

**Advertising**

Michael Cook

(National Advertising Manager)

P: 07 4659 3555

F: 07 4638 4520

 E: [advertising@greenmountpress.com.au](mailto:advertising@greenmountpress.com.au)
**Editor**

Lloyd O'Connell

**Associate Editor**

David Dowling

**Production and Design**

Mick Allan

CONTENTS OF ADVERTISEMENTS are the responsibility of the advertisers. All statements and opinions expressed in Australian Grain are published after due consideration of information gained from sources believed to be authentic. The following of advice given is at the reader's own risk, and no responsibility is accepted for the accuracy of the matter published herein. No portion in whole or part may be reproduced without permission of the publisher.

Copyright 2014.

Published by Berekua Pty. Ltd.,

40 Creek Street, Brisbane

Registered by Australia Post Publication No.

PP100002295. ISSN 1449–2970.

Published bi-monthly.

Grain Yearbook published in April

**FRONT COVER**
**Rice trials in the Ord**

Record rice yields have been achieved in north Western Australia's Ord River Irrigation Area. Planting of a Vietnamese



variety at the beginning of the dry season has produced yields in experimental trials in excess of 14 tonnes per hectare. For full details on these promising trials see page 35.

(PHOTO: David Hadden, DAFWA)

# Contents

|   |    |
|---|----|
| Editorial   | 4  |
| Match flowering, sowing date for dual-purpose crop success      | 6  |
| Rotations that beat brome grass and make money                  | 14 |
| Scientists work to outsmart clever fungus                       | 18 |
| Remain vigilant for best control of canola and pulse diseases   | 19 |
| <b>Classic Tractor Tales...</b>                                 |    |
| My Orenstein and Koppel   | 26 |
| <b>Marketing...</b>   |    |
| Risk premium coming out of wheat prices                         | 29 |
| <b>AHRI insight...</b>  |    |
| 'Left jab, right hook'  | 32 |
| <b>Weed Smart...</b>  |    |
| 'Ask an expert'   | 34 |
| Research in the Ord has found ways to improve rice yields       | 35 |
| Food science centre to bolster grain opportunities              | 40 |
| Study reveals what the profitable farming practices are         | 41 |
| Myth busters: Leaving a silo sealed up won't protect your grain | 42 |
| Don't let insects get cosy this winter                          | 44 |
| Proactive approach needed for cereal foliar disease control     | 47 |
| <b>Farming in Foreign Fields...</b>                             |    |
| Shining in the heart of corn country                            | 48 |
| <b>News &amp; New Products</b>                                  | 50 |
| <b>District Reports</b>   | 51 |

## Focus Sections

### Southern Australia Focus

*Covering cropping systems of Southern NSW, Victoria, South Australia, Western Australia and Tasmania*

**Consultants' Corner...**

|   |      |
|---|------|
| Slug research strives for cost-effective control strategies | i    |
| Give early seeding technique a dry run                      | vi   |
| Boosting international wheat sales                          | vii  |
| Elevated barley disease risk                                | vii  |
| Chemical rotation beats radish challenge in Lower North     | viii |

### Northern Focus

*Covering Northern NSW and Queensland*

**Consultants' Corner...**

|  |      |
|--|------|
| Nematode management critical to preserving wheat yields            | i    |
| Psst! Want to improve plants? Whisper to their genes               | iv   |
| Speeding up development of Phomopsis-resistant soybeans            | v    |
| Know more and grow more with GrowNotes                             | vi   |
| Corn production should double by 2020                              | vi   |
| Moree takes out 1 million drumMUSTER milestone                     | vii  |
| Recognition for young researcher searching for pulse breakthroughs | viii |

# Together we can defend your crop stop disease before it attacks

For return on investment, the proven technology of Amistar Xtra is a clear choice. Applied early as a preventative spray, it gives long lasting protection of cereal crops against all key foliar diseases – for up to six weeks. By using the broad spectrum and flexible protection of Amistar Xtra, together, we can defend your crop.



**syngenta®**



**Talk to your local distributor about Syngenta's solutions  
or visit [www.syngenta.com.au](http://www.syngenta.com.au)**

The information contained in this document is believed to be accurate.  
® Registered trademark of a Syngenta Group Company. AD14/222.

TM



# Let's all rise up against rhizoctonia.



## EverGol<sup>®</sup> Prime

**The seed treatment that can  
make a difference to your yield.**

Finally, growers can make a stand against rhizoctonia root disease with EverGol Prime seed treatment.

With a revolutionary active ingredient, EverGol Prime is setting a benchmark for fungal disease management and plant health.

- Superior activity against rhizoctonia<sup>^</sup>
- Can increase yield in wheat and barley by up to 20%
- Control of smut diseases\*
- Powerful active ingredient penflufen



**150 Years  
Science For A Better Life**



**evergolprime.com.au**

Bayer CropScience Pty Ltd, 391-393 Tooronga Road, Hawthorn East, Vic. 3123

ABN 87 000 226 022 Technical Enquiries 1800 804 479

<sup>^</sup>Suppression of rhizoctonia root rot. <sup>\*</sup>Suppression of soil-borne flag smut.

EverGol<sup>®</sup> is a registered trademark of the Bayer Group. SeedGrowth<sup>™</sup> is a trademark of the Bayer Group.



**Bayer SeedGrowth<sup>™</sup>**

seedgrowth.bayer.com

**B**y the time you are reading this, the entire Australian winter crop planting should be done and dusted – and in most regions – into pretty favourable conditions. Excellent autumn rains have set-up some good soil moisture profiles and, with an unusually warm May, have combined to have the young crops race away. In many areas, crops are now into their three and four leaf stages whereas last season in early June, they weren't even in the ground.



Of course the downside of plenty of moisture being available to growing crops is the potential onset of various plant diseases. A feature article on page 19 looks at the latest in disease management options for oilseeds and pulses, including brown manure legume crops. This comprehensive article reviews last season's various disease profiles and, armed with this information plus recent trial results, suggests what management options will help crops travel through to harvest in a healthy condition this year.

The general message for all crop types and all regions is for growers to be vigilant by regularly monitoring the health of crops as the season unfolds. This will allow you to proactively choose the best management option according to the seasonal conditions.

We also review some extensive research by CSIRO on how to extract the maximum grazing and harvested grain benefits from dual purpose crops across a range of Australian sites. Sowing early – and with the right variety in terms of flowering date – is critical to dual purpose crop success (see article page 6).

## Landmark GM versus organic farm decision

A landmark decision involving the controversial issue of GMOs and nearby organic farms was handed down in May by the West Australian Supreme Court. It appears to me that the Court has found in favour of common sense. The case pitted two neighbours against each other – one a GM canola grower, the other a certified organic producer. The organic farmer was claiming damages from his neighbour for his loss of organic status when eight GM canola plants were found growing on his farm – the GM seeds having blown in from next-door's pre-harvest swathes. The judge found that the GM grower could not be held responsible for this 'contamination' when he was growing a legal crop in a conventional way and with no intent to contaminate his neighbour's land.

It was found that there was no physical transfer of any GMO onto the organic farm as the eight plants were removed before shedding any seed or being harvested with an organic crop. It would make more sense to put the spotlight on the certifying authority – the National Association of Sustainable Agriculture Australia (NASAA) – for its zero tolerance of any GM material on organic farms. If conventional and organic farms are to co-exist, a more realistic NASAA organic accreditation test, as exists in the US and the EU, needs to be put in place so that all farmers have the choice of growing legal crops by conventional or organic means.

## International farm study tours

There are four *Australian Grain/Greenmount Travel* study tours on offer from July onwards this year. The tours include time in far-flung destinations such as Siberia, Morocco, Spain, Norway, Canada and the US. If you are interested in one of these tours please contact our office as soon as possible.



# AUSTRALIAN GRAIN

[www.ausgrain.com.au](http://www.ausgrain.com.au)

## In this issue...

### Dual-purpose crop success

While growers have long been growing dual-purpose canola and cereals in the high rainfall zone, taking the guess work out of when to sow the right variety to achieve optimum flowering time and knowing how much biomass will be produced is the focus of GRDC-funded research.



**See article . . . . . Page 6**

### Canola and pulse diseases

The blackleg fungus is sexually reproducing, resulting in enormously diverse populations, and therefore, a high propensity to overcome resistance in canola cultivars. This article outlines the latest in blackleg and sclerotinia stem rot management for healthy canola crops. The latest disease management advice for pulse and pulse manure crops is also presented.



**See article . . . . . Page 19**

### Huge rice yields in the Ord

A new record yield of 14.3 tonnes per hectare was achieved from a Vietnamese rice variety grown in the Ord (northern WA) during the dry season of 2013.



**See article . . . . . Page 35**

### My Orenstein and Koppel

Back in the 1950s during the period I worked with Lanz Australia Pty Ltd, Ken Murray was my dealer at Robertson. His enthusiasm for the new generation light-weight Lanz Bulldogs resulted in these idiosyncratic single cylinder



two stroke powered tractors edging out the David Browns, as being the district's top selling tractors. It became impossible to drive through the green fertile valleys without hearing the familiar thumping staccato of a Model H Bulldog echoing around the hills.

**See article . . . . . Page 26**





## Applied science

The best fertiliser is wasted unless it is delivered at the correct amount across the entire paddock – and nowhere else. AMAZONE ZA-M mounted and ZG-B trailed twin-disc centrifugal spreaders feature unique ‘soft ballistics’ technology that accurately and uniformly spreads fertiliser up to 52 metres without shattering the valuable granules. Combined with simple and easily-adjustable controls, on-line fertiliser advisory service, integrated weighing systems, optional on-board electronic controller and optional section control technology, AMAZONE spreaders deliver a better agronomic outcome. Contact your local CLAAS Harvest Centre or dealer today.

CLAAS Harvest Centre

[www.claasharvestcentre.com](http://www.claasharvestcentre.com)

LPA13313AG

May–June 2014

**AMAZONE**

*Australian Grain* — 5

# Match flowering, sowing date for dual-purpose crop success

■ By Deanna Lush

**W**HILE growers have long been growing dual-purpose canola and cereals in the high rainfall zone, taking the guess work out of when to sow the right variety to achieve optimum flowering time and knowing how much biomass will be produced is the focus of GRDC-funded research.

The CSIRO is focusing on using climate data to breakdown the links between sowing dates and flowering times using actual data to indicate to growers the likelihood of early-sowing being an option for them. CSIRO's John Kirkegaard said the organisation matched the different crop development timing of wheat and canola varieties to a sowing time that achieves optimum flowering for maximum dual-purpose crop benefits.

The project has focused on 13 sites across Australia's high rainfall zone. It involved using the APSIM wheat and canola models with long-term weather records to:

- Pinpoint the optimum flowering window that minimised the risk of damage from frost and heat stress;
- Identify the sowing dates that would have the crops flowering in the optimum window;
- Calculate the historic likelihood of a sowing opportunity in the window;
- Predict average forage production and grazing value.

- Estimate average seed yield of a crop after grazing assuming safe lock-up timing; and to,
- Investigate impacts of agronomic management such as nitrogen application and plant density.

John said all sowing dates generated by the model were 'laugh-tested' with local advisers and growers to see whether the CSIRO was on track. They were also cross-checked with experimental data from CSIRO field experiments.

He said the model was designed to answer questions on the benefits specific crops would deliver and their on-farm impacts, such as the best variety to sow, the amount of biomass production for grazing, whether increasing nitrogen or plant

## GRAZING CROPS ADDS PROFIT

If research pointed to a new way for high rainfall zone farmers to add \$100–\$200 per hectare to their farm profits, there would be plenty of interest. Recent GRDC-funded research by the CSIRO has done exactly that through the integration of dual-purpose crops.

CSIRO's John Kirkegaard says research and leading grower experience is showing farms that are animal enterprises only (all pasture) that are able to introduce about 15 to 20 per cent of their total farm area to grazing crops could increase farm profits by \$100–\$200 per farm hectare. That is potentially a total increase on a 1000 hectare farm of an extra \$100,000 to \$200,000 for the farm.

For mixed farming properties, grazing crop paddocks that would have previously been grown for grain-only can increase the gross margin on the paddock by \$100–\$400 per hectare, assuming best management practices are followed and there are no yield penalties due to grazing.

"This is mostly a single paddock issue – a grazed crop paddock versus an un-grazed crop paddock – and the profit increase only happens on that paddock although there is also some benefit from pastures which are spelled while the crop is grazed.

"Successfully grazing crops is all about sowing early. Grazing gives another option for those early-sown crops to make extra money without losing yield. If you sow on-time or early, crops will usually produce more biomass than is really needed for yield and this can be exploited by the animal enterprise in winter," John said.





### Neil's Parts Australia

**New Tractor Parts & more ...**



**Increased range of Radiators, Water Pumps  
Tie Rods, Seats, Lights, Cab Glass & A/C Parts**



### Front Hitches and PTO

LAFORGE front 3-point hitch  
Technology, improving tractor  
performance for over 30 years!

**More work with less fuel!**

**1800 463 457** And a whole lot more ...  
[www.neils.com.au](http://www.neils.com.au)  
Corowa - Dubbo - Toowoomba - Gawler - Ayr - Northam



# TRIMBLE SOLUTIONS, UNLIMITED APPLICATION POSSIBILITIES



LEARN MORE ABOUT HOW YOU CAN OPERATE EFFICIENTLY, SAVE ON INPUT COSTS, AND IMPROVE CROP PERFORMANCE AND PRODUCTIVITY. CONTACT YOUR LOCAL TRIMBLE RESELLER NOW.

AUSTRALIAN TRIMBLE AGRICULTURE DISTRIBUTION PARTNERS ARE:

## WA

Wellard Rural Services

0488919165  
[www.wellard.com.au](http://www.wellard.com.au)

## Central/Southern NSW, VIC and SA

SST Development Group

03 58 860051  
[www.sstgps.com.au](http://www.sstgps.com.au)

## North West NSW

NFS-Ag

02 67427771  
[www.nfsag.com](http://www.nfsag.com)

## Northern NSW, QLD and NT

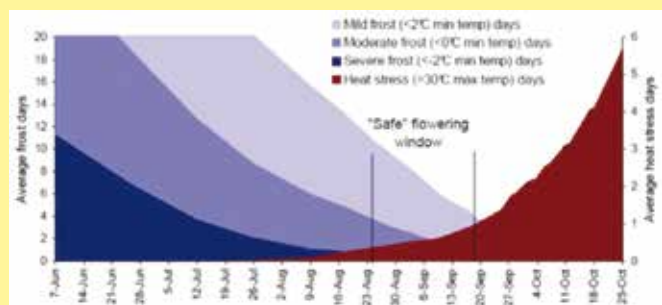
BMS Lasersat

1800 502 688  
[www.bmslasersat.com](http://www.bmslasersat.com)

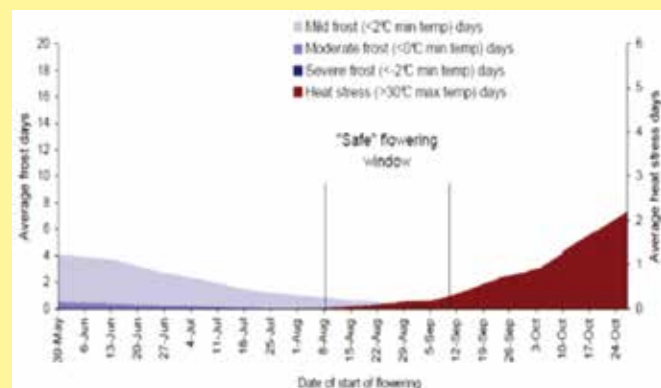
© 2013–2014, Trimble Navigation Limited. All rights reserved. Trimble and the Globe & Triangle logo are trademarks of Trimble Navigation Limited, registered in the United States and in other countries. All other trademarks are the property of their respective owners.



**FIGURE 1: The optimum flowering window for canola at Young, NSW**



**FIGURE 2. The optimum flowering window for canola at Inverleigh, Victoria**



density would increase feed supply, stocking rates and grazing times that would optimise feed use, and whether yield would be affected by grazing.

Varieties assessed fell into four maturity categories for wheat: Winter (eg Revenue); Mid-winter (eg Wedgetail); Mid-spring (eg Gregory); and, Fast-spring (eg Suntop).

For canola, the categories were: Winter (eg CB Taurus); Winter/spring (eg CBI406); Late spring (eg 46Y83); and, Mid-spring (eg Hyola 50).

### Flowering window

In identifying the optimum flowering window, John's team

used historic weather data to find out the number and timing of frosts and high temperature days in a season. These were optimised to find a window when the chances of both frost risk and heat stress were lowest.

For example for canola at Young, in NSW, the optimum flowering window was between August 24 and September 19 (Figure 1), but the window will be specific to each site. For canola at Inverleigh, Victoria, the safe flowering window was August 8 to September 10 (Figure 2).

**TABLE 1: Optimum sowing window (yellow shading) and the probability of a sowing opportunity in that window (%) for wheat and canola crops of different maturity class at two sites, and the simulated mean grazing and seed yield achieved.**

| Site          | Cultivar – phenology type | Sowing window intervals |        |       |        |       |        |        |        |        | Mean predicted grazing days (DSE/ha) | Mean potential yield (t/ha) |     |
|---------------|---------------------------|-------------------------|--------|-------|--------|-------|--------|--------|--------|--------|--------------------------------------|-----------------------------|-----|
|               |                           | Mar 8                   | Mar 22 | Apr 5 | Apr 19 | May 3 | May 17 | May 31 | Jun 14 | Jun 28 |                                      |                             |     |
| Wheat         |                           |                         |        |       |        |       |        |        |        |        |                                      |                             |     |
| Delegate, NSW | Winter                    | 78%                     |        |       |        |       |        |        |        |        | 1830                                 | 5.3                         |     |
|               | Mid-winter                |                         | 100%   |       |        |       |        |        |        |        |                                      | 1200                        | 5.1 |
|               | Mid-spring                |                         |        |       | 84%    |       |        |        |        |        | 750                                  | 5.7                         |     |
|               | Fast spring               |                         |        |       | 84%    |       |        |        |        |        | 650                                  | 5.7                         |     |
| Young, NSW    | Winter                    | 44%                     |        |       |        |       |        |        |        |        | 2050                                 | 4.7                         |     |
|               | Mid-winter                | 98%                     |        |       |        |       |        |        |        |        |                                      | 1500                        | 4.5 |
|               | Mid-spring                |                         |        |       |        | 89%   |        |        |        |        | 720                                  | 5.1                         |     |
|               | Fast spring               |                         |        |       |        | 89%   |        |        |        |        | 600                                  | 5.1                         |     |
| Canola        |                           |                         |        |       |        |       |        |        |        |        |                                      |                             |     |
| Delegate, NSW | Winter                    |                         | 75%    |       |        |       |        |        |        |        | 680                                  | 4.2                         |     |
|               | Winter/ spring            |                         |        |       | 84%    |       |        |        |        |        | 400                                  | 4.2                         |     |
|               | Late-spring               |                         |        |       |        | 88%   |        |        |        |        | 230                                  | 4.0                         |     |
|               | Mid-spring                |                         |        |       |        | 62%   |        |        |        |        | 380                                  | 4.2                         |     |
| Young, NSW    | Winter                    | 44%                     |        |       |        |       |        |        |        |        | 1300                                 | 3.9                         |     |
|               | Winter/ spring            |                         | 65%    |       |        |       |        |        |        |        | 1360                                 | 3.9                         |     |
|               | Late-spring               |                         |        |       | 80%    |       |        |        |        |        | 580                                  | 3.9                         |     |
|               | Mid-spring                |                         |        |       | 80%    |       |        |        |        |        | 570                                  | 3.9                         |     |

The table outlines the predicted long-term safe sowing window (highlighted in yellow) for four different maturities in wheat and canola. The percentage in each window describes the probability of a sowing opportunity in that window for each region. The simulated potential mean grazing and grain yield outlines the mean grazing and yield potential achieved from each option.



# Choose Green... ...Harvest Gold



## The 2014 John Deere S-Series Harvesters are engineered to harvest profit.

Harvest more per day with new **Interactive Combine Adjustment** which irons out operator learning curves more quickly, taking novices to near pros.

Enhance crop handling and separating with our **TriStream™ Rotor Technology**, enabling improved crop flow, with up to 20% less force, for a high capacity and smooth performance in damp conditions, so you can pack more harvesting time in a day to finish faster.

Do it all in **one-of-a-kind** comfort with the new leather cab package featuring a leather trim steering wheel along with a lumbar-supported, ventilated leather operator seat to keep you fresh and focused on long harvest days.

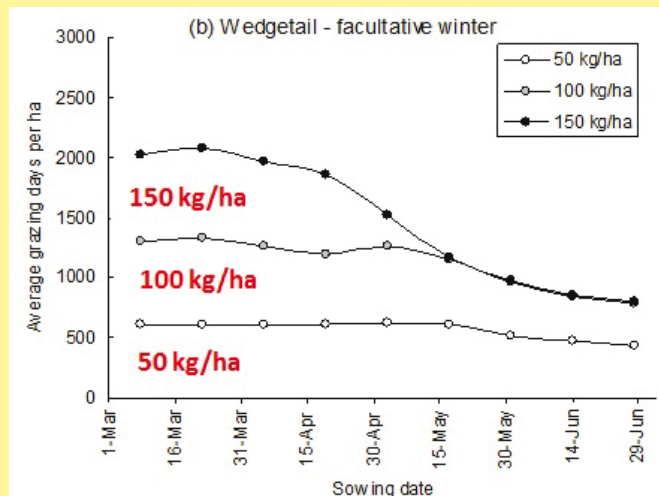
Turn green into gold and start benefiting today. Visit your John Deere dealer and see why **Nothing Runs Like a Deere.™**



**JOHN DEERE**

[JohnDeere.com.au](http://JohnDeere.com.au)

**FIGURE 3: The effect of nitrogen rate on average grazing for early-sown Wedgetail at Young, NSW**



### Sowing dates and probability

Armed with knowledge of the least-risk flowering window, the CSIRO could work back to identify the optimum sowing dates to hit that window with varieties of different maturity. The model was then used to calculate the percentage of years growers could sow at the optimum date, based on actual rainfall and evaporation data for each site.

A grower at Delegate could expect that in 78 per cent of years

there would be the opportunity to early-sow a winter wheat from March 8–22 and to have it flower at its optimum time (Table 1). For a grower at Young wanting to early-sow canola, the model predicted there would only be an opportunity to sow a winter canola variety from March 8–22 in 44 per cent of years (Table 1).

### Grazing value and yields

Predicted mean grazing days and potential grain yield for each variety was predicted using the model based on 50 years of weather data from 1959–2009 (Table 1, two right hand columns). It predicted a winter wheat variety sown at the optimum time at Young would provide an average of 2050 DSE per hectare grazing days while a fast-spring variety at the same location would only give 600 DSE per hectare grazing days.

John said earlier sowing with later maturing varieties provided the greatest grazing potential across all sites. Generally, wheat provided more grazing than canola.

"There are not large differences in potential grain yield for the different maturity types sown in their optimum windows. But the differences are very large in terms of what each variety can offer for grazing," he said.

"Overall, growers should be looking at varieties with a high chance of sowing and high combined grazing and grain yield potential."

### Nitrogen, plant density

John says early N application encourages plants to grow rapidly, producing early biomass which is desired for maximum forage. But for grain-only crops, it can lead to excessive growth and water use, and lower starting N with later topdressing are usually advised.

At Young, the model predicted grazing from winter wheats –



## PLANTER SPECIALISTS

- TX Series Parallelogram tyne (hydraulic or spring)
- SX25 Single disc opener
- SX25P Parallelogram single disc opener
- DX50 Parallelogram double disc opener
- NX20 Parallelogram narrow row double disc opener
- SJ Series Stump jump tyne planting & cultivating units (hydraulic or Spring)
- RX100 Strip till parallelogram row units

Phone 02 6721 2677 Dan Ryan 0488 512 677  
Fax 02 6721 2760 Dave Herbert (Dalby QLD) 0439 286 277

[www.bosseng.com.au](http://www.bosseng.com.au) • [www.bossagparts.com.au](http://www.bossagparts.com.au)

Boss Agriculture - A division of Boss Engineering Pty Ltd • 40 Taylor Avenue Inverell NSW 2360





**Unlock your Phosphorus with FertiCoat- the ultimate solution for Phosphorus availability. Call today to find out how.**



**Perfect for granular coating, mixing with UAN for stability and liquid soil injection.**

**Ian Leonard**  
Specialist Agronomist -  
QLD  
0419 757 863  
ileonard@omnia.net.au

**Jan De Jager**  
Specialist Agronomist -  
WA, SA, NT, Vic  
0429 898 131  
jdj@iinet.net.au



03 5133 9118 omnia.com.au

such as early-sown Wedgetail at 150 plants per m<sup>2</sup> – produced most biomass at 150 kg N per hectare of starting N (Figure 3) and up to 100 kg N per hectare for later-sown spring varieties, such as Gregory. For canola at 60 plants per m<sup>2</sup>, required levels were higher at 250 kg N per hectare for winter types and 150 kg N per hectare for spring types.

“As for crop density, the modelling, combined with grower experiences and trial work, shows there is little impact in wheat above 150 plants per m<sup>2</sup> with respect to grazing value – which is also a reasonable target for grain-only in the medium and high rainfall zones. In canola, densities of 40–50 plants per m<sup>2</sup> are usually advised to optimise grazing and grain.”

### Future research

John said best management practice for grazing stressed the

importance of removing stock before growth stage Z30 in cereals and before buds elongated more than 10 cm in canola to avoid significant yield loss.

“But recent experience in cereals in shorter-season areas suggest that grazing can cause yield penalties even when locked up by these dates if grazing management leaves insufficient time or biomass for crop recovery,” he said. “While these phenology-based grazing rules remain sound, they could be improved with additional advice on the residual biomass needed at different lock-up dates to achieve potential yield in specific seasons. This is the goal of ongoing work.”

For more information contact John Kirkegaard, 0458 354 630, [john.kirkegaard@csiro.au](mailto:john.kirkegaard@csiro.au)

Fact sheets: Dual-purpose crops - [www.grdc.com.au/uploads/documents/GRDC\\_Dual-PurposeCrops.pdf](http://www.grdc.com.au/uploads/documents/GRDC_Dual-PurposeCrops.pdf)

## MORE OPTIONS WITH DUAL-PURPOSE CROP PROGRAM

Grazing dual-purpose canola and wheat have opened up options to bridge in the autumn-feed gap for Lameroo (SA) farmer Brenton Pudney. Brenton farms 3560 hectares with wife Beck and parents Des and Vicki, and workman Regan Daniel. About 2000 hectares are cropped to cereals, canola, lupins, peas and export oaten hay.

Brenton says they are mostly croppers but had been looking at new ways to lift the performance of their 1500-head Dorper grazing operation.

In 2006 they experimented with early-sowing and grazing Chebec barley, instead of waiting for the June-July germination of medic pastures. There was only a slight yield penalty in the grazed crop – in what was a very dry year – so they decided to keep experimenting.

### From ‘heart-in-mouth’ to ‘this really works!’

“The first year there was a bit of heart-in-mouth,” Brenton said. “Our agronomist Mick Faulkner had been involved in the first *Grain and Graze* project. He picked it up and worked with us to have a go.

“When we put the sheep on the crop, it was more stock per hectare than we were used to and they grazed it off to the ground – the weeds too. We thought, ‘this isn’t going to work’.

“By grazing it to the ground, there wasn’t the leaf on top of the soil surface so plants were not losing moisture to the atmosphere through transpiration, instead they were putting effort in root growth.

“We found grazing was good for weed control too because it delayed development of weeds. If there’s a bit of ryegrass, the sheep run up and down the seed rows and eat the grasses first before they eat the cereal.”

The Pudneys would normally sow a crop at a seeding rate of 65 kg per hectare but for dual-purpose crops, it is up to 100 kg per hectare. At the crop’s three-leaf stage, sheep grazing starts until growth stage 31, or stem elongation.

By late winter or early spring, paddocks have been locked up – any later and yield potential for grain can be lost. Pasture paddocks have been rested and sheep are moved into those paddocks. But staggering cereal plantings can lengthen the grazing period.

Brenton says the concern in a low rainfall environment was getting enough rainfall to start sowing, and the risk of a ‘false break’. “But we haven’t found it to be an issue at all,” he said. “The seed just seems to stay there. If there is an issue, the sowing rate is so high at 100 kg per hectare that if it doesn’t germinate



Des and Brenton Pudney, Lameroo, SA.

immediately, there is still the seed numbers there for plants to emerge later.”

One of the key benefits for the Pudneys has been the ability to sow early. Originally ‘early’ meant late April/early May, but now early paddocks are April 15 or earlier, if soil moisture allows. For wheat or barley in the ‘grain-only’ seeding program, the optimum is the second or third week in May.

Canola was grazed for the first time last year. In total, 200 hectares was sown on April 14 and 450 ewes were put in on May 5. They had 500 lambs and grazed the canola until July 3. The canola crop went on to average 900 kg per hectare.

Meanwhile wheat was sown on May 5 at 75 kg per hectare. Ewes that had grazed canola were changed to the 130 hectare wheat paddock in July and remained there until late August.

“We probably feel more secure with grazing wheat, only because we have more experience with it. The canola last year was really sown as a pasture. It was a dabble but the germination was so good, we turned it into a crop,” Brenton said.

“The key to dual-purpose crops is topping up with nitrogen once the sheep have been removed. We broadcast 50 kg per hectare of urea so that can be washed-in by rain.

“In seeding early, the best paddocks to use are the ones that are fairly clean. Weed control is much harder because of chemical management and the need to adhere to stock withholding periods for grazing.”

For more information contact Brenton Pudney, 0428 774 031, [brentonandbeck@bigpond.com](mailto:brentonandbeck@bigpond.com)



## DUAL-PURPOSE CROPS BOOST CARRYING CAPACITY

There is a quiet evolution under way on the Southern Tablelands of New South Wales – a change in traditional lingo of micron, crimp and lustre to new concepts, such as grazing canola, dual-purpose crops and early sowing.

Once rolling hills were dotted with only Merinos but now the landscape is taking on a mosaic pattern of grazed and cropped paddocks.

The interest in cropping coincided with livestock's meteoric rise in profitability in the 2000s. While stock from the Tablelands were usually shipped out to be finished in warmer climates, there was a push to produce higher quality animals by finishing them on-farm. And it was found more high value, dual-purpose grain and graze crops could do it.

But the road to growing dual-purpose successfully has had its ups and downs.

In the mid-2000s, some farmers on the South West Slopes were sowing canola too early and were using sheep to graze it back to get it under control. Some wheat and triticale sown was ending up with wheat streak mosaic virus (WSMV).

Rural Consulting Company agronomist Tony Good, also a farmer at Cowra, says WSMV put a dampener on cropping in the region for the next few years.



Tony Good.

Before 2009, only a handful of growers in the Central and Southern Tablelands were dabbling with early-sown winter cereals, such as wheat and triticale, grown in a loose rotation with oats. The results were variable because there were few break crop options and a tendency to allow summer weeds to grow as sheep feed.

Many growers were not incorporating a two-year break for annual grasses in their rotation planning. Without this break, weed seed banks built-up during cropping and put newly-sown pastures under similar weed pressure than if no crops had been planted.

"Much of the grain produced was feed quality and kept for use on-farm in the livestock side of the business," Tony said.

But in the past four years, cropping turned professional as contractors were brought in to help.

While difficult-to-control weeds, such as ryegrass, brome grass and silvergrass, had been hosting cereal root diseases like crown rot and take all, growers were able to use crops to clean-up weeds before reseeding an improved pasture.

"For farmers who have taken up cropping, on most farms dual-purpose varieties have been combined with correct fallow management, through spring and summer weed control and effective break crops, combined with lime application," Tony said. "The result has been more certainty in production, fewer weeds and disease issues, and better pasture establishment – all the while carrying more stock on the farm, not less."

### Early sowing advantages

Tony says Tablelands' growers are proving that early-sown winter or spring varieties that are established before winter will

out-yield spring crops sown at the traditional late April/early May sowing time.

The advantages are:

- Control of invasive weeds, which in turn improves property values for both cropping and grazing.
- Potential for higher returns from the same land through producing higher grades of milling wheat or higher value oilseeds, as well as prime animals rather than store stock.
- Ability to push up stocking rates and finish stock in winter. The aim is to recover variable costs of cropping through the sale of the animal, and any grain sold becomes profit.
- Costs of liming land can be recovered in one year with cropping, rather than as amortised capital over 10 years with grazing.
- Pushing up productivity on an existing farm is cheaper than buying a new one; and the extra profit(s) are creating "head-space" to reduce debts or engage in family farm succession.

But Tony says there are risks and many growers have sought professional advice to navigate potential problems.

"Not all parts of the Tablelands are suited to cropping so land choice is critical. Suitable land must not be too shallow or too rocky and must have deep, well-draining soils," he said.

"It is a new level of expenditure that people aren't used to and they are putting their cost base up directly and severely. They might misunderstand what the land is capable of, and there are years when stock is expensive and there's nowhere to trade.

"There are weather risks such as frost but crop maturity is being managed with grazing.

"But is it sending people broke? Not those that are doing it properly. The people that started doing it are making a reasonable return and they are not giving it up."

### Crop choice

Tony says 'new' crops being grazed include canola, wheat and barley – replacing triticale and, in some areas, oats.

Canola is palatable to livestock and early-sown crops can be grazed to bridge the historical Tablelands' mid-winter feed gap. Long-season canola crops sown two to three weeks earlier than normal can produce 1.5–3.0 tonnes per hectare more biomass.

"To guarantee this early biomass, paddocks must be well-prepared and ready for early sowing and have enough stored soil water for good, even crop establishment. High breakout tynes and press wheels can improve crop establishment," he said.

Cereal grazing can be a major contributor to weed control in the crop in winter and spring. The choice of which cereal cultivar to grow is an agronomic decision (based on locality and sowing time) but long-season or true winter types will be a more flexible fit into the dual-purpose system.

CSIRO research in the region has found grazing of canola and cereals can start as soon as plants are well anchored. Canola must have biomass of more than 1.5 tonnes per hectare and wheat 1.0 tonne DM per hectare. To avoid yield penalties, remove stock before canola buds have elongated more than 10 cm above ground level in mid to late spring.

For wheat, animals must be removed before the crop reaches growth stage 31 – just before stem elongation with one node visible – to ensure there are no impacts from grazing.

More information: Tony Good, The Rural Consulting Company, Cootamundra, NSW, 0488 002 866 or [tonynkris@bigpond.com](mailto:tonynkris@bigpond.com)

# Rotations that beat brome grass and make money

■ By De-Anne Ferrier, Birchip Cropping Group

## AT A GLANCE

- In years with high summer rainfall, growing break crops is low risk and is an effective management strategy for reducing weeds, while growing profitability.
- Two year breaks are better than one at achieving favourable returns and reducing brome grass populations.
- The best brome grass control and gross margins were achieved by two year rotations of Clearfield Canola/vetch and continuous Clearfield Wheat followed by wheat.

**T**HE GRDC-funded crop sequencing trial at Chinkapook, 70 km north west of Swan Hill in the Victorian Mallee, has investigated one and two year break crop sequences. Central to this study was the profitability of each three year sequence and its influence on brome grass, soil water and nitrogen.

Specifically the trial looked at the impact of non-cereal crop rotations and cereal sequences that use group B herbicides for brome grass control. In the third year of this four year investigation, the yield and profitability of wheat grown after each sequence was measured.

### How the trial was done

In 2011, a four year trial was established in a long term cereal paddock at Chinkapook in a typical dune-swale Mallee landscape. One and two year non-cereal break crops, or cereals with group

B herbicide applied to target brome grass, were established. Various crop types, chemical groups and management options were compared via three complete randomised blocks. Plot size was 2.5 m x 20 m. The 15 treatments examined in this trial are summarised in Table 1.

In early April 2013 – in the third season of this trial – topsoil was collected to measure baseline weed seed bank, soil biology and root disease levels. Soil nutrition and moisture were measured to depth. Brome grass populations were evaluated on June 18, July 23 and August 29.

Yield, quality and gross margins were statistically analysed. Findings from this project will be used for crop sequencing modelling. This trial has been sown to wheat in 2014.

In 2013, wheat (Grenade CLF Plus) was grown on all treatments (but Clearfield herbicide was not used) to measure the influence of each crop sequence on soil water, nitrogen and brome grass populations.

The difference between each sequence was measured by 2011 through 2013 yield results and gross margins.

## What we found

The 2011 season was excellent for crop growth with both high summer and growing season rainfall (GSR). In 2012, summer rainfall was the driver for crop growth as the GSR was only decile 2 (Table 2).

In 2013, summer rainfall was much lower (decile 3) and neither weeds nor self-sown cereals emerged prior to sowing. Decile 4 GSR would have governed plant growth, together with any residual soil moisture carried over from the previous years.

**TABLE 1: Treatment descriptions for 2011 and 2012 – one and two year break descriptions include both legume and brome grass breaks**

| Treatments                 | Herbicide / Break crop              |
|----------------------------|-------------------------------------|
| CLF wheat/CLF wheat        | 2 year herbicide control            |
| Wheat+Atlantis/CLF barley  | 2 year herbicide control            |
| Field Peas/Wheat           | 1 year break crop                   |
| Chemical Fallow/Wheat      | 1 year break crop                   |
| CLF Canola/Vetch           | 2 year break crop                   |
| TT Canola/Field Pea        | 2 year break crop                   |
| CLF Wheat/Chickpeas        | 1 year herbicide, 1 year break crop |
| Chemical Fallow/CLF canola | 2 year break crop                   |
| Vetch hay/CLF canola       | 2 year break crop                   |
| Lupins/CLF canola          | 2 year break crop                   |
| Hay/Hay                    | 2 year break                        |
| Medic/Medic                | 2 year break                        |
| Vol. Pasture/Vol. Pasture  | 2 year break                        |
| Wheat/Wheat                | nil control                         |
| Chem Fallow/Chem Fallow    | 2 year herbicide control            |

**TABLE 2: Chinkapook rainfall (mm) for 2011, 2012 and 2013**

|               | 2011 | Decile | 2012 | Decile | 2013 | Decile |
|---------------|------|--------|------|--------|------|--------|
| Summer        | 129  | 10     | 105  | 9      | 31   | 3      |
| GSR (Apr-Oct) | 219  | 7      | 117  | 2      | 168  | 4      |
| Annual        | 421  | 9      | 222  | 2      | 246  | 2      |

\*Deciles obtained from the Rainman computer program using long term rainfall from Manangatang

### Highest gross margin

The treatment with the highest gross margin and medium-low brome numbers (\$1305 per hectare; 12 plants per m<sup>2</sup>) was the CLF wheat/chickpeas sequence.

But high gross margins were also achieved by the CLF canola/vetch (\$1221 per hectare) and CLF wheat/CLF wheat (\$1062 per hectare) and low brome grass numbers of 6 plants per m<sup>2</sup>.

Figure 1 provides a clear comparison of the respective performance of the different treatments which can also be compared with the brome grass controls of each.

Note: Unfortunately the grazing values of pasture treatments had not been calculated at the time of writing. As such, only input costs were included when statistical analysis was undertaken.



# 3 OF THE BEST



## Now there's 3 reasons to buy a New Holland tractor

- 3% Finance
- 3 Year Warranty
- 3 Months Only

And the best thing about this offer is that it's available across the entire range of New Holland agricultural tractors – from the utility Workmaster™ to the broadacre powerhouse T9 4EWD. Visit your local New Holland dealership today and discover great things really do come in 3's.

**3** %\* P.A.  
Finance

**3** YEAR  
Warranty



**3** MONTHS ONLY  
April, May, June 2014



\*36 months with 30% deposit. GST payment month 4. Monthly or Annual repayments. Terms and conditions apply. Finance provided by CNH Industrial Capital ABN 71 069 132 396 AFS License No. 286664. Offer is available to business customers only and subject to credit approval. 3 year warranty comprises the manufacturers base warranty and Service Plus Protection Plan. Contact your local dealership for full details.



The BCG trials showed that just two years consecutive use of Group B herbicides could result in resistant brome grass populations.

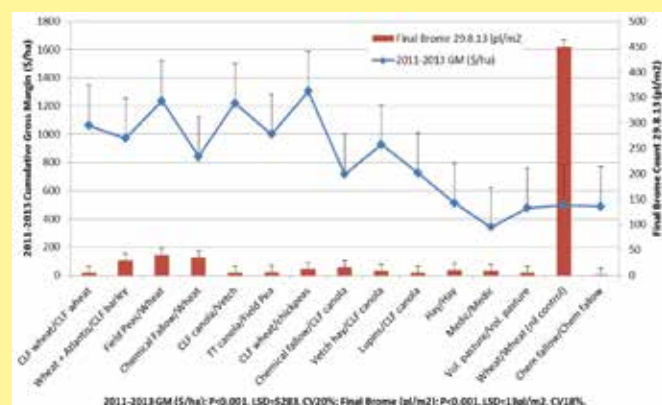
### Commercial practice

To date, this trial has shown that after high summer rainfall, growing a break crop is low risk and an effective management strategy for reducing weeds, while providing profitable gross margins.

Clearfield Canola, followed by vetch and Clearfield Wheat-on-wheat rotations, effectively reduced brome grass numbers (brome grass 6 plants per m<sup>2</sup>), and were also profitable.

But the most profitable treatment was the CLF wheat/chickpea sequence. This sequence was also effective at reducing brome grass numbers (12 plants per m<sup>2</sup>). This would generally be considered a high input sequence, but in years in which soil moisture is abundant, the cost of inputs can be returned in increased yield. A price of \$500 per tonne was used for chickpea grain, but the market for chickpeas has now fallen to approximately \$400 per tonne. This highlights the need for sensitivity analyses to be undertaken for each commodity.

**FIGURE 1: Cumulative gross margin (\$/ha) for the 2011 through 2013 seasons and final brome grass populations**



The project results so far have shown that two year breaks are better than one at achieving favourable returns and reducing brome grass populations. Two year breaks that include legumes and/or use Clearfield technology can reduce brome grass numbers to low levels and be very profitable.

Current results show that caution needs to be exercised if using group B herbicides for two years in a row or longer, as brome grass populations will develop herbicide resistance.

Calculations on pasture costs and benefits require further investigation, but brome grass numbers were substantially suppressed in this study.

#### References:

[www.grdc.com.au/GRDC-FarmGrossMarginAndEnterprisePlanningGuide2013](http://www.grdc.com.au/GRDC-FarmGrossMarginAndEnterprisePlanningGuide2013)

This trial was funded by GRDC through the Low Rainfall Collaboration Group Crop Sequencing Project (DAS00119).

# BCG GRAINS RESEARCH EXPO

**GRDC**  
Grains Research & Development Corporation

**BCG**  
Brome Grass Control

**+ WHEN**  
Thursday 3 July 2014  
8.30am to 4.00pm  
Breakfast from 7.30am

**+ COST**  
BCG members: FREE  
Non-members: \$50

**+ WHERE**  
Birchip P-12 School  
Sunraysia Hwy  
Birchip VIC 3483

**+ MORE INFORMATION**  
[www.bcg.org.au](http://www.bcg.org.au) or  
03 5492 2787

**+ SESSIONS**

- + Microwave and robotic weed control technology
- + Tow-behind vs. self-propelled sprayers
- + Strategic succession planning: farm boards
- + Making use of machinery data
- + Farm software and apps
- + Livestock marketing: targeting premiums
- + Working dog demonstration
- + Spot the difference: grain vs. grass fed lambs
- + Grain storage economics and marketing





# Das Tractor

Introducing CLAAS AXION 900, the new benchmark in broadacre farming. With up to 410 hp of made-to-measure power, continuously variable transmission, unique four-point cab suspension, cutting-edge on-board technology and intuitive control systems, AXION 900 delivers the same exacting levels of performance, efficiency, versatility, reliability and comfort that have made CLAAS the world leader in harvesting technology. Contact your CLAAS Harvest Centre today and find out how AXION 900 can drive the productivity of your business even further.



## CLAAS Harvest Centre

[www.claasharvestcentre.com](http://www.claasharvestcentre.com)

LPA13586AG

The CLAAS logo in red, followed by a series of vertical bars of increasing height in a light green color.

# Scientists work to outsmart clever fungus

**R**HIZOCTONIA *solani* is a soil-borne fungus able to infect a broad range of plant species, including most major agricultural crops. There is no effective resistance at present, which leads to significant crop losses. The AG8 strain of *R. solani* that causes bare patch and root rot diseases of cereals, canola and legumes causes losses of about \$87 million to these crops in Australia every year.



Scientists have sequenced the genome of the *Rhizoctonia solani* strain AG8. (Photo: Carl Davies, CSIRO)

Scientists from CSIRO and the University of Western Australia, with financial support from the GRDC, have recently sequenced AG8's genome – with some surprising results.

It was already known *R. solani* has more than one nucleus per cell. Dr James Hane and the team discovered significant genetic differences between these nuclei. This meant that sequencing the pathogen was a complex process – like mixing the pieces of different, but similar, jigsaw puzzles, and then trying to put them back together in the correct position.

The team suspects these multiple nuclei could explain why the fungus is able to infect such a broad range of plants.

"This level of diversity within one individual is unusual for plant pathogens," explains CSIRO research leader Dr Karam Singh. "It is similar to the diversity we see within entire populations of many other fungal pathogens."

The researchers are investigating how this high level of diversity may relate to the pathogen's broad host range and why no effective resistance has evolved or been bred in the past.

Now they have sequenced the genome, Karam and the team are trying to understand the key mechanisms by which the fungus induces disease and how the plant's immune system can be adapted to resist infection.

Taking into account their previous investigations, the team have identified two very different resistance mechanisms in two model plants, *Medicago truncatula* (barrel medic) and *Arabidopsis*, which suggests there may need to be different approaches to resistance in different crop plants. ■



*Rhizoctonia solani* AG8 causing root rot on narrow leaf lupin, cultivar Tanjil (the top image is the infected plant and the bottom the control 'normal' plant for comparison. (Photos: Jonathan Anderson, CSIRO)



# Remain vigilant for best control of canola and pulse diseases

■ By Kurt Lindbeck<sup>1</sup>, Stephen Marcroft<sup>2</sup>, Angela Van de Wouw<sup>2, 3</sup>, Vicki Elliott<sup>2</sup> and Barb Howlett<sup>3</sup>

## AT A GLANCE...

- Elevated levels of internal blackleg infection were detected at some blackleg monitoring sites, especially across southern NSW, in 2013.
- Early flowering canola crops in combination with wet weather conditions were conducive to sclerotinia stem rot development in 2013.
- Consider the past frequency of sclerotinia stem rot outbreaks and yield potential when deciding to apply a foliar fungicide in 2014.
- Make informed decisions about blackleg and sclerotinia stem rot management. Monitor crops during the growing season to understand the impact of these diseases on production.
- Consult the *Sclerotinia Stem Rot in Canola* factsheet and *Blackleg Management Guide* for further information (see [www.grdc.com.au](http://www.grdc.com.au))
- Early sown pulse manure crops are more prone to developing disease.



Blackleg monitoring site at Mullaley in northern NSW.

## Blackleg of canola – the challenge continues

The blackleg fungus, *Leptosphaeria maculans*, is sexually reproducing, resulting in enormously diverse populations, and therefore, a high propensity to overcome resistance in *Brassica napus* (canola) cultivars. This means the fungal population evolves

very rapidly and responds quickly to selection pressures such as wide-scale sowing of cultivars with specific resistance genes.

This will lead to resistance being overcome when cultivars of the same resistance gene are sown for three or more years.

Cultivar resistance has been overcome in many regions around Australia, the most recent being Hyola 50 which went from a rating of resistant to susceptible on the Eyre Peninsula in 2012.

There is a very strong relationship between the intensity of

# All Clear<sup>®</sup> DS

Make  
crop damage  
a thing of  
the past

## Removes damaging residues from your boom sprayer

Speak to your agronomist for details.

AgNOVA  
TECHNOLOGIES

® Registered trademark of AgNova Technologies Pty Ltd.

[agnova.com.au](http://agnova.com.au)

Read the product label thoroughly before opening or using All Clear DS.

canola production within a region and the level of blackleg development within commercial crops. The blackleg pathogen survives and reproduces on the previous season's canola stubble.

So this means the 2.5 million hectares of canola crop planted across Australia in 2013 will result in 2.5 million hectares of blackleg infested stubble in 2014 releasing windblown spores every time it rains this season.

### The warning signs for blackleg

Cultivars representing each of the blackleg resistance groups were sown at 32 National Variety Trial sites across Australia and monitored for levels of blackleg development in 2013.

Each site contained a representative cultivar of each of the six blackleg resistance groups: Groups A, B, C, D, E and G.

There was no fungicide applied to seed, fertiliser or the

**TABLE 1: Summary data of all Australian blackleg monitoring sites for levels of internal infection. Cultivars representing each of the resistance groups were sown adjacent to canola National Variety Trial sites across Australia and monitored for levels of blackleg. These data indicate which resistance groups have high levels of disease compared to the national average at each site. For more detail consult the individual site summaries and recommendations on the NVT online website.**

| Site        | Resistance Group  |          |          |          |          |          | Comments   |
|-------------|---|----------|----------|----------|----------|----------|--|
| <b>NSW</b>  | <b>A</b>  | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> | <b>G</b> |  |
| BECKOM      | H   | H        | M        | M        | L        | L        | High blackleg severity in groups A, B. Moderate in C, D.       |
| BELLATA     | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| COOTAMUNDRA | H   | H        | L        | L        | L        | L        | High blackleg severity in groups A and B.                      |
| CUDAL       | H   | H        | H        | H        | L        | L        | High blackleg severity in Groups A, B, C and D.                |
| GEROGERY    | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| GRENFELL    | H   | M        | L        | L        | L        | L        | High blackleg severity in Group A. Moderate in Group B.        |
| LOCKHART    | H   | H        | L        | M        | L        | L        | High blackleg severity in Groups A and B. Moderate in Group D. |
| MULLALEY    | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| PARKES      | H   | H        | M        | L        | L        | L        | High blackleg severity in Groups A and B. Moderate in Group C. |
| WAGGA WAGGA | H   | H        | H        | H        | L        | L        | High blackleg severity in Groups A, B, C and D.                |
| <b>SA</b>   | <b>A</b>  | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> | <b>G</b> |  |
| ARTHURTON   | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| BORDERTOWN  | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| MT HOPE     | L   | L        | L        | H        | L        | L        | High blackleg severity in Group D.                             |
| RIVERTON    | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| SPALDING    | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| TURRETFIELD | H   | M        | L        | L        | L        | L        | High blackleg severity in Group A. Moderate in Group B.        |
| <b>VIC</b>  | <b>A</b>  | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> | <b>G</b> |  |
| CHARLTON    | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| DIGGORA     | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| HAMILTON    | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| KANIVA      | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| MINYIP      | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| STREATHAM   | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| WUNGHNU     | L   | H        | M        | L        | L        | L        | High blackleg severity in Group B. Moderate in Group C.        |
| YARRAWONGA  | H   | H        | L        | H        | L        | H        | High blackleg severity in Groups A, B, D and G.                |
| <b>WA</b>   | <b>A</b>  | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> | <b>G</b> |  |
| BADGINGARRA | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| CORRIGIN    | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| GIBSON      | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| KATANNING   | L   | M        | L        | L        | L        | L        | Moderate blackleg severity in Groups A and B.                  |
| KENDENUP    | L   | M        | L        | L        | L        | L        | Moderate blackleg severity in Group B.                         |
| KOJONUP     | L   | M        | L        | L        | L        | L        | Moderate blackleg severity in Group B.                         |
| S. STIRLING | L   | L        | L        | L        | L        | L        | Low blackleg severity in all groups.                           |
| WILLIAMS    | L   | M        | L        | L        | L        | L        | Moderate blackleg severity in Group B.                         |
| <b>Key</b>  |   |          |          |          |          |          |  |
| L           | Low blackleg severity compared to national average – continue with current management techniques.                           |          |          |          |          |          |  |
| M           | Moderate blackleg severity compared to national average – Monitor crops for disease, see <i>Blackleg Management Guide</i> . |          |          |          |          |          |  |
| H           | High blackleg severity compared to national average – high risk of yield loss, see <i>Blackleg Management Guide</i> .       |          |          |          |          |          |  |



growing plot (foliar) at these blackleg monitoring sites. These data indicate which resistance groups have higher levels of disease compared to the national average at each of the regionally based NVT canola yield sites and serve as a monitoring tool of local blackleg pathogen populations.

The main finding from the blackleg monitoring sites in 2013 was the increase in blackleg severity in southern NSW compared to other regions in Australia across all the cultivars evaluated (see Table 1). The blackleg severity in NSW in 2013 was significantly higher compared to infection levels in Victoria, South Australia and Western Australia. This increase in disease severity is likely due to the increasing area sown to canola in NSW since 2010.

In addition to overall increased blackleg severity, the Group D monitoring cultivar had a marked increase in blackleg severity. When similar increases in blackleg severity in Group D were detected on the Eyre Peninsula in South Australia in 2011, the Group D cultivars showed increased susceptibility to blackleg in the following season (2012). This situation could potentially occur in some regions of NSW in 2014.

In South Australia, results indicated that overall blackleg severity has not increased in recent years. Group D resistance cultivars are still susceptible on the Eyre Peninsula. However the level of infection in Group D cultivars has not increased in the monitoring sites in other regions of SA.

Similarly in Victoria, the monitoring sites indicated generally low levels of blackleg, mainly as a result of drier conditions in winter. The only concern was the Group D cultivar located at one site in the north east, with higher than average levels of internal infection. The Group D cultivar still had low blackleg infection in all other sites and regions across Victoria.

In Western Australia there were generally low levels of blackleg. This was due to conditions being unfavourable for disease

development. The Group D resistance cultivar was observed to have exceptionally low levels of blackleg infection at all monitoring sites except one blackleg management trial site in the Great Southern region. But Group D still had low blackleg infection in most of the commercial crops across Western Australia.

### Use the right strategy to minimise yield loss

Spores of the blackleg fungus are released from the previous year's canola stubble, so an increased area of canola results in increased disease pressure.



**Sclerotinia apothecia in the field – these are the small fruiting structures that release ascospores.**

# EXCEL



## Stubble Warrior Planters ZERO & MINIMUM TILLAGE



**Trailing, Lift Assist & Linkage Frames**

### EI 853 Single Disc

#### — Single disc opener has excellent ground penetration

Ideal for seeding, fertilising and gassing into heavy trash cover and clayish, sticky soils. Frames to suit 9", 10", 12", 13" and 15" row spacings. Easy access to row units. Slotted gauge wheel.

- ✓ Precise ground following ability with a true parallelogram design
- ✓ SP 200 can be fitted with JD boxes
- ✓ CR 600 can be fitted Double Disc Shank
- ✓ Combination of winter and summer planting machinery
- ✓ Interchangeable disc opener and tyne tooling options
- ✓ Robust low maintenance design
- ✓ Slotted gauge wheel



**SP 200 DOUBLE DISC**



**CR 600 TYNE**

**Brian Moran:** 0427 722 925

**Graeme Easey:** 0427 700 779 (NSW)

74 – 92 Buckland St  
Toowoomba Qld 4350

**Phone:** (07) 4636 9100  
**Facsimile:** (07) 4636 9140  
**www.excelagr.com.au**

A DIVISION OF  
GREAT WESTERN  
CORPORATION P.L.

**EXCEL**  
Agriculture

The most effective blackleg management tool is to keep a 500 metre distance from this season's crop and last year's canola stubble.

But as more canola is grown this control measure is becoming harder to achieve, particularly in tight wheat/canola rotations.

Blackleg can be minimised by a number of factors including the sowing of cultivars with high blackleg resistance, avoiding last year's stubble and applying the appropriate fungicides (see 2014 *Blackleg Management Guide*).

An additional method for minimising disease is rotating cultivars with different resistance genes.

All canola cultivars are now classified into different resistance groups. In 2014, the groups have been modified slightly and now use a colour coding system to indicate the best cultivar rotations. Again, refer to the 2014 *Blackleg Management Guide* for individual cultivar groups.

Remember to monitor the level of blackleg development in canola crops during the growing season as a basis for selecting appropriate management strategies in the future.

## Sclerotinia stem rot – the new disease challenge

### How does the disease develop?

The fungal pathogen that causes sclerotinia stem rot is called *Sclerotinia sclerotiorum*. This fungus can infect over 300 plant species, mostly broadleaf plants, including many crop, pasture and weed species. This includes plants like canola, lupin,

chickpea, sunflower, lucerne, cape weed and shepherd's purse. The main features of the disease are:

- Airborne spores of the fungus are released from apothecia (small, golf tee shaped structures, 5 – 10 mm in diameter) which germinate from sclerotia in the soil. For this to occur, prolonged moist soil conditions in combination with moderate temperatures of 15°C to 25°C are considered ideal. Most sclerotia will remain viable for up to 3 – 4 years then survival slowly declines.
- Spores of the sclerotinia pathogen cannot infect canola leaves and stems directly. They require petals as a food source for spores to germinate grow and colonise the petal. When the infected petal eventually drops, it may become lodged onto a leaf, within a leaf axil or at branch junctions along the stem. If conditions are moist the fungus grows out of the petal and invades healthy plant stem tissue which will result in a stem lesion and production of further sclerotia within the stem which will be returned to the soil after harvest.
- Sclerotia also have the ability to germinate in the soil, produce mycelium and directly infect canola plants in close proximity, causing a basal infection.
- Weather conditions during flowering play a major role in determining the development of the disease. The presence of moisture during flowering and petal fall will determine if sclerotinia develops. Dry conditions during this time can quickly prevent development of the disease, hence even if flower petals are infected, dry conditions during petal fall will prevent stem infection development.

### Sclerotinia research findings in 2013

A number of commercial canola crops were monitored in southern NSW for the development of sclerotinia stem rot in 2013. These crops were around Cootamundra and south of Henty, in traditionally high disease risk districts.

Results from observations within these crops found a very strong relationship between leaf wetness and stem rot development. While the level of stem rot development varied between the crops south of Henty and those at Cootamundra, it was found those extended periods of continual leaf wetness of at least 48 hours or longer were critical 'trigger' points for stem rot development in both regions.

There was also two distinct phases identified in the development of the disease. It was found that petal infection provided the first phase in the initial establishment of stem rot within the crop.

The second phase occurred once canopy closure occurred and a humid microclimate was established, with the retention of infected plant tissue under the crop canopy providing opportunities for continued disease development later in the season. This tissue included lower leaves and senescent leaves that became colonised and later adhered to stems, causing stem lesion development and yield loss.

This work will continue in 2014 to collect and collate data which will be used to develop a disease prediction model.

### Where did the disease occur in 2013?

In 2013 epidemics of sclerotinia in southern NSW and northern Victoria were observed in traditionally high rainfall districts. These included districts east of Cootamundra, Young and Cowra, south of Henty, around Corowa and Howlong and districts along the Murray River. Infection levels observed in some crops were as high as 30 to 60 per cent.

Other districts in NSW and Victoria recorded generally low levels of infection.

In Western Australia high levels of sclerotinia stem rot was



Formation of a sclerotinia stem lesion in the field, with profuse white mycelium covering the stem lesion.



widespread in commercial crops across the grain belt, with infection levels of up to 60 per cent recorded.

### Why more sclerotinia stem rot in 2013?

The weather conditions during the winter of 2013 could be considered ideal for the development of sclerotinia stem rot. Mild winter temperatures in eastern Australia resulted in many canola crops flowering three to four weeks earlier than would be considered 'normal', especially in southern NSW and northern Victoria. Canola crops were flowering as early as the middle of July. These flowering crops also coincided with good rainfall throughout late July and August, which provided ideal conditions for apothecia development and release of ascospores.

Frequent rainfall events throughout August provided long periods of leaf wetness and ideal conditions for infected petals to drop into wet crop canopies and allow infection to occur.

### What are the indicators that sclerotinia stem rot could be a problem in 2014?

- Epidemics of sclerotinia stem rot generally occur in districts with reliable spring rainfall and long flowering periods for canola.
- Use the past frequency of sclerotinia stem rot outbreaks in the district as a guide to the likelihood of a sclerotinia outbreak. Paddocks with a recent history of sclerotinia are a good indicator of potential risk, as well as those paddocks that are adjacent.
- The commencement of flowering can determine the severity of a sclerotinia outbreak. Spore release, petal infection and stem infection have a better chance of occurring when conditions are wet for extended periods, especially for more

than 48 hours. Canola crops which flower earlier in winter – when conditions are cooler and wetter – are more prone to disease development.

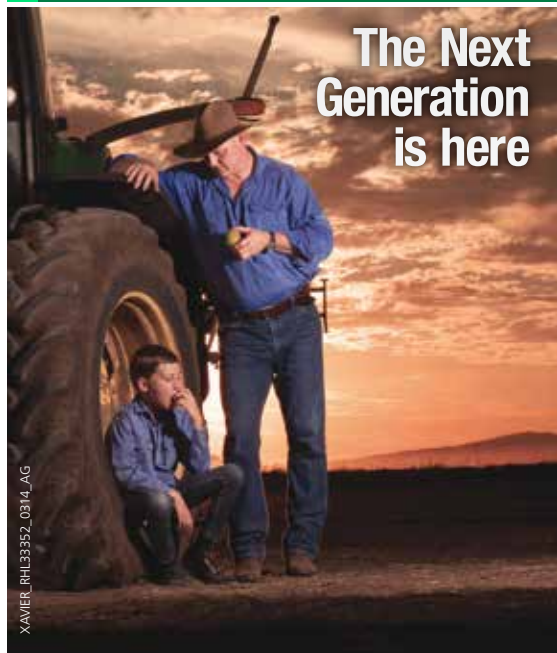
### If I had sclerotinia in my canola crop last year, what should I do this season?

The biggest challenge in managing sclerotinia stem rot is deciding whether or not there is a risk of disease development and what will be the potential yield loss. Research in Australia and Canada has shown that the relationship between the



Early leaf infection in the field from infected petals lodging within a leaf axil.

## *We know* Crop Protection



The Next  
Generation  
is here

**Talk to your CRT Local Bloke about how to control a large variety of broadleaf weeds in a wide range of crops.**

Your CRT Local Bloke can help give your crops the best chance to reach their full potential with excellent herbicides like Lontrel™ Advanced.

Lontrel Advanced contains the active ingredient clopyralid, which is effective across a range of broadleaf weeds in wheat, barley, oats, triticale, canola, pastures, fallow land and forests.

- Wider compatibility profile than other clopyralid products
- No plant back restrictions when Lontrel Advanced is applied before canola or cereals
- Lontrel Advanced contains twice as much clopyralid as Lontrel Herbicide

Talk to your CRT Local Bloke and find out how Lontrel Advanced can benefit you.



Dow AgroSciences

® Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow.



**There's always better value at CRT.**  
[www.crt.com.au](http://www.crt.com.au)

presence of the pathogen (as infected petals) and development of sclerotinia stem rot is not very clear due to the strong reliance on moisture for infection and disease development.

Important management options include:

- Sowing canola seed that is free of sclerotia. This applies to growers retaining seed on farm for sowing. Consider grading seed to remove sclerotia that would otherwise be sown with the seed and infect this season's crop.
- Separate this season's paddock away from last year's canola stubbles. Not only does this work for other diseases such as blackleg, but also for sclerotinia.
- Rotate canola crops. Continual wheat/canola rotations are excellent for building up levels of viable sclerotia in the soil. A 12 month break from canola is not effective at reducing sclerotial survival. Consider other low risk crops such as cereals, field pea or faba bean.
- Follow recommended sowing dates and rates for your district. Canola crops which flower early, with a bulky crop canopy are more prone to developing sclerotinia stem rot. Bulky crop canopies retain moisture and increase the likelihood of infection. Wider row spacing's can also help by increasing air flow through the canopy to some degree until the canopy closes.
- Consider the use of a foliar fungicide. Weigh up yield potential, disease risk and costs of fungicide application when deciding to apply a foliar fungicide.
- Monitor crops for disease development and identify the type of stem infection. Main stem infections cause the most yield loss and indicate infection events early in the growing season. Lateral branch infections cause lower levels of yield loss and indicate infection events later in the growing season.

### When is the best time to apply a foliar fungicide?

Research in Australia and Canada has shown that an application of foliar fungicide around the 20 to 30 per cent flowering stage (20 per cent flowering is 14 – 16 flowers on the main stem; 30 per cent flowering is about 20 flowers on the main stem) can be effective in reducing the level of sclerotinia infection.

The objective of the fungicide application is to prevent early infection of petals while ensuring that fungicide also penetrates into the lower crop canopy to protect potential infection sites (such as lower leaves, leaf axils and stems).

Timing of fungicide application is critical.



**Early formation of a stem lesion in the field, with the infection spreading from an infected leaf into the stem.**

In 2013 some commercial crops which received an application of foliar fungicide still developed stem rot later in the season. This is not unexpected as the fungicide will have a limited period of protection during a time of rapid plant growth and the main aim of foliar fungicide applications is the prevention of main stem infections, which cause the greatest yield loss.

Development of lateral branch infections later in the season is not uncommon, and will cause lower yield loss (see the GRDC *Sclerotinia Stem Rot in Canola* factsheet for further information).

## Diseases of pulse crops in 2013

Disease issues which appeared in pulse crops in the southern region in 2013 include:

### Phytophthora root rot of lupin

Wet winter conditions throughout July and August favoured the appearance of this disease in some districts. Lupin crops sown in lower lying paddocks or paddocks with a hard pan layer which favoured waterlogging, may have developed patches of dying plants in spring.

The pathogens which cause phytophthora root rot (also known as 'sudden death' in the past) only require a brief period (short as 8 hours) of waterlogging for infection of roots to occur.

### Bacterial blight of field pea

This disease was not seen or reported in any commercial field pea crops. The mild winter temperatures experienced in 2013 did not favour development of bacterial blight, confirming the strong relationship between incidence of frost events and development of the disease.

### Powdery mildew of field pea

Mild winter temperatures and rapidly growing crops resulted in outbreaks of powdery mildew in some districts further west and north of Wagga Wagga.

Traditionally this disease does not appear in crops till later in the season during late flowering and pod fill. Mild daily temperatures in combination with cool nights, which favour dew formation, are ideal for this disease to develop. There are a number of foliar fungicide options available and resistant varieties to manage this disease.

## Manuring pulse crops and disease

A number of disease issues developed in 2013 with the increasing trend toward using pulse crops as manure in southern NSW and northern Victoria, in particular blackspot (or ascochyta blight) of field pea.

If pulse crops are to be used successfully for manuring purposes the balance has to be made between dry matter production and disease management.

Essentially, many pulse crop species have not been developed as manure crops and the agronomy and disease management packages which accompany these crops traditionally focus on grain production.

Field pea is sensitive to early sowing and early sown field pea crops are more prone to developing blackspot if conditions are wet in winter or developing bacterial blight if conditions are dry and frosty.

The traditional sowing window for this crop have been developed around maximising grain yield and avoiding disease, in particular avoiding spore release from old field pea stubble.

The pathogens which cause blackspot can survive between seasons on seed, in soil and on stubble, which means an integrated approach must be taken to manage this disease. Effective disease management options include:



- Use of a fungicidal seed dressing: To reduce seed transmission of the disease and provide early seedling protection (products such as P-Pickle-T).
- Crop rotation: A break of at least three years to ensure adequate time between field pea crops for soil-borne spore populations to decrease.
- Paddock selection: Do not sow this year's field pea crop adjacent to last year's field pea stubble which will release air-borne spores onto new season's crops. Leave a distance of at least 500 metres between last year's stubble and this year's field pea crop.
- Time of sowing: Do not be tempted to sow crops too early outside the recommended sowing window for your district. Early sowing will expose crops to early season spore showers and allow crops to develop a dense canopy by mid – late winter, which further favours disease development. Early sown crops are also more prone to bacterial blight by increasing exposure to frost events.

### Why the high levels of blackspot last year?

High levels of blackspot were found in field pea manure crops in several districts in southern NSW last year. These blackspot epidemics were due to a combination of factors which favoured development of the disease. These factors included:

- Crops sown extremely early.
- Field pea crops sown adjacent to the previous season's field pea stubble.
- Dry conditions over summer which did not allow any spore maturation or release to occur prior to sowing.

In previous seasons the wet conditions over summer had aided breakdown of field pea stubble and accelerated spore maturation and release in the field prior to sowing. This had allowed early sown field pea crops to effectively 'escape' early spore showers from the previous season's stubble and develop only low levels of disease.

### Disease prediction using *Blackspot Manager*

Primary infection of blackspot can be reduced if field pea crops are sown after the majority of blackspot spores have been released from infected field pea stubble. Consequently pea growers have generally been advised to sow pea crops two to three weeks after opening rains so newly emerging crops can avoid these spores. But the timing of the spore release varies depending on seasonal conditions over summer and autumn.

For several years field pea producers in Western Australia have

had access to *Blackspot Manager* – a computer model which predicts the best time to sow new season field pea crops to avoid disease.

*Blackspot Manager* calculates the timing of spore release from old stubble using seasonal rainfall and temperature data, and identifies whether the delay in sowing is necessary in the current season or whether it is safe for peas to be sown during the autumn.

The optimum sowing dates calculated also consider agronomic factors, which may vary by region and season, and other production issues such as frost and yield penalties from late sowing.

In recent years this service has been extended to field pea producers in South Australia and Victoria. Over the past two years data from southern NSW has been supplied to researchers in DAFWA to validate the model for this region.

This service is now available for southern NSW producers. For more information see [www.agric.wa.gov.au/cropdisease](http://www.agric.wa.gov.au/cropdisease)

### Choosing the right crops to manure

To overcome issues relating to disease development in manure crops the choice of manure crop should be considered and how this fits within the farming system.

For some producers time of sowing will be seen as an important consideration.

For producers who prefer to sow manure crops early, crops such as lupin or high density legume species would be suitable.

For a later sowing time, field pea or vetch would be appropriate.

Even within some of these crop species there are varietal differences that can be exploited if dry matter production (and hence nitrogen fixation) is the objective. For example, within field pea, varieties such as Morgan or PBA Hayman produce more dry matter, even when sown within the recommended sowing window, than other high yielding varieties.

Unfortunately there exists a conflict between dry matter production and disease development.

Crops sown to maximise dry matter production will succumb to disease more readily and the manure crop fails to reach potential. Advisers and producers need to weigh up the potential risks, limitations and costs of the various manure crop options and choose a crop that best suits their particular farming system.

Contact: Kurt Lindbeck, Ph: 02 69 381 608 E: [kurt.lindbeck@dpi.nsw.gov.au](mailto:kurt.lindbeck@dpi.nsw.gov.au)

Authors: 1. NSW – Department of Primary Industries, Wagga Wagga;  
2. Marcroft Grains Pathology P/L, Horsham; and, 3. The University of Melb.  
GRDC project codes: DAN177, UM0051

## FREE UPGRADE ON ROGATOR® 1300



PRODUCTIVITY PACK  
VALUED AT  
**\$25K** INCL GST

INCLUDES  
6300 LITRE  
SPRAY TANK  
AND 3 INCH  
FILL PUMP

OFFER ENDS 30 JUNE 2014. TERMS & CONDITIONS APPLY. WHILE STOCKS LAST.

### IMPROVED POWER, PERFORMANCE, SERVICEABILITY, AND FUEL CONSUMPTION

With powerful engines,  
excellent cab comfort and  
visibility, the RoGator range  
is simply the toughest  
and most practical on the  
market today.

- » Higher engine horsepower
- » Easier access to service points
- » Reduced in-cab noise levels
- » More efficient fuel consumption
- » 120 foot booms available on entire range

Freecall 1800 999 162 Email [sales@croplands.com.au](mailto:sales@croplands.com.au)  
Freefax 1800 623 778 [www.croplands.com.au](http://www.croplands.com.au)

**CROPLANDS**



# My Orenstein and Koppel

■ By Ian M. Johnston

## The find

Back in the 1950s during the period I worked with Lanz Australia Pty Ltd, Ken Murray was my dealer at Robertson, a farming community located in the Southern Highlands of NSW. His enthusiasm for the new generation light-weight Lanz Bulldogs resulted in these idiosyncratic single cylinder two stroke powered tractors edging out the David Browns, as being the district's top selling tractors. It became impossible to drive through the green fertile valleys without hearing the familiar thumping staccato of a Model H Bulldog echoing around the hills.

Over the years I have maintained contact with Ken. In the mid 1990s I received a telephone call from him stating "...as you are the guy who collects ancient heaps of old rubbish tractors for your collection, you had better get yourself down to Robertson."

Upon inquiring the nature and make of 'the old rubbish tractor' Ken indicated he hadn't a clue. Apparently one of his sales reps had been asked to trade-in an obscure rusted out tractor that had been abandoned years ago in an old collapsed shed and left to rot.

I certainly had no intention of driving 500 kilometres only to find the thing was a basket case old Fordson or International. So I suggested that the rep return to the mystery object and with a torch endeavour to locate an identification plate.

Two days later Ken was back on the phone, mumbling something about an identification plate that read Orenstein and Koppel "...which sounds daft to me. Never heard of a tractor with such a stupid name," he complained.

But it certainly did not sound daft to me! "Don't let anyone near it and I'll be down at your place first thing in the morning

with my truck." I could not believe my luck! An Orenstein Koppel – wow!

Nine months later, Margery and I completed the restoration of our tractor treasure of monumental historic significance, our Orenstein and Koppel Model S32K.

## The non-existing tractor!

In Australia the name of the German firm Orenstein and Koppel is relatively unknown, except to those involved within the mining industry, container handling and department store escalators. The name certainly is very rarely associated with vintage tractors. Even the mention of O&K to tractor enthusiasts is generally greeted with a shrug and a shake of the head. I concede that although I was aware of O&K tractors, I had little knowledge of them except for the fact that only a handful remained in existence, even in Germany.

Indeed when I approached the General Manager of the Australian O&K office for technical information relating to our recently acquired S32, he confessed he was totally unaware his parent company had ever produced a tractor! But he assured me that the following week during a visit to his head office in Germany, he would request all the information I was seeking.

Three weeks later he telephoned me to the effect I must be confused as there were no records of O&K ever having manufactured a tractor.



The O&K S32K restored by the author. Note the air pressure gauge built into the mudguard, plus the air receiver tank below the front of the mudguard. Also visible is the air pressure line where it enters the side bonnet. The hot air then passes through a cooler before being piped to the air receiver tank. The air tool connection fittings are on top of the mudguard. (Photo IMJ)



The hand screw shuts off the fuel supply to the offside cylinder, which then serves as an air pump. The pressure relief valve is clearly evident. The system is designed to operate at 100 psi and deliver 120 cu ft per minute. Photo taken before restoration. (Photo IMJ)





The near side of the O&K S32K. Spacious lock-up cupboards are built into each side mudguard providing stowage for air hoses and air tools. (Photo IMJ)



A three quarter rear view of the O&K S32K.

No I was not confused, as I had one of the things parked in my shed! So it was up to me to do my own research on this tractor that supposedly never existed. Fortunately Margery and I had already arranged a visitation to Germany later that year for the purpose of attending The Hanover Trade Fair.

## All is revealed

The genesis of the present day engineering conglomerate can be traced back to 1876, when Benno Orenstein and Arthur Koppel opened their engineering works in Berlin. The company

engaged in diversified heavy manufacturing, but it was not until the 1930s that it ventured into the design and production of farm tractors.

In 1938 O&K introduced the first of their long stroke full-compression diesel engines for fitting to their new range of tractors. The 30 hp twin cylinder V configured massively constructed 3.3 litre engine had a 115 mm bore and 170 mm stroke. During the following 14 years several variations of the engine appeared, including one, two, three and four cylinder units. The exception was a lightweight industrial tractor powered by a small Ford four cylinder petrol engine designated the MBA 35.

Everyone has seen the newsreel footage of the total

# Bring in your crop quickly, reliably, safely

CSW Chaser Bins are your top choice for solid engineering, efficiency and reliability

## The 50 tonne Crop Carrier is here

- Front and rear self-steering axle system, with hydraulic load levelling suspension, rollover tarp, adjustable height delivery chute, eye level sight glass, 6mm delivery auger flitting, full length clean out drop doors, 3m wheel centres
- 20" delivery auger (10 tonne/min) or 24" delivery auger (15 tonne/min)
- Robust construction: 8mm plate bottom bin, 8/10mm line pipe auger tube system
- Options include weight scales, 2 or 3 section grouper, side discharge chute, tram line catcher



Contact Bruce Hutcheon today on 0427 273 439 to find out more about a top performing chaser bin to suit your operation.  
[bruce@coolamonsteel.com.au](mailto:bruce@coolamonsteel.com.au)

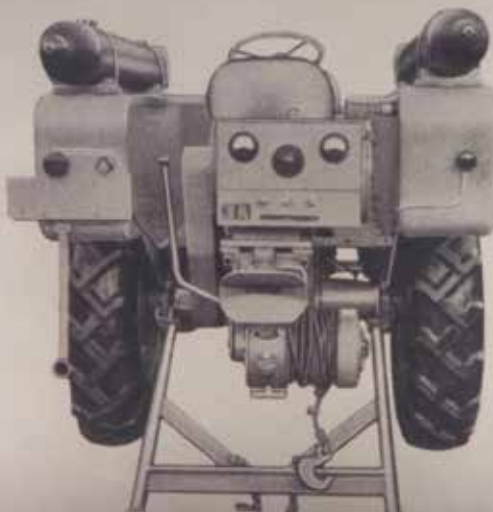


ASK US ABOUT OUR  
EARLY ORDER DISCOUNT  
PROGRAM - UP TO  
**10% OFF**

18T 'Crop Chaser'  
24T 'Crop Mover' • 30T 'Crop Hauler'  
36T 'Crop Carter' • 50T 'Crop Carrier'

**CSW**  
COOLAMON STEELWORKS

81 Wade Street, Coolamon, NSW 2701  
Ph: (02) 6927 4000 | Fax: (02) 6927 3404  
[www.coolamonsteel.com.au](http://www.coolamonsteel.com.au)



**An archival photo showing the gas cylinders on top of the mudguards plus the rear generator driven by a belt from the belt pulley, also the rear winch powered by the PTO shaft.**

devastation of Berlin at the end of World War 2. The Allied bombings and Soviet artillery shells decimated the once grand city, converting it into a pile of rubble. But miraculously one engineering factory emerged more or less intact. It happened to be the premises of Orenstein and Koppel.

Following the cessation of hostilities, Berlin languished for a decade or so in its devastated state. The city was divided into four political sectors – Russian, British, American and French. Basic requirements such as food, medicines and shelter, plus civil utilities including water, sewerage and electricity were all in short supply. Each governing power had the right of veto of any development and reconstruction plans, which the Soviets used harshly and indiscriminately.

## The Russian challenge

Parks and recreational grounds (including Berlin's famous Tiergarten) were ploughed-in and converted to vast vegetable gardens. But there was an acute shortage of tractors. Accordingly, when Messrs. Orenstein and Koppel approached the Allied powers with a request for a licence to acquire steel for the purpose of building tractors, their request was greeted warmly. But the Russians, already well ahead with plans to reinstate their own tractor manufacturing plants at Leningrad, Kharkov, Minsk and Kishinev, were not enamoured with the idea of encouraging renewed tractor production in Berlin.

The Russian tactics were brazen and obstructive. They stipulated they would only give approval to the O&K project providing the proposed tractor was capable of ploughing at night then working as an industrial unit during the day, by assisting with the clearing of rubble and collapsed buildings. To perform the latter task it would have to be equipped with a large capacity air compressor necessary for the operation of an impact hammer and/or rock drill. A tall order indeed and one which the Russians were confident would be beyond the capabilities of the O&K design team.

But they underestimated the resourcefulness of the German engineers. O&K responded by stating the inclusion of an air compressor would present no problems.

Surprised but not put off, the Russians added that the tractor would also have to include gas welding and cutting equipment in order to cut up destroyed tram tracks. "Easy. As good as done," came back the O&K response.

It was then insisted that in addition the tractor would be required to incorporate a high output generator for supplying

temporary electricity power to work sites. Plus, it would also need to be fitted with a heavy duty winch for pulling down teetering buildings. The Russians believed these two features would finally put an end to the project.

Again they made the fatal mistake of failing to understand the capabilities of the German engineers. The O&K team worked around the clock and amazed everyone by stating a tractor capable of ploughing during the hours of darkness and complying with the required specifications for restoration work during daylight hours, would be available within 12 months. The Russians had no option but to join the other three jurisdictions and approve the project, albeit with bad grace.

## The gem in my collection

It will now be obvious to readers why I just had to own the 'unidentified' tractor discovered rotting away near Robertson. It was indeed an example of the tractor the Russians believed could not be built owing to their extortionate demands. It is an O&K S32 Kompressor tractor built in 1949.

Apparently a German plumber emigrated to Wollongong in the 1950s, bringing with him the S32K which he had used in Berlin for the purpose of pumping compressed air through blocked sewerage pipes. He intended to resume this activity in Australia, but was presented with a problem. The Sydney Metropolitan Water Drainage and Sewerage Board, whose jurisdiction Wollongong came under, forbade the use of compressed air for the purpose of cleaning out blocked sewer lines.

The tractor was locked away in a shed and forgotten for decades. Eventually the plumber died and his son inherited the property with the now collapsed shed. The property was put on the market and an investigating real estate agent forced open the door of the shed, to be confronted with a jungle of lantana and a collapsed roof beneath which lay the rusting hulk of an unidentified item of machinery.

This then is how Margery and I acquired one of the world's most rare tractor artefacts. The months of work restoring the O&K back to as new condition was nothing less than a labour of love.

## IAN'S MYSTERY TRACTOR QUIZ

**Question:** Can you identify this tractor by its unorthodox engine?

**Clue (cryptic):** A monk would tell you!

**Degree of difficulty:** Phew!

**Answer:** See page 56.





# SOUTHERN AUSTRALIA FOCUS

COVERING CROPPING SYSTEMS OF SOUTHERN NSW, VICTORIA, TASMANIA, SOUTH AUSTRALIA & WESTERN AUSTRALIA

## THE RESEARCH VIEW

# Slug research strives for cost-effective control strategies

### AT A GLANCE...

- Determine 'slug risk'.
- No one control option will work – develop a control strategy based on risk factors.
- Baits must be eaten to protect the crop; slugs must be active.
- Sowing followed by rolling and baiting will protect emerging seedlings, but follow-up baiting may be required if crop establishment is slow.

**S**LUGS are significant pests of crops globally and are an increasing problem in Australia where expenditure on molluscicide has increased 50 per cent over the past 10 years.

South Australian Research and Development Institute (SARDI) entomologist Michael Nash says annual agricultural industry expenditure on molluscicide is estimated to be between \$10.2 million and \$13.5 million, dominated by baits containing the active ingredient metaldehyde. Cultural controls cost a further \$14.9 million annually.

"Assuming that slugs alone cost growers in excess of \$25



The brown field slug is a species that is becoming more prevalent in the high rainfall zone. (Photo: Michael Nash)

## Consultants' Corner

Consultants' Corner is an initiative by *Australian Grain* highlighting current GRDC-funded research with a particular focus on the commercial implications of adopting cutting-edge research.

# WESTFIELD

**Augers Australia Pty Ltd**

*The name you've grown to trust*



**WESTFIELD**

- Available in 4, 8, 10, 13 & 16 inch diameters.
- Lengths from 26 to 125 feet.
- PTO, engine or electric drives.
- Capacity to 630 tonne per hr.



**CONVEY-ALL INDUSTRIES INC.**

- Long lasting, fast & gentle.
- Lengths from 20 to 120 feet.
- PTO, engine or electric drives.
- Drive over conveyors.
- Capacity to 450 tonne per hr.

Westfield Augers Australia Pty Ltd. is the exclusive distributor of Westfield and Convey-All in Australia and specialises in high quality, long-lasting equipment that saves you time and money in the long run.

Free Call 1800 635 199 [www.westfieldaugers.com.au/ac](http://www.westfieldaugers.com.au/ac)



**SARDI entomologist Michael Nash speaking at a GRDC grains research Update about the control of slugs.**

million per annum, we must question the cost benefit of current control methods," Michael said.

To this end, the Grains Research and Development Corporation (GRDC) is investing in research projects aimed at providing growers with improved and more cost effective slug and snail management options.

Michael says that by understanding the biology of slug species and their interaction with farming systems and environmental factors, a management program can enable growers to assess the likelihood of crop damage or 'slug risk', and thereby implement well timed, integrated controls.

### Identifying slug risk

The main pest species of slugs in Australia are the black keeled (*Milax gagates*) and the grey field slug (*Deroceras reticulatum*), but the brown field slug (*Deroceras invadens*) can also be a pest, with species often co-occurring.

Michael says that in national surveys, 62 per cent of adviser respondents indicated that the black keeled slug was a problem, and given its distribution this species is a key focus of current research.

He says species distribution modelling is testing if different species have similar environmental requirements.

"The informative factors for grey field slug distribution models were temperature – (annual mean), moisture index (annual mean) and percentage soil clay, with cooler high elevation locations along the Australian escarpment providing the most suitable habitat.

"For brown field slugs, temperature (annual mean), moisture index (annual mean) and moisture index (warmest quarter mean) were informative factors and indicated suitable habitat across temperate/subtropical areas with over 500 millimetres of rainfall.

"This species may have been widespread for a considerable time, but the survey indicated an increased prevalence. Moisture availability during the warmest quarter appears to have the most information that isn't present in the other variables.

"This result leads to the hypothesis that brown field slugs can breed in warmer conditions than grey field slugs where moisture is available. This means brown field slugs may become more of a problem with the predicted increased intensity of late summer rainfall. Modelling from the United Kingdom predicts that under warmer conditions, brown field slugs will displace grey field slugs in the southern regions of England."

Michael says survey results suggest changing climatic conditions are causing a shift of exotic slug species distributions in Australia, but this needs further testing.

"Slightly different environmental factors seemed to influence the suitability of habitat for black keeled slugs; moisture index (annual mean) and moisture index (warmest quarter mean) being the most informative. The relatively low information provided to the predictive model by percentage clay suggests that heavy soils are an indirect factor for determining slug risk.

"Black keeled slugs were recorded in a range of broadacre crops and pastures, particularly soils with higher clay content in drier areas under 475 mm. But in wetter areas over 650 mm the opposite was observed, with this species found on sandy soils such as those between Mt Gambier (south-east South Australia) and Portland (south-western Victoria).

"Heavy soils retain more moisture, and therefore, such areas are often prone to slug problems. It is the slug's response to moisture that is the key to understanding these pests. Slugs will continue to be pests in southern Australian high rainfall cropping areas due to growers improving their soil moisture holding capacity with practices such as stubble retention, no-till and raised beds.

"Black keeled slugs are bio-indicators of excellent soil management that will help mitigate climate change."

### Monitoring

A foundation dogma of integrated pest management is the monitoring of populations, yet monitoring of slugs is difficult to implement, according to Michael.

"Even current methods based on utilising surface refuges, such as terracotta paving tiles, are considered too labour intensive. A minimum of ten 300 mm by 300 mm tiles per 10 hectares placed evenly across the entire area is recommended.

"But monitoring using four refuges in areas where slugs have previously been a problem is better than nothing. Adequate replication is required due to their clumping behaviour and dependency on moisture.

"The problem with refuges is that they rely on individual slugs being active, and slugs will only be active when soil is moist. So any decision support tool or thresholds based on refuge trap counts fail during dry periods, which is often before sowing when this data is needed to determine control strategies. Monitoring using surface refuges can only provide an estimate of what species are active (that is, they are unable to monitor species that are currently inactive)."

### Identifying slug risk on farm – understanding biology

Michael says understanding risk factors and biological differences between slug species is vital for informed management of slugs, especially timing of bait applications.

"Being hermaphroditic and opportunistic breeders, slugs reproduce whenever temperature and moisture conditions are suitable," he said. "In Australia, black keeled slugs can have either a bi-annual or annual reproductive cycle.

"Observations from warmer areas of New South Wales indicate late summer breeding under moist conditions can occur with the new generation reaching maturity in late spring, but these individuals can delay breeding until the following season due to dry conditions.

"In the colder regions of south-west Victoria, adults tend to breed in late winter with juveniles maturing the following season and breeding in late winter/spring, but if conditions are dry this is delayed until the next autumn.





## Extend a good season with a Farm Management Deposit.

With seasonal fluctuations, it's not always easy to control year to year cash flow. **A Rabobank Farm Management Deposit account** is an effective solution that allows you to invest pre-tax income from profitable years and set it aside for use in challenging years. With a minimum deposit of \$1,000, you can earn up to 3.65%p.a.\* on a 1 year fixed term.

**Call 1300 30 30 33 or visit [rabobank.com.au](http://rabobank.com.au)**



**Rabobank**

Rabobank Farm Management Deposits (FMDs) are issued by Rabobank Australia Limited ABN 50 001 621 129 AFSL 234 700. Conditions and eligibility criteria apply to primary producers under the FMDs Scheme. This advertisement and any tax related information is general in nature. You should consider the relevant Disclosure Documents along with your personal objectives, financial situation and needs and the FMDs Terms and Conditions, available at our branches, before making any financial decisions. Rabobank recommends you ask your tax adviser or accountant about any taxation implications before investing in a FMD. Early termination fees apply and other fees and charges may apply.  
\* Rate is effective 5 May 2014 and subject to change without notice.



**Canola seedlings damaged by slugs.** (Photo: Michael Nash)

"Observations in 2013 of overlapping generations (adults and juveniles present) suggest that juveniles present in late autumn were from winter 2012 breeding adults, but some of these adults delayed breeding. Despite eggs being laid two to five centimetres into the soil, these eggs must remain moist in order to hatch in 40 days (at 18°C)."

Michael says populations are adapted to survive harsh winter conditions in the Balkans (of northern Europe) by burrowing to avoid permafrost. The burrowing ability of juveniles and adults enable this exotic species to survive harsh Australian summers.

Black keeled slugs have a much longer lifecycle compared to grey field slugs; approximately 300 days compared to 190 days. Differences in life history may explain why grey field slug populations return quicker after bait applications in winter.

"Further research is being conducted to understand factors such as crop type, soil management and weather conditions that affect breeding in the preceding season.

"Different behaviours may also explain varied species responses to bait applications. Grey and brown field slugs are mainly surface active, requiring moist refuges at the soil surface, such as volunteers and broadleaf weeds. Black keeled slugs are a burrowing species, thus better suited to drier environments and able to buffer temperature extremes. This behavioural difference may also influence activity in the autumn break. Dry autumn conditions in 2013 across western Victoria and a late break resulted in canola being dry sown."

Michael says monitoring for slug activity suggested delaying bait application until rain occurred.

"This meant that baiting coincided with early crop establishment and provided improved control. Baites applied at sowing when the soil was dry, protected canola from grey field slugs, but where black keeled slugs occurred these emerged later and damaged canola at the four leaf stage. Control success requires monitoring to determine different species activity in response to environmental conditions."

### Chemical and cultural controls

Baiting is still the only effective chemical control worldwide, and the most commonly used active in Australia is 1.5 per cent metaldehyde, according to Michael.

"A review of the literature indicates that active concentration must be increased above three per cent in order to improve efficacy. Different species may be more tolerant of metaldehyde; however these results may be confounded. Many factors influence

the efficacy of baits, but put simply, slugs must encounter and consume a toxic dose of the active for it to kill them."

Chance of encounter is determined by:

- Slug activity,
- Attractiveness of bait; and,
- Number of baits per unit area.

Consumption of a lethal dose is dependent on:

- Enough bait,
- Adequate concentration of toxicant; and,
- Palatability.

"Given these confounding factors, any data presented should be interpreted understanding the conditions and context of the trial," Michael said. "Following that caveat, current Australian trials support previous research, recommending the application of baits must be immediately after sowing and applied to the soil surface to protect emerging seedlings from active slug populations.

"Bait does kill juveniles that are active, but re-invasion from the soil and new hatchlings quickly return population levels often to greater than the initial population, hence the common observation that baits select for younger populations. Molluscicides do not limit slug populations when they are active for extended periods, they only protect the crop. Only climatic conditions can reduce populations in the long term."

Michael says that so far, no novel products tested provide better efficacy than those already registered.

"Growers can protect crops from slugs if they take the effort to be proactive by monitoring slugs in preceding seasons to understand which areas are at risk.

"A combination of control approaches needs to include current cultural controls such as burning, cultivation and consolidation of seedbeds with rollers, removal of summer volunteers and incorporation of sheep back into farming systems.

"Biological functions of farming systems also need to be recognised and priority given to farming practices that limit disruption to disease-bearing nematodes and ciliates (that will infect slugs), and predatory beetles.

"New strategies, such as increased seedling resistance to damage (for example, growing less susceptible crops), and early sowing with improved seedling management that provides quick establishment can achieve optimum plant densities.

"To improve bait efficacy, growers need to apply when the crop is most susceptible and when the individuals are active and likely to feed on the baits. This is almost always at sowing prior to emergence.

"More expensive wet process flour-based baits with three to five per cent metaldehyde will give better results for longer periods than dry process bran-based products containing 1.5 per cent, but still should only be considered as crop protectants lasting three to six weeks.

"Baits need to be evenly applied to the soil surface at 25–35 per square metre to ensure encounter. Drilling baits increases the length of time before encounter for surface-active individuals and increases the likelihood of microbial degradation of actives."

To ensure even bait distribution, calibration of spreaders specifically for molluscicide baits is needed, with twin spinner or equivalent machines giving better results.

"Attempting to spread baits over 30 metres will give poor results. Individuals often reinvade from the soil to feed over extended periods, so continue to monitor and check baits after application. Nil bait means they have all been eaten so you need to apply more. Do not wait until crop damage of susceptible crops such as canola to reapply baits to 'problem' areas," Michael concluded.

Contact details: Michael Nash, SARDI. Phone 08 83039537



## THE CONSULTANT'S VIEW

### SLUG MANAGEMENT PRACTICES – WHAT IS WORKING?

Slugs have become constant and major pests in the High Rainfall Zone of the southern cropping region, causing significant damage to crops at emergence and during the establishment phase.

Southern Farming Systems chief executive officer Jon Midwood says the increase in slug prevalence and crop damage may be attributed to a number of factors including the increase in adoption of stubble retention and reduced tillage and the larger area sown to susceptible crops such as canola.

"The area of damage caused by slugs has increased irrespective of favourable climatic conditions, including the drought of 2006," Jon said.

"Slugs caused significant damage to some canola during the germinating and early establishment phase of crops in 2013, especially in areas where damage had been seen previously. The extent of damage was unexpected given the very dry conditions of summer and autumn."

SFS recently conducted an evaluation of slug management strategies as part of a 'fast track project' instigated by the GRDC's Regional Cropping Solutions Network in the HRZ.

The project, which was based in the Western District of Victoria, aimed to demonstrate and evaluate a range of management strategies that could effectively reduce slug damage to crops at emergence and during establishment.

The evaluation concluded that species identification was a critical aspect of effective control of slugs in the HRZ.

"Different species become active and feed on crops at different times, and therefore control tactics should be timed in accordance with the emergence of each individual slug species," Jon said.

Jon said growers, agronomists and advisers often lacked effective management strategies that consistently controlled slugs below thresholds for growing canola.

"Growers' approach to management is quite often reactive when damage has occurred and where baiting is seen as the only available control option."

Other key messages to emerge from the project included:

- Managing slug populations is unlikely to be successful unless both cultural and chemical control strategies are used;
- Research has found burning, light cultivation and rolling improves slug control;
- Control measures must be carried out before slug damage is observed;
- Paddocks with a previous history of slug damage are always a good place to start monitoring in a susceptible crop such as canola;
- Slug bait should be applied at a rate to provide sufficient bait points per metre square relative to slug populations in the paddock; and,
- Check the accuracy of your bait spreader to make sure there is an even distribution of bait across the spreading width. This width may not be the same as the width you spread urea.

Contact details: Jon Midwood, SFS, phone 03 5265 1666 or 0400 666 434.



## GIVE'EM THE SUCKER PUNCH!

**Transform**<sup>TM</sup>  
INSECTICIDE  
**ISOCLAST**<sup>TM</sup> ACTIVE



**Dow AgroSciences**

- Outstanding aphid control
- Approved for use in canola and all winter cereals
- Effective across a wide range of temperatures
- New Mode of Action (Group 4C)

For more information call 1800 700 096  
[www.dowagrosciences.com.au](http://www.dowagrosciences.com.au)

*Solutions for the Growing World*

®™ Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow.

# Give early seeding technique a dry run

## AT A GLANCE...

To dry seed crops successfully:

- Select paddocks with low weed, pest and disease burdens;
- Seed into wheat stubbles of at least 1.5 tonnes per hectare;
- Seed into completely dry soil; and,
- Avoid seeding into non-wetting or heavy/clay soils.

**W**ESTERN Australian grain growers concerned about the risks of dry seeding crops are encouraged to set up an on-farm trial in a paddock where weeds, pests and diseases are under control.

WA No-Tillage Farming Association (WANTFA) executive director David Minkey said initial research had shown that early, dry sowing had the potential to produce higher crop yields and profits.

"Studies supported by the Grains Research and Development Corporation (GRDC) have shown that, overall, dry seeding will give you an advantage in well managed conservation farming systems, especially in dry years," he said.

"Risks include germination of weeds alongside cereal crops, erosion and early sown crops flowering during frosts.

"But these issues can be managed by setting up paddocks correctly and, in most cases, yield advantages outweigh any increases in area frosted."

David said many growers were already dry seeding a bigger proportion of their crops to allow them time to complete bigger cropping programs, regardless of the timing of opening rainfall.

But those growers who were yet to adopt the practice could easily test it on small areas of their farm using existing equipment.

David said wheat was the lowest risk crop to dry sow in medium to low rainfall areas because once it had germinated it was very hard to kill.



**Farmers consider a low weed seed bank is one of the most important factors in successful dry seeding.**

"Also, a key financial risk management strategy is to commit minimal fertiliser inputs for dry sown crops in case they germinate late, reducing yield potential."

David said that in 2011 and 2012, WANTFA surveyed a number of growers who already dry seeded crops.

"They indicated that a low weed seed bank is the most important management strategy when dry sowing, followed by stubble retention and the use of no-tillage farming systems," he said.

"The use of pre-emergent herbicides is known to be a vital aspect of dry sowing wheat.

"Crop residue retention is also integral to success because of the beneficial effects on soil water availability."

David said the surveys conducted by WANTFA and analysis of Planfarm benchmarking data indicated that half of WA's low rainfall growers did some dry seeding and the average area was about 32 per cent of their cropping program.

In medium and high rainfall zones, 43 and 26 per cent respectively of growers surveyed said they carried out some dry sowing and the average amount was 23 and 30 per cent of their cropped area.

## Higher profits

David said most growers surveyed were confident that dry seeding had increased farm profitability over time by boosting crop yields, increasing the sown area and reducing the risks of end-of-season heat stress events.

"The 2011 Planfarm benchmarking data showed a 0.5 tonnes per hectare wheat yield benefit in the low rainfall zone when growers doubled their dry sown area from 10 to 20 per cent," he said.

"When there was more than 150 mm of growing season rainfall, growers in all zones who dry seeded more than 40 per cent of their wheat crop achieved higher overall crop yields than growers wet-sowing crops."

David said a new GRDC funded project, involving WANTFA, CSIRO and the Department of Agriculture and Food (DAFWA), was refining guidelines for successful early sowing, including tips on reducing the risks and increasing profits.

"This project will research which strategies work best for different situations and is expected to give growers the confidence to dry seed more of their crop," he said.



**David Minkey, left, Lauren Celenza and Matthew McNee, all of WANTFA, worked on a GRDC funded dry sowing project in 2011 and 2012.**



# Boosting international wheat sales

**A** NEW wheat quality discovery by a Murdoch University researcher has the potential to add one per cent – or \$50 million – to the \$5 billion wheat market in Australia.

Murdoch's newly-appointed Professor in Grain Protein Chemistry, Wujun Ma, has worked with wheat grains on a genetic level to produce new lines of Australian wheat which are richer in protein and better for bread-making.

Wheat proteins control quality traits such as colour, texture and taste, as well as attributes such as disease resistance and climate adaptability.

"It will make our wheat more competitive with grain in the Chinese market where Australian wheat is often viewed negatively," said Professor Rudi Appels, chair of the Australia-China Centre for Wheat Improvement.

"Our environment of long, hot summers affects protein levels in wheat grains which in turn impacts bread quality. Professor Ma's new wheat lines have significantly increased the functional protein component in wheat grain, making the baking quality of low protein Australian wheat comparable with the high protein American wheats.

"This is a significant gain and will open up new international markets for an industry which exports 80 per cent of what it produces."

Rudi said the work could also help wheat-producing countries with warming climates to maintain all-important protein levels.

## Breakthrough came in Italy

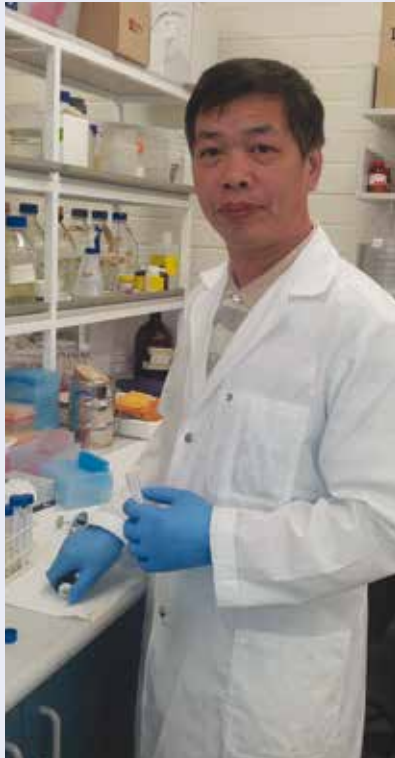
The breakthrough came when Professor Ma and his team identified a wheat variety in Italy which had beneficial genetic characteristics not seen in Australian varieties before.

Professor Ma was able to introduce these characteristics into Australian varieties and his research group is planting an entirely new wheat type for release to breeders programs this year.

Extensive testing and refinement of the wheat lines will follow in the coming years to ensure the wheat lines have the ability to tolerate periods of drought and frost.

Professor Ma's research colleague Hollie Webster is investigating the complex genetic regulatory mechanisms underpinning drought tolerance in wheat.

A comprehensive range of quality testing plus large scale field



**Professor Wujun Ma's discovery has led to new wheat lines with significantly increased functional grain protein. This has the potential of making the baking quality of low protein Australian wheat comparable with the high protein American lines.**

trials are required before the new wheat lines can be used by growers.

The ongoing research has been funded by the GRDC over the past nine years in conjunction with the Australian Export Grain Innovation Centre and the Department of Food and Agriculture Western Australia. Investments complementing this input have been made by Murdoch University. ■

## Elevated barley disease risk

**G**RAIN growers in Western Australia's southern cropping regions are advised that there is a heightened risk of foliar fungal diseases infecting barley crops this season.

Department of Agriculture and Food (DAFWA) researcher Kith Jayasena said DAFWA spore trapping work supported by the GRDC had detected spores in mid-May of leaf rust, net blotch, spot blotch/root rot, scald and powdery mildew.

"Despite a very dry summer and early autumn, the spore trap results and disease findings on crop regrowth are an early warning sign that these diseases are likely to infect 2014 barley crops in the southern grainbelt," he said.

"Past observations in this region have shown that crop disease symptoms can appear in crops two to six weeks after spores are found in traps."

Kith said the spore traps were located at South Stirling in the lower Great Southern region but other areas of the grainbelt, particularly higher rainfall areas, might also have a heightened disease risk.

"I encourage growers to monitor the early development of crops for leaf disease symptoms and to consider using a registered foliar fungicide if the variety is susceptible to the diseases found," he said.

"A second spray may be necessary. Whenever possible, rotate fungicides with different actives to reduce the development of fungicide resistant pathogen populations."

Kith said avoiding seeding barley on barley; choosing varieties with good disease resistance; using registered seed dressings or in-furrow fungicides; and avoiding a high seeding rate were seeding strategies that could help minimise the risks.

Growers who had completed seeding programs could reduce the risk of crop losses by:

- Destroying barley volunteers in non-cropping paddocks, laneways, crop boundaries and fencelines;
- Avoiding high nitrogen rates early in the season which can generate a bigger crop canopy, favourable to disease development;
- Applying potassium fertiliser to crops deficient in the nutrient six to eight weeks after crop emergence; and,
- Using foliar fungicides. A list of registered products is available by searching 'registered foliar fungicides' on the DAFWA website [www.agric.wa.gov.au](http://www.agric.wa.gov.au).

Kith said GRDC supported spore trap experiments were underway which aimed to finetune recommendations to growers about the optimum timing for foliar fungicide application in any given season.

Information about identifying and managing foliar diseases is available at [www.agric.wa.gov.au/cropdisease](http://www.agric.wa.gov.au/cropdisease) ■

# Chemical rotation beats radish challenge in Lower North

**A** CQUIRING additional land can often throw up the odd new challenge for farmers and so it has proved for Lower North (South Australia) grain grower Mark Branson. Mark and his wife, Nola, and parents, Deane and Jennifer, operate the 1200-hectare 'Branson Farms' property near Stockport and purchased another property at Giles Corner, near Riverton, in 2005.

Weed management is an ongoing challenge for many farmers, but controlling resistant weeds requires further strategy and is something the Bransons have had to contend with in a paddock at Giles Corner.

"A long history of Group B (herbicides) used by the previous owners has brought on herbicide resistant wild radish in 30 hectares of a 400 hectare paddock," Mark said.

"When a neighbour starts to spray out areas in a wheat crop with Roundup, you know it's starting to become difficult to kill."

Bifora, which he said was a harsh, spreading weed similar to fumitory, was another concern in the paddock.

While his previous broadleaf weed control approach comprised a winter kill with Tigrex or Paragon followed by 2,4-D amine herbicides, Mark said a decision to apply Velocity as a different herbicide group (Groups H and C) with improved crop safety was the key to more effective control.

"We need to rotate chemicals to protect the Group I chemistry," he said.

Velocity post-emergent herbicide from Bayer is based on the novel active ingredient, pyrasulfotole, and also includes bromoxynil and the company's crop safener, mefenpyr-diethyl. The pyrasulfotole interrupts several biological processes crucial to weed growth, while the bromoxynil, which acts primarily as a contact foliar herbicide with virtually no soil residual activity, further disrupts the photosynthetic process, resulting in a unique action against weeds.

The Bransons applied Velocity at 670 mL per hectare in the paddock, which was sown to Flinders barley.

Mark said wet conditions delayed their spraying and unfortunately meant they had to tackle larger radish plants, but he said the Velocity "did a very good job".

"It got it, which was very good. We had a good outcome."

Due to the excellent compatibility of Velocity with other chemicals, the family also applied it in a mix with 450 mL per hectare of MCPA LVE, 250 mL per hectare of propiconazole fungicide and with one per cent Hasten spray adjuvant.

To achieve a medium spray droplet for good coverage in the Flinders barley, they increased the water rate through their mini drift nozzles to 120 L per hectare.

## Broadspectrum mix

"The compatibility was excellent and the broadspectrum mix picked up the radish, bifora, bedstraw and variegated thistle," Mark said.

Peter Wendt, Agronomy Adviser with the local Farmer Johns store at Nuriootpa, said bifora was just as concerning as radish for growers throughout the region and the opportunity to safely target it with Velocity from the two-leaf crop growth stage was extremely important.

"There is nil tolerance for bifora seed in harvested grain," Peter said.

"In the past, Affinity plus MCPA has been widely used from the three-leaf stage, but due to the lack of tank mix options with fungicides and insecticides, we are now going with Velocity for its flexibility with fungicides and insecticides."

Mark said they were aiming to achieve nil weed seedset.

He said Velocity was a significant cost, but its application was important to help them rotate to another herbicide group, achieve 100 per cent control and spray earlier with good crop safety.

"You also get a yield benefit that far outweighs the cost of the treatment."

Mark said they have had to target resistant radish patches in some of their faba bean crops as well.

Located in a 425 to 550 mm average annual rainfall zone, the family's full cropping program includes bread and durum wheat, malting and feed barley, canola, faba beans and field peas.

They also run a self-replacing, fine wool Merino flock and cross older ewes to Poll Dorset terminal sires for prime lamb production. ■



Peter Wendt, Agronomy Adviser with Farmer Johns at Nuriootpa, Stockport grower Mark Branson and Graham Hatcher, Bayer, pictured discussing some of the weed management concerns facing growers in the Lower North.





## THE RESEARCH VIEW

# Nematode management critical to preserving wheat yields

### AT A GLANCE...

- Nematode populations following the summer crop rotation hold important implications for wheat variety selection and yield performance.
- Root-lesion nematodes are present in approximately 70 per cent of fields in the northern grain belt and can slash yields by up to 50 per cent in wheat and 20 per cent in chickpeas.
- All major winter crops – wheat, barley and chickpeas – are susceptible to the root-lesion nematode species *Pratylenchus thornei* and encourage the proliferation of nematode populations.
- Growers are urged to conduct soil testing for nematodes, particularly if a susceptible crop was grown in the 2013–14 summer season.

**G**ROWING a tolerant wheat variety in paddocks harbouring high populations of root-lesion nematodes is critical if growers are to avoid devastating yield losses of up to 50 per cent.

Recent trials supported by the Grains Research and Development (GRDC) and conducted by the Department of Agriculture, Fisheries and Forestry (DAFF) found that management of nematode populations through the summer crop rotation held important implications for the performance of a following wheat crop.

In presenting the trial data at the recent GRDC Northern Research Update at Goondiwindi, DAFF soil microbiologist Dr Kirsty Owen said it was critical that tolerant rather than intolerant wheat varieties were grown when the root-lesion nematode species *Pratylenchus thornei* was present at damaging levels.

"If intolerant wheat varieties are grown, growers risk a yield reduction of up to 50 per cent," Kirsty said.

"The research found that growing one resistant crop, such as sorghum, maize or sunflower did not provide a quick fix in a field that started with damaging levels of 2500 *P. thornei* per kg of soil.

"Populations of *P. thornei* did not fall below damaging levels and the next intolerant wheat lost 44–51 per cent in yield compared to a tolerant wheat variety."

While *P. thornei* did not die out completely even after five successive resistant crops, Kirsty said a significant reduction in nematode populations was possible by growing several resistant crops.

## Consultants' Corner

Consultants' Corner is an initiative by *Australian Grain* highlighting current GRDC-funded research with a particular focus on the commercial implications of adopting cutting-edge research.

## WESTFIELD

**Augers Australia Pty Ltd**

*The name you've grown to trust*



### WESTFIELD

- Available in 4, 8, 10, 13 & 16 inch diameters.
- Lengths from 26 to 125 feet.
- PTO, engine or electric drives.
- Capacity to 630 tonne per hr.



### CONVEY-ALL INDUSTRIES INC.

- Long lasting, fast & gentle.
- Lengths from 20 to 120 feet.
- PTO, engine or electric drives.
- Drive over conveyors.
- Capacity to 450 tonne per hr.

Westfield Augers Australia Pty Ltd. is the exclusive distributor of Westfield and Convey-All in Australia and specialises in high quality, long-lasting equipment that saves you time and money in the long run.

**Free Call 1800 635 199** [www.westfieldaugers.com.au/ac](http://www.westfieldaugers.com.au/ac)



Department of Agriculture, Fisheries and Forestry (DAFF)  
soil microbiologist Dr Kirsty Owen.

But she urged growers to conduct soil testing for nematodes, particularly if a susceptible crop such as mungbean or soybean was grown, as monitoring was essential to the on-going management of crop and variety selection.

The summer crop rotation trials consisted of two trials planted

in adjacent fields in December 2011. The first field had low *P. thornei* populations (less than 125 per kg of soil) with a cropping history of five resistant crops since 2004 – cotton, maize and sorghum – while the second field had moderate *P. thornei* populations (2500 per kg soil) and a cropping history of wheat, sorghum, wheat.

Several cultivars of mungbean, soybean, sunflower, maize and sorghum were planted in each field in a replicated design with sufficient plots to plant wheat varieties EGA Wylie (tolerant) and Strzelecki (intolerant) in 2013. An unplanted bare fallow treatment was also included in the trial.

After harvest of the summer crops, nematode populations were recorded to 120 cm soil depth.

At the moderate *P. thornei* site, nematodes were found to 90 cm soil depth and populations were greatest at 0–15 cm soil depth.

Populations of *P. thornei* after growing sorghum, sunflower and maize were similar to bare fallow (range of 2900–4500 per kg soil at 0–15 cm) and there were no significant differences between varieties within each of these crop species.

In contrast, populations of *P. thornei* increased after growing mungbean or soybean compared to sunflower, sorghum, maize or clean fallow and there were significant differences between the soybean and mungbean varieties.

At the low *P. thornei* site, nematodes were detected to 60 cm soil depth and below that depth populations were extremely low or zero.

There were no significant differences in *P. thornei* populations among the different summer crops and varieties and while overall, populations increased five times compared to pre-summer plant populations, they remained low at below 250 per kg soil.

Importantly, Kirsty said there were no differences in biomass or grain yield of the summer crops between the low and moderate *P. thornei* sites and as the summer crops grown were tolerant to *P. thornei*, no yield loss was suffered.

In terms of the impact on the following wheat crop, the site that started with moderate *P. thornei* populations saw a yield reduction on the intolerant wheat variety Strzelecki of 49 per cent compared to the tolerant wheat variety EGA Wylie (1.9

the  gate

A new service providing a path to ...

farm group research

farm labour

farm group tours



The **LABOUR PLACEMENT** division of The-Gate is essentially a service introducing Australian farmers needing short-term skilled labour, to keen and experienced young workers with farming backgrounds.

And The-Gate has a pool of skilled international farm workers with header and other large machinery experience

**AVAILABLE NOW.**

So to get the ball rolling on solving your short-term labour needs,  
go to [www.the-gate.com.au](http://www.the-gate.com.au) and register (for free) on The-Gate's database or  
contact Catherine on 0408 717 459

[www.the-gate.com.au](http://www.the-gate.com.au)

the  gate



tonnes per hectare after Strzelecki compared to 3.7 tonnes per hectare after EGA Wylie).

In contrast, at the site that started with low *P. thornei* populations there was only a 4 per cent difference in yield between Strzelecki and EGA Wylie (3.6 and 3.7 tonnes per hectare respectively). The yield of cv. Strzelecki increased 47 per cent, or 1.7 tonnes per hectare, at the low *P. thornei* site compared to the moderate *P. thornei* site.

"Yield of Strzelecki was lowest following soybean (1.6 tonnes per hectare) and greatest following maize and sunflower (2.1 tonnes per hectare)," Kirsty said.

"An unexpected result was that there were no significant differences in yield of Strzelecki after fallow, sorghum and mungbean.

"This result may be partly due to dry conditions during the 2011–12 summer and following a winter season which limited

nematode multiplication, particularly after the susceptible mungbean crop.

"Additionally and importantly, the results support the theory that one resistant crop in sequence was not enough to sufficiently reduce populations of *P. thornei*."

Nevertheless, Kirsty said the trial results had found a strong negative relationship between populations of *P. thornei* after the summer crops and yield of the following intolerant wheat Strzelecki.

In contrast, there was no relationship between populations of *P. thornei* and yield of the tolerant wheat EGA Wylie which Kirsty said was expected due to the good *P. thornei* tolerance of EGA Wylie.

At the low *P. thornei* site, there was no relationship between yields of the tolerant and intolerant wheat and populations of *P. thornei* after growing the summer crops. Populations were below the damage threshold for wheat Strzelecki. ■

## THE COMMERCIAL VIEW

### REAP YIELD BENEFITS THROUGH NEMATODE MANAGEMENT

■ By Paul Castor, senior agronomist MCA, Toowoomba

If grain growers in the northern region are not already convinced about the presence and impact of root lesion nematodes (RLN) on crop production they should attend the next nematode field day.

The impact of nematode activity on crop yields can be difficult to assess visually. Their impact is definitely less striking than a field full of whiteheads which can be the result of unmanaged crown rot inoculum.

In trial situations where you have tolerant and intolerant varieties growing side by side, the impact of RLN becomes far more obvious.

Recent GRDC funded research activities conducted by DAFF and Northern Grower Alliance (NGA) has shown that the impact of RLN on yields of winter crops including wheat, barley and chickpeas can be even more significant than the impacts of crown rot on wheat yields.

If growers do not recognise that they have an issue with RLN on their farms they are unlikely to implement appropriate management programs and production losses will accumulate.

At low to moderate levels of RLN, their relatively minor impacts can be attributed by unsuspecting growers to other causes such as dry conditions or nutritional deficiencies.

But as numbers of RLN can rapidly explode under inappropriate management programs, growers can be unwittingly exposing their intolerant crops to very high levels. It is under these regimes that recent research has shown up to 50 per cent loss in grain yield.

#### Tailored programs

At MCA we have been monitoring RLN numbers on behalf of our grower clients since the late 1990s and have used the data to help design appropriately tailored management programs.

In fields where the presence of RLN has been confirmed we have promoted the use of varieties with some tolerance and resistance. We have also altered the recommended rotation to help in managing their numbers.

Our monitoring has shown that there are still a reasonable percentage of fields in the region that do not have any RLN issues.

This presents an opportunity for those growers to continue



Paul Castor.

with their current cropping programs without major concerns to RLN management practices.

But the majority of fields monitored do have RLN at various levels. For these growers, this information provides an opportunity to tap into some production that had been otherwise lost due to unmanaged RLN.

*Pratylenchus thornei* has definitely been the dominant RLN species in

our operational region. But we have noticed more recently that the number of fields which also have *pratylenchus neglectus* has increased significantly.

Our monitoring over time has shown that to bring *P. thornei* numbers down significantly, several resistant crops (in our cases predominantly sorghum) need to be grown consecutively.

The practice of double cropping of chickpeas into sorghum has been shown to negate the *P. thornei* benefit of sorghum in the rotation. Also the use of very susceptible wheat varieties such as Strzelecki has proven to lead to a rapid escalation in RLN (*P. thornei*) numbers.

But we have also shown that the presence of RLN is not a death sentence. With the adoption of appropriate management practices their impacts can be minimised.

The saying "you can't manage what you don't measure" definitely applies to RLN as the early impacts can be relatively subtle and we would encourage all grain growers to have background RLN data on their fields and to monitor numbers over time. This is now most conveniently achieved by submitting soil samples to SARDI for PreDicta B testing.

Contact Paul Castor, MCA senior agronomist, Toowoomba  
0427 712 003, E: paulcastor@mcagoondi.com.au

# Psst! Want to improve plants? Whisper to their genes

ONE of the world's leading discovery researchers has moved to Queensland University of Technology (QUT) to work with the university's plant genetic scientists to help solve one of the most baffling problems facing the genetic improvement of food plants.

Professor Peter Waterhouse is a molecular whisperer, recognised internationally for his research into gene silencing and plant viruses. He and his small team of scientists discovered how to trigger a naturally occurring pathway in plants that fights viruses and switches off genes.

"There is valuable work being conducted at QUT and at other key institutions around the world with the aim of transferring beneficial nutrients and other characteristics to staple food crops such as bananas, chickpeas and other pulses, rice and maize," he said.

"But a real problem is that the newly introduced genes often get switched off by the plant. Somehow the plant knows the difference between 'self' and 'non-self'.

"If we can provide the new genes with 'certificates of authenticity' so that the plant accepts them as 'self', we will not

only reduce the time it takes to successfully improve an array of staple crops but also have confidence that the new genes are operating at their maximum efficiency and in harmony with the rest of the plant.

"If we can work gently with the plant's genes to have them accept the new modification we will be able to drastically reduce the time it takes to successfully improve an array of staple crops essential to world food security.

"Knowing the keys that start and direct the pathway, and the enzymes that power it, we aim to persuade plants to embrace the genes we introduce for beneficial modification," Peter said.

Peter has taken up a position at QUT's Centre for Tropical Plants and Biocommodities where significant work is being undertaken to develop hardier, more drought tolerant varieties of tropical pulses such as chickpeas and mungbean as well as rice.

## Enriching staples

The centre's flagship research is the Bill and Melinda Gates Foundation funded cooking banana project led by Centre director Distinguished Professor James Dale.

A staple crop throughout many east and west African nations, cooking bananas and plantains are great sources of starch but lack other vital micronutrients but James and his team have found ways to enrich the fruits with pro-vitamin A, and soon, iron.

Each year up to 670,000 children die and a further 300,000 suffer blindness from vitamin A deficiency. But with the data from human trials in the US set for release mid-year, the project will reach a major milestone and over the next three years an elite line of banana plants will be selected from field trials in Uganda.

The quality of the research is such that the government of India is now partnering with James to develop iron-enriched bananas to provide better nutrition to poor, vegetarian communities and also help stem the number of women hemorrhaging to death in childbirth as a result of iron deficiency.

James said Peter's research potentially meant genetic scientists would be able to take their nutrient-enriched or drought-tolerant crops to those who needed them, much sooner than is currently the case.

"Our research will make a real difference to people in some of the poorest nations in the world and the sooner we can get it to them the better," James said.

Peter said that this research has applications and insights for medical science as all living things have the silencing pathways in their cells. Another spin-off from the research is the ability to vaccinate plants against newly emerging viruses before they spread widely to threaten food security.

Educated at the universities of Newcastle upon Tyne, Cambridge and Dundee in the United Kingdom, Peter was elected a fellow to the Australian Academy of Science in 2009 and comes to QUT from the University of Sydney where he was a Federation Fellow. He has been a chief research scientist at CSIRO and has won a string of prestigious scientific research awards including:

- 2007 Prime Minister's Prize for Science (with Dr Ming Bo);
- 2007 Winner of The Bulletin's Smartest Scientists in Australia;
- 2005 CSIRO Chairman's Medal;
- 2003 IMTC-ISI/Thomson Most Highly Cited in Field Award; and,
- 2002 Victor Chang Medal.



Gene whisperer – Professor Peter Waterhouse.



# Recent advance may speed development of Phomopsis-resistant soybeans

■ By Jan Suszkiw, Agricultural Research Service – USDA

**S**OYBEANS have been called the “wonder crop” for all the products that can be made from the versatile legume – including cooking oil, tofu, livestock feed, and biodiesel, to name just a few. But one of the world’s largest field crops is no match against *Phomopsis longicolla*, a seed rot fungus costing growers income through reduced yields and higher fungicide costs.

Applying fungicides, rotating soybeans with nonhost crops, and tilling the soil are among strategies used by growers around the world (including Australia) to prevent *P. longicolla* from causing Phomopsis seed decay (PSD), a disease which degrades the seed and reduces the quality of the protein and oil constituents.

“Breeding for resistance to PSD is the most effective long-term strategy,” notes Shuxian Li, a plant pathologist in the Agricultural Research Service’s USDA Crop Genetics Research Unit in Stoneville, Mississippi.

As part of a Phomopsis resistance program there, Li has sought to learn more about how the fungus inflicts harm at the cellular level. Towards that end, she and colleagues enlisted the aid of *Agrobacterium tumefaciens*, a soil bacterium commonly used in genetic engineering procedures to endow plants with new traits.

In this instance, the team used the bacterium to “shuttle” genes for an antibiotic marker and green fluorescent protein (GFP) into the nuclei of the fungus’s cells. This resulted in new *P. longicolla* strains that produce the protein and emit a green glow when exposed to light in the blue-to-ultraviolet range.

“Green fluorescent protein is amazingly useful in scientific research, because it allows researchers to look directly into the inner workings of cells,” says Shuxian, who collaborated with Burton Bluhm and others at the University of Arkansas in Fayetteville. “Using this transformation method, we can monitor how the fungus infects plants.”

The researchers compared the characteristics of seven GFP-modified strains to an unmodified “parent” isolate, and they confirmed the presence of the protein by using a molecular test



**Healthy soybean seeds (left) and seeds infected by *P. longicolla*.** (Photo: Crop Genetic Research Unit)

method called “Southern blot analysis” and by direct observation with a confocal laser scanning microscope.

A paper published in the March 2013 issue of the *Journal of Microbiological Methods* describes their research in detail.

Shuxian plans on inoculating soybean seedlings with the modified strains to study how the infection process unfolds within the tissues of both resistant and susceptible soybean germplasm lines. She expects use of the GFP-expressing strains will also help to identify sources of PSD resistance that may escape detection using conventional disease-screening methods, such as field observation or visual assessment of seed on culture medium in the laboratory.

With the recent sequencing of *P. longicolla*’s entire genomic code, use of the transformed strains will allow researchers to probe the function of specific genes for virulence directly in soybean plants, potentially unlocking new clues to protecting this important crop. Use of the soybeans with GFP, however, will be limited to scientific research.

**Shuxian Li is in the USDA-ARS Crop Genetics Research Unit, 141 Experiment Station Rd., Stoneville, MS 38776; Ph: +1 (662) 686-3061.** ■



**Using a fluorescence microscope, plant pathologist Shuxian Li observes the pathogen *Phomopsis longicolla* that causes Phomopsis seed decay of soybean.** (Photo: Crop Genetic Research Unit)

# Know more and grow more with GrowNotes

■ By GRDC Northern Region Panellist Keith Harris

**N**ORTHERN region growers were recently handed an exceptional new tool to assist in operational decision-making and I urge growers to utilise it for improving overall farm management and profitability.

The launch of the Grains Research and Development Corporation (GRDC) GrowNotes for wheat, barley and durum at the GRDC Advisor Research Update at Goondiwindi represents a new era for the Australian grains industry, offering on-the-spot access to a wealth of crop-specific research and agronomic information.

These first three modules are effectively pilot projects with the remaining leviathan crops being rolled out over the next year.

The GrowNotes provide an overview of each crop, information on a range of farm best practice, results of northern region trials, best-practice recommendations and links to additional research and trial information for further study.

## On-line flip-books

Presented as a set of online flip-books, the GrowNotes are dynamic documents that will be regularly updated as new research and agronomic information come to light and growers and agronomists provide feedback.

This is the first time that such a comprehensive range of information has been so readily accessible to growers and they will play a vital role in helping improve crop management and farm profitability.

As with any new initiative, feedback is important to ensure that the GrowNotes remain as user-friendly, informative and relevant as possible and I urge all growers to take the time to view the wheat, barley and durum modules at [www.grdc.com.au/grownotes](http://www.grdc.com.au/grownotes).

## Feedback button

There's a feedback button on every page that sends your comments, good or bad, directly back to GRDC.

The GRDC has been actively investing in grains research, development and extension for more than 20 years and over that time has generated a mass of information from research data and findings, most of which remains relevant.

This has been traditionally communicated to industry via media and annual GRDC events like the grower and advisor Updates and while these remain fundamental communication channels, the digital age has provided us with new technologies like digital publishing and mobile applications which enables GRDC to communicate important research information more often and more effectively.



**Keith Harris, GRDC Northern Region panellist, Quirindi.**

# Corn production should double by 2020

**C**ORN production should double by 2020 if Australia taps into export markets and domestic business is managed efficiently, according to the Maize Association of Australia.

This, and other big plans for the industry were revealed at a MAA industry meeting in Toowoomba, where a crowd of about 80 growers, marketers, researchers and seed company staff met to discuss issues and hear from keynote speakers.

MAA President Harley Bligh said the association developed a strategic plan at last year's AGM and doubling corn output was the top priority.

"In our strategic plan we state by 2020, the Maize Association of Australia will have led growth of Australian maize from 630,000 tonnes to a million tonnes," he said.

Harley said to achieve this substantial growth rate, Australia must use its desirable non-GMO status to tap into the growing north Asian market.

"I believe that with the free trade agreements that have been signed recently, there is a great interest in our production of Australian non-GMO corn.

"I've been involved with the push into north Asia for quite a few years now which culminated in my invitation to join a grains mission to South Korea," Harley said.

He has also been involved in discussions with another group in Japan wanting to do something along the same lines.

Harley said weather, price and competing crops will be the major roadblocks to achieving export goals.

"In developing this market there will be challenges, for example with the drought we had last year in Queensland, production was well down.

"I think we've got to realise as farmers, we're all farming water, whether dryland or irrigated.

"Also the price of cotton will be an issue for corn production as will the AUD and the US dollar exchange rate," he said.

Harley said while South Korea and Japan are the big growth spots, it is essential that Australia maintains and enhances its domestic market.

He said there is scope to expand sales in the domestic market through grain and silage to the dairy industry.

"I think there's a big increase in demand for both corn and grain silage in the dairy industry in Victoria and also in Tasmania that we should be aware of."

Harley also said strong yields being achieved down south provided the opportunity to extend that successful agronomy to the rest of the industry.



**MAA President Harley Bligh is confident Australia can lift its corn production to one million tonnes by 2020.**



# Moree takes out 1 million drumMUSTER milestone

**M**OREE Plains Shire Council has become the first local government in Australia to collect one million drums through rural recycling program, drumMUSTER.

Farmers, council workers and community volunteers were recognised as part of the celebration of the council's milestone.

The program first started in Moree in February 2000, collecting drums that had been used by the local aerial spraying operators.

By the end of 2000, the shire signed drumMUSTER's collection agency agreement to bring the program to the rest of the local farming community.

The council run eight sites across the region for farmers and other chemical users to dispose of their empty agvet chemical containers. Another three are run by private organisations.

The council's local drumMUSTER Coordinator, Trevor Annis-Brown has been involved with the program since early 2004 and has relied on his diverse knowledge and contacts with the farming community to make sure the program runs smoothly.

AgStewardship Australia CEO Stephen Richards presented Trevor with an award for his 10 years of service with the program at the Moree Show. Trevor said he enjoys the job and hopes to see the program continue to flourish in the region.

"I like talking to the growers and they are doing a really good job," he said. "Some are really passionate and deliver their drums every year. Some even deliver them every six months."

An award of recognition was presented to the council's waste management team for their hard work towards the milestone.

Moree Plains Shire Council Group Manager Waste and Water, David Wolfenden said he's proud of his team and local farmers for contributing to the effort.

"It's a big achievement and we're very pleased about it," he

said. "Our commitment will be to continue to work towards reducing the amount of waste that ends up in landfill."

## Local awards

drumMUSTER also recognised local farmer Patrick Downes from Gurley who returned the one millionth drum.

Patrick runs a long established family farming property, *Ogilvie* west of Gurley and is a long term and regular user of the program.

He was awarded a \$250 voucher for his local agvet chemical retailer.

An award was also granted to President of the Gurley Tennis Club, Philpa Hamilton who organises drumMUSTER collections to raise funds.

The club has raised more than \$15,000 over the past 10 years. Philpa said the funds help pay association fees and public liability insurance.

The final award of the day was granted to Moree Plains Shire Councillor, John Tramby for his contribution to the program.

John was instrumental in developing the drumMUSTER program for the region when he was Mayor of Moree from 2004-07.

He said other rural industries should be replicating the drumMUSTER program.

"More industries should be following the drumMUSTER system and finding ways to get rid of the waste they create," he said.

Since 1999, drumMUSTER has collected more than 23 million drums nation-wide. That represents more than 28,000 tonnes of waste avoiding landfill. Once collected, the waste is recycled into new and useful things again like plastic cable covers, wheelie bins and pipes.



Moree Plains Shire Council Group Manager Waste and Water, David Wolfenden, and council Waste Officer, Tahra Sayers.

# Recognition for young researcher searching for pulse breakthroughs

**A** YOUNG plant molecular biologist has received national recognition for his research which has the potential to improve production in food crops not only in Australia but in developing countries around the world.

Jonathan Plett from the University of Western Sydney has been honoured in the 2014 *Science and Innovation Awards for Young People in Agriculture*. The science awards recognise big ideas from young rural innovators who contribute to the success of Australia's agriculture sector.

Jonathan was named the recipient of the Grains Research and Development Corporation (GRDC) Award for his research into whether chickpea plants bred to be disease-resistant are also able to take advantage of beneficial microbes in the soil.

His project focuses on disease resistance to two chickpea pathogens, *Phytophthora* and *Ascochyta* blight, which together are responsible for \$13 million in lost productivity and \$43.8 million spent on disease control each year.

Jonathan says he is looking for a set of specific genes that allow crops to be resistant to these common diseases but still form beneficial relationships with soil microbes.

"A lot of great research has gone into breeding new crops that are resistant to diseases. But these crops are also very dependent on soil microbes. Bacteria and fungi in the soil help crops grow by giving them nutrients."



**GRDC Managing Director John Harvey (left) presents Jonathan Plett from the University of Western Sydney with his GRDC-sponsored 2014 *Science and Innovation Award for Young People in Agriculture*. (Photo: Steve Keough Photography)**

Jonathan said he was 'stoked' about the project and the chance to undertake research likely to have an impact on people's everyday lives.

"You name it – all crops that we depend on for our food are attacked by diseases but also interact with beneficial microbes in the soil," he said.

Jonathan hopes that his work could be broadened to include other agricultural crops such as wheat and potatoes in the future.

GRDC Managing Director John Harvey said Jonathan was a deserving recipient of the award.

"The GRDC, on behalf of growers and the Australian Government, is very supportive of any research efforts that have the potential to combat costly crop diseases and improve productivity," John Harvey said.

"Another important focus of the GRDC is building research skills and capacity in the grains industry, so it is very encouraging to have someone as young and enthusiastic as Jonathan setting a great example for other aspiring researchers and scientists."

Supported by the GRDC and other rural industry partners, the *Science and Innovation Awards for Young People in Agriculture* provide assistance to 18 to 35-year-olds to undertake a project on an emerging scientific issue or innovative activity over the next 12 months.

The awards aim to encourage science, innovation and technology in rural industries and help to advance the careers of young scientists and innovators through national recognition of their research ideas.

More information about the awards is available via [www.daff.gov.au/scienceawards](http://www.daff.gov.au/scienceawards)



## At Dinner Plain the pace is easy going...

Dinner Plain is the place where the family can be together by the fireside or miles apart exploring the cross-country trail network. Where you stroll the treelined streets simply for the sights or to meet friends for a restaurant dinner or drinks at the bar. The village itself helps set the community atmosphere, natural building materials and earthy tones blur the line between man made and alpine environment. Over 200 lodges and chalets with all the conveniences of a modern resort.

**Dinner Plain is the place for your next holiday.**

Explore our website at [www.dinnerplain.com](http://www.dinnerplain.com) or call our info number **1300 734 365** or email to [info@dinnerplain.com](mailto:info@dinnerplain.com)

 **Dinner Plain**  
Visitor Information Centre



# Risk premium coming out of wheat prices

**W**E wrote recently about how the market is forward looking and how markets often price in a risk premium before all risk factors are known or quantifiable, and as such can cause markets to become overbought.

When the US winter crop emerges from dormancy the traditional US weather market begins and this year, as seen in many previous years, it provided good levels of market volatility. Of course the Russian and Ukrainian situation also contributed.

Traders remain focussed on the 7–14 day weather forecast and how it will impact the weekly crop condition ratings of winter wheat which is currently heading, and the planting of spring wheat, corn and soybean crops. These forecasts have been supportive up until the last two weeks but now the weather has turned wetter for the dry Southern Plains and drier/warmer for the wet Northern Plains. Hence a large chunk of the speculative risk premium has come out of the market.

Reports are the winter wheat harvest has begun in small pockets of Central Texas and Oklahoma. As the harvest gets underway and yields become a known rather than a guesstimate, the market will begin to trade more from a fundamental standpoint rather than a speculative or 'what-if' scenario. This could potentially be bullish or bearish on the market depending on whether these yields surprise to the downside or upside.



May 28, 2014

## Achieving price certainty

If you are going to be a seller in the forward market, we prefer fixed or floor pricing products to achieve price certainty. This is because, when you make forward sales you effectively

commit to producing grain, thus increasing your production risk.

We feel that if you are increasing one major risk in your business, you should be reducing another major risk – in this case – price risk.

We used floor products effectively in the post harvest market by selling APW (or better) grades for cash at the end of January and simultaneously buying a 'call' option in CBOT wheat futures. Rather than carrying grain through to the later post harvest market, and paying carry costs along the way as well as the risk that values could fall, we were able to lock in strong domestic values whilst maintaining an exposure to CBOT if the market were to rally.

## Floor products for the forward market

In the forward market the strategy is to buy a 'put' option, on CBOT wheat futures as an alternative to selling swaps or a forward APW Multigrade. A put option provides us the right but not the

## CBOT wheat forward market



A lack of fresh bullish news, the onset of the northern hemisphere harvest and profit taking from the long speculative positions has corrected the market to the downside.

## AT A GLANCE...

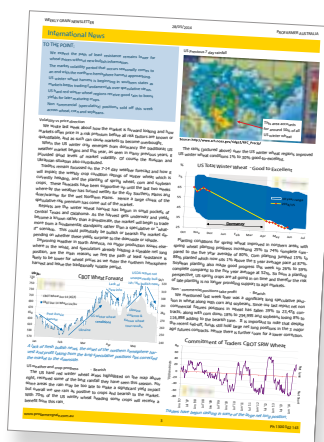
- The market volatility period that occurs seasonally comes to an end with the northern hemisphere harvest approaching.
- US winter wheat harvest is beginning in southern states as markets begin trading fundamentals over speculative views.
- US hard red winter wheat regions receive good rain to boost yields for later maturing crops.

Phone 1300 302 143



Profarmer Australia is a specialist team of independent market analysts with an extensive data set to back-up their expertise

**Profarmer Australia's range of products is designed to help you turn production into income**



✓ **Morning Grain Report:**  
An expectation of today's price moves.

✓ **Grain Strategy Newsletter:** What, when and how to sell.

✓ **Grain Pool Report:**  
What is the pool mandate and is it delivering?

For a free copy of Profarmer visit  
<http://bit.ly/pfsamples>

**TABLE 1: Dec 2014 CBOT wheat 'put' options**

At 27/05/14 A\$/US\$ = 0.9109

At 27/05/14 Dec14 CBOT wheat = 682 US c/bu

| Strike Price |       | Premium Implied |       | Floor Price |       |
|--------------|-------|-----------------|-------|-------------|-------|
| US c/bu      | A\$/t | US c/bu         | A\$/t | US c/bu     | A\$/t |
| 640          | \$258 | 27.5            | \$11  | 612.5       | \$247 |
| 650          | \$262 | 31.6            | \$13  | 618.4       | \$249 |
| 660          | \$266 | 36.1            | \$15  | 623.9       | \$251 |
| 670          | \$270 | 40.9            | \$16  | 629.1       | \$254 |
| 680          | \$274 | 46.0            | \$19  | 634.0       | \$255 |
| 690          | \$278 | 51.6            | \$21  | 638.4       | \$257 |
| 700          | \$282 | 57.4            | \$23  | 642.6       | \$259 |
| 710          | \$286 | 63.6            | \$26  | 646.4       | \$260 |
| 720          | \$290 | 70.1            | \$28  | 649.9       | \$262 |
| 730          | \$294 | 76.8            | \$31  | 653.3       | \$263 |
| 740          | \$299 | 83.9            | \$34  | 656.1       | \$265 |
| 750          | \$303 | 91.3            | \$37  | 658.8       | \$266 |
| 760          | \$307 | 98.8            | \$40  | 661.3       | \$267 |

obligation to sell CBOT futures at a predetermined value (the strike price) before a specified date in the future.

If the market falls below the strike price our option value will increase, we then sell the option and offset the profit against any deterioration in the cash market. If the market rallies our option value falls towards zero, and we pick up any gains in the market when we sell our physical grain.

### Pros and cons of floor products

The main inhibitor to using floor products is the cost. Current at-the-money Dec14 put options are trading at about A\$19 per tonne (Table 1). But it is important to note, the option itself is an asset which will sit on your balance sheet. If the market falls the option asset should appreciate to offset the falls in the cash market. If the market rallies the asset value will deteriorate but the value of your grain should increase.

Hence you have achieved a worst case price scenario for the grain you have covered by the option. The more you pay, the higher the floor price that can be achieved. But there is also less upside potential if the market rallies.

### How to access an options strategy

There are three main avenues to access an options strategy:

- Through futures in your own account.
- Through some over-the-counter bank products.
- Some pre-harvest pool products.

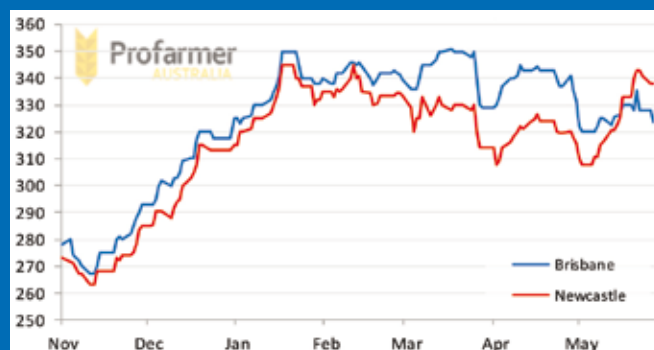
The three avenues can give you access to a similar strategy but with a few key differences:

- **Cost** – The up front cost of an option is the most inhibiting characteristic in using one, so an aim should be to minimise this cost. The cost will be lowest when you use futures in your own account, whilst management and administration fees when trading through banks or through a pool will tend to be more expensive.
- **Control** – When you buy options through your own account or via the bank you maintain control of the timing of your marketing strategy and the price at which you transact, whereas via a pool you are relinquishing that control to the pool operator.

## Sorghum market update

- The sorghum market was softer in late May on weaker demand.
- Flat price sorghum remains historically high.

### Brisbane vs Newcastle sorghum



Newcastle track prices remain above Brisbane which is unusual, due to track shorts eventuating on SOR1 given ASX May delivery periods and the current stained delivery debacle. For those looking to sell and would like to check the delivered or site prices make sure you use your login for Profarmer Price Discovery which is available on iPhone, iPad apps and the Profarmer Grain website.

## Barley

- The discount of feed barley to wheat narrowed this week in export dominated states.
- An increase in June shipping stem quantity for barley in WA and SA supported markets in these export zones.
- Tighter wheat supplies and continued feed demand provide underlying support to east coast barley values.

### 2013–14 feed barley prices



We believe in the second half of the year as the Canadian export program increases and EU barley becomes available that these origins will begin to compete more heavily with Australian barley and potentially weigh on our prices.

For growers in the eastern states – where the wheat balance sheet is tighter and feed demand from the north continues to pull feed barley into Queensland – we expect this will continue to provide underlying support for barley values. But you should also recognise that holding barley since harvest has worked and at some stage you should cash in on the gains made.

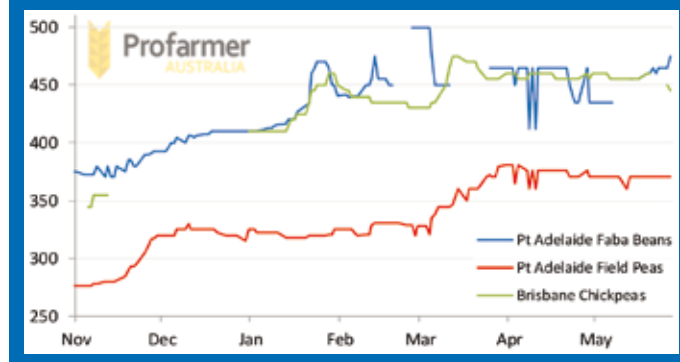


## Pulses

### Two factors we can see impacting global pulse price direction:

- Abundant Canadian stock levels are likely to keep a cap on prices.
- The threat of El-Niño adversely impacting Australian and Indian production is likely to provide support to new crop prices.

### 2013-14 season pulse prices



### Pulse marketing timeline

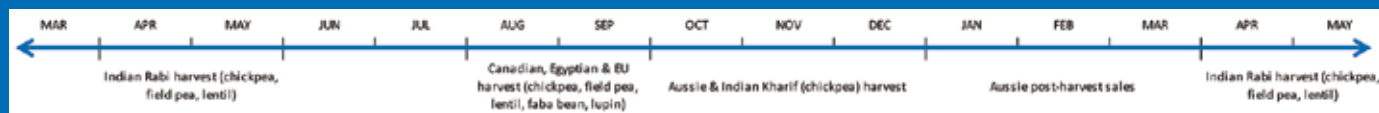
When considering historical price trends, often the early post harvest period provides a good opportunity for pricing most pulses in Australia. This is partly because seasonally, January, February and March lines up with a gap in global supply (ie. there is not a major harvest underway of pulse crops).

There is also a recognition by importers that the Australian crop has recently come off and so the focus of importers swings down to Australian product and away from one of our largest competitors being Canada which is under snow during the same period.

In years when prices are performing poorly during this post harvest period – deciles may be used as an effective guide – it is likely due to a global surplus of supply. Hence storing (if possible) and waiting for a production hiccup somewhere in the world can yield better returns in the late post-harvest period (Jun/Jul), but this is always a bit of a punt.

Current new season prices on offer for pulses are generally poor, with the exception of field peas being near a decile 8 price since 2007. Note this is not unusual for this time of year. Given the increased production risk in producing many pulse crops – and for many growers it is a smaller enterprise in terms of revenue generation – we are not that keen on locking in forward pulse prices.

### Pulse marketing timeline



Disclaimer: Comments made in this article are general in nature and the opinion of the Profarmer Australia team of analysts without regard for any individual objectives, financial situation or needs. Any information should be considered in the context of your personal circumstance. This information should not be construed as an offer to sell or the solicitation of an offer to purchase a financial product. Decisions about financial products involve risk, and past performance is no assurance of future performance.

the  gate

A new service providing a path to ...

farm group research

farm labour

farm group tours



The **LABOUR PLACEMENT** division of The-Gate is essentially a service introducing Australian farmers needing short-term skilled labour, to keen and experienced young workers with farming backgrounds. And The-Gate has a pool of skilled international farm workers with boom spray and other large machinery experience.

**AVAILABLE NOW** or reserve your worker/s for harvesting in just a few months time.

**So to get the ball rolling on solving your short-term labour needs, go to [www.the-gate.com.au](http://www.the-gate.com.au) and register (for free) on The-Gate's database or contact Catherine on 0408 717 459**

**[www.the-gate.com.au](http://www.the-gate.com.au)**

the  gate

## 'Left jab, right hook'

*"Float like a butterfly sting like a bee – his hands can't hit what his eyes can't see." – Muhammad Ali*

**A** GOOD boxer uses combinations of punches to beat his opponent. A good farmer uses diverse combinations to beat weeds. Herbicides and crop competition are the left jabs – harvest weed seed control is the right hook that delivers the knock-out blow.

In 2008, AHRI researcher Dr Michael Walsh and colleagues published a paper showing that 2,4-D resistant wild radish could be controlled by 2,4-D if there was elevated wheat crop competition. This demonstrates that if weeds are noticeably affected, but not controlled by a herbicide, then the additional impact of crop competition can deliver weed control.

Despite the widespread occurrence of resistance to 2,4-D, this herbicide continues to be an integral component of wild radish control programs. The combined effects of crop competition plus 2,4-D may explain this.

### However!

2,4-D plus competition WILL eventually fail as resistance is enriched over many years of selection. Adding harvest weed seed control (remember the knock-out right hook) will extend the life of herbicides and increase the effects of crop competition by reducing the seed bank.

### Left jab

The summary of AHRI's research from 2008 was that herbicide plus crop competition is better than herbicide alone (although it does have its limits).

Michael compared three wild radish populations – susceptible, one from Nabawa (moderately resistant) and one from Wongan Hills (highly resistant).

Wild radish were sprayed at the two leaf stage with 500 gai per hectare 2,4-D Amine.

**TABLE 1: Wild radish biomass reduction at flowering of wheat and wheat maturity after spraying with 500 gai per hectare 2,4-D amine for three wild radish populations in the absence of crop competition**

| Population      | Biomass reduction (%) |                   |
|-----------------|-----------------------|-------------------|
|                 | At wheat flowering    | At wheat maturity |
| Susceptible (S) | 100                   | 100               |
| Nabawa          | 80                    | 75                |
| Wongan Hills    | 35                    | 0                 |

The resistant wild radish plants were damaged by the herbicide but went on to survive and set seed. The Wongan Hills population was less affected by 2,4-D than the Nabawa population and by maturity had completely recovered and had the same biomass as the un-sprayed wild radish.

When crop competition was added to the scene, things got interesting.

### Susceptible

The susceptible population (Figure 1A) was completely controlled by 500 gai per hectare 2,4-D regardless of the level of crop competition. Adding competition to the un-sprayed wild radish reduced the biomass of the wild radish.

### Nabawa (moderately resistant)

The population from Nabawa (Figure 1B) had survivors in the absence of crop competition, but there were no survivors when there was competition with 100 wheat plants per m<sup>2</sup> or more.

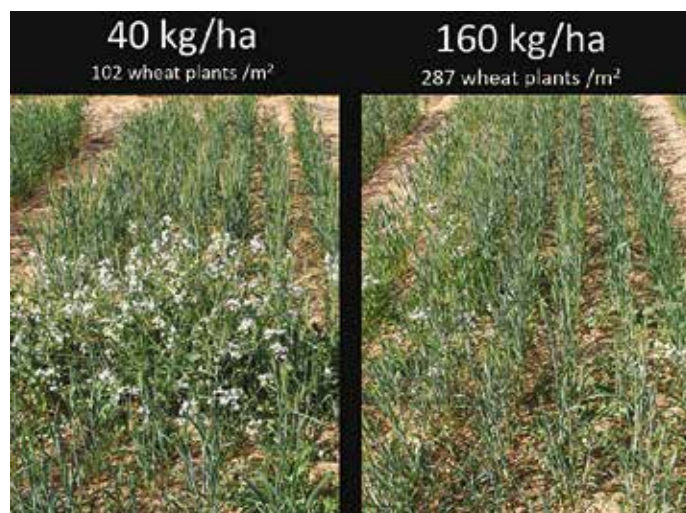
### Wongan Hills (highly resistant)

The biomass of the Wongan Hills population (Figure 1C) was only slightly affected by increasing crop competition.

This result possibly explains why wild radish at present is being controlled by 2,4-D based herbicide treatments despite the high frequencies of 2,4-D resistance in wild radish populations.

### Wheat can compete with wild radish

The photos below are from a Department of Agriculture and Food trial at Binu, WA in 2012. This shows how well wheat sown at high seeding rates can suppress the growth of un-sprayed wild radish through crop competition. There was a one metre wide un-sprayed strip of wild radish that ran through the middle of the trial.



### Grant Thompson – 2013 trials

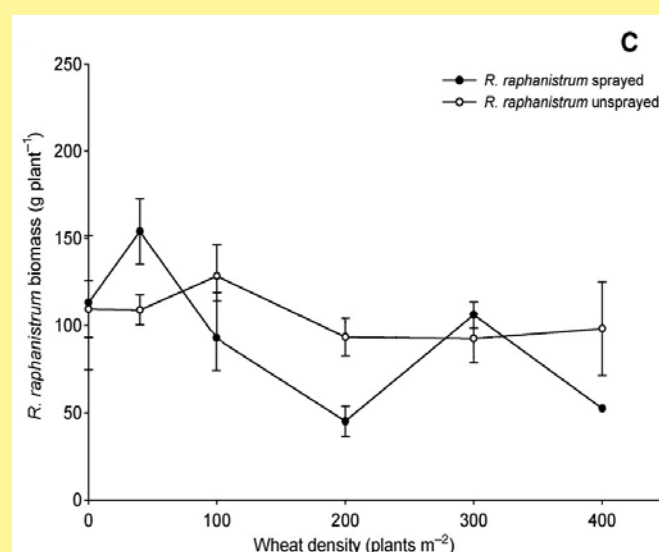
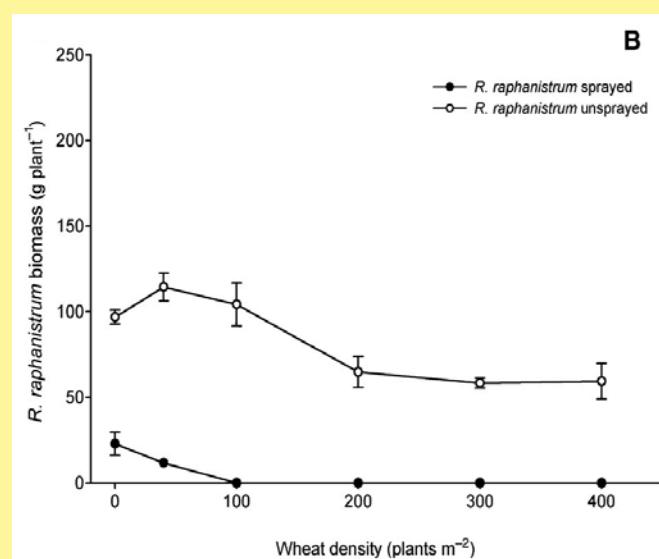
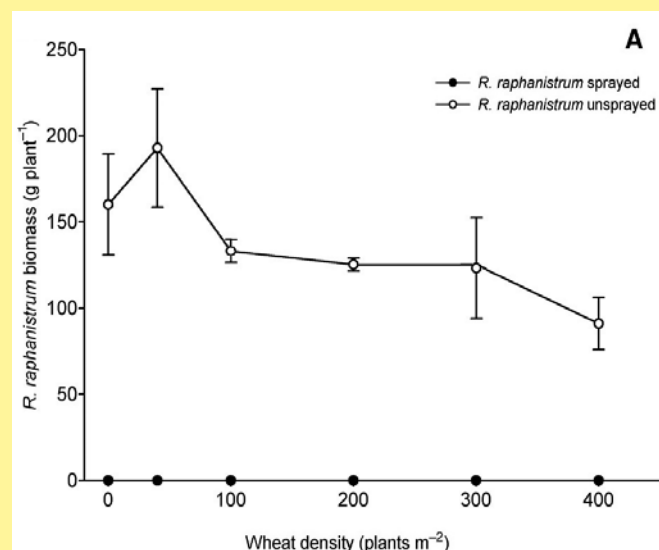
The biggest funder of agricultural research in Australia – the GRDC – has funded some field trials into wild radish in the Geraldton area through the Regional Cropping Solutions Network (RCSN) over the past two years. Grant Thompson from Crop Circle Consulting was responsible for these trials in 2013.

At one of his four sites, a resistance test confirmed that wild radish had 100 per cent resistance to the Group B herbicide Logran and 60 per cent resistance to 2,4-D ester. But in the trial, a mix of Logran plus 2,4-D ester gave 100 per cent control of the wild radish.





**FIGURE 1: Wild radish plant biomass for three populations (A) susceptible, (B) Nabawa, and (C) Wongan Hills – subjected to increasing wheat competition and sprayed or un-sprayed with 2,4-D Amine 500 gai/ha**



The radish took a very long time to die but they did eventually die.

Grant concluded that the key is to spray small wild radish with excellent application and use a two spray strategy, in the presence of a competitive wheat crop.

### Peter Newman – 2012 trials

In 2012, Peter Newman (then Department of Agriculture and Food) was responsible for the RCSN trials in the Geraldton area. Peter made the same conclusions as Grant Thompson.

At one site, the wild radish was highly suspected to be 2,4-D resistant (a later test confirmed this). Once again, small wild radish were sprayed with robust rates of 2,4-D with excellent application, surrounded by a competitive wheat crop.

The wild radish took a very long time (8 weeks) to die but they did eventually die.

### Warning – herbicides alone are not the answer

Competition plus herbicide is a great combination but it has its limitations as can be seen by the Wongan Hills population.

If we were to rely on herbicides such as 2,4-D only, it is highly likely that we would enrich the level of resistance to 2,4-D and the herbicide plus competition strategy will eventually fail.

It is imperative to add harvest weed seed control to the equation. By removing the seeds of the resistant survivors at harvest, the seed bank is minimised and the life of the herbicide is extended.

Remember: Follow those left jabs with your right hook. It's the only way to win. ■



■ **'Why change if a herbicide is working well' with AHRI Communication Leader, Peter Newman**

**R**ECENTLY, the Kondinin Group conducted a survey of 200 farmers and found that the overwhelming majority were practising herbicide rotation in their cropping systems.

Peter Newman, Communication Leader with the Australian Herbicide Resistance Initiative says this confirms that most growers are implementing practices aimed at reducing the risk of herbicide resistance on their farms.

"Rotating herbicide chemistry is essential," he says. "But it is not enough on its own. A diverse weed management program must include more tactics to help protect the chemistry that we have available to us for weed control."

"Glyphosate is by far the world's best herbicide," he says. "It is highly effective in so many situations and its widespread use is justified. What we need to start implementing are tactics that will protect the usefulness of glyphosate, and other herbicides, well into the future."

"We know that rotating chemical modes of action is useful as a broad tactic but when it comes to particular chemicals, like glyphosate, that are so widely used it is important that seeds

from any weeds that survive a spray application do not enter the seed bank.

"So a trusted herbicide can be used, and used often, provided there is a strategy in place to remove all survivors, including any seeds," says Peter. "If possible this strategy should include non-chemical tactics to provide the double-knock effect."

**Can I rely on herbicide rotation to avoid herbicide resistance?**

**Short answer:** No.

**Longer answer:** There are documented cases of herbicide resistance occurring on farms where herbicide rotation was conscientiously implemented. We even have cases where ryegrass has developed resistance to glyphosate and paraquat, despite rotation between these two herbicides.

**Is it true that weeds can be resistant to herbicides I haven't ever used?**

**Short answer:** Yes.

**Longer answer:** Metabolic resistance is an alarming phenomenon that we are learning more about. In a laboratory experiment annual ryegrass plants were treated with low doses of Sakura to see if they would become resistant to this herbicide. They did – and they also became resistant to Avadex and Boxer Gold – which had not been applied during the experiment.

This meant that some individual plants had the ability to stop the action of, or metabolise, these herbicides with different modes of action, before they reached the various target sites.

**Do non-herbicide weed controls really help avoid herbicide resistance?**

**Short answer:** Yes.

**Longer answer:** Managing herbicide resistant weeds is all about managing the weed seed bank. Farms where non-herbicide tactics are part of the system have less weeds and lower levels of herbicide resistance. The ideal 'second knock' to follow a herbicide is a mechanical, non-herbicide option such as haymaking, cultivation or grazing. Effective weed management requires the implementation of as many tactics from the WeedSmart 10 Point Plan as possible. Using one or two of these tactics is not enough. ■



**Peter Newman, communication leader with the Australian Herbicide Resistance Initiative (AHRI) said a trusted herbicide can be used, and used often, provided there is a strategy in place to remove all survivors, including any seeds.**

**HOW TO ASK A WEEDSMART QUESTION**

Ask your questions about testing for herbicide resistance, or any herbicide resistance management strategy, using Twitter @WeedSmartAU or on the WeedSmart website <http://www.weedsmart.org.au/category/ask-a-weedsmart-expert/>

Questions will be answered online, through our interactive blog, and may also be shared with other growers through this column.

'WeedSmart' is an industry-led initiative that aims to enhance on-farm practices and promote the long term, sustainable use of herbicides in Australian agriculture.



# Research in the Ord has found ways to improve rice yields

■ Dr Siva Sivapalan, Development Officer, Department of Agriculture and Food, WA



Siva Sivapalan and Craig Palmer setting up the lysimeters to quantify leakage losses under paddy rice.

## Study into 'time of sowing' puzzle

A new record yield of 14.3 tonnes per hectare was achieved from a Vietnamese rice variety grown in the Ord (northern WA) during the dry season of 2013.

A total of five varieties with three replicates were tested for three planting dates – namely April 22, May 8 and May 21 – using the traditional flooded (paddy) growing system.

The highest yield of 14.3 tonnes per hectare was achieved for one replicate of the variety Viet 1 with a planting date of May 8 2013. But Viet 1 takes two to four weeks longer than the other varieties to reach maturity. This indicates that the later maturing Viet 1 variety might lead to higher irrigation water usage, extended bird control measures and reduced quality of harvested grain due to more exposure to the harsh climatic conditions of the late dry/early build-up during grain maturity.

Among the three planting dates tested in 2013, May 8 appeared to produce the best results (Figure 1). Varieties NTR 587 and NTR 426 achieved average yields of 12.5 and 9.6 tonnes per hectare, respectively, on this planting date. This is similar to average yields of 11.5 and 10.7 tonnes per hectare for NTR 587

## AT A GLANCE...

- Planting in early May is crucial to achieve high yields for selected rice varieties in the Ord River Irrigation Area.
- To maximise yield from aerobic rice, it is essential to implement an irrigation interval of less than seven days.
- Deep percolation losses from flooded rice crop in Cununurra Clay soil were less than one mm per day.



## You wouldn't let this happen to your profits.

Don't be put off by the hot weather. Slugs and snails are just waiting to attack your profits.

Plan your Metarex program now.

**METAREX®**  
ALL WEATHER SLUG AND SNAIL BAIT

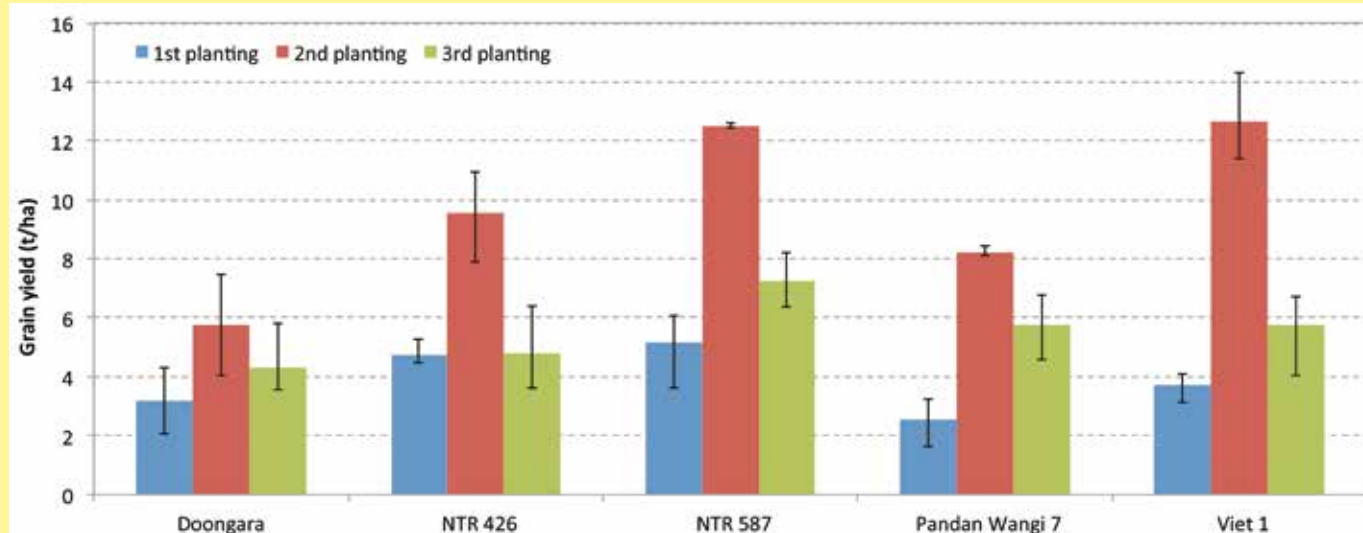




® Registered Trademark of De Sangosse, France.

[agnova.com.au](http://agnova.com.au)

**FIGURE 1: Grain yield of five varieties tested at three planting dates (error bars indicate the maximum and minimum values)**



and NTR 426, respectively, for the May 2, 2012 planting date. In a previous trial in 2011, the highest yield of 13.6 tonnes per hectare was achieved with a May 15, 2009 planting date for one replicate of the variety, Doongara.

Over the past four years, trials with planting dates outside the May 2–15 interval failed to produce high yields. It appears that for the tested varieties, a planting window during the first two weeks of May is essential in achieving good yields.

### **Clearer picture of 'irrigation scheduling' for aerobic rice**

Variety Yunlu 29 was tested for aerobic growing management in field trials. The crop was furrow irrigated once every 12–17 days (average 14.3 days). A fixed irrigation scheduling adjusted according to water availability was used to determine whether the rice plants can utilise the subsoil moisture. An EnviroScan system was installed to monitor soil moisture status.

## **Jaylon produces quality tarpaulins for harsh environments**



Jaylon has fabricated tarpaulins for 60 years and is Australia's leading manufacturer of hay and grain covers — supplied throughout Australia and around the world!

As well as heavy-duty long-life tarpaulins supplied to major grain handlers, Jaylon is also able to supply silo bags, wall liners, ground sheeting and economy tarpaulins to meet individual storage requirements.

With manufacturing facilities in both Perth and Brisbane...

**JAYLON HAS GOT AUSTRALIA COVERED!**



**Telephone: 08 9249 2088**  
**Facsimile: 08 9249 3690**  
**Email: graincovers@jaylon.com.au**

## At Dinner Plain the pace is easy going...

Dinner Plain is the place where the family can be together by the fireside or miles apart exploring the cross-country trail network. Where you stroll the treelined streets simply for the sights or to meet friends for a restaurant dinner or drinks at the bar. The village itself helps set the community atmosphere, natural building materials and earthy tones blur the line between man made and alpine environment. Over 200 lodges and chalets with all the conveniences of a modern resort.

**Dinner Plain is the place for your next holiday.**

Explore our website at **www.dinnerplain.com** or call our info number **1300 734 365** or email to **info@dinnerplain.com**

**Dinner Plain**  
**visitor Information**  
**Centre**





**Attendees at the Rice Field Day inspecting the aerobic trial.**  
(Photo: Noel Wilson, DAFWA)

Data from the EnviroScan system showed that the soil moisture dropped below the desired critical soil moisture level (i.e. the refill point at 50 per cent depletion of plant available water) at 10 and 20 cm depths (Figure 2). The root system had grown to a depth of 40 cm. But 70 per cent of the absorbed water was extracted from the top 20 cm of the root zone. This means that the soil moisture data at both the 10 cm and the 20 cm depths are critical for irrigation scheduling purposes.

Rice is a semi-aquatic plant and thus a heavy user of water. Soil moisture levels closer to the drained upper limit (DUL) are necessary to avoid water stress leading to reduced yields. The data on Figure 2 suggests that the soil moisture at 10 cm depth reached the refill point in approximately seven days.

Any delay beyond seven days in commencing the next irrigation will subject the crop to water stress, especially for the root zone within the first 10 cm which absorbs 40 per cent of total water uptake. The irrigation intervals for the 2013 trials varied from 12 to



**Siva Sivapalan and Mark Warmington observe harvesting of the rice plots by Maurice Darlington.** (Photo: David Hadden, DAFWA)

# verno™ FG

## Cu30 + Zn30

verno™ FG Cu30 + Zn30 is a next generation combined copper and zinc fertiliser for the correction of copper and zinc deficiencies.

verno™ FG Cu30 + Zn30 contains micronised particles of cuprous oxide and zinc oxide, which adhere strongly to plant surfaces, providing a reservoir of slow release copper and zinc nutrient that is readily available to the plant.



**New FG formulation with high concentration – 60% nutrient.**  
Low use rates for in-furrow pop-up & foliar applications.

Next generation Flowable Granules are dust free, easy to pour, measure and mix. Rapid dispersion with wide compatibility. Ideal for co-application.

**Technically proven performance.**

**Cost effective nutrition.**

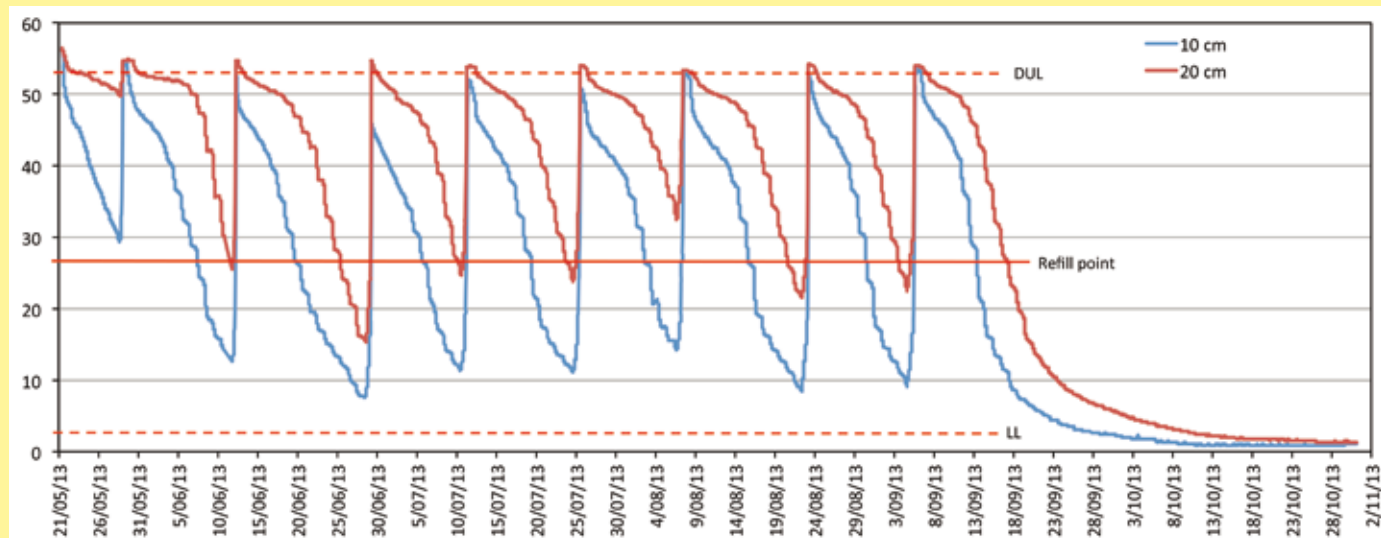
# Tanuki

Tanuki Pty Ltd

**Ph: 07 4639 2009**

**[www.tanuki.com.au](http://www.tanuki.com.au)**

**FIGURE 2: Fluctuation of soil moisture at 10 and 20 cm depths under aerobic rice conditions (DUL, drained upper limit; LL, lower limit)**



17 days (average 14.3 days) and this caused severe water stress to plants. The ideal irrigation interval for rice in Cununurra Clay has been estimated to be seven days. This is supported by the previous aerobic trials in 2011 and 2012 (Table 1).

#### Study explores deep percolation issues

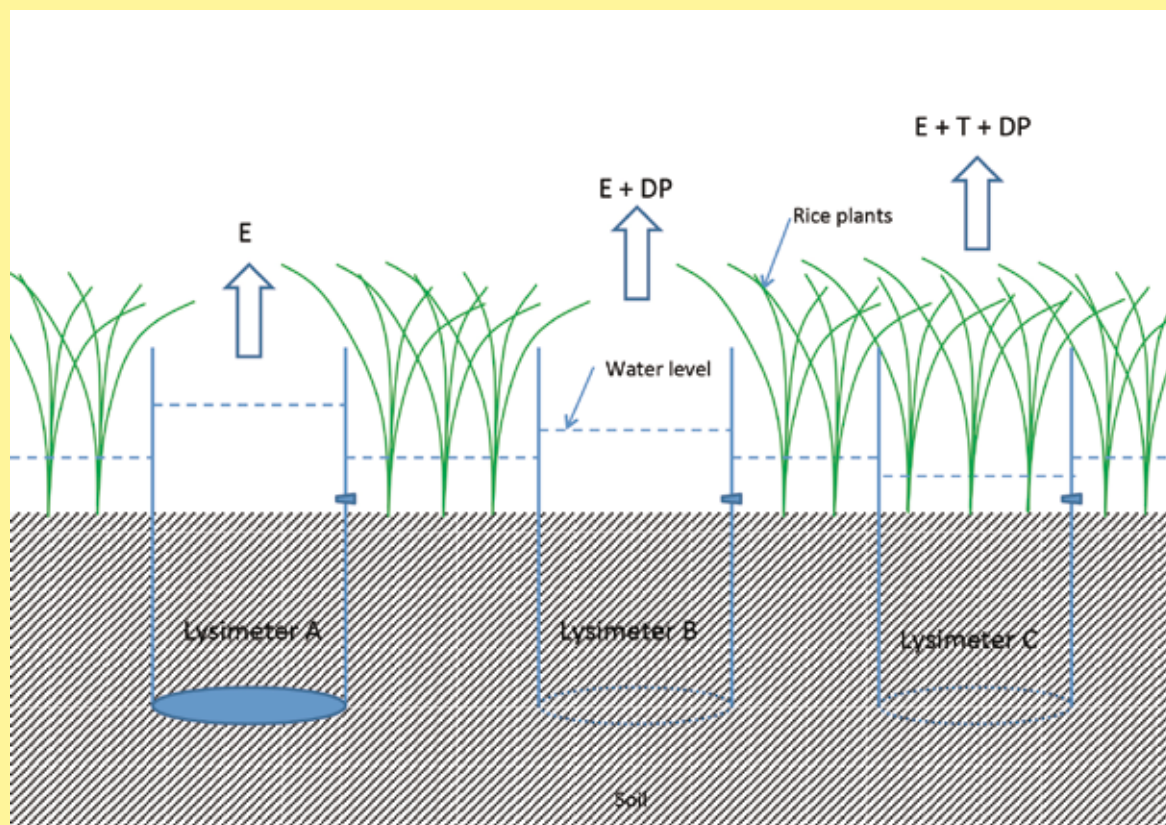
Using a set of three lysimeters and lockup bay tests, the trials estimated the evaporation, transpiration, and deep percolation losses for ponded rice culture (Figure 3).

**TABLE 1: Yield of Yunlu 29 in aerobic rice trials**

| Year | Yield (t/ha) | Irrigation frequency (days) |
|------|--------------|-----------------------------|
| 2013 | 2.0          | 14.3                        |
| 2012 | 9.9          | 7.7                         |
| 2011 | 11.7         | 7.0                         |

The data shows that evaporation losses were high at the beginning when the rice plants were small (Figure 4). As the crop

**FIGURE 3: Diagram of lysimeters to measure evaporation (E), transpiration (T) and deep percolation (DP) losses in a paddy field, where the arrows indicate combined water losses**





developed to full canopy which provided a shading effect and reduced the evaporation losses.

Transpiration losses increased rapidly as the plants reached full canopy and then started to decline when the plants approached full maturity. The increase in transpiration was mainly due to more leaf surface area contributing to more stomata openings for water loss. At full canopy, transpiration losses were almost double the evaporation losses.

The amount of deep percolation losses generally fluctuated between 0 and 2 mm per day over the period and this variability in loss may be due to the nature of measurements performed in the lysimeters. The total deep percolation losses over a period of 90 days were 88 mm. Hence the average deep percolation loss over the period was 0.97 mm per day.

The average of 0.97 mm per day was less than previously reported for Cununurra Clay in 1982 and 2002, reflecting the improved crop and water management used with modern rice varieties. Climatic conditions can impact processes such as evaporation and transpiration, but have no effect on deep percolation.

If this deep percolation can be replicated at the paddock and farm scale, it is predicted that recharge of groundwater under extensive rice cultivation using the traditional flooded system in Cununurra Clay soil should be within manageable limits.

It was estimated that the total water usage might reach the 13 ML per hectare mark for rice depending on weather conditions. The average deep percolation losses were estimated to be approximately one ML per hectare for the crop cycle. At this rate, deep percolation under ponded rice culture in Cununurra Clay soil is within manageable leakage rates of one mm per day.

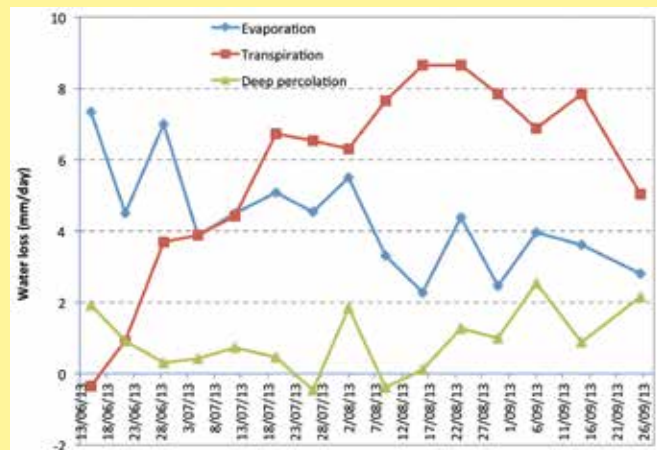
The leakage under ponded rice culture compares well with irrigated cotton or sugarcane in the Ord. Leakage under irrigation

was estimated to be 160 to 250 mm per irrigation season for cotton, and between 190 and 340 mm per crop-cycle for sugarcane.

Given the experimental results are able to be scaled to bay and farm scales, the rates should not unduly affect growers, or environmental managers, in terms of rising groundwater levels, waterlogging and salinity.

**\*The author acknowledges the financial support from Rural Industries Research and Development Corporation (RIRDC) and Rice Research Australia Pty Ltd (RRAPL) for the trials.**

**FIGURE 4: Evaporation, transpiration and deep percolation losses as measured by the lysimeters (data points relate to average water losses within an irrigation cycle)**



Valmont Irrigation Australia  
+61 (7) 3457 8830  
[www.valleyirrigation.com/au](http://www.valleyirrigation.com/au)



So don't wear out a single solution

[diversitycantwait.com.au](http://diversitycantwait.com.au)



Bayer CropScience Pty Ltd ABN 87 000 226 022  
391-393 Tooronga Road, Hawthorn East, Vic 3123  
Technical Enquiries: 1800 804 479 [enquiries.australia@bayer.com](mailto:enquiries.australia@bayer.com)

Science For A Better Life

# Food science centre to bolster grains opportunities

**A** NEW centre for food science research will play a pioneering role in exploring new product and niche market opportunities for Australian grain growers.

Grains Research and Development Corporation (GRDC) Southern Regional Panel chair Keith Pengilley says the \$2.15 million Australian Research Council Training Centre for Functional Grains – to be located at Charles Sturt University (CSU) at Wagga Wagga in New South Wales – aims to add value to crop production, improve product marketability and boost research capacity within the industry.

“This new centre represents a positive step forward for the grains sector which is dependent on innovative research for the delivery of new technologies and products to promote increased cropping productivity, profitability and sustainability,” Keith said.

The GRDC is a non-commercial partner of the Australian Research Council-funded centre which will be a research hub for grains scientists from CSU, the NSW Department of Primary Industries (NSW DPI) and CSIRO. Also involved is the Graham Centre for Agricultural Innovation – a collaborative research alliance between CSU and NSW DPI.

The Functional Grains Centre (FGC) will focus on three commodities – pulses, canola (both GRDC leviable crops) and rice.

“Pulses and canola have become particularly important crops for our grain growers in recent times and opportunities exist to make these crops more lucrative and appealing to growers by researching and developing novel grains-based products,” Keith said.

“GRDC is also very supportive of any initiatives that foster increased skills and capacity in the grains research community, so we see this new centre as being a very exciting development.”

The FGC, to be operational mid-year, will be housed within CSU’s recently completed \$45 million National Life Sciences Hub

which contains state-of-the-art research laboratories, quarantine facilities and associated support services.

Based in the centre will be a team of more than 30 researchers, including 12 academic staff, nine government-funded researchers, six industry staff, three post-doctoral scientists and 10 PhD students.

## Focus on training the next generation

CSU Associate Professor in Food Science, Dr Chris Blanchard, is the centre director and he says training the next generation of grains scientists will be a key focus of the centre.

“The students, who will be aligned with the centre’s partner organisations for at least one year, will be very much ‘industry-ready’ once they have completed their studies,” said Chris, who is also deputy chair of the GRDC Southern Regional Panel.

“We have entered into a recruiting phase and attractive scholarships are on offer to encourage students to undertake research at the centre.”

Chris described the FGC as a major boost to the nation’s grains research sector.

“Over the past 10 to 15 years, we have lost a lot of capacity and infrastructure in the area of research into grain quality as a result of downsizing of publicly-owned breeding programs, so this new centre will go some way to filling that void.”

Chris said adding value to primary product was another major focus for the centre.

“The grains sector here in Australia is very much commodity-driven and we have to accept whatever price is on offer. We want to explore what options exist to add value to grains so growers can secure premium markets, particularly in Asia, and command a higher price for what they produce.

## Food functionality

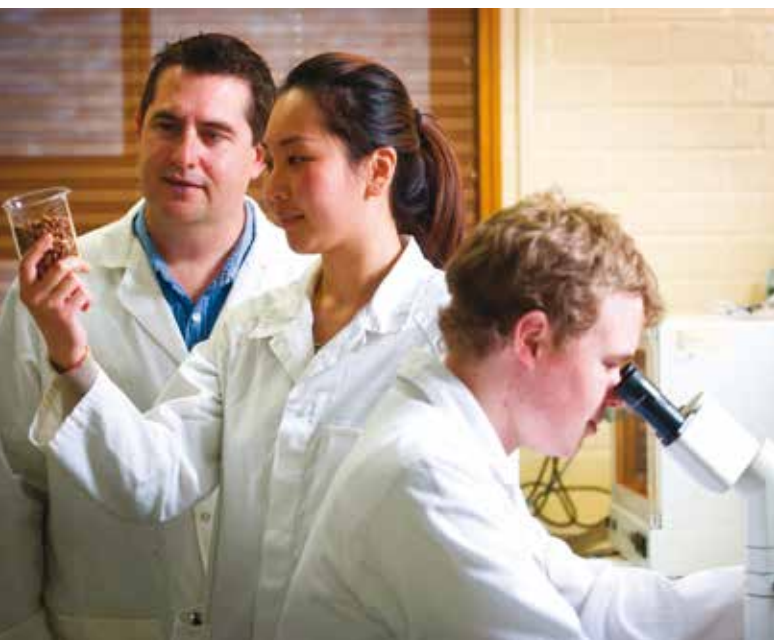
“Crops such as pulses are an important part of our farming systems in terms of adding nitrogen to the soil and acting as a disease break for cereal crops, but often prices for pulses are not sufficient so we need to make these crops a more viable option for growers.”

To this end, Chris said scientists at the new centre would be looking closely at ‘food functionality’ – particularly the growing demand for foods with specific health benefits or novel food applications.

“The functional food market was worth US\$25 billion globally in 2011, yet Australia had only a 1.6 per cent share. So there is significant potential to boost Australia’s economy, and growers’ cropping options and income, by exploiting the functional food market,” Chris said.

This will require a ‘whole-of-product’ approach to research in areas such as market intelligence to identify what consumers want, generating fundamental scientific knowledge to understand food systems, as well as monitoring of health-enhancing properties and other functionalities through the production chain so that storage, processing, and consumer acceptance of the end product can all be optimised.

In addition to the GRDC, partners of the FGC include GrainGrowers, MSM Milling, Flavour Makers, Teys Australia, Woods Grains, Grains and Legumes Nutrition Council and the Rural Industry Research and Development Corporation.



Charles Sturt University Associate Professor in Food Science and director of the new Australian Research Council Training Centre for Functional Grains, Dr Chris Blanchard (rear), pictured at CSU with grain science PhD students Christina Chin and Kyle Reynolds. (Photo: Paul Jones)



# Study reveals what the profitable farming practices are

## AT A GLANCE...

A strong business in the eastern WA grainbelt needs to:

- Have a low break even yield at average grain prices;
- Be able to capitalise on good seasons and prices, when they happen; and,
- Be conservatively geared to cope with the inevitable poor season.

**A** 'NEAR enough is not good enough' attitude to management decisions was a common sentiment expressed by top performing eastern WA grainbelt farmers analysed in a recently completed study.

Funded by the Grains Research and Development Corporation (GRDC) and conducted by Planfarm, the study also found that relatively small percentage changes in key areas can equate to big percentage changes in overall profitability.

Planfarm managing director Greg Kirk presented the study's findings to the Agribusiness Crop Updates, supported by the GRDC and Department of Agriculture and Food.

"The study was conducted to investigate how high performing farmers in the eastern grainbelt achieve profitability and to look closely at what can be done to lift profitability across the region," he said.

### What the top businesses did

The performance of 14 top and 20 low performing businesses in the region was reviewed for the years 2006 to 2012.

It found that top businesses generated \$42.56 per hectare more than the average of those in the Planfarm Bankwest Benchmarks for the region.

This translated into an extra \$243,485 per annum in operating surplus – 60 per cent higher than the average for the region.

"Despite receiving no more growing season rainfall, these farmers outperformed their peers financially and in higher yields per hectare in both good and bad seasons," Greg said.

He said that cost savings across all aspects of the businesses needed to be a key priority as they presented low risk opportunities to make significant improvements to overall profitability.

"We were able to identify that there was no one large component that resulted in people being successful," he said.

"But the most common areas of cost savings introduced in recent years by the top performing farmers were reduced fertiliser inputs and lower machinery replacement costs."

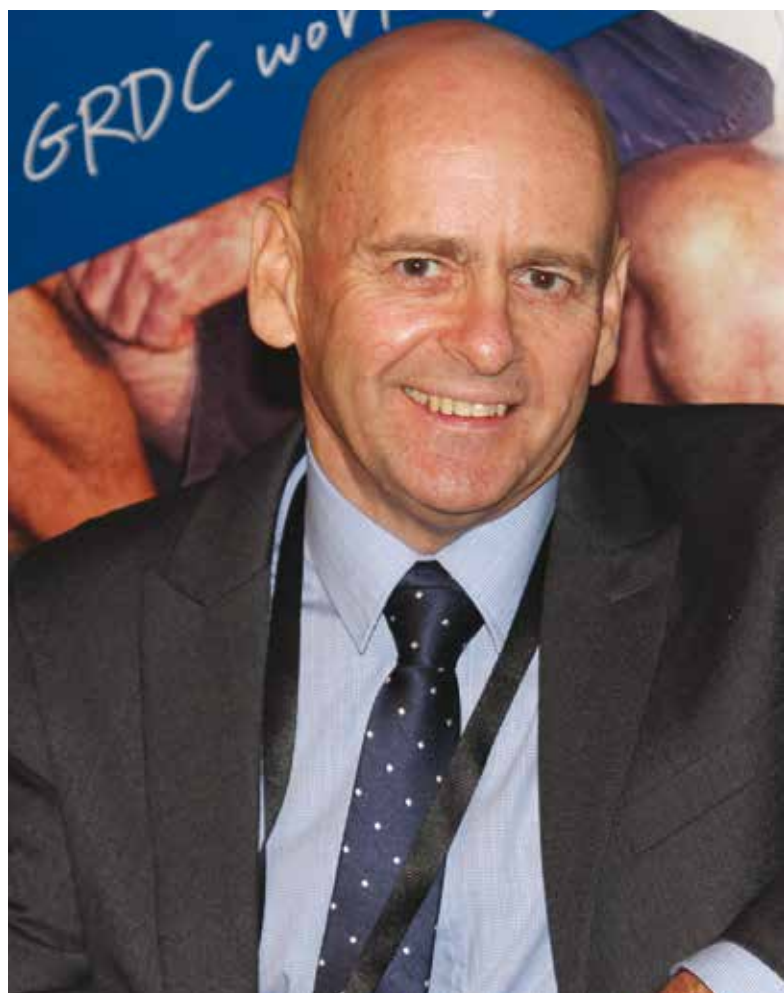
The average land use for the top group was 65 per cent cereal crops, 20 per cent pasture (for sheep) and 8 per cent canola, with the balance made up of oats, lupins, fallow, triticale and peas.

"On average, the group dry-seeded 25 per cent of their annual cropping program," Greg said.

"While 95 per cent of the group used auto-steer technology, few had yet adopted controlled traffic farming (CTF) and/or variable rate technology (VRT).

"Their average equity at the start of 2013 was 84 per cent and they tend to have a conservative approach to debt.

"When asked about the reasons for their success, common



**Planfarm managing director Greg Kirk conducted a GRDC funded project investigating what can be done to improve the profitability of farming in the low rainfall eastern grainbelt region of WA.**

responses were preparedness to work hard, a conservative approach, low cost, getting the big decisions right and paying attention to detail."

### Practices with potential

Greg said that as part of the study, researchers and extension people active in the region were asked to identify key management practices with the potential to increase profitability that could be more widely adopted in the region.

"Practices they identified included CTF, VRT, liming and fallow," he said.

"Future profit opportunities are likely to come from continued rapid advances in technology driving both labour and machinery efficiencies.

"Corporate farming was also identified as potentially offering risk management opportunities via contract farming."

The GRDC study is available at [www.giwa.org.au/2014-crop-updates](http://www.giwa.org.au/2014-crop-updates)

Other useful GRDC resources on farm business management include farm business fact sheets available at [www.grdc.com.au/FBM-factsheets](http://www.grdc.com.au/FBM-factsheets) or the Farm Business Management hot topic at [www.grdc.com.au/FBM](http://www.grdc.com.au/FBM).

# Myth busters: Leaving a silo sealed up won't protect your grain

**S**OME growers mistakenly think that by leaving their silo sealed it keeps insects out of their grain, but this is a dangerous assumption.

According to Phil Burrill, Senior Grain Storage development agronomist with the Department of Agriculture Fisheries and Forestry (Qld), the point of having a sealable silo is to achieve a good result when fumigating – not to keep out insects.

Leaving grain sealed up in your silo for a long time (one or two months) may result in:

- Spoiled mouldy grain due to moisture migration and condensation;
- Creating areas of warm grain suitable for insects to rapidly multiply;
- Preventing the use of aeration cooling and associated grain quality benefits; or,
- Increasing the risk of silo structural damage.

## Spoiled mouldy grain

Grain left sealed in a silo will be much warmer in the head space at the silo top and on the northern and western walls, compared to grain kept in a well aerated silo. Head space air

in sealed silos routinely exceeds 60°C. Just like any other living organism, grain can spoil and suffer quality damage if subjected to high temperatures for a long period of time. Try leaving a slice of bread in a sealed tin container in the sun for four weeks and see how it deteriorates.

## Encouraging insect growth

It is dangerous to assume that there are no insects in your grain when filling silos at harvest time. The reality is that there are usually a few insects in very low numbers that you will not detect. Therefore, it is best to aim to maintain cool, uniform moisture conditions in your silo which makes it very difficult for these few insects to breed. With good hygiene practices and well managed aeration, you should have no need to fumigate in seven out of 10 years. Although in years with humid summer conditions, the balance is tipped in the insects' favour.

## Preventing use of aeration

Having your silo sealed means you can't run the aerators. Regular grain inspections and aeration cooling is the best way of maintaining grain quality for cereal grains, oilseeds and pulses.

## The possibility of structural damage to your silo

If a silo is left sealed for a long period of time, particularly when only partially full, it is at risk of damage. A partially full silo has a lot of air in the head space that can rapidly expand and contract with changes of outside weather conditions. A summer storm that moves in quickly on a hot day could create a risk of silo structural damage.

Silo manufacturers put oil bath relief valves on sealable silos to allow air to move in and out of silos while they are sealed during fumigation. But in some circumstances, relief valves may struggle to allow large enough volumes of air to move quickly in or out of a silo to alleviate the change in pressure.

Therefore, having a silo sealed only during the fumigation period minimises the risk of silo structural damage. It is also important to ensure the relief valve is well maintained.

Following the one to two week fumigation period, open the silo and use the fan to vent. After venting, return to the normal aeration cooling cycle to ensure the grain is kept cool.

Using an automatic aeration controller to switch the fans on and off is the best way to keep the grain both cool and dry. It selects approximately 100 hours per month to maintain uniform and cool conditions in the silo. This helps to stop or slow insects breeding, and also protects the quality of the grain.

The myth that sealing silos protects grain from insects is just

## THE BEST PRACTICES FOR STORING GRAIN

- Practice good storage hygiene;
- Use aeration to cool grain from the first day of storage;
- Check grain regularly and sieve for insects every month;
- If you detect any storage pests, seal your silo for fumigation;
- Keep records of pests found each month and any grain treatments; and,
- If you suspect you have an exotic insect then call 132523.



## The solution for all your nutrient requirements

For the farmers, Yara is a trusted partner to supply the nutrient solutions that best realise their crops' potential and optimises their yields. In this way, we are helping farmers feed the world.

To learn more about us, visit [www.yara.com.au](http://www.yara.com.au)



Knowledge grows



that – a myth. The best way to protect your grain is to practice good hygiene, inspect every month, and use aeration to keep your grain temperature close to 20°C or lower. This will minimise insect breeding and maximise the quality of your grain.

Remember, in most circumstances, the general rule is to only seal your silo for fumigation.

For more information on grain storage go to <http://storedgrain.com.au/> ■



**It is important to ensure silos are properly sealed for an effective fumigation but leaving them sealed after fumigation can cause structural damage.**

(Photo: Chris Warwick ProAdvice)



**Phil Burrill Senior Extension Officer with DAFF, talks to Roma growers about the importance of sealing silos for fumigation.**

(Photo: K. McIntyre)



**FOR OVER 40 YEARS, SCT HAS SPECIALISED IN DELIVERING FREIGHT IN THE FASTEST AND SAFEST WAY POSSIBLE.**



As the leaders in our field, SCT logistics offer its customers the most valuable tool available in the highly competitive industry...choice.

- Rail and Road Linehaul Services
- Local Distribution
- Contract Management
- Warehousing with Bonded and Refrigerated Facilities
- Property Development for Distribution Centres
- Tailored Rail Solutions including Bulk Haulage

**THE CHOICE IS YOURS**

**1300 000 SCT**

**[www.sctlogistics.com.au](http://www.sctlogistics.com.au)**

# Don't let insects get cosy this winter

**'D**ON'T give insects a cosy resort lifestyle' is the message being delivered to grain growers this winter with a strategic storage and equipment clean out saving costly grain quality issues later in the year.

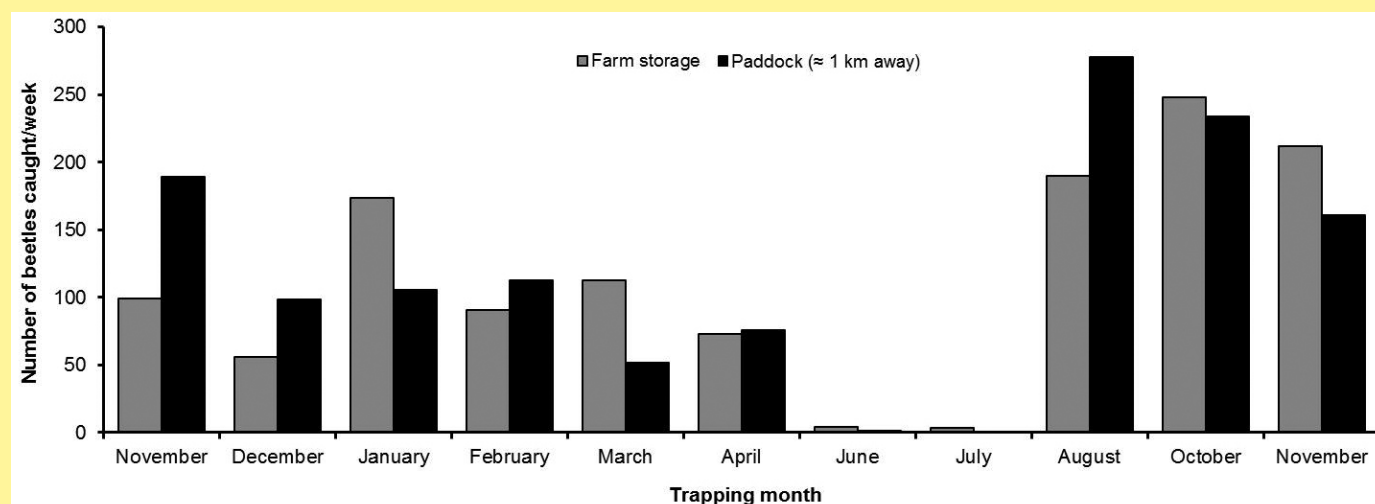
Senior Development Agronomist with the Postharvest Grain Protection Team at Queensland's Department of Agriculture, Fisheries and Forestry (DAFF) Philip Burrill says when it comes to

controlling pests in stored grain, prevention is better than cure and winter is the ideal time to act.

"Grain residues in storages or older grain stocks held over from last season provide ideal breeding sites," Philip said.

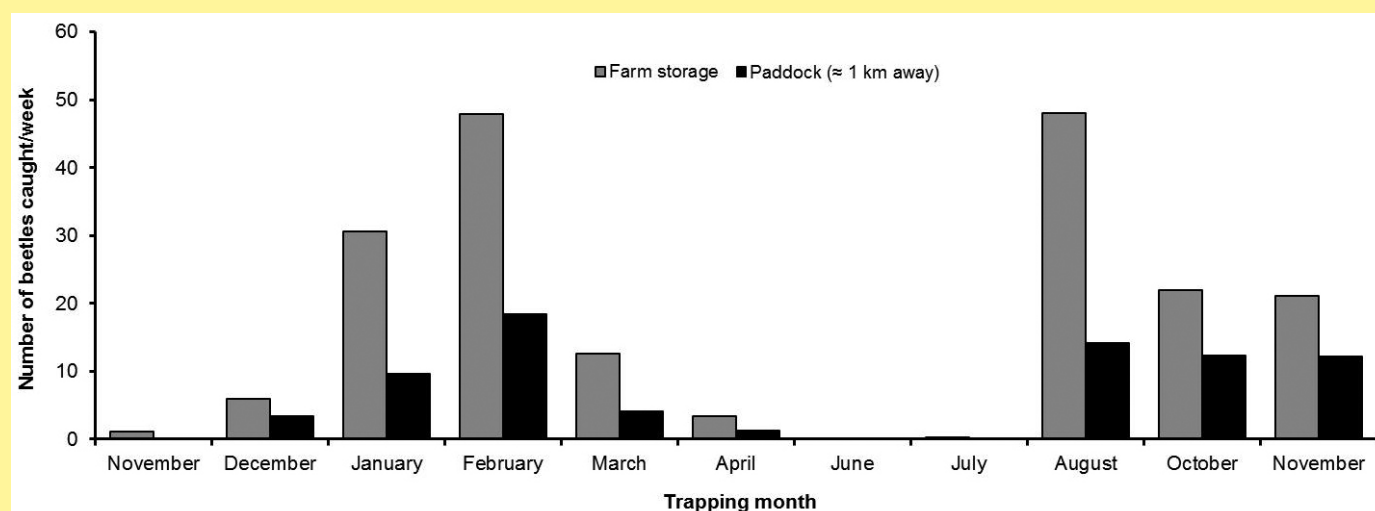
"Good hygiene has a significant impact on reducing storage pest numbers and winter is the ideal time to act with insects moving about much less," he said (see Figures 1 and 2).

**FIGURE 1: This shows the number of lesser grain borers trapped each month at both 'farm silo complexes' (grey bars) and numbers trapped 'in paddock' (black bars) located at least 1 km away from the silo complex on the same farm. Note the very low numbers flying in winter. Also note the sudden, large flight and activity of insect in early spring. A good hygiene effort in winter should significantly reduce the storage pest numbers around harvest time that can cause an early infestation of freshly stored grain in November, December.**



Graph shows results from Insect Ecology project – Greg Daglish, CRC50089 of the Cooperative Research Centre for National Plant Biosecurity.

**FIGURE 2: This documents numbers of rust-red flour beetles trapped. They have very similar 'low movement' in mid-winter but flour beetles prefer to reside around silos when compared to lesser grain borers which had large numbers flying at silos and in the paddock.**



Graph shows results from Insect Ecology project – Greg Daglish, CRC50089 of the Cooperative Research Centre for National Plant Biosecurity.





## YOU WORRY ABOUT EVERY HECTARE. WE'LL WORRY ABOUT EVERY CENTIMETER.

### **CenterPoint™ RTX™ Correction Service**

---

Your farm is as much a part of your family as you are. While we can't break a sweat with you in the field, we can supply the tools to make your hard work more efficient, increasing your yield and profit. Think of us as the global solution that's right in your backyard.

► Industry-leading correction solution ► Reliable worldwide satellite availability ► Horizontal accuracy better than 4cm\*

---

► [Trimble.com/positioning-services](http://Trimble.com/positioning-services) // 1 800 802 573

© 2014 Trimble Navigation Limited. All rights reserved. Trimble, the Globe & Triangle logo are trademarks of Trimble Navigation Limited, registered in the United States and in other countries. RangePoint and RTX are trademarks of Trimble Navigation Limited. All other trademarks are the property of their respective owners.

\*Results vary based on conditions.





**Research suggests that mid-winter is a good time to do your major grain storage and equipment clean up. During the rest of the year, 'clean as you go'. (Photo: Chris Warrick)**

Recognising that growers play a pivotal role in determining grain quality for Australia's export and domestic markets, the Plant Biosecurity Cooperative Research Centre and the GRDC is funding insect ecology research and grain storage extension projects to provide information resources to assist growers achieve improved pest control results in on-farm storage.

Philip's recommendations for ensuring good stored grain hygiene include:

- Pick a sunny day if silos need to be washed out, particularly if you had an infestation in a silo last season. All 'seed' silos should be washed out and left open to dry. DE dust (such as Dryacide) can then be applied as a structural treatment.

- A thorough clean out of storage facilities and equipment in winter is likely to significantly reduce the spring time storage pest numbers looking to infest freshly harvested winter grains. This, matched with good aeration cooling practice during storage, should ensure that the number of infestations and fumigation treatments required is significantly reduced.
- Check all monitoring and recording gear is in order and ready to use including insect sieves, probe traps, identification chart, storage record book and/or spread sheet, CVD supplies, supplies of DE, grain protectants and fumigation gear.
- Be mindful, plan and record which storages have had insecticide structural treatments like Fenitrothion applied. Check the label with grain buyers before application. Remember that for almost all growers, Dichlorvos is not able to be used on farm. See the current APVMA permit.
- Clean grain residues from headers after the completion of sorghum harvest and apply DE. Trucks, auger hoppers, field bins, seed silos should also be cleaned out.
- Remove grain piles from around storage facilities or any grain grading in bags in sheds. A bag of infested grain can produce more than one million insects during a year which can fly to other grain storages and start new infestations.
- If dumping waste grain on-farm, do it well away from storages and spread it out to less than 25 mm so storage pests are not provided with suitable shelter, food and a new breeding site. "Winter is also a good time for growers to check aeration equipment is in good working order and to do a pressure test on sealable silos to check for damaged rubber seals or lids," Philip said.

Being vigilant when it comes to pest control and grain quality in on-farm storage will pay dividends when it comes to marketing. Philip says it is also critical in maintaining and enhancing our growers' hard-earned reputation as reliable suppliers of high quality grain.

**Information on stored grain management techniques is available at the GRDC Stored Grain Information Hub at [www.storedgrain.com.au](http://www.storedgrain.com.au)**

**Two handy publications are Hygiene and Structural Treatments for Grain Storage <http://storedgrain.com.au/grain-storage-fact-sheet-hygiene-structural-treatments-for-grain-storage/> and Pressure testing sealable silos <http://storedgrain.com.au/pressure-testing-sealable-silos-grdc-fact-sheet-september-2010/>**

**Contact Philip Burrill, DAFF Senior Development Agronomist, Ph: 07 46603 620; Mob: 0427 696 500, E:[philip.burrill@daff.qld.gov.au](mailto:philip.burrill@daff.qld.gov.au)**

# Charlton's

## FISHING

TACKLE • BAIT • ICE



**AT CHARLTONS FISHING YOU'RE IN THE BEST COMPANY...**

**Minnkota  
Daiwa**

**Humminbird  
Shimano**

**Abu Garcia  
G-loomis**

**Penn  
Jackall**



**18 Kerwick Street Redbank Q 4301 Ph: 3818 1677 [www.charltonsfishing.com.au](http://www.charltonsfishing.com.au)**



# Be proactive to beat foliar diseases

**E**ACH year, cereal foliar diseases cause significant damage to wheat and barley crops across Australian grain growing regions, reducing yield outcomes and crop profitability.

Powdery mildew losses alone have previously been estimated at \$39 million, mostly in WA, with 2010–11 epidemics resulting in yield losses and downgrades to feed with an economic cost estimated at up to \$200 per hectare.

Similarly, during the 2000s, stripe rust developed into a significant issue particularly as new pathotypes evolved and it has continued to cost growers significant income.

The GRDC *Powdery Mildew Factsheet* (2012) suggests that strobilurin-based fungicide products (Group 11) should be used as preventative or protectant control that can stop disease before it attacks.

Protectant activity is where the plant foliage is protected after the spray date by inhibiting fungal spores developing on the plant tissue. Its value as an investment to growers lies in that strobilurin-based products are now more affordable whereas the potential crop losses caused by foliar disease are immeasurable.

Syngenta Solutions Development Manager, Garth Wickson, said uncertainty of seasonal conditions and not knowing the level of latent infection are the reasons the rate and spread of infection is difficult to predict, and a reason why a strobilurin-based fungicide product can be a good preventative approach.

"The beginning of stem elongation (GS31) is particularly

important for decisions on fungicide application, since it marks the emergence of the first of the important yield contributing leaves.

"While protection at the flag leaf stage (GS39) can provide the greatest yield response and is therefore often the most important leaf to keep disease free, you can save a lot of angst by stopping foliar diseases before they develop," Garth says.

Strobilurins are extremely effective protectant fungicides as they have the ability to control disease and keep the crop greener for longer, provided there is sufficient soil moisture and plants are not subjected to excessive temperatures.

Garth said that Amistar Xtra is an effective full rate strobilurin-based product that is now more cost competitive, while still delivering significant benefits over other cut rate strobilurin products.

"Amistar Xtra is renowned for its length of protection. It's also very broad spectrum and actively protects cereal crops from all key foliar diseases including stripe rust, barley leaf rust, powdery mildew and is now also registered for the control of stem rust in wheat."

Garth said that it is important to remember some key differences between strobilurins and triazoles, especially application timing.

"Strobilurins such as Amistar work primarily on the leaf surface and provide a protectant shield around the outside of the leaf. They stop the disease entering the leaf so strobilurins need to be applied to disease free leaves for maximum benefit."



PRESS WHEELS, COULTERS, DOUBLE DISC OPENERS & OEM AGRICULTURAL PARTS

MANUTEC PTY. LTD.  
30 JONAL DRIVE CAVAN SA 5094  
www.manutec.com.au

Phone: (08) 8260 2277  
Fax: (08) 8260 2399  
manutec@manutec.com.au



**DOUBLE & TRIPLE DISC OPENERS**



**PRESS WHEEL ASSEMBLIES**



**GANG ASSEMBLIES**



**GANG CONVERSIONS TO SUIT FLEXICOIL, BOURGAULT, MORRIS, EZZEON**



**COULTER & CULTIVATOR DISCS**

**CALL US FOR A COPY OF OUR AGRICULTURAL PARTS AND TRAILER PRODUCTS CATALOGUE**



**HD & LD COULTERS**



**HUB, STUBS, AXLES & WHEELS**



**AGRICULTURAL TRAILER PARTS**



**IN-FRAME SEEDING ASSEMBLIES**

## OEM PARTS

MANUTEC HAS A LARGE RANGE OF PRESS WHEELS, PLANTER WHEELS, GAUGE WHEELS AND DISCS TO SUIT MOST AUSTRALIAN AND IMPORTED FARM MACHINERY, INCLUDING JOHN DEERE, FLEXICOIL, BOURGAULT, MORRIS, EZZE-ON, STUBBLEKING AND MANY MORE.

## JOHN DEERE AFTERMARKET RANGE

JOHN DEERE PRESS WHEEL & GAUGE WHEEL PARTS TO SUIT 1820 & 1830 AIRHOE DRILLS, 1870 "CONSERVAPAK", 1860 & 1890 SINGLE DISC, 1730 MAXEMERGE AND ASSOCIATED MACHINES.

CALL MICK OR DAN TO FIND OUT MORE.

## NEW MUD RAZOR RANGE



**NEW**  
**EATS MUD AND TRASH!**

## JOHN DEERE 1870 AFTERMARKET PRESSWHEEL



**NEW**

# Farming in Foreign Fields...



## Current equipment and technology shines in the heart of corn country

**L**IKE many progressive Midwestern US farmers, Dennis Doolittle has adopted new equipment, technologies and practices throughout his career that now allow a level of productivity unimagined when he began farming with his father after graduating college in 1969.

By steadily acquiring more acreage over the years, Dennis and his son, Eric, of Williams, Iowa, now farm corn and soybeans in a modern and large-scale operation that reflects their underlying desire to do a good job of farming for themselves and the landowners they work with.

"We rent a lot of the farms we operate, and we're fortunate to have very good landlords. We take pride in what we do and try to do things the right way," Eric explains.

Precision farming technologies have played a big role in helping the Doolittles be more efficient producers. They have been longtime site-specific yield mappers. For the past several years they have shared their data with a crop consultant who works with a handful of similar producers from different parts of Iowa.

"This gives us good comparisons throughout a broad area so

**Dennis and Eric Doolittle take a break with Eric's wife, Krystal and their son Callum.**

we can make more informed opinions about varieties, tillage, everything," Eric says. "This has been an awesome move for us, to gain new ideas and open our eyes to things we might not have tried otherwise."

The Doolittles have moved to an all-Case IH precision farming system, using the AFS Pro 700 displays for yield monitoring, mapping, AFS AccuGuide autoguidance with a CenterPoint RTX signal, and managing planter functions including row shutoffs.

"We like the Pro 700 displays because they can do so much, and we don't have all the clutter of wires and multiple monitors," Eric says.

With heavy black Iowa soil comprising much of their acreage, the Doolittles say it's worthwhile for them to deep-till every acre following corn to manage residue, leave the soil open over winter, and promote faster warm-up in the spring.

After running several other brands of rippers, they now use a Case IH Ecolo-Tiger 870 disk ripper. "I'm really impressed with the rolling basket in the back," Eric says. "It leaves the field nice and smooth heading into spring; we're not dealing with big clods. It's the best deep tillage tool we've used, by far."

The Doolittles use chopping heads on their combines, so the disk ripper is able to work as a first-pass tool after the combine, although they commonly spread dry fertiliser prior to ripping.

In the spring, immediately prior to planting corn, they run a pair of Case IH Tiger-Mate 200 field cultivators over the autumn-ripped ground. "These smooth the field and give us an excellent seedbed to plant into," Eric says.

The Doolittles say both of the tillage tools have a robust design for minimal downtime. And, Eric says they're impressed with the depth control performance of the 60-foot (18.3 m) field cultivators. "It's easy to adjust them for uniform depth across the entire width," he says.

### CENTERPOINT RTX

The CenterPoint RTX signal gives the Doolittles 1.5-inch (3.8 cm) repeatable accuracy directly from the satellites, without requiring a base station or cellular signal. This is an advantage for working farms that are spread out geographically, and in areas where cellular service may be spotty.

By being both GPS and GLONASS compatible, the system combines all satellites working together to deliver reliable location data. Corrections are delivered directly to the AFS-372 GNSS receiver for positioning and guidance information through the AFS Pro 700 display.





**The Doolittles use a grain cart and grain wagons to move corn away from their pair of Axial-Flow 8230 combines.**

### Side-by-side planter test

In the spring of 2012, the Doolittles' Case IH dealer encouraged them to try a Case IH 1200 Series planter in a true side-by-side comparison with the planter they were running. They agreed, and did a test on the same day, in the same field, with the same variety.

The result: "We saw a lot better spacing, more equal depth and better population control with the Case IH planter," Eric says. "The crop emerged faster, and we had more plants out there."

At harvest, the corn planted with the Case IH planter yielded 8 to 10 bushels (500–600 kg/ha) more. "That's a lot of money. It made the decision to trade fairly easy." Based on those results, the Doolittles traded their three 16-, 24- and 32-row planters for three Case IH Early Riser 1200 Series Case IH front-fold planters of the same size, all on 30-inch rows.

Each planter has a specific role. About 10 per cent of their corn is seed corn, and they use the 16-row planter equipped with individual row hoppers and Smart Boxes for those fields.

The 24- and 32-row planters, both with bulk fill, handle both corn and soybeans. The 24-row planter is very versatile, Dennis says, and the 32-row planter is highly productive in bigger fields with long rows.

The 32-row model includes the steerable rear axle to aid maneuvering in and out of tight fields. "That's a nice feature my previous 32-row planter didn't have," Eric says.

At harvest, the Doolittles use a pair of Case IH Axial-Flow 8230 combines equipped with model 2608 eight-row chopping heads and AFS RowGuide sensors for autoguidance, and 35-foot model 3162 flex draper heads.

Now on their third set of Axial-Flow combines after years with another brand, Eric says they are impressed with the Axial-Flow combines' capacity and simple operation. "They're easy to run, easy to adjust on the go, and have a superior cleaning system," Eric says.

Dennis adds that the Axial-Flow combines they have owned have been extremely trouble-free. Their current models are Tier 4A compliant, using the Case IH SCR-only Efficient Power system. They have also had several Tier 4A compliant Magnum tractors. "They don't consume a lot of DEF, and the oil stays clean," Dennis notes.

Strong Case IH dealer service underpins the Doolittles' move into more Case IH equipment. "It takes good service to support this type of equipment, and our Case IH dealer has it. They have good people, they are honest and knowledgeable," Eric says.

As they have added acres, the Doolittles have sought unique



**The Doolittles say running grain train wagons instead of semis is more efficient for them to move corn at harvest.**

new ways to be more efficient. For example, running the disk ripper over several thousand acres takes a lot of time, but they have found two retired brothers who look forward to keeping the ripper running, day and night.

Similarly, they trade off some fieldwork with several friends who help them harvest with their own combines.

In addition to several good full-time employees, the Doolittles rely on several retired farmers to help haul grain in the fall. This is a reason why they run tractors and wagons, rather than semis. "These guys are comfortable running tractors."

They are good operators, and reliable. It's harder to find part-time people with CDLs," Eric says. And, with the 30-mph transport speeds of their current Magnum tractors, the tractor/wagon combinations can deliver comparable cycle times over short to moderate distances.

### Putting technology to work

Looking ahead, the Doolittles anticipate putting more technology to work. Each year's worth of yield maps gives their crop consultant more data for better recommendations. Their integration into the AFS Precision Farming system as their common platform is making overall management of data-based functions, including variable-rate applications, easier.

"Already, we're seeing how variable-rate fertiliser allows us to be more economical by putting nutrients where they belong," Eric says. "We're at the tip of the iceberg with this."

They have changed their nitrogen program by reducing the amount of fall-applied nitrogen and instead applying more, through sidedressing, as the crop grows. "We've decided to spread out the applications, as nitrogen is expensive, and we need to make sure it's doing what it's supposed to," Eric explains. He adds that new application options give them more flexibility for the post-emerge applications. "We're not limited to just dragging an anhydrous bar," he says.

He's also looking harder at herbicide resistance for weeds including waterhemp and pigweed in soybeans. "Controlling them is becoming a major issue for us," he says. One option he's considering is moving to 15-inch rows for beans to gain the faster canopy to suppress weed growth.

"We did a fair amount of row-crop cultivating in beans this year, but that doesn't get them all, and we want to have pride in how these fields look," he says.

## No maintenance self-cleaning tank system

**T**ANKVAC is a self-cleaning system for your water tank. When a standard water tank overflows, the excess water drains from the top of the tank. Unfortunately this means it's the fresh, richly-oxygenated water which is removed first.

A TankVac system – in most situations, can be installed in less than half an hour – changes the flow of water and creates an automatic vacuum whenever your tank overflows. This vacuum siphons the waste water from the base of the water tank, discharging it in such a powerful flow that the harmful sediment and bacterial colonies are extracted.

As the wastewater is purged from the water tank, it takes with it the organic materials that settle and grow on the bottom of your tank.

This unique patented system was developed in New Zealand, and tested and proven at the School of Engineering, University of Waikato in collaboration with microbiologists from Auckland University of Technology.

### Is it cost-effective?

By replacing the need for frequent, costly professional tank cleaning it will virtually pay for itself as soon as it is installed.

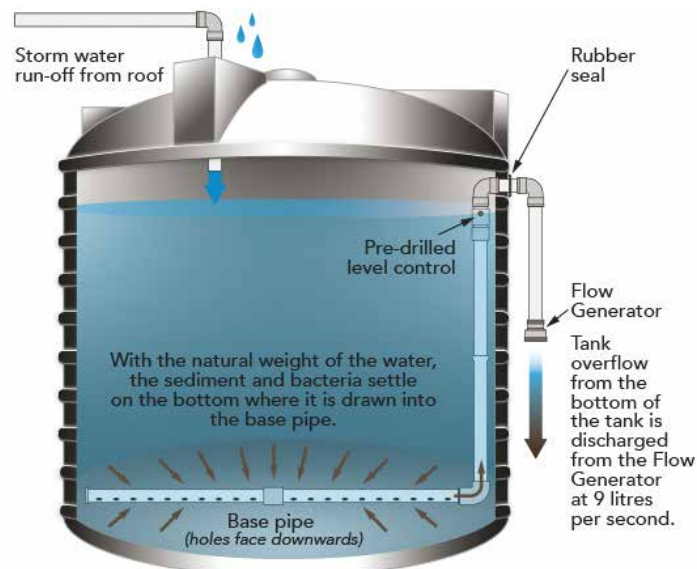
TankVac can potentially extend the life of your filtration system which will no longer be subjected to a constant stream of finely-ground waste materials.

### Is it easy to install?

TankVac can be easily fitted to any tank size and by any DIY handyman. It can be retro-fitted to your full or empty existing water tank or installed with your new tank. This unique system has no movable parts and operates automatically without the need for power.

For further information about TankVac please contact:

Ph: 0423 688 360, E: [info@tankvac.com.au](mailto:info@tankvac.com.au) Web: [www.tankvac.com.au](http://www.tankvac.com.au)



## An innovative new website

**A**GNova Technologies Pty Ltd is an innovative Australian company that sources, develops and distributes speciality crop protection and production solutions for agricultural and horticultural producers.

AgNova is proud to launch its new website at [agnova.com.au](http://agnova.com.au). An easy-to-use reference for growers and retailers alike, [agnova.com.au](http://agnova.com.au) introduces the range of specialist herbicides, fungicides, insecticides and non-chemical products marketed in Australia, and includes labels, MSDSs and other important technical information detailing their use.

The new website also provides more information about AgNova, an Australian owned and operated company that works closely with local agricultural producers and their supporting rural networks to identify market gaps and develop real solutions to difficult problems. A growing company with an expanding team of technical staff, specialist expertise and strong distribution networks, AgNova is focussed on commercialising niche and speciality products.

AgNova has launched a number of new products including Flute, the new mode of action fungicide for control of powdery mildew in grapes and cucurbits. Flute is a highly effective fungicide which is active at five stages of the powdery mildew life cycle, and due to its unique mode of action, will control strains of powdery mildew resistant to other fungicide groups.

With an excellent product portfolio and a full and exciting new product pipeline, AgNova is strongly placed to continue to develop value-adding solutions for agricultural and horticultural producers in Australia well into the future.

Visit us at [agnova.com.au](http://agnova.com.au) to learn more.

## Sealed grain sheds

**U**SING a unique sealing system, a locally owned north-western NSW company constructs heavy duty, fully sealed on-farm sheds to help create an insect-free, cost-effective grain storage option for Australian grain growers. Warren-based WRL Engineering Pty Ltd has been in the regional engineering business for over 20 years and for the past five years has been constructing heavy duty steel, fully sealed grain sheds ranging in capacity from 3000 to 10,000 tonnes.

The sealed steel sheds with concrete floor, not only provide the ideal environment for insect fumigation and control, they are a solid, impenetrable barrier to vermin such as mice. With the capability of providing long term, insect free storage for not just one, but if needed, several grain types 'under the one roof', the sheds have given growers more grain marketing options.

The sheds are custom designed for various door, side wall inlet, bulk head and grain chute options etc to suit the individual farm situation.

The sheds can also be used to store machinery or to provide another on-farm work area.

See [www.wrltoolboxes.com.au](http://www.wrltoolboxes.com.au) or call Warren on 0418 259 909.



## Western region



### NORTH

What a great start! Most areas of the region received between 50 and 100 mm of rain in the two weeks after Anzac day. There have been a couple of other follow up rains since. The first rains were around 10 times the amount that was forecast!

Low winds and very good soil moisture levels have given us the mildest May that I can remember. Growing conditions are 10/10.

Seeding is complete or close to complete for most growers. Some will be seeding into the first week of June.

Mould-board ploughing of non wetting sand will delay completion of seeding on some farms but the plough is well worth the crop establishment delay.

Crops are up and growing rapidly. Good knockdown herbicide

# District Reports...

May-June 2014

opportunities have meant that crops are emerging clean for weeds in most cases. The earliest crops are at tillering stage for wheat, six leaf for canola and 10 leaf for lupins.

Nitrogen applications and weed spraying are the next jobs on the list but most growers are up to date with these operations.

Generally, it has been one of the best starts you could hope for in our area. Crops look great now and I can't wait to see them in August and September.

**Peter Norris**

**Agronomy For Profit and Synergy Consulting, Geraldton**  
May 28, 2014

### SOUTH COAST

Seasonal conditions on the South Coast have been dry over the past two months. Rainfall is well below average while the remainder of the WA agricultural zone is experiencing very good autumn rain thanks to north-westerly frontal systems. The South Coast is just coping the wind and the dregs of the rain.

Hopefully the wind direction shifts to the south to push frontal

## Seasonal rainfall across the grain regions – 25 year averages and year to date

| <div><div>Brought to you in association with</div><div></div><div>JOHN DEERE</div></div> |                          |                            | Summer                   |         | Autumn                   |              | Winter                   |      | Spring                   |      |
|---|--------------------------|----------------------------|--------------------------|---------|--------------------------|--------------|--------------------------|------|--------------------------|------|
|   | 25yr Annual Average (mm) | 2014 rainfall to date (mm) | 25yr Annual Average (mm) | 2013–14 | 25yr Annual Average (mm) | 2014 to date | 25yr Annual Average (mm) | 2013 | 25yr Annual Average (mm) | 2013 |
| Emerald Qld   | 554                      | 204                        | 250                      | 125     | 118                      | 195          | 61                       | 34   | 120                      | 141  |
| Toowoomba Qld   | 673                      | 257                        | 281                      | 64      | 134                      | 233          | 82                       | 94   | 179                      | 140  |
| Roma Qld  | 590                      | 209                        | 248                      | 96      | 135                      | 121          | 73                       | 12   | 137                      | 120  |
| Goondiwindi Qld   | 619                      | 222                        | 251                      | 83      | 133                      | 164          | 97                       | 49   | 139                      | 135  |
| Narrabri NSW  | 642                      | 242                        | 228                      | 57      | 125                      | 199          | 128                      | 97   | 162                      | 124  |
| Gunnedah NSW  | 665                      | 250                        | 242                      | 66      | 122                      | 204          | 130                      | 142  | 178                      | 75   |
| Dubbo NSW   | 611                      | 322                        | 200                      | 148     | 136                      | 221          | 127                      | 155  | 153                      | 91   |
| West Wyalong NSW  | 446                      | 207                        | 117                      | 66      | 90                       | 159          | 117                      | 153  | 126                      | 104  |
| Wagga Wagga NSW   | 545                      | 200                        | 133                      | 80      | 121                      | 139          | 152                      | 181  | 144                      | 52   |
| Swan Hill Vic   | 327                      | 157                        | 73                       | 70      | 66                       | 125          | 92                       | 90   | 96                       | 64   |
| Bendigo Vic   | 524                      | 180                        | 110                      | 59      | 105                      | 167          | 171                      | 229  | 138                      | 116  |
| Horsham Vic   | 392                      | 117                        | 77                       | 27      | 71                       | 96           | 135                      | 200  | 110                      | 123  |
| Lake Bolac Vic  | 537                      | 129                        | 119                      | 51      | 101                      | 100          | 163                      | 215  | 153                      | 147  |
| Murray Bridge SA  | 370                      | 175                        | 64                       | 109     | 77                       | 85           | 130                      | 202  | 101                      | 54   |
| Kadina SA   | 345                      | 177                        | 55                       | 74      | 77                       | 128          | 123                      | 184  | 90                       | 54   |
| Cummins SA  | 394                      | 162                        | 46                       | 93      | 86                       | 86           | 177                      | 269  | 84                       | 94   |
| Esperance WA  | 623                      | 71                         | 80                       | 41      | 145                      | 59           | 255                      | 275  | 143                      | 161  |
| Wagin WA  | 405                      | 96                         | 49                       | 2       | 96                       | 96           | 171                      | 116  | 89                       | 103  |
| Northam WA  | 402                      | 129                        | 45                       | 7       | 84                       | 125          | 190                      | 131  | 84                       | 100  |
| Mingenew WA   | 368                      | 111                        | 32                       | 12      | 92                       | 100          | 176                      | 119  | 65                       | 75   |
| Moora WA  | 389                      | 29                         | 45                       | 0       | 89                       | 29           | 183                      | 140  | 73                       | 39   |
| Mullewa WA  | 320                      | 146                        | 50                       | 28      | 90                       | 134          | 134                      | 69   | 47                       | 41   |

Last rainfall reading May 27, 2014.

# District Reports...

May–June 2014

rain inland for a much needed drink!

But on the positive side, much of the area still has reasonable levels of subsoil stored moisture as a result of last season's wet winter and spring.

Seeding is progressing well, but crop establishment is varied, particularly on the non wetting sands. On these soil types, crop germination is poor as most of the crops have been effectively dry-sown.

Some early dry-sown canola has germinated well but without an effective knockdown, and limited summer rain, these crops are quite dirty with volunteer cereal. These crops have had to be sprayed quite early for grass control with particular emphasis on conserving limited topsoil moisture.

For growers with livestock, pasture growth is very slow to non-existent. Some very early sown grazing wheat and barley looks quite good and is filling the feed gap whilst we wait patiently for a good rainfall event.

**Quenten Knight,**  
**Agronomist, Precision Agronomics Australia**  
**May 28, 2014**

## Southern region



## SOUTH AUSTRALIA

### Weather

Rainfall for March ranged from average to below average.

April rainfall was average for most of Eyre Peninsula, Kangaroo Island and the South East.

Rainfall was well above average in the Northern Agricultural Areas and the Northern Mallee, with an intense band of tropical moisture from the northwest bringing heavy rain on April 9 and 10.

The northern part of the Upper North and parts of the Northern Mallee received their highest April rainfall on record.

Maximum temperatures during March were average across most of the state. Parts of the Lower South East were slightly above average. Maximum temperatures during April were near average across the whole state.

### Crops

The start to the season has been excellent in most parts of the state with ideal conditions for germination and control of weeds before seeding and for mineralisation of nitrogen and other nutrients.

There is now adequate to excellent sub soil moisture in most areas.

Seeding commenced in earlier districts in early to mid-April with pasture feed and some canola sown into dry soil.

Summer weed control occurred in most districts during March and April with many growers applying two herbicide applications.

There has been an increase in stubble burning this season in some districts in an effort to control herbicide resistant weeds, mice and snails.

Following the rain in mid April, growers in the earlier districts of the Northern Agricultural Areas and Mallee began seeding, with a number of growers more than 50 per cent completed by the end of April.

Some growers are concerned about reports of an El Niño developing later in the year and are sowing earlier than normal to reduce the impact of a potential dry spring.

In later districts and in areas which missed mid April rains, only limited seeding had occurred by the end of April. Many growers had sown pasture feed and a number had sown canola and legumes by the end of April.

Following widespread rains in late April, seeding will get underway in all districts across the state in early May.

The area sown to wheat is likely to increase in a number of districts but the area sown to barley is likely to fall slightly.

The area sown to canola is likely to remain relatively stable across the state although there will be increases in some districts and reductions in others.

The area sown to beans and lentils might increase in some districts at the expense of chickpeas and field peas. The area of oaten hay is also likely to decline in some districts.

Despite the hot summer reducing snail numbers, rains in mid February provided ideal conditions for them to build up in some districts and burning and baiting has been necessary to reduce numbers.

Mice are in high to plague proportions in parts of Yorke Peninsula and the Lower and Mid North, and growers have baited before and after sowing to reduce damage. In most other districts numbers are relatively low.

Grazed stubble paddocks have significantly lower mouse numbers.

### Pastures

Pasture availability in the Northern Agricultural Areas and Mallee is excellent.

Pasture feed reserves on Kangaroo Island, Fleurieu Peninsula and the South East are limited, with supplementary feeding required.

Livestock are generally in good to excellent condition across the state.

**PIRSA Crop and Pasture Report**  
**May, 2014**

## WIMMERA

Wimmera croppers have finished sowing early this year as great opening rains in excess of 50 mm in April were followed by good rains in May. Many crops were out of the ground in early May – a good four weeks earlier than last year.

The early start to the season has put pressure on fertiliser and chemical supplies as manufacturers struggled to bring production forward. Glyphosate stocks went from abundant to scarce in the space of two weeks.

Along with the wetter than average April and May, we have seen higher than average temperatures and the almost complete absence of frosts. The warm conditions have allowed newly sown crops to bounce out of the ground and quickly establish themselves.



# District Reports...

May-June 2014

At the end of May we have a few crops moving toward tillering whereas none were germinated this time last year.

Wimmera pastures have also established well allowing early grazing of paddocks sown with Harberger Startup Blend which has been very successful for the past few seasons.

The warm conditions have also been favourable to insect activity in the Wimmera. Lucerne flea were abundant early in the season and caught a few people with cereals and pastures being chewed as they emerged. This in turn has led to insecticide shortages in some areas.

Cutworm have also appeared this year. Young cereals are typically nipped off at, or below, ground level by the cutworm. Often large areas are chewed back before the problem is discovered. Some plants will recover, but usually the crop requires re-sowing in affected areas.

The Bureau of Meteorology is talking up the prospect of an El Niño weather event in the spring which has many of us proceeding with caution. Maybe the best tactic is to get the crop in and established early, feed it early while soil moisture is good and ensure there are no weeds to compete for moisture.

If the Bureau is right, with good management, we may just be able to sneak home with an average or better crop on existing soil moisture rather than missing out on the last critical rain – as often happens.

**Mike Laidlaw**

**Harberger Farm Supplies, Donald**

**May 28, 2014**

## MALLEE

Currently, Mallee annual rainfall deciles range from 8 in the northern Mallee to 5 in the southern Mallee. But Growing Season Rainfall deciles are well above average ranging from 10 in the north to 8 in the south.

Season breaking rains in early April have given growers the opportunity to instigate a 'war on weeds'. Separate knockdown, pre-emergent and even double knocks have been applied. Emerging crops appear weed free – a good reward for effort.

Insects such as bryobia mite and cutworm in canola have posed an issue for growers given the moist soils and warm temperatures (5°C above average in May for Swan Hill).

The pending El Niño juxtaposed against the excellent early rainfall has challenged growers to carefully consider the potential benefits and risks of their rotations and planned inputs this season. Many growers have similar views to BCG board member and Birchip farmer Ian McClelland, that the benefits of sowing early and using available soil moisture, outweigh the risks.

"I know it's early when considering frost damage, but with the El Niño forecast I think it is better to trust early rainfall than spring rainfall," Ian says.

Growers in the Mallee have either finished sowing now or are putting in their last field pea crop.

Thanks to the early start, BCG is 80 per cent through sowing our research plots. We have 111 research trials going in this year. These comprise



**Linda Walters, BCG Research Officer, scoring GRDC barley agronomy trials.**

member, research and privately contracted trials, across 20 sites in the Mallee and Wimmera.

Having large trial sites – designed for field days – does pose logistical issues for spraying given cereals and broadleaf crops are sown in close proximity and plots emerging prior to others being sown. Good spray days and careful boom spray operators are a must!

Priority research projects funded through GRDC include crop sequence, integrated weed management and stubble



Boss Ag Parts is online now and our spare parts listings are growing everyday.  
With competitive prices and regular Specials its worth checking in to see what's new.

online now!  
**[www.bossagparts.com.au](http://www.bossagparts.com.au)**  
Phone Boss Ag Parts **02 6721 5188**



**Boss Agriculture**  
P **02 6721 2677** • F **02 6721 2760**  
Dan Ryan **0488 512 677**  
Dave Herbert (Dalby QLD) **0439 286 277**

**[www.bosseng.com.au](http://www.bosseng.com.au) • [www.bossagparts.com.au](http://www.bossagparts.com.au)**

Boss Agriculture - A division of Boss Engineering Pty Ltd  
40 Taylor Avenue Inverell NSW 2360

# District Reports...

May–June 2014

management. We also have a four year project investigating efficient grain production compared with nitrous oxide emissions. This is being undertaken with the Department of Agriculture.

Project results will be extended throughout the year.

**De-Anne Ferrier**

**BCG Research & Extension Officer, Birchip**

**May 28, 2014**

## Northern region



**Gregory wheat just coming out of the ground at Gordon Park, Trangie**

## CENTRAL WEST

All body parts are crossed that the rain forecast for this weekend comes to fruition. It will be a saviour for many and provide an excellent boost for others.

Winter crop sowing is nearly complete in the Central West if you were to draw a line from Coonamble to the south. It is a rare pleasure when crops go into the ground on time – and varieties in their correct windows – albeit a little (or very) early in some cases!



**Three leaf canola at Warren. It's a promising – if not slightly early – start to the Central West winter crop.**

The area to the north and west of Coonamble and up into Walgett is still very dry. Walgett has only had 102 mm for the year to date versus the long term average of 210 mm. So on top of a desperately dry 2013, things are pretty crook in that area.

The very warm conditions during May have left their mark on crops. The crops have powered on where moisture has been plentiful but many are hitting the proverbial brick wall as they do not cope too well with the 30°C days or being sown into such warm soils. Maximum daily temperatures in May for Trangie are 2.5°C above the long term average.

First out of the blocks for sowing this year were the forage crops, which were sown as early as February in the softer parts of the region. Many oats crops are encountering rust issues as finding enough mouths to stock them efficiently is proving a challenge! The bulk of these crops are currently being grazed, or have had one grazing already.

Wheat, of course, is the dominant crop in the region with the bulk of the planting being early to main season varieties. Canola has enjoyed a huge increase in hectares sown in the Central West due to the wonderful autumn rains and subsequent sowing opportunities.

The shift in production systems continues to move to TT products as farming herpes (ie herbicide resistance) expands and growers are forced to utilise differing chemical options. On this note, the area of windrow-burning increased markedly last year as producers look for non-chemical weed control options.

Pulse crops are a mix of lupins, field peas and chickpeas. The lupin area has expanded due to the high price for the commodity in the past few years and the early break this season (that is, where seed could be obtained). Field peas have seen a modest increase in area due to the improved marketability of this legume and the increased awareness of its value as a break crop. Chickpeas are coming out of the ground as I write.



# District Reports...

May–June 2014

Crops have been hit by a scourge of insect pests. These pests include locusts at Nyngan, aphids, thrips, cutworms and slugs at Narromine, whitefly and the rarely seen Anthelid grubs.

Feral pigs are in huge numbers and they really love any pulse seed put into the ground.

**Penny Heuston**  
**Delta Agribusiness, Warren**  
**May 29, 2014**

## WESTERN DOWNS

After a tough summer, good autumn rain has enabled the area to go into winter cropping with a healthy profile of moisture. And due to failed crops during summer, many growers are putting some extra paddocks into winter cropping to make up for the poor season.

The rain in March has led to a fair area of early long season varieties of barley and wheat being planted. The relatively warm weather has bounced these crops out of the ground and they are moving along quite quickly. Some cold weather would be good to slow them up so they don't flower too early.

After some further rain mid May, more main season wheat and barley is being planted along with chickpeas, which are well underway.

Some more rain is needed for growers intending to double-crop wheat into cotton ground if they have their ground prepared.

The odd bit of canola has been planted in the region, along with faba beans which have generated considerable interest.

Along with winter crop planting to keep local growers busy, there are still a few sorghum crops remaining to harvest. These late sorghum crops have tillered after the good autumn rain which means that harvesting conditions are not ideal. Although not the prettiest crops – with about three crop stages in the one paddock – they will put some money in the bank.

**Nikolaus Fritz**  
**Agronomy – Landmark, Miles**  
**May 28, 2014**



A sight you don't see too often on the Western Downs – the good autumn rains have led to some sorghum crops still to be harvested alongside paddocks of newly emerging barley.

## CENTRAL QUEENSLAND

### Weather

Dry, warm weather continues across CQ grain growing districts. Except for areas around Clermont, Capella and Dysart, November 2013 was the last month that above average rainfall fell on the Central Highlands (Rolleston to Kilcummin).

The Dawson and Callide Valleys scored better as March 2014 rainfall was above average in those areas but April and May have been mostly dry.

Of the local districts, Clermont seems to be the worst affected by a cold spell that hit eastern Australia on May 5. There was frost damage to some sorghum crops and grass pastures especially in lower areas.

### Summer crop

Most of the earlier planted sorghum crop (January 2014 plant of about 30,000 hectares) has been harvested. Yields were generally moderate (2.5 to 3.0 tonnes per hectare) but given the dry season and good price, farmers are generally pleased. There have been a few exceptional crops (greater than 5.0 tonnes) in the Dysart district. The later planted sorghum crop (February 2014 plant of about 50,000 hectares) is at soft dough to colouring stage. Once it gets to May in CQ, waiting for sorghum to dry is as much fun as watching paint dry ... but it takes even longer. The sorghum harvest will continue through to mid August.

The May 5 frost caused significant damage, particularly in the Clermont district and to a lesser extent at Rolleston. There is less sorghum there and it wasn't as cold. Damage to sorghum plants I checked 20 km north of Clermont, ranged from zero to 100 per cent leaf kill. There appeared to be no stem or head damage.



On May 5 a frost caused damage to sorghum crops in the Clermont district. This was an early frost for the Central Queensland region.

# District Reports...

May-June 2014

The final effect of the frost won't be known until after harvest as grain fill is a reflection of how much green leaf is retained. Sorghum is a C4 grass so will frost at temperatures above 0°C whereas wheat and barley are C3 grasses and need 0°C or colder to frost.

Harvest of the summer planted mungbeans crop is mostly complete. Most crops are very short as a result of dry growing conditions. This has made harvest a challenge and yields have been modest.

## Winter crop

Planting of the earliest wheat began in the second week of April and continued through to mid-May when farmers either ran out of paddocks or soil moisture. Most paddocks have 35 to 65 per cent PAW (plant available water) at best and will need at least one in-crop rainfall event for crops to develop secondary roots for any reasonable yield to occur.

The trend this year has been for farmers to plant more wheat and less chickpeas. If we get rain before late-June, more wheat will be planted. But my estimate at the end of May is that about 130,000 to 150,000 hectares of wheat and 30,000 hectares of chickpeas have been planted. Chickpea planting generally didn't start until early May.

## ANSWER TO IAN'S MYSTERY TRACTOR QUIZ

The tractor is a Swedish Munktells Model 25 and is powered by an unconventional vertical two cylinder two stroke semi-diesel engine. The starting procedure involves pre-heating with a blow lamp and an injection of compressed air. The proud owner of this rare artefact is Victorian Leon Panov.



## Livestock and pastures

Following some rain at the end of March, pastures across the Central Highlands, Dawson and Callide grew limited, short grass but this has now mostly hayed-off. Local bullocks, steers and weaners are in good to excellent condition as summer pastures were generally short but of higher quality. Cows with big weaners will drop condition quickly as pasture quality and quantity drop.

Meatworks with full books and low saleyard prices have created a sombre and sometime desperate mood in the cattle industry.

## Water

Surface water will continue to be an issue for many graziers. While some properties were lucky enough to have farm dams filled, nearby neighbours were often left with unfilled farm dams as a result of the dry summer and lack of overland flow.

While Fairbairn Dam is currently at 51 per cent capacity (677,807 megalitres), most on-farm water storages are empty.

Maurice Conway

Department of Agriculture, Fisheries & Forestry

Emerald, Queensland

May 29, 2014

## ADVERTISERS' DIRECTORY

|                               |            |
|-------------------------------|------------|
| Agnova .....                  | 19, 35     |
| Bayer .....                   | IFC, 3, 39 |
| BCG Grains Research Expo..... | 16         |
| Boss Agriculture .....        | 10, 53     |
| Case IH .....                 | OBC        |
| Charltons .....               | 46         |
| Coolamon Steelworks.....      | 27         |
| Croplands.....                | 25         |
| CRT/Ruralco .....             | 23         |
| Dinner Plain.....             | 36, N      |
| Dow Agro .....                | S          |
| Excel Agriculture .....       | 21         |
| Jaylon Industries.....        | 36         |
| John Deere .....              | 9          |
| Landpower Claas.....          | 5, 17      |
| Manutec.....                  | 47         |
| Neil's Parts .....            | 6          |
| New Holland.....              | 15         |
| Omnia Specialities.....       | 11         |
| Profarmer .....               | 29         |
| Rabobank .....                | S          |
| SCT Logistics .....           | 43         |
| Study Tours .....             | IBC        |
| Syngenta.....                 | 1          |
| Tanuki .....                  | 37         |
| The-Gate .....                | N, 31      |
| Trimble .....                 | 7, 45      |
| Valmont .....                 | 39         |
| Westfield.....                | N, S       |
| WRL Engineering .....         | 10         |
| Yarra Nipro .....             | 42         |