cultivate

PRODUCED FOR THE BENEFIT OF AUSTRALIAN BROADACRE FARMERS BY BAYER

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Weed control vital for optimum water use

Northern WA bracing for powdery mildew

New moves against black oats

Powerful IWM tool for farmers

Growers on a winner with canola disease tool

Inside

Welcome

Welcome to the second issue of our new *cultivate* magazine for the broadacre industry.

We have made *cultivate* available in both printed and digital copy format for readers and the response to our first issue has been fantastic.

Once again, the first 100 new subscribers who sign up for the magazine from this issue will receive a free Leatherman® Micra Multi Tool *(see page 42)*, and, of course, we welcome your feedback and any suggestions of topics or issues you might like us to address. Email your feedback to cultivate.au@bayer.com

This is a time of the year, heading into a new season, that's always exciting – like the first round of a footy or rugby season – and we wish all growers the very best for a productive and profitable farming year.

We have mentioned the title of our magazine hits on the benefits of "cultivating" relationships, knowledge, innovations and on-farm solutions for the agricultural industry and some of these successful partnerships, operating both locally and globally, are well highlighted in this issue. In particular, the effort to address one of agriculture production's biggest challenges, herbicide resistance, is very encouraging and we look forward to future developments in this area.

Local collaborative work with grower groups and other organisations is also vital to develop solutions to local issues and improve return on investment for growers.

We aim to continue to provide credible and practical information, with a number of grower and industry experiences again a feature of this issue and which deliver highly relevant, early season messages.

Some of the latest developments in canola varieties are also updated, while tools that are helping growers to make better on-farm management decisions are discussed as well.

We look forward to supporting growers throughout the 2016 season – and "cultivating" with more subscribers!

James Catherall,
(Acting) Portfolio Manager Broadacre, Rice and SeedGrowth

COVER PICTURE: Ed Blackburn, Agronomist with CRT store, Haynes Farm and Hardware at Coolah in NSW, and Andrew McFadyen,Company Agronomist and Cropping Manager at Paspaley Rural Properties' local 'Kurrajong Park' group of farms, illustrate the clean paddocks that remain after using the post-emergent herbicide mix, Velocity with Axial.

DESIGN AND PRODUCTION: Howatson PR Communications

About Bayer

Bayer is an international life science company offering innovative products that serve the health of humans, plants and animals. With core competencies in the areas of health care and agriculture, we take on two of the greatest challenges of the 21st century: The health and the nutrition of the growing population.

Fulfilling the demand for quality, nutritious food for all depends on visionary thinking, courage and creativity. At Bayer, our spirit of innovation and curiosity means we are always looking to develop more advanced solutions to meet these future challenges. On and off the farm, we work closely with our customers, our business and research partners and the wider community to improve the security of our food and fibre supplies and our overall quality of life. This great tradition is also our commitment to the future – entirely in line with our mission: Science For A Better Life.

We have been investing in Australian agriculture for almost 100 years, supplying leading brands backed by expert advice in the areas of seeds and plant biotechnology, crop protection and non-agricultural pest control. For every $10 spent on our products, more than $1 goes towards creating even better products for our customers.

Forward-looking statements

This magazine may contain forward-looking statements based on current assumptions and forecasts made by Bayer Group or subgroup management. Various known and unknown risks, uncertainties and other factors could lead to material differences between the actual future results, financial situation, development or performance of the company and the estimates given here. These factors include those discussed in Bayer's public reports, which are available on the Bayer website at www.bayer.com.
The company assumes no liability whatsoever to update these forward-looking statements or to conform them to future events or developments.

WEED CONTROL CRITICAL

WHEN WATER AVAILABILITY DRIVES PRODUCTION

Ed Blackburn, Agronomist with CRT store, Haynes Farm and Hardware at Coolah in NSW, and Andrew McFadyen, Company Agronomist and Cropping Manager at Paspaley Rural Properties' local 'Kurrajong Park' group of farms, during the recent harvest.

WHEN you have a major focus on plant available water and related trigger points for crop production, you don't want weeds drawing on your valuable resource.

This is a driving factor for Andrew McFadyen, Company Agronomist and Cropping Manager at Paspaley Rural Properties' 'Kurrajong Park' group of farms near Coolah in New South Wales.

Heading into his 15th season with the group, Andrew manages a 5500 ha continuous cropping program that includes summer and winter crops. He said, ideally, sorghum would account for about half of the program.

Rotations can include sorghum/sorghum/long fallow/wheat or barley, while canola or chickpeas can also come into the rotation before a return to sorghum.

'Kurrajong Park' comprises ironbark beach sand country through to rich, black vertisol soils. The cropping program is managed on red clay loams through to the black vertisol soils.

Of the 675 mm average annual rainfall, Andrew said they factor in 250 mm of in-crop rainfall and they start with 100-150 mm of plant available moisture.

He said managing the different climates and ecosystems across the properties was a real challenge, as was weed control, including herbicide resistant weeds.

"We have mainly had to deal with glyphosate-resistant ryegrass. A huge reliance on glyphosate over the winter fallow period led to problems with resistance. Two out of every three winters was Roundup®, with no crop competition," Andrew said.

"We also have a little bit of annual ryegrass with resistance to Topik® and black oats with resistance to Mataven®.

"Grasses are our biggest problem. If we lose plant available water, we lose sowing timeliness."

The crop rotation program has since been extended, double knockdowns occur across the board, strategic grazing effectively provides a triple knock and cultural practices, including windrow burning, are also employed. Residual herbicides and using pre-emergent herbicides with a fallow option are other considerations.

Andrew said trifluralin herbicide, good crop competition and Intervix® herbicide were keeping grasses under control in winter crops, while black oats were being killed in the fallow phase with glyphosate.

The range of broadleaf weeds they tackle includes wireweed, deadnettle, bindweed, sowthistle, turnip weed and other brassica weeds, as well as volunteer canola.

Andrew said the winter cropping program was becoming more heavily weighted to barley due to higher yields, quicker maturity and, hence, better frost tolerance, and, in conjunction with the use of the post-emergent herbicide, Velocity® from Bayer, it was proving to be highly effective against weeds.

"Velocity in barley, with good crop competition, leaves the country clean."

"As part of our broader herbicide management, it offers good chemistry, a different mode of action and we have no plantback problems – it is a good product.

"If we are coming out of canola, where there can be some Group B (herbicide) tolerance, having Groups H and C with Velocity is good. It also works well on any volunteer canola."

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

"We were previously using MCPA (Amine) and Ally® in a mix, but went to Velocity with Axial® for grasses in the one pass at the 3-4 leaf stage. The wireweed and bindweed can be a bit tougher if we don't get in early," Andrew said.

"The Axial is getting the black oats, phalaris and ryegrass. We still get ryegrass suppression and the crop competition is also taking them out, so they are getting a left/right jab."

The spray mix is applied through medium to coarse nozzles with water rates of around 75 L/ha.

"We also test our water here. It's one of the biggest things to check. It's also about nozzle selection, knowing your conditions and knowing your product," Andrew said.

Local Agronomist with CRT store, Haynes Farm and Hardware, Ed Blackburn, who works closely with Andrew, said throughout the wider region, the Velocity and Axial spray mix in barley and wheat had been highly effective.

"It has left paddocks very clean," Ed said.

> "Velocity in barley, with good crop competition, leaves the country clean. As part of our broader herbicide management, it offers good chemistry, a different mode of action and we have no plantback problems – it is a good product.
>
> **ANDREW McFADYEN,**
> **CROPPING MANAGER,**
> **PASPALEY RURAL PROPERTIES, COOLAH, NSW**

FIND OUT MORE ABOUT VELOCITY

Fighting global herbicide resistance

THE TIME TO ACT IS NOW

Herbicide resistance is a global challenge. Professor Stephen Powles, Director of the Australian Herbicide Resistance Initiative (AHRI), discussed this issue with Liam Condon, member of the Board of Management of Bayer AG and head of the Crop Science Division, at the recent Weed Resistance Global Symposium in Paris.

Professor Stephen Powles (right) is a Professor at the University of Western Australia and the Director of the Australian Herbicide Resistance Initiative (AHRI). His expertise ranges from the fundamental science on the evolution and molecular basis of herbicide resistance through to applied agronomic research and management. Within the last 32 years, Prof. Powles has strongly influenced Australian and international thinking on sustainable herbicide usage by reducing herbicide reliance and increasing diversity in agro-ecosystems.

Liam Condon: Weeds threaten our global food supply. They harm enough crops to feed one billion people. The total losses from weeds worldwide are estimated at 13.2 percent of agricultural production, worth more than $76 billion a year. We can control weeds with herbicides, but increasing herbicide resistance on a worldwide level is a huge problem. It can only be solved through a holistic and sustainable approach – based on knowledge exchange, collaboration and innovation. That is why we at Bayer are striving together with leading scientists and international institutions to jointly develop new solutions that help farmers worldwide to combat herbicide-resistant weeds. For example, we are delighted to be working together with you, Steve, as a world-renowned and highly accomplished herbicide expert. You and your organization, the Australian Herbicide Resistance Initiative (AHRI), are fantastic partners for us.

Stephen Powles: Actually, we need to work together because we are in the same boat. But we also find our collaboration with Bayer to be very advantageous. For example, our AHRI team profits from close interactions with Bayer's Weed Resistance Competence Centre in Frankfurt. It is very valuable that we can use each other's research expertise, which we couldn't possibly reproduce in our own countries. In fact, we have an Australian Research Council-funded project on the mechanisms of resistance in which Bayer is a linkage partner. Also, events like this Weed Resistance Global Symposium offer a forum for discussion regarding practical integrated weed management (IWM) solutions.

Liam Condon: Yes, these exchanges of experiences are crucial in order to develop better solutions that are needed to ensure we can feed not only today's population, but also the expected 9-10 billion people by 2050. Weeds are real and evident threats to farmers' harvests. I remember very well the

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>
> **PROFESSOR STEPHEN POWLES,**
> DIRECTOR OF THE AUSTRALIAN HERBICIDE RESISTANCE INITIATIVE (AHRI)

first time that I saw the Palmer amaranth weed out in the field – Palmer amaranth is able to grow 5 centimetres per day, ending up at four metres tall and able to produce 1.8 million seeds per season. What crop plant could withstand such a strong adversary?

Stephen Powles: Indeed. Weeds have been persistent robbers of food for at least 10,000 years of agriculture. They have demonstrated their ability to survive and persist despite human efforts. Our new joint approaches and the decisions that we make will influence world food supply. Our objective is more food through fewer weeds – but sustainably. By now, we discovered one of the most important lessons: Herbicides are superb weed control tools. They are effective, cheap and easy to use – but also easy to overuse! Multiple resistant weeds are telling us that herbicides alone are not sustainable. The golden age of herbicides, where the weeds could easily be controlled, is over. So today we cannot overly rely on them. We can only win this battle if we use these precious tools more wisely than we have in the past. And we have to apply a combination of chemical and non-chemical crop protection – such as smart crop rotation, harvest weed seed control and digital farming tools – in order to tackle weed resistance and sustain herbicides in the long run. Diversity is the key.

Liam Condon: I completely agree. A diversity of approaches is key to ensuring a sustainable intensification of agriculture. For this purpose, we currently invest annually more than $1.5 billion in crop science research and development with a strong focus on our integrated toolbox, combining chemical and biological crop protection products with modern breeding technologies and trait research. Science and modern technologies such as digital farming play a vital role in shaping the future of farming. Digital farming solutions can help growers gain a better understanding of what's going on in their fields and allow them to make better and faster decisions. Precise, real-time crop monitoring data and soil health analyses are examples that can enhance decision making and help ensure a higher focus on sustainability. We are excited about the possibilities such new technologies deliver in the fight against resistant weeds.

Stephen Powles: That is the right approach. Diverse techniques in the fight against weed resistance are the only sustainable way forward. Furthermore, diversity needs communication. Connecting growers, the industry and the scientific community requires traditional and new ways of interaction, such as social media. Our research results have to be distributed across all communication channels: To the growers, the agricultural industry, the advisors and the scientific community. That is why in our research team, we invest 30% of our budget in communication.

Liam Condon: Great point. As an industry we probably under-invest in communication. Engaging with the public and everybody involved in agriculture is essential to bring our messages across. We at Bayer are placing a stronger emphasis on doing this better through a more integrated media mix – ranging from our company publication, 'Farming's Future,' to corresponding digital and social media activities, and also educational approaches. We want to encourage societal dialogue and raise awareness of the need for new innovation and technology.

Stephen Powles: Yes, it is vital that we share our key findings with the end users to create consciousness for herbicide resistance and a change of behaviour. There is a role for everybody in this to manage resistance and to providing food for an ever-growing world population. Together, we are going to defeat weeds through science, technology and understanding evolutionary principles. The time to act is now!

AUSTRALIAN HERBICIDE RESISTANCE INITIATIVE

The Australian Herbicide Resistance Initiative (AHRI) is a research leader in herbicide resistance in Australian cropping. It is focused on sustainable farming and weed control. With headquarters at The University of Western Australia, the multi-disciplinary team's research activities range from understanding the biology and control of major weed species through to the development of agronomic and herbicide management strategies. Fundamental research occurs at the biochemical and molecular level.

WANT TO KNOW MORE ABOUT ADDING DIVERSITY TO YOUR WEED CONTROL PROGRAM

DEVELOPMENT VETERAN HAILS ONCE IN A LIFETIME EXPERIENCE

Mike Rouch, Development Manager - Seed Growth, Summer Crops and Broadacre (fungicide and insecticides) for Bayer, loved his time in the field as a Development Specialist.

STANDING in the middle of a paddock, a small group of people eagerly examine early field trial results of a potential new herbicide; there's excitement in the air.

Mike Rouch and his colleagues knew they were onto something big.

According to Mike, it's an experience that happens once, maybe twice if you're lucky, in a career spanning more than 30 years in the agricultural research industry.

That particular experience was the early stages in the development by Bayer of the pre-emergent herbicide, Sakura®, a game changing product for Australian agriculture.

Mike has been with the company for most of his career, working in the field as a Development Specialist for the majority of time.

As a Development Specialist, Mike and his colleagues conducted efficacy and crop safety field trials with products not yet registered, to generate sufficiently reliable and robust data for their registration in Australia.

It's by no means a fast process and many products fail to reach registration stage, but if successful, Mike said it was extremely satisfying.

The biggest highlight of Mike's career to date has been the development of Sakura, for which he was the Field Project Leader.

Sakura is a Group K herbicide (pyroxasulfone) for use in the pre-emergent control of annual ryegrass, including herbicide-resistant annual ryegrass, and other key weeds in wheat (except durum wheat),triticale, lupins, chickpeas, field peas and now lentils.

Mike clearly remembers standing in that paddock back in 2006 and the feeling of anticipation among the group.

A Sakura trial tour in 2015.

He led the field development program for Sakura, writing the protocols, summarising and reviewing the data at the annual Winter Review and Planning meetings, writing the Part 8 efficacy submissions and, with his regulatory colleague Geoff Perkins, writing the product label.

Mike also made significant contributions to the marketing of Sakura by writing most of the technical material.

"My role as the Field Project Leader for Sakura has been a career highlight, because it's been such a big product for Bayer," Mike said.

The active ingredient in Sakura is supplied by a Japanese company, Kumiai, and Mike said the first step was developing a relationship with the company's management in order to gain their trust and develop a shared vision for the product in Australia.

This involved all the project team and Bayer managers, particularly the Heads of Marketing and Development at the time, Holger Detje and Don Nicol.

"The first trials were done in 2006 and it was first registered in November 2011, but we knew from the very first trial that if we could get it on the market, it was going to be huge," Mike said.

"The product ticked a lot of boxes. It was a new mode of action and it gave a high level of control of the most important weed in the biggest crop in Australian agriculture.

"You go for years in development working on smaller products or making label changes to existing products, so being able to work on something as exciting as Sakura was really special."

He said he thoroughly enjoyed working in the field, particularly his close working relationships with Bayer's Southern NSW technical advisory and sales team members.

"They are a great bunch of blokes; practical, professional and highly respected in the industry."

"I've also been lucky enough to work with and learn from some of the best farmers in the industry."

Recently, Mike has taken on the position of Development Manager - Seed Growth, Summer Crops and Broadacre (fungicide and insecticides) for Bayer, based in Melbourne.

> "Sakura ticked a lot of boxes. It was a new mode of action and it gave a high level of control of the most important weed in the biggest crop in Australian agriculture.
>
> **MIKE ROUCH,**
> **BAYER DEVELOPMENT MANAGER - SEED GROWTH, SUMMER CROPS AND BROADACRE (FUNGICIDE AND INSECTICIDES)**

In his new role, Mike is a member of the Development Leadership Team, reporting to the Head of Development, Sue Cross, and has assumed personnel responsibility for Development Specialists Norm Stone, Greg Davies and Stewart Druce.

"I see my new role as being a manager of resources to achieve the successful registration of new products for Bayer," he said.

The first trials conducted with Sakura by Bayer in 2006. Note the untreated strip of ryegrass between the two Sakura-treated plots.

"I'm lucky to have started in this role just as we are in the final stages of registration of Aviator® Xpro™, a new foliar fungicide in broadacre agriculture."

Aviator Xpro contains bixafen, a new member of the Group 7 (SDHI) fungicides and the proven performance of prothioconazole, a third generation triazole.

Aviator Xpro is highly effective on necrotrophic diseases in wheat and barley, is a new mode of action for the control of blackleg in canola and will be a new option for disease control in pulse crops.

Next year is expected to be the first year of full commercial release of Aviator Xpro.

An application for the registration of Aviator Xpro has been made. At the time of publication, this product is not registered.

New technologies, careful rotation **HELPS MEET CHALLENGES**

FARMING soils that can change within the width of a seeder can throw up some challenges, particularly with disease and weed control, but use of newer input technologies and careful crop and chemical rotation are helping the Eckerts at Meningie, South Australia, to remain ahead of the game.

David and Gwenda Eckert, together with their sons, Matt and Tim, crop 2500 hectares of their 3800 ha 'Mentara Park' property and leased land at Malinong, near Meningie, to wheat, barley, canola, beans, lupins, lucerne and oaten hay, the latter of which is sold to local dairy farmers and lotfeeders.

David said their soil types were so variable and could range from reef rock to rock hard clay, through to beach sand.

They operate continuous crop rotations that can include canola-wheat-barley, beans-wheat-barley or canola-wheat-hay.

The sandy soils are sometimes their highest crop yielding areas, however, they can also be more prone to rhizoctonia root rot disease and this can have a stronger impact in barley crops.

Matt Howell, Agronomist with local CRT store, Platinum Ag-Services, assists the Eckerts and said rhizoctonia was becoming widespread throughout the region.

Matt said the disease had increased with the wider adoption of minimum tillage practices and following recent dry summers that had assisted disease carryover.

"We are looking at more and more problems with it," he said.

SA grower Tim Eckert, Meningie, and local CRT Agronomist Matt Howell look over the solid barley crop production across a paddock on the Eckert's Malinong property that used to show weak patches due to rhizoctonia disease.

After previously not managing rhizoctonia, in the last two years the Eckerts have treated seed with EverGol® Prime for select paddocks comprising their higher production country and it has recovered areas that were previously wiped-out by the disease.

David said about 20 per cent of their paddocks were affected by the disease.

"The rhizo' has been a lot less pronounced where we used EverGol (Prime) – it did a hell of a job," he said.

"We noticed that the crops grew a lot better from the start."

SMUT DISEASES

Containing the active ingredient, penflufen, EverGol Prime, from Bayer, also helps control smut diseases in wheat, barley and oats, which Matt Howell said was another bonus for local growers.

"Smuts are also prevalent through this area and EverGol (Prime) has been good on loose smut," he said.

Grass weeds, particularly brome grass on non-wetting sands, are another major concern for the Eckerts, however, hay crops are helping to clean-up problem paddocks and switching their pre-emergent weed control to the Group K herbicide, Sakura® 850 WG, also from Bayer, has proved successful.

"We were running into resistance issues with annual ryegrass. We had used a lot of Treflan®, chasing higher rates every year, as well as Logran®, and have used Verdict®, Crusader® and Intervix® (post emergent herbicides)," David said.

"We have issues with Group As and Bs (herbicides), and Group Ds are also on the way out. We now use Treflan just in some parts of the rotation and we still use Crusader occasionally.

"We've used Sakura for four years and it has been brilliant on ryegrass and it is helping with the brome grass.

"On a select block with wheat, the thing I really liked about Sakura was its control of silver grass, which we can often get on the lighter country. When I was spraying the crop I couldn't see any silver grass. It had done really well."

The Sakura had been applied with a knockdown and incorporated at sowing via the family's Universal bar within a day of the treatment.

FLEXIBILITY

Tim said one of the best attributes of Sakura was the flexibility with its incorporation, with David adding that the recommendation for incorporation by sowing within three days of application was a lot better than the 24 hours suggested with Treflan.

During growing seasons, wild radish was becoming a problem and Matt Howell said the Group H and C post-emergent herbicide, Velocity®, was now widely used by local farmers from the 2-leaf stage for good early control.

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

Bayer Territory Sales Manager Craig Jackson and Matt discuss the benefits of EverGol Prime seed treatment for rhizoctonia, as well as smut diseases in wheat and barley, at the Platinum Ag-Services store at Meningie. Matt says rhizoctonia is becoming widespread throughout the region.

Matt Howell said previously, a Group B mix using Eclipse® was the dominant broadleaf weed spray throughout the region.

RADISH TESTING

He said local testing of wild radish had identified resistance to Group B (80% resistance to IMIs), mild resistance to Group I and low resistance to Group F herbicides.

The Eckerts have used Velocity the past two seasons in select areas from the 2-3 leaf stage depending on crop health and the moisture level, while they are moving toward a two-spray strategy for most of their cereal crops. The first spray would be from the 1.5 leaf through to 2 tiller stage of the crop, with the second spray applied with LV Ester 680, together with any copper, zinc, manganese or wetter, at crop jointing or as late as possible.

"It has cooked big radish. Where it has been sprayed, it has had whacking results. Because we have applied it early, we also have not seen much capeweed, turnip or stemless thistle," Matt Eckert said.

Matt Howell said he loved the fact it was so soft on crops.

"You can get net blotch in barley and there is no problem going with Velocity and propiconazole, compared with Flight®. Velocity and propiconazole doesn't check the crop at all, whereas Flight EC and propiconazole can scorch and set back the young barley plants."

He recommended using generous water rates with applications (75-80 L/ha) and 02 or 025 air induction nozzles.

"Depending on the particular situation, farmers should look at what can do the best job."

To help maintain the effectiveness of the herbicides and their weed control, the Eckerts plan to use Velocity every three years and to continue using Tigrex® and Crusader.

Sakura will sometimes be used only every five years, with Treflan still remaining in the weed control program and hay to be an increasingly important break crop option.

Tim, Matt, David Eckert and Craig check barley grain quality prior to harvest in a paddock on the Eckert's Malinong property where EverGol Prime seed treatment is helping to control rhizoctonia disease.

FIND OUT MORE ABOUT SAKURA

FIND OUT MORE ABOUT EVERGOL PRIME

BAT mobile improves return on herbicide investment

A spray application trailer capable of comparing the effectiveness of up to nine different chemical treatments on growers' properties is continuing to prove popular in Western Australia.

Coined the BAT (Bayer Application Trailer), it was originally designed to help growers and agronomic advisers to better understand herbicide resistance on properties.

"Compared with growers' broadacre equipment, it is an efficient way of quickly and accurately laying down multiple treatments and a number of replications to identify how chemical groups are performing and the responses to different rates," said Bayer Territory Sales Manager Glen Bradley.

"Products and mixes can be applied to any crops and pastures in a range of circumstances, with the intent to determine the status of the pest or weed that exists in regard to resistance or developing resistance.

"The BAT enables a benchmark appraisal of the performance of older and newer chemistry against the particular weed population or pathogen.

"It allows an assessment of which chemical options are performing less than ideal and those that are performing better and achieving the desired result.

"Growers can work out their best return on investment and ensure they are not wasting money."

Growers can also follow up the BAT treatments with herbicide resistance testing.

Glen said the Bayer team had worked extensively in WA to seek solutions for problems faced by growers and the BAT helped to develop "prescriptions" for different issues.

Growers and agronomic advisers interested in similar practical, side-by-side demonstrations on properties can contact their local Bayer territory sales manager.

High hopes for new **HERBICIDE OPTIONS**

Australian postdoctoral chemists Dr Stephanie Bellmaine and Dr Katherine Law at Bayer's new research laboratories in Frankfurt, Germany.

THERE have been some promising developments in the five-year, $45 million Herbicide Innovation Partnership (HIP) between Bayer and the Grains Research and Development Corporation (GRDC), which aims to develop novel chemistry for managing herbicide-resistant weeds.

A high-level delegation from GRDC recently visited Bayer's Frankfurt site in Germany, where new research laboratories were viewed that now employ 39 scientists, including 11 postdoctoral chemists from Australia and New Zealand who travelled to Frankfurt as part of the partnership.

Bayer Business Development Manager Peter MacLeod said the postdoctoral chemists, who were highly skilled in molecule creation, were focusing on identifying and assessing new molecules with the potential to replace existing herbicides that had succumbed to resistance.

"They have a very important role in the early stages of developing new herbicides for Bayer and the GRDC, screening and analysing chemical molecules that have the potential to provide new options for weed control," Peter said.

"The postdoctoral program is also expected to help build the capacity of the young scientists by providing training in advanced industrial research techniques, as well as the overall weeds research capacity at Bayer."

As part of the partnership, GRDC will receive royalties and milestone payments on new herbicide products derived from the joint venture.

The chemists participating in the program include Dr Bruno Basic and Dr Erin Smith from Curtin University; Dr Darran Loits, Dr Dayna Sturgess, Dr Arron Brown and Dr Stephanie Bellmaine from the University of Melbourne; Dr Katherine Law from the University of Sydney; Dr Eric Harris from Australian National University; Dr Daniel Chorley from the University of Auckland; and Dr Christopher Gardner from the University of New South Wales.

Liam Condon, member of the Board of Management of Bayer AG and head of its Crop Science Division, and GRDC Chairman Richard Clark officially open one of the company's new laboratories in Frankfurt, Germany.

Bayer's new laboratories in Frankfurt, where its global weed control research activities are concentrated, have a surface area of about 1100 square metres.

Liam Condon, member of the Board of Management of Bayer AG and head of its Crop Science Division, said in light of the challenges to increasing productivity and sustainability in crop production, it was even more important to collaborate in order to accelerate research activities.

GRDC Chairman Richard Clark said the delegation was pleased to visit Frankfurt to acknowledge the important milestone in the partnership.

"Growers have consistently told us that managing resistant and poorly controlled weeds is the biggest problem they face. By highlighting the significance of the challenge, through regional panels and cropping solution groups, growers have directly influenced the research focus of the GRDC and the global innovation company, Bayer, for the benefit of their local farming communities," Richard said.

"We acknowledge our growers and also the industry for its support of this collaboration. We believe this partnership will put Australian farms at the forefront of tackling herbicide resistance."

WA LEADER UP FOR FARMING'S CHALLENGES

When Craig White made the move to Western Australia from South Australia to pursue a career opportunity, it was to be "just for a few years as a bit of an adventure".

Fast forward 21 years and Craig has well and truly established himself in WA, both personally and as a beacon in the agricultural industry.

GROWING up in SA's Mid North among grapevines, sheep and grain crops, Craig's interest in agriculture developed at an early age and he went on to study at the Roseworthy Campus of the University of Adelaide, gaining a Bachelor of Applied Science (Agriculture).

Although he had a job lined-up on the Eyre Peninsula, when the opportunity arose to head west and work for the Department of Agriculture WA, he decided to go for it.

Landing in Lake Grace, Craig threw himself into working on sustainable rural development before moving into crop agronomy.

It was during this time that no-till farming systems developed throughout the wheatbelt, and Craig was involved with its evolution. He is a current board member of the Western Australian No-Tillage Farmers Association (WANTFA) as an industry representative.

Craig moved from Lake Grace to Merredin and worked as a Development Officer with the Department of Agriculture, where his main role was increasing awareness and understanding of frost damage in cereal and pulse crops, including through authoring and illustrating the GRDC Back Pocket guides.

PIVOTAL

"That was a pivotal, interesting time as I led the field response to the major frosts in 1998 and 1999," Craig said.

Craig moved on to work for Elders as an Agronomist, still in Merredin, where he assisted growers across the eastern wheatbelt for five years.

He later joined Bayer as a Territory Sales Manager, again based at Merredin, before he was promoted in 2007 to a market development position, based in Perth.

He said highlights during that time included the development of key products such as Velocity®, Precept®, Prosaro® and Sakura®.

"Being involved in the development of Sakura would have to be one of the biggest highlights of my career," Craig said.

"Bayer is an extremely innovative company and to be part of the project team was huge. It was a significant invention for agriculture as we see it today.

"I think my background has given me a very good, grassroots understanding of the challenges that any innovation can bring, as far as getting the most out of it, because we do have very challenging farming systems in Australia.

"My wife, Susie, has done a lot of work in natural resource management, so I believe that's given me insight into a different aspect of agriculture, helping formulate my opinion that no progress should be at the expense of the environment. It has to be sustainable and fit the whole system."

These days, Craig's role is a Technical Advisor and Leader of Integrated Weed Management (IWM) for Bayer in Australia.

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>
> **CRAIG WHITE,**
> BAYER WA TECHNICAL ADVISOR

He is based in Bridgetown in WA's South West region, where he lives on a small property with Susie and their six-year-old daughter, Evelyn.

Craig's position as Technical Advisor sees him providing technical advice to Territory Sales Managers, filtering down to agronomists and growers, and linking between the marketing, sales, development and regulatory areas of the business.

He also maintains relationships with key industry groups, agronomy teams and schools and universities. Craig is an active visitor of schools as part of the CSIRO/Bayer Sustainable Futures program, which aims to increase awareness of agricultural food production and career opportunities in the sector.

"New concepts coming through Bayer start their life a few years before the public knows about them, but then technical advisors become involved as a central linkage up to five years prior to them being launched for use," Craig said.

"When those products are launched, we want to ensure that our sales team and agronomists are highly trained to understand how best those products are used and the benefits, as well as providing ongoing support.

"The IWM role is a new role, but resistance management is something I've been passionate about for a long time and for me it's about being able to control weeds, pests and diseases long-term.

"Bayer has a really strong IWM program worldwide and I link in with that program as the Australian Leader."

Technology in agriculture is also an area of interest for Craig, but more specifically as an advocate for purpose-built technology.

He is an avid user of social media, predominantly on Twitter (@photobycw), which he uses as a tool to communicate information and keep up-to-date with industry trends.

TECHNOLOGY

"We have to combine our brains with technology to think about how we want to progress and use technology to support us, not just develop new technologies and try and fit them into agriculture," Craig said.

"There are plenty of new gadgets, but that's all they are unless we know why we want to use them.

"An example is when we introduced the use of quadcopters at Bayer to help assess trial plots in a more rounded sense – to gain an overhead view.

"The idea was there, but we had to assess why we wanted to use them and if and how they would be of benefit.

"It made sense because it complements our trial programs, so we now have quadcopters specifically for that use."

In what "spare time" remains, Craig is a passionate photographer and is a current committee member of the Bridgetown Camera Club and is a former vice president of the WA Photographic Federation.

He traces his interest in photography back to a high school biology project, examining the rate of manure breakdown by dung beetles.

"Part of the experiment involved photographing the dung beetles at regular intervals, so my Mum and Dad bought me a little camera and my love for photography really grew from there," Craig said.

"I enjoy seeing light, form and shape but I also like trying to illustrate stories with pictures, because I think it speaks 1000 words."

Fire brigade is another passion and it's something that he's been involved in back in SA and continued during his regional work in WA.

He was Captain of Merredin Volunteer Fire and Rescue and is currently a Lieutenant of the Hester Brook Bushfire Brigade and is a ground controller of aerial fire attacks.

WANT TO KNOW MORE ABOUT ADDING DIVERSITY TO YOUR WEED CONTROL PROGRAM

Craig White, one of Bayer's Western Australian technical advisors and Leader of Integrated Weed Management (IWM) for Australia, has become a beacon in the agricultural industry.

Unique canola reaps extra 0.5 t/ha after strong winds

There's nothing like a 100-kilometre per hour wind just days before harvest to test a unique pod shatter reduction trait in canola – and that's exactly what occurred during a trial of the technology last season on George and Barbara Burdett's property at Witkliffe, near Lake Bolac in Victoria.

George Burdett, who farms at Witkliffe, near Lake Bolac in Victoria, says the PodGuard trait in canola can allow delayed harvesting, which may be beneficial for harvesting other crops, including to take advantage of good pricing, and also to assist crop-topping.

THE Burdetts have continuously cropped 900 ha of their 1000 ha 'River Bend' farm since 1972, today growing wheat, canola, barley, faba beans and oats for hay. Triazine-tolerant (TT) and, more recently, glyphosate-tolerant canola varieties have been grown to help keep on top of difficult-to-control ryegrass.

Due to consistent strong winds in the region and the threat of canola pod shattering, George said they normally windrowed up to one-third of their canola as a risk management tool. However, they consider direct harvesting to be more efficient and so were keen to trial the PodGuard® shatter reduction trait in the Roundup Ready® hybrid canola variety, IH 51 RR.

"If there's a chance of losing a direct headed crop before we actually get there and PodGuard could alleviate this issue, then it's worth trying," George said.

In conjunction with Bayer and local seed reseller, Gorst Rural, IH 51 RR was grown alongside IH 52 RR as two 4 ha strips within a 40 ha paddock sown to GT-50 canola.

George said after the 100 km/hr winds prior to harvest, the success of PodGuard was emphatic.

"There was a visible contrast. Shattered areas looked white and the IH 51 (RR) just looked like a normal, ripe canola crop."

"There was up to 0.5 t/ha of canola shattered on the ground from all varieties except IH 51 (RR)."

At harvest, the paddock yielded 0.9 t/ha, while the IH 51 RR strip yielded 1.4-1.5 t/ha, up to highs of 1.9 t/ha.

"It was a fantastic yield for the season for the amount of rainfall we had and the frost damage prior to the winds," George said.

'River Bend' has rainfall data dating back to 1880 and the 2015 season was the fourth driest on record. The property received 239 mm during the growing period last year, compared with its 400 mm average. The average annual rainfall is 550 mm.

George said, critically, the PodGuard trait would allow delayed harvesting, which could be beneficial for harvesting other crops, including to take advantage of good pricing, and also to assist crop-topping.

"It offers the flexibility of not having to rush in and harvest so early. When stalks are very green, it's very slow harvesting, even though the seed is ripe to harvest and the moisture content of seed is okay."

"With PodGuard, we may be able to harvest other cereal or pulse crops while the canola is still standing there. I would be fairly assured that the IH 51 (RR) wouldn't shatter."

Due to their normal canola harvesting requirement, the Burdetts have previously windrowed barley to access good early malting prices. The ability to delay the canola harvest could allow the opportunity to direct harvest the barley.

STRENGTHENED PODS

The PodGuard technology, developed by life science company, Bayer, over almost a decade, is designed to strengthen canola pods as they ripen.

It strengthens the dehiscence zone, the seam that runs along the top and bottom of pods and which breaks down as plants reach maturity, effectively allowing later windrowing or direct harvesting and opportunity for higher yields through reduced harvest losses. The reduced seed loss at harvest also limits volunteer canola the following year.

For the 2016 season, George said they would plant one-third of their canola production area to IH 51 RR with PodGuard, one-third to the TT variety, Wahoo, and the remaining one-third to another RR variety.

"I have no hesitation recommending IH 51 (RR) to other farmers if they want to direct head, because of the experience we had with the wind damage on everything else, which showed we can make an extra 500 kg/ha," he said.

Independent analysis builds confidence in trials results

Bayer recently moved to improve the accuracy of its on-farm canola variety demonstrations for growers by entering into an alliance with Precision Agriculture to provide independent analysis of the company's new MySeed trials program.

Market Development Agronomist Jeremy White said the company was keen to work with growers to test new varieties in local conditions, however, compared with replicated trials, differences in performance can often be difficult to determine.

"Paddock variability, past practices and the difficulty in repeating treatments (or varieties) numerous times across a paddock often means that yield differences can be as much due to how the trial was set up as the varieties being tested," Jeremy said.

However, he said many growers had the ability to yield map paddocks, and, combined with Precision Agriculture's independent analysis, this would now offer the opportunity for highly accurate on-farm demonstration trials.

"The analysis will use past yield maps to select the best paddocks and parts of paddocks for trials, ensuring that differences between treatments are caused by the treatments, not the paddock," Jeremy said.

"At the end of the season, yield maps will be cleaned and analysed by Precision Agriculture, providing both the grower and Bayer the fairest comparison between varieties from their property.

"When these results are collated with others, we get a strong picture of how the Bayer varieties have performed against the competition in the field.

"The partnership between Bayer and Precision Agriculture means the result to growers will be as close as possible to a fair comparison between varieties in the paddock.

"This way, when growers purchase a bag of Bayer seed, they can have confidence that the variety has been independently tested in paddocks just like theirs," he said.

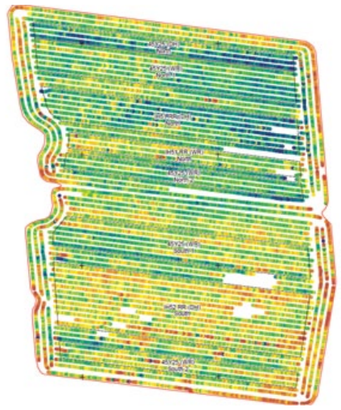
Precision Agriculture Ag Services General Manager Andrew Whitlock said the alliance with Bayer would significantly improve the professionalism of farm scale trials.

Andrew said historical yield data helped to determine areas of paddocks with consistent performance, while trials could deliberately be run through high and low production zones. Harvest yield results will then later be reconciled against maps to effectively extract accurate data.

"A lot of farm scale trials are done poorly, but if they can be designed properly and the data extracted after yield maps are cleaned properly, then you can better trust the results," Andrew said.

"Farmers can then look at a demonstration site and have confidence in the results. More confidence also means more value for all involved."

He welcomed the opportunity to work with Bayer and said the company's desire to conduct highly professional trials and, in turn, achieve quality data was most encouraging.



Using past yield maps, Bayer and Precision Agriculture can place trials in paddocks according to production zones, allowing the fairest comparison between varieties and treatments, which supports good grower confidence in the trial results.

Shatter reduction trait stands out in the field

Trials with more than 40 growers in eastern Australia are starting to show the real, in-field results of the PodGuard® shatter reduction trait in the Roundup Ready® hybrid canola variety, IH 51 RR.

The variety was placed in 15 trials, where it was alongside top performing varieties including 45Y25, GT-50 and IH 52 RR.

National Variety Trials have demonstrated that, in replicated trial work, these leading canola varieties are all ahead of IH 51 RR, however, in the field, the PodGuard trait has shown to greatly improve yield.

Trial locations ranged from the low rainfall Victorian Mallee through to higher rainfall areas such as North East Victoria and southern and central west New South Wales. Precision Agriculture independently analysed the trials, helping to form a highly dependable pictured of how the varieties performed.

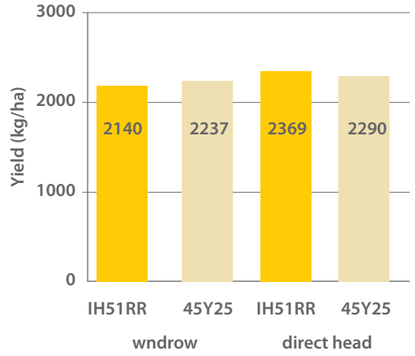
Bayer Market Development Agronomist Jeremy White said IH 51 RR was compared to 45Y25 in four demonstration trials that were direct harvested and four which were windrowed.

"When windrowed, IH 51 RR yielded only 4 per cent less than 45Y25, but when direct harvested, this switched to IH 51 RR being 3% ahead – a 7% yield turnaround," Jeremy said.

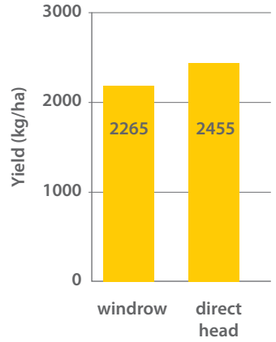
He said PodGuard could especially help growers with large windrowing operations, limiting the risk of significant shattering losses on the final paddocks, which could be well beyond the recommended 50% colour change timing.

"IH 51 RR can be used in this situation as the final paddock a grower windrows."

If growers were direct harvesting canola, Jeremy said IH 51 RR with PodGuard was a big winner.



IH51RR vs 45Y25 when windrowed



IH51RR yields windrow vs direct head

YIELD ADVANTAGE

"As the trials have demonstrated, IH 51 RR yields have been greater when direct harvesting compared with windrowing."

"This yield advantage with PodGuard in the paddock means growers can reduce their harvest risk without any penalty," Jeremy said.

Meanwhile, further trials at Longerenong in Victoria last season compared canola losses from shattering events between two PodGuard varieties and Hyola 404 RR.

The trials were harvested at three different timings and the PodGuard varieties achieved similar yields at each timing, whereas the Hyola 404 RR showed a significant yield reduction at the third harvest timing. This corresponded with periods of strong, hot northerly winds in November.

Similar results were reflected in trials conducted by the Department of Agriculture and Food, Western Australia, at Esperance last season, when one PodGuard variety was compared with three commercial varieties at three different harvest timings.

Like at Longerenong, the PodGuard line was the highest yielding and, over the course of the delayed harvesting, it showed considerably less seed loss than the commercial varieties.

Esperance experienced extreme weather conditions on November 17, when high temperatures and wind gusts caused catastrophic fires in the region, and the research indicated that, under these circumstances, some yield losses could be attributed to mechanisms other than shattering. In particular, all varieties lost whole pods.

FIND OUT MORE ABOUT PODGUARD

IH51RR against key competitors

Competitor Variety	Harvest	% Difference	No. Trials
45Y25	WR	-4%	4
45Y25	DH	3%	4
IH52RR	DH and WR	12%	5
V5002	WR	6%	1
43Y23	DH	-16%	1
GT50	WR	12%	2

IH52RR against key competitors

Competitor Variety	% Difference	No. Trials
45Y25	-3%	6
GT50	8%	2

Latest tools help SA growers keep pressure on grasses

Zack Zweck, Agronomist with AW Vater and Co at Kadina in SA, and Bayer Territory Sales Manager Graham Hatcher pictured sampling a wheat crop prior to harvest last season. Zack says growers who are getting a third cereal into their rotations, and who are now using Sakura pre-emergent herbicide, are getting lower grass weed populations.

EXTENDING cereal cropping rotations and adopting a new pre-emergent herbicide option in lentils, in conjunction with employing other management strategies, is set to further help South Australian growers to drive down grass weed numbers.

Zack Zweck, who has been working as an Agronomist on the Yorke Peninsula in the State for the past six years with AW Vater and Co at Kadina, said annual ryegrass control had proved difficult for growers, particularly in canola, which, consequently, had been removed from various cropping programs.

"The area has had a strong history of trifluralin (herbicide) use and there is now a high resistance level, and we don't have in-crop solutions," Zack said.

"However, growers who are getting a third cereal into their rotations, and who are now using Sakura® (Group K pre-emergent herbicide), are getting lower grass populations.

"Prior to Sakura, they were using Boxer Gold® for the length of residual (protection), then Sakura came in and has been used on the wheat, and they can use Treflan®/Avadex® Xtra for the third cereal.

"Sakura adds some flexibility for the spraying and sowing operations compared with Treflan, it has good effect with stubbles and its length of residual control far outweighs anything else, which was a real eye opener. Boxer Gold and Treflan/Avadex lasts for about six weeks, but then you can get another flush (of grass weeds)."

Zack said brome grass was also increasingly coming on the radar for growers and, fortunately, Sakura provided good suppression of this grass weed, whilst including Avadex Xtra in a mix with Sakura was suitable for paddocks with wild oats.

In encouraging growers to rotate their herbicides each season, he said they could use Sakura, then Boxer Gold and then Treflan/Avadex for consecutive cereal crops, or grow a legume crop in the third year of the rotation.

Zack and Graham inspect one of the lentil trials where Sakura herbicide was applied last season. Sakura has recently been registered for use in lentils.

Bayer Territory Sales Manager Graham Hatcher said to help ensure the longevity of the Group K herbicide for growers, they should use it no more than twice every four years in the same paddock.

Containing the active ingredient, pyroxasulfone, Sakura controls annual ryegrass, barley grass, silver grass, annual phalaris and toad rush and also suppresses certain grass weeds in wheat (not durum wheat), triticale, chickpeas, field peas and lupins.

LENTILS

It has also recently been registered for use in lentils, which is a major bonus for growers on Yorke Peninsula, one of the biggest lentil production areas in Australia.

Zack said over the last two years, lentils, which performed well on alkaline soils, had become one of the major crops grown. He estimated about 40 per cent of the peninsula's crop production was devoted to lentils. Graham said it amounted to about 85,000 hectares.

"Wheat-barley-lentils or wheat-wheat-lentils are popular rotations," Zack said.

In conjunction with Bayer, AW Vater and Co has coordinated fully replicated trials of Sakura in lentils over the past three years, with farmer demonstration trials also occurring the last two seasons.

> "Sakura adds some flexibility for the spraying and sowing operations compared with Treflan, it has good effect with stubbles and its length of residual control far outweighs anything else, which was a real eye opener. Boxer Gold and Treflan/Avadex lasts for about six weeks, but then you can get another flush (of grass weeds).
>
> **ZACK ZWECK,** AGRONOMIST, AV VATER AND CO, KADINA, SA

Zack said Sakura was compared with farmers' standard applications.

"By using Sakura in lentils to take out the early flush of grass weeds, Select® (post-emergent herbicide) will then work better and, importantly, it will be clean for the next crop."

He said growers could also include a triazine type broadleaf herbicide with Sakura, particularly since lentils offered poor early crop competition.

The trials are set to continue in the coming season.

Meanwhile, Zack said growers were also applying knockdown sprays in their programs and employing other integrated weed management (IWM) strategies in an effort to control grass weed populations.

"There is still a lot of hay grown and we are now seeing more wheaten hay. Hay was a way to get numbers down quickly – and we are fortunate to have exporters here and in the Mid North."

He said various growers also crop-topped to control weed escapes, used chaff carts and burned windrows after lentil crops.

FIND OUT MORE ABOUT SAKURA

SEED GRADING ADVANCES A BOOST FOR GROWERS

ADVANCES in seed grading technologies are significantly improving the quality of seed treatment applications for farmers.

Bayer recently held a training day with professional seed graders and engineers for staff of its SeedGrowth® business, updating them on the state-of the-art technology now used by the seed grading industry to help maximise seed performance.

Leon Edmonds, the founder of Edmonds Engineering, said the latest technologies had changed the face of seed treatment for farmers.

"It's changed the game dramatically. Previously, farmers were just doing it themselves and they weren't getting the right results, but precision equipment has since made a hell of a difference".

Bayer SeedGrowth Product Manager Andrew Gourlay said the event provided a valuable insight into the innovative advances being made across the industry and would assist the company to better support its customers.

UNDERSTANDING

"With a greater understanding of the technical aspects of operating a seed grader and applying a seed treatment, our team can provide a valuable support service to our mobile seed grading customers," Andrew said.

He said one of the highlights of the day was a tour of Edmonds Engineering, which specialised in the manufacturing of seed and grain processing and handling equipment.

The group also viewed McKinnon Seed Cleaning's equipment in action, processing cereal seed.

Rod McKinnon's CC24 mobile seed grader is a 24-tonne/hour Edmonds seed cleaner made in Ballarat, Victoria.

"It uses a NoroGard continuous flow seed treater, which we find to be very accurate, and it gives us good coverage," Rod said.

"It's a lot gentler on beans and peas. It's fairly user friendly and it also has the ability to apply more than one product on the seed."

Andrew said the improved understanding of the processes and requirements of professional seed treatment applicators would help Bayer to continue to provide innovative solutions to the seed treating industry.

WANT TO KNOW MORE ABOUT SEEDGROWTH SOLUTIONS

Strong establishment delivers in WA crop competition

THEY say two out of three ain't bad and this certainly rang true for the Bayer team participating in the DIRT to $ Cropping Challenge run by the Southern DIRT grower group in Western Australia's Great Southern region.

If not for unforeseen impacts on canola production in the second year of the competition, the team may have achieved a "three-peat".

The DIRT to $ Cropping Challenge pitted 10 teams against each other in a wheat-canola-barley rotation from 2013 and incorporated complete crop production management and grain marketing, inclusive of freight to the delivery point.

Yields and profits were calculated on the basis of a 50-hectare paddock to determine winners for most profitable crop, highest yield and overall cumulative total gross margin, with the results revealing that yield is not always "king"; instead, it is critical to focus on return per hectare.

The Bayer team, comprising Technical Advisor Craig White, Territory Manager Glen Bergersen, Bayer Seeds WA Market Development Agronomist David Peake and Kojonup grower David Robinson, achieved the best gross margin result in two out of the three years of the competition. Michael O'Dea, Emerald, also provided grain marketing advice for the first crop, while Keith Gundill, CSBP, offered nutritional advice.

CROP HEALTH

Craig said the team had focused on setting each crop up for strong establishment, maintaining health and growth throughout its life, drawing on local knowledge and, where possible, marketing it for best return.

"We had an integrated approach to crop production and always used the best available product for the job, whether that be from Bayer or another quality company. We looked for products with strong research, development and reputable backup behind them that provide strong return on investment," Craig said.

He said the team recognised the importance of keeping on top of cropping strategies, using correct products, local knowledge, effective marketing and sourcing the best available information to help achieve the best returns.

The team congratulated Kojonup Agricultural Supplies, a Bayer agency, on winning the overall cumulative total gross margin in the competition.

Craig said Bayer jumped at the opportunity to participate in the DIRT to $ Cropping Challenge.

"Bayer is a life science company that is committed to R&D, developing innovative product and service solutions and it promotes open innovation with others to, ultimately, enhance the lives of plants, animals and people."

"We valued being part of the cropping challenge and look forward to continue working with grower groups like Southern DIRT. We are currently working with them on herbicide resistance and have provided free herbicide resistance kits to Southern DIRT members."

Bayer has a strong history with WA grower groups, focusing on the use of its innovative products to achieve improved return on investment.

Southern DIRT's new Chief Executive Officer, Tracey Hodgkins, who has a strong background in research and development in the education industry and with not-for-profit organisations, said the cropping challenge had galvanised the local community.

"It has really brought the community together, allowed for exchange of ideas and built knowledge and trust – and that's the core of what the challenge is about," said Tracey, who is passionate about innovation.

"Learning more about the supply chain right through to selling and benchmarking against others has also been highly valuable."

She said while the cropping challenge was not running this year, it would be relaunched in spring with an expanded format from 2017 involving 15-20 teams, including from universities.

Southern DIRT's growing strength has resulted in the appointment of full-time and part-time staff and Tracey said the group would continue to forge symbiotic relationships with other farming groups, researchers and agricultural companies, including Bayer, to help build knowledge.

"Increased product development and innovation can only help farmers and this is where we see a good fit with Bayer," she said.

The competing Bayer team in the Dirt to $ Cropping Challenge coordinated by the Southern DIRT grower group in WA's Great Southern, including Craig White, David Peake and Glen Bergersen (right) with Kojonup grower David Robinson.

	2013 WHEAT	2014 CANOLA	2015 BARLEY
Growing season rainfall	*509 mm*	*469 mm*	*391 mm*
Bayer yield	4.1 t/ha	2.13 t/ha	3.45 t/ha
Teams yield range	2.71-4.1 t/ha	1.79-3.31 t/ha	1.97-3.72 t/ha
Bayer investment	$505/ha	$501/ha	$479/ha
Teams investment range	$328-$530/ha	$374-$726/ha	$362-$687/ha
Bayer Gross Margin	$645/ha	$427/ha	$235/ha
Teams Gross Margin range	$360-$645/ha	$358-$962/ha	$162-$235/ha

Managing weeds, seed banks a challenge in double crop areas

WHEN you are in a high rainfall, mixed farming area where growers may like to keep their rotation options open and crop spray timings can be influenced by the availability of contractors, weeds and weed seed banks can become harder to manage.

Additionally, when you are in a winter and summer cropping region that can rule out the use of some herbicides due to plantback restrictions, the problem can be exacerbated.

At Inverell in New South Wales, Landmark Agronomist Rachael O'Neill said farmers can face a smorgasbord of broadleaf weeds. The long list includes variegated thistle, saffron thistle, sowthistle, St Barnaby's thistle, black bindweed (climbing buckwheat), deadnettle, turnip weed, wireweed, wild radish, corn gromwell, fumitory and some other brassica weeds. Of course, there are also plenty of grass and summer crop weeds to contend with.

Rachael, who is heading into her ninth season with Landmark and was previously Farm Supervisor at Rangers Valley Feedlot after working in the cotton industry at Moree, said local weed seed bank loads were high in many situations.

"We can get wild radish late and then it's not controlled in an early-sown summer crop such as sunflowers and sorghum, and then it sets seed. We can then have a radish problem for up to the next 10 years," Rachael said.

"We haven't got any confirmed resistance (to herbicides) with broadleaf weeds, but we are not achieving 100% kill with existing chemistry."

She said in recent years, use of the post-emergent herbicide, Velocity® from Bayer, had provided improved control of a wider spectrum of weeds and harder-to-kill weeds, although plantback periods still dictated its use.

DOUBLE CROPPING

"If growers are going back into cereals, plantbacks aren't a problem, but they are if the plan is to double crop broadleaf crops like sunflowers, mungbeans and soybeans. Rotating to oats, maize or sorghum out of wheat or barley is not a problem. There is not a lot of double cropping to sorghum, but if the opportunity comes along – as it did with one grower, it can be done."

Rachael said most growers in the area preferred to apply one broadleaf spray around early tillering.

"The general plan is a grass spray first, possibly with some fungicide, and then they do a broadleaf spray about 10 days later. There's also no problems mixing fungicides with Velocity – and it has been safe on crops."

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

"Most growers apply it with about 80 L/ha of water for good coverage, mostly with air induction nozzles, but also flat fan nozzles. It has also been most effective when applied with maximum daylight hours," Rachael said.

"One grower had a situation with corn gromwell, where he had previously used Ally® and Tordon® 242, which wasn't effective. Velocity was a perfect fit because it controlled the corn gromwell and all the other weeds. Bindweed was there like the hairs on a cat's back, plus a bit of deadnettle, but we knew we had to control the corn gromwell – if it sets seed, you'll have problems. The grower was happy to use Velocity and in two days the bindweed was fried. It absolutely nailed it. He also mixed a bit of Axial® in it for random black oats.

"It's cleaned the corn gromwell up and he has since been able to rotate to other crops and achieve good production. After two years with Velocity, you can hardly find a weed. Corn gromwell is a difficult-to-control weed due to limited herbicide control options. Velocity absolutely killed it."

Rachael also highlighted the cost-effectiveness of using Velocity post-emergent herbicide compared with alternatives.

"MCPA LVE with Hotshot® is $23/ha to pick up the bindweed, whereas 500 mL/ha of Velocity with Hasten® is $20/ha."

She said, in most cases, the 670 mL/ha rate for Velocity had not been required in the area.

> "One grower had a situation with corn gromwell, After two years with Velocity, you can hardly find a weed. Corn gromwell is a difficult-to-control weed due to limited herbicide control options. Velocity absolutely killed it.'
>
> **RACHAEL O'NEILL,** AGRONOMIST, LANDMARK, INVERELL, NSW

Bayer Territory Sales Manager Scott Ariell and Rachael O'Neill, Agronomist with Landmark at Inverell in NSW, pictured discussing the broad weed spectrum controlled by the post-emergent herbicide, Velocity, and its application requirements.

FIND OUT MORE ABOUT VELOCITY

Growers on a winner with **new canola disease tool**

> “It’s important to be proactive, not reactive, and that’s what the tool is doing. While they’re sitting in the cab or doing something else, growers can look up the Prosaro Scale online and know that they’re making their blackleg management decisions based on the best information available.
>
> **RICK HORBURY**, BAYER WA TECHNICAL ADVISOR

A new online tool praised by growers and advisers for helping to better manage fungal disease in canola is set to offer further benefits in the coming season.

The Prosaro Scale

Rick Horbury, Technical Advisor with Bayer in Western Australia, says the Prosaro Scale assists growers and advisors to make more astute, strategic decisions on applying Prosaro fungicide.

THE Prosaro Scale, from Bayer, is based on the Blackleg Sporacle model developed from research by the Department of Agriculture and Food Western Australia (DAFWA), in conjunction with the Grains Research and Development Corporation (GRDC).

The model uses daily weather data and future weather scenarios to predict the likely commencement of blackleg infection in canola, allowing growers to make effective decisions, such as the tactical use of foliar fungicide, to help minimise risk of yield loss.

A simple postcode input returns a predicted ascospore maturation risk rating for blackleg. Each postcode is aligned to a weather station in the area and there is data for more than 800 postcode locations.

The Prosaro Scale provides an alert level (colour code) depending on the likelihood of blackleg spore showers commencing from previous seasons’ canola stubble. Yellow indicates a low probability, orange indicates medium and red indicates high; hence infection risk is high if canola is at a susceptible stage.

During the coming season, the new online tool will also help predict sclerotinia infection in canola.

Clemens Gschwandtner, Broadacre Fungicides, Rice and Biologics Product Manager with Bayer, said sclerotinia stem rot was an increasing threat to canola production and growers, advisors and researchers were seeking simple disease models to help guide fungicide spraying decisions.

For sclerotinia, the Prosaro Scale will provide a disease incidence warning, supported by a graph indicating the infection levels for the previous seven days. A red line in the graph indicates the threshold of when the model assumes that sclerotinia infection occurs.

The length of the canola rotation determines the infection threshold. As with the blackleg model, the colours on the scale represent the potential risk of infection. Once the scale is showing red, conditions conducive for a potential sclerotinia stem infection have occurred.

Clemens said the model determined conditions conducive to petal and stem infection based on hourly relative humidity and temperature measurements. The results are then summed to determine if infection thresholds have been exceeded for the previous 24-hour period.

Bayer WA Technical Advisor Rick Horbury said the Prosaro Scale assisted growers and advisors to make more astute, strategic decisions on applying Prosaro© fungicide.

“A grower can make a decision, based on the risk category indicated, that they should be spraying now, delaying an extra few days or perhaps not spraying at all,” Rick said.

“It’s important to be proactive, not reactive, and that’s what the tool is doing. While they’re sitting in the cab or doing something else, growers can look up the Prosaro Scale online and know that they’re making their blackleg management decisions based on the best information available.

“Getting a spray application done in a timely manner because the risk’s high, shows how this tool can be used to guide such important decisions.”

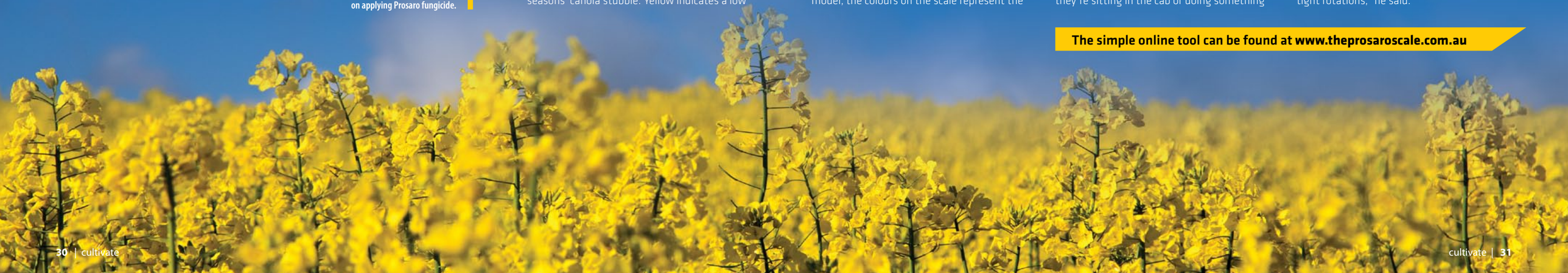
He said it was invaluable for all stakeholders, including agricultural consultants.

“It’s definitely of use to advisors because growers are always time-poor, so they can use the tool to help farmers identify the risk of a blackleg spore shower and guide them through the best management strategy.”

Rick said it was also important to be proactive and spray early against sclerotinia.

“Being reactive, you can often already have forgone 10 or 20 per cent of yield potential in endemic paddocks with high risk factors or tight rotations,” he said.

The simple online tool can be found at www.theprosaroscale.com.au



Managing diseases made easier with Prosaro® Scale

Courtney Piesse, Senior Agronomist with Elders in Western Australia's Great Southern region, says the new tool is a boon for advisors and farmers.

MANAGING canola diseases in Western Australia's Great Southern region is a major challenge, however it was made significantly easier last season with the launch of the Prosaro Scale online tool.

Courtney Piesse, Senior Agronomist with Elders in the region, said the new tool from Bayer was a boon for advisors and farmers, who used it to predict when crops were most at risk of a blackleg spore shower.

"With the rotations we run here, the pressure tends to come on for blackleg, and later in the season sclerotinia, and then you can also throw in other diseases like damping off and alternaria, but the two big ones are blackleg and sclerotinia by a long shot," Courtney said.

"In the last few years, especially in the south of the State, sclerotinia has shown to be pretty devastating, with a lot of crop lodging occurring. Then also blackleg, if left unchecked with poorer varieties, can potentially be pretty damaging as well.

"With the Prosaro Scale, you can go onto the website, put your postcode in and press submit. Then the scale will tell you the risk of a spore shower at that time.

"The results indicate to growers if their canola is more or less susceptible at that time to blackleg, and from there they can make more informed control decisions."

Courtney said it could be especially useful for growers with blocks of land across districts, where they could put different postcodes in and potentially get significantly different responses.

He advised growers to use the Prosaro Scale regularly when canola crops were at risk of blackleg infection.

"If I was a grower, I'd be using it fairly consistently as the weather changes, because the model has an assumption of four millimetres per week of rain built in to it. So if you've had more rain than that, you may need to adjust your strategy."

"I would look at it early in the season, right up until the time your canola is technically safe from blackleg – so after the 6-8 leaf stage. Anything up until that point, I'd be looking at it once a week, especially as it takes less than five minutes.

"I think using the Prosaro Scale is all about being more efficient and understanding if you have a high risk in a particular year. For example, a grower could cover themselves by doing half their program early on with Prosaro, instead of coming back later in the year and saying, 'gee, I wish I'd done that'. Basically, it's about being proactive instead of managing retrospectively."

Courtney said agronomists and consultants could also benefit from using the Prosaro Scale and improving their decision-making.

"There's definitely a fit for me as an agronomist for just keeping an eye on blackleg, because I'm monitoring a wide range of issues at any one time. If you can use this to make it a lot easier, at least to keep tabs on one disease across a large area, I think that's fantastic."

"More broadly, I think it's vital that we start looking at this kind of risk management, because on-farm gross margins are coming down. We really need to make sure we're good at every aspect, so if this adds another string to the bow and makes for better risk management in our canola phase, potentially it's going to be more profitable," he said.

New Zealanders break world barley record

NEW Zealand growers Warren and Joy Darling were thrown into the international spotlight last year after producing a world record barley crop yielding an astounding 13.8 t/ha.

The Darlings run a total cropping enterprise on their 450 ha property, 'Poplar Grove', at Timaru, in the South Canterbury region.

Warren and Joy grow three crops on the farm, including oilseed rape, wheat and barley on a three year rotation.

The property's annual rainfall is 600-650 mm and the average yields are a healthy 11.5 t/ha for barley, 12.5 t/ha for wheat and 6 t/ha for oilseed rape.

After achieving yields of 11.5 t/ha in consecutive seasons, Warren said he began wondering if there was a world record held for barley.

"We found out the record was 12.2 t/ha held in Scotland by Gordon Rennie since 1989," Warren said.

"We thought, with better management and some help from our team, we could beat it. So we decided to go for it."

The Darlings use minimum tillage practices, which they introduced on their property about 10 years ago, and Warren said he believed it played a big role in their success.

A key team of businesses also offered their services to help the Darling's world record attempt, the majority of which they had been working with for years. They included Bayer, CLAAS, Agronomy Solutions, Power Farming, Rabobank, Canterbury Seed and Balance Agri-Nutrient.

Warren said once they had contacted Guinness to find out the necessary steps involved with a world record attempt, they sowed 130 ha of a new barley variety, 776, bred by Blackman Agriculture.

The crop was sown using a Versatile Delta Track towing a Great Plains Simba SL500 cultivator and Great Plains Simba Centurion drill.

Warren said they were fortunate enough to have a fantastic season to help them across the line.

"The season evolved in front of us and everything fell into place."

"Through the growing season, the spring and early summer, the crop looked outstanding, so I had a feeling it would do well.

"We had yield assessments done about two weeks out from harvest and from those results, we knew we were on track."

The barley crop was given the Darling's standard program of inputs, with fertiliser applied at variable rate, equating to 22 kg of nitrogen per tonne of grain produced, which is on the lower scale by New Zealand standards.

Warren said after plant testing was carried out, the crop was topped-up with an application of micro nutrients and was also given a small amount of irrigation.

> There were no secret recipes or anything like that. Just good advice during the season from all the companies involved, combined with a good season.
>
> **WARREN DARLING,**
> TIMARU, NEW ZEALAND

Bayer Territory Sales Manager David Weith, Seed Treatment Specialist Colin Dunstan, world record barley growers Joy and Warren Darling, and Managing Director and Head of Bayer in New Zealand, Holger Detje.

He said they worked closely with local Bayer Territory Sales Manager David Weith to manage their seed treatment, weed and disease control program.

The crop was treated with a standard fungicide program and broadspectrum herbicide management, targeting the usual broadleaf weeds and insects.

Their Bayer program included products such as Aviator® Xpro fungicide, which is due for registration in Australia next year, seed treatments such as Raxil® and Hussar® herbicide.

"There were no secret recipes or anything like that. Just good advice during the season from all the companies involved, combined with a good season," Warren said.

"We worked closely with David Weith and we also used an independent agronomist, so all the advice was put on the table and we went through it all and took the best advice and went with it."

The crop was harvested using a CLAAS Lexion 770 combine mounted with a 9.1-metre (30-foot) MacDon FD75 FlexDraper header, and the record was officially ratified by Guinness.

INTERNATIONAL INTEREST

Warren said the spotlight had since been shining bright on him and Joy, with plenty of interest from farmers on an international scale keen to know how they managed to produce a world record barley crop.

"We've had contact from people from various countries around the world wanting an insight into what went into it and how we achieved the record."

"It's also created quite a lot of interest amongst our farming colleagues here in New Zealand.

"I think it's only a matter of time before the record is broken, and our northern hemisphere counterparts in Europe are keen to take it back again. Especially as there's some juggling going on with wheat records. We did hold the yield record here in New Zealand, but it's now gone back to the UK.

"I think it's got people thinking, so there'll be more people trying to have a crack at beating it.

"Down the track, with new plant varieties coming out, it's just a matter of time really."

So what's next for New Zealand's world record holders?

It's very much back to business as usual for Warren and Joy, although the phone does ring a lot more than it used to.

Helping grower groups **remain at cutting edge**

KEEPING grower groups at the cutting edge of innovations and solutions to farming challenges is a key driver of the Bayer trials program.

The company sponsors and supports various leading grower groups across the country.

Bayer CropScience Victorian Technical Advisor Angus Calder said the company worked closely with groups both to assist the formation of their trials programs and also to conduct Bayer product trials, which can include its crop protection products as well as seeds and crop traits.

"This collaboration provides valuable feedback on the big issues in different areas and we can then look at trials that best assist the industry in those regions," Angus said.

Bayer has also offered herbicide resistance testing to grower groups to help them better determine the issues they may be facing in their areas.

"Grower groups can also take confidence in the fact that their staff are trained on some of the latest products and innovations, which can then filter out to their members," Angus said.

"Ultimately, it's about the industry being aware of the latest innovations and solutions and understanding how best to implement or apply them."

Major field days held by the groups are also particularly valuable for engaging with growers' agronomists and advisors.

Angus said one of the highlights of Bayer's trials in the upcoming season would be the performance of the new foliar fungicide, Aviator Xpro, which is pending registration.

He said Aviator Xpro would be the first post-emergent fungicide in Australian cropping to contain the SDHI mode of action and would offer improved control of blackleg in canola, net blotches in barley and septoria tritici and yellow leaf spot in wheat. It will also be registered for various diseases in lentils, chickpeas, faba beans and field peas.

"It's a step up over what is currently available. The two complementary modes of action/active ingredients mean it is very effective against some key diseases."

Angus said the harvest management benefits for farmers from growing canola with the new PodGuard trait, which reduces pod shattering, would also be demonstrated.

Northern WA wheatbelt bracing for powdery mildew

> With Prosaro, we noticed the difference in 10 days. The disease levels dropped off. It cleaned up the plants really well and the crops got away again. Prosaro is that much better than all the rest of them.
>
> **ROB KITTO,** MULLEWA, WA

THE northern wheatbelt cropping industry is bracing itself for another powdery mildew challenge this season after the disease devastated some crops in the region last year.

Local Landmark agronomist Grant Thompson said over the past 20 years, he had never seen the disease so widespread.

"You can generally get it in a couple of varieties and closer to the coast, where there are humid canopies, but last year it was very widespread," Grant said.

"It rained, then it was dry for a period and this dulled the disease, and then it rained again and there was head infection. There was a lot of white powder coming off crops at harvest.

"In hindsight, one spray was not enough. We could have done two to three spray strategies."

He said there was strong potential for widespread powdery mildew again this year.

"It's a stubble borne disease, so there is a large portion of the northern agricultural region that has powdery mildew fruiting bodies attached to stubbles."

Rob Kitto, who farms on the Casuarina Sandplain south-west of Mullewa, was one grower who was "caught by surprise" with the disease last season.

Rob and his wife, Tanya, who have four children, Jemma (16), Ebony (15), Maddison (13) and Thomas (12), operate a continuous cropping program of wheat (4000 hectares), lupins (3500 ha) and canola (500 ha) at their 'Erangy Spring Farm' property.

"We normally get a bit of powdery mildew, but it's not much of an issue because the weather usually works in our favour," Rob said.

"Last year though, it went super-sized. We were finding it in crops before the good winter rain, then June was warm and dry and we were still finding it, but thought we would be okay. Then it rained and it infected everything – and it was hard to keep on top of."

He said they firstly applied Folicur® fungicide over everything, however it did not perform well and so they then turned to the broadspectrum triazole fungicide, Prosaro® 420 SC from Bayer, for the worst affected crops.

"With Folicur, people were not seeing any difference after 10 days, but with Prosaro, we noticed the difference in 10 days. The disease levels dropped off. It cleaned up the plants really well and the crops got away again."

"Prosaro is that much better than all the rest of them. You are better off doing it and doing it well."

The Bayer fungicide was applied at the label rate with 100 L/ha of water.

The disease, combined with the dry finish and frost events, had quite an impact on crops.

"Some parts of crops that were not frosted or affected by the disease yielded 3.5-4 t/ha, but other areas were down to zero," Rob said.

"We were looking at an average 2.6-2.8 t/ha wheat crop. When it comes in at about 1 t/ha less, it's pretty disappointing."

He said there had been some rain in the region and some volunteer cereals, so careful monitoring would be required for the coming season.

"At least now, we have a better understanding of what we are dealing with."

"We will run the liquid kit on the seeder bar with a suitable fungicide and that should get us through to flag leaf. At $4/ha, you just have to put it on. We will also monitor the pressure a lot more. We will be proactive – and you need to have chemical on-hand. You need to get onto it early."

Grant said most farmers who applied Prosaro achieved better control than those using other triazole fungicides.

"It's $10/ha compared with $2-$4/ha, but the better quality product did a better job than cheaper triazoles," he said.

Bayer Territory Sales Manager Ian Cook, Landmark Agronomist Grant Thompson and WA grower Rob Kitto, Mullewa, pictured at harvest discussing the benefits of using Prosaro fungicide to help combat powdery mildew disease.

FIND OUT MORE ABOUT PROSARO

DEVELOPING RESOURCE
A POWERFUL IWM TOOL

Jon Bennett, a member of Bayer's national IWM focus group and a Territory Sales Manager in New South Wales, says successful IWM requires the development of long-term strategies and consideration of all available options or techniques to help reduce weeds' ability to become tolerant of existing practices.

INTEGRATED Weed Management (IWM) is a fancy term that largely means controlling weeds for the long term and sourcing all available information and tools to help achieve it, ultimately ensuring sustainable agricultural production and global food security into the future.

That's the view of Australian Leader for IWM with Bayer, Craig White, who is championing the development of a multi-faceted resource base for the industry, linking local and global information for the benefit of agriculture and food production.

"Weed control, including of herbicide-resistant weeds, is an ongoing global challenge and a threat to food production," Craig said.

"Australia experienced herbicide resistance early, so we are advanced in our knowledge and development of integrated weed control strategies, but we can still draw on information from around the world."

He said connecting the best local and global weed control information, whether that be from Bayer or other sources, to aid improved long-term weed control for the industry was a key aim – and it is available through the company's IWM website in Australia, **www.diversitycantwait.com.au**

"We see the need to strive to bring all solutions together for effective, long-term weed control and the website is a key vehicle to link the best information together for growers and the industry," Craig said.

To assist future weed control, the website also offers a powerful mapping tool developed specifically for the Australian industry that tracks the development of herbicide resistance across the country, as well as a mode of action tool.

The maps were created using 20 years of data from herbicide resistance testing laboratories at Charles Sturt University in New South Wales and Plant Science Consulting in South Australia.

Craig said the maps helped to identify which herbicide options could still be effective for growers and advisors, and, in turn, could result in considerable savings.

"I believe there are still great opportunities for growers to enhance their weed control in various areas and the mapping tool can help determine these," he said.

Bayer also offers weed seed resistance test kits through its territory sales managers and technical advisors to help growers effectively identify their herbicide resistance status.

The mode of action tool on the website compares existing herbicides by registered name and chemistry to confirm whether growers are actually changing chemistry when they rotate their products.

Meanwhile, a national IWM focus group has also been established by Bayer, drawing on expertise from North Queensland right around to Western Australia. Focus group members are actively developing relationships with universities and institutes and can be contacted by growers and advisors.

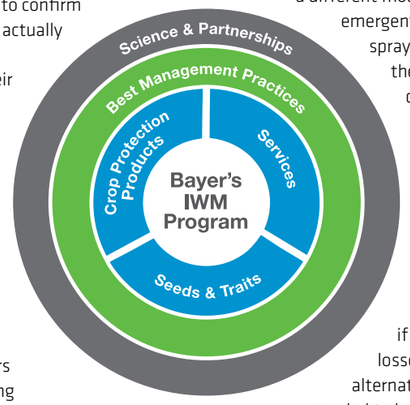
Jon Bennett, a member of the focus group and a Territory Sales Manager with Bayer in New South Wales, said successful IWM required the development of long-term strategies and consideration of all available options or techniques to help reduce weeds' ability to become tolerant of existing practices.

"In NSW, some early options have included growing hybrid canola varieties and encouraging early season crop vigour and bigger crop canopies quicker to help reduce the reliance on herbicides," Jon said.

"There has also been a focus on using pre-emergent herbicides in conjunction with good, early crop establishment.

PRE-EMERGENT

"We are not as advanced as WA with weed seed management, but growers are also windrow burning and ensuring they do it right for the best result, and they are using multiple modes of action. Whereas in previous years they were just relying on post-emergent herbicides, they are now spraying pre-emergent and going with a different mode of action post-emergent. The pre-emergent spray is helping to get the weed numbers down and then they are coming back with a strategic post-emergent application."



He said growers well recognised that farming was their livelihoods and if they were getting losses in production, alternatives and diversity needed to be considered – of course whilst also making a profit.

"A lot of IWM doesn't have to cost growers. It can be about sowing at the optimum time and at the optimum rate and understanding paddocks and weed populations, so they can make decisions based on that information and with consideration of the environmental impact."

"They are also aware of the growing world population and demand for food, and are keen for Australia to maintain its clean and green image and reputation as a producer of highly sought-after products," Jon said.

WANT TO KNOW MORE ABOUT WEED RESISTANCE TO HERBICIDES IN AUSTRALIA

Bayer's global IWM program has four main "pillars", including:

- **Integrated weed control solutions** – innovative crop protection products, high quality seeds and crop traits, as well as tailored services such as agronomic support, weed identification systems, field demonstration trials, diagnostics, prediction tools and documentation aids.
- **Best management practices** – mechanical and cultural control techniques such as good agronomy and competitive crops.
- **Science and partnerships** – including the Herbicide Innovation Partnership (HIP) with the Grains Research and Development Corporation (GRDC) and working with WeedSmart, the industry-led initiative focused on enhancing on-farm practices and promoting sustainable herbicide use. Bayer's Weed Resistance Competence Centre (WRCC) in Germany, which is engaged in understanding resistance mechanisms, testing and developing new concepts and tools to manage resistant weeds, also collaborates with a number of scientific bodies like the Australian Herbicide Resistance Initiative (AHRI) and the Australian Research Council (ARC).
- **Holistic approach** – involving a combination of all elements to provide the best long-term control of weeds, as well as cooperating with external partners and sharing knowledge with the global agricultural community.

NEW MOVES AGAINST BLACK OATS KEEP ODDS IN GROWERS' FAVOUR

COMBATING black oats has been a constant chess game for northern New South Wales and southern Queensland croppers, however, some new moves in recent times, including using different chemistry groups of knockdown and residual herbicides, are at least keeping the odds in growers' favour.

Tony Lockrey, Consulting Agronomist at Moree with AMPS Agribusiness, which strongly invests in independent production research in the region, has been dealing with increasing Group A fop resistant black oats in the district for the last 10 years.

Tony said the use of Group A herbicides had been widespread within the popular wheat-chickpea rotation in the region.

"Products that were the safest on the crop, cheapest and most active have been pushed hard and are now less effective," Tony said.

"Group A resistant black oats forced consultants and growers to look to new modes of action and herbicide groups for knockdown control in crop, as well as revisiting some of the residual treatments that had been neglected due to the adoption of zero tillage.

"Growers have since been using Atlantis® and, to a lesser extent, Hussar® and Crusader® herbicides and growing more Clearfield® wheat and barley in their systems. After 10 years, some of the earliest farms that converted to Clearfield crops are now finding IMI-resistant phalaris. This highlights the need to rotate modes of action and herbicide groupings to prolong the life of our existing chemistry. Integrated weed management is a must."

He said the only way to sustainably tackle the weed resistance problem was to assess the whole farming system, including crop choice and rotation sequence, to maintain profitable cropping whilst not letting any seedset occur.

"Every lever we can pull to attain this outcome is explored. This has and will include knockdown and residual chemistry, agronomic, genetic, cultural and mechanical solutions where needed."

Tony said while wheat was the traditional mainstay in crop rotations and pulses, oilseeds and summer crops were used to manage key diseases such as crown rot and nematodes, rotation plans must also work to provide the best possible control of problem weeds and prevent their seedset for a minimum of three years, helping to relieve pressure on systems.

Bayer Territory Sales Manager Scott Ariell and Tony Lockrey, Consulting Agronomist at Moree with AMPS Agribusiness, pictured going through some of the company's research plans for the coming season at the Moree store.

"We take stopping seedset so seriously that we will spray out wheat pre-harvest with glyphosate to stop viable seedset by late germinating black oats, or even slash or plough down problem patches that have escaped control. Unfortunately, weed seed destructors and windrow burning are less effective on black oats than ryegrass, as early germinated plants have often dropped their seed prior to harvest. Baling crop areas for stockfeed is another alternative to stop seedset."

He said the use of Group B selective herbicides in wheat, particularly Atlantis, was picking up black oats that emerged in crops when used correctly.

Reinforcing the notion of wearing out products that are cheaper, soft on crops and easier to use, Tony cautioned that Atlantis must be used in the right situation at the right time – then it was very effective.

"It is critical that both the crop and weeds targeted are at the right growth stage and in good condition. Get that right and the Atlantis control can be very good, even on high weed populations," he said.

"Be very careful to avoid spraying stressed weeds and crop, particularly frost stress that is recent or imminent, as weed control results may disappoint and transient crop checking may occur."

Tony recommended using water rates of around 100 L/ha and twin tip nozzles for good coverage of the target, as well as using oil, rather than wetter, with Atlantis.

"While oil may cause some slight spotting on the crop, I think it gives the optimum job."

"Always use the full rate in good conditions and the results will follow."

In terms of residual chemistry, he said in some cases farmers had returned to applying Treflan® with Avadex® Xtra prior to sowing, hoping to reduce in-crop weed pressures, but their re-adoption was not widespread due to poor performance and incompatibility with the zero tillage/minimum tillage system.

"FANTASTIC BREW"

Tony said use of the newer Group K pre-emergent herbicide, Sakura® 850 WG from Bayer, with Avadex Xtra on a ryegrass area in wheat had been a "fantastic brew" and, in combination with a follow-up Atlantis spray in crop, a fallow and a dryland cotton crop, the paddock had since cleaned up extremely well.

"The field treated had 90-100 ryegrass plants per square metre, with multiple herbicide resistance the previous year in Clearfield canola, as well as black oats and some scattered barley grass in the headlands," he said.

"While it was a risk to take it to wheat, the stubble cover was required to fallow out to the following cotton crop, so it was decided to tackle the weed burden head-on with well incorporated residual herbicides, as well as the strategic in-crop selective."

The field was planted to a short season wheat after the initial ryegrass emergence had been double knocked.

In addition to suppressing black oats and great brome, Sakura, which contains the active ingredient, pyroxasulfone, controls annual ryegrass, barley grass, silver grass, annual phalaris and toad rush in wheat (not durum wheat), triticale, chickpeas, field peas, lupins and lentils.

Tony said the new label additions for Sakura made it a "standout candidate" among the soil-applied residuals to investigate and use well in systems.

"There is a lot of room for growth with Sakura because we are not using residuals very much and we need to be exploring every possibility to limit the number of grass weeds emerging in crops – as a starting point to eliminating seedset," Tony said.

"Sakura is taking 50-80% of black oats out in trials and upwards of 80% of ryegrass. It must be used wisely in the rotation however, as it should not be used more than twice every four years."

He said Sakura was more robust in a variety of conditions, particularly more stable than other residuals in dry conditions following planting, which often occurred.

FIND OUT MORE ABOUT SAKURA

FIND OUT MORE ABOUT ATLANTIS

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