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Pre-sowing edition 2018

We/come

to an all-new issue of cultivate



As a global, innovation-driven life sciences company, Bayer strives to help growers and advisers make better decisions for a sustainable future. With Cultivate, we bring together and share insights and successes around some of today's major farming hurdles, as well as new technologies, applications and knowledge that can enable better on-farm decisions and positive outcomes.

In this vein, this latest edition of Cultivate continues to look at how growers are managing weeds and herbicide resistance, one of the biggest threats to agricultural production both here in Australia and globally. Supporting this is an insight into some of the latest trials with pre-emergent herbicide applications.

We also feature research on postemergent crop protection applications, as well as the performance of a new fungicide in chickpeas, and we take a look at where the industry sits as we aim to control Russian wheat aphid in Australia.

We are also all aware that digital farming is fast becoming the next revolution in agriculture and this edition gives readers a preview at what Bayer has been up to on that front in Germany.

The team at Bayer wishes all farmers good planning and preparations, and an encouraging start to the 2018 season.

Tobias Marchand, Managing Director



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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.

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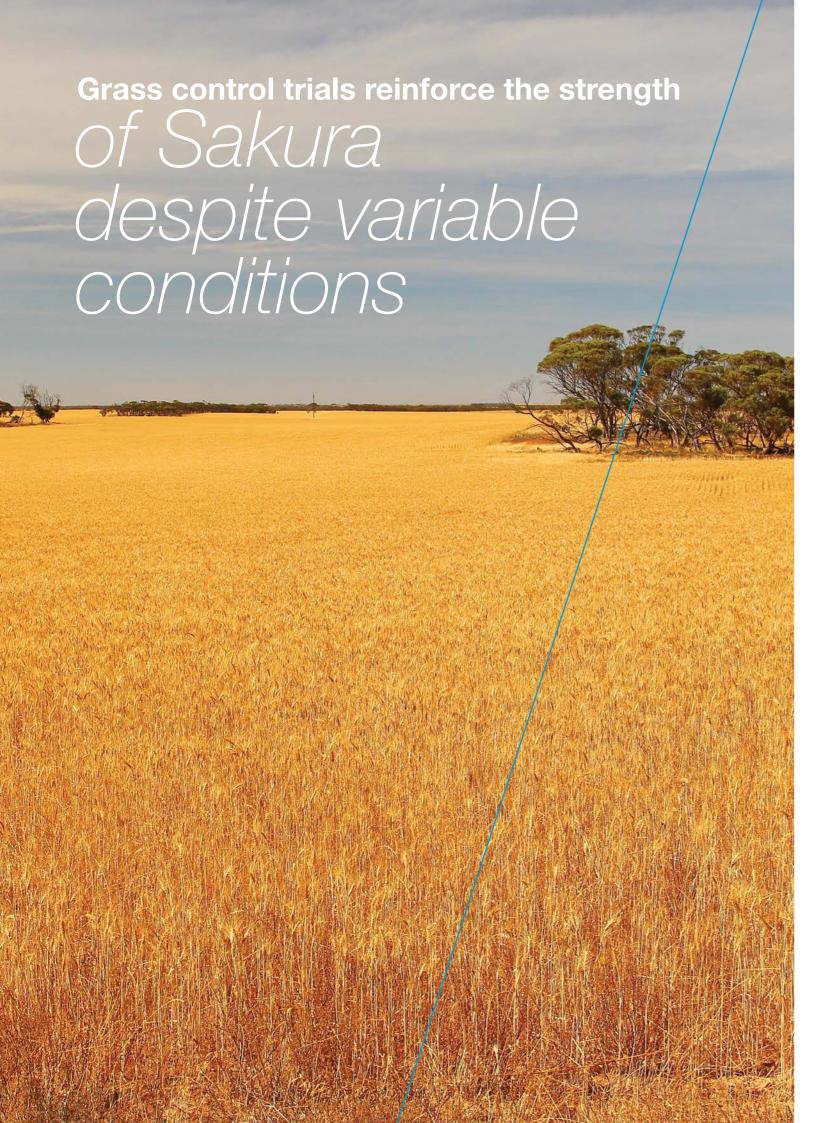
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Collaborative pre-emergent herbicide trials in Western Australia last season continued to reinforce the strong performance of Sakura® herbicide for controlling annual ryegrass and, importantly, minimising weed seeds entering the weed seed bank.

Collaborative industry partners conducted trials in wheat for the Liebe Group on the Dodd family's property near Buntine and the Mingenew Irwin Group (MIG) on the Dempster family's farm near Arrino. The sites experienced variable seasonal conditions, with significant rainfall and crop germination not occurring until July after sowing in May at Buntine, while the Arrino site recorded a more normal season.

The trials, which received an upfront knockdown herbicide, investigated annual ryegrass control during the season, with final panicle counts conducted in October, as well as yields and return on investment (ROI) from the different pre-emergent applications.

The ROI calculations also took into account reduced pricing for some of the products used in the trial, including Boxer Gold® and Arcade®, leading into the 2018 season, however Sakura, in addition to improving weed control and yield, still showed better results.

At Buntine, Sakura reduced annual ryegrass panicle numbers from 765 per square metre in untreated plots to 176/m², providing 77% control and an ROI of \$48/ha. Application of Arcade® at 2.5 L/ha with trifluralin at 2 L/ha achieved only about 57% control for an ROI of \$19/ha. Sakura, together with trifluralin at 1.5 L/ha, achieved up to 81% control of annual ryegrass and recorded the highest level of brome grass suppression in the trial, resulting in an ROI of \$30/ha.

In the tough conditions at Buntine, just 100 kg/ha extra yield amounted to about an extra \$25/ha return.

Sakura, incorporated by sowing, even achieved similar weed control, yield and ROI to IBS application of trifluralin at 2 L/ha followed by post-emergent application of Boxer Gold at 2.5 L/ha in August. Small weeds, no stubble

to intercept application, moist soil and follow-up rainfall provided ideal conditions for the post-emergent treatment at Buntine. However, the same treatment (trifluralin followed by Boxer Gold) in drier conditions at Arrino was not so successful, with control of only 55%, similar to IBS application of trifluralin at 2 L/ha plus Avadex Xtra at 2 L/ha, and an ROI of only \$21/ha.

At Arrino, treatments that included Sakura achieved 71-78% control of of annual ryegrass, while all other treatments provided only 40-55% control.

Trifluralin (IBS) at 2 L/ha produced a yield of 1.7 t/ha for an ROI of \$24/ha, whereas Sakura achieved a yield of 2 t/ha for an ROI of \$62/ha, which increased to \$74/ha when applied with 1.5 L/ha of trifluralin. All other treatments resulted in no more than \$33/ha ROI.

Bayer Customer Advisory
Representative Matt Willis said
although the season was difficult,
it did show the consistently strong
performance of Sakura across all
trials and conditions.

"When growers viewed the sites at field days, they could see the results with Sakura. It was visually quite strong," Matt said.

"In a challenging season like we had, with limited rainfall, it really tested the residual control of products and showed that while control from trifluralin can be variable, Sakura is relatively stable and will activate with rainfall and provide good control.



Above

Mingenew Irwin Group (MIG) Trials Coordinator Carlie Rowe and Bayer Customer Advisory Representative for Northern WA, Matt Willis, pictured inspecting a herbicide trial last season.

"The Arrino trials showed that despite the extra cost with Sakura compared with trifluralin, it still returned an extra \$38/ha benefit."

He said importantly, the trials showed the reliability of Sakura for minimising the amount of weed seed entering the weed seed bank, which was critical.

"Sakura could be reducing the amount of weed seed going into weed seed banks by 20-30%, compared to other pre-emergent herbicide treatments, which is an enormous reduction in seeds."

The Group K pre-emergent herbicide, which contains the active ingredient pyroxasulfone, controls annual

ryegrass, barley grass, silver grass, annual phalaris and toad rush and also suppresses wild oats and great brome in wheat (not durum wheat), triticale, chickpeas, field peas, lentils and lupins.

Matt said he understood the trials were conducted in "dirtier" grass paddocks, but he said most growers also earmarked Sakura for use in paddocks with higher grass populations and were applying it about every fourth year in crop rotations.

He said the trials also continued to highlight the need for integrated weed management (IWM) strategies including harvest weed seed control, as even the best treatment was still allowing 126 annual ryegrass panicles per square meter to survive.

In the pre-emergent grass control trials conducted in 2016 in wheat at Coorow, Pithara, Nugadong and Cunderdin, Sakura treatments yielded an average 2.14 tonnes per hectare and achieved an average \$73/ha ROI.

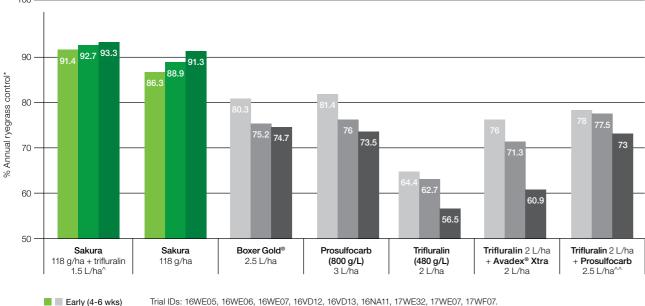
Applications of Boxer Gold applied at 2.5 L/ha achieved an average yield just under 2 t/ha for an \$18/ha ROI. In addition, with 18% lower average weed control, Boxer Gold also allowed more ryegrass seed to enter the seed bank.

The addition of 1.5 L/ha of trifluralin to Sakura only added a small increase in weed control, but still returned the highest yield and ROI across the trials at 2.23 t/ha and \$78/ha respectively.

The pre-eminent pre-emergent

The long residual control of Sakura makes it a standout

Control of annual ryegrass in 9 trials# across 2016 & 2017. WA (Coorow, Pithara, Cunderdin, Nugadong, Arrino, Buntine), Vic (Pyramid Hill, Wedderburn), NSW (The Rock).



Trial IDs: 16WE05, 16WE06, 16WE07, 16VD12, 16VD13, 16NA11, 17WE32, 17WE07, 17WF07.

- Some trials assessed using weed counts, other control ratings.
- Trifluralin (480 g/L) applied at 2 L/ha in trials 16VD12, 16VD13, & 16NA11.
- ^^ Trifluralin (2 L/ha + prosulfocarb 2.5 L/ha only in trials 17WE07 & 17WF07.

 # Two assessment timings only for 16VD12, 16VD13, 16NA11, 17WE07 & 17WF07.

PRE-EMERGENT CONTROL OF ANNUAL RYEGRASS, FINAL YIELD AND RETURN ON INVESTMENT 2016 & 2017 (6 TRIALS, WA)

		2016								2017					
		Coor	ow, WA	Pitha	ıra, WA	Cunde	rdin, WA	Nugad	long, WA	Arrin	no, WA	Bunti	ne, WA		
Weed density (panicles/m²)		1831		843		1,033		493		554		765			
Treatment							% ARG wt/grain sample		wt/grain	%ARG	wt/grain		wt/grain	Mean Final %ARG control	Mean % ARG wt/ grain sample
Sakura 118 g/ha + trifluralin 1.5 L/ha		97	0.8	96	0.1	90	0.6	98	-	78	-	81	-	90	0.5
Sakura 118 g/ha		93	1.4	95	0.0	92	0.4	92	-	71	-	77	-	87	0.6
Trifluralin 2 L/ha + Boxer Gold® 2.5 L/ha		69	-	87	-	79	1.0	80	-	-	-	66	-	76	1.0
Boxer Gold 2.5 L/ha		75	6.8	75	0.4	70	0.9	78	-	46	-	59	-	67	2.7
Prosulfocarb 3 L/ha		76	3.1	83	0.7	72	0.6	67	-	-	-	46	-	69	1.4
Trifluralin 2 L/ha + Avadex® Xtra 2 L/ha		62	6.7	66	0.8	53	2.3	68	-	55	-	67	-	62	3.2
Trifluralin 2 L/ha		48	7.7	58	0.1	35	0.5	68	-	49	-	52	-	52	2.8
Trifluralin 2 L/ha + prosulfocarb 2.5 L/ha		-	-	-	-	-	-	-	-	41	-	57	-	49	-
Avadex Xtra 3 L/ha		58	2.1	63	0.5	53	0.6	-	-	-	-	-	-	58	1.1
Prosulfocarb 2.5 L/ha		73	3.4	77	0.4	61	0.8	67	-	50	-	45	-	62	1.5
Treatment	Cost \$/ha	Yield t/ha	\$ROI	Yield t/ha	\$ROI	Yield t/ha	\$ROI	Yield t/ha	\$ROI	Yield t/ha	\$ROI	Yield t/ha	\$ROI	Mean t/ha	Mean \$ROI/ha
Sakura 118 g/ha + trifluralin 1.5 L/ha	\$48.95	2.60	\$192.25	2.82	\$83.37	1.81	\$66.51	1.68	\$53.00	2.06	\$74.84	1.11	\$29.84	2.01	\$83.30
Sakura 118 g/ha	\$40.10	2.31	\$131.50	2.81	\$89.56	1.95	\$112.60	1.50	\$18.69	1.97	\$62.70	1.09	\$48.05	1.94	\$77.18
Trifluralin 2 L/ha + Boxer Gold® 2.5 L/ha	\$39.30	2.22	\$110.70	2.28	-\$109.90	1.69	\$0.30	1.66	\$59.27	-	-	1.03	\$34.39	1.78	\$18.95
Boxer Gold 2.5 L/ha	\$27.50	2.14	\$103.30	2.40	-\$6.90	1.67	\$7.30	1.57	\$50.07	1.73	\$11.81	0.97	\$18.54	1.75	\$30.69
Prosulfocarb 3 L/ha	\$25.50	1.91	\$50.10	2.70	\$4.70	1.65	\$47.40	1.40	\$11.02	-	-	0.94	\$23.73	1.81	\$27.39
Trifluralin 2 L/ha + Avadex® Xtra 2 L/ha	\$29.80	1.75	\$7.40	2.43	-\$64.40	1.50	-\$35.80	1.42	\$9.78	1.82	\$33.58	1.00	\$21.74	1.65	-\$4.62
Trifluralin 2 L/ha	\$11.80	1.87	\$54.20	2.35	-\$4.50	1.31	-\$29.34	1.35	\$12.48	1.71	\$24.70	0.91	\$30.07	1.58	\$14.60
Trifluralin 2 L/ha + prosulfocarb 2.5 L/ha	\$33.05	-	-	-	-	-	-	-	-	1.74	\$10.61	1.00	\$18.99	1.37	\$14.80
Avadex Xtra 3 L/ha	\$27.00	1.85	\$34.20	2.41	-\$3.74	1.75	\$72.50	-	-	-	-	-	-	2.00	\$34.32
Prosulfocarb 2.5 L/ha	\$21.25	2.34	\$150.35	2.65	\$65.85	1.66	\$11.15	1.57	\$54.74	1.72	\$15.76	0.92	\$10.29	1.74	\$51.36
%ROI includes \$6.00/ha application (cost and o	quality.													
Untreated	\$0.00	1.57	\$376.80	2.30	\$611.80	1.50	\$360.00	1.23	\$294.08	1.55	\$411.77	0.73	\$186.37	1.48	\$373.47

Trial IDs: 16WE05, 16WE06, 16WE07, 17WE32, 17WE07, 17WF07

SUMMARY

- Across two trials in 2017 and seven in 2016, Sakura demonstrated best-in-class pre-emergent control of ARG at early, mid and late season assessments compared with other pre-emergent options including Boxer Gold and prosulfocarb treatments.
- With longer residual control, Sakura helps control ARG for longer, helping to reduce ARG seed-set and keep weed pressure low for the following crop.
- Prosulfocarb provided similar ARG control to Boxer Gold at a higher rate of 3 L/ha, but lower level of control at
- Based on the WA trials taken to yield in 2016 and 2017, Sakura alone, or with trifluralin, offered the best ROI and lowest number of ARG weed seeds compared with other treatments.

Mid (7-13 wks)

Final (16-19 wks)

Seed treatments an important tool

in Russian wheat aphid control

The damage to cereal crops from the Russian wheat aphid (RWA) was first described in the early 1900's in Russia, and over the next 100 years it's made a global tour through countries including South Africa, Mexico and the United States, ending up most recently being detected in Australia in 2016.



The history lesson of this most destructive cereal pest comes from one of the world's foremost authorities on RWA, Frank Peairs, Professor of Entomology at Colorado State University.

Colorado has been dealing with RWA for 30 years now, so Professor Peairs was an obvious choice to bring to Australia for a series of GRDC presentations to information-hungry locals in 2017.

Also sharing his knowledge was Dr Paul Umina from cesar and The University of Melbourne, who explained the spread of RWA in Australia following its discovery in Tarlee (SA) in May 2016.

"RWA is already distributed across a large part of south eastern Australia, with a few isolated cases in Tasmania," he explains.

"It's not known to be present in WA at the current point in time, it's not known to be present in Queensland, and at this stage there's been no confirmed detections in northern New South Wales."

The primary damage caused by the aphid, according to Professor Peairs, is due to its injection of toxins during feeding that prevents the leaves of wheat, barley, and other grasses from unrolling, meaning a reduction in photosynthetic ability and a general stunting of the plant.

RWA will also inject, or transfer, a toxin into the phloem sap while feeding,

causing rapid, systemic phytotoxic effects to cereal plants.

"We use the rule of thumb that for every 1% of stems infested, you lose about 0.5% of yield in wheat. Another way of putting that is, if you have a 100% infestation you can expect a 50% loss in yield," Professor Peairs says.

"That number in barley is quite a bit higher - it may be 0.8 or 0.9% yield loss per 1% infested stems, so barley is really a much better host for the aphid than wheat."

Over the last 30 years Professor Peairs has investigated most elements of Integrated Pest Management to control RWA, with mixed results.

The work has included adjusting planting dates and diversifying crop production systems, as well as some research into breeding host resistance.

"We developed about 10 varieties that were resistant to RWA, but in 2003 the aphid developed a population that was capable of overcoming that resistance, which really took us out of the plant breeding business," Professor Peairs says.

"We also found the natural enemies involved in biological control of RWA in North America are the same natural enemies that are involved in the biological control of just about any cereal aphid, so there were no surprises there.

"When the aphid first came in, we really saw very little biological control effect, but now, biological control is probably one of the most important factors in terms of reducing RWA abundance."

Professor Peairs believes seed treatments also hold good potential for management of RWA in Australia's spring grains.

"I think seed treatments need to get a pretty close look but I hope growers don't over rely on them because it's a fragile chemistry and they need to preserve that for a variety of uses rather than just blanket applications against RWA," he says.

"

Here in Australia I think you need to really pin down what defines a risky RWA situation at planting - is it planting early? Is it planting late? Is it failing to control a green bridge?

"Based on those risk considerations, I think Australian growers should limit seed treatments to those high-risk situations."

While acknowledging Australia still has a lot to learn about this recently introduced pest, Dr Umina says observations from 2016 showed paddocks with a green bridge, particularly from late summer and early Autumn, were at risk from RWA, as were those sown early.

"Many of the early infestations in South Australia tended to be those paddocks where there was early sowing, inadequate control of the green bridge, and a lack of insecticidal seed dressings," he explains.

"We have also seen quite a lot of natural enemies attacking RWA, which is really pleasing given it's a new pest to Australia," he says.

Dr Umina reports RWA have been attacked by fungi, parasitised by wasps, as well as predatory insects such as hoverflies and ladybird beetles.

Like Professor Peairs, Dr Umina also believes insecticide seed treatments will play an important role in RWA management in Australia.

"Experiences in 2016, and again in 2017, have demonstrated existing cereal seed treatments registered for other cereal aphids are very effective against this pest," he says.

"This has been supported by controlled glasshouse experiments that were conducted in 2017."

While there is much to learn in Australia about the best control options for RWA, it seems much of the 30 years of work Professor Peairs and his colleagues have compiled in Colorado will be of great use to Australian growers looking to control this threat to local cropping systems.



Weed management the key

to award-winning cropping operation

Like many farmers across Australia, moisture retention, weed control and optimising sowing times are critical management issues for Alex Baldry.

Mr Baldry farms in the Wallendbeen district of NSW on 'Comfort Farm', incorporating a 1,700-hectare canola-wheat cropping program and 400 hectares of pasture.

His strategy to retain soil moisture and influence time of sowing includes using summer fallows and managing crop residues.

With his weed management, Mr Baldry makes sure he is rotating chemical groups and getting the best fit for his system by introducing chemistry such as Sakura® herbicide.

"Basically, I manage any weed that becomes a problem. Essentially with the number of rain events we have and our current rotation, annual ryegrass is an issue, particularly on our soil types, which stay wet at the top of the profile a bit longer," he explains.

"We first brought Sakura into the system five years ago for its flexibility - you can mix Sakura with Roundup® or Spray.Seed®, it gives you a broad spectrum of control and we have particularly found it really effective on annual ryegrass.

Premier Advisory Australia agronomist Andrew Daley agrees the flexibility of Sakura application is a big advantage for local farmers.

"Being able to spray Sakura and come back and sow in the next three days, because a lot of them are single operators, rather than spray, turn around, jump in the sowing tractor and sow it within four to 24 hours makes a huge difference," he says.

"In a district where grazing crops are popular, we're also pushing the limits on how early we can sow, so a product like Sakura really helps with long residual control compared to other chemistry."

"In addition, the six-week grazing withholding period on Sakura works well in helping farmers get livestock back quickly onto paddocks."

Proof that the system is working on 'Comfort Farm' perhaps can be found in the Agricultural Societies Council of NSW 2016 Dryland Wheat Competition, in which Mr Baldry and his team won the southern division and went on to the State final.

Happy with a farming system that's producing results, Alex Baldry sees Sakura continuing to play an important role in his pre-emergent chemical rotation moving forward.

"We've used Sakura quite strategically in the past, but moving forward we'll probably use it more generally, and possibly earlier in the rotation to keep the population of ryegrass down to levels where it's just not an issue," he says.

"The fact that we can use it on stubble is important, and it's been quite clear that Sakura has the sort of residual effect that's outlasted what we've been used to, which is a clear feature of the product."

"2016 being such a wet year was almost an ultimate test for a product like Sakura - where it wasn't an extremely wet gully or paddock, Sakura was very effective and it did what it needed to do."

Mr Daley agrees 2016 was a difficult one for agronomists and farmers alike.

"It was probably the most challenging year I've had as an agronomist to control weeds in crop, however with our system - using Sakura, early sowing and competition against weeds – we were able to stand up quite well," he says.

Hybrid canola shines

in WA community crop

Despite a challenging season in the WA wheatbelt last year, a community cropping program at Mullewa highlighted the benefits of growing hybrid canola varieties in the region.

Mullewa recorded its lowest ever rainfall during the 2017 growing season and at one stage it looked like there would be no community crop to harvest from the 274 hectares of canola planted.

Rain received during August made all the difference and in early November, five harvesters, one chaser bin, two trucks and many local growers worked together to harvest the crop.

The proceeds from the canola will be used to support a variety of local sporting clubs and events.

According to CRT Mullewa Farm Supplies owner and Mullewa Community Group committee member Glenn Bryant, the community crop, which included a canola



demonstration, would not have been possible without the vital support of sponsors such as Bayer.

Bayer provided almost 1000 kg of IH30RR hybrid canola seed to the Mullewa, Mingenew and Bruce Rock communities.

"In a great result for the community in a very tough season, a total of 101.8 tonnes of canola was delivered to CBH," Glenn said.

"The good areas of the paddock yielded up to 1 t/ha, with 13 t coming off 14 ha of IH30RR on the harvester that I sat on for a while."

IH30RR is an early maturing Roundup® Ready hybrid canola variety from Bayer, which is well-suited to low to medium rainfall areas of WA, with exceptional early vigour for quick canopy closure.

There was 150 ha of IH30RR sown in the community crop, next to 30 ha of 3000TR, which is an early maturing, dual-tolerant hybrid variety from Bayer suited to low and medium rainfall areas.

There was also 30 ha of InVigor® T 4510, a triazine-tolerant variety from Bayer ideally suited to areas with low to medium or medium to average rainfall, offering strong yields in a dry finish.

A remaining area of about 70 ha was sown to a triazine-tolerant variety

commonly grown in the Mullewa area, ATR Bonito, from NuSeed.

The 274 ha crop was sown on April 7 after about 200 mm of summer rainfall and deep ripping was done prior to seeding.

Glenn said after the crop was sown, Mullewa received no rainfall in April and only 5 mm in May, resulting in a poor crop establishment with a significant amount of canola not germinating until July and August.

"In early August, the crop was assessed by an agronomist to be a total failure and a recommendation was given to spray the crop out," Glenn said.

"This decision was delayed to give the paddock maximum ground cover and avoid large problems with soil erosion.

"However, very good August rainfall, including 46 mm of rain on August 29, saw an amazing recovery with our canola and in many crops around the Mullewa area."

The crop received no in-crop herbicides or fertiliser applications due to the season, until a salvage application of glyphosate was applied to Roundup Ready varieties in late August.

Glenn said the whole paddock was sprayed with insecticide in September

to control aphids and diamond back moth grubs.

When it came time to harvest the paddock, a single header was used for the trial strips of canola to provide a common yield monitor for all varieties.

While the IH30RR near the other varieties was assessed to be too patchy for an accurate yield assessment, Glenn said the 3000 TR yield was assessed at 586 kg/ha, InVigor T 4510 at 780 kg/ha and Bonito at 644 kg/ha.

"Overall, the community crop yielded 400 kg/ha across 274 ha," Glenn said.

"Due to the variability in the paddock, we cannot draw reliable conclusions from the individual yields, but it has still been evident that hybrid varieties have performed well in all variety comparisons in the Mullewa area this year."

In a corresponding trial near Mullewa, a grower had InVigor T 4510 planted alongside Bonito, with InVigor T 4510 yielding 1.2 t/ha and Bonito 1.05 t/ha.

Based on the results from both sites and taking into account the cost of seed, growers would see a \$25.65/ha benefit from growing the InVigor variety.

There has been overwhelming demand for Bayer's canola range for 2018 and all seed in WA is oversubscribed.





History has shown chickpeas to be on somewhat of a rollercoaster in the region. In the 1990s there were significant areas sown to chickpeas in the lower Mid North; then ascochyta blight (AB) disease hit and production dropped; and new varieties were introduced in the 2000s, including Genesis 090 and the larger Kabuli variety, PBA Monarch, which contained better AB resistance than previously grown varieties.

However, more recently varietal resistance to AB has broken down and diligent fungicide programs have been required.

According to Richard, chickpea crops in eastern states were hit hard by AB over 2015-16, which reduced subsequent plantings and disease build-up. Prices were now around \$1300 per tonne for Kabuli chickpeas, particularly those for the large (8-9 mm) canned market, and various growers had achieved yields of 1.8-2.2 t/ha.

"

This has been a big faba bean area, but the returns are not great on the back of the Egypt export market struggling at the moment. I think chickpeas will replace faba beans a little.

Together with Andrew Tremlett, Dwayne Pratt and Grant Smith, Richard has been running the Kapunda CRT agency, NTS Rural, for the past decade.

The business, which won the SA CRT store of the year in 2016, services a region from Gawler to Manoora and across to the Adelaide Plains, where it is set to open another store at Mallala. Agronomist Bradley Kosta will head up the agronomy services at Mallala.

The 2017 season was another average to above average season in the area. Richard said the region was fortunate to consistently receive 425-450 mm of rainfall annually, providing good pulse crop production options including lentils, chickpeas and faba beans.

Local crop rotations were generally wheat-wheat-pulse or wheat-barley-pulse.

NTS Rural recommended a five-spray fungicide strategy to combat AB in chickpeas, at 14-day intervals during rainy periods and otherwise 21 days.

Chlorothalonil fungicide had mainly been used by growers, although treated crops can present a grazing issue due to a 63-day export slaughter interval on stock grazing the stubbles. Mancozeb had also been applied, while recently the new Aviator® Xpro® fungicide had been included in programs.

"We had been looking at Aviator (Xpro) at the Mid North High Rainfall Group's trial site for a couple of years," said Richard.

In addition to AB in chickpeas, Aviator Xpro, from Bayer, is also registered for blackleg and sclerotinia control in canola. Registration in other crops is anticipated in time for the 2018 season. Always use Aviator Xpro according to the most recent registered label.

Aviator Xpro contains bixafen, a new member of the Group 7 (SDHI) fungicides, which offers a new mode of action for resistance management, as well as the proven performance of prothioconazole.

It also offers good compatibility and its patented LeafShield™ formulation system enhances its activity against diseases. Its short rain-fast period, estimated at around 30 minutes to one hour, is particularly beneficial for chickpea growers spraying ahead of rainfall events.

Richard said the new mode of action helped to break up the chemistry program and they recommended two applications, including just before pre-canopy closure (August) and again 28 days later at a rate of 500 mL/ha.

"Growers can start with chlorothalonil at grass spray timing, about four weeks after emergence, apply another 21 days later, then two Aviator (Xpro) sprays, then a late chlorothalonil with a grub spray," he said.

"Aviator (Xpro) also mixes well with herbicides and insecticides."

Bayer advises applying Aviator Xpro only twice as part of a preventative spray program, incorporating other fungicides.

Aviator (Xpro) was applied in a medium droplet spectrum with 90-100 L of water and had performed well.

"Getting good coverage right to the bottom of the canopy is important," Richard said.

61

Aviator (Xpro) definitely gives longer protection. We think we could stretch the spray interval beyond the minimum 28 days, depending on the conditions.

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"It kept the pre-canopy closure stage very clean and then the early flowering period was also very clean, which is a crucial growth stage for the crop.

"Crops weren't under massive pressure last season. It got wet, but the spray programs worked well – and growers aren't worried about spending \$30/ha (at the 600 mL/ha Aviator Xpro rate) when they are getting \$1300/t for the crop."

Richard said AB was the number one disease in chickpeas and growers had to be organised with their spray programs.

"In a wet year you could do six to seven fungicide sprays, with a final application at pod set with some fungicides."

Seed for sowing is also generally treated with P-Pickel T® or thiram fungicide.

Adrian and Nathan Laubsch, who farm at Hamilton, north of Kapunda, applied Aviator Xpro twice to a 60 ha paddock of Genesis 090 chickpeas last season and it achieved an average yield of 1.3 t/ha. Adrian said better parts of the paddock yielded up to 2.3 t/ha

Reduced disease pressure compared with 2016 meant the family applied only four sprays last year, however Adrian said AB was still a challenge and some neighbours sprayed out crops due to the disease.

Richard said with the range of pulses grown in the region and following the anticipated registration of Axiator Xpro in other crops, he expected it would have a good fit as it could be used across a large group of crops.



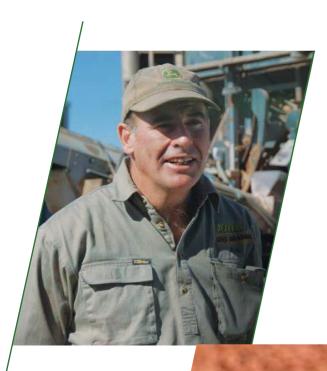
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CRT Kapunda agent Richard Noll, NTS Rural, local growers Nathan and Adrian (right) Laubsch and Bayer Commercial Sales Representative Graham Hatcher pictured inspecting the Genesis 090 chickpea crop on the Laubsch's property that received two applications of Aviator Xpro fungicide to help control ascochyta blight.

New seed treatment gets

thumbs up from graders

Seed graders across the country gave the thumbs up to trial applications last season of the new broadspectrum fungicidal seed treatment, EverGol® Energy, which is expected to be registered in 2018.



EverGol Energy combines the proven disease control strengths of penflufen with the systemic activity of prothioconazole and metalaxyl. It is set to offer control or suppression of a range of diseases in wheat, barley, oats and triticale, including flag smut (seed and soil borne), loose smut, covered smut, common bunt, rhizoctonia, pythium, crown rot, fusarium head blight and white grain disorder. Anticipated registration for in-furrow application will add crown rot and pythium suppression in wheat, triticale, barley and oats.

Nick Moses, Broadacre and SeedGrowth Brand Manager with Bayer, said the company recognised the importance of working with seed graders to check the quality of products and their application through seed treating equipment, as well as to assess their performance in paddock demonstrations.

"It's excellent to get feedback from practical situations that can help to further improve formulations," Nick said.

Clay Townrow, who operates Townrow Quality Seed Grading Service with his father, Jeff, at Moama on the New South Wales and Victorian border, said a trial of EverGol Energy on barley seed showed very good flowability and it adhered to the seed well with good, even coverage.

"It's very important to get flowability as well as good, consistent coverage, so that every seed has the benefit of the seed treatment," Clay said.

"Evergol Energy performed very well in that regard. The coverage was fantastic. We found that with varying water rates, it still had very good coverage on the seed.

"It stuck to the seed well, there weren't any dust-off issues and we didn't have any build-up on application equipment augers."

He said EverGol Energy had strong market potential, particularly with its anticipated registration claim for crown rot suppression.

"More customers are asking about seed treatments for crown rot, so I think it has a good future."

In Western Australia near Boyanup, Rob Bell, Bell Pasture Seeds, which has one of the more modern cleaning works with a Noroguard seed treater, the only one of its kind in WA that can do multi-level applications, and robotic packaging, said flowability and coverage were critical.

a waste of time," Rob said.

He said EverGol Energy with Gaucho® was trialled on barley and oat seed.

"We applied it in a slurry with water of 6 litres per tonne. We can go up to 20 L/t with this treater because we get very good dry-down with a gas-heated drying bed. We get excellent coverage and can dry down. The more volume, the more coverage. It's better than three times the coverage from 6 L/t.

coverage and it wasn't powdery or dusty. We didn't use Inteco oil with it, like we have done with EverGol Prime."

On the Liverpool Plains in northern NSW, Rob Jeffery, Jeffery Seed Grading, agreed that flowability and consistency of coverage were primary aims.

Rob said a trial of EverGol Energy through his grading plant went really well, with good flow and coverage.

It seemed to go on the seed with not as much water applied and the coverage was really good that way.

"

He also expected EverGol Energy would be popular with local farmers due to the significant crown rot problem in the area.

"I can see it having a big impact for the cropping region in the New England and Liverpool Plains because it (the disease) is very prevalent around here at the moment."

Bayer Commercial Sales "If you can't get the coverage, then it's Representative in the region, Greg Hunt, agreed, expecting strong interest in EverGol Energy to combat crown rot in not only bread wheats, but also particularly in durum wheat.

> "Farmers do a lot in terms of rotating their crops, field hygiene and variety selection to ensure they minimise the effect of this disease, but with the addition of EverGol Energy, it will give them an additional tool to be able to combat this disease when they plant their crop in the ground," Greg said.

EverGol Energy has been made. At the time of publication, this product is not registered.





A breeding and research facility on the outskirts of Adelaide,

animal weight-gain trials prior to the release of new varieties and superior seed treatment packages are just some of the elements that ensure "the best of the best" in forage and pasture seeds arrives at farm gates ready to sow.

One of the largest producers, marketers and suppliers of seed to Australian agriculture, Pasture Genetics has come a long way since Rob and his wife, Ann, first started a feed grain and seed business in 1997.

Today, Pasture Genetics offers about 430 proprietary and common lines of a range of pastures, including lucerne, clovers, medics, grasses, brassicas and forage cereals, it has around 400 contracted seed growers and exports to 30 different countries through South America, Middle East, Europe, Asia and Africa.

The company runs the largest lucerne breeding program in the country and dominates the varieties grown, as well as cooperative programs with government and private partners, including from the US and Europe.

Last year, Pasture Genetics produced more than 10,000 tonnes of forage seeds. Exports climbed to 2000 tonne at an average of two shipping containers a week and are set for rapid growth, underpinned by strong product confidence also linked to the company's unique in-house testing and grazing trials. So it also came as no surprise that Pasture Genetics recently won the agribusiness award in the Business SA 2017 Export Awards.

On its seeds, the company has continued the development of the Goldstrike genetic package for pastures and has had a strategic partnership with Bayer for the application of leading seed treatment chemistry, helping to establish healthy crops protected against pests and disease.

"

We started a partnership with Bayer because we needed the chemistry – and they are world leaders in this and other seed treatment technologies. It was a very good fit with where we were at.

"It's been an all-encompassing and very successful partnership, where we have also used a range of polymers, including binding polymers and encapsulating polymers, as well as other products from Bayer in Europe.

"There's been a lot going on behind the scenes with Bayer as a strategic partner."

He said the Pasture Genetics team had targeted a specific goal of achieving 1000 live rhizobia per Goldstrike-treated seed at 12 months after application on lucerne, allowing a wider sowing window for farmers.

"We achieved that – and we are the only company in Australia that has it regularly tested by an independent third party."

With sub clover and medic, 1000 rhizobia per Goldstrike-treated seed are still viable six months after application.

"We are the only company guaranteeing this standard and it's been achieved in partnership with Bayer," Rob said.

"You need the best chemistry package and with Bayer, we have been able to wrap the best genetic and chemistry packages and latest treatment technologies around the seed with long life rhizobia to drive production and profitability in farmers' paddocks.

"With the tonnes being sown now, there isn't the ability to inoculate onfarm and so it has to be pre-inoculated. It has to land on-farm, ready to sow."

Rob said Gaucho® insecticide seed dressing from Bayer was excellent earlier and the company's latest Poncho® Plus insecticide treatment was a significant advancement for a range of pastures.



"All our proprietary lucernes get Goldstrike and Poncho (Plus)," Rob said.

"

Poncho Plus is a Group 4A insecticide combining two robust compounds, imidacloprid and clothiandin, effectively broadening the insect control spectrum for farmers.

He said cutworm had been a significant issue in broadleaf pastures and Poncho Plus provided much greater protection compared with Gaucho for both broadleaf and grass pastures.

It also protects against yellowheaded cockchafer and African black beetle in grasses, and provides suppression of lucerne flea in broadleaf and grass pastures, as well as brassica forage crops.

"Emerging seedlings get three to four weeks protection against sucking insects – so a one-month window while pastures are establishing," Rob said.

Furthermore, Pasture Genetics also shares production risk with farmers by providing a 30-day seed establishment guarantee, which incorporates environmental and sowing issues and where seed is replaced at half the original purchase price.



Bayer builds latest sprayer knowledge

to help growers maximise returns

The Bayer team has moved to enhance its knowledge of some of the latest spraying systems and technologies available to help ensure growers can deliver world class active ingredients the best way possible and, in turn, achieve maximum return on their investments.

The team in WA recently met with the distributor of Miller sprayers and the manufacturer's Spray-Air technology in Australia, McIntosh Distribution.

Craig White, Customer Advisory
Representative and the Leader of
Integrated Weed Management in
Australia for Bayer, said the past two
global conferences on one of the
biggest issues in agriculture, herbicide
resistance, had raised the need for a
machinery component in the agenda
and he considered it critical to remain
abreast of new spraying technologies.

"At Bayer, we consider ourselves industry leaders in crop protection and seeds, but we also recognise that it's important to understand new and effective ways of delivering the active ingredients in our products," Craig said.

"We need to keep up with changes in technology and new machinery, and with McIntosh Distribution we were also able to discuss the Integrated Harrington Seed Destructor (iHSD) and WeedSeeker spot spraying technology, in addition to Spray-Air." Jon Bent with McIntosh Distribution took the Bayer team through the workings, trial demonstrations and grower experiences with the Miller Spray-Air system, which allows for more targeted chemical applications through air-assist and air-atomisation technology.

Growers have fingertip control of droplet size and speed of air delivery for any spraying application. They can consistently atomise spray droplets in a range from 200-500 millilitres per minute per nozzle – spaced 25 centimetres apart.

Jon said Spray-Air achieved 90% of spray droplets within the target size range, whereas conventional nozzles achieved about 60% within the selected range, hence contributing significantly to spray drift.

He said the use of lower water volumes with Spray-Air was producing the best spraying results for growers.

"The optimum water carrier volume range with Spray-Air is 20-60 litres per hectare, depending on spraying speed," Jon aid.

He said reduced water rates also effectively doubled the size of spray tanks for growers, allowing them to spend more time spraying and less time refilling.

Craig said ensuring active ingredients in products were delivered where required and not drifting away was vital and the drift minimisation and precision delivery to the target achieved with Spray-Air was excellent.

"It's important that when we deploy pesticide products, that we deploy them absolutely as best as possible and not waste a shot," he said.

"With herbicide resistance increasing, we need to maximise every opportunity to control weeds."

Craig said Jon showed work with Spray-Air where, in some cases, it was possibly reducing the number of spray applications required.

"Anything that is efficient and very effective at delivering the molecules is a great step forward for helping manage resistance to pesticides. This is part of an integrated approach and is very positive."

He said being at the leading edge, Bayer was keen to develop good relationships with forward thinking machinery companies and expertise to look at spray delivery, as well as to incorporate precision agriculture, drone data and other information to aid decisions.

"By having relationships, networking and linking everything together, we can potentially squeeze so much more out of an active ingredient."

"We all want to ensure the best products are delivered the best way possible to achieve the best outcome and returns for growers. We look forward to further developing our knowledge with McIntosh Distribution to help achieve this," Craig said.

Regional Sales Manager Broadacre West with Bayer, Craig Pensini, who toured the Miller Spray-Air system with his sales team, said interaction with companies like McIntosh Distribution was very beneficial.

"Our sales representatives are never going to be machinery experts, but this sort of 'cross pollination' between ag companies is excellent. It will increase the confidence of the WA Bayer sales representatives, especially when interacting with growers, consultants or agronomists, because they will now at least have a basic knowledge of the Miller Spray-Air technology," Craig said.

"This will enable our team to speak with an enhanced level of confidence when recommending the Bayer range of products and associated spray systems."



Smart chemistry choices tick the box

for farm and feedlot at Dunedoo

With a cattle feedlot and horse stud on the property Phil Redding manages at Dunedoo in New South Wales, having a good supply of quality grain is critical.

With a cattle feedlot and horse stud on the property Phil Redding manages at Dunedoo in New South Wales, having a good supply of quality grain is critical.

Mr Redding manages the farming operation of 'Corumbene', a mixed farming enterprise of 5,000 hectares, with merino sheep and crossbred lamb production, as well as beef cattle and cropping. While the farming operation supplies grain to the horse stud, it is run as a separate business.

With most of the grain produced on 'Corumbene' going to the cattle feedlot, keeping cropping paddocks free of weeds, such as annual ryegrass, barley grass and Paterson's Curse, is important.

"Weeds can take your whole yield down – it's simple, more weeds, less yield," Mr Redding says. Alongside that comes the challenge of also managing chemical resistant weeds, with rotation of chemical mode of action groups critical according to Mr Redding's agronomist, Murray Skinner from the Delta Agribusiness branch at Dunedoo.

"

We're growing a lot more dual purpose crops for livestock in the district and with some of the crops we are growing there's not a lot of weed control options, so that's sometimes a challenge, Mr Skinner says.

"We've used a lot of Group B herbicide chemistry in the past, and probably with our pasture rotation they have lasted a little bit longer than some other areas but you certainly wouldn't count on the Group B's for grass weed control now."

"We've got to look at some newer chemistry and look at rotating between those mode of action groups so we don't end up with the same problem we had with the group B's."

Mr Skinner says Sakura 850 WG herbicide from Bayer is now playing an important role for weed control in wheat crops, leaving alternate products for use on barley and oats.

"Sakura is probably a lot more flexible with its timing and crop safety, and is certainly very reliable for control of the grass weeds we're targeting, compared to some of the other products available, so it is the preferred product," he says.

"With our dual-purpose systems, when we're sowing quite early Sakura does seem to give us season-long control of the problem grass weeds."

Mr Redding has been using Sakura on 'Corumbene' for two seasons to control barley grass and annual ryegrass in wheat crops.

"It gets the wheat paddocks very clean, there are next to no weeds left where we've used it and it works really well right through the season," he says.

With a need for a supply of quality oats into the horse stud, it's also important that oat paddocks are kept clean of problem weeds such as Paterson's curse and wireweed.

"We've got a few stud race horses, and so the oats need to be good, clean and heavy - the cleaner the better," Mr Redding says.



Having used Group B chemistry in conjunction with Amine 625 for a period of time, Precept® selective herbicide from Bayer was introduced three seasons ago.

Precept is a combination of pyrasulfotole (the only Group H active ingredient registered in cereals) and MCPA LVE.

"The introduction of Precept was about bringing in a different kind of chemistry, which also has better crop safety than alternate products we've used," he explains.

"Precept covers a lot of weeds in our oats, and has particularly nailed the Paterson's curse - it's done a pretty good job on all of them really."

It's an observation backed up by Murray Skinner, who says Precept is increasing in use through the district, particularly because of its broad weed spectrum.

"It also has good crop safety, which allows us to control weeds at various

stages and various crop stages so it's very flexible in that regard," he says.

"We've certainly used a lot of phenoxy products in the past, in with Group B's, so as a Group H, Precept certainly brings something new to the rotation."

Perhaps the most telling part of Phil Redding's approach to weed management on 'Corumbene' is his long-term philosophy to investing in chemistry.

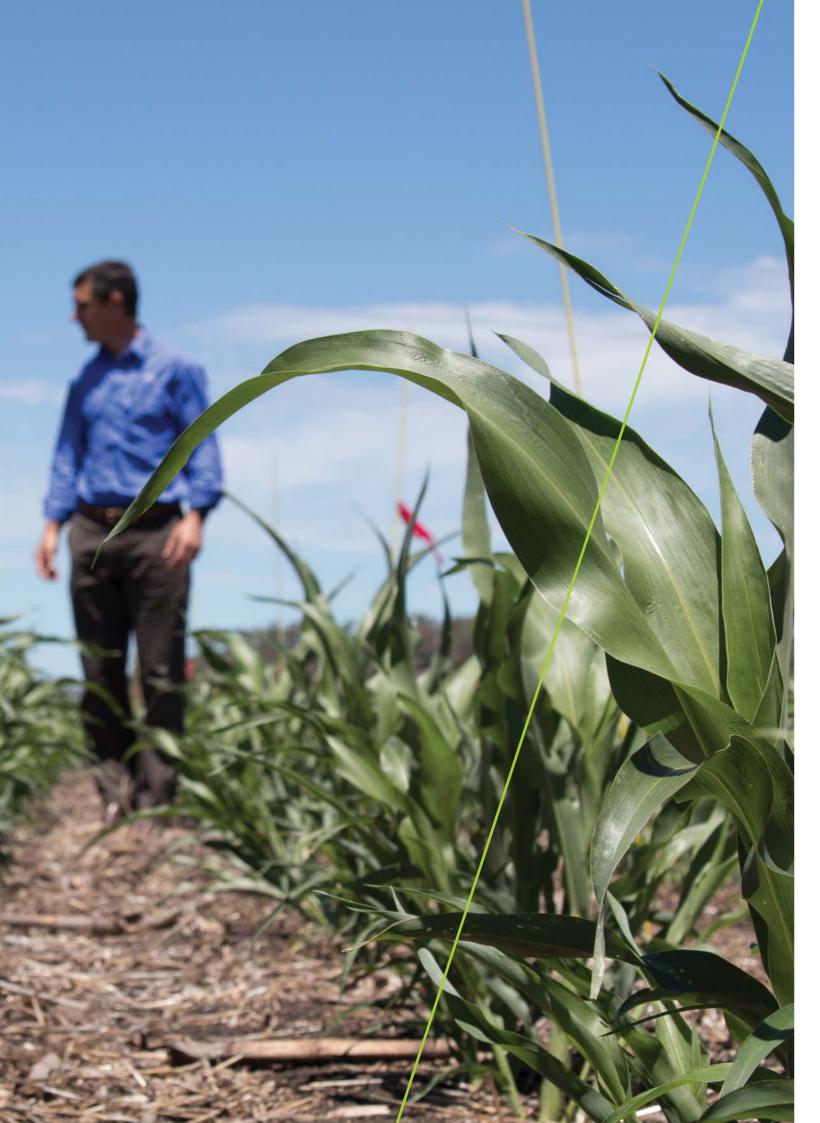
"In 2016, if people hadn't gone in with a pre-emergent and looked after weeds early in their crop phase, they didn't get to spray them last year through the winter because it was extremely wet and there's a lot of cost involved in not getting the crop clean - a little bit of cost up front is not that big of a hassle."

"Using Sakura in 2016 was a very good choice - especially with the wet winter, it was just miles in front," he concludes.

Left: Phil Redding of 'Corumbene' Dunedoo, NSW.

Above: Agronomist Murray Skinner from Delta Agribusiness.





Northern Grower Alliance relationship

identifies local solutions

Partnerships forged between Bayer and local research organisations like Northern Grower Alliance (NGA) play a crucial role in delivering effective solutions to farmers.

NGA is a small organisation established to focus on applied agronomy research, directly in response to grower and agronomist needs.

The organisation has a broad network comprising leading advisors and growers from the Liverpool Plains in northern New South Wales through to the Darling Downs in southern Queensland.

The region has significant areas of summer crops, including dryland sorghum and cotton, mungbeans and small areas of sunflower and maize. Winter crop programs consist of chickpeas, bread wheat, durum wheat, faba beans and barley, while plantings of canola increase further south.

With such a wide range of cropping systems, developing research priorities can be a challenge, which is why NGA CEO Richard Daniel says they have established six local research groups across the region.

"Each of those groups meets twice a year and identify and prioritise the constraints or issues they believe are most important," Mr. Daniel explains. "We then combine the output from those groups together to work out the NGA research program across the whole region.

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The benefits to the industry as a whole is that the local R&D can be more tailored to the actual grower needs. It's a win-win.

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"We've got a very diverse range of activities, including quite a bit of crop protection work around weed management, disease management and, to a lesser degree, pest management. "Our work also incorporates areas like nutrition and farming systems issues such as mycorrhiza, soil water conservation and fallow efficiencies."

While the work NGA conducts is focussed on solutions to issues that growers and their advisors face, partnerships with companies like Bayer also play a critical role. "By working in closely with crop protection companies, the actual market needs are better defined and there is much more chance of a new solution being developed that can benefit the entire industry".

"We've been working with Bayer since 2006, when NGA started operations, with one of our earliest projects evaluating stripe rust management options and timing in wheat. It's a relationship that's very much driven on an individual project basis," Mr Daniel outlines.

"NGA is all about responding to issues identified by growers and agronomists. We prepare projects on particular issues, and then seek the advice and input from an organisation like Bayer to ensure a consistent approach and that we are aware of the latest developments".

"Often this can then be the proof of concept to help drive a new project or assist and inform some of the work Bayer might be doing in the same space."

Mr Daniel believes an unexpected benefit of this approach is that it provides an improved understanding to companies like Bayer about the issues where industry is really seeking new solutions.

He says NGA has been working with Bayer products across a number of different projects in recent seasons.

"One of the most important projects is the management of ascochyta blight in

chickpeas, a massive issue for one of our major winter crops," he says.

"Unfortunately (from a research perspective!) the 2017 winter was so dry that ascochyta blight did not occur in our trials, so that work will need to be repeated, but it will utilise the Bayer fungicide Aviator® Xpro®."

NGA is also working with Bayer products in weed management trials, investigating options to control problem weeds, or where herbicide resistance is an issue.

"Some of the work we're looking at in the 2017/18 summer is to improve the management of key weeds in sorghum," Mr Daniel says. "At this stage we are screening a range of new options."

"

With the relationship between NGA and Bayer clearly paying dividends for both organisations, and by extension, industry as a whole, Mr Daniel is optimistic about future.

"I think the relationship with Bayer will remain on the same level it's been on for quite a while, we would be in close contact at least twice a year directly in terms of presenting the issues that are coming back from industry," he explains.

"It really means Bayer has even more market intelligence around areas they might wish to explore more fully and that allows for a good pipeline in terms of making sure new active ingredients are evaluated in a range of situations, rather than just on a small subset of key weeds and diseases.

"The benefits to the industry as a whole is that the local R&D can be more tailored to the actual grower needs. It's a win-win."

Post-emergent herbicide trials target

wild radish control, crop safety

The release of new options in a weed control segment always provides opportunity for industry comparison with existing leading standards and this story played out with postemergent broadleaf weed control in Western Australia's northern wheatbelt last season.

New Group H and C herbicide, Talinor®, was introduced last year and was assessed in trials with another Group H and C product, Velocity®, for the Mingenew Irwin Group (MIG) near Mingenew, as well as at sites near Arrino, Pithara and Cowcowing.

Talinor comprises the Group H herbicide active ingredient, bicyclopyrone, as well as bromoxynil (Group C) and the crop safener, cloquintocet-mexyl. The Group H herbicide chemistry in Velocity is pyrasulfotole, together with bromoxynil and Bayer's crop safener, mefenpyr-diethyl.

The trials compared the performance of the herbicides against wild radish and other broadleaf weeds in wheat crops.

The products were applied at rates from 500 mL/ha up to 1 L/ha for Velocity and 1.2 L/ha for Talinor, with 80 L/ha of water using a medium droplet size.

Most sites had reasonable populations of wild radish and applications were

timed to coincide with the two to six-leaf plant stage.

Weed control was assessed from two weeks and later at eight to twelve weeks after the applications, and final yields were compared at the MIG site.

The early investigations showed little difference in weed control between the applications, however at the eight to twelve-week stage, larger weeds that had been treated with Talinor were recovering and starting to reshoot.

For the sites near Arrino, Pithara and Cowcowing, applications of Velocity® at 600 mL/ha with Hasten® at 1% achieved an average of 78% wild radish control across the trials at the eight to twelve-week stage, while applications of Talinor at 750 mL/ha with Hasten at 1% (volume for volume) resulted in an average of 70% control of wild radish.

The higher 670 mL/ha Velocity rate with Hasten at 1%, costing \$25.10/ha, achieved 86% control, compared with 1 L/ha of Talinor with Hasten at 1% (v/v), costing \$29/ha, recording 80% control.

At the MIG site, Velocity applied at 670 mL/ha with MCPA LVE at 440 mL/ha and Hasten at 1% resulted in a crop yield of 2.32 t/ha and Velocity applied at 670 mL/ha with 1% Hasten achieved 2.23 t/ha. This compared with Talinor applications at 750 mL/

The high level of crop safety with Velocity allows it to be applied to a young crop without harm, but also does not slow the growth of the crop.

ha with MCPA LVE at 440 mL/ha and Hasten at 1% (v/v), at 850 mL/ha with Hasten and at 1 L/ha with Hasten at 1% (v/v) recording yields of 2.13 t/ha, 2.17 t/ha and 2.15 t/ha respectively.

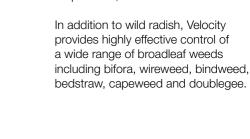
Bayer Customer Advisory
Representative, Matt Willis, said
the primary aim of the trials was to
evaluate control of wild radish, as well
as other weeds, and while Talinor had
strength against some volunteer pulses
and fumitory, Velocity was generally
stronger acting against wild radish –
the number one weed concern in WA.

"The applications of Velocity at 670 mL/ha were equal to, if not better than, the applications of Talinor at 1 L/ha for wild radish control and were more cost-effective," Matt said.

He said the Velocity applications also showed no concerns with crop phytotoxicity.

"Northern WA experiences intense daylight, so crop phytotoxicity can be a concern in the region."

"However, with Velocity applied even at 1 L/ha in the trials, there were no crop effects," Matt said.





The company's Xarvio® suite of digital solutions

was unveiled at the world's leading trade fair for agricultural machinery, Agritechnica, at Hanover in November and is set to be rolled out around the globe.

Tobias Menne, Global Head of Digital Farming at Bayer, said digital tools were making farming quicker, more precise, efficient and sustainable.

"Already today, most new farm machinery is equipped with precision agriculture features. New tools help farmers optimise inputs such as fertiliser and crop protection agents, with corresponding improvements in yields and quality," Tobias said.

He said digital farming solutions helped to meet society's rising requirements in terms of transparency and sustainability, and Bayer was closely collaborating with highly competent partners such as Bosch and FaunaPhotonics, universities, start-up companies and not-forprofit organisations.

"By donating licenses to use proprietary data to organisations such as Quantified Planet, we are contributing to research into biodiversity for the benefit of both agriculture and society - and we are open for further partnerships."

Tobias said the Xarvio technologies would support growers around the

world to optimise the amount of crop protection they needed, allowing more efficient production and increased profits while reducing the impact of farming on the environment.

Field Manager and Scouting App Two innovative solutions under the Xarvio brand include Field Manager and Scouting App.

Field Manager will provide farmers with instant access to field-specific, actionable strategies for the most efficient application of crop protection products, within registered label guidelines.

"With Xarvio Field Manager, which uses imaging and sensor technology from, for example, satellites, growers always have the status of their fields at hand, receive field-specific crop protection timing and can download field-zone specific variable application maps," said Andree-Georg Girg, Head of Commercialisation Digital Farming and Managing Director of Digital Farming GmbH at Bayer.

"As a result, the application of agricultural inputs can be optimised so that the perfect amount is used exactly when

and where it is needed and harvests will be produced more efficiently."

The new Xarvio Scouting App will make it easy to detect and identify weeds, crop diseases, insects, leaf damage from other causes, and the crop nitrogen status - just take a picture and receive the analysis.

Targeted and transparent data use Tobias said the exchange of data between growers and technology providers like Bayer was critical and farmers should be informed and agree to how the data they shared was used and accessed.

"Especially the collection, use and storage of data must be clear and transparent," he said.

"Data policies, practices and engagements with growers should be carried out in an open and transparent manner, and be consistent with agreed-upon terms.

"We believe the best approach would be one in which partners agree on rules, such as through well-defined service agreements or a general code of conduct.

"The exchange of data must happen in a secure way. Security is at the top of our mind and we take all necessary steps in order to protect data."

Bayer uses technical and organisational security precautions to protect data from manipulation, loss, destruction or access by unauthorised persons. Any personal data provided will be encrypted, when in transit between systems, to prevent possible misuse by third parties.

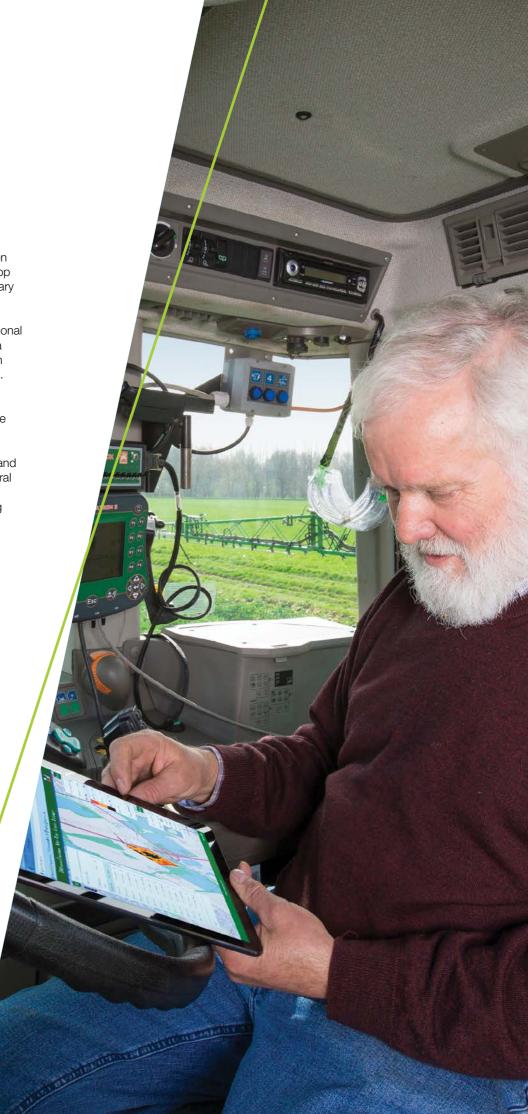
"As a leading innovation company and technology provider in the agricultural space, Bayer has lots to share, but also much to learn from the farming community," Tobias said.

"We are eager to learn and engage in the ongoing discussion about the responsible use of data in modern agriculture."

For further information about Xarvio digital farming solutions from Bayer, please visit:

xarvio.com and digitalfarming.bayer.com





Reducing ryegrass numbers the

name of the game at cootamundra

After purchasing what he calls a development property at Cootamundra (NSW) in 2013, Tony Good had a number of challenges, from general capital works, to managing herbicide resistant annual ryegrass and out-of-control wild radish.

Mr Good has since implemented a range of integrated weed management strategies on the 820-hectare 'Stradbroke', including grazing cereals, Kelly disc chaining, break crops, good firebreaks and even baling wheat crops for silage.

A key plank of his strategy was Sakura 850 WG herbicide, applying it in a mix with other herbicides, initially on all his wheat paddocks to bring ryegrass under control.

Heading into his fifth season on the property in 2018, Mr Good has driven ryegrass numbers down enough that he has been able to reduce his reliance on Sakura.

"This year, we will put Sakura on about a quarter of the wheat area, which is a level I'm happy with," he says. "What we've done is contained the ryegrass, got the numbers down, but Sakura remains a cornerstone of our overall integrated weed management program."

The problem of weeds building resistance to herbicide chemistry is a high management priority for Mr Good, who understands the need for long-term protection of effective products.

"We use wheat as our break crop, we mix our chemistry up and certainly never let something like Sakura be applied alone," he explains.

"Sakura will always have Avadex® with it, and occasionally we also add in trifluralin."

Mr Good, who also does some consulting as an agronomist, believes generally farmers are becoming more discerning about using products such as Sakura.

"When Sakura first came out there was a lot of blanket usage of it, but people have now learned how to use the product," he says.

"If a product is to survive and we're going to have good resistance management, that's how it needs to be."

In his canola program, Mr Good relies on Prosaro 420 SC Foliar Fungicide for foliar disease control, particularly on sclerotinia, to the extent he now describes it as an 'investment'.

"Prosaro came on to the market at the back end of the millennium drought – we were having a few tough years, and we started to use paddock strips to test the product," he says.

"Generally speaking, if we got Prosaro on at the right time to control disease, the resulting healthier crop could mean 400 to 600 kilograms per hectare extra yield in those tough years.

"That experience taught us a lot, so when the seasons changed and we started to have wetter years, it's now not an optional decision, Prosaro is a fixed cost when growing canola."

In those wetter seasons, Mr Good reports extra yield benefits of around 800 kilograms per hectare from healthier plants due to effective disease control from Prosaro.

"If it's put on at the right time, and probably on the early end of the right time, Prosaro is pretty good at having a positive impact on the end result most years, particularly when used early," he says.

"I'm not afraid to apply it twice so I'll go early, and while most times that's enough, if I need to, or I'm really worried about it, I'll go back out and give it another application of Prosaro."

"Thirty to forty kilometres west of here, where it's drier, those guys tend to get 400 to 600 kilograms per hectare yield increase from healthier plants following effective disease control from Prosaro, but they are still big numbers."

When conditions are wet, like 2016, Mr Good says he will turn to aerial spray contractors to make sure his Prosaro program goes out.

"My preference is to apply Prosaro by ground, but if the timing is right and I can't get there, the plane does it, that's how I rate the importance of the product," he says.



"It's interesting when dropping a chemical into the shed at the air strip, you see all the names written on the drums - I'm not the only person using the planes for Prosaro, pretty well now it's the standard practice of the local farmers.

"Having said that, moving forward I'm likely to start using Aviator Xpro instead of Prosaro, due to how effective it can be in potential high yield situations."

Having seen excellent results with Prosaro on sclerotinia in his canola for a number of seasons, Mr Good is excited by the potential of the product to benefit his wheat.

"Application on wheat is interesting to me and something we've got to learn about, particularly with a product like Prosaro," he says.

"There's a whole new world and a lot of learning to do around what I call the 'top shelf' or 'top end' foliar fungicides for keeping that leaf disease free for longer and looking after it in a high yield situation."





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