

Advertising

Michael Cook

(National Advertising Manager)

P: 07 4659 3555

F: 07 4638 4520

E: 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 2015.

Published by Bereku 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



This birdseye view of clay spreading near Esperance, WA was taken by a GoPro mounted on a remote controlled copter drone. See District Reports page 50. (PHOTO: Quenten Knight)

Contents

Editorial	4
What does IWM really mean?	6
Lessons in resistant ryegrass management	10
Kill weeds early to save moisture from summer's rainy days	12
Weed Smart...	
'Ask an expert' – How can studying resistance genetics in weeds help farmers?	13
Fungi readied for weed biocontrol	18
CBRE – National round up of grain farm sales	20
Assessing wheat versus barley as the first cereal following a break	22
Don't risk replanting weeds	24
Classic Tractor Tales...	
The odd and the interesting!	26
Marketing...	
Recent market reports fill the gap	29
Russia's (disruptive) role in world trade	31
Pulses and FTAs	32
Crop insurance: Doing it better	33
Keep seed pure and viable	34
Pulse yields down but grower sentiment up	35
Farming in Foreign Fields...	
Strip-till is the way to increase yields	36
Light stubble grazing doesn't reduce crop yields	38
Enjoy the good but beware of the bad when grazing pulses	39
Closing in on butanol for biofuel	41
Switchgrass for ethanol: Where it came from and where it's going	42
AHRI insight...	
Rules of thumb	45
News & New Products	47
District Reports	50

Focus Sections

Southern Australia Focus

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

Consultants' Corner...

Canola has merit in Mallee soils despite seasonal constraints	i
The consultant's view	iv
Subsoil manuring comes of age in HRZ	v
Taking subsoil manuring to the Mallee and beyond	vii
Fast-tracking adoption in Victorian HRZ	viii

Northern Focus

Covering Northern NSW and Queensland

Consultants' Corner...

Digging the dirt on wide rows in cereal crops	i
The consultant's view – Count the cost of wide rows	iii
Keeping the farm clean using many tactics	iv
GRDC wastes no time in researching new fertiliser options	vi
Pampas growers get wheat harvest surprise	vii
Growers the key to preserving farmland fertility	viii

Together we can beat root and foliar diseases with new technology



Uniform®



Vibrance®

**NOW
REGISTERED**



In-Furrow Fungicide

Fungicide Seed Treatment

syngenta®

To find out more visit www.syngentacereals.com.au

The information contained in this document is believed to be accurate. Images used do not represent full product label. See product labels for full instruction on handling and use. No responsibility is accepted in respect of this information, save those non-excludable conditions implied by any Federal or State legislation or law of a Territory.
© Registered trademark of a Syngenta Group Company. AD14/623.

TM

FLAME_SVN1602_0115

Keep up the fight against rhizoctonia.



EverGol[®]
Prime

We're winning but it's not over yet.

Last year we started the revolution and rose up against rhizoctonia root disease. EverGol Prime seed treatment was the biggest weapon against a range of fungal diseases, smuts and bunt. It had a great effect on yields across Australia, up to 20% increases in barley and wheat. To maintain this victory, farmers should continue to use the best tools available. So stand your ground and continue to fight rhizoctonia with EverGol Prime.



Bayer CropScience

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

[^]Suppression of rhizoctonia root rot. ^{*}Suppression of soil-borne flag smut.

EverGol[®] is a registered trademark of the Bayer Group. SeedGrowth[™] is a trademark of the Bayer Group.



Bayer SeedGrowth[™]

seedgrowth.bayer.com

SANTA Claus delivered early and generously in 2014 with much of the northern cropping region gratefully receiving beautiful December rain extending over two or three weeks. And typical of summer rainfall, totals varied widely. Our summer cropping districts from Central NSW north to Central Qld received anything from 50 to 250 mm during December – and the storms are still happening. This is giving growers much needed optimism that they can cash in on some healthy grain prices this summer, particularly for sorghum and mungbeans.



Once again, we can thank strong and growing demand out of Asia for these healthy prices. More particularly we can thank Chinese ducks – and this is a graphic indication of how relatively 'small' market factors in China can have a huge impact in Australia. Chinese authorities are concerned about the possibility of GM tainted stockfeed imports from the US. So the importation of sorghum (a non-GM grain), and much of it from Australia, is the preferred stockfeed – particularly for ducks in the vast commercial farms dotted across China.

The rapidly growing predilection by the Chinese for liquor based on sorghum grain, is not only keeping Chinese party-goers happy, Australian sorghum farmers and exporters are also merry at the prospect of this unique market continuing to grow.

To put things into perspective here, over the next 12 months China is forecast to import from all international sources around five million tonnes of sorghum – our average annual national production of sorghum over the past five years has been 1.8 million tonnes of which 835,000 tonnes is exported ... cheers!

To continue this international theme, we have an article on page 31 which also explores some recent developments and distortions in global wheat trade. The Russian government's propensity to regularly intervene in their wheat exports with taxes and embargoes is nothing short of disruptive to the world trade.

But there may be a silver lining for Australian wheat growers as importers lose patience with those exporters, particularly from the Black Sea region, who keep shifting the marketing goalposts.

Farm study tours in 2015

Speaking of developments overseas, there is a great line-up of destinations for Greenmount Travel/Australian Grain farm study tours this year. Tours options include Japan, UK & Ireland, Central Europe/Turkey, Cuba & Central America and, an old and very deserving favourite, South America. Thanks to more than 20 years' experience in arranging and hosting international farm tours, the itineraries are a fantastic blend of the local culture, sights and farms – and with plenty of flexibility to do your own thing before, during or afterwards.

For further details see www.greenmounttravel.com.au or call and ask to speak to Lloyd or Dave on 07 4659 3555.



AUSTRALIAN GRAIN

www.ausgrain.com.au

In this issue...

What does IWM really mean?

It's one of the buzz phrases of grain growing in recent years – integrated weed management. But how can growers use IWM to take control of weeds and prevent resistance without losing financial returns?



See article Page 6

National roundup of grain farm sales

Confidence levels in the national grain property market are relatively solid but in some areas – where adverse seasons have prevailed – confidence is a little fragile.



This is on the back of a variable 2014 winter crop harvest, and in many areas of Queensland and northern NSW, a patchy and generally late start to the 2014–15 summer crop.

See article Page 20

The odd and the interesting!

How many years have I been associated with tractors?

I have no idea. I gave up counting about a decade ago. All I know is, I have been involved with driving the things, fixing them when they have failed to proceed, selling them, importing them, restoring them when



they became old and classic, exhibiting them, researching and chronicling their evolution and of course writing books and magazine articles about them in order to spread their gospel.

See article Page 26

Light stubble grazing doesn't reduce crop yields

Light sheep grazing of crop residues over summer in no-till systems does not negatively impact on subsequent grain crop yields, soil health or ground cover, Western Australian research has confirmed.



See article Page 38



We've packed a lot of quality ideas into every single seed.

Seeds that work harder for you in the field and beyond.

**Speak to your agronomist
or Nuseed representative
today or call 1800 993 573**



nuseed.com.au

With herbicide resistance rapidly becoming the norm, the term 'integrated weed management' has become equally widespread, but what does IWM really mean for growers?

What does IWM really mean?

■ By Rebecca Barr

IT'S one of the buzz phrases of grain growing in recent years – integrated weed management. But how can growers use IWM to take control of weeds and prevent resistance without losing financial returns?

GRDC-supported research has shown that while IWM principles may seem to be expensive and more complex than chemical control alone, using a range of control measures will pay for itself – both financially and in giving growers more control options for the future. There are simple and easy tools available for growers to identify the best IWM tactics for their cropping program.

The key principles of IWM are stopping weed seed set, rotating crop types and chemical modes of action, testing for resistance, adhering to label rates, double-knock techniques and, perhaps most importantly, aiming for 100 per cent control.

IWM economics

While many growers may see the short-term costs of investing in extra weed management diversity as an impediment, modelling has shown that using IWM results in significantly higher returns in the longer term.

CSIRO agricultural economist Marta Monjardino was part of the University of Western Australia team which developed RIM (Ryegrass Integrated Management) – a GRDC-supported bioeconomic model which calculates the economic return from different weed management strategies, based on growers' specific circumstances.

"There is no 'right way' to use integrated weed management. The options that will provide the best results will depend on the weed density, resistance status, preferred rotation, and other factors that are different for every grower," Marta said. "RIM was originally developed so that growers and advisors can feed their own situation into the model to find out the best economic



Wild radish is one of the most widespread broadleaf weeds in Australian grain cropping and has developed resistance to many herbicide modes of action. (PHOTO: Peter Newman)

balance between the tactical decisions for this year and the strategic outcomes they want over a 10-year period."

RIM was originally a ryegrass model but has also been extended to wild radish. It accounts for the dynamics of weed behaviour and crop biology, potential herbicide resistance development and the effect of a range of weed control options over 10 years. For example, if a grower models the use of green manuring, the program will take into account the increased return from crop and weed seedbank benefits in following years.

RIM has also proven particularly useful in demonstrating to growers when harvest weed seed control practices will be profitable.

"What we've found from RIM is that, over the long term, there's no choice but to use a diverse range of practices. But it's unlikely the whole suite of tools will be required for any grower. Some measures are only profitable for particularly high weed densities. For example, we showed that a three-year pasture phase can provide excellent control of the weed seed bank, and will still pay off over 10 years for a severe infestation," Marta said.

Marta is currently working with the Australian Herbicide Resistance Initiative (AHRI) to update the model to include brome grass, which is becoming an increasingly important weed in south-eastern Australia.

RIM is a computer-based tool designed for growers and advisors to use, with tutorials and training workshops available, and a new user-friendly version can be downloaded for free from the AHRI website

Chemical control

The key to effective chemical weed control is to understand what the herbicide can achieve and optimise application to improve efficacy.

Delta Agribusiness senior agronomist Tim Condon says that while the majority of growers adhere to label rates, the technique of application still needs to be considered.



Agronomist Tim Condon advises growers to mix and rotate modes of action when using chemical weed control. (PHOTO: Tim Condon)



CLAAS AXION 800 (200 to 270 hp)



CLAAS AXION 900 (320 to 410 hp)

Look twice

CLAAS AXION 900/800 advanced technology tractors have been recognised as the world's best tractors – not once, but twice – by Europe's leading agricultural and technology editors.¹ With eight models delivering 215 to 410 hp of on-demand power, category-leading fuel efficiency,² your choice of smooth CMATIC continuously variable transmission or HEXASHIFT powershift transmission, unique four-point cabin suspension and smart on-board technology, AXION 900/800 delivers the same exacting levels of performance, efficiency, versatility and reliability that have made CLAAS the world leader in harvesting technology. Contact your local CLAAS Harvest Centre today and give CLAAS AXION 900/800 the once-over today. Or maybe twice.



CLAAS Harvest Centre

www.claasharvestcentre.com

1. CLAAS AXION 800: 2013 Tractor of the Year, Agritechnica and 2014 Machine of the Year, Agritechnica. CLAAS AXION 900, 2011 Machine of the Year – Agritechnica. 2. AXION 900, Best fuel consumption – Drawbar category (320-270 hp class), DLG Powermix Test 2013; AXION 800, Best fuel consumption – Overall (200-270 hp class), DLG Powermix Test 2013.

LPA14053

CLAAS



Forage harvesting to simulate grazing in the Southern Farming Systems IWM trial at Inverleigh, southwestern Victoria. The plots contain (left to right) serradella heavily infected with radish, persian clover and sub-clover.
(PHOTO: Corinne Celestina)

“Growers are aware of the need to use the appropriate label rates to achieve the required levels of weed control, however there’s still more focus required on application. A critical factor is nozzle selection. For example when applying a pre-emergent, the herbicide must be making it onto the soil, not the standing stubble, so the nozzle selection and water rate need to be adjusted to ensure correct application,” he said.

Tim gives three tips for optimised chemical control:

- Apply a double-knock;
- Manage expectations; and,
- Mix the modes of action.

“A double-knock is traditionally the application of two knockdown herbicides around a week apart, for instance a full rate of glyphosate followed by a full rate of gramoxone. However a double-knock does not have to be chemical, and it doesn’t have to be limited to two steps. The principle is to use a subsequent technique to control the survivors of the first. One effective method is a triple-knock, which is a full rate of glyphosate, followed by a heavy sheep grazing, then a full rate of gramoxone,” Tim said.

Following the knockdown, the next control option is the effective use of pre-emergent herbicides. Tim advises growers should not have too high expectations of the control pre-emergents can achieve.

“Achieving anything over 80 per cent control is very respectable. The degree of control may range from 70 up to 95 per cent when applied well, but to expect 100 per cent control is unrealistic. IWM is all about depleting the seedbank – reducing the numbers. It’s a long-term process and growers need to take into account that even in a good system, some weeds will generally survive. It’s all about stopping any weed seeds from entering the seedbank using as many techniques as practical,” he said.

Tim Condon’s final tip is to mix and rotate modes of action strategically.

“As per the double-knock principle, mixing modes of action means that if herbicide A doesn’t control a certain weed, then herbicide B will. Continuous use of a single mode of action will

select for resistance, so the importance of mixing and rotating modes cannot be understated. The newer modes of action are often more expensive than the older ones, but sticking to the cheaper chemicals will select for resistance, and will eventually mean the new modes of action will be the only ones left. By mixing and rotating, growers can ensure the cheaper herbicides remain effective,” he said.

Rotation control

Another important principle within IWM is crop rotation. Southern Farming Systems (SFS) is managing a GRDC-funded trial into the effect on weed populations of pasture ‘breaks’ in a farming system.

The four-year trial at Inverleigh and Lake Bolac in the Victorian high rainfall zone has involved sowing nine different pasture crops for between one and three years, starting in 2012, followed by a return to a traditional grain rotation (canola, wheat, then barley). The crops selected for the trial were sub-clover, lucerne, Arrowleaf clover, Persian clover, forage oats, ryegrass, Balansa clover, forage peas and serradella. Each of these pasture and fodder species is subjected to different weed control measures over the course of the trial, including in-crop herbicides, silage, hay, grazing and manuring.

SFS projects coordinator Annieka Paridaen said the trial was initiated after noting that while many growers in the high rainfall zone are mixed farming, the animals and crops were rarely integrated.

“Growers would have ‘crop’ paddocks, and ‘pasture’ paddocks, but weren’t rotating between the two. We saw great potential in integrating the two practices in terms of weed control,” she said.

The trial has run for three seasons, with all pasture rotations complete.

“We have proven that with a crop that does not go to harvest, such as hay or silage, we can achieve almost 100 per cent prevention of weed seed set. By counting seedbank numbers, and using the combination of cutting hay, then grazing, then spraying, we saw a weed reduction in the following year of about 90 per cent. This can deliver excellent returns, with the sale of hay, feed for livestock and a huge reduction in weeds,” Annieka said.

While chemical control is part of the weed equation, Annieka

TESTING FOR RESISTANCE

University of Adelaide researcher Dr Chris Preston says once growers have experienced resistance to a certain herbicide, there is huge value in testing weeds to find out what herbicides will work.

“While there are some rules about what types of cross-resistances there might be between herbicides, there are lots of variations; cross-resistance is not absolute,” he said. “These variations can sometimes help growers make a decision about what product they might use.”

For example, in a GRDC-funded Fast Track trial in the Griffith, NSW, region, a large number of seed samples were collected and sent in for testing. While all the samples tested positive for Logran resistance – which had been expected – surprisingly, two thirds of the growers’ samples showed no resistance to Hussar.

“So they suddenly had a product they could use, even though the technical rules would say you’re likely to get cross resistance. You’d never know that unless you tested,” Chris said.

says the SFS trial has shown there is a problem with relying on chemical control.

"In the trial, it's not necessarily the weeds in autumn that are the problem, a knockdown and pre-emergent chemistry can control those weeds. It's the weeds germinating in spring that create the biggest issue for the following year. Up-front herbicides are a great tool, but if you're missing the spring germinating weeds every year, it's difficult to get on top of the problem. By stopping those weeds setting seed by other means, it's reducing the seedbank for the future," she said.

SFS tested different crops but found no clear winners at this stage. Oats provide high bulk early, and strong competition with autumn weeds, while clovers may be slow early on but increase their bulk in spring, improving weed competition. While the perennial crops such as sub-clover and lucerne are slow in the first year, they provide better crop competition in the second and third years.

So far, Annieka has found that methods which physically remove the seed, such as hay or silage, are having the best effect on weed seeds, but it is critical to time it right based on weed maturity.

"Only one week late will make a big difference, and the timing has to be based on weed maturity, not crop maturity. The weed has to be stopped from setting seed," she said.

A demonstration trial has indicated there may be benefit in hay-topping which prevents weed regrowth, however further research is required to confirm this.

So what does Annieka recommend?

"It depends on the severity of the problem. We've shown already that two years of pasture can reduce the numbers significantly, so if the weed problem is costing yield, a two-year

break, cutting hay and grazing can pay itself back as well as reduce weed numbers by around 90 per cent," she said.

"Most importantly, stick to the plan. We've seen many serious weed problems where the grower has set out a rotation plan, but then changed at the last minute, maybe they sowed wheat when they were going to sow a hay-blend, or else instead of cutting for hay, they took oats through to harvest. If you have a weed problem, without action it will only get worse, and one year of poor control can undo 10 years of good work. Integrated management is a long-term commitment."

More Information:

Marta Monjardino, 08 8303 8413, Marta.Monjardino@csiro.au

Tim Condon, 02 63 862 118, tcondon@deltaag.com.au

Annieka Paridaen, 03 5265 1666, aparidaen@sfs.org.au



Local growers and agronomists inspecting a Southern Farming Systems IWM trial paddock at Lake Bolac, southwestern Victoria.

THE BEST OPTICAL SPRAYING SOLUTION ON THE MARKET



"The unit has more than paid for itself and the surplus has been ploughed into extra fertiliser to further boost the next crop's potential."

**WEEDit Owner,
Cereal and canola producer, S.A.**

Purpose built contour following boom.
The latest in weed detection technology.
WEEDit cameras are the newest optical solution to hit the market.

Nothing else compares to WEEDit.



PRODUCT MANAGER
QLD
SOUTH QLD/NORTH NSW
NORTH NSW/TAS
SOUTH NSW

Steve Norton 0437 878 695
Rob Graham 0409 597 462
Jeremy Jones 0407 485 569
Dave Farmer 0427 651 971
David Hamilton 0427 975 072

VIC
SA
WA
WA

Matthew Plunkett 0417 832 784
Luke Wormald 0419 991 534
Gavin Merritt 0448 022 172
John Griffiths 0407 132 746

CROPLANDS

Lessons in resistant ryegrass management

AT A GLANCE...

- 60 per cent of southern Victorian paddocks have ryegrass resistant to Group A and B herbicides;
- Chemical and cultural strategies are needed to stay on top of the problem; and,
- Learn to narrow windrow burn with an 'easy' crop, such as canola.

GETTING mouldboard ploughing right, the advantage of an expensive herbicide strategy and how not to narrow windrow burn are just some of the initial learnings from a long-term trial in southern Victoria's high rainfall zone.

The project was set up to address the problem of herbicide resistance in the high rainfall zone (HRZ), particularly southern Victoria. It is being led by the University of Adelaide's Dr Chris Preston in conjunction with Southern Farming Systems (SFS).

Five years ago, Chris surveyed paddocks in southern Victoria and found some worrying results.

"We discovered that 60 per cent of paddocks between Geelong and Hamilton had ryegrass resistant to both group A and group B herbicides," Chris said. "Essentially, all the post-emergent herbicides for cereals were gone, so the conversation turned to – what are we going to do about this?"

From 2012, a trial at SFS' Lake Bolac site – which has a history of resistant ryegrass – assessed the effectiveness and applicability of cultural control practices before seeding, in combination with pre-emergent herbicides on management of herbicide-resistant annual ryegrass in the Victorian HRZ.

The cultural control practices include mouldboard ploughing, stubble burning, stubble incorporation with light cultivation and retained stubble with direct sowing. These were followed up with low cost (such as trifluralin mixtures), medium cost and high cost (such as Sakura + Avadex Xtra mixtures in wheat) pre-emergent options.

Lessons learnt from the trial so far

Mouldboard ploughing

Although expensive, early results from mouldboard ploughing were promising despite some wild radish germinating in the area ploughed.

"We pretty much got the ryegrass out but we didn't get 100 per cent of it, which came back to haunt us because now (2014) the ryegrass numbers are back to what they were when we started (2012)," Chris said. "That comes back to the HRZ environment. In a long-season scenario where there is plenty of rain, any ryegrass that is germinating late after treatments have been applied will produce a lot of seed."

"In dry environments we don't see that so much, but in the

HRZ it's a problem. If we're not stopping the seed set of ryegrass it will reset the seedbank pretty quickly."

Pre-emergent herbicides

Chris says the biggest lesson learned from using pre-emergent herbicides was not to incorporate stubble.

"If you've got too much stubble and you want to get rid of it, burn it," he says. "By incorporating stubble we're moving the ryegrass away from where the herbicides are and they just don't work as well."

"We also learnt that if you've got post-emergent resistant ryegrass and you think you're going to manage your way out of that by growing wheat and barley – it's not going to happen. Even with our best treatments, we kept a lid on the ryegrass, but numbers are still going up. We haven't actually driven the ryegrass down, we've just kept it stable by putting in a lot of pre-emergent herbicides."

Unsurprisingly, the cheapest pre-emergent herbicide strategies were the least effective. Chris says the mid-cost strategy was better but the expensive strategy was best.

"In the cereal side of your rotation, if you really want to keep a lid on the ryegrass you're going to have to go for some pretty expensive herbicide options to do that in the HRZ," he said. "A lot of that is about needing the length of persistence we get out of that product, particularly the Sakura + Avadex Xtra mix."

Chris says they used RT canola in 2014 because of its flexibility – they are able to grow it as a triazine tolerant (TT) canola, a Roundup Ready canola and use an array of treatments on it.

"That has been Rustler, up front; we've got two applications of Roundup Ready herbicide, we've got atrazine in there and we're going to crop top it with Weedmaster DST. With that, we're going all-out to try and fix the ryegrass problem, with the question being, how important is that seed set control component in the system in southern Victoria?"

"In my belief, it is, and this will give us some data around that and how important that component is. If we don't get on top of it with canola this year we'll go in with a pulse next year and brown manure that."

Narrow windrow burning

Chris has some important advice for growers in the HRZ who want to have a go at narrow windrow burning. Or, how not to windrow burn.

"Last year we got a pretty big barley crop and we thought we'd set it up to windrow burn," he said. "Unfortunately, part of the trouble we had was lodging ryegrass. In this environment we get a lot of ryegrass that lodges, so you don't actually get it going through the header, it just lies on the ground, so we had all these windrows with ryegrass in between."

"We tried to burn it but we ended up burning everything. That was fine for the ryegrass between the rows, but the burn got too fast and didn't burn the windrows all the way down to the ground, so there are streaks of ryegrass across the site."

"The lesson there is that if you're going to windrow burn, don't start practising with barley because it's probably the hardest crop to do it in. Start with something easy like canola. Learn how to do it and do it well, and don't make the mistakes we did."

For more information: Dr Chris Preston, University of Adelaide –
E: christopher.preston@adelaide.edu.au



Dr Chris Preston is confident that long-term trials in southwestern Victoria will continue to shed light on improved strategies for herbicide resistance management.



The World Advances when The Chemistry is Right

- Advanced technology
- Reliable products
- Manufacturing integrity
- Great customer service



www.vicchem.com
Phone 03 9301 7000

Kill weeds early to save moisture from summer's rainy days

EARLY control of weeds over the summer will place grain growers in an advantageous position ahead of next year's cropping programs.

Research funded by the Grains Research and Development Corporation (GRDC) shows that early control of fallow weeds can lead to significant increases in the levels of stored plant-available water and increased availability of nutrients (especially nitrogen), benefiting crop yield and grain quality.

ICAN agronomic consultant John Cameron says weeds that are not killed or only partially killed will rapidly remove significant amounts of summer moisture.

"Early summer weed control is critical," John said. "Even low populations of weeds can rob the soil of valuable water."

John, who co-authored the GRDC's *Summer Fallow Weed Management* manual, said soil water saved by killing fallow weeds was often stored deep in the profile and its value is often far higher than that of in-crop rainfall.

Moisture and nutrition benefits

Deep-stored water is often used by the crop later in a dry season to maintain grain number during the critical period of stem elongation to anthesis. As a result, in the right soil, deep

stored soil water can have a water use efficiency of up to 60 kilograms of grain per millimetre of stored water.

John said the amount of nitrogen tied up in dead and dying weeds was another important reason for taking out weeds as soon as possible.

"In many environments, the contribution of the extra nitrogen made available to the next crop from control of summer weeds is just as (and sometimes more) important than the contribution from extra water stored," he said.

An adequate supply of nitrogen is critical to capture the benefits of high levels of stored soil water and reciprocally, a high water supply is required to capture the benefits of nitrogen fertiliser.

Trials in southern New South Wales have illustrated that for every millimetre of moisture lost via summer weed growth, a further 0.64 kg N per hectare was made unavailable to the following crop.

John said uncontrolled weeds not only reduced soil moisture and nitrogen, but could also lead to equipment blockages that impeded efficient sowing operations.

More efficient sowing

"Maintaining a weed-free fallow generates other benefits as well – it helps growers to sow on-time and can also minimise many disease and insect issues that stem from a 'green bridge' being allowed to survive over summer."

With higher levels of stored soil water, many growers can consider sowing a proportion of their crop earlier than the traditional sowing window if conditions suit.

This ability to sow a crop at the desired time into moisture can deliver yield and risk management benefits.

Research in NSW showed the extra soil moisture saved by controlling summer fallow weeds almost doubled the probability of being able to sow during the month of April.

"Having extra stored soil water improves the chance of successful crop establishment as it reduces the risk of failure associated with crops sown on limited soil water," John said.

In several recent seasons in the southern and western grains regions, drier growing season conditions have been offset by higher than average fallow rainfall.

In these situations, managing summer rainfall by controlling weeds and maintaining stubble cover has been a key management strategy to optimise profit, according to John.

The new *Summer Fallow Weed Management* reference manual for grain growers and advisers in the southern and western grains regions draws heavily on the data produced by the much acclaimed GRDC-funded Water Use Efficiency Project.

The *Summer Fallow Weed Management* manual is available for viewing and downloading via the GRDC website at www.grdc.com.au or hard copies can be ordered through the GRDC's Ground Cover Direct, free phone 1800 11 00 44 or email ground-cover-direct@canprint.com.au.

To assist growers with pre-harvest herbicide application to control weeds in winter crops, and post-harvest control of summer weeds, the GRDC has also produced an updated Pre-Harvest Herbicide Use Fact Sheet.

Further information on effective weed control is available at the GRDC's new Integrated Weed Management Hub, www.grdc.com.au/IWMhub, which has been developed specifically to help Australian grains industry advisers and growers find the latest weed research and management advice quickly and efficiently, as well as the WeedSmart website, www.weedsmart.org.au ■



A crop in which summer fallow weeds were managed (left) and where no fallow weed management occurred (right).
(PHOTO: Col McMaster, NSW DPI)

ASK AN EXPERT – HOW CAN STUDYING RESISTANCE GENETICS IN WEEDS HELP FARMERS?

■ With Dr Qin Yu, Research Associate Professor with the Australian Herbicide Resistance Initiative

THE old saying 'know thy enemy' certainly applies to managing herbicide resistance. Dr Qin Yu's research into the biochemical and molecular processes plants use to evade destruction is essential for the development of effective strategies to manage resistance.

Working with 33 populations of annual ryegrass that had survived treatment with Hoegrass (diclofop), Qin and her team identified the resistance mechanisms being used. Their findings were both alarming and illuminating – 91 per cent of the resistant populations studied possessed target site mutations, 80 per cent possessed metabolic mutations, meaning 70 per cent were using both types of mechanisms to survive herbicide treatment.

"Target site mechanisms are relatively easy to identify and study," says Qin. "We now have a good understanding of these mechanisms, which can lead to high levels of resistance. The resistant plants can usually be removed using alternative herbicides of the same mode of action."

"Non-target site mechanisms are more difficult to study and harder to manage," she says. "This type of resistance is related to the metabolism of the herbicide within the plant, making it more complex and unpredictable. This is harder to manage in the field."



AHRI research associate professor, Qin Yu studies the molecular and biochemical processes plants use to evade death.

EXCEL

Stubble Warrior Planters
ZERO & MINIMUM TILLAGE



Trailing, Lift Assist & Linkage Frames

- ✓ Single disc opener has excellent ground penetration
- ✓ Precise ground following ability with a true parallelogram design
- ✓ SP 200 can be fitted with JD boxes
- ✓ Combination of winter and summer planting machinery
- ✓ CR 600 can be fitted Double Disc Shank Standard 1 1/4 parallelogram pins
- ✓ Interchangeable disc opener and tyne tooling options
- ✓ Robust low maintenance design
- ✓ Slotted gauge wheel



SP 200 PARALLELOGRAM DOUBLE DISC



EI 853 SINGLE DISC



CR 600 PARALLELOGRAM 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

www.smartplanting.com.au 26420_114

How can target site and non-target site mechanisms occur in the same individual plant?

Short answer: Through gene sharing.

Longer answer: Some weed species have a very high capacity to respond and adapt to environmental conditions, including herbicide applications. Cross-pollinator weeds such as annual ryegrass readily exchange genetic material, with each new generation having the capacity to accumulate resistance genes from different individuals.

What is the value of theoretic science such as resistance genetic studies?

Short answer: Better information for better decisions.

Longer answer: Advances in diagnostic technology to determine what mechanisms are present in a resistant weed population can identify effective management strategies.

Finding ways to capitalise on the 'fitness penalty' that may come with herbicide resistance, such as increasing crop competition or using other non-chemical control tools, is an important outcome of this research.

What can resistance genetic studies tell us about using selective herbicides?

Short answer: Resistance can occur within just a few years if low rates are used or survivors are ignored.

Longer answer: Selective herbicides work by taking advantage of a crop's greater ability to metabolise a herbicide compared to the target weed's lesser ability to metabolise the herbicide. Studies of annual ryegrass and wild oats have proven that both weeds possess the genetic capacity to breakdown selective herbicides if these herbicides are applied at sub-lethal

rates. Resistant populations can be resistant to other selective herbicides, even ones that are not yet on the market. Applying full label rates and removing any survivors is essential to preserving these chemicals for use in-crop.

What are some ways to improve herbicide efficacy in resistant populations?

Short answer: Ambient temperature makes a difference to the efficacy of some herbicides and the resistance level.

Longer answer: Some resistance mechanisms are temperature-dependent. Understanding these mechanisms can help researchers optimise the way growers use herbicides that the weeds are resistant to. For example, glyphosate should be applied during relatively cool (but not warm) temperatures for better control of resistant winter-grown ryegrass, and applied at warm (but not hot) temperatures to improve control of resistant summer-grown barnyard grass. ■



Hoegrass-resistant populations of annual ryegrass can be resistant to other selective herbicides, even ones that are not yet on the market. Applying full label rates and removing any survivors is essential to preserving these chemicals for use in-crop.

HOW TO ASK A WEEDSMART QUESTION

Ask your questions about genetic research that is helping to manage herbicide resistant weeds using WeedSmart Innovations Facebook page <https://www.facebook.com/pages/WeedSmart-Innovations/354441941389122>, Twitter @WeedSmartAU or the WeedSmart website <http://www.weedsmart.org.au/category/aska-weedsmart-expert/>. '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.



Superior Group G spike.
How will you describe it?



SUMITOMO CHEMICAL

www.valor.net.au

Valor® is a registered trademark of Sumitomo Chemical Company, Japan.

Excellent work. Tractors from CLAAS.



Name	Sam Taylor
Geodata	52°49.500 000°01.200
Country	United Kingdom
Farm	800 ha arable, including 170 ha flowers and bulbs



Hello from the United Kingdom.

We harvest 11 months a year. Curious?

Visit us at: tractor.claas.com





CLAAS



Fungi readied for weed biocontrol

■ By Jan Suszkiw, Agricultural Research Service – USDA

RUSSIAN thistle, *Salsola tragus* (tumbleweed, roly-poly), has become an icon of the American West since arriving in the 1870s as a flax seed contaminant. Make no mistake, though: The weed is a menace. It outcompetes crops, clogs irrigation ditches, spreads insect pests, and even poses a driving hazard. The latter happens when the weed's top portion breaks off the main stem and is blown onto roads, obscuring driver vision and potentially causing accidents.

Russian thistle is particularly troublesome in arid and semi-arid regions of the western US. (See accompanying box story for comments on Australian *Salsola* species. Ed).

In the US, large-scale infestations, especially on low-value agricultural lands, can make chemical or cultural control too costly or impractical, says Dana Berner, a plant pathologist in the Agricultural Research Service's Foreign Disease-Weed Science Research Unit (FDWSRU) in Fort Detrick, Maryland.

As an alternative, he and colleagues have been studying certain fungi with potential to biologically control the weed. The approach would involve exposing targeted thistle populations to fungal spores to cause widespread disease of the weeds.

Towards that end, Dana and colleagues Bill Bruckart and Craig Cavin examined the host range and specificity of two promising fungal candidates: *Uromyces salsolae* and *Colletotrichum salsolae*. Both were originally isolated from infected thistle plants

in Russia and Hungary and exported to FDWSRU under permit for quarantine study.

In a biosafety level-3 greenhouse containment facility there, the researchers exposed specimens from 64 different plant species to *U. salsolae* and 89 species to *C. salsolae* and gauged the plants' reactions and disease symptoms, if any.

To broaden the scope of their host-range tests – critical to making sure the fungus won't harm nontarget plants or crops once released into the environment – the team adapted and validated the use of a risk-assessment approach.

Dubbed "mixed model equations (MMEs) that produce best linear unbiased predictors," the approach uses a disease-ranking system and matrix information to predict susceptibility of a plant species, based on how genetically similar it is to the targeted weed – Russian thistle, for example.

Such predictions are especially useful when checking for



Spore-forming pustules of the rust fungus *Uromyces salsolae* on Russian thistle. (Photo by Dana Berner)

BALDAN SB2013 ROW UNIT

- 20" single disc for deeper sowing and longer disc life
- Cover wheel and press wheel NOW non greaseable
- Fast depth wheel adjustment
- 6" spacing available for pasture crops, extremely robust



SERAFIN ULTISOW

Serafin
ULTISOW



High quality, low maintenance, heavily constructed no-till seeder. Sizes ranging from 20ft – 66ft. Fitted with Baldan 20" single disc row units. Perfect seed placement for all crops. AUSTRALIAN designed, owned & manufactured.

BALDAN CRI-A OFFSET DISC

IN STOCK READY TO GO

40, 44 & 48 plate, 28" discs, 5.3m up to 6.4m working width. Baldan oil bath bearings with 3 year warranty. Hydraulic folding wings with hydraulic locks to avoid uneven ploughing.



Serafin
MACHINERY

1300 737 586
www.serafinmachinery.com.au



A stem section of Russian thistle with symptoms of *Colletotrichum salsolae* infection. (Photo by Dana Berner)

susceptibility in plant species that are rare, endangered, or difficult to grow, says Dana. In the case of *C. salsolae*, for example, the MME risk-assessment approach enabled the team to extend plant host-range evaluations to 33 additional species.

The FDWSRU scientists have submitted petitions seeking recommendation for release of the two weed pathogens from the Technical Advisory Group for Biological Control Agents of Weeds, an advisory committee to the US Department of Agriculture's Animal and Plant Health Inspection Service, consisting of other federal and state regulatory agencies and representatives of plant regulatory agencies in Canada and Mexico.

In the meantime, the search continues for other biocontrol organisms – fungal, mite, or insect – that could help turn the tide on the loathsome weed.

Dana Berner is in the USDA-ARS Foreign Disease-Weed Science Research Unit, 1301 Ditto Ave., Fort Detrick, MD 21702; Ph: +1 (301) 619-7316. ■

SALSOLA IN AUSTRALIA

Salsola tragus (Chenopodiaceae) is found throughout Australia and is considered to be a weed in both natural and agricultural ecosystems, although the current taxonomic status of this species is not clear.

Common names for the weed include buckbush, prickly saltwort, prickly saltwort, roly-poly, prickly roly-poly, soft roly-poly, Russian thistle, prickly Russian thistle, tumbleweed.

The taxonomic literature reports morphological variation within Australian populations of the weed, indicating that there may be genetically distinct ecotypes or unidentified subspecies present within the species.

The predominant wheatbelt *Salsola* weed, which was previously classified as *S. tragus* ssp. *tragus* L., has been recently identified as *S. australis*. This species is probably native to Australia, given its arrival predated European settlement.

Source: *Australian Journal of Botany*



High performance in the field

This winter cropping season get high performance in your field with **ZincStar**, without walking a tightrope.

ZincStar provides balanced nutrition with Nitrogen, Phosphorus, Sulphur and Zinc in every granule.

Listen to Australian farmers talk about their **ZincStar** experience at www.impactfert.com.au and find out why it is superior to a dry blend.

Please contact your local distributor for more information.

www.impactfert.com.au
Customer Service 1800 88 44 88



Local focus,
global strength



ZincStar® is a trademark of Impact Fertilisers Pty Ltd

CBRE NATIONAL ROUNDUP

National overview

Confidence levels in the national grain property market are relatively solid but in some areas – where adverse seasons have prevailed – confidence is a little fragile. This is on the back of a variable 2014 winter crop harvest, and in many areas of Queensland and northern NSW, a patchy and generally late start to the 2014–15 summer crop.

Properties that meet the scale and quality criteria required by the corporate investors have generally sold at stronger values than the smaller or lesser quality grain properties. In some regions, this has created a two-tiered market. Since around July 2014, corporate interest in the national grains property sector has waned – this is particularly the case when compared to the flurry of investment activity we have seen over the past five years.

The leasing of grain growing properties has increased significantly in recent years. Leasing has met with varied success and it remains to be seen if we experience a general increase in the level of leasing. Prevailing rates are generally between four and five per cent of current market value of the cropped land – but we expect to see rents become more closely tied to productivity than to property values.

Whilst the depreciating Australian dollar, declining fuel costs, low interest rates, Free Trade Agreements and ongoing offshore interest in Australian farmland are all positive market drivers – unless there is a significant escalation in grain prices and improved seasonal conditions – we sense that property prices will plateau in 2015 to reflect prevailing rates of return.

Yield bands:

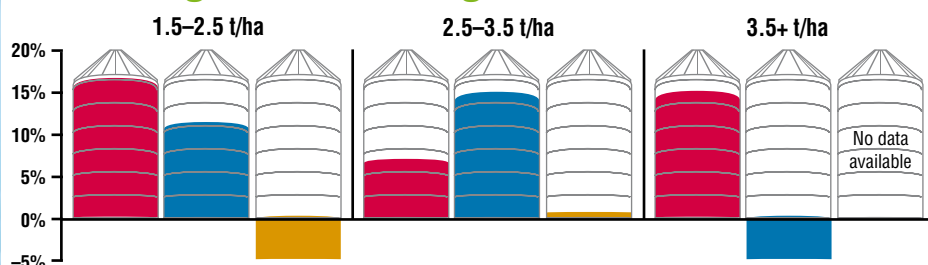
Farm sales are categorised into Northern, Southern and Western Cropping Regions of Australia. Individual farm sales are further categorised into 'yield bands' reflecting the average yield history for wheat production on that farm.

1.5–2.5 t/ha wheat = 7–12 bags/ac
2.5–3.5 t/ha wheat = 12–17 bags/ac
3.5+ t/ha wheat = 17+ bags/ac

With this feature, *Australian Grain* – in conjunction with CBRE – presents a national and unique overview of grain farm sales. Indicative selections of individual farm sales over the past 12 months are categorised into the three major agro-economic cropping regions and further categorised into average wheat 'yield bands'. Trends in the value of grain farms since 2008, according to these categories, are also presented.

For the first time, prospective buyers and sellers (or just interested observers) have a national insight into the current and recent trends in the value of cropping farms across Australia according to region and production capability.

% change in value of grain farms since 2008

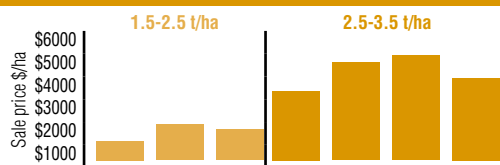


The three yield bands above – 1.5–2.5 t/ha; 2.5–3.5 t/ha; and, 3.5+ t/ha – are used to categorise grain farms according to the average yield history for the production of wheat on that farm.

Red = Northern Cropping Region. **Blue** = Southern Cropping Region. **Gold** = Western Cropping Region.

Source: CBRE national farm sales data, 2008–2014.

Indicative Farms Sales Western Region, 2014



Farm No: 1 2 3 4 5 6 7
Av. price: \$1562/ha \$4240/ha

- Farm 1 Wogolin, WA** – Well improved property with sandy loam soil types.
- Farm 2 Cunderlin, WA** – This is a small scale property featuring productive soil types.
- Farm 3 Malyalling, WA** – 500 hectares of land with approximately 80% considered arable and utilised for cropping.
- Farm 4 Wongan Hills, WA** – Large scale aggregation situated in well regarded cropping region.
- Farm 5 Takalarup, WA** – Small scale property with sound loam soil types, situated in close proximity to Albany.
- Farm 6 Kalgan, WA** – Small scale property with sound loam soil types, situated in close proximity to Albany.
- Farm 7 Narrikup, WA** – Small sized vacant cropping property.

There were no indicative farm sales by CBRE in the 3.5+ t/ha yield band.



Danny Thomas
REGIONAL DIRECTOR

☎ 0439 349 977
 ✉ danny.thomas@cbre.com.au
 📍 Area covered: National/Vic

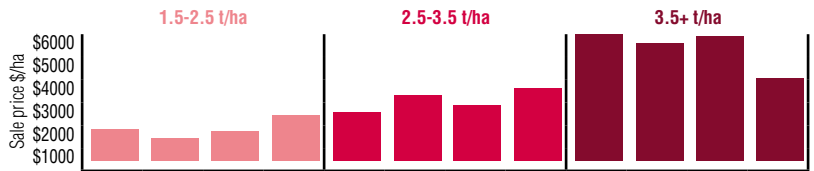


Chris Davidson
DIRECTOR

☎ 0418 354 835
 ✉ chris.davidson@cbre.com.au
 📍 Area covered: NSW

UP OF GRAIN FARM SALES

Indicative Farms Sales Northern Region, 2014



Farm No:

Av. price:

\$1676/ha

\$2793/ha

\$5058/ha

Farm 1 The Gums, Qld – Features brigalow with melonholes, sold under distressed circumstances.

Farm 2 Inglestone, Qld – Comprises brigalow and belah land types.

Farm 3 Toobeah, Qld – On the flood plain of the Macintyre and Weir Rivers and features self-mulching alluvial clays.

Farm 4 Mungindi, NSW – Potential for limited irrigation assistance.

Farm 5 Rowena, NSW – Good level myall soils.

Farm 6 West Moree, NSW – Good quality black/chocolate soils on edge of watercourse.

Farm 7 Burren Junction, NSW – Mix of black and red soils.

Farm 8 Delungra, NSW – Good sloping basalt soils.

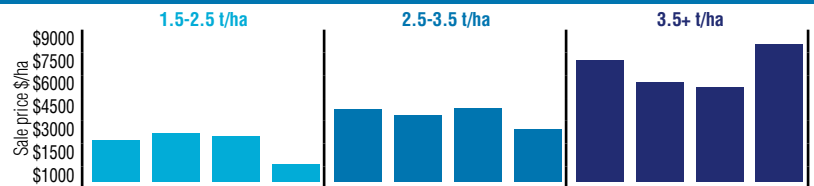
Farm 9 Warra, Qld – A non-contiguous aggregation with high quality self-mulching brigalow belah soils.

Farm 10 Warra, Qld – Features high quality self-mulching brigalow belah soils.

Farm 11 Warra, Qld – Comprises high quality self-mulching brigalow belah soils.

Farm 12 North Star, NSW – Operated on a zero till farming basis and features level and open soft self-mulching soils.

Indicative Farms Sales Southern Region, 2014



Farm No:

Av. price:

\$1684/ha

\$3334/ha

\$6265/ha

Farm 1 Ultima, Vic – Comprises approximately 1,100 hectares of cropping land with strong Mallee soil types and a high arable percentage.

Farm 2 Hopetoun, Vic – Small scale farming property with a high percentage of strong red sandy loam soil types.

Farm 3 Lock, SA – Predominately arable land of relatively heavy soil types for the district. Strong management and production history.

Farm 4 Ulyerra, SA – Large scale property with a high proportion of arable land predominately featuring sandy soil types.

Farm 5 Minyip, Vic – Features approximately 680 hectares of heavy black clay soil types and associated rural infrastructure.

Farm 6 Gerang Gerang, Vic – Small scale property comprising approximately 410 hectares of good quality black clay soils.

Farm 7 Rand, NSW – This is a large scale property previously operated as a mixed cropping & grazing enterprise and was purchased by the adjoining owners.

Farm 8 Urana, NSW – This is a large scale cropping aggregation with extensive grain storage that has been extensively improved over the previous 5 years.

Farm 9 Lake Bolac, Vic – This is a well regarded cropping property situated north of Lake Bolac.

Farm 10 Penshurst, Vic – Prestige property with a significant homestead complex that was purchased by Chinese interests.

Farm 11 Stoneleigh, Vic – Cropping property which was previously part of a larger holding and divested to local purchasers.

Farm 12 Hilltown, SA – Small scale property located in a sought after region that commonly tops 4.5 t/ha wheat yields.

CBRE Agribusiness is dedicated to being the industry's premier provider of transactions, valuations and advisory services across a wide range of rural assets. If you are buying, selling or researching, please contact your local CBRE agribusiness professional.



Geoff Warriner
SENIOR CONSULTANT

0408 687 880
geoff.warriner@cbre.com.au
Area covered: Qld



Phil Melville
ASSOCIATE DIRECTOR

0488 203 088
phil.melville@cbre.com.au
Area covered: WA



Phil Schell
DIRECTOR

0418 809 849
phil.schell@cbre.com.au
Area covered: SA

Assessing wheat versus barley as the first cereal following a break

HIGH rainfall zone (HRZ) growers should consider growing a malting or feed barley over wheat as the first cereal after the break crop, based on data from National Variety Trials (NVT) in the region and Southern Farming Systems (SFS).

FAR Australia managing director Nick Poole was speaking at a SFS field day on trial work comparing yield and quality of five barley cultivars with a feed wheat variety, being carried out as part of the wider GRDC Southern Barley Agronomy project.

Nick says barley is underrated by many growers and, when pitted against each other evenly, the productivity of barley is greater than wheat. He believes barley is often overlooked in respect to how it is grown, how hard it is pushed with inputs and the discussion around feed versus malt quality.

"Between 2008 and 2012, the difference between the malting variety Westminster barley and feed variety Oxford barley was about 0.3 tonnes per hectare in NVT trials," Nick said. "If you



Nick Poole.

went Oxford to malting variety Gairdner there's about 0.6 tonnes per hectare difference in favour of Oxford.

"If you look at last year's results – a high yielding year in the NVT – at 5.21 tonnes per hectare, Oxford was out-yielded by Westminster. That is atypical of what happened in most research trials last year where Oxford would have out-yielded Westminster.

"Examining SFS trials over a similar period from 2009 to 2012 is useful, since the trials have been pushed harder with inputs. More nitrogen has been going into the system such that comparing Oxford v Westminster sees the feed advantage go out to 0.5 tonnes per hectare. In 2013 with the very high yields, the feed barley averaged about two-thirds of a tonne better."

Malt premium needed to break even

According to data commissioned by SFS, between 2003 and 2014 the premium for malt has averaged about \$23 per tonne. Assuming malt quality is always achieved (which would not be farm experience) and not taking into account possible differences in nitrogen applied, Nick says yields of 5.31 tonnes per hectare for feed barley at a price of \$200 per tonne would require a premium of \$11 per tonne to break even, taking account of the reduced yield that goes with growing malting barley based on NVT results.

"At \$250 per tonne for feed barley, that premium creeps up to \$14 per tonne," he said. "But based on SFS trials data, feed barley is achieving yields of around 6.8 tonnes per hectare over those trial years. With these higher yields the premiums required for malting barley over feed creep up.

"For example at \$200 per tonne, the malting premium required is \$16 per tonne, and at \$250 per tonne the required premium is \$20 per tonne, which is getting close to that \$23 per tonne breakeven figure for feed barley. This is important considering that growers surveyed said that they achieved malting quality on 50–80 per cent of occasions.

Having two bob each-way

"If you combine that with the fact you can't guarantee you're going to get malt because of the environment we're working in, I would suggest we may be better off to grow good malt varieties like Westminster as a feed and get a good crop with the potential to make malting grade, rather than target malt where you deliberately cut back on nitrogen but don't know whether you'll make malt at the end of the day or not."

Based on these figures, Nick says there is a 'huge' case to be made as to whether or not growers in the HRZ should be planting barley as the first cereal after canola and push it harder with more nitrogen like they would with a wheat crop.

He says varieties such as Westminster and Grange give growers a much better agronomic packages than the historical favourite Gairdner.

"As such, we might find ourselves farming barley more like we might farm a wheat crop, rather than it being just a low input crop which we put in as the second cereal," he said.

"At the end of the day, better malt varieties with better characteristics such as head loss retention are going to provide growers with the candidates they can push harder anyway and achieve either feed or malt."

More information: Nick Poole, FAR Australia, poolen@far.org.nz



EZYFLO STAINLESS STEEL AIR DIFFUSERS

Quality hard wearing air diffusers that will last!



- Single Inlet;
- Double Inlet; or,
- Quad Inlet.

Shop online at www.ezyflo.net.au
Call 0490 046 168 for a FREE consultation
Like Us on Facebook

CBRE AGRIBUSINESS

CBRE Agribusiness comprises skilled property professionals providing Valuation, Sales, and Advisory services across Australia and New Zealand.

Clients include Private, Corporate and Government entities seeking timely and accurate freehold, leasehold and business advice on a single property or portfolio basis.

CBRE is the world's largest commercial real estate services and investment firm* and is able to leverage off its global reach to support and service local opportunities by connecting these to new sources of capital.

VALUATIONS

- All Agricultural Asset Classes
- Current Market Value
- Succession / Family Law
- Financial Reporting
- Compulsory Acquisition / Litigation Support
- Going Concern
- Superannuation Planning
- Development Assessment
- Taxation Business Administration

TRANSACTIONS

- Sales and Divestment
- Acquisitions
- Sale and Lease Back
- Vendor Due Diligence
- Aggregation and Portfolio Build
- Strategic Advisory
- Capital Raising
- Pre Farm Gate
- Post Farm Gate

To find out more please call:

Victoria: +61 3 8621 3333

New South Wales: +61 2 9333 3333

South Australia: +61 8 8110 3333

Western Australia: +61 8 9320 0000

Queensland/Northern Territory: +61 7 4690 6933

Auckland: +64 9 355 5333

www.cbre.com.au/services/agribusiness

*Based on 2013 revenue



CBRE

Don't risk replanting weeds

It is possible to remove weed seed contamination from farmer-retained planting seed but it requires a high level of care and planning and many farmer-cleaned samples still have a high level of contamination.

From a crop hygiene point of view it is obvious that planting clean seed is the best way to prevent weed seed being sown with the crop. If in doubt the cost of buying certified clean seed for planting pales into insignificance against the cost of controlling weeds in crop or the difficulties associated with a weedy paddock at harvest.

Un-cleaned seed samples can contain over 1500 weed seeds per 10 kg planting seed, many of which will be seed from herbicide resistant plants.

There is more to the story though, as clean seed promotes strong crop establishment and early growth – another key tool to reduce the weed seed bank and to combat the spread of herbicide resistance.

Professional seed cleaning machinery not only removes weed seeds, it also removes small and broken seeds and non-seed contaminants. The removal of these other contaminants increases the chance of the retained seed having a high germination rate and strong seedling vigour. Both these factors will increase the competitiveness of the crop and reduce the likelihood of weeds growing and producing seed.

Large seed size is generally equated to higher germination and vigour so the removal of small crop seeds also helps with weed control. Similarly, the removal of non-seed contamination reduces the risk of insect damage and fungal diseases that can spoil the seed quality during storage. Following the guidelines for safe on-farm storage is also important to protect the viability of the retained seed.

A survey in Western Australia by the GRDC-funded Australian Herbicide Resistance Initiative found that the gravity table

method of seed cleaning consistently produces the cleanest seed sample. The AHRI survey found that un-cleaned seed samples can contain over 1500 weed seeds per 10 kg planting seed, which would add extraordinary pressure on the next crop. Sieves alone can bring that number down to about 150 weed seeds per 10 kg and a gravity table reduces contamination to about 25 weed seeds per 10 kg.

A fully automated, continuous flow cleaning and grading plant will remove at least 98 per cent of addage. The complete cleaning and grading process will sort the material by weight, length and width as the grain moves over an air screen then a gravity table to remove impurities and finally through indented cylinders to sort the grain according to size.

Infield cleaning

Any cleaning of grower-retained seed is beneficial for reducing weed pressure in the next crop. An in-field rotary screen cleaner can be expected to leave an average 80 weed seeds per 10 kg of grain while a gravity table will produce the cleanest sample, leaving an average 20 weed seeds per 10 kg of grain.

Investing in such equipment is not economic to treat planting seed only, but when it is used to treat all grain produced it can be economically viable through saving cleaning costs on delivery and potentially upgrading the overall quality of grain sold to meet premium market requirements.

If a grading table is not an economic option in your business, choosing to have planting seed cleaned by a contractor is definitely worth considering over retaining un-cleaned seed or using sieves alone.

If the seed being cleaned has come from an identifiable area of the farm, then this is a good opportunity to collect weed seed and send it off for testing to find out what herbicides the weeds present at harvest are susceptible to. This will help you prepare in-crop weed management strategies for next season.

Plan ahead for the next seed crop and ensure you harvest seed from the cleanest paddock or the cleanest section of a paddock.

You can find more information about managing herbicide resistant weeds and testing weed seed for susceptibility to herbicide on the WeedSmart website: www.weedsmart.org.au or to follow us on Facebook click [here](#). ■



The gravity table method of seed cleaning produces the cleanest seed sample.



Infield cleaning of grower retained seed is rarely economic.

WE'LL HELP DO THE HEAVY LIFTING

Case IH is right behind you, offering interest-free finance on pre-season service and repairs of your tractor or combine harvester by our highly specialised, factory-trained technicians. Plus, we'll help you boost productivity next season with AFS guidance which is – you guessed it – also interest free.

0% INTEREST > No Repayment Until March 2016



Maximise productivity, minimise downtime: visit caseihparts.com.au

*For interest-free service and repairs, simply spend \$15,000 (incl. GST) on service and repairs before 30 June. 25% deposit required, final payment due March 2016. Includes major repairs such as engine or transmission replacement. **Spend \$10,000 or more on AFS (incl. GST) before 31 March for 0% interest rate and no repayment due until March 2016. 10% deposit required. Offers available to business customers only and subject to credit approval. Finance is provided by CNH Industrial Capital Australia Pty Ltd. Terms and conditions apply. See your dealership for full details.





The odd and the interesting!

■ By Ian M. Johnston

HOW many years have I been associated with tractors? I have no idea. I gave up counting about a decade ago. All I know is, I have been involved with driving the things, fixing them when they have failed to proceed, selling them, importing them, restoring them when they became old and classic, exhibiting them, researching and chronicling their evolution and of course writing books and magazine articles about them in order to spread their gospel.

So logically, with such a lengthy and comprehensive affiliation with tractors, it is not surprising I have come across some highly weird and extraordinary examples.

Take for example, the following three.

BMB President

During the late 1940s and into the 50s, in the lightweight tractor class the little grey Ferguson reigned supreme. The Lancashire firm of Brockhouse Engineering (Southport) Ltd. decided to present a challenge to the Fergy when it introduced the BMB President in 1950. But a challenge it was not! Harry Ferguson certainly would not have suffered sleepless nights concerning himself with a fall-off of sales because of the President!

The 'BMB' part of the name was an abbreviation of (wait for it) British Motor Boat. I don't doubt the excellence of their motor boats, or indeed their range of walk-behind two wheel garden tractors, but the design team at Brockhouse obviously were clueless when it came to conventional tractors.

The 'thing' was built around an insubstantial two rail chassis which tended to flex if the operator even hiccupped. A 1930s designed 919 cc Morris side valve engine was perched under the bonnet, because Morris had moved on to ohv (overhead valve) engines and were selling off old stocks of the side valve unit at a fire sale price to anyone who didn't know better!



A young James Flower is rightfully proud of his restoration of his BMB President. As a collector's item the President is quite rare and historically interesting. (Photo IMJ)

The transmission housing castings tended to crack and the three point linkage was below the accepted specifications adopted by all other British tractors. This resulted in an owner having to buy 'captive market' flimsy President implements.

Climbing up into the high swivel seat was not easy for an elderly farmer, but once there he certainly could enjoy an excellent panoramic view. But exerting the necessary extensive pressure on the clutch pedal resulted in the swivel seat swivelling! The pedal remained unpressed and the operator found himself facing sideways. So the thing to do was first hang on to the steering column or the mudguard to prevent the seat from screwing around.

The steering wheel itself was a hazard – in the extreme! You see the throttle control for the engine was a lever attached to the end of a shaft which extended through the centre of the steering wheel. So imagine the scenario. You are gently executing a tight turn through a barn doorway and as you spin the steering wheel your sleeve catches the throttle lever and instantly the engine goes from slow idle to flat out! Wow!

Or the tractor is hauling a loaded trailer up a steep incline and you come to a bend and carefully steer around the curve – and abruptly the engine loses its revs and stalls, all because your arm nudged the throttle lever. The inadequate brakes would not have been much help in preventing a rapid backwards descent of the hill. Scary stuff!

I can sum up my impressions of the President by revealing that Brockhouse was forced to accept a payment in figs from an unhappy importer in Istanbul. Quite extraordinary! Also, in Australia the local importer Buzacott (Aust.) Pty Ltd was obliged to substantially reduce the price to clear unsold numbers of Presidents, which the firm still carried long after production in England had ceased!



The 919 cc side valve Morris engine was past its use by date when acquired by Brockhouse Engineering for fitting to the President.



The offending and dangerous throttle control is clearly visible in the photo of James Flower's tractor. (Photo IMJ)

Oh, incidentally, I once included a President in my collection. It was great – for driving to the front gate and collecting the mail! Enough said!

Case 10-20

The J. I. Case Threshing Machine Company produced some fine tractors during the early part of the twentieth century. But the Model 10-20, introduced in 1915, was – well let's say different! The fact that it only had three wheels was in itself not totally unusual for the period. But the idiosyncratic thing about its design was that it could be either a one wheel drive or, at the operator's choosing, a two wheel drive.

The single front wheel was located on the off-side of the tractor, with the rear main driving wheel following in its tracks. The operator sat perilously on a hard un-sprung pan seat, sticking out from the rear but also positioned on the off-side, enabling him to have a clear view of the furrow ahead. All very fine, unless he was jolted off – right into the path of the trailing plough!

But the bulky mud guard and engine cowling prevented him from actually seeing the front steer wheel. So some bright spark of a design engineer, possibly related to Sitting Bull, attached an arrow on the top of the elevated steering box. So by watching the arrow the operator knew what was going on with the front wheel.

All good, until the machine encountered heavy or soft going and the single drive wheel started to spin! The stalwart operator (providing he had not fallen off his hazardous perch) wrestled with a lever which operated a jaw clutch and engaged the near side rear wheel. So the tractor was now a two wheel drive machine.



A Case 10-20 owned by C. W. Schilling of Indiana, USA. The side mount radiator and the 'second' drive wheel are clearly evident. (Photo IMJ)

So why not leave it permanently in two wheel drive? Well you see there was no differential! All was bliss whilst the two wheel drive machine proceeded in a straight line. But if a curve was encountered and our friendly operator forgot to disengage the drive to the near-side wheel, then snap went the axle shaft and probably his job!

On the credit side, the 12-20 was the first Case to feature a four cylinder engine. On the debit side, the brake only functioned if the tractor was in gear.

I imagine the design engineer who stuck the side mounted radiator in the vulnerable position out front, was probably the same guy who thought up the arrow!



A nearside photo of a Case 10-20 taken at The Western Development Museum, North Battleford, Canada. Note the hazardous operator's seat and the steering arrow – see text. (Photo IMJ)

David Brown Cropmaster

I can hear the shout of protests from the legions of David Brown enthusiasts out there. My name is busily being crossed off scores of Christmas card lists. Everyone knows the Cropmaster was a brilliant tractor – so why am I including it in this epistle?

Simple. It had two very unusual features.

Firstly, it featured a two person bench seat. Accordingly (and quite uniquely) the brake and clutch pedals were located together on the off-side of the transmission housing. Therefore there was no requirement to straddle the bulky box of gears and things running through the centre of the tractor.

Significantly the padded bench seat was meagre in dimensions, which meant it was pleasantly squeezey if being shared with a Land Army girl or a farmer's daughter. A truly admirable feature which elevated the Cropmaster to a higher plane than 'ordinary' tractors which could only offer single seats! (Years later the Chamberlain Champion also had a bench seat, but sadly it was more capacious than that of the David Brown).

Secondly, the Cropmaster was equipped with a hand clutch, in addition to the foot operated clutch pedal. Why was this so?

Because back in the 1940s most farm workers, particularly in Britain, were still accustomed to having a Clydesdale (or a Percheron or a Suffolk Punch or a Shire horse) pulling carts around the place. For example at harvest time when bringing in the sheafs of oats, barley or wheat, the horse automatically walked from stook to stook, pausing at each whilst the farmhand pitch-forked the sheafs to his mate who would place them around the dray.



A David Brown Cropmaster restored by the Author. The top of the hand clutch lever is just discernable at the side of the near-side mudguard. (Photo IMJ)

But in the world of tractors, the chap on the ground had to climb up into the tractor seat, engage the clutch and select a gear, before moving forward the few feet to the next stook, then clamber down, fork the sheafs and then back up into the tractor. All very time consuming and wearisome.

Gentleman farmer David Brown knew all about this. As a consequence he had his design boffins fit a hand operated clutch lever at the rear of the Cropmaster, close to the nearside mudguard. Voila. All the guy on the ground had to do was walk up to the tractor, (which was already in gear) put the tractor in motion by reaching over and operating the lever whilst he walked alongside! Brilliant, eh? Well not quite!

A today's work safety officer would have a fit at such a highly dangerous practice. I mean, leaning over a lugged rear tractor tyre and manipulating a lever which bounced the tractor into action!! Okay, hundreds of Cropmaster drivers, including me, did this on a regular basis and I never heard of anyone being injured by so doing. Maybe in these days we were more careful and responsible? Maybe modern safety bureaucrats are over zealous? The thing is, I am still here to tell the tale. ■

IAN'S CLASSIC TRACTOR QUIZ

1. In 1919 a Scottish designed and built tractor entered the market and a handful came to Australia. Can you name it?
Aberdonian, Glasgow or Reekie.
2. The world's first 4 wheel drive and 4 wheel steer tractor was an Aussie. Can you name it?
McDonald, Howard, Caldwell Vale.
3. The very first Lanz tractor (1912) was powered by an engine of how many cylinders?
1, 2, or 4.
4. The diesel powered version of the Grey Fergy was identified as
TEA, TEF or TED?
5. The HSCS tractors imported into Australia were made in which European city?
Budapest, Bucharest or Belgrade.
6. Kubota traces its origins to 1890. It first commenced manufacturing what products?
Samurai swords, cast iron pipes or cannons.
7. In 1915 an American named William Adams designed and produced the world's first V8 engine powered tractor. Can you name it?
Adams, Common Sense or Super Power.
8. The indigenous Aussie tractor Jelbart was produced in which Victorian town?
Ballarat, Bendigo or Bairnsdale.
9. Which of these crawler tractors is NOT German?
Schneider, Demag or Liebherr.
10. A 1945 Bristol crawler would have been powered by which British car engine?
4 cylinder Austin A70, 4 cylinder Humber Hawk or 6 cylinder Rolls Royce.

A score of 8 or over indicates an excellent knowledge of classic tractors.

A score of 5 to 7 is not too bad.

A score of less than 5 is definitely ho hum!

Answers are on page 56.



THE RESEARCH VIEW

Digging the dirt on wide rows in cereal crops

AT A GLANCE...

- Narrower row spacings in cereal crops could deliver yield benefits under high yielding conditions.
- Trials have found that yield loss in moving from 30 to 40 cm row spacings averaged approximately 0.3 tonnes per hectare while yield loss in moving from 30 to 50 cm rows was nearly 1.0 tonnes per hectare.
- Narrower crop rows can also offer an 'easy win' against weeds and significantly aid a crop's ability to outcompete them.
- Sowing on wider row spacings has been adopted by northern growers as a means of managing retained stubble in minimum and zero tillage farming systems.

SOWING cereal crops on narrower row spacings could deliver substantial yield benefits to northern growers of up to one tonne per hectare under high yielding conditions.

Research trials supported by the Grains Research and Development Corporation (GRDC) and NSW Department of Primary Industries (NSW DPI) at the Tamworth Agricultural Institute and the Condobolin Agricultural Research & Advisory Station in 2009 and 2010 found that yield loss from 30 cm to 40 cm row spacings averaged approximately 0.3 tonnes per hectare but varied from less than 0.2 up to 0.8 tonnes per hectare.

The trials also showed that yield losses were more consistent and much greater at 50 cm row spacing with nearly a 1.0 tonnes per hectare yield reduction compared to the 30 cm row spacing.

These findings were supported recently by a summary of over 80 southern region trials which showed an average one per cent yield impact for every inch (2.5 cm) rows were narrowed.

The trend towards planting cereal crops on wider row spacing has been concurrent with northern growers' increased adoption of minimum and zero tillage practices as a means of managing retained stubble.

It is well recognised that stubble cover plays a key role in conservation farming practices by maximising water capture, infiltration and storage, and the adoption of wider row spacing has enabled growers to sow into higher levels of retained stubble.

Additionally, wider row spacing has the capacity to reduce fuel costs during sowing and/or increase sowing speed, allow for inter-row sowing of subsequent crops, reduce soil disturbance and lower the cost of sowing equipment.

Some growers also believe that wider rows in cereals offer

Consultants' Corner

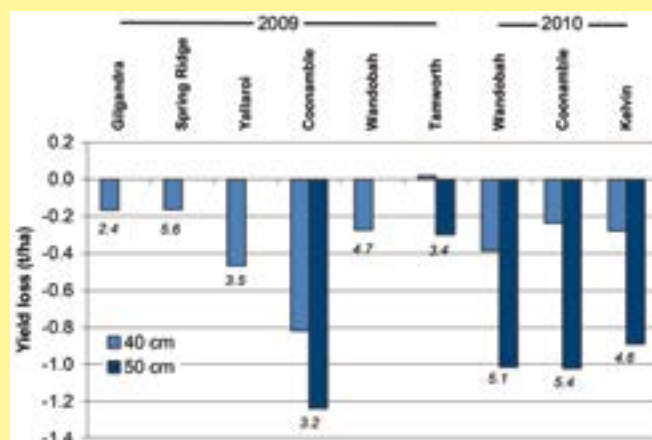
Consultants' Corner is an initiative by *Australian Grain* highlighting current GRDC-funded research with a particular focus on the commercial implications of adopting cutting-edge research.

yield reliability in drier seasons although the current data does not validate this opinion.

On the flip-side, the drawbacks of wide rows can be costly, not just in yield loss but also in reduced crop competition against weeds which may hinder herbicide resistance management efforts within the north.

Herbicide resistance is estimated to cost the Australian grains industry more than \$200 million annually and poses a major threat to the long term viability of the northern grain belt with resistance issues across a multitude of weed species and modes of action.

FIGURE 1: Effect of row spacing on grain yield at sites in 2009 and 2010



In some trials only two row spacings were compared (30 cm and 40 cm) while at others 50 cm row spacing were also included. Yield loss is calculated as the difference compared to the 30 cm row spacing.

Narrower crop rows can offer an 'easy win' against weeds and significantly aid a crop's ability to outcompete them. Good crop competition can significantly enhance the success of integrated weed management programs, often working well in combination with herbicides to improve efficacy, particularly in difficult seasonal conditions.

Addressing advisors during a round of integrated weed management workshops in 2014, NSW DPI Northern Cropping Systems manager Dr Guy McMullen questioned whether it was financially viable for industry to continue using wide rows to manage stubble, particularly in low production environments with the threats of harder to control weeds and herbicide resistance.

"It is likely that we will need to look for more innovative ways to manage stubble in the future," he said.

"One of the suggestions is that growers could concentrate stubble loads in a strip farming system to maximise water storage and then move to allow for more ideal sowing options and improved crop growth."

Narrow rows are better, but...

Guy said row spacing needed to be as narrow as possible to maximise yield but stressed that it needed to be considered within the context of the farming system as a whole.

"Wider row spacings resulted in significantly reduced yields in most trials in 2009 and 2010 which was primarily related to reduced tillering and head production and total crop dry matter," Guy said.

"Spacings should be as narrow as possible to handle stubble while also fitting into pulse and summer crop configurations."

The 2009–10 trials also assessed row spacings in relation to other factors such as variety, population and phosphorus (P) nutrition.

"The trials didn't show any strong evidence that variety performance differs with row spacing," Guy said.

"The exception to this may be barley where trials have shown



**Dr Guy McMullen, Northern Cropping Systems Manager,
NSW Department of Primary Industries, Tamworth.**
(Photo supplied by NSW DPI)

some differences between varieties with very different crop architecture."

In light of the results, Guy urged growers to select varieties based on yield potential across a number of seasons.

With regards to P nutrition, research has found that wider row spacing increases the concentration of P per metre of row if the rate per hectare is maintained.

the gate

Short term, skilled labour available now



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 and register (for free) on The-Gate's database or
contact Catherine on 0408 717 459**

www.the-gate.com.au

the gate

But row spacing has been shown to have an inconsistent impact on crop P response in initial trial work.

The adoption of zero tillage systems and increased use of inter-row sowing on wide spacing within the northern region has the potential to alter P responses in the year of application due to changes in the spatial pattern of P application and increased within-row concentrations of P.

"Since the calibration of the main soil P tests that growers and advisors base their fertiliser decisions on were conducted under conventional tillage and narrower row spacings, we were interested in the effect of increasing row spacing, and therefore increased concentrations of P in the seeding furrow, on P fertiliser responses," Guy said.

"But the trials showed little evidence of row spacing by P rate interactions. From the research to date there appears to be no reason to change P fertiliser recommendations based on row spacing or formulation choice in the northern grain region."

For more information: Guy McMullen M: 0428 256 544,
E: guy.mcmullen@dpi.nsw.gov.au



Trials suggest there is little yield effect between varieties at different row spacings – but the exception may be barley.

COMMERCIAL VIEW

COUNT THE COST OF WIDE ROWS

■ By Robert Weinthal, Director/Principal Agronomist, RAW Agriculture, Gunnedah

Winter cereal growers in the higher yielding environments of the northern region may be sacrificing valuable yield potential for operational efficiencies by sowing on wider row spacings.

Grains Research and Development Corporation (GRDC) funded research suggests that the yield cost could be significant in areas where grain yields over 3.5 tonnes per hectare are expected – as much as 1.0 tonnes per hectare yield loss on 50 cm rows compared to 30 cm rows.

That yield loss represents a substantial cost to an operation's bottom line and should be carefully weighed up against the operational efficiencies gained through sowing on wider rows.

The widespread adoption of minimum and zero tillage farming systems in the north has been a driving force behind the practice of widening row spacings which enable some growers to better handle stubble loads, reduce machinery and planting costs, and maximise soil water infiltration and storage.

Offsetting yield loss

What needs to be calculated is whether the cost reductions and farm management benefits of sowing on wider row spacings sufficiently offset the potential yield loss.

The other compromise of wider row spacings that needs to be factored in is reduced weed competition.

Wider row spacings reduce the crop's ability to close the canopy and compete with weeds between rows which delays inter-row weed suppression – the wider the rows the longer the delay.

Row spacing is a particularly useful tool in maximising crop competition against weeds. Maximising crop competition helps to minimise the seed set of weeds, which in turn helps drive down the weed seed bank and decrease the rate of developing herbicide resistance.

Herbicide resistance is a rapidly escalating issue in the northern region with weeds such as wild oats, annual ryegrass, awnless barnyard grass, liverseed grass and common sowthistle already having confirmed resistance status. In all of these species, resistance is to one or more chemical groups. Needless to say,



Wider row spacings can reduce the crop's ability to close the canopy and compete with weeds between rows.

managing herbicide resistance is a key element of all good integrated farm management plans.

The most appropriate row spacing ends up being a delicate balancing act between crop yield, ease of stubble handling, optimising travel speed, managing weed competition and soil throw and achieving effective use of pre-emergent herbicides.

Although row spacing is relatively simple to change, the effect on the whole farm system can be complex and can influence grain yield, timeliness of sowing, machinery choice, residual herbicide choice, seed and fertiliser costs, weed management, development of herbicide resistance, and the configuration of other crops sown within the farming system.

Taking a 'narrow as possible' approach when it comes to sowing cereal crops should help ensure that delicate balance is found, enabling growers to preserve yield and manage weeds while sowing unimpeded through stubble loads.

More information: Robert Weinthal M: 0427 230 427,
E: rob@rawagriculture.com

Keeping the farm clean using many tactics

Case study: Graham Clapham



A diversified cropping system requires great attention to detail and offers many opportunities to implement several tactics in an integrated weed management strategy.

Graham Clapham started his farming career straight out of school at 15 years of age. Even then he was clear about his desire to own a black soil farm on the Darling Downs. Graham grew up on his parent's 200 hectare mixed cropping farm, growing irrigated and dryland crops including corn, soybean, wheat, sorghum, onions and pumpkin.

With help from his parents, Graham realised his first goal when he was 18, purchasing a farm of his own at Norwin, west of Toowoomba. He now grows mostly irrigated cotton, corn and wheat and dryland cotton, wheat and sorghum on the family's 1840 hectare aggregation in the Brookstead–Norwin district.

On the 700 hectares that is usually irrigated each year, Graham has two main rotations – irrigated cotton or corn followed with irrigated wheat then a long fallow before returning to cotton or corn. In the corn-wheat rotation there is no cultivation but Graham has different herbicide options available and an opportunity to provide a disease break to combat Fusarium wilt.

Rainfall dictates the dryland crop rotation on the rest of the cropping area. Minimum till is practiced to conserve soil moisture with occasional cultivation only to renovate the tramtracks.

Graham is aware of the risk of herbicide resistance, particularly

in weeds like flaxleaf fleabane and feathertop Rhodes grass, which have always been hard to kill with glyphosate, and milk thistle is a new concern for the business.

Pupae-busting spin-off benefits

Since the introduction of genetically modified cotton in 1996, the Claphams have practiced pupae-busting cultivations to manage resistance in helicoverpa. This has had the spin-off benefit of keeping hard to control weeds like flaxleaf fleabane and feather-top Rhodes grass under control.

"Pupae busting is a robust cultivation to a depth of 100 mm and is required to remove all large soil clods," he says. "It must be done before the end of July following the cotton harvest in April–May."

The deep cultivation after cotton buries weed seeds deep in the profile where they can't germinate. Unfortunately flaxleaf fleabane seeds remain viable for longer when they are buried than when they are close to the soil surface. This means cultivation in subsequent years can bring viable seed back to the surface where it can germinate so it is not a complete solution but another useful tactic in the farming system.

The cultivation leaves the soil dry and prone to erosion so the Claphams aim to sow a wheat crop after cotton to provide ground cover over winter and stubble for the following summer.

Soil moisture and irrigation water availability govern the sowing rates used although the Claphams have two options when it comes to row width in their dryland crops. When sowing wheat into cultivated soil after cotton they can use an air seeder to plant rows 150 mm apart rather than the single disc planter used in minimum till planting to sow 500 mm rows.



Spray application technology like these multiple-nozzle fittings make it quick and easy for the operator to change the nozzle type if environmental conditions change during the spray operation. The Claphams have placed the nozzles on their spray rig close together (250 mm apart) to maximise coverage and minimise drift.



Infrastructure such as channels and pump sites are kept clean all year to avoid the risk of weeds spreading throughout the farm in irrigation water.

Narrow row benefits

Sowing in narrow rows has several benefits for weed control in the dryland system. To begin with, sowing is a full tillage operation that removes any weeds present at the start of the season. The increased shading of the inter-rows suppresses weed germination and after harvest there is more stubble left on the ground, again suppressing weed germination.

Graham has not noticed a yield difference between crops sown at the narrow and wider spacing although the air seeder does dry the soil out more than the single disc planter.

"The wheat crop is often not great, especially if winter rain is scarce," he says. "But it provides good cover and we can use different chemistry to control weeds, especially to achieve a residual effect on flaxleaf fleabane."

Graham says the chemistry available for use in wheat is very effective, keeping the wheat crops quite clean. Corn can experience some late grass germinations, which they have previously treated with glyphosate at harvest and then burnt the stubble.

When there is additional water available for irrigation early in the year the Claphams often take the opportunity to plant soybeans. Having this as an option they are conscious of the residual action of the herbicides used in the previous wheat crop. "We use herbicides with no residual effect to control broadleaf weeds such as thistles and turnip in the wheat so we don't need to worry about the plant back period for soybean," says Graham.

So far the Claphams have not experienced any spray failures that have raised concern about herbicide resistance. Graham is very conscious of the potential risk and is mindful of the experience in the US with widespread glyphosate resistance in their cotton industry.

"Glyphosate-ready cotton has been a positive innovation for the industry, making it more sustainable and ending the use of environmentally-harmful herbicides," says Graham. "But glyphosate does not give 100 per cent control of weeds in cotton. Vines particularly can survive a spray and so we use inter-row cultivation and hand chipping to remove vines as needed."

Inter-row cultivation in cotton, corn and sorghum also helps maintain the furrow profile and to conserve moisture before the canopy closes. Graham occasionally uses an inter-row shielded sprayer to apply glyphosate in corn and sorghum crops.

The Claphams recently purchased a neighbouring farm with a very heavy weed burden. They have used cultivation and herbicides to drive down the weed seed bank and to treat weeds they have never seen in the area before.

Control when they spray

The Claphams do all their own spray operations, mainly so they can control when they spray. "The Darling Downs region is closely settled and there are not many trees across the cropping area. It can be very difficult to find suitable times to spray without the risk of off-field impacts. Having our own gear and labour available means we can spray as soon as suitable conditions prevail."

Graham's son-in-law, Jonathon Mengel, is responsible for the spraying operations across the farms. They have found that having a person with the designated responsibility to have the chemicals in stock and be looking for spray opportunities has been very beneficial to their operation.

"We have very few weed escapes after a herbicide spray," says Graham. "On the rare occasion that it does happen we prevent seeding using tillage or a follow-up application of a knockdown like paraquat."

"In the fallow we look for opportunities to do a double-knock treatment but it can be very difficult to get favourable conditions for two sprays close together," he says. "Glyphosate, Starane and



Spot spraying larger weeds that have escaped earlier treatment is the last operation before planting clean seed into clean paddocks with clean borders (#8 in the WeedSmart 10 Point Plan).

MCPA are relatively easy to apply using air induction nozzles to splash the product on with minimal risk of spray drift. The second application of paraquat 10 days later is more difficult, especially given the need to apply a fine droplet size."

The Clapham's Case Patriot sprayer, with its 36 metre boom and four metre wheel base, fits perfectly into their on-farm control traffic system. They have doubled the number of nozzles on the boom, placing a set of nozzles every 250 mm instead of the traditional 500 mm, allowing greater coverage and helping to extend the tight spraying window.

"This gives us a double overlap so we can consistently use coarse droplet nozzles and still get coverage, and it also enables us to operate lower to the ground," he says.

When necessary Graham will spot spray or hand pull weeds prior to planting the next crop to ensure the paddocks are as clean as possible going into the season.

Keeping infrastructure clean

The Claphams are also careful to keep irrigation infrastructure such as head ditches, supply channels and tail drains weed free. They use residual herbicides at high rates to effectively sterilise the soil in these non-cropping areas. "The risk of distributing weeds throughout the farm is of great concern and maintaining weed-free infrastructure is a year-round priority for us," says Graham. "We also pay attention to planting clean seed each year, buying in cotton, sorghum and corn seed, and grading the wheat seed we keep the next season."

"Black oats has been a bad problem in the winter cropping program but we seem to have won the battle with a consistent approach to planting clean seed."

Throughout the crop rotation the Claphams are looking for ways to manage weeds to achieve the best possible productivity and profitability in the long term from their cropping operation.

For more information on planning a strategy to manage the risk of herbicide resistance, visit www.weedsmart.org.au. A video showcasing Graham's weed management program is also available.

GRDC wastes no time in researching new fertiliser options

■ By Will Martel – GRDC Northern Region Panellist

THE processing of industrial waste into fertiliser is a concept that has attracted many a keen discussion over the kitchen tables of farming families.

There are compelling reasons for progressing research and development within this area – Australia's agriculture and livestock industries source 50 per cent of their fertiliser phosphates and 100 per cent of potassium from overseas leaving the market extremely vulnerable to price fluctuation and resource availability.

A viable home-grown and renewable alternative could help lower the cost of fertiliser supplies and improve the availability of resources within Australia.

The Grains Research and Development Corporation (GRDC) is a keen supporter of research that helps bring down the cost of grain production and improves the profitability of farmers.

The GRDC is helping researchers find alternative, renewable nitrogen, phosphorus and potassium (NPK) mineral fertilisers to promote the long term sustainability of the Australian grains industry through its investment in the Fertiliser From Wastes project.

Fertiliser from wastes

The research is being carried out by a team of researchers at the University of Queensland (UQ) Advanced Water Management Centre led by Dr Damien Batstone with the assistance of GRDC research fellow Dr Chirag Mehta.

A key part of the research is developing a process to extract



Will Martel, GRDC Northern Panellist, Wellington NSW.



University of Qld Research Fellow, Chirag Mehta, operates a granulation rig used in the Fertiliser from Waste project.

nutrients from effluent waste to make a nutrient rich and low bulk fertiliser product that will compare to current synthetic products.

With much of the effluent waste being produced in cities, there is significant opportunity to capitalise on the recovery and use of nutrients. But while farmers well recognise the value of waste products, the cost to freight these products to the paddock has been generally prohibitive.

Two major fertiliser recovery processes have been piloted, involving a sewage treatment plant and a meat processing plant.

The nutrient recovery system has proved highly cost-effective for phosphorus and is now being developed for nitrogen and potassium.

A multi-staged nitrogen and potassium recovery process is being developed at UQ with the aim of producing concentrated liquid fertiliser from diluted wastewater.

The current research builds on previous work in identifying the opportunities and feasibility of nutrient recovery and will help generate a buffer against external phosphorus price movements.

Previous work focussed strongly on phosphorus recovery as the most price-sensitive nutrient and the one most technically feasible to recover. With potentially up to 25 per cent of the domestic phosphorous market able to be recovered from waste streams and the potassium market able to be completely supplied, the project has important agricultural and environmental implications.

The next phase of the project will involve up-scaling the pilot plants to commercial-scale operations and agronomic trials to test the efficacy of the new fertiliser products against traditional sources.

The grains industry stands to benefit significantly from a more competitive and sustainable intensive agro-industrial sector, through improved waste management technologies and a new revenue stream related to renewable energy and fertiliser.

For more information on the Fertiliser From Wastes Phase 2 project contact Dr Damien Batstone 0434 841 150 or damenb@awmc.uq.edu.au



Chirag Mehta and Emma Thompson Brewster (UQ PhD student), working on the electroconcentration of nutrients.

Pampas growers get wheat harvest surprise

RECEIVING just 60 mm of in-crop rain, Darling Downs (southern Queensland) grower Lyndon Pfeffer, was not expecting the very good yield his 2014 wheat crop managed to achieve.

Lyndon and his wife Lyndelle ended the tough season with a Lancer crop that yielded 4.2 tonnes per hectare at their farm 'Bungaree', Pampas. "We really weren't expecting that because the season was very challenging, but we were extremely impressed," Lyndon said.

"The good profile of moisture from a 300 mm event in March helped, but from then on, we watched our wheat suffer."

Sowing of the crop began in mid-June but they missed out on the good June rain that hit parts of the Downs, only seeing six mm for the month. The next shower came in August, with 33 mm, and the final rain event was 20 mm in September.

"The saviour was the soaking rain back in March which gave all the paddocks a good profile of moisture and enabled the crops to perform. It was actually a bit too much, as it compacted the ground, but it's what saved the crop."

The wheat was sown in a paddock that was fallowed out of sorghum with a Boss single disc planter at 33 cm spacings. Urea was applied pre-plant at 210 kg per hectare, then 35 kg Gran-am at planting plus 35 kg Starter. Harvesting began on November 17 using a John Deere 9770 STS combine fitted with a 12 metre 640D draper platform.

Lyndon said in addition to yield, they aimed to grow wheat of good quality and good protein levels.

"We managed 12.5 per cent protein out of the crop, which is a H2 classification. I look for yield and protein in our varieties. I compared Lancer to Gregory in our 2012 trials, and Lancer showed better protein which is what helped my variety decision."

Still several months out from winter sowing, Lyndon said they will be using the same crop plan as last year.

It was not all harsh conditions in 2014, as their cracked soil was soothed by 130 mm of December rain which produced an overland flow at Christmas. This has helped build their moisture profile back up for the coming season.



Harvesting began on November 17 using a John Deere 9770 STS combine fitted with a 12 metre 640D draper platform.



Alton and Lyndon Pfeffer harvesting their four tonne plus crop of Lancer wheat. Two in-crop rain events totaling 60 mm – plus some stored soil moisture from March 2014 – resulted in an excellent yield given the tough season.

Divine Dinner Plain...



*Bring the family,
enjoy the
wonderful
snow that is
still falling,
it's perfect!
Skiing, boarding,
cross country
skiing or just
enjoy the
fantastic
atmosphere that
is Dinner Plain*



Where you stroll the snow covered tree lined 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, cosy lights sparkle and entice you into their warmth. Snow lined, natural buildings 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.

What are you waiting for...



**Dinner Plain
Visitor Information
Centre**

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

1/24/001 07/22/2008

Growers the key to preserving farmland fertility

NORTHERN farming systems are becoming increasingly reliant on grain growers to assume the role of 'soil custodians' to preserve farmland productivity.

More than 100 growers and advisors attended a 2014 More Profit from Crop Nutrition (MPCN) workshop near Kingaroy to learn about soil nutrient management and its critical function in a healthy and profitable farming system.

The workshop was a collaborative effort between the Grains Research and Development Corporation's (GRDC) MPCN initiative and the Inland Burnett Grower solution group and provided growers with best practice advice on nutrient removals, soil testing and fertiliser placement as well as research findings from local trials.

Department of Agriculture, Fisheries and Forestry (DAFF) researcher and project leader, Dr Kaara Klepper said the workshops reinforced that an "out of sight, out of mind" approach to soil management challenges had the potential to significantly impact the sustainability and profitability of farming, forage and livestock farming systems.

Replacing nutrients

"Many growers are now realising that we have to replace nutrients that we have taken or are taking out," Kaara said.

"So it is extremely important to regularly measure existing soil nutrient levels and ensure that adequate amounts are being supplied to maintain production."

Kaara said many northern soils were depleted in phosphorus (P) in the 10 to 30 cm layer even if starter fertilisers have routinely been applied with the seed.

"This occurs because the roots forage moisture and nutrients at depth and unlike nitrogen (N), nutrients like P and K don't move in the soil profile," she said.

"Testing has shown that potassium (K) reserves are very low in some cases and perhaps fertiliser application required.

"Sulfur (S) on the other hand can move like nitrogen in the soil and thus sampling to maximum soil depth is advised.

"It is critical for growers to remember that all nutrients need to be well supplied – if one nutrient is deficient money can be wasted applying other nutrients because there will be no yield increase."

The right testing frequencies

Workshop attendees were advised that nutrient testing needed to be conducted separately at appropriate frequencies – N testing should be carried out on a crop-by-crop basis, K and S levels should be checked regularly while P levels can be checked at three to five year intervals as long as the deeper layer is checked and growers use the Colwell and BSES methods.

Other topics discussed included the application of nutrients and in particular the widespread suitability of bagged fertiliser where growers have checked the analysis of nutrients and calculated the quantity required to correct any deficiencies indicated by soil tests.

The N benefits of rotating legume and cereal crops were covered during the workshops and growers were alerted to the fact that much of the N produced by the legume is removed in the grain.

"There can be some contribution from the left-over stubble, but the key is to grow the biggest plant possible which will probably mean the application of P, K, S or zinc fertilisers but not N," Kaara said.

"Taking care with the seed inoculant is the key to helping the legume produce the 'free' nitrogen.

"Building the organic matter of the soil was also agreed to be a very valuable aim and practices that are beneficial to maintaining soil organic matter include the incorporation of a grass-legume pasture rotation into the cropping system, growing a large amount of stubble and retaining it, minimum or zero tillage, and adding manure or other organic materials."

More information on any of these topics is available from the GRDC website www.grdc.com.au



More than 100 growers and advisers from across the inland Burnett region attended the recent More Profit from Crop Nutrition workshop at Kingaroy.

THE RESEARCH VIEW

Canola has merit in Mallee soils despite seasonal constraints

AT A GLANCE...

- The area sown to canola in the Mallee is rapidly expanding – beyond traditional production areas – where much of the agronomic information was generated.
- Trials are being conducted to quantify the impacts of agronomic practices on canola production in Mallee soils.
- Best agronomic practice achieved canola yields of 1.0 tonnes per hectare, despite seasonal constraints.

TRIALS in the Mallee cropping regions of Victoria and South Australia have demonstrated that canola can be a valuable rotational crop when best agronomic management is practised.

The area sown to canola in the Mallee has expanded rapidly within the past decade, but information to assist Mallee growers with sustainable canola cropping, and to alleviate widespread problems with canola establishment, has been limited – until now.

Dodgshun Medlin Agricultural Management consultant Ivan Mock says improved canola crop genetics for lower rainfall zones, the incorporation of non-cereal options to sustain intensive



Dodgshun Medlin Agricultural Management consultant Ivan Mock addressing Mallee region canola growers.
(PHOTO: Dodgshun Medlin)

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.

PERSUASION SKILLS WORKSHOP

LEARN HOW TO MOTIVATE GROWERS TO CHANGE THEIR PRACTICES

It's one thing to help growers *understand* the value of new products and technologies.

It's another thing to motivate them to use them on farm.

Join C-Qual's proven workshops for consultants, agronomists, researchers and extension officers and help more growers make the leap from knowledge to action.

Workshops coming soon to:

Perth: 17th & 18th February

Horsham: 26th & 27th February

Adelaide: 5th & 6th March



SAVE WITH EARLYBIRD REGISTRATION ONLINE NOW
www.c-qual.com



cropping programs and attractive prices have resulted in canola plantings spreading into the Mallee.

"Canola is being sown by landholders who have little or no previous experience with the crop – the crop is being grown beyond traditional production areas where much of the agronomic information was originally generated," Ivan said.

"Canola is also being grown in rotation with other crops which utilise a diverse range of herbicides that may have residual implications for canola when breakdown requirements are not achieved due to soils and/or climate."

A succession of dry starts to the cropping season in the Victorian Mallee has been associated with poor establishment of approximately 20 per cent of canola crops.

"Implications of failed or poor canola establishment extend beyond the financial viability of that crop to include future crops as it exacerbates potential problems with weeds and soil erosion.

"But variation in the success of canola cropping within a paddock and between farms indicated that some situations were better suited to canola, and crop agronomy that more closely duplicated these conditions could achieve a more consistent result."

Seeking more consistent results

To quantify the impacts of a range of agronomic practices on canola production in Mallee soils and to provide this information to producers to assist them to satisfactorily integrate recent technologies for canola in their cropping rotations, a 'Canola establishment and best management practices in Mallee soils' project was initiated by Dodgshun Medlin.

The project was supported financially by the Grains Research and Development Corporation (GRDC) through a Southern Region Agribusiness Trial Extension Network initiative. It complemented earlier studies on canola establishment funded by the Mallee Catchment Management Authority and Dodgshun Medlin.

Replicated field plot trials were established in 2013, following six months when rainfall totalled 25–50 per cent of the long-term average and soil water content was low prior to sowing.

"Trial one, at Walpeup in the central Victorian Mallee and

at Paruna in the South Australian Murray Mallee, compared agronomic decisions at sowing including settings for seed rate and depth and their impact with a conventional open pollinated variety compared to a newer hybrid variety," Ivan said.

"Trial two focused on the potential impact of commonly used herbicides for summer weed control and whether any deleterious residual impacts could be mitigated by varying seeding rates or crop type."

Below average rainfall in the period between the application of summer weed control herbicides and sowing was of particular relevance for Trial 2, sites for which were both in the central Victorian Mallee – at Walpeup and Manangatang.

Ivan said the trial sites represented the sandy textured surface soils where canola establishment problems and variable production have been more prevalent.

"The four replicated field trials evaluated a range of agronomic options canola growers can readily adopt to potentially reduce risks of poor crop establishment and growth in adverse seasons.

"Low plant density is symptomatic of poor establishment and a range of seeding rates were evaluated in each trial to clarify the role of seeding rate as an agronomic option to restore canola plant density, compensating for seeds that fail to produce viable plants."

Some trial results

Trial 1 compared three canola sowing rates (1.5, 2.5 and 3.5 kg per hectare), two sowing depths (nominally 2 and 4 cm) and an open pollinated and hybrid variety.

Trial two compared the presence or absence of potential residues from three herbicides (amine, ester and imidazolinone) applied in March, varieties with imidazolinone and triazine tolerance and the same seeding rates as Trial 1.

Canola plant density was highly correlated with seeding rate in all trials. The initial 1.5 kg per hectare rate established 22.7 plants per m² per kg seed, the additional kilogram of seed (in the 2.5 kg per hectare rate) adding 16.5 plants per m² and the extra kilogram of seed (in the 3.5 kg per hectare rate) adding another 13.0 plants per m².



A 2014 Dodgshun Medlin 'farm crawl' of Mallee canola sites. (PHOTO: Dodgshun Medlin)

The 1.5 kg per hectare seeding rate resulted in plant densities sometimes at the lower end of the recommended range (25–50 plants per m²) and with reduced ground cover compared to higher seeding rates. The fact that high quality seed was used with 98 per cent germination emphasises the importance of considering an increase in the seeding rate if seed quality is doubtful.

Ground cover with each seeding rate in June–July was 26 per cent with 1.5 kg per hectare, 37 per cent with 2.5 kg per hectare and 44 per cent with 3.5 kg per hectare. Increasing seeding rates above 1.5 kg per hectare reduced wind erosion risk for surface soil but did not increase grain yield.

The marginal increase in crop plant density with shallow sowing was not significant.

At the Walpeup site, which established under sustained marginal soil moisture, ground cover was improved with shallow sowing, and at the Paruna site, where there was adequate seed bed moisture, deeper sowing was associated with more early vegetative growth.

Hybrid and open pollinated varieties had similar plant densities although early biomass production was greater with the hybrid. Grain yield was also more but associated with nearly 50 per cent lodging in the open pollinated variety in trial one at Walpeup.

In Trial 2, the *B. juncea* variety established better than the *B. napus* variety with marginal soil moisture at Walpeup, while the reverse occurred with more favourable moisture at Manangatang.

Herbicides applied in March, for summer weed control, reduced canola plant density by four plants per m² and ground cover by 9–15 per cent in a year when rainfall between herbicide application and sowing was substantially less than the long-term average.

There was negligible impact on grain yield, although oil

content was 0.2–0.4 per cent less where herbicides had been applied.

Best agronomic practice achieved canola yields of 1.0 tonnes per hectare, despite seasonal constraints.

To sum up

In summary, Ivan said canola had been confirmed as a valuable rotational crop, given that the best agronomic management achieved canola yields exceeding 1.0 tonnes per hectare in a challenging season at two of the three central-northern Mallee sites and 0.6 tonnes per hectare at the third very low soil moisture site.

Meanwhile, next financial year the GRDC is proposing to fund six new southern region agribusiness trial and extension networks initiative projects involving field trials and demonstrations based around specific tactical agronomic management issues such as soil health, crop nutrition, crop rotations and the identification and management of weeds, pests and diseases.

The projects will be part of the agribusiness trial and extension networks initiative which is aimed at addressing locally important agronomic issues through collaboration between growers, grower groups, advisers, agribusiness and researchers.

Andrew Rice, GRDC Manager Regional Grower Services – South, says that outside GRDC's existing investment processes, there remains a need to address a range of local cropping constraints through small scale trials and for the targeted extension of results from these trials.

"A key feature of these projects will be the extension of project outcomes and outputs through a locally-based network which will work in close collaboration with the GRDC, particularly the Southern Regional Panel and the Regional Cropping Solutions Networks which support the Panel," Andrew said. ■



Bourgault maintains a relentless focus on designing seeding systems that maximise productivity and enhance convenience.

Our job is to make your job as efficient and effortless as possible.

Visit our website to find your local professional dealer and full details of the Bourgault products that are right for you.

www.bourgault.com.au

THE CONSULTANT'S VIEW

Consultant Matthew Witney says canola has the potential to deliver many benefits to growers in the Mallee despite a 'rocky' 2014 season for many – as demonstrated by the GRDC-funded canola establishment and best management practices project.

"Canola is a fantastic disease break and offers critical grass control if done thoroughly," he said. "It offers a great disease break and chemical control diversity as well as an operational advantage, as field applications and so on, can be done outside the typical times demanded of cereals. For example, canola can be sown earlier and harvested earlier if windrowed, or last if direct headed.

"It also allows soil type opportunity via its boron tolerance on heavier soil types as opposed to some sensitive pulse crops."

Despite these benefits, some Mallee growers are reluctant to maintain or increase canola plantings due to a lack of success in previous seasons, either within their own farming systems or within those of other growers in the region.

"Some growers see the establishment of canola on particular sands as a large 'risk' and I expect that after the dry season in many areas in 2014, growers will be electing to reduce their production risk and thus canola will take a step backwards in 2015 – plantings could be down 30–40 per cent," said Matthew, a Swan Hill-based adviser with Dodgshun Medlin.

"Often if a particular crop type does not do as well as expected in a season for various reasons, there is always a 'knee jerk reaction' in the following year's plantings."

Costs and efforts associated with control and monitoring of pests such as green peach aphid and diamondback moth added to the difficulties associated with canola production in the Mallee in 2014 – despite these pest outbreaks being regarded as particularly uncommon. "It was just another set of 'unwanted' costs, chewing into an already narrow gross margin for many."

Some common issues in the Mallee

Generally, issues encountered by Mallee growers with canola establishment have related to sowing into dry soils with clods



The impact of points set too deep relative to the seeding boot at sowing in 2013. (PHOTO Matthew Witney)



Consultant Matthew Witney says canola has the potential to deliver many benefits to growers in the Mallee.

(PHOTO: Dodgshun Medlin)

or little moisture, small rain events giving a false break and exhausting seed reserves, and fertiliser toxicity (particularly nitrogen too close to the seed) and various insect pests.

"Seed quality has also been an issue, especially in relation to where it's been stored over the off season. Some growers have had trouble with seed stored in chemical sheds and amine/ester fumes have affected seed quality and reduced germination and plant vigour.

"Retained seed that is not being graded properly has caused many 'smaller seeds' with reduced germination and seedling vigour," Matthew said. "Canola seed if kept by a farmer needs to be graded hard, so they are sowing the 'very best' of the seeds to aid in establishment."

Sowing depth, herbicide residuals, the length of time the canola has remained ungerminated in the soil and too much press wheel pressure on wet sands (this compacted sands and caused significant establishment issues in 2014) are among other challenges faced by growers.

Mandalotus weevils have also had an impact on production, especially on limey soil types. "They can be hard to find and often it can be too late when they are found as they chew through the main stem, killing plants. Insecticides do assist, but do not always offer 100 per cent control."

Matthew said it was often difficult to pin point the reason for poor establishment with canola and it always required thorough investigation, often being linked to a number of factors.

"There can be a combination of factors at times. As we are dealing with different machinery, rotations, soil types, regions and management, many factors come into why canola emerges well and performs, or why it doesn't."

Matthew said he and his colleagues were constantly assisting growers in refining canola establishment guidelines, by referring to and using the outcomes of existing and new trial work.

"A lot of learning is done via a farmer visual basis and examining details by asking key questions. This is when many issues are discovered or explained and a plan to overcome them is put in place."

He expects that over time, as the outcomes of the GRDC-funded trial work are extended and grower confidence in canola increases, planting percentages will likely rise again.

Subsoil manuring comes of age in HRZ

AT A GLANCE...

- Over a decade of research has shown subsoil manuring is profitable.
- Effects of subsoil manuring last for seven years and beyond.
- More machinery being developed to drive the practice.
- Research continuing into effects on soil biology.

RAISED beds helped to revolutionise cropping in the high rainfall zones (HRZ) of southern and western Australia by reducing the risk of waterlogging.

But the next step in not only mitigating waterlogging but breaking up the tightly-packed clay subsoil and improving the soil moisture-holding capacity in the HRZ could be achieved through subsoil manuring.

For close to a decade, trials across the Victorian HRZ have shown that wheat yields can be improved by anywhere between two to five tonnes per hectare and canola yields one to two tonnes per hectare, particularly in years with a dry finish to the growing season.

In the early 2000s, staff at the Department of Environment and Primary Industries (DEPI) Victoria – including project officer productive soils Dr Renick Peries – observed crops established on raised beds producing huge amounts of biomass which was not translating into grain yield.

The raised beds had improved the rooting depth of plants, but in the hostile clay subsoils which are common in the Victorian HRZ, the crops were not accessing the large amounts of water held within the heavy clay matrix that was not available to them.

"There was a lack of connection between the topsoil and the subsoil, which got me thinking about ways to make that connection," Renick said.



Dr Renick Peries (right) with North Central Catchment Management Authority project officer Darren Bain and soil scientist Christian Bannan.

Influenced by the idea of some farmers in the HRZ spreading chicken manure on their crops at rates of five tonnes per hectare, Renick began experimenting with the idea of digging trenches on some of the raised beds and burying chicken manure in them.

"I thought that if I can get this organic matter and microbes to the roots of the crop it might provide a self-sustaining system of soil structure change," he said. "Unfortunately the five tonnes per hectare wasn't an accurate figure and at the time we went through a period of drought – the millennium drought – where we didn't see a lot of improvement in the soils."

ACCUFIRE
BROADACRE FIRELIGHTER

Australia's most affordable + efficient tool in the HERBICIDE RESISTANCE Fight!



Construct a narrow windrow behind the harvester



Light them in Autumn with the ACCUFIRE BROADACRE FIRELIGHTER



Collected weed seed GONE!

CHECK THE WEBSITE TO VIEW THE ACTION www.accufire.com.au | 0427 722 031

TABLE 1: The yield increases, and extra costs and benefits from subsoil manuring with 20 tonnes manure per hectare at the Penshurst and Derrinallum sites in 2009

Yield increases costs and benefits	Penshurst				Derrinallum			
	2009 Wheat	2010 Canola	2011 Wheat	2012 Canola	2009 Wheat	2010 Canola	2011 Wheat	2012 Wheat
Yield increase (t/ha)	2.8	1.2	4.5	2.0	4.8	0.0	2.4	4.1
Extra costs (\$/ha)	1398	27	67	39	1310	0	43	64
Extra benefits (\$/ha)	830	789	1184	1100	1359	66	715	1086
Net benefit (\$/ha)	-568	764	1201	1061	49	66	672	1022

TABLE 2: The yield increases, and extra costs and benefits from subsoil manuring with 10 tonnes manure per hectare at the Penshurst and Derrinallum sites in 2009

Yield increases costs and benefits	Penshurst				Derrinallum			
	2009 Wheat	2010 Canola	2011 Wheat	2012 Canola	2009 Wheat	2010 Canola	2011 Wheat	2012 Wheat
Yield increase (t/ha)	2.0	0.6	3.6	0.6	2.7	0.0	1.9	2.5
Extra costs (\$/ha)	717	7	43	22	674	0	38	45
Extra benefits (\$/ha)	678	398	814	330	902	66	418	662
Net benefit (\$/ha)	-39	377	757	308	228	66	381	617

But fast-forward to the present day and that initial idea of getting organic matter and microbes down to the roots of the plant has proved to be fruitful for the HRZ.

Research funded by the Grains Research and Development Corporation (GRDC) and carried out by DEPI, La Trobe University and Southern Farming Systems has shown that even at the high rates of between 10–20 tonnes per hectare, subsoil manuring is economically feasible.

There are also a handful of prototype and commercial machines – ‘subsoilers’ – doing the rounds on farms in southern Victoria for early adopting growers to trial subsoil manuring on their own farms.

Economics and profitability

Renick said costs of about \$1200–1500 per hectare to subsoil manure might sound prohibitive, but cost-benefit analyses had shown that those expenses could be recouped in less than three years through extra yields.

An economic analysis of subsoil manuring compiled by Associate Professor Dr Peter Sale, La Trobe University, and Associate Professor Bill Malcolm, University of Melbourne, concluded that subsoil manuring at 20 tonnes per hectare or at 10 tonnes per hectare was profitable and financially feasible.

Using data from farms at Penshurst and Derrinallum, both in south-west Victoria, the analysis found farmers who invested in subsoil manuring in 2009 were better off financially, comparing land that was subsoil manured versus land conventionally growing crops (Table 1).

But what might drive a farmer to consider subsoil manuring?

Renick says clay subsoils with tightly packed together clay particles – which have very little pore space for roots to move or for water to infiltrate – are a prime target for subsoil manuring.

“In order for the subsoil manuring technology to work, the soil should have a minimum clay content of around 20 per cent, as that is the material that helps in the formation of aggregates,” he said.

“This technology helps improve the ‘bucket size’ of the soil, or the soil water-holding capacity. Some areas only have five per cent or less of their natural macro-porosity left in the subsoil, resulting in poor aeration and impeded root growth, which is where we find crops haying off and greater loads of stubble on

the ground which causes issues in itself such as a greater habitat for slugs and snails.

“What we end up getting after subsoil manuring is a larger bucket size and soil capable of holding three times its original capacity of plant-available water, which can be stored deep in the profile to be used in the spring grain-fill period, therefore achieving much higher water use efficiency.”

Organic matter, manures and rates

Besides chicken manure, Renick has also looked at subsoiling duck manure and any other locally available composts, with the thinking being that chicken manure will not be available everywhere that subsoiling is conducted.

While results are still inconclusive as to which manure or organic matter might be best to use, Renick says they do need to find a material that is more abundantly available should the popularity of subsoil manuring increase.

“We are hoping one of the materials available is wheat and barley stubble,” Renick said. “It contains a lot of carbon, but it needs to be enriched with nutrients. There has been some work done by a PhD student which has shed some light on where to proceed with this, but we haven’t got the resources at the moment to follow-up and bridge the knowledge gaps.

“We are looking at impregnating the stubble with chemicals and nutrients and investigate ways to increase the density of the material to get it flowing through the machinery better. But for farms close to cities, there are options such as bio solids and municipal green waste which some councils are saying can be delivered to farms if they want to do the composting.”

Research into what rates to apply and where is also continuing.

“We’re not really at a stage where we can say which soils will respond to 10 tonnes per hectare and which will respond to 20 tonnes per hectare,” Renick said. “That work is being done at the moment by looking at what has been done over the years to provide guidelines to farmers.

“From a series of years of experiments between 2009 and 2012, we’ve got some sites responding to 10 tonnes per hectare and giving a significant and profitable yield, but on those same sites rates of 20 tonnes per hectare have given stronger results. But some sites haven’t responded to 10 tonnes per hectare but have responded to 20 tonnes per hectare (Tables 1 and 2).”

Subsoil activity

While Renick conceded they had not yet been provided the resources to get into the details of soil biology as a result of subsoil manuring, he did have some educated estimates on the process that was occurring below the topsoil.

"The manure will help the water storage – it will improve the conductivity of the soil so in cases of heavy rainfall it will infiltrate deeper into the profile and stimulate more root growth and then the microbes will begin to react on the root exudes," he said.

"Then, as a result of a number of chemical compounds including polysaccharides, large clay structures begin to break down and start to form aggregates, which increases the macro pores by up to 20–30 times.

"When there is greater macroporosity in the soil it not only helps to hold water but it drains water better and prevents waterlogging as the water is taken away rapidly and stored in deeper profiles of the soil.

Renick said as a result of this, farmers were seeing an increase in the size of the soil water 'bucket'.

Repeat ... or not?

As for a second treatment of subsoil manuring, he said growers were still seeing the benefits of their first treatment almost seven years ago.

"They are reporting incremental benefits from 2005 right up until today," he said. "Who knows? Ten years down the track we might need to go to a deeper layer, but as it is, we feel they won't need to repeat the practice for 7–10 years.

"As long as the crops are growing, the roots are reacting and the clay is transforming, which will be happening over a number of years, it won't need to be repeated. One of the earliest sites set up in 2009 bordering Victoria and SA – from the road you can still see the difference between the control and where it was subsoiled."

Depths and machinery

Renick said the depth of subsoil manuring depends on where the topsoil meets the subsoil, which he said could be anywhere from 5–10 cm.

But he reminded growers considering subsoil manuring to be

TAKING SUBSOIL MANURING TO THE MALLEE AND BEYOND

While subsoil manuring was born and bred in the high rainfall zone of southern Australia, a new project is demonstrating the practice in the lower and medium rainfall zones to determine whether there are benefits on improving the productivity of soils.

In an effort to address the declining soil condition and subsoil constraints in areas of Victoria such as the Wimmera, Mallee, North Central and South West, subsoil manuring is being trialled alongside controlled traffic farming to see if it will benefit the long-term productivity, sustainability and profitability of soils in those regions.

The two-year project, funded by the Federal Government's National Landcare Program, is being led by the Victorian Department of Environment and Primary Industries (DEPI) with partners including the Victorian No-Till Farmers Association, La Trobe University and the North Central Catchment Management Authority.

The demonstrations are located across Victoria at Ouyen, Hopetoun, Propodollah, Toolondo, Rhymney, Charlton, Kamarooka and Werneth.

DEPI team leader, land management and livestock extension Melissa Cann said although it was only early in the project, visual differences in crops on soils that had been subsoil manured were observed.

"We've seen positive effects on sandy and sodic soils in the Hopetoun area, which we hope translates into yield, but it's too early to tell yet," Melissa said. "Where the ground has been ripped and the manure placed, there has been a lot more plant root development."

While visual inspections had been promising, Melissa said it was too early to be too confident about any positive impact from subsoil manuring.

"Most important is the practice's cost effectiveness," Melissa said. "On one hand it could have a positive long-term effect on improving subsoil constraints, but accessing manure or compost will weigh heavily on the economics. Freight is the biggest cost."

"We've still got another growing season to go, so by end of the project we will have two years' worth of data. By then we might be able to get a better picture of how subsoil manuring has improved the subsoil, whether we've been able to increase the rooting depth and if crops are able to hang onto more

moisture in deeper sands by having compost below the surface."

Of particular interest at the Mallee sites will be whether subsoil manuring improves the soil water-holding capacity and nutrient use efficiency in the deep sands. The Kamarooka sight has a focus on the benefits of subsoil manuring on the remediation of salinity.

Data collection will focus on the physical and chemical properties of the soil and plant growth and yields over the two growing seasons in comparison with the rest of the paddock.

More information: Melissa Cann, DEPI, melissa.cann@depi.vic.gov.au



DEPI Victoria's Darryl Pearl at the Ouyen demonstration site in September 2014.

cautious as not all soils had a clay layer at a uniform depth. In such cases, he advised growers to take soil cores.

The greatest depth that the subsoil manuring trials had to go to was 40 cm.

Renick believes that as subsoiling machinery becomes more available, the practice will become more widespread. He says the same thing happened when raised bed cropping was at its peak – machinery dealers were bombarded with requests from growers for machinery to make raised beds.

One of the machines currently operating is the Peries-Wightman subsoiler, named after Renick and agronomist Bruce Wightman. But it is only a small, twin-boot machine capable of doing 0.5 hectares an hour.

The first commercial subsoiler was produced in 2012. It features a six-metre bar and an air suction system which takes manure from a trailer and delivers it into the soil, similar to an airseeder.

Best timing

Renick says land earmarked for subsoil manuring needs to be mostly dry so a 'shattering' process occurs in the clay, allowing

the manure to get in, but some subsoil moisture was needed in the profile.

He says in most cases, farmers subsoil manure in January or February. But the practice is also gaining traction with livestock farmers wanting to improve irrigated pastures who would choose a time when the soil is not waterlogged.

Future work

Research is continuing into the soil carbon benefits of subsoil manuring and the potential of the practice to sequester carbon, in line with the Federal Government's response to climate change.

Renick said the major research will be into soil biology as a result of subsoil manuring.

"We will look at what it is in the manure that is driving the change," he said. "From that, there is the potential to develop a liquid concentrate which could be dropped into the subsoil, which would also mean we could use less powerful machinery."

More information: Dr Renick Peries, DEPI Victoria, renick.peries@depi.vic.gov.au

FAST-TRACKING ADOPTION IN VICTORIAN HRZ

Southern Farming Systems (SFS) is continuing its research into subsoil manuring with projects focusing on the commercialisation of the concept.

SFS research and extension officer Corinne Celestina says the concept of subsoil manuring has been proven through research by the Victorian Department of Environment and Primary Industries (DEPI) and La Trobe University. But they are working to grow the practice on a broad scale through a grant from Regional Development Victoria (RDV) and federal funding in the form of an innovation grant from the Department of Agriculture, Fisheries and Forestry (DAFF).

"There are lots of barriers for growers to the adoption of subsoil manuring, mainly because of the cost and access to chicken manure, with only one commercial grower adopting the practice. For that reason, we are developing and testing other amendments that are more cost-effective and accessible than chicken manure, such as stubble, and looking at brought-in materials such as green waste, bio solids and manures."

These materials are being trialled on a large scale at Westmere, while there are two smaller field trials at Inverleigh and Wingeel, all in Victoria.

"The other key aim of the project is to design commercial subsoil manuring machinery, in which we have enlisted the help of some people from the University of Melbourne and to develop suitable machinery and use it to test different amendments for use in manuring," Corinne said.

Corinne says, ideally, materials used in subsoil manuring will come from on-farm.

"We're looking at whether farmers can grow a legume crop into cereal stubbles, windrow it when it's green and then collect it and put it underground, rather than carting in chicken manure and putting that underground," she said.

"The idea with commercialisation is to tackle barriers to adoption. Obviously not everybody can access chicken manure and almost nobody has the machinery to subsoil, so we're working on overcoming all those barriers.

"At the AgriFocus Field Days we had so much interest in subsoil manuring, so if we can get some machinery developed and find the right amendment, hopefully it will take off."

More information: Corinne Celestina, ccelestina@sfs.org.au



The Peries-Wightman subsoil manuring machine in action at Southern Farming Systems' Westmere site in April 2014.

Recent market reports fill the gap

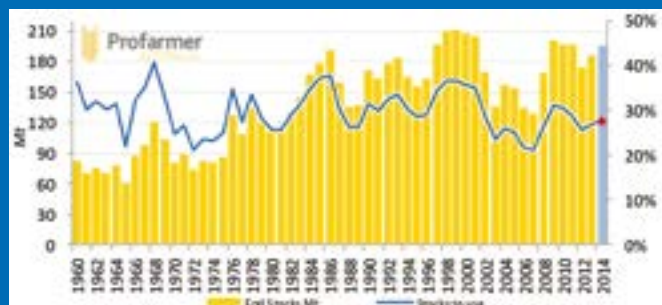
ON Monday, January 12, 2015 the USDA hit the market with a number of reports. The monthly world agricultural supply and demand estimates (WASDE), quarterly US grain stocks report, US winter wheat seeding report and the 'final' US corn and soybean production estimates. The market had been awaiting this data to establish some direction since the Christmas lull.

What the USDA had to say about wheat

Monday night's USDA report saw stocks to use relax further with 1.2 million tonnes (mt) added to global production estimates whilst total use rose by a modest 0.6 mt and US consumption in fact fell.

World wheat stocks to use are forecast to increase to the end of 2014–15 season. Meaning there should be more 'fat' at the end of the year as ending stocks are expected to grow by more than total consumption.

World wheat stocks to use



Some of the key changes noted in the USDA reports were:

- Global wheat trade increased by 1.2 mt. Exports were 1.0 mt higher from the EU and 0.7 mt higher from Ukraine on faster shipment pace to date and the expectation these two nations will capture the bulk of the gap left by Russian export restrictions.
- Russian exports were revised 2.0 mt lower. This flowed straight through to Russian carry out stocks. Domestic consumption and rapid export pace both continue to weigh on the Russian balance sheet as import and export restrictions re-shape the Russian balance sheet.
- If rumours that Ukraine is looking to follow Russia's lead and implement export restrictions eventuate, this is likely to see more Russian export market share pushed on to other origins.
- Faster than expected shipment pace to date also saw Canadian exports revised 0.5 mt higher.

There remains uncertainty as to what exactly Russia plans to do. Russia achieved a record 59 mt wheat crop this year and based on USDA numbers, Russian carry out stocks are forecast to increase over 4.0 mt year on year. Are they preparing for the potential of a poor crop in 2015?

Some feel the USDA 2.0 mt reduction in exports is overkill. Although in 2014 Russia shipped 5.0 mt from February through to June. This coincided with geo-political uncertainty hence doesn't reflect a 'normal' year. The prior year just 1.0 mt of wheat was exported over the same period.



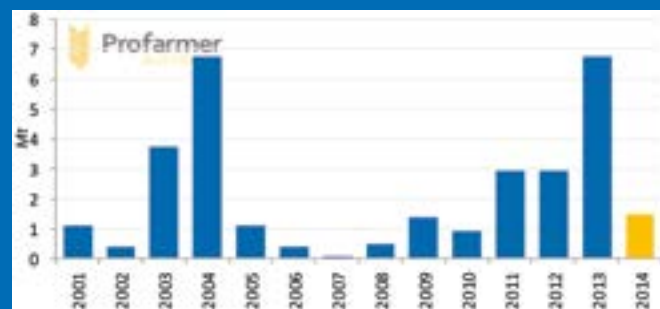
January 16, 2015

The USDA winter wheat seedings report indicated winter wheat seeded area was below market expectations and below year ago levels. Soft red winter and hard red winter wheat acres were both revised lower.

The market will now need to form a view on what will go in instead. Will it be a higher protein spring wheat crop? Given current uncertainty as to the condition of the winter wheat crop, saving more area for spring wheat might not have been such a bad idea.

The other interesting point to come out of the USDA report was Chinese imports. Although wheat imports to China are

China wheat imports



Farming for the Future...

"Two well known companies united"

GYRAL HAS A NEW MANUFACTURING FACILITY UNDER NEW OWNERSHIP

- AIR SEEDER BINS
- AG BOSS DIRECT DRILL
- PENETRATOR DIRECT DRILL
- LEUCAENA PLANTER

- BELT SPREADERS
- MANURE SPREADERS
- SILAGE FEED OUT WAGON
- LARGE RANGE OF SPARE PARTS

74-92 Buckland St Toowoomba QLD 4350
Ph: (07) 4634 3388 Fax: (07) 4633 1634
www.gyral.com.au
Australian Made & Australian Owned

A DIVISION OF

GREAT WESTERN CORPORATION P.L.

expected to be considerably lower year on year, the composition of the import mix is telling.

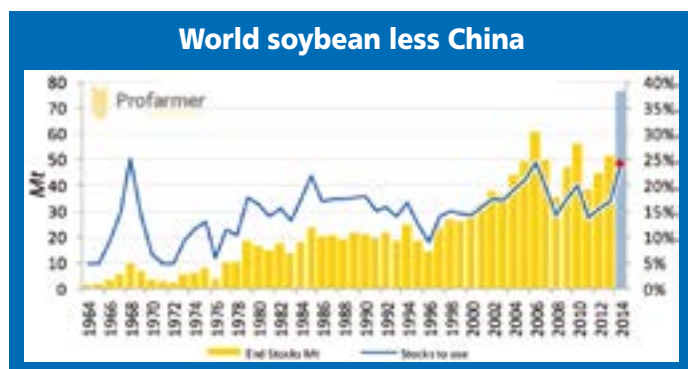
China recorded a high yielding wheat crop this year, hence overall production is up 5 mt year on year resulting in growing government inventories. On the one hand the government is continuing to encourage purchases from domestic reserves, whilst on the other hand, strong domestic yields have resulted in a lower protein crop. This is reportedly generating strong Chinese interest in high protein milling wheat from Australia, Canada and the US.

What the USDA had to say about oilseeds

The USDA final US soybean production numbers released on January 12 showed a slightly smaller area offset by higher yields resulting in an increase to US soybean production estimates. Soybean production was also increased for Brazil. All in all an additional 1.6 mt of soybean production was added to the global balance sheet.

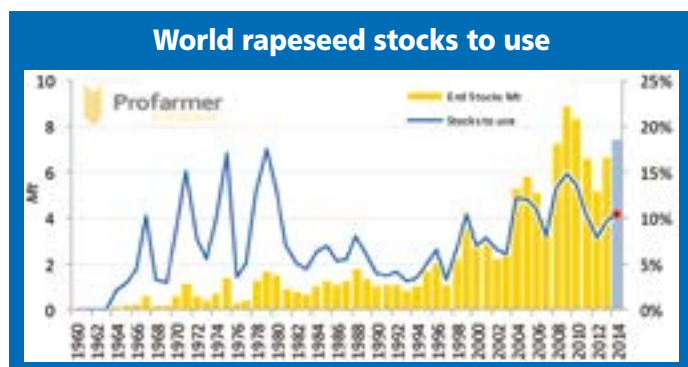
The market had been speculating that perhaps Brazilian crop conditions weren't as favourable as previously thought – this had supported soybean values in the lead up to the report. But when the USDA increased Brazilian production estimates, this put to bed any further rumours the Brazilian crop was in trouble.

The replenishment of world soybean stocks remains imminent. As shown in the chart below, world stocks to use are forecast to increase considerably this year after the South American crop hits the market – even after adjusting for Chinese stocks.



US soybean exports were revised higher on the back of strong purchases to date by China. But if China steps out of the market for US product and switches to South American or focuses on domestic product, this could undermine current estimates and bring a further weaker tone to soybean markets.

Canola values haven't been as affected by the USDA report as soybeans despite the implications this may have for the overall oilseed complex. Canola differs from soybean as it contains a higher oil content – this means that when crushed there is more oil and less meal from canola than soybeans.



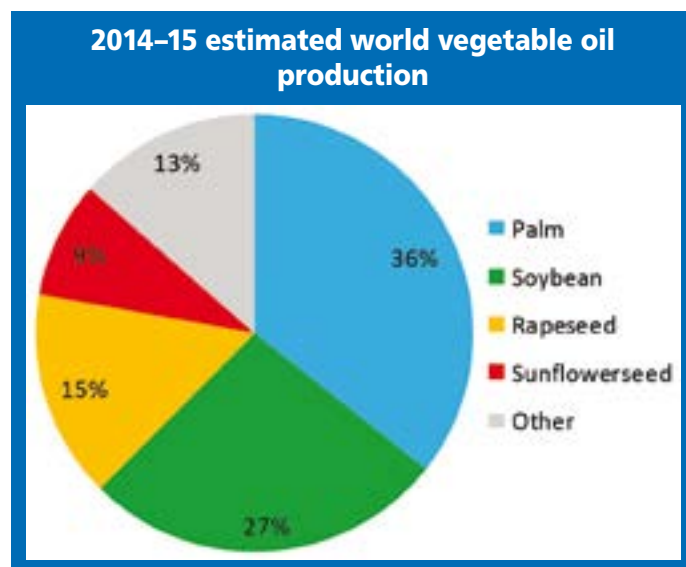
Current uncertainty around Malaysian palm oil production is one factor supporting canola futures values. The other factor is the cracking pace of Canadian canola exports. Although this can be perceived as negative for Aussie canola values. The positive side of this is the indication global appetite for canola is strong. Thus supporting canola values.

Wheat does palm oil mean for canola?

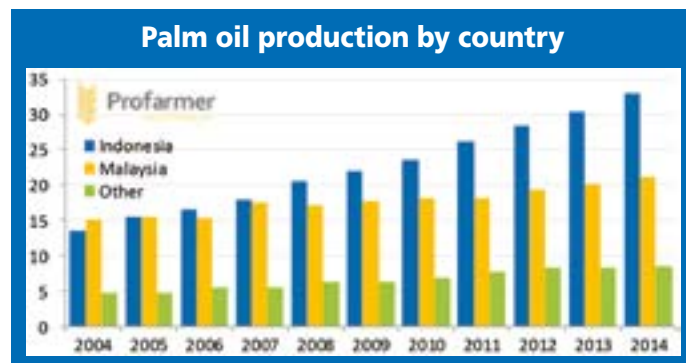
Canola values have found support on strong international demand for canola seed as well as strong crush margins. This is being coupled with slow grower selling in Europe and Canada which is making it difficult for exporters and local crushers to get their hands on product.

The other factor supporting canola values is uncertainty around Malaysian palm oil production following inclement weather and flooding which has damaged crops.

The chart below shows vegetable oil production estimates by type based on USDA data. It highlights the significant size of palm oil production relative to other oils.



The majority of palm oil is produced in either Malaysia or Indonesia as the chart below shows. Hence Malaysian production disruptions can have a considerable impact on overall supply of vegetable oils.



Data released from Malaysia on January 12 indicated Malaysian production fell 22 per cent from November to December due to flooding. Even if rains stop now, the impact of current weather events is expected to be felt for several months.

This has created a gap in the global vegetable oil market – one which canola can fill which is supportive of canola values.

Russia's (disruptive) role in world trade

■ By Vince Peterson, US Wheat Associates, Vice President of Overseas Operations

WORLD wheat consumption set a new record in 2013–14 of 713 million tonnes (mt), the sixth new high in the past 10 years. The only way to meet this demand is for more of the world's surplus wheat to move from its origin to deficit destinations. In fact, world wheat trade has increased some 50 mt per year in the past 10 years. USW has estimated that in the next 35 years, by the year 2050, global wheat trade may need to reach or even exceed 225 mt in order to supply a growing population with improving economic opportunity.

Countries that depend on imports to provide food security to their people need reliability in that supply. The last thing they need is market disruptions and their inevitable price swings. Sadly, the government of Russia has once again fallen back into a troublesome pattern of disruption that has consistently imposed unnecessary economic hardships both on Russian farmers and on many of the world's most vulnerable buyers and consumers.

In December, the Russian government announced that beginning February 1, 2015, all wheat exports would be levied an export tax at the rate of 15 per cent plus €7.50 per tonne (with a minimum tax imposition of €35.00). Together with coincidental

concern over the Russian winter weather, the announcement of these new taxes helped push global wheat prices rapidly through a 30 per cent increase. At today's export values of approximately US\$260 FOB, the tax calculation would imply an export tax of nearly US\$48 per tonne added to the price of any wheat exported from Russia.

The inescapable fact is that Russia and other countries in the Black Sea region have become critical wheat suppliers to many logistically close markets in the Mediterranean, Middle East, and East Africa. Lower prices (partly reflecting lower quality), small size vessels in some cases and increasing export capacity have drawn nearby wheat importers to the Black Sea. Normally, this would be a positive story of how increasing regional supplies are meeting increased world demand.

A darker story

But looking back through the headlines of recent history, a darker story emerges. Five times in just the past seven years, the Russian government has restricted or threatened to limit access to exportable wheat supplies, sometimes even cutting across

Take the guess work out of seeding

Every millimetre matters when it comes to your seeding success. With trademark flexibility and strength Flexi-Coil offers unrivalled depth control and seed placement.

Contact your dealer today to organise a demonstration or call Flexi-Coil direct.

Call 1800 790 811 or visit www.flexicoil.com.au



flexicoil



In five of the past seven years Russia has intervened.

existing contracts. Each time, the markets responded with a correspondingly sharp price rally.

These are not just isolated, sensational headlines. Governmental intervention has unexpected, real-life consequences. While repeated interference by the Russian government has not been the only stimulant, intervention greatly magnified temporary supply shortages into full-blown price and supply crises. The result, of course, has forced buyers to seek alternative supplies at artificially high prices.

Yet, drawn in by cheaper prices that Russian exporters must offer to rebuild demand, importers have been relatively forgiving, opting to quickly return each time to Black Sea supply sources after the export restrictions were lifted. But Egyptian Minister of Supply, Khaled Hanafi may have revealed a crack in that tolerance on December 29, 2014 in public remarks about the latest Russian export taxes.

"Egypt has alternatives and would accept offers based upon dependability as well as cost, quality and timing," he said.

Food security is clearly among the top priorities for Minister Hanafi and he must have reliable supply partners to deliver it. We take the Minister's words seriously and believe that he expressed a sense of frustration shared by many importers.

The US government long ago learned from experience that disrupting export grain trade only brings logistical problems and potential economic catastrophe for every segment of the market, including farmers. Fortunately, we said 'no more.' Short of a massive, and highly unlikely, crop failure, by law the only way to block US grain exports is through a presidential declaration of national emergency.

Importantly, a national emergency does NOT include short-term, fundamental rises in wheat prices. Further, export taxes are expressly forbidden by the US Constitution.

Embracing open markets

Russia need not be an island unto itself, continually throwing up walls to exporters and importers as the means of managing domestic supply and prices – stifling growth of its own agricultural sector in the process.

Someday, Russia may benefit from embracing open markets and free trade rather than continually rushing in and out of the marketplace on a political whim. For example, opening trade would ensure that, even in times of a particularly short wheat crop, supplies would freely move into Russia from surrounding countries or from surplus areas abroad and quickly balance and quell any concern about local food supplies.

Russia's government should be in a position of confidence to be able to assure its citizens that no Russian is going to suffer in the face of rising wheat prices without imposing that suffering on other dependent nations. A failure to accept this reality may well doom Russia's export-oriented agricultural economy – and many dependent importing nations – to another decade of this continual feast or famine turmoil.

Pulses and FTAs

■ By Cindy Benjamin, Pulse Australia

AFTER many years of negotiations several free trade agreements (FTAs) and economic partnership agreements have come to fruition and others have taken meaningful steps forward. Pulses have been included in all three of the FTAs that Australia has signed recently.

Tony Russell is Executive Manager for Grains Industry Market Access Forum (GIMAF), which draws together peak industry bodies, including Pulse Australia, to work with the Australian government and its agencies to develop and implement international market access plans for the grains, fodder and seeds industries.

He says that while the reduction or removal of tariffs is significant it does not remove all barriers to trade. Nor does it mean that huge new markets will suddenly open up to demand Australian pulses.



Tony Russell, GIMAF.

"The Korea–Australia FTA includes the phasing out of quite large tariffs (27 per cent) on chickpea, lentil and faba/broad bean over 5–10 years," he says. "This FTA removes a significant trade barrier and gives Australian exporters an opportunity to do business and grow the market for pulses in Korea."

The Japan–Australia FTA negotiations concluded in April 2014 after seven years of talks. The agreement includes the abolition of 8.5 per cent tariffs on chickpea and lentil imports, to take effect immediately the agreement comes into force. As with Korea, this FTA will open doors of opportunity but is unlikely to have an immediate impact on pulse markets in Australia.

The China–Australia FTA includes the phasing out of tariffs of up to 7.5 per cent on various pulse commodities over the four years following the FTA coming into force. Unfortunately there are no phytosanitary protocols in place for pulses from Australia into China. "This means that although the tariffs will soon be removed it will not be automatically possible for Australia to supply pulse products to China," says Tony. "Buyers in China are interested in Australian pulses, particularly faba bean, and this interest will assist in the negotiations required to encourage officials in China to undertake the necessary risk assessment so trade can commence."

Opportunities may also exist in China for lupin as stockfeed, especially for their burgeoning dairy industry. But Australian lupin processors and growers are keen to develop the higher value lupin for human consumption market in China.

In March 2014, after years of lobbying efforts, processed lupin for human consumption (split or ground) has been granted market access to India. This may kindle a renewed interest in the production of lupin as an important broadacre rotational crop.

"Mandatory methyl bromide fumigation, demanded by Indian authorities for a range of pulses, including lupin, remains an unresolved issue," says Tony. "GIMAF is developing a strategic plan for India to focus on market access problems as a priority."

In coming issues of *Australian Grain* – in conjunction with Strategis Partners' Jay Horton – we will run a series of articles to help farmers better manage agricultural risk. There are large gaps in insurance knowledge – and from all sides of the fence. This series will help address this knowledge deficiency and to point the way to the types of insurance products and risk management services growers need.

Crop insurance: Doing it better

AT A GLANCE

- When it comes to crop insurance, Australia can do better;
- Today, there's not enough growers insured and not enough commodities covered with the right insurance products;
- There are big knowledge gaps – many insurers don't understand agriculture well and many growers don't understand insurance;
- Government responses to events such as drought are costly and often poorly targeted; and,
- We need to reduce the insurance knowledge gaps and to have the right insurance products available to growers.

THE Symposium on the Future of Crop Insurance held in Sydney on December 2, 2014, brought together experts, practitioners and users of crop insurance. A dozen speakers provided a wealth of insights on agricultural risk management and crop insurance. A key theme that emerged was that reducing uncertainty in crop production need not be costly for business – for farmers, for insurers or for governments.

Agriculture is Australia's riskiest economic sector, possibly becoming more risky over time – so better risk management is essential for Australian agriculture.

Current risk management strategies have potentially high, but largely hidden, costs. There are political and productivity costs associated with inefficient risk management systems.

Taking and managing risk is part of what producers must do to create farm profits. But without insurance cover, producers 'punt the season' and often take excessive risk.

Investment is the key to unlocking the full potential of Australian agriculture. To provide investors and farmers with the risk management framework they need, innovative insurance products and services.

The way forward

There is an overwhelming case for Australian producers, their financiers, insurers and advisers, as well as governments, to develop a deeper understanding of how to manage agricultural risk exposure through insurance.

We need to develop individual, organisational and industry capacity to deal with unfolding weather, climate and biosecurity risks.

Successful producers will be those who are best able to develop strategies, which are defensive and focused on avoiding downside risks, together with strategies, which embrace risk and make the most of the opportunities it presents.

FUTURE ARTICLES & TOPICS

■ The business of agricultural risk management

This introductory article will explain the building blocks of agricultural risk management. The key question is not about how to minimise farming risk – it's about how to construct a business plan that achieves your future income and wealth goals with current and future farming risks factored in.

■ Understanding your risk exposure

An integrated approach to managing risk means considering your exposure to: Environmental, economic and societal; Industry value chain; and, Enterprise-specific uncertainties.

■ Designing risk solutions for your farm

This article will outline the measures available to address the full array of risks, as well as the costs and benefits of those measures. This will help you negotiate with suppliers for the most cost-effective products to account for production, marketing, operational, financial and regulatory risks.

■ Selecting the right risk management products and services

This article will also help you negotiate with suppliers for the best products for managing not only your production risk exposure but also in areas such as financing and succession plans.

■ Mastery of decision tools for risk assessment

Fortune favours analytical, forward thinking. Unless data can be interpreted and integrated effectively into risk analysis decision-making, it is of little use. This article will help you exploit the increasing volume and scope of data now available – a key capability for agribusiness managers.



BOSS

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
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

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

www.bosseng.com.au • www.bossagparts.com.au

Keep seed pure and viable

■ By Alan Meldrum, Pulse Australia industry development manager



ACHIEVING profitable yields from lupin and pulse crops is based on establishing healthy and vigorous seedlings. Whether you use your own lupin or pulse seed or buy seed in, seed testing and careful handling are both critical points in successfully establishing a healthy stand.

The advantages of retaining your own seed are many, including cost and convenience. Careful planning for seed movement and storage, along with special attention to soft and minimal handling will ensure good quality seed is available for planting.

Be vigilant with your silo storage records to keep the retained seed pure and true to type. The problem of varieties becoming mixed in on-farm storage or being incorrectly identified can, and does, happen. Where seed lots are contaminated, even with a small proportion of seeds from a different variety, there is a risk that crop disease may build up on susceptible plants, putting undue pressure on the resistance genes in the moderately resistant plants. The multiplier effect of seed means the percentage of contaminated seed will increase in successive generations of grower-retained seed.

Contaminated seed may also compromise the quality of the grain you intend to sell to the market. Pulse grain markets look for consistency in colour and grain size so mixing varieties can lead to a dockage due to inconsistencies.

Best quality seed is essential to produce a crop with optimum



Alan Meldrum advises that soft handling and careful segregation is key to maintaining pulse seed quality.

density and vigour. Always source seed from the cleanest, most fertile paddocks where no disease has been detected.

Grain is commonly augered up to six times between harvest and planting, so the risk of damage to lupin and pulse grain is high. If possible, use belt conveyors rather than spiral augers.

You can minimise the potential damage of an auger by keeping it full and operating it at a slower speed. Use large diameter augers and keep the auger length short and the incline low. Check the clearance of the flight casing. The optimal clearance is 50 per cent of the grain diameter to reduce the chance of grain becoming wedged between the spiral and the casing.

Grade the seed to remove split, damaged and small seeds before storage. Small seeds generally don't produce strong seedlings and may harbour diseases. Any disease present at the seedling stage can become a significant yield threat. Grading will also remove weed seeds and harvest trash that can lead to blockages in the secondary seed head distributors. Seed that has been subject to field weathering prior to harvest should not be retained as planting seed.

Applying fungicide during cleaning

Applying a seed fungicide to lupins and pulses will minimise the risk of disease early in the crop's life. Applying the seed fungicide during the cleaning process will avoid one extra movement of the grain and will not affect storage or the germination rate. Excess grain treated with a seed fungicide cannot be sold or used for food or feed.

Insects are generally not a problem for stored pulses when loaded into clean storages. Before loading with pulses, be sure to properly clean all handling equipment and storage facilities. If an insect infestation does occur, phosphine fumigation is the only registered treatment for stored pulses and must be applied in an airtight silo to ensure effective treatment.

Finally, conduct a new germination test as close to seeding as practicable. If the germination rate is reduced, adjust the seeding rate to achieve the plant density needed to maximise the new crop's yield potential.

Planting high quality lupin and pulse seed with a known germination rate, and treated with seed fungicide, will give the best chance of a healthy and vigorous stand and a rewarding yield at harvest.

Contact Alan Meldrum on T: 0427 384 760 E: alan@pulseaus.com.au
Pulse Australia: www.pulseaus.com.au



Portable Grain Analyser

Ready for Summer Crops

IM 8800 – developed with Grain Growers Ltd.

- Sorghum (protein and moisture)
- Maize, Soybean (moisture, protein, oil)
- Wheat, Barley & Canola are also pre-installed.
- GPS enabled for field mapping
- Battery powered, 12/24V adapter or 240Vac

Read more at www.perten.com/im8800

Perten
INSTRUMENTS
Analysis with Value

Pulse yields down but grower sentiment up

■ By Cindy Benjamin

AFTER a near perfect start to the 2014 winter cropping season, the weather then played havoc with all Australian crops. But as the pulse harvest concluded, many growers reflected on how well their pulse crops performed under extreme conditions.

Pulse Australia's industry development manager (southern), Mary Raynes, says the fact that prices have remained strong has maintained grower confidence in pulses as many have been pleasantly surprised how well the crops have withstood very challenging conditions.

"This is certainly a positive reflection on the achievements of the Pulse Breeding Australia researchers, with the commercialisation of several improved varieties in recent years, and the efforts of the industry to develop, promote and adopt best management practice," she says.

"We have had extremely poor years like this before and the result has been some growers dropping pulses from their rotations. But after the 2014 season we have every expectation that the area sown to pulses in 2015 will again increase across the growing regions of Australia."

Mary says the reason behind this increased level of confidence is the acceptance that pulse crops can boost farm returns while also making a positive contribution to the farming system, improving soil condition and fertility and breaking disease cycles.

Faba bean the star performer

Across Australia, faba bean was the star performer in 2014. The sown area was up by 15–20 per cent following high prices and an excellent season in 2013 and, although yields have been lower than expected in 2014, the quality has generally been good and prices have supported growers.

"Pulse Australia's long term production estimates for faba bean show a five-year average planting area of over 160,000 hectares, with an average yield of 1.7 tonnes per hectare for dryland crops and up to 3.0 tonnes per hectare in more favourable areas and under irrigation," says Mary.

A combination of hard frosts and a hot, windy growing season had affected crops to varying degrees across South Australia and Victoria.

While average yields are estimated to be down by 35 per cent, the sown area is expected to increase by 15–25 per cent in 2015.

The lower Australian dollar is also supporting pulse export prices with strong demand for Aussie faba bean, lupin, chickpea, lentil and field pea grain.

In Victoria, kabuli chickpea crops were devastated by harsh late frosts at flowering. Field pea yields in Victoria and South Australia were well down on average but interest continues to grow in new varieties. Increased plantings of PBA Wharton and the white field pea, PBA Pearl, are expected in 2015.

Lentil crops in Victoria suffered badly, with some crops not being harvested, while crops in South Australia achieved yields up to 2.5 tonnes per hectare, but below the longterm average for the region. Generally quality was good and grower confidence is up, with lentil plantings expected to increase by five per cent in 2015, especially if prices remain strong.

Lupin yields in Victoria and South Australia were below average but grain quality has been high. Growers have seen promise in new varieties such as PBA Barlock and plantings are expected to increase again in 2015 across South Australia and Victoria, provided stockfeed prices remain favourable.



Pulse Australia's industry development manager Mary Raynes is expecting the area sown to winter pulses to increase again in 2015 after pulses performed better than many expected under extreme weather conditions in 2014.



BOSS
BOSS AGRICULTURE

"the Boss planter has proven itself... its well-built & simple to set up and operate"
Ken Waterford "Graddon Park" Come-By-Chance NSW

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 • www.bossagparts.com.au

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

Farming in Foreign Fields...

Strip-till is the way to increase yields

“WE’RE always looking for different ways to increase corn yields, and strip-till, by far, has been our best option.” That’s how Shawn Olsen, of Hayti, South Dakota, US, describes his adoption of strip-till fertiliser applications for corn. He says that in his area of lighter sandy loam soils, focusing granular nutrients into the root zone increases corn yields from 10 to 30 bushels per acre (0.6 to 2.0 tonnes per hectare) or more compared to broadcast applications.

Shawn says he became interested in strip-till about 10 years ago after seeing a neighbour’s results with the practice. He bought his first strip-till rig in 2003, using an applicator bar and a Case IH air cart.

He was soon approached by the local co-op to handle strip-till applications for their customers. “They found it easier to have Shawn do it, with his equipment,” explains Shawn’s father, Dave.

The practice caught on – Shawn now custom-applies strip-till fertiliser to more than 20,000 acres (8000 hectares) in a 60-mile radius from their home, along with the Olsens’ 3000 acres (1200 hectares) of corn, soybeans and wheat.

Shawn, Dave and Kelly Olsen. Shawn uses two Case IH Nutri-Tiller 950 strip-till applicators and Precision Air 3430 commodity carts in his custom fertiliser application business.

“A farmer will try 100 acres one year, see the results, and then add more acres,” Shawn explains.

Shawn now handles all custom work on his own, using best-of-class equipment and technology.

The Olsens’ fleet includes two Case IH Nutri-Tiller 950 strip-till applicators, a 60-foot model to cover 24 30-inch rows, and a 40-foot model for 16 rows. Both are supplied by Case IH Precision Air 3430 commodity carts and pulled by a pair of Quadtrac tractors, a 600 and a 550. The tractors are equipped with Case IH AFS AccuGuide autoguidance. They have used autoguidance for nearly a decade as part of their custom tilling business, and upgraded to RTK in 2010.

Shawn’s strip-till applications are mainly in soybean stubble in preparation for corn the following year. It’s a short window, from postharvest in early October to the ground freezing toward the end of November.

Equipped with row cleaners, the strip-till rigs easily work in the fresh soybean residues. The 950s’ high clearance shanks are set to run about seven inches (18 cm) deep, putting nutrients in a zone protected from leaching and runoff but available to the corn roots.

Each shank is followed by a pair of 18-inch diameter Berm Build’r blades that bring soil shattered and lifted by the shanks back over the row, creating a black strip and a slightly raised berm (mound of soil). The berm is firmed and conditioned by the Berm Condition’r rolling baskets.

Shawn says the berms aren’t very high, and over winter, they will settle to about an inch or so above the surrounding ground, which is enough to encourage warm-up in the spring. Importantly, the strips shouldn’t be inverted. If so, Shawn says water can wash them out.

Consistent depth control is critical for consistent plant emergence and growth. Shawn says even the 60-foot Nutri-

A typical application is 550 pounds of dry fertiliser per acre (620 kg per hectare), variable rate, covering about 40 acres (16 hectares) per hour.

Tiller does a good job of maintaining the depth across the entire implement width. "It's a single-point control, it's accurate, and it does an excellent job."

Running at seven inches deep (18 cm), Shawn says the shanks also shatter some compaction and loosen the soil along with injecting the fertiliser.

High rates of dry fertiliser

Without the fear of overwinter loss, Shawn says he applies higher rates of fertiliser because there's not a need for split applications. This means he often applies 500 to 750 pounds of product per acre (560 to 840 kg per hectare).

"We've seen university studies saying strip-till rates can be reduced six to eight per cent versus broadcast, but we find the higher yield potential of full rates offsets any cost savings," he says.

Frequently, the rates he applies are determined by his customers' agronomists who provide variable-rate application data on jump drives. Shawn plugs the drives in the AFS Pro 700 display to generate the variable-rate applications for the particular field.

The Pro 700 controls the variable-rate drives on each of the three bins on the precision air carts.

"We can variable-rate three products. Every customer's prescription is different, based on their soil samples and their agronomist's plans. For some, we might put down phosphorus and potassium, and they'll sidedress their nitrogen. Others might have nitrogen, phosphorus, potassium, sulfur and zinc as a total blend," he explains.

He says in most cases, the variable-rate data from the agronomists is truly plug and play. "When the maps are in the right format, things go pretty smooth."

When he does run into issues, he credits his brother, Kelly, as being his first line of tech support. "He's really good at figuring things out. Using smartphones, email and laptops, we generally get through things," Shawn says.

After the application, Shawn gives the jump drive (USB stick) back to the farmer. Assuming the farmer is also using an RTK signal and compatible autoguidance system, the drive will guide the farmer's planter directly onto the strip-till rows Shawn made.

The variable-rate applications provide a more efficient and effective application of fertiliser. It also takes more time than applying one product. "We're dealing with multiple products delivered to the field, and dealing with air cart bins that empty at different rates. Urea might empty twice as fast as another product," he says.

In spite of the added complexity, Shawn says his equipment has ample capacity to cover a lot of acres. "I'll usually run about five mph (8 kph), but can push it up to seven (11 kph), if I need to. But normally I'm applying about 550 pounds per acre (620 kg per hectare), at about 40 acres (16 hectares) an hour." He says the precision air carts can hold about 28,000 pounds (12.7 tonnes).

Part of this high productivity is due to the Quadtrac tractors. At the outset, Shawn used a row-crop tractor for his first strip-till rigs, then went to a four-wheel drive tractor on wheels.

"The performance of the Quadtrac tractors isn't comparable to anything else. They're so reliable," he says. Dave adds that the Quadtracs run very straight and accurately follow the RTK signals. "With big metric tyres, we saw a little give, back and forth. But these Quadtracs hold the line."

The Quadtrac tractors also have the ample hydraulic flow and electrical capacity to power the variable-rate drives for the three-compartment carts.

Noting that the Nutri-Tiller 950 is primarily an implement



Olsen's Nutri-Tiller 950s use row cleaners, high-clearance shanks, Berm Build'r blades and Berm Condition'r rolling baskets.

designed for liquid fertiliser or anhydrous ammonia, Shawn says they made a few changes to handle the large amounts of dry product. The biggest change was installing larger diameter hoses and a diffuser to handle the high amounts of dry fertiliser.

They also modified the front axle of the precision air 3430 carts to allow the front and rear wheels to follow in the same tracks as the tractor. The front and rear axles are set at 120 inches (3.05 m), and he has the rear duals on the tank spaced to run in the 30-inch (76 cm) rows.

Meanwhile, back at the ranch

On their own land, Shawn says they plant directly into the strips using a Case IH 1255 Early Riser 24-row 30-inch planter, equipped with row cleaners to remove the top half inch of soil. "We think it's important to clear that top half-inch of residue and crust," Shawn explains. "You want that black strip to draw heat for emergence."

Another advantage he frequently sees is reduced weed pressure with the residues between the rows blocking sunlight and suppressing weed emergence.

The Olsens follow a corn/soybean rotation on their farm. Thanks to the RTK autoguidance, they simply move their planter over 15 inches (38 cm) to plant no-till soybeans between the corn rows.

"Every other year, we're building our phosphorus and potassium levels seven inches (18 cm) deep, where it's available to the roots, and won't leach out," Shawn says.

This buildup of fertility, including variable rate applications, now gives the Olsens corn yields of 250 to 300 bushels (16.2 to 19.4 tonnes per hectare) in their top producing areas.

"We ran comparisons of strip-till versus conventional tillage and broadcast fertiliser for four years, and saw the 10 to 30 bushel (0.65 to 1.94 tonnes per hectare) increases, consistently," Shawn says.

The Olsens see strip-till as the most effective way to apply dry fertiliser, with the additional benefit of soil-saving minimum tillage. The accurate depth control and robust construction of the Nutri-Tiller 950 applicators and the precise variable-rate capabilities of the precision air carts help the Olsens meet their customers' expectations and provide the productivity needed.

"Strip-till will increase yields, but it takes more management," Shawn adds. "You should be a perfectionist – or at least think like one – to make it work to its maximum potential."

Light stubble grazing doesn't reduce crop yields

LIGHT sheep grazing of crop residues over summer in no-till systems does not negatively impact on subsequent grain crop yields, soil health or ground cover, Western Australian research has confirmed.

But grazing the same paddock throughout the year – such as in a pasture phase – can significantly reduce residue levels and potentially lead to reduced water infiltration and lower crop yields, especially on heavier soil types.

The research was conducted at Wickpin, Yealering, Cunderdin and Meckering as part of the \$12 million national Grain & Graze 2 program, funded by the GRDC and the Federal Government's *Caring for our Country* initiative.

The University of Western Australia (UWA) carried out the research from 2010 to 2013, in conjunction with the WA No-Tillage Farmers Association (WANTFA) and the Facey Group.

UWA agronomy lecturer Ken Flower said it had been suspected that light sheep grazing did not reduce grain yields and soil health in WA's no-till farming systems, as long as sufficient

crop residue was retained to prevent wind erosion and maintain water infiltration.

"The Grain & Graze 2 research in WA has confirmed that this is the case and similar results have been found in trials in other states," he said.

"Results show that carefully managed grazing in summer can preserve topsoil structure and water infiltration and have no impact on compaction and subsequent crop establishment and yields."

Ken said the WA results suggested that growers could safely use summer stocking rates of up to about four dry sheep equivalent (DSE) per hectare, or a grazing intensity of about 150 to 200 DSE days per hectare.

"This level of grazing was enough to maintain 50 to 70 per cent of ground cover in the trials, or about 2.0 tonnes per hectare of cereal stubble cover," he said.

"Sheep should be monitored regularly to ensure that residue levels do not fall below 50 per cent."

There were no significant differences between in-crop weed numbers for the grazed and ungrazed plots.

Ken said Grain & Graze 2 modelling work indicated that the value of grazing crop stubbles was about \$6.70 per hectare of crop or \$2.40 per tonne of stubble for a typical farm in WA's central grainbelt that was 80 per cent cropped.

GRDC resource management project manager Tanya Robinson said the four-year program had overseen some significant changes to farming practices.

"At the program's completion in 2013, Grain & Graze 2 had delivered an estimated cumulative net profit to Australian growers of \$100.2 million through better management of stubbles, increased stocking rates and adoption of novel rotations and fodders," Tanya said.

Grain & Graze entered a new three-year phase in July, 2014, with a focus on risk management, grazing cropped lands and crop/fodder rotations in southern and western regions of Australia.

More information:

Ken Flower, UWA – 08 6488 4576, 0417 952 080, ken.flower@uwa.edu.au
Tanya Robinson, GRDC, 02 6166 4500, tanya.robinson@grdc.com.au



Light summer grazing means leaving at least 50 per cent of crop residue in the paddock. (PHOTO: Sarah Hyde, Facey Group)

Charlton's

TACKLE • BAIT • ICE



AT CHARLTONS FISHING YOU'RE IN THE BEST COMPANY...

**Minnkota
Daiwa**

Humminbird

Shimano

Abu Garcia

G-loomis

**Penn
Jackall**



**MAIL
ORDER
WELCOME**

18 Kerwick Street Redbank Q 4301 Ph: 3818 1677 www.charltonsfishing.com.au

Enjoy the good but beware of the bad when grazing pulses

GRAZING the stubble of large lupin and bean crops can provide producers an opportunity to boost livestock productivity and farm profits. Sheep and cattle grazing pulse stubble or unharvested crops can achieve excellent growth rates, particularly while there is sufficient grain available – but there are risks involved.

Pulse Australia industry development manager, Tim Weaver reminds producers to review the products used during the season before introducing livestock to graze pulse stubbles. "If the crop has been treated with a desiccant for crop-topping or brown manuring, or been treated with fungicide, check the grazing and harvest withholding periods and the export livestock intervals (ELI) for each product before allowing animals to graze," he said.

Although livestock grazing lupin stubbles can achieve weight gains of about 200 grams per day for lambs and about 500 grams per day for young cattle, there is a significant risk of lupinosis that must be considered and carefully managed before and during grazing.

Lupinosis risk

Lupinosis is a potentially-fatal liver disease of livestock caused by the fungus *Diaporthe toxica* (formerly known as *Phomopsis leptostromiformis*), which can infect lupin plants and increase on the crop stubble after harvest.



Geoff Casburn, Development Officer – Sheep, NSW Department of Primary Industries (left) and Mark Richards, NSW DPI Pulse Research Agronomist inspect an infected Albus lupin plant.

ROGATOR® - POWER, PERFORMANCE AND RELIABILITY



Free to customer with purchase of a RoGator RG1300

2 YEAR
SLINGSHOT
DATA PACKAGE

2 YEAR
EXTENDED
WARRANTY



6300L
TANK UPGRADE



2 YEAR SUPPLY
OF FILTERS

"When you look at productivity, the new RG series RoGator would have to be the most efficient bit of machinery for hectares covered per hour on the farm. This, combined with fuel consumption and performance returns a great \$/Ha figure in application costs. I was surprised at the low fuel data figures pulled from my machine and couldn't be happier."

Brent Morrish, Cropping Producer, Ouyen, Vic

CONDITIONS

- Customer must pay all labour and travel associated to servicing
- Filters will be supplied with the machine upon delivery
- Extended warranty is for 2 years or 2000hrs, whichever comes first
- Offer applicable while current stocks last

PRODUCT MANAGER
QLD
SOUTH QLD/NORTH NSW
NORTH NSW/TAS
SOUTH NSW

Steve Norton 0437 878 695
Rob Graham 0409 597 462
Jeremy Jones 0407 485 569
Dave Farmer 0427 651 971
David Hamilton 0427 975 072

**VIC
SA
WA
WA**

Matthew Plunkett 0417 832 784
Luke Wormald 0419 991 534
Gavin Merritt 0448 022 172
John Griffiths 0407 132 746

CROPLANDS

The fungus can infect any plant part but is most commonly seen on dry, mature stems and pods, and sometimes on seed. "Carefully inspecting the stubble before and during grazing for signs of 'leopard spotting' on the lupin stems is essential," says Tim.

"The toxin stored in these 'leopard spots', or pycnidia, can remain toxic for 12 months so care is required if livestock have access to paddocks with old lupin stubble. When inspecting stubble, look on the stems for brown spots that do not rub off."

"All current Australian narrow leaf lupin varieties have reasonable resistance that slows the development of the fungus while the plant is growing. But under the right conditions the disease can develop on all varieties, particularly after harvest and under moist environmental conditions," he said.

"But there are no known risks for animals grazing bean stubble, even after rain."

In normal years, with a dry finish to the season, grazing lupin stubble is considered low risk but it is recommended the livestock be introduced to the stubble as soon as possible after harvest. The disease is more likely to flourish after rainfall, in bulky crops or after crop topping. The risk also increases after the plant dies because the stubble and seeds have no inherent resistance.

Reducing the risk of fungal infection

To reduce the risk of high levels of fungal infection, always plant with clean seed and avoid tight lupin rotations – a minimum four year rotation is considered low risk.

Livestock, particularly sheep, grazing lupin stubble will preferentially eat the grain on the ground rather than the stems of the lupin crop. Aim to remove grazing animals from the paddock while there is still some seed remaining on the ground to reduce the risk of lupinosis.

There is no cure for fully-developed lupinosis but animals can recover if they are removed from the infected feed source immediately there is any sign of the disease.

Daily inspections of animals grazing lupin stubble is recommended and immediate action is required if any individual animals appear to have lost condition or if animals have begun to eat the stems rather than seed.

Tim Weaver suggests for producers seeking more information, they read the NSW DPI factsheet: 'Reducing the risk of lupinosis and the incidence of phomopsis'.

Also visit the Pulse Australia website for more information: www.pulseaus.com.au

Divine Dinner Plain...



*Bring the family,
enjoy the
wonderful
snow that is
still falling,
it's perfect!
Skiing, boarding,
cross country
skiing or just
enjoy the
fantastic
atmosphere that
is Dinner Plain*



Where you stroll the snow covered tree lined 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, cosy lights sparkle and entice you into their warmth. Snow lined, natural buildings 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.

What are you waiting for...



**Dinner Plain
Visitor Information
Centre**

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

1/24/01/07270808



Correct diagnosis is important – look for the characteristic leopard spotting caused by the fungus, *Diaporthe toxica*, on the stubble and pods.

Closing in on butanol for biofuel

■ By Ann Perry, (formerly) Agricultural Research Service – USDA

BUTANOL is the go-to industrial solvent for products such as lacquers and enamels, but it might also play a substantial role in the production of renewable fuels. Litre for litre, it has 30 per cent more energy than ethanol and only around four per cent less energy than a litre of petroleum-based gasoline.

Agricultural Research Service chemical engineer Nasib Qureshi has studied a range of feedstocks for producing 'biobutanol'. His most recent work suggests that using barley straw and corn stover (that is, the corn leaves and stalks left in the field after harvest) – could be the answer.

"To produce butanol most economically, we will need to produce it from agricultural byproducts, not from dedicated crops," says Nasib, who works in the ARS Bioenergy Research Unit in Peoria, Illinois.

Nasib has confirmed that both materials can be converted to butanol via "separate hydrolysis, fermentation, and recovery" (SHFR) or by "simultaneous saccharification, fermentation, and recovery" (SSFR).

SHFR requires two operations in two reactors – one for hydrolysis and the other for fermentation combined with recovery.

In SSFR, releasing the plant sugars, fermenting them to butanol, and recovering the butanol are combined into a single operation that is performed in a single reactor.

In one recent study, Nasib, ARS chemist Badal Saha, and ARS microbiologist Mike Cotta evaluated the effectiveness of SHFR in fermenting barley straw plant sugars into butanol. They pretreated the barley straw to release the plant sugars, which created a broth called a 'hydrolyzate' that could be fermented into butanol.

Then the researchers observed the hydrolyzate's fermentation rates. They also used a process called 'gas stripping' to remove the resulting butanol simultaneously produced during fermentation. With this approach, Nasib and partners obtained a final butanol yield that was 182 per cent of the yield obtained from a control study.

Next, the scientists used the same protocols with pretreated corn stover and were able to ferment more than 99 per cent of the sugars in the hydrolyzate. This resulted in butanol yields that were 212 per cent greater than yields observed from the controls, and 117 per cent higher than the butanol yields from the barley straw.

Using the SSFR process

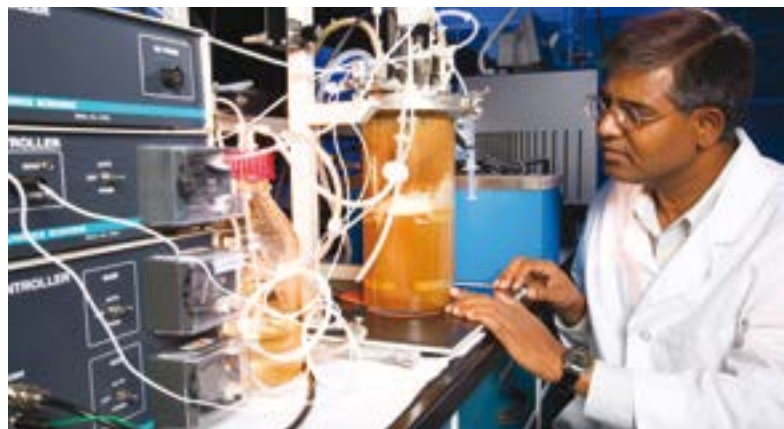
Nasib and his research partners applied these results to another investigation that evaluated the effectiveness of producing butanol from corn stover in an SSFR process that used vacuum technology – not gas stripping – to simultaneously recover butanol during fermentation. The team included Saha, Cotta, ARS molecular biologist Siqing Liu, University of Illinois professor Vijay Singh, and Ohio State University professor Thaddeus Ezeji.

During the hydrolysis process, more than 97 per cent of the stover sugars were released and were available for fermentation. The total butanol yield was 0.34 grams per litre per hour – higher than the glucose control yield of 0.31 grams.

The scientists published their results in *Bioresource Technology* and *Food and Bioprocess Technology*, both in 2014.

"Several years ago when I tried to ferment butanol from barley straw, the yields were much lower than the control yields, and I was not able to obtain any yields from corn stover," Nasib says. "So we're pleased with our findings, and we look forward to scaling up and commercialising butanol biofuel production from agricultural residues such as barley straw and corn stover."

Nasib Qureshi is in the USDA-ARS Bioenergy Research Unit, 1815 N. University St., Peoria, IL 61604; Ph: +1 (309) 681-6318.



At the ARS Bioenergy Research Unit in Peoria, Illinois, chemical engineer Nasib Qureshi observes and controls a fermentor in which butanol is produced from corn stover and recovered simultaneously with a vacuum. (PHOTO: Scott Bauer)

An advertisement for Valley Irrigation. It features a large blue banner with the text "GET MORE THAN WATER SAVINGS" in white. Below the banner, there is a photograph of a Valley pivot irrigation system in operation, with water spraying from the wheels. To the right of the photograph is a brown jacket, which is part of the promotion. At the bottom of the advertisement, the Valley Irrigation logo is displayed, along with the website "www.valleyirrigation.com/au" and the tagline "The Leader in Precision Irrigation".

Get even more than water and labor savings with your new pivot or lateral. For a limited time, when you buy a new machine you will receive a FREE Valley® Jacket.

www.valley-au.com

Ph: 07-3457-8830

Email: vaus@valmont.com

Switchgrass for ethanol: Where it came from and where it's going

■ By Ann Perry, (formerly) Agricultural Research Service – USDA

SWITCHGRASS was originally valued as a forage crop, but its more recent claim to fame has been as a potential feedstock for bioenergy production. Now, after decades of combined research, Agricultural Research Service scientists have announced the release of Liberty, a variety of switchgrass specifically developed for bioenergy generation.

Says ARS geneticist Ken Vogel, who recently retired from the ARS Grain, Forage, and Bioenergy Research Unit in Lincoln, Nebraska, "With Liberty, we were able to combine the high yields of the southern lowland varieties with the winter hardiness of the northern upland types. Right now, Liberty can yield eight tonnes of biomass per acre (20 tonnes per hectare), and with further breeding, we have the potential to get to 10 tonnes per acre (25 tonnes per hectare) – maybe as soon as five years from now."

The release of Liberty is a significant milestone for ARS. It's also a key accomplishment for CenUSA Bioenergy, a project funded by the US Department of Agriculture's National Institute for Food and Agriculture that is tasked with developing perennial bioenergy production systems in the Midwest. Other ARS researchers who contributed to Liberty's development include agronomist Rob Mitchell, molecular biologist Gautam Sarath, and geneticist Michael Casler. Rob and Gautam both work at the ARS laboratory in Lincoln, and Michael works at the US Dairy Forage Research Center in Madison, Wisconsin. Michael, Rob, and Ken have all played significant leadership roles in CenUSA Bioenergy.

Another name for success

Liberty made a previous appearance as 'KxSNETO2,' one of the switchgrass types used in a 16-year breeding study by Ken and others to increase long-term yields. In the study, breeding for increased biomass yield in upland switchgrass resulted in average gains of four per cent every year, while biomass yields in lowland types increased an average of one per cent every year. But the

lowland-upland hybrid KxSNETO2 increased biomass production as much as 43 per cent.

Their results convinced the researchers that switchgrass biomass yield is a moderately heritable trait that can be readily improved using conventional breeding methods. But they did not observe any genetic links between biomass yield and quality.

This suggested that breeders might be able to combine different traits to mitigate production challenges posed by climate change, weather, and pests.

Another plus with the new cultivar is that gains in yield were achieved without an increase in nitrogen fertiliser use, which helped lower expected farm-gate production costs by around \$20 to \$30 per tonne. And with the increased yields, each hectare of switchgrass could potentially be used to produce from 700 to 1500 more litres of ethanol.

Teamwork and time

It took a multi-location effort to get to this point. For years, Michael and others have been studying the evolutionary history of switchgrass, which now flourishes in a range of North American environments. Lowland ecotypes are found on floodplains, wetlands, and other low-lying areas, while upland ecotypes are found in flood-free areas subject to frequent droughts.

Since switchgrass has successfully adapted to these different environments, its genome contains a diverse array of traits, many of which could be useful in breeding efforts. But switchgrass types can have as many as eight sets of chromosomes in each cell, so natural crossbreeding over thousands of years has produced some varieties that contain an unwieldy genetic mix.

To identify evolutionary patterns in the complex genome, Michael and his colleagues examined the genetic makeup of 480 individual plants from 67 lines and cultivars, including upland,



Geneticist Michael Casler harvests switchgrass seed in a program to develop high-yielding new cultivars that are well suited to bioenergy production in different environments.
(Photo by Wolfgang Hoffmann)



Molecular biologist Gautam Sarath analyses switchgrass cell-wall samples for their lignin content. The data will be used to identify elite switchgrass plants for improvement through breeding.
(Photo by Peggy Greb)

STARTING WITH THE SEEDS

For a plant that can survive the challenges of a prairie environment, switchgrass seeds can be surprisingly delicate. Fewer than 50 per cent of switchgrass seeds planted in drilled plots germinate and emerge as seedlings, and more than 90 per cent of those seedlings will die within a year. But the competitive environment of the prairie provides a real-world laboratory that fosters development of genetic traits that favour survivorship, such as high rates of root growth or shoot growth.

ARS geneticist Michael Casler analysed five-year survivorship rates of switchgrass varieties planted at four locations in Illinois and Wisconsin. Although he concluded that most survivorship is random, he determined that survivors at the northernmost location were hardier, with better value for breeding, and their progeny displayed better survivorship and better yields.

"From an agronomic and breeding point of view, we want to know if survivorship has a positive genetic correlation with any important agronomic traits," Michael says. "From a practical standpoint, we can use the survivors to support our breeding programs."

Results from these studies were published in *Crop Science*.

lowland, and hybrid types. Using advanced genetic techniques, the team identified several distinct switchgrass 'clades' (groups of organisms descended from a common ancestor) in North America. The researchers located two lowland clades in the eastern Gulf Coast and southern Great Plains and three upland clades in the central Great Plains, northern Great Plains, and eastern savanna.

The team determined that despite switchgrass's renown as a prairie dweller, the primary centre of origin for modern switchgrass was along the eastern Gulf Coast between 1 and 1.5 million years ago. A less significant centre of origin and diversity was located along the western Gulf Coast. Meanwhile, a western mountain ecotype became the source of upland ecotypes that migrated to the arid and semiarid Great Plains, which then



These 'crossing cages' are used to make up to 100 switchgrass hybrid crosses per year in the breeding program at Madison, Wisconsin. (Photo by Michael Casler)

became a secondary – not the primary – centre of switchgrass diversity.

The scientists surmise that after these types were established, repeated rounds of North American glaciations affected switchgrass dispersal and development by forcing diverse types into relatively close proximity. By increasing the opportunity for different types of switchgrass to mate, the glacial intervals created favourable conditions for much of the gene flow between upland and lowland ecotypes.

Conversely, as the plants migrated northward, the opportunities for genetic mixing declined, and upland types adapted to frost and longer days and started flowering earlier. Meanwhile, lowland varieties remained relatively intolerant of cold and continued to flower much later in the summer. Many 'hot spots' of genetic diversity still thrive in the southeastern United States and along the Atlantic Seaboard.

After sorting through their results, the scientists identified eight regional gene pools with traits that might be beneficial

NDF

www.ndf.com.au

Call now to obtain a machine for 2015 winter sowing - Ph 02 6889 7211

**NDF.....Australia's No1 disc seeder,
meeting your seeding challenges.....
.....by listening to the grower.**



In Nebraska, technician Marty Schmer harvests switchgrass to evaluate yield. The results will help guide breeding and management efforts to increase switchgrass yields.
(Photo by Peggy Greb)

in breeding switchgrass varieties for different production environments. Results from these studies have been published in *Genetica* and *Crop Science*.

Room for improvement

Ken and Michael also evaluated how previous switchgrass breeding for in vitro dry matter digestibility (IVDMD) altered biomass composition, forage quality, and potential ethanol yield. IVDMD is a laboratory test that mimics the rumen processes of cattle to measure forage digestibility. It is a good indicator of ethanol yield from switchgrass via a process known as “simultaneous saccharification and fermentation,” which researchers hope will become a cost-effective method for extracting and fermenting plant sugars into ethanol.

The researchers used six breeding generations of switchgrass in their study. The first four generations had only been bred to improve IVDMD, while the past two generations had been bred to improve winter survival as well.

The analysis showed that the six types had notable differences in a range of variables linked to forage quality and ethanol yield traits. The study also showed that forage digestibility is affected by many traits that could be improved with breeding.

For instance, breeding solely for increased IVDMD initially lowered forage and biomass yields, but yield levels stayed the same after the scientists began improving the plant’s winter-survival characteristics. And while the first several rounds of



Geneticist Ken Vogel (left) and molecular biologist Gautam Sarath compare switchgrass plants produced by mating plants from upland and lowland ecotypes with parent plants.
(Photo by Peggy Greb)

breeding increased biomass digestibility and ethanol yields, both characteristics declined in the improved varieties when breeding selection began for winter survival.

Researchers often focus on modifying tough cell-wall lignin characteristics to improve the conversion of plant biomass to liquid fuel. But as a result of their study, the ARS scientists determined that many other cell-wall and cell constituents influence this process.

In addition, the scientists demonstrated that breeding to improve IVDMD significantly changed the concentration of almost all the cell-wall components. These changes altered the way carbon was distributed between lignin and carbohydrates throughout the biomass, but did not notably alter total overall biomass carbon concentrations.

The researchers were surprised to find that breeding for winter survival in later generations led to decreased IVDMD, which indicated a clear association between the two traits. They believe that selecting for IVDMD might result in plant vascular structural changes that reduce winter survival.

The team concluded that breeding to improve IVDMD also affects plant characteristics that are important for ethanol production. The results confirmed that traits affecting biomass composition can also affect plant hardiness – information that plant breeders can use to guide their work in developing switchgrass varieties for forage or for bioenergy. Results from these studies were published in *Crop Science* in 2013.

Rob and Gautam, who have been working with Ken for over a decade, will continue the switchgrass studies at Lincoln and the collaborations with Michael and other ARS scientists. Meanwhile, Ken is pleased that with the release of Liberty, the plant he began studying so long ago is finally living up to its promise. “It’s nice to retire on a high note,” he says.

To contact the scientists mentioned in this story, contact Ann Perry, USDA-ARS Information Staff, 5601 Sunnyside Ave., Beltsville MD 20705-5128; Ph: +1 301 504 1628.

Rules of thumb

A useful principle having wide application but not intended to be strictly accurate or reliable in every situation.

"Then they measured my right thumb, and desired no more – for by a mathematical computation, that twice round the thumb is once around the wrist, and so on to the neck and waist, and by the help of my old shirt, which I displayed on the ground before them for a pattern, they fitted me exactly,"
Jonathan Swift, Gulliver's Travels.

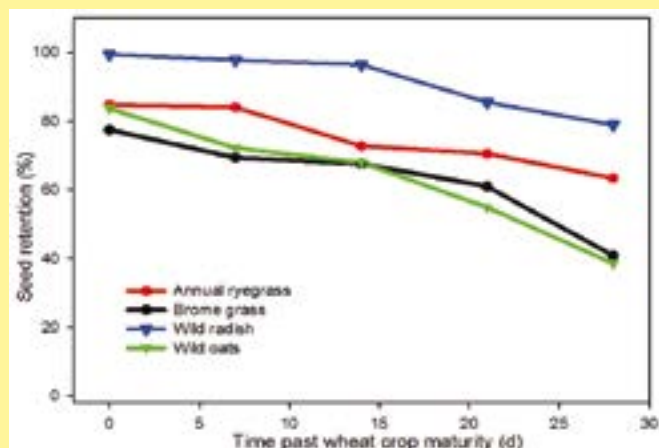
WHERE would we be without rules of thumb in agriculture? No, they are not 100 per cent scientifically accurate but they can be very helpful in decision making. Dr Michael Walsh from AHRI has developed a new rule of thumb from his research into weed seed retention at harvest – Australia's main cropping winter weeds shed seeds at about one per cent per day during harvest.

Our common harvest weed seed control tools rely on the weeds retaining seed at harvest time. In his research, Michael found that ryegrass, wild radish, brome grass and wild oats all retained at least 75 per cent of their weed seeds at the first opportunity to harvest. There were differences in seed retention between species, but not as great as expected.

This research also highlights why annual ryegrass is a herbicide resistance world champion, setting more seed than the other species. Wild oats, on the other hand, was a distant fourth in the weed seed set stakes.

The first step in harvest weed seed control is to get the weed seeds into the front of the harvester. In 2008, Michael, with the help of grain growers and grower groups, set up nine sites throughout Western Australia to measure the seed retention of the four major weeds of Australian cropping.

FIGURE 1: To check for weedseed retention, samples of four weed species were taken from wheat crops at the first opportunity to harvest and then every week after that for four weeks (WA, 2008)



Samples of annual ryegrass, wild radish, brome grass and wild oats were taken from wheat crops at the first opportunity to harvest and then every week after that for four weeks. The 2008 season was generally considered to be a good rainfall year in WA, but the sites were spread across 650 km resulting in considerable growing season variability.



Dr Michael Walsh has dedicated the bulk of his 25 year career in agricultural research to harvest weed seed control and is delighted to see the level of adoption steadily increasing around Australia.

Seed retention

Averaged across all sites, all four weed species retained at least 75 per cent of their seeds above beer can cutting height at the first opportunity to harvest.

Wild radish retained nearly all its seed, 99 per cent, at the start of harvest, and continued to retain 79 per cent of its seeds four weeks later. While the other species did not have quite this level of seed retention, all are good targets for harvest weed seed control.

Seed shedding – one per cent per day

The rule of thumb of one per cent per day is not precise, but adequate, with the main exception to the rule that wild oats shed seed at 1.5 per cent per day.

Weed species	Seed shedding (% per day)
Annual ryegrass	0.8
Wild radish	0.8
Brome grass	1.2
Wild oats	1.5

Annual ryegrass sets a lot of seed – wild oats don't

This data is a reminder of why annual ryegrass is such a successful weed – it sets a lot of seed. The weed density at the sites was similar for the three grass species – 25 to 30 plants per m². Wild radish density was two plants per m².

Seed set per plant

People often ask, 'how many seeds does one ryegrass plant set?' The answer to this question is how long is a piece of string? But this data gives a more specific answer. Annual ryegrass is the

	Annual ryegrass	Wild radish	Brome grass	Wild oats
Total seed set/m ²	8449	1778	3278	633
Plants/m ²	27	2	30	25
Seeds/plant	475	1246	123	23

king of the grass weeds, but wild radish set more seed per plant than all of them put together.

More weed seeds into the front of the harvester

Harvest weed seed control is effective, but is limited by how many weed seeds are collected into the front of the harvester. Some of the techniques aimed at collecting more weed seeds include:

- Swathing – this can bring harvest forward by a week or so, minimising the risk of weeds shedding / lodging prior to harvest as well as maintaining a high seed retention for the swathed weeds.
- Crop lifters are being used by some growers to pick up weeds that have fallen down between crop rows. We are yet to measure the effectiveness of this, but it seems plausible.
- Sowing at narrow row spacing increases competition from the crop, forcing weeds to grow tall to chase sunlight. Narrow row spacing may also help 'hold up' the weeds in the crop canopy to improve the chances of getting them into the front of the harvester. Research has commenced to measure the effect of crop competition on weed seed height at harvest.

To sum up

Yes, it is true that all weeds shed their seed as harvest progresses. This research shows that seed shed varies less between species than we may expect. The rule of thumb of one per cent of seed shed per day gives growers an indication of how effective their harvest weed seed control will be.

The recommendation is simple: Harvest the weediest crops first.

The above information forms the basis of paper recently published in *Weed Technology*, a Journal of the Weed Science Society of America. The authors have just received the "Outstanding paper of the year" award for this publication.

Walsh, M. J. & S. B. Powles (2014) High Seed Retention at Maturity of Annual Weeds Infesting Crop Fields Highlights the Potential for Harvest Weed Seed Control. *Weed Technology*, 28, 486-493.

the  gate

Short term, skilled labour available now



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 and register (for free) on The-Gate's database or contact Catherine on 0408 717 459

www.the-gate.com.au

the  gate

John Deere launches new self-propelled sprayer

AIMED at large arable farms and contractors, the new John Deere R4040i Self-Propelled Sprayer replaces the John Deere 5430i Self-Propelled Sprayer and is designed to provide improved performance, increased uptime and significantly reduced cost of operation.

The R4040i is powered by a 6.8-litre John Deere PowerTech PSS engine producing 176 kW (240 hp) at rated power boosted to 190 kW (255 hp) with intelligent power management (IPM). This new engine meets US EPA Final Tier 4 emissions regulations by incorporating selective catalytic reduction (SCR) and diesel exhaust fluid (DEF) injection. The machine's centrally located cab, which is now easier to access, provides a comfortable operating position and offers good visibility both on the road and in the field. It also has a restyled interior with a new cornerpost display.

The sprayer chassis features XtraFlex dual-strut independent wheel suspension for a smoother and faster ride, and optional hydraulic track width adjustment. Hydrostatic final drives and planetary gears provide constant four wheel traction in both transport and spraying modes, at up to 40 and 20 km per hour respectively. The sprayer can be operated with two-wheel, four-wheel or crab steering to suit different crop and field conditions, and has a 5.2 metre turning radius.

The R4040i is equipped as standard with the John Deere GreenStar 3 2630 touch-screen display with full Field Doc spray documentation and ISOBUS compatibility. The sprayer also comes AutoTrac ready and with a free JDLink Ultimate subscription for one year, which enables a range of additional John Deere FarmSight precision farming solutions including new Remote Display Access and Wireless Data Transfer, as well as Service ADVISOR Remote.

For safe, intuitive and convenient operation, the sprayer features a Hydro Handle multi-functional control lever and the SolutionCommand electronic sprayer control system for automatic filling, mixing, spraying and rinsing.

Huge spray capacity and efficiency

Total spray pump capacity is a maximum of 560 litres per minute with a flow of up to 380 litres per minute to the steel spray booms, which are available in widths from 24 to 36 metres.

The rounded shape of the 4000-litre polyethylene spray tank features a smooth internal surface for efficient solution mixing and fast automatic cleaning. Simply in-cab operated – or by a switch on the SolutionCommand panel – the conical shaped PowrFill inductor safely transfers crop protection chemicals into the main tank.

The pendulum boom suspension system includes polyurethane dampers for stability, while John Deere's established BoomTrac automatic boom levelling system adds even more accuracy to the spraying operation. The new automatic variable geometry control system option further increases application accuracy and efficiency by automatically adjusting the height of the individual boom wings independently to match the terrain.

Instant coverage to the full working width of the sprayer is provided by the optional pressure circulation system, which keeps the liquid solution moving along the stainless steel spray lines and right up to the nozzles even when not spraying.

Once spraying starts, the system feeds the spray lines from both ends to maintain a constant pressure and application rate.

To reduce input costs by minimising overlaps or skips, John Deere's automatic Section Control switches individual boom sections on and off when entering or leaving predefined areas, including headlands, while LED boom lights help to maintain high productivity at night.

The new John Deere R4040i Self-Propelled Sprayer is available to order now.

To learn more about the new R4040i Self-Propelled Sprayer, visit the John Deere website (www.deere.com.au) or freecall 1800 800 981 to contact your local John Deere dealer. ■



The new R4040i self-propelled sprayer is designed for growers and contractors who seek a highly productive, versatile and thoroughbred machine.

What to do when adoption stalls?

ANSWER: *Change tactics! It usually means you have to get a lot more personal.*

QUITE often when adoption stalls it is because the appeal of information alone has lost its appeal. Even good research data can lose its capacity to fire up the imagination with possibilities.

If you are an agricultural researcher or knowledgeable advisor then digging in to the facts and analysing the data are, no doubt, the very things that fire up your passions and excite you with possibilities. And, fortunately there are some great farmers out there who are equally inquisitive and want to know 'how things work'. They're first in line to adopt.

But there are many farmers, just as great, who don't share that inquisitive nature. They will look to something else to ignite their enthusiasm for your fabulous idea.

Maybe they thrive on the respect they generate within their communities. Maybe it's the passion they have for the land and treating it as a precious resource. For others it is perhaps providing security for their growing family. And even some would rate lifestyle as a high priority. These are far more personal drivers.

If, by some clever strategy, you could trigger their passions, linking your idea to these personal motivators, you just might spark an interest in exploring the facts. And if the facts stack up, as they will if you have done your research well, then there's a good chance you will win both heart and mind, and a committed follower.

Want to know more about targeting personal drivers? Then register for the C-Qual Persuasion Skills Workshop, 2015 series, in your nearest location, Horsham February 26 and 27 and Adelaide March 5 and 6. See the C-Qual website (www.c-qual.com) for more information and registration. Persuasion skills workshops are supported by GRDC.



Claire Gutsche from Rural Directions and Amanda Hudswell at a recent workshop in Adelaide.

A broadacre success story

DAVID Trewick is a successful fourth generation farmer in Elmore, Victoria. He is part of a family farming operation that covers 2700 hectares with crops including wheat, barley, canola, oaten hay, and chickpeas. The farm produces for both domestic and export markets.

Standing in a field of flowering canola, David recently chatted with Chris Howard from Impact Fertilisers about the challenges of broadacre farming and what works best for him.

"Weeds are a big issue," said David. "Especially when it comes to finding ways to get past using chemicals. As a consequence we have increased the area to oaten hay."

But of course the nutrient load removed by the hay exacerbates what needs to go back into the paddock, especially with yields of 10 tonnes per hectare.



Chris Howard, Impact Fertilisers (left) and David Trewick, broadacre farmer from the Elmore district.

David explained, "We get around this nutrient removal by using a ZincStar blend with MAPstar and add molybdenum. This gives us a yearly maintenance level of 0.5 per cent zinc. This blend is applied at 80 to 85 kilos to the hectare."

Almost 100 per cent of the farm's crops use this blend. The Trewick farm is also a heavy user of lime, which aids in optimal pH for the availability of the fertiliser applied.

"Another problem at one point was rhizoctonia particularly in the barley, but the use of Zincstar helped with this. Zinc is also good for seedling vigour on the other crops too," David said.

Normal practice is to pick up b-double loads of the ZincStar blend directly from Geelong, which also has Flutriafol added at the Impact Fertilisers plant. "It is a good service and works for us," he said.

You reap what you sow – and how you sow

AS growers bring in their crop and tally their results for the season, they should remember that the decisions they made before they even planted their seed had an impact on the growing cycle, says Flexi-Coil Brand Leader Steve Mulder.

“Producing a high quality, high yield crop is the sum of many parts,” Steve says. “Ultimately, where you finish your season depends very much on how you started it. One of the most important decisions you will make in your season is when and how to sow your crop, including which equipment to use.

“You only get one chance to plant each seed so it’s worth doing everything you can to give every seed the very best chance.”

Steve says the best equipment manufacturers follow the same principles as the best growers, constantly refining their processes and making continual upgrades.

“At Flexi-Coil, research and development has been part of our DNA since the company launched in the 1950s, because we understand how critical seeding is to the growing season. From the evolution of the flexible frame on cultivators and drills to single cylinder depth control on our ST820 precision cultivator, we’ve been helping growers do better with each passing season.”

Steve says growers cannot overestimate the importance of depth control at seeding. Sowing too deep can delay or stifle emergence, while sowing too shallow can lead to seed damage from herbicide uptake.

“Seasonal differences in depth and availability of moisture should influence decisions about depth of sowing, and the task should not be left to chance. You need very precise and accurate placement and appropriate seeding rates if you want the best results,” Steve says. “Flexi-Coil has built its reputation on superior ground following capacity and repeatable depth accuracy, because it really matters.”

Look back to plan forward

Steve says at this time of year, growers should review what they did during the past season and how it might have affected their results.

“There will always be factors that are outside our control – that’s the nature of farming. But it’s good to cast a critical eye over those things that we can control. Taking the time to review what you did and how it played out can have a direct impact on your bottom line so it’s worth doing.”

He recommends dividing the season into stages and assessing how each stage went, from planning to seedbed preparation, sowing, growing and harvest.

“The planning stage is about reviewing yield maps, completing soil testing, choosing the right variety and ensuring you have access to quality, disease-free seed. Get these decisions right, and you’re setting yourself up for the best possible start.

“Once you’ve decided what to grow, seedbed preparation becomes the next focus. Ensuring good seed soil contact is vital for successful crop establishment. Grower groups are a good place to start for growers looking for advice relevant to their district.”

Choosing the right time and the right method for sowing is



Flexi-Coil have been helping growers do better with each passing season.

the next decision point. “This is the point where your seeding equipment really matters. Just getting the seed into the ground is not enough. If you’re investing in quality seed and crop management, you should be investing in the best sowing technology, too.

“You should also make sure your equipment is not only the best for the job but is well supported. The seeding window each season is very short. You need the right expert advice on hand and rapid parts availability. With 50 highly trained dealers across the country, Flexi-Coil can deliver that.”

Once the seed is in, the focus should switch to crop nutrition. “Farming is much more technical than even 20 years ago. Every grower should be assessing their paddock nutrient status and developing a detailed crop nutrition plan for the season,” Steve says.

Steve says no matter what this season delivered, growers should be thinking about what they’ll change and what will stay the same the following season.

“If your season was not stellar then of course you’ll be thinking about what you can do differently next time, but even if your season was good, it’s worth assessing what you can do to make it even better. Making well-researched choices and choosing the most accurate equipment will help you make the most of whatever the next season sends your way.”

For more information contact your local Flexi-Coil dealer or see www.flexicoil.com.au

District Reports...

January–February 2015

Western region



STATE WIDE SUMMARY

The Grain Industry Association of Western Australia's (GIWA's) December 2014 estimate for the total WA grain crop was 13.6 million tonnes.

This estimate is 200,000 tonnes lower than the last estimate made by GIWA at the beginning of November, principally because of lower recorded yields in the Geraldton and Kwinana zones.

This stems from the record temperatures in August which coincided with very dry conditions. Wheat, in particular, if flowering at the time, suffered pollen kill and did not achieve the grain set indicated by its stage of growth at the time. Harvest progress had been slow in the Albany zone with the October and November rainfall either delaying maturity of crops or causing constant halts to harvest.

High yields were anticipated for wheat across the zone, but with some quality concerns.

Harvest progress had been rapid in the Esperance zone with harvest about 90 per cent complete – despite the constant delays with rain – by early December.

The Geraldton zone harvest was similarly almost complete by early December. Cool cloudy weather did slow the harvest but, other than localised storms, weather related grain quality problems were not seen.

The east Kwinana zone had finished a disappointing harvest by December. The west Kwinana zone was about 50 per cent complete, recording some exceptional yields with average to above average quality throughout.

In the southern zones of Albany and Esperance, constant rainfall during October and November had caused delays to maturity of crops and delays to harvest. In the Albany zone, a considerable amount of barley was discoloured and delivered as Feed grade. In the Lakes region, wheat harvesting had only just started in early December and the effects of rain on quality were unknown at the time of writing.

In Esperance, the vast majority of the harvest had produced good quality grain despite crops being mature during the rain events. But late harvested crops suffered from falling numbers and were downgraded to General Purpose and Feed grades.

For the rest of the state, grain quality across all the commodities was generally good to very good. Despite low yields, wheat in the north Geraldton and east Kwinana zones had

been delivered with high protein content and low screenings.

Canola recorded oil quality of 45 to 48 per cent where crops were not drought affected. In low rainfall districts with very low yields, this figure dropped to 40 per cent and below.

Barley quality was mixed with high yielding crops having low protein content with good screenings, and low yielding crops having high protein content. In the Albany zone, barley colour had been affected by the wet November.

The overall percentage of barley across the state making Malt grade was around 60 per cent.

**Grain Industry Association of WA (GIWA)
December Crop Report, 2015**

SOUTH COAST

Seasonal conditions on the South Coast for the past two months have been mixed. In early December the rain continued to delay the finish to harvest. Finally, in late December, the rain stayed away long enough to allow harvest to finish.

Final crop yields were generally good given the very dry season. Most growers were pleasantly surprised at how well crops yielded compared to what they were expecting.

The Esperance Port Zone received approximately two million tonnes of grain – well above CBH's pre harvest forecasts.

With all the wet weather during harvest, there have been plenty of summer weeds to spray. Most growers completed one round of spraying before Christmas and some are now onto their second spray.

The big bonus from all the harvest rain is that stored soil moisture levels are very good and have created a promising foundation for the 2015 crop.

Some growers are busy spreading clay. Mark and Hayley Wandel are two such farmers at Beaumont, northeast of Esperance (see photo). The Wandels get clay from areas on their farm where the clay is close to the surface and relatively close to the application area. This increases efficiency by limiting travel time to and from the clay pit.

The clay pits can be excavated to a depth of three to five metres depending on the quality of the clay. At the Wandel's farm, the soil material is being spread at 400 tonnes per hectare and it has a clay content of between 30 to 50 per cent.



A bird's eye view of clay spreading on water repellent sand at Mark and Hayley Wandel's property at Beaumont 100 km north east of Esperance, WA. The photo was taken from a remotely operated DJI Phantom Quad Copter using a GoPro camera. (PHOTO: Quentin Knight)

District Reports...

January–February 2015

Depending on the distance to the clay pit, around 1.5 to 2.0 hectares per hour can be spread. After spreading, the paddock is run over again with a smudge bar and then the clay material is incorporated using a rotary spader.

Other activities keeping growers busy are lime and gypsum spreading. But where possible, some growers are having well-deserved time off.

Quenten Knight,
Agronomist, Precision Agronomics Australia
January 14, 2015

Southern region




SOUTH AUSTRALIA

Despite having one of the warmest and driest springs on record, total 2014 winter crop production for SA will come in slightly above the long term average. This is largely thanks to stored soil moisture from above average rainfall earlier in the season.

- Canola yields and quality were highly variable across the state with above average yields on Upper Eyre Peninsula. The Upper North, Mid North and Yorke Peninsula returned average results while the Mallee districts and the South East were below average due to a combination of Beet Western Yellow virus, waterlogging, frost damage and dry spring conditions.
- Frost significantly reduced the yields of peas in some districts but unaffected crops have returned average to above average yields. Frost in early to mid-October caused severe damage to crops in low-lying areas in the eastern part of the Upper and Mid North. Wheat, canola and peas were the worst affected and some farmers cut a large proportion of their wheat for hay.
- Cereal yields were also variable across the state with above average yields on Upper Eyre Peninsula and the northern part of the Upper North but average to below average in other districts due to the extremely dry finish to the season. Early-sown wheat crops in early districts produced medium to high protein levels with low proportions of small or pinched grain.
- Bean crops were severely affected by waterlogging, frost and

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)	2015 rainfall to date (mm)	25yr Annual Average (mm)	2014–15 to date	25yr Annual Average (mm)	2014	25yr Annual Average (mm)	2014	25yr Annual Average (mm)	2014
Emerald Qld	549	56	242	202	112	95	60	36	122	161
Toowoomba Qld	662	12	272	263	130	233	82	69	121	85
Roma Qld	578	45	247	215	128	121	72	87	126	43
Goondiwindi Qld	6.8	25	251	143	124	164	66	72	135	30
Narrabri NSW	633	28	227	97	119	200	126	110	160	36
Gunnedah NSW	660	33	234	128	118	205	129	140	177	74
Dubbo NSW	609	90	197	167	132	227	128	129	152	38
West Wyalong NSW	444	76	113	120	86	173	118	108	126	54
Wagga Wagga NSW	537	76	130	103	114	164	151	123	143	103
Swan Hill Vic	322	15	73	20	65	133	89	46	95	45
Bendigo Vic	514	57	109	68	102	177	167	155	136	108
Horsham Vic	384	64	75	76	70	98	132	90	107	36
Lake Bolac Vic	529	46	117	65	100	101	160	144	152	74
Murray Bridge SA	369	53	66	60	76	89	128	111	99	46
Kadina SA	343	18	58	31	77	132	120	94	88	26
Cummins SA	395	27	51	45	87	96	175	209	82	26
Esperance WA	615	2	80	24	142	121	249	242	144	163
Wagin WA	402	10	46	11	95	96	171	136	89	88
Northam WA	404	0	42	0	85	127	192	173	86	101
Mingenew WA	366	0	31	0	92	102	176	144	68	99
Moora WA	384	0	43	0	86	36	783	140	72	37
Mullewa WA	309	0	48	1	90	136	131	56	50	74

Last rainfall reading January 20, 2015.

District Reports...

January–February 2015

hot, dry windy conditions with yields well below average in all districts.

- During December, severe rainfall deficiencies remained in southern South Australia with pockets of serious deficiencies in the South East.

**PIRSA Crop and Pasture Report
January 2015**

WIMMERA

Wimmera farmers have put 2014 firmly behind them as the winter crop harvest dribbles into bins. The 2014 season was well below average and only about 30 per cent of the yield of the previous year. This will call for some important planning decisions in the year to come.

General rain across Victoria last week has prompted a germination of summer weeds and volunteer crops. Falls of over 50 mm will no doubt start to be of use to the coming crop provided weeds are controlled early.

Without follow up rains the area to be sown to canola seems likely to fall in 2015. Low canola prices – as a result of very low world oil prices – coupled with a moisture deficit could see the canola plant drop.

Growers are more likely to retreat to the safer, cheaper options of cereals, and perhaps increased fallow, to try to improve the chances of a crop in 2016.

Land prices are still buoyant in the Wimmera with one reported sale in excess of \$3000 per hectare and lease opportunities attracting plenty of interest. It is good to see an air of optimism in the area following a very ordinary harvest.

**Mike Laidlaw
Harberger Farm Supplies, Donald
January 19, 2015**

WESTERN MURRAY VALLEY

Winter crop

The 2014 winter crop harvest finished with little interruptions from rainfall and with plenty of happy farmers as yields were generally average to above. Good yields, good grain prices and an easy harvest – what's going on? Most growers are waiting for something bad to happen!

Since harvest we have had two rainfall events: 15–20 mm in December and 40–70 mm in early January. This late rain has stimulated a lot of summer weed growth. This means some sheep green feed for mixed farming enterprises, but with the risk of flystrike – and for cropping farmers – some weeds to control.

Most cropping farmers will be spraying weeds to conserve moisture and make the sowing operation easy. Weeds of particular concern (and on the increase) are fleabane, umbrella grass, prickly lettuce/sow thistles and pannicum grass.

The heavy stubble load on dryland paddocks maybe an issue for sowing this year and it's worth noting the rain has rotted the cereal roots and it is easily pulled from the ground. Good stubble management for sowing will be important to maintain moisture, enable ease of sowing whilst making sure our pre-emergent

herbicides still work effectively on the soil. Growers are opting for a range of different techniques:

- Using coulters on airseeder bars to cut through;
- Using a 'speed tiller' to cut and incorporate stubble;
- Mulching/slashing; or,
- Cool burns prior to sowing in autumn.

With direct drilling and stubble retention vitally important in our dryland zone, these various technique options need to be carefully considered and on an annual basis.

With a reasonable harvest in 2014, and an improvement in the bank balance, growers are looking to some soil maintenance with the addition of lime and gypsum. This has meant a thorough re-assessment of the quality of both lime and gypsum and finding the best and most economic product for the job. Buying quality product can mean paying more for the product and the freight – but economically, it will often be of more value once spread in the paddock. I'm strongly encouraging growers to go through this process when purchasing hundreds of tonnes of soil ameliorants.

Summer crops

Rice: Water... water... water! Currently the MIL (Murray Irrigation Limited) system has a water allocation of 52 per cent with the last increase being three per cent. Temporary water is still being traded from \$110–\$130 per megalitre. The January rainfall provided some reprieve from water whilst growers were filling rice bays to 20–30 cm for the early pollen microspore



Leigh Hepner, agronomist with IK Caldwell, Moama, inspecting plant populations and cob sizes in a crop of P1070 corn.

District Reports...

January–February 2015

period. Water depth is critical at this stage as it provides a buffer against cool temperature changes which can cause sterility in pollinating rice.

Some rice crops have heads emerging and growers and agronomists will be on the lookout for armyworm pressure.

Corn: Corn crops have had exceptional temperatures during the important tassling/silking reproductive stages. Temperatures in the mid 25s to low 30s have enabled most cobs to fertilise without losses.

Irrigation has also eased slightly with less evapotranspiration after the short period of high 30s to low 40 degree days.

Good irrigation management has been critical through these hot periods where evapotranspiration rates can reach 12 mm per day.

Growers are now gearing up for another big winter crop after last year's success. Preparation for crop rotations, varietal choices and soil nutrition programs are in progress and it's full steam ahead for the WMV as we put our rain orders in for mid April onwards!.

Laurence Pearce
Agronomist – IK Caldwell, Deniliquin NSW
January 19, 2015

MALLEE

After an excellent start, the 2014 cropping season was largely disappointing for growers in the Southern Mallee, while those further north fared better. Last year Mallee growers had to contend with Beet Western Yellows virus in canola, severe frost events (with a lot of hay being cut around the region), an outbreak of diamondback moth and, for parts of the southern Mallee, one of the worst finishes on record.

Harvest wrapped up from late November to early December, with yields around the Mallee ranging from average to very poor. The dry finish to the season, meant harvest was underway about two weeks earlier than usual in most areas. The southern Mallee was hit the hardest, with next to no rainfall from July onwards, resulting in yields well below average, or crops not being harvested at all. While some parts of the northern Mallee also experienced a dry finish to the year, the full profile of moisture was the saviour, ensuring crops had enough resources left when



Heliotrope, caltrop and melons starting to set seed in the southern Mallee near Birchop.



Harvesting wheat in the Northern Mallee near Manangatang.

Clear Grain Exchange

Introducing self managed grain trading.

NEW SERVICE

ClearFORWARD

Clear Forward Market Exchange

You now have the ability to trade forward contracts. You can create a forward offer at the price you want and we'll check the daily bids to find a competitive buyer.

Create a forward offer instantly

The Clear Grain Exchange Forward Marketplace allows sellers to secure a target price today for grain they are going to deliver into an approved Bulk Handler at a future date.

Offers in the market are viewable by the approved buyers on the Clear Grain Exchange, giving you the market depth you require.

Clear will also provide you free daily SMS market alerts, so you're always up to date with the relevant market activity.

Go online to see just how easy it is to take control of selling your grain.

cleargrain.com.au

District Reports...

January–February 2015

the season ended harshly. Crops also performed better on the lighter sandy soils.

Where yields were very low in cereals, protein was quite high and lower retention (due to the dry finish and frost events) resulted in some malt barley being downgraded to feed. Subsequently, there was not much malt barley around the area.

Canola yields across the region were generally disappointing with many crops not reaching expectations. For many canola growers, input costs were higher than usual with spraying undertaken to control green peach aphids and diamondback moths.

Following on from harvest, apart from having a well-deserved break, growers have been controlling summer weeds (in small patches) selling grain and buying sheep to clean up left over crop residues in paddocks.

Over the past week growers have been waiting for the 'big' rains to hit that were forecast throughout the Mallee. As of January 14, most areas of the Mallee had received around 25–40 mm, but also parts of the southern Mallee received a much needed 80 mm. In the next 10–14 days, growers will be out spraying weeds that will germinate from this rain, to ensure valuable stored soil water isn't lost to high weed burdens. This rain will also ensure some germination for sheep feed, which will save purchasing grain for feed.

Linda Walters
Research Officer, Birchip Cropping Group
January 14, 2015

Northern region



DARLING DOWNS

What a difference rainfall makes! November saw a number of only small rainfall events and the start of December was dry – but gradually rain came through December and especially around Christmas, with falls from 70 to 200 mm in the last week of December.

This allowed the 'normal' summer crop area to eventually be planted. Sorghum was the main crop to go in, with a good area of maize and an increased area of mungbeans and some soybeans.

Sorghum emergence has been good but establishment has had some setbacks, ranging from pythium on the roots, scarab grubs attacking larger sorghum and peachvine grub larvae worrying growers but leaving the crops alone.



The December rain allowed the 'normal' summer crop area on the Downs to be planted. Sorghum was the main crop to go in.

The early spring sown sorghum is now being desiccated and starting harvest on the western Downs, but as expected, yields are low at about 2.5 tonnes per hectare. The majority of the spring sown crop is at grain fill to ripening, with varying potential depending on the crop maturity when the rain arrived – but 2.5 to over 6 tonnes per hectare is expected.

There has been some heliothis pressure at different stages, and grasshopper damage on the western Downs. Any crops flowering now are finding the first flushes of sorghum midge and a fair lay of heliothis eggs. But at least 50 per cent of the sorghum crop was December–January planted and is just getting underway.

The spring sown corn is starting to be cut for silage or starting to ripen for the gritting market.

The cotton area is well down this season, especially the dryland area, and there has been high heliothis pressure in the



Sunflowers on the Downs also enjoyed the December rains.

District Reports...

January–February 2015



The mungbean area on the Downs is well up this summer.

conventional crops coupled with constant mirid pressure. But most crops are looking good – having enjoyed the heat – and are ahead of schedule.

The mungbean area is well up this summer due to excellent prices, with a strong planting and good crop emergence. Row widths vary from 40 to 100 cm but all crops look good and are currently undergoing weed control.

There have also been some soybeans planted, again having a good start, although coming under early sucking pest interest.

Winter crop prospects

On the western and central Downs there is still plenty of area available for winter crop planting. But on the eastern Downs – with the late summer crop plant – the double cropped area will be cut, reducing the opportunities.

But fallow paddocks do now have a reasonable amount of stored soil moisture.

Hugh Reardon-Smith
Agronomist, Landmark Pittsworth
January 15, 2015

WESTERN DOWNS

The start of the summer plant wasn't particularly ideal with only a couple of sorghum and cotton crops being planted into marginal conditions. This led to patchy plant stands but these crops have benefited greatly from the recent rainfall.

The early sorghum planting window passed very quickly without any significant rain offering any general planting opportunity. But our long-awaited break came in December with local areas receiving around 6 to 10 inches (150 to 250 mm) of beautiful rainfall. This resulted in a very wet period through the second half of December with most crops not being able to be planted until the beginning of January and later. This is pushing deep into the late sorghum plant window – which isn't ideal.

With little dryland cotton going in this summer (too dry in late spring), the grain sorghum area is proportionally higher. There has also been huge interest in mungbeans. The current price is attractive and mungbeans provide diversity in the summer rotation. It is also a fast growing crop which, given the late planting opportunity, is a good attribute.

January–February 2015

Due to the good rainfall, some double cropping is occurring to try and make the most of the current moisture levels. With crops going in late, pests will need to be monitored at the appropriate stages. Sorghum midge in grain sorghum and powdery mildew in mungbeans look to be emerging issues.

Hopefully this good summer season will continue and help to make up for last year's dismal summer crops.

Nikolaus Fritz
Agronomy – Landmark, Miles
January 14, 2015

SOUTH BURNETT

Key issues

- A big change from previous reports.
- Variable rain across the South Burnett.
- Good peanut plant.
- Follow up rain needed.

The 2015 season is off to a reasonably good start. Areas to the north of Kingaroy had a good start with rain in mid-November, while to the south, the rain was more patchy.

Since the rain started in mid-November falls have been from 50 to 275 mm.

Some farmers to the southwest still have not planted (although there was planting rain on January 14 and 15). Planting is almost complete to the north. The recent rain will allow most planting to be completed.

Planting options have been changed as it is too late to plant peanuts. Corn and beans will be the main crops. Sorghum planting is down due to the late plant and concern about ergot with later plantings.

The rain has promoted many weeds in peanut crops. There will be peanut fungicide sprays starting in earnest if the rain continues.

We have the biggest bean crop for a number of years with soybeans, mungbeans, adzuki beans and navy beans planted.

Hope the rain continues and it is particularly pleasing, that recently, the driest areas in the district have received the most rain.

Ian Crosthwaite
Agronomist
BGA AgriServices, Kingaroy
January 15, 2015

CENTRAL QUEENSLAND

Rainfall

Soil water profiles are currently a long way from being filled for the summer crop in most districts in Central Queensland. Above average rainfall fell during September but all districts were extremely hot and very dry during October and November 2014. Above average rainfall (130 to 180 mm) fell across most districts during December. The Callide is wet (250–350 mm for December) as are areas around Capella/Dysart.

District Reports...

January–February 2015

Summer crop

Smaller than average areas planted to summer crop in 2013–14, as well as a smaller 2014 winter crop, resulted in large areas of fallowed paddocks ready for summer crop this season. Farmers at Fernlees (50 km south of Emerald) have missed both a summer and winter crop for the first time in more than 30 years.

Mungbeans

A larger than normal area had been planted to spring mungbeans. Yields of many mungbean crops were disappointing due either to the hot, dry weather during the critical part of the growing season (October–November) or rain close to maturity in December. Currently high prices have induced many farmers to plant larger areas to summer mungbeans which are mostly yet to flower.

Sorghum

Large quantities of sorghum seed have been sold but only a moderate area has been planted. There is still a lot of seed held on-farm awaiting more rain to properly wet the profile.

Livestock and pastures

Rainfall has generally been sufficient to grow high quality feed but mostly not enough to grow high quantities of feed. As a result, cattle are in excellent condition but paddocks are already grazed short where stocking numbers are high. Rainfall during the warmer months will be needed to grow grass as most paddocks have been grazed short over the past few years.

Grasshoppers

Small scattered swarms of locusts have a potential to cause damage and are being sprayed when sufficient numbers are located.

Irrigation water

The Fairbairn Dam has had minor inflows and is currently at 42 per cent capacity or 543,000 megalitres. Most on-farm water storages are still empty.

Maurice Conway

Department of Agriculture, Fisheries & Forestry

Emerald, Queensland

January 15, 2015

IAN'S CLASSIC TRACTOR QUIZ ANSWERS

- 1 – Glasgow.
- 2 – Caldwell Vale.
- 3 – 4.
- 4 – TEF (TED was kerosene fuelled).
- 5 – Budapest.
- 6 – Cast iron pipes.
- 7 – Common Sense.
- 8 – Ballarat.
- 9 – Schneider (surprising, but it was French).
- 10 – 4 cylinder Austin A70.

ADVERTISERS' DIRECTORY

Accufire.....	S	Ezyflo	22
Agfarm.....	IFC	Flexicoil	31
Agmaster	Insert	Gyral.....	29
BASF	Insert	Impact Fertilisers	19
Bayer	3	Landpower Claas... 7, 16, 17	
Boss Agriculture	33, 35,	NDF	43
Bourgault.....	S	Neil's Parts	14
Case IH	OBC	Nuseed	5
CBRE.....	23	Pertens Instruments	34
Charlton's Fishing.....	38	Serafin.....	18
Clear Grain Exchange	53	Study Tours	IBC
CNH	25, Insert	Sumitomo	15
Croplands.....	9, 39	Syngenta.....	1
C-Qual	S	The-Gate	N, 46
Dinner Plain.....	40, S	Valmont	41
Excel Agriculture	13	Vic Chem.....	11

Barcoo...

Enjoy a cool holiday this year, and at a great rate

**ALL
THE
WINTER
SPORTS**



Barcoo is a superbly appointed lodge at Dinner Plain in the heart of Victoria's high country. This year round playground offers trout fishing, magnificent scenery, great restaurants, peace & quiet and other cool activities.

- 4 bedrooms (all with queen size beds)
- Fully equipped with all mod cons
- 3 bathrooms • Spa pool • Sleeps up to 16

GREAT VALUE FOR LARGE OR FAMILY GROUPS

**Further details phone 1800 670 019 or
www.dinnerplain.com**