radius of your base, you are NOT required to keep and record information in a National Driver Work Diary under the National Primary Production Work Diary Exemption (Notice) 2015 (No.2).

Grain Producers SA has worked with PIRSA and the National Heavy Vehicle Regulator to develop a fact sheet which spells out the times when you will need to use a Work Diary and when you are exempt. To download the fact sheet, [click here](#).



Making best value of paddock feed in a mixed cropping and grazing system

Author: Michael Richards, Landcare Coordinator, Northern and Yorke

The aim of this article is to provide three tips for efficient use of paddock feed in larger paddocks during the challenging summer autumn period. Given current grain and livestock prices, getting the best value from paddock feed pays.

Deciding when to shift stock in the summer / autumn period is difficult when part of the paddock is almost bare and there is plenty of cover and feed in the rest of the paddock.

Improved summer grazing techniques can deliver efficient livestock production, without sacrificing greater cropping operational efficiency from larger paddocks and longer runs.

The three options briefly discussed are; temporary livestock watering points, flock size and shade.

Option 1. Increasing flock numbers by running flocks together and moving them to another paddock at shorter intervals will result in more even grazing and better use of feed. Check stock condition and soil cover levels regularly until you become confident of the time interval needed before stock are shifted to the next paddock. In a mixed farming system, evenly grazed paddocks will perform better during the crop years due to reduced number of weed seeds and improved plant soil cover.

Option 2. The position of water troughs during dry periods has a strong influence on livestock movement, livestock condition and protection from soil erosion. While it is near impossible on many properties to locate permanent water troughs in an ideal position. Using additional temporary water troughs over the summer autumn period makes it much easier to achieve more even grazing. Benefits from well positioned and relocatable water points include;

- Improved livestock condition
- Reduced trampling of plant material and fragile soil
- Less pressure on existing water points and lower risk of water loss
- Greater removal of seeds which build weed, mice and disease problems
- More even distribution of nutrients from dung and urine

Uniform distribution of nutrients in lighter soils leads to more even crop canopies and grain protein, improved grain size, reduced lodging, delayed onset of disease, and reduced sowing and weed control problems in areas of heavier stubble.

The idea is to set up temporary water points that can be positioned to maximise livestock condition and soil cover over the summer autumn period and then shifted prior to cropping.

This technique allows water points to be positioned several hundred metres in from fences and if required, moved down the length of the paddock to graze the paddock evenly and reduce trampling of feed and soil. There are many ways to setup temporary water points for three hundred sheep.

If you are purchasing the tank \$770, trough \$750, trough valve \$140, hose & fittings \$240, the cost is around \$2,000 plus a few rolls of poly pipe, for a unit that will last for many years. The tank can also be repositioned during cropping and used for supplying water for general farm use, such as cleaning equipment and spraying. In many cases existing water tanks and troughs can be used, reducing the cost to around \$400.

Using a holding tank at the livestock trough is essential to supply livestock with cool water when using above ground pipe during the summer autumn period to a temporary trough located several hundred metres into the paddock.

Key principles to keep in mind for water point design for three hundred sheep are;

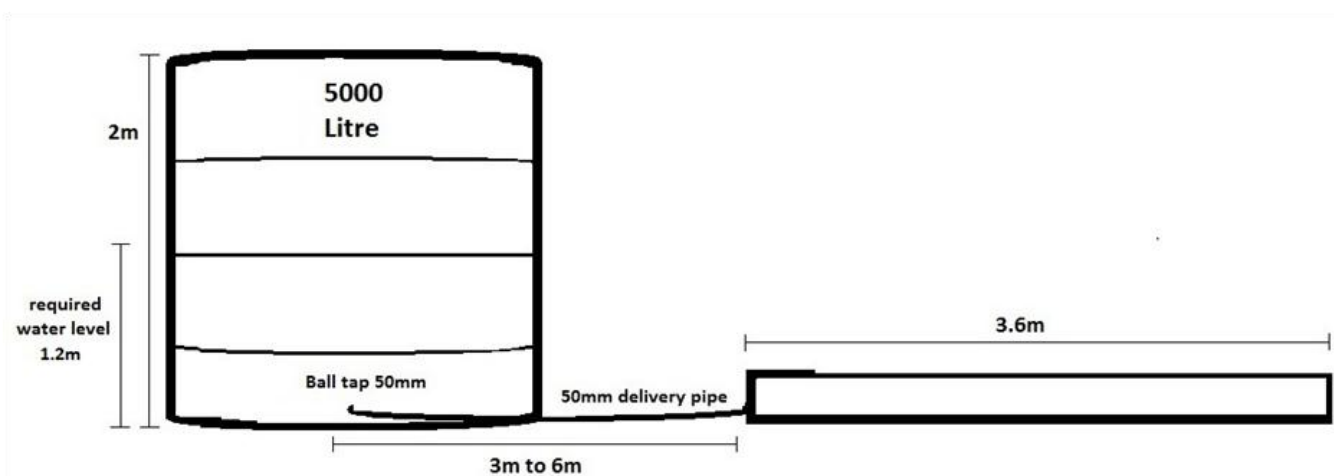
- A flow rate into the water trough of **one litre per second**, during peak summer periods will reduce sheep camping around water points and rushing and jostling to get a drink
- **Sheep usually drink less than seven litres per day** in the summer period (300 Sheep will drink up to a total of 2,100 litres a day)
- A 3.6 metre long trough supplied with one litre per second is sufficient for 300 sheep

A 5,000 litre vertical holding tank, with a side height of around 2 metres will provide an adequate supply of cool water when starting with a full tank and supplied with a consistent water flow of 0.6 litres per second (3.6 litres per minute) into the holding tank throughout the day. If water flow is unreliable a larger tank will be required.

A water height of greater than 1.5 metres above ground level will provide a flow rate of one litre per second when connected with a 50 mm diameter hose/pipe less than 6 metres long and a well designed low pressure trough valve such as a Philmac 32 mm brass, low pressure valve.

Keep in mind if you plan leaving the tank on a trailer, that 5,000 litres of water weighs 5 tonne and you will need a sturdy trailer and less than 2,000 litres in the tank to shift it safely with most 4WD utes.

A handy tool to have on hand especially over the summer autumn period is a good quality 12 volt submersible bilge pump. They are light to handle, quiet running, reliable and draw low current. A 120 litre per minute Bilge Pump costs around \$100 and will supply water up to a 4 to 5 metre head. The pumps draw around 10 amps, have a 28mm (1 1/8 inch) hose outlet and require a manual or float on off control switch.



Option 3. Shade for livestock contributes to summer grazing efficiency. In replicated trial work in South Africa a 26% reduction in water consumption and a 3.8% increase in lamb weaning weights was achieved from merino ewes with access to shade over the summer autumn period. With no increase in feed consumption, when compared to sheep with no shade.

A galvanised iron roof 3 X 5 metres in area raised 2 metres off the ground was used to provide shade for the 50 merino ewes. The research was conducted over a two year period testing the impact of shade over the summer autumn period during maximum daily temperatures averaging around 30 degrees Celsius.

For more information contact **Michael Richards, 0427 547 052, michael.nynrm@internode.on.net**

Hot narrow burn keeps weed seeds down

Source: GRDC Ground Cover Issue 124-September October 2016

Author: Alistair Lawson

Narrow windrow burning canola as part of a broader integrated weed management strategy has played a vital role in driving down weed seed numbers for the Jaeschke family at Hill River.

Farming in a high-rainfall area just south-east of Clare in South Australia's Mid North, the Jaeschkes have been narrow windrow burning for five years. It is a low-cost practice that involves a chute being set up on the back of a harvester to drop chaff into a narrow row during harvest for burning in autumn.

The Jaeschkes – Grant and his wife Megan, Craig and his wife Nicole, and parents Rob and Lyn – crop cereals, pulses and oilseeds across 3000 hectares with a typical rotation comprising faba beans or canola/wheat/oaten hay or, with a heavy weed burden, beans/canola/wheat/hay/hay.

Problem weeds on the Jaeschkes' property include annual ryegrass, wild radish and wild oats. As no-till croppers for 20 years, Grant says the family has worked on rotations and integrated weed management to help reduce reliance on chemicals. However, they still use chemical control strategically in the lead-up to harvest. Canola is crop-topped or sprayed under the windrow with Weedmaster DST[®]. Faba beans are crop-topped with paraquat. Hay crops are sprayed out with glyphosate and once it is cut, baled and carted, the paddock receives a blanket spray of paraquat to kill any surviving weeds. But it is the narrow windrow burning in canola crops that brings the most pleasing results for the Jaeschkes.

"Narrow windrow burning was a big decision for us," Grant says. "We are very anti-burning and it was a big step for us to burn any part of a paddock." Initially the Jaeschkes worked with the Hart Field Site Group (HFSG) to quantify the results of narrow windrow burning. That turned out to be a great experience with results coming back indicating 95 per cent destruction of annual ryegrass seeds.

Since then, the Jaeschkes have continued to monitor ryegrass numbers following a narrow windrow burn and continue to record weed kill percentages in the high nineties.

"We had excellent results straight off the bat," Grant says. "We couldn't fault it when we did the initial trial and the data generated by Hart was invaluable."

Canola crops are cut at about 30 centimetres high at windrowing, which Grant says captures the majority of ryegrass seed heads without compromising the canola windrow. The Jaeschkes set up their narrow windrow burning chute aiming for a row between 30 and 40 centimetres wide.

"We try to make the row as narrow as possible without plugging up the header," Grant says.

"However, we normally put sheep on canola stubbles straight after harvest and they burrow into the row to find seeds so the row might get spread out to 50cm."

Windrows are left over summer before being burnt in autumn. Grant says the key to getting a good burn is "a bit of luck" as conditions have to be right. "The rule of thumb is to have a 10 kilometre per hour wind blowing at a slight angle to the row," Grant says. "We want the burn to last for about a minute or so at a minimum of 400°C in the same spot."

"It can be a bit of a process to get it right but we have learned there is no area we can really neglect. It's very obvious if we haven't got the burn right in a cereal following canola because there are 'tiger stripes' of ryegrass through the wheat crop."

"In high-rainfall zones, if you get a wet year and miss the ryegrass there are going to be five years of pain after that so it's critical to get it when you can. We have missed it before, harvesting a wheat crop that yielded one tonne per hectare purely because of weed burden when we'd like to average 4.5t/ha to 5t/ha."

The Jaeschkes obtain permits from their local council to undertake burns during the fire ban season, otherwise rain that falls by the end of the fire ban season makes it difficult to burn.

Snapshot

Growers: Rob and Lyn Jaeschke, Grant and Megan Jaeschke, Craig and Nicole Jaeschke

Location: Hill River, South Australia

Farm size: 3000 hectares

Average rainfall: 650 millimetres

Enterprises: cropping, livestock, hay production, vineyards, broiler farm

Crops: canola, cereals, pulses

Livestock: 3500 Merino ewes

"We did have one year where we had some really heavy summer rain, which is something you can't really manage," Grant says. "It is normally a case of waiting for a bit more wind so we can get more heat in the windrow and get a good burn, but with a wet windrow we normally drop below 50 per cent weed kill."

Pest kill bonus

An added benefit to narrow windrow burning for the Jaeschkes has been pest management.

"We were getting wiped out with millipedes, slugs and snails, but since we've been narrow windrow burning we've been able to halve our baiting," Grant says. "For us, that's a huge benefit."

Despite some of the challenges, Grant says having an integrated weed management strategy incorporating crop rotations, spray topping, hay, livestock and narrow windrow burning significantly reduces the weed burden across their farm.

"There are plenty of tools in the toolbox and, as a result, the weed burden is quite low," he says.

"We took on some lease country about five years ago with a heavy ryegrass burden and now we're battling to find a ryegrass plant out there."

"Our weed management strategy might seem over the top but with dry springs becoming more prevalent, every weed is another competitor for moisture."



Grant Jaeschke in a clean paddock of wheat sown into last year's faba bean stubble. **PHOTO:** Alistair Lawson, AgCommunicators

More information:

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0413 690 450,
grant@hrhay.com.au



Useful resources:

[GRDC Integrated Weed Management Manual](#)
[WeedSmart](#)

Manage fire risk this harvest

Source: GPSA Newsletter October 2016



With a bumper harvest forecast for 2016, Grain Producers SA is encouraging growers to prepare their properties, be aware of fire risks and follow the Grain Harvesting Code of Practice.

Key points outlined in the code for growers include:

- Stop harvest when the local actual (not forecast) Grassland Fire Danger Index (GFDI) exceeds 35.
- Before harvest, establish a minimum 4-metre fire break around the boundary of crops or paddocks to be reaped.
- Keep crop residues on machines to a minimum, particularly engines, exhausts and brakes.
- Regularly maintain machinery before and during harvest, particularly wearing parts and bearings.
- Reduce potential build-up of static electricity while reaping.
- Carry the prescribed equipment - such as water, extinguisher and a shovel - and have immediate access to a UHF CB radio or mobile phone. •
- Keep a farm firefighting unit in the paddock being harvested.

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Participate in the 2016 Rural Directions Farm Salary Survey

The 2016 Farm Salary Survey is now open for public participation. To start entering salary data for yourself or your team, [click here](#) or [email](#) us.

The survey will take just 10-15 minutes to complete and all data collected is used in a compiled, anonymous form. All contributors will receive a copy of the report at no cost, in appreciation of data provision.



The Farm Salary Survey Report provides information on current wages and other benefits for farm employees across Australia.

Interested in becoming a ranger?

NRM Northern & Yorke currently has three ranger positions advertised. For further information on the positions go to: http://www.environment.sa.gov.au/get-involved/Working_at_DEWNR/Vacancies

Applications close on 11th November 2016



Natural Resources
Northern and Yorke



Government of
South Australia



GRDC Grains Research Update (Adelaide)

7-8 February 2017

Venue: Adelaide Convention Centre, North Terrace, Adelaide SA
GRDC Grains Research Updates provide the latest research outcomes needed to improve the profitability and sustainability of grain growing enterprises.

The Updates bring together leading researchers, advisers and growers from across the region.

Contact: Matt McCarthy

Email: admin@orm.com.au

Phone: 03 5441 6176

Website: <http://www.orm.com.au/events/eventdetail/109/%C2%AD/grdc%C2%ADgrains%C2%ADresearch%C2%ADupdate%C2%ADAdelaide-sa>

Cost: \$350.00 per person two days, \$250 per person one day

Student: \$150 per person two days, \$80 per person one day

Prioritising safety this harvest

Source: <https://grdc.com.au/Media-Centre/Media-News/National/2016/10/Prioritising-safety-this-harvest>

Grain growers are being encouraged to implement strategies to ensure harvest 2016 is a safe one.

The Grains Research and Development Corporation (GRDC) is backing calls by the Australian Centre for Agricultural Health and Safety for the prioritisation of the welfare of all those involved in harvesting this year's crops.

Alan Umbers, GRDC Manager Grower Services, says harvest is a testing time of the year for the nation's growers so being well prepared is critical.

"It is important that growers remain firmly focused on planning for a safe and successful harvest, especially after having to contend with numerous challenges during the 2016 growing season, from frosts in the west through to flooding and water-logging in the southern and northern cropping regions," Mr Umbers said.

Dr Tony Lower, Director of the Australian Centre for Agricultural Health and Safety, says now is the time to make sure that growers and their most important resource – the people who work with and for them – are safe and up to the tasks ahead.

"Growers experience intense pressure and fatigue during harvest, and there is usually a higher number of inexperienced seasonal workers employed – all factors that expose the industry to a heightened risk of danger," said Dr Lower, whose work is supported through the Primary Industries Health and Safety Partnership, of which the GRDC is a partner.

Dr Lower says risks can be reduced by growers employing key strategies, such as:

- Making sure all guards on machinery and equipment (harvesters, tractors, chaser bins, silos, field bins and auger), are in place;
- Ensuring all people working during harvest – whether employees, contractors or family members – are inducted into the way safety will be managed during the harvest, including fatigue. Expectations for safety should be made very clear to everyone;
- Having a standard policy where all harvester/machinery engines are stopped and keys removed from the ignition during maintenance. Before working under raised hydraulics, header fronts and combs, ensure hydraulic and ram locks have been fitted and that the comb is chocked and supported. Replace all guards after servicing/repairs;
- Making everyone aware of electrical hazards and where they exist on the property. Consider having no-go areas, if practical. Look up and live;
- Fire is always a risk at harvest. Check that the water trailer is full, regularly clean down headers to keep trash and straw away from pulleys, belts and bearings, and fit a fire extinguisher on headers, tractors and fuel trailers.

Dr Lower says the mix of people, machinery, extended working hours and fatigue, makes for a potent cocktail increasing the risk of injury and downtime during harvest.

"It is in everyone's interest to manage fatigue and while there is no one-size fits all solution, there are things that you can do. Talking with all workers and family members about fatigue and how you will manage fatigue during the harvest as part of the induction is vital."

To help start this discussion with workers and contractors, a self-assessment fatigue checklist poster has been developed and can be downloaded from the Australian Centre for Agricultural Health and Safety web-



Grain growers are being encouraged to implement strategies to ensure harvest 2016 is a safe one.

Photo: Chris Stacey

site's Resources for Farmers (Fatigue Management) at <http://sydney.edu.au/medicine/aghealth/>.
"One error made in tiredness can have tragic consequences for individuals or others working on the harvest. Let's make this harvest a productive and injury-free one," Dr Lower said.

Further information on harvest safety is available by phoning the Australian Centre for Agricultural Health and Safety on 02 6752 8210.

Grain Harvesting Code of Practice GRAIN HARVESTING OPERATIONS TABLE

The table below calculates the average wind speed[†] (kilometres per hour) for different temperature (degrees Celsius) and relative humidity (RH) combinations that equate to a Grass Fire Danger Index (GFDI) of 35.

TEMP °C	5	10	15	20	25	30	40	50	60	65	RH%*
15	31	35	38	40	43	45	49	53	56	58	AVERAGE WIND SPEED (KPH)
20	29	33	36	38	40	43	46	50	53	55	
25	27	30	33	36	38	40	44	47	50	52	
30	25	28	31	33	35	37	41	44	47	49	
35	23	26	28	31	33	35	38	41	44	46	
40	21	24	26	28	30	32	35	39	41	43	
45	19	22	24	26	28	30	33	36	39	40	
TEMP °C	5	10	15	20	25	30	40	50	60	65	RH%*

*RH% (Relative Humidity rounded down)
†Wind speed averaged over 10 minutes

GRAIN HARVESTING OPERATIONS MUST CEASE FOR PERIODS WHEN THE AVERAGE WIND SPEED† FOR A PARTICULAR COMBINATION IS EXCEEDED

Is the wind speed too high for me to harvest right now?

Combination example Refer to the highlighted areas on the adjacent table.

- 1 TEMP = 35° C
- 2 RELATIVE HUMIDITY (RH) = 14% (Round down to 10%)
- 3 For this combination of TEMP and RH, grain harvesting operations must cease when the average wind speed[†] is greater than 26kph.



Sept 2014

www.cfs.sa.gov.au

Don't forget there are now links to code of conduct for harvest and summer spraying on our website:
<http://unfs.com.au/resources/>



Attendees at a UNFS/Making More from Sheep : The Business of Sheep and Improving Weaner Management workshop delivered by Hamish Dickson of Agripartner Consulting. The [presentation](#) from the workshop is available on the UNFS website.

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Turkish mustard (*malcomia Africana*)

REDUCING ITS IMPACT IN THE NORTHERN AND YORKE NRM REGIONS



Description of this weed

Turkish mustard (*malcomia Africana*) is native to the Mediterranean and Eurasia and belongs to the Brassicaceae family.

An annual plant that grows to 30 cm with star shaped hairs, 4 lilac petalled, 1 cm wide flowers and long narrow pods on very short stalks held away from the stem.

Turkish mustard germinates in late winter and flowers in spring, from late August to October.

The plant is a common weed in poorly grown/patchy crops, overgrazed pasture and disturbed areas, eg. roadsides, wildlife corridors, or areas which have a greater impact by humans such as tourist areas or campsites.

Turkish mustard spreads through both pasture crops and unfallowed areas and is dense on bare chalky patches and in alkaline soil and is unpalatable to stock.

What is the threat to crops?

Turkish mustard is a recognised weed of crops in multiple countries, with significant cereal yield losses recorded.

The weed has Allelopathic affects, e.g. wheat germination and growth is significantly reduced and hosts some important crop diseases including powdery mildew.

South Australian observations near Orroroo suggest that it may become a significant weed in lower-rainfall cropping areas including the Mid-upper North, Murray Mallee and parts of the Yorke and Eyre Peninsula's.

While dense crops in mid-high rainfall cropping areas of South Australia may not be particularly susceptible to competition from this species, the crops in lower-rainfall areas may struggle to compete early in the season and suffer significant yield losses.

Recent sightings

Turkish mustard has been recorded in the Hundred of Coomooroo and Wallaway in pasture and cropped paddocks and was collected 2.5km west of Orroroo by M. Catford in 1988 and D. Cooke in 1992.

Turkish mustard has not been recorded elsewhere in South Australia, however it has been documented in Victoria. Biosecurity SA has conducted a threat analysis on the plant.

What can you do?

Please report any sightings of Turkish Mustard on your property to Natural Resources Northern and Yorke to assist with mapping its current distribution.

Management and control of Turkish mustard is the same treatment as for wild radish.

See www.herbiguide.com.au for more information.

For more information

Natural Resources Centre - Clare (head office)

Unit 2/17 Lennon Street Clare SA 5453

Ph: (08) 8841 3400

Hours: Monday-Friday, 9am-5pm

www.naturalresources.sa.gov.au/northernandyorke



Natural Resources
Northern & Yorke



Government
of South Australia

Upcoming Events Calendar

November

10 PreDicta B Agronomist Root Disease Management Course, Adelaide, Shawn Rowe, 0477 744 305

December

4 - 8 7th International Nitrogen Initiative Conference, Melbourne, [Conference Design](#) 03 6231 2999

February

7-8 GRDC Farmer Advisor Update, Adelaide, [ORM Communications](#) 03 5441 6176

9 GRDC Grains Research Update, Loxton, [ORM Communications](#) 03 5441 6176

17 Soil Water Workshop for Researchers & Advisors, Pt Lincoln, [Naomi Scholz](#) 0428 540 670

17 BCG Trials Review Day, Birchip. [BCG](#) 03 5492 2596

20 – 24 Grain Biz: Unwrap your Business Grain Marketing Potential, Clare, [Rural Directions](#) 08 8841 4500

22 UNFS Integrated Weed Management Workshop

April

6 – 7 Ag Excellence Annual Forum & Awards, Adelaide, [Kerry Stockman](#) 0418 841 331

July

18 Hart Field Site Winter Walk, [Sandy Kimber](#) 0427 423 154

September

19 Hart Field Day, [Sandy Kimber](#) 0427 423 154

26-28 Yorke Peninsula Field Days, Paskeville [Elaine Bussenschutt](#) 08 88272 040

October

17 Hart Spring Twilight Walk, [Sandy Kimber](#) 0427 423 154

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