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THE AUSTRALIAN AGRONOMIST MAGAZINE

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THE AUSTRALIAN AGRONOMIST

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AUSTRALIA'S PEAK SEASON FOR SEVERE WEATHER AND RISK OF TROPICAL CYCLONES

THE BUREAU OF METEOROLOGY HAS RELEASED ITS LONG-RANGE FORECAST TO HELP THE COMMUNITY PREPARE FOR AUSTRALIA'S PEAK SEASON FOR SEVERE WEATHER.

While severe weather can occur at any time of the year, October to April is the peak time for severe weather in Australia including heatwaves, bushfires, tropical cyclones, severe thunderstorms and floods.

The current climate drivers, long-range forecast and recent conditions indicate an increased risk of heatwaves and bushfires this year. Different climate drivers are influencing the coming severe weather season compared to the previous 3 years with El Niño and positive Indian Ocean Dipole (IOD) events underway this year.

"While the long-range forecast shows conditions are likely to be drier than usual for large parts of Australia, there is still a risk of riverine and flash flooding where storms bring heavy rainfall."

Australian Bureau of Meteorology

For the 2023–24 season, the Bureau is expecting the following conditions:

Heatwave – the forecast shows a high chance of unusually warm temperatures for most of Australia until at least February 2024.

Bushfire – there's an increased risk for much of eastern and southern Australia due to reduced rainfall, high fuel loads and above average temperatures. Tropical cyclones – while overall likely to be below average, at least one tropical cyclone crosses our coast each season.

Severe thunderstorms – a normal risk of severe thunderstorms with dry conditions forecast for late spring and early summer.

Flooding – normal risk for localised flooding when storms bring heavy rain and during the northern wet season. Senior Meteorologist Sarah Scully said overall Australians can prepare for dry and warm conditions with an increased risk of heatwaves and bushfire weather this spring and summer.

"Daytime and night-time temperatures have an increased chance of being unusually warm for October to February. Warm nights after hot days means little relief from heat and can lead to heat stress," Ms Scully said.

"There is always a risk of dangerous and destructive fires in Australia at this time of year. Grass growth due to above average rainfall in the past 2 to 3 years is contributing to an increased fire risk." The Bureau has also forecast that this season there will be an 80% chance of fewer than average tropical cyclones.

Australia's most cyclone-prone area is the north-west coast between Broome and Exmouth. Northern Queensland and the Top End of the NT also get a high number of tropical cyclones.

"On average the first tropical cyclone crosses the Australian coast in late December. This can be later in El Niño years – possibly early to mid-January," she said.

"During El Niño, the number of tropical cyclones in the Australian region is often below average." Ms Scully said the start of the Australian summer monsoon is typically later than average during El Nino and positive IOD years.

"The average date is the last week in December and this season it's more likely to be in the first or second week of January," she said."Severe thunderstorms are more common during the warmer months, particularly in northern New South Wales, southern Queensland, inland Western Australia and across the tropical north."

"Thunderstorm asthma can be triggered by thunderstorms after high grass growth in southern Australia from October to December when pollen levels are highest," she said.

While the long-range forecast shows conditions are likely to be drier than usual for large parts of Australia, there is still a risk of riverine and flash flooding where storms bring heavy rainfall.

You can reduce the impact of severe weather by taking time to get ready before it happens. We provide regular forecasts and warnings to support the community.

Stay up to date with the Bureau's warnings. Download the BOM Weather app and set up your warning notifications.

Learn more about severe weather – visit **bom.gov.au/knowyourweather**

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HIGH FLOW MILLS' IMPACT ON DYNAMICS OF THE WEED SEED BANK

IN 2016, BRUCE MCLEAN FACED A DAUNTING RYEGRASS BURDEN ON HIS 3800 HA PROPERTY IN THE HIGH RAINFALL ZONE AROUND BOOL LAGOON IN SOUTH-EAST SOUTH AUSTRALIA.

In 2016, Bruce McLean faced a daunting ryegrass burden on his 3800 ha property in the high rainfall zone around Bool Lagoon in south-east South Australia. Knowing that they would need to capture and destroy this weed seed at harvest, Bruce decided to add an iHSD seed mill to their weed control program that year.

"We started with the original hydraulic horizontal drive iHSD and have since upgraded to the vertical drive model on our CLAAS 770 harvesters, although not all in the fleet have a mill attached," he says. "One reason for choosing the iHSD was the proximity of the dealership for service, and we have been pleased with the developments in mill technology over time."

Bruce grows mainly dryland wheat, beans, canola, clovers, phalaris and lucerne on 550 annual rainfall, with some area available for irrigation. "We don't get many harvest hours here where we often have cold, wet weather blowing in from the coast in the evening, so we can't afford to have anything slowing us down," he says. "This was a major deterrent for us when it came to implementing harvest weed seed control, but we have found that the mill doesn't slow us down too much, and we have the option to by-pass it if we need to."

In practice, Bruce has found that snails have been the main reason they have to by-pass the mill. The Persian clover crops can have very green vines at harvest, and Bruce finds he might need to by-pass the mill for up to 10 per cent of the clover area.

"Now we have the high flow mill, harvesting capacity is up by 5 to 10 per cent and with the CLAAS harvester, we don't lose much power when running the mill," he says. "Not all our harvesters have a mill attached, so when we have two mills running in the same paddock, we can often see a difference in weed germination in the swaths behind a harvester with no mill."

Bruce McLean farms at Bool Lagoon in South Australia's high rainfall zone. He says that the limited harvest hours in the region was a major deterrent when it came to implementing harvest weed seed control, but they have found that the impact mill doesn't slow them down too much, and they have the option to by-pass it if necessary.

This reassures Bruce that the mills are very effective at killing weed seeds, and they prioritise using the mills in paddocks with weed issues. He also appreciates the value of having a non-herbicide tool to help reduce the impact of herbicide resistance.

The McLeans find that getting the weed seed, particularly annual ryegrass, into the harvester front can be challenging. Wind can shatter the weed seed heads, particularly in wheat late in the harvest program, so they are contemplating windrowing in wheat but need to weigh up the impact of additional jobs while maintaining harvest timeliness. Desiccation in the bean crops works well to halt seed shedding and allow the mills to capture and destroy the weed seeds.

"In the high rainfall zone, we need to process up to 20 tonnes of biomass when harvesting a 10 tonne cereal crop," he says. "The bulk and presence of green material is more challenging for the harvester than the impact mill."

Having seen the benefits of harvest weed seed control using the impact mill, Bruce knows he is better prepared for the next big weed blow-out season.

De Bruin Engineering's iHSD representative, Andrew Vearing, says setting up the harvester correctly in high-yielding situations is critical to success with the weed seed kill and maximising grain yield.

"Take time to set up correctly, and do everything you can to protect straw quality," he says. "This will ensure the straw and chaff streams are well-separated, minimise the amount of 'MOG', or material other than grain, on the sieves."

"Checking grain losses in the separator and the cleaning shoe is also important, as is validating the changes you make to the set-up so you minimise grain loss and maximise weed seed capture into the mill."

Harvest weed seed control is one of the WeedSmart Big 6 tactics to limit the impact of weeds that have evaded herbicide during the cropping phase. Three companies offer seed impact mills in Australia, and all are WeedSmart partners.

For more information about harvest weed seed control, please visit the website: www.weedsmart.org.au

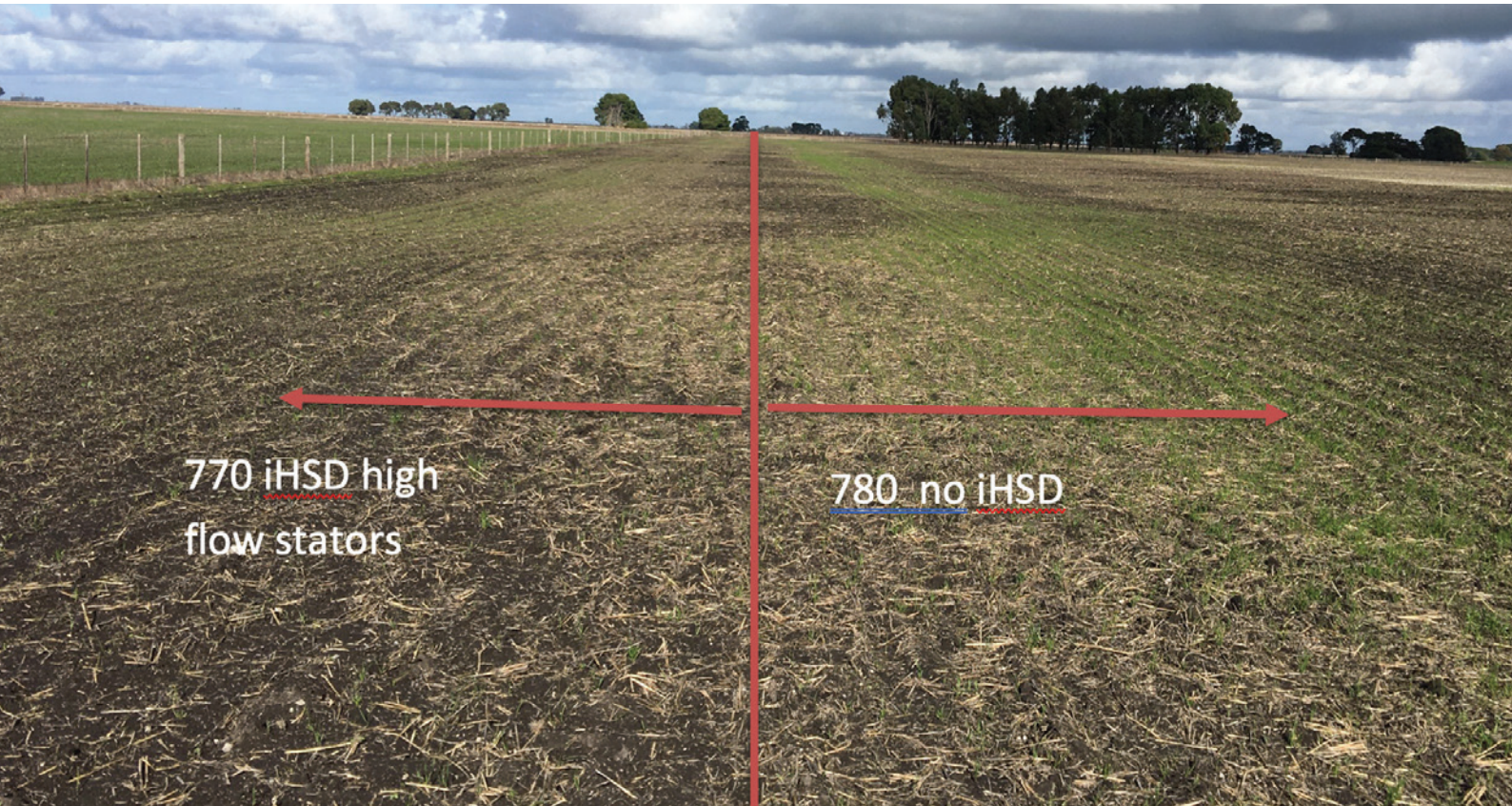
***Attribution:** Cindy Benjamin, WeedSmart*

WEED smart

"Take time to set up correctly, and do everything you can to protect straw quality," he says. "This will ensure the straw and chaff streams are well-separated, minimise the amount of 'MOG', or material other than grain, on the sieves."

Bruce McLean

Side-by-side comparison of weed germination with and without an impact mill applied reassures Bruce that the mills are very effective at killing weed seeds, and so they prioritise using the mills in paddocks with weed issues.



GRAIN GAINS AND WEATHER PAINS

AUSTRALIAN GRAIN PRODUCERS BRACE FOR A SEASONAL MIX BAG

The second batch of seasonal update videos for 2023 released last week by the Australian Export Grains Innovation Centre indicate a mixed bag for growers across the country.

The Bureau of Meteorology's latest climate outlook is for drier and warmer conditions across most of Australia's major grain growing regions, influenced by a likely El Nino and positive Indian Ocean dipole, and record warm oceans globally.

AEGIC's videos feature grain producers from across the nation speaking about the progress of their production programs during the growing season, and come with subtitles in eight languages.

The videos are made by AEGIC in collaboration with organisations from across the Australian grains supply chain, including support from GPA, to provide insights for export customers and grain buyers. This year the format has been tweaked to include a summary at the start of each video.

Eastern States

According to the August AEGIC update, crops across eastern Australia were generally in a good position after a wet start to winter, but conditions had begun turning dry and more rain was needed further north in New South Wales and Queensland.

Many growers were eyeing the outlook with trepidation, as the Bureau continues to forecast drier than average conditions for the next three months.

Mark Merrett, of Kaniva, Victoria, said the season was tracking fairly well after a very wet June, with July helping to dry paddocks and warm sunny days encouraging crop growth during August.

"We will be, however looking for rain in the next three weeks," he said. "If we miss out then, it will limit our yield significantly, but otherwise it's looking really good."

Jasmine Ryan, of Barry, NSW, said winter had been quite dry and unseasonably warm, with some crops more advanced than usual, and lower disease pressure.

Jake Hamilton, of Burradoo, near Condamine on the Western Downs, said the Bureau's "dire seasonal outlook" released earlier in the year persuaded them to sow early, planting winter crops into marginal to fair moisture.

"Luckily for us they weren't quite right, and we had a beautiful soaking 40-50mm in mid-May that allowed us to finish (sowing) in the good conditions," he said. "Since then the tap has turned off and with unusually warm weather for July and early August, the early crops .. are well-advanced for what we'd expect at this stage."

South Australia

Conditions vary across South Australia, with many crops progressing well after the wet start. August was dry and warm, and rain will be crucial for finishing crops.

Simon Goss of Brinkworth, said their crops were "on a knife's edge". "The season could go either way," he said. "We're probably only a couple of good rains away from an above average year, but if we don't get those rains, we mightn't be looking so pretty."

Robin Schaefer, of Bulla Burra, near Loxton in the SA Mallee, said the season was progressing nicely, although July was a lot drier and there were some quite severe frosts.

"For us spring is always really critical," he said. "Some of the forecasts aren't looking real promising, but others say ... it's going to be okay."

Western Australia

Growers reported crops were struggling in the north where lack of rain was costing yield potential, while central and southern areas were mostly looking good, and it was a mixed bag for the south east region.

The outlook for WA also is for drier than average conditions for the next three months. Despite welcome rain in mid-August many crops in the Geraldton zone were struggling.

In the Kwinana zone, the south was looking very good, while lack of rain in the northern and central areas was costing yield potential.

Most crops in the Albany zone were in excellent condition and there were some good crops in the Esperance zone, but others were either too dry or too wet.

Simon Wallwork, of Corrigin, said crops were developing nicely thanks to above average rain.

"We're hoping for minimal frost as crops approach flowering stage," the GPA member said. "Canola is at 50 per cent flowering and enjoying the wetter than average conditions."

Stuart Hocking, of Boxwood Hill, said they were expecting above average yields, and applying more in-crop nitrogen.

"Canola is in full flower and we're pretty excited about where things are headed," he said.

Source: Grain Producers Australia

MANGO MALFORMATION DISEASE: DECLARED PEST

MANGO MALFORMATION DISEASE IS A DISEASE OF MANGOES, CAUSED BY SEVERAL SPECIES OF THE FUNGUS FUSARIUM.

Mango malformation disease is a disease of mangoes, caused by several species of the fungus Fusarium (including Fusarium mangiferae), that can cause significant yield losses. This disease is not known to occur in Western Australia. Early detection and reporting of this disease will help protect the Western Australian mango industry.

What plants are affected?

Mango malformation disease only infects mango trees.

What do I look for?

- Flowers and shoots develop abnormally with stunted, compact growth.
- Shoots are tightly bunched and misshapen with shortened internodes.
- Flower stems are shortened, thickened and highly branched with 2-3 times more flowers than normal.
- Leaves sometimes grow in the flower head.
- Distorted flower panicle and dwarfed leaf growth
- Distorted flower panicle and dwarfed leaf growth
- Distorted leaf bud growth
- Distorted leaf bud growths in knots on the main stem

How does the disease survive and spread?

- The fungus infects emerging flower and shoot buds, then fungal spores are produced on infected plant parts.
- Spread within orchards is slow. Spores can be spread by contaminated pruning equipment, air currents, rain splash and infected plant material falling from infected trees. Mango bud mite (Aceria mangiferae) is thought to assist spread of the disease within orchards.
- Mango malformation spreads longer distances with nursery stock and budwood.
- The disease is not spread in fruit or seeds.
- The disease can remain dormant for several years before showing symptoms.
- What damage can this disease cause?
- Affected flowers do not usually set fruit, which reduces yield.
- Abnormal growth can stunt mango trees.

Status in Western Australia

Fusarium mangiferae is absent from Western Australia and is a quarantine pest. It is a prohibited organism under section 12 of the *Biosecurity and Agriculture Management Act 2007.*

Western Australia's Pest Freedom for mango malformation disease is supported by general and targeted surveillance, and by specific import requirements to prevent its entry. A person who finds or suspects the presence of mango malformation disease must report it to DPIRD.

What do I do if I find it?

It is important that any suspect mango malformation disease occurrence is reported. Early detection and eradication will help protect Western Australian mango growers.

If you find or suspect plants with mango malformation disease, please make a report using *MyPestGuide® Reporter* or contact the *Pest and Disease Information Service (PaDIS*) to report this pest.

Pest and Disease Information Service (PaDIS)

- **+61 (0)8 9368 3080**
- **padis@dpird.wa.gov.au**

CORTEVA REFORMULATES 2,4-D TO PROVIDE A BETTER WAY FOR CONTROLLING TOUGH WEEDS

CORTEVA Agriscience has applied its commitment to finding better chemistries for the 2,4-D family by creating Colex-D® - a herbicide just as effective on hard-to-control weeds but with the added benefits of near-zero volatility, ultra-low odour and Drift Reduction Technology, meaning it's better for you, and better for your neighbours.

The unique structure of Colex-D® comes from its innovative choline salt. This proprietary salt brings a step change in drift reduction performance and volatility to reduce off-target movement.

Trialled extensively under Australian field conditions and wind tunnel testing, Corteva Agriscience Product Manager, Guy Sands said Colex-D® has demonstrated its strength and efficacy in fallow management, while still remaining lower risk to sensitive crops, such as, grapes, horticulture, and cotton.

"Colex-D® is a premium product with superior performance that is a better way of managing hard-to-control weeds in fallow such as fleabane," Mr Sands said.

"The proprietary Drift Reduction Technology is designed to eliminate droplets at the finer end of the spectrum and generate more optimally sized droplets, maximising performance and minimising the risk of off-target movement."

"A high quality of manufacturing, and lower levels of impurities in the technical material used to make the product has also resulted in Colex-D® having an ultra-low odour."

Gunnedah CGS Branch Manager, Christie Chapman said her first experience with Colex-D® at the Corteva Agriscience Breeza research station solidified the product's efficacy and highlighted its improvements in drift reduction and ultra-low odour.

"At the Breeza trial site, video and field demonstrations of the Colex-D® product were conducted, and it was really great to see how much less drift you had from the Colex-D®," Ms Chapman said.

"It was trialled next to cotton which was really important to those of us observing because we wanted to see how that would work in a real-life situation."

"It made us confident in the product. It worked just like 2,4-D should and we had the confidence that it wasn't going to cause us issues in the surrounding crops."

Ms Chapman said while existing 2,4-D formulations have issues with volatilisation and drift, this was not a cause for concern with Colex-D®.

"At the Breeza trial site, video and field demonstrations of the Colex-D® product were conducted, and it was really great to see how much less drift you had from the Colex-D®."

Christie Chapman
Gunnedah CGS Branch Manager

"Where our farmers have used Colex-D® it has not drifted at all. They have made sure to use it in the right conditions, with the right nozzles," she said.

"The structure of Colex-D® and its chemical composition means it is not going to volatilise."

"I am confident in the chemistry."

Corteva Agriscience Field Scientist, Chris Love said while 2,4-D undoubtedly has robust activity on some of the most important, hard to kill weeds, the use of existing 2,4-D products is becoming increasingly difficult to recommend due to drift and volatility issues. "Older formulations of 2,4-D are viewed as problematic because of the risk of drift and damage to sensitive crops," Mr Love said.

"However, farmers still need a way to control tough weeds in fallow. Colex-D® is a product that addresses both issues which is why we believe it's a better way forward, to use in conjunction with Best Management Practices."

NU Rural Agronomist, Adrian Nelson said the Breeza trial day showcased the strength of Colex-D® and its proven compatibility with other key herbicides.

"Corteva always make good formulations that mix well, and work well," Mr Nelson said.

"Older formulations of 2,4-D are viewed as problematic because of the risk of drift and damage to sensitive crops,"

Chris Love
Corteva Agriscience Field Scientist

"Farmers like it from that perspective and are willing to pay a bit more for it."

"I think it's some of the more innovative farmers that like to use new products that they can see have a definite benefit."

"Stewardship for 2,4-D, in particular, is very important," he said.

"Obviously the cotton industry is particularly sensitive to it. They'd love to see it disappear but it's a key tool in farming. We need it and we need to make sure we look after it."

Corteva reinforces that success with this unique chemistry requires users follow the label and best management practices for 2,4-D application.

"The structure of Colex-D® and its chemical composition means it is not going to volatilise. I am confident in the chemistry."

Christie Chapman
Gunnedah CGS Branch Manager

Christie Chapman, Cotton Grower Services, Gunnedah NSW

FARMERS HOPEFUL BUT UNRECOGNISED IN THE FIGHT AGAINST CLIMATE CHANGE

FARMERS AROUND THE WORLD HAVE SPOKEN: CLIMATE CHANGE IS HAVING A SIGNIFICANT IMPACT ON FARMS. ON AVERAGE, FARMERS ESTIMATE THAT THEIR INCOMES HAD REDUCED BY 15.7 PER CENT DUE TO CLIMATE CHANGE OVER THE PAST TWO YEARS.

Farmers around the world have spoken: climate change is having a significant impact on farms. On average, farmers estimate that their incomes had reduced by 15.7 per cent due to climate change over the past two years.

This is according to the Farmer Voice survey, an independent global research project commissioned by life science company Bayer that brings to light the views of farmers from across eight countries worldwide, including Australia. The project also surveyed farmers from the US, Brazil, Germany, Ukraine, China, India, and Kenya.

"The survey is the first of its kind to ask farmers worldwide what's happening on their farm. The results have highlighted the common challenges of climate change and economic pressures being faced by farmers around the world, and brought to light some regional differences," said Warren Inwood, Managing Director for Bayer Crop Science Australia.

The results revealed that, regardless of location, farmers were already feeling the effects of climate change, with 71 per cent stating that it has had a large impact on their farm in the past two years. Three quarters placed climate change as a major concern for their future.

"A uniting challenge for farmers around the world is climate change. Farmers are already experiencing its adverse effects on their fields. And they expect this challenge to deepen," said Mr Inwood.

Economic pressure a standout challenge for Australian farmers

For Australian farmers, farm economics are particularly top of mind compared to their international peers.

Australians were particularly concerned about farm costs and access to finance. Energy costs were a top challenge for 78 per cent of Australian farmers compared to 47 per cent globally. Australians were also more likely to state that better access to finance and support in relation to financial risk would benefit their farms than their international peers.

"While economic pressures were felt by all farmers in the survey, we're hearing that it's been particularly challenging for Australian farmers," said Mr Inwood.

Farmers squeezed between climate change and the economy

The research project revealed that farmers are tackling a multitude of problems with limited compensation and recognition.

"Farmers are on the frontline dealing with the direct impacts of climate change on their farms every day. They are expected to look after the environment and tackle the global emissions problem all while under enormous economic pressure," said Mr Inwood.

Although the world's farmers are facing a wide array of challenges, 80 per cent are already taking or planning to take

HIGHLIGHTS

- **The global Farmer Voice survey revealed farmers estimate that their incomes had reduced by 15.7 per cent due to climate change over the past two years.**
- **Farmers are already feeling the effects of climate change, with 71 per cent stating that it has had a large impact on their farm in the past two years.**
- **Three quarters placed climate change as a major concern for their future.**

steps to reduce greenhouse gas emissions. Steps include adoption of cover crops, innovative seeds or renewable energy.

In Australia, renewable energy has been, or is in the process of being, implemented by 72 per cent of farmers. And on average Australians are around three times more likely than their international peers to be investigating opportunities to sequester carbon.

Despite these efforts, these environmental stewardship activities are rarely compensated.

"All farmers surveyed agreed that the huge amount of work done to steward the environment should be compensated. Farmers play an irreplaceable role in nourishing the world, yet 88 per cent of them feel they do not receive the credit they deserve," said Mr Inwood.

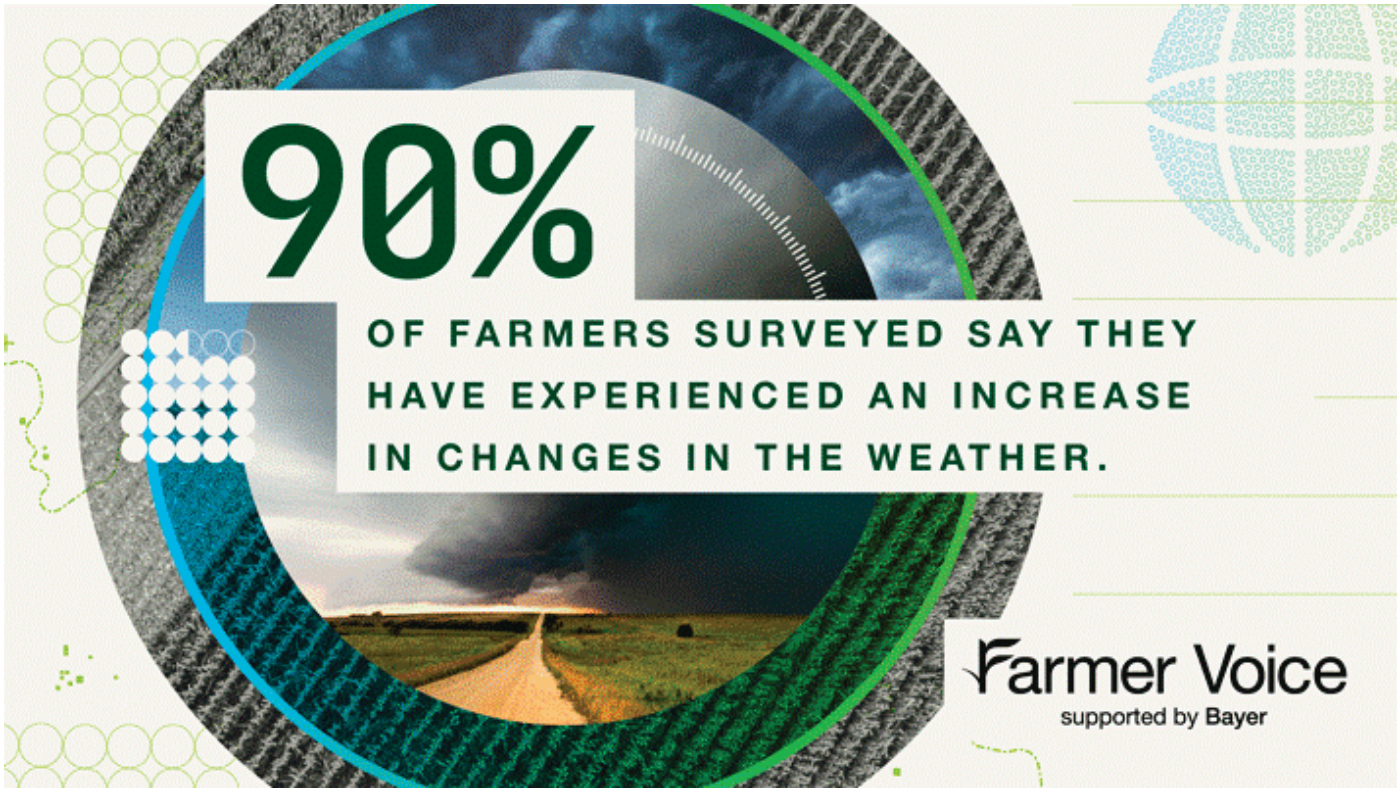
The Farmer Voice project revealed that, regardless of these difficulties, farmers remain optimistic, with 71 per cent feeling positive about the future of farming.

"While farmers are incredibly resilient, more can be done to support them. We need to come together to provide farmers with the tools, technologies, financing and recognition to help them continue growing food and fibre for local and international consumers," said Mr Inwood.

"Bayer began this research project wanting to capture the voice of farmers around the world and share it with the public. We've now heard what they have to say. It's a call to action for the entire food system to innovate, collaborate and deliver the solutions farmers need."

This is the first year of the Farmer Voice survey led by Bayer. It is expected that the project will continue yearly to track the results over time and continue sharing the perspectives of farmers around the world.

To find out more about the Farmer Voice survey, visit **www.bayer.com/en/agriculture/farmer-voice.**



HARVESTING EXCELLENCE: TECHNIQUES BEHIND MAKING QUALITY HAY

There are two aspects to making quality hay, starting with quality forage, and curing the forage to the appropriate dry matter content in as shorter time as possible.

When to cut forage for hay is a trade-off between quality and quantity. As the crop or pasture develops a seed head and reaches maturity the yield increases, however the quality declines.

The quality decline is a result of decreased metabolisable energy and crude protein, along with an increase in fibre. However, with cereal crops for example, it can be hard to cure if cut before the seed head has fully emerged.

Project 3030, which was run in the early 2000's showed it was possible for a wheat yield at the boot stage to yield 7.9 tonnes dry matter per hectare with 10.2 megajoules of metabolisable energy per kilogram of dry matter.

At the soft dough stage the yield increased to 10.9 tonnes dry matter per hectare, but metabolisable energy dropped to 9.3 mega joules per kilogram of dry matter.

Cutting height of 15 centimetres (cm) is normally recommended for cereal crops. Cutting higher will increase the quality but reduce yields while cutting below will increase yields but reduce the quality (with increased stem).

Leaving 15 cm also allows for the curing fodder to sit on the stalks, allowing airflow under the windrow, reducing curing times and decreasing potential contamination from dirt and rocks.

Once the forage is cut the aim is to get the forage to the target dry matter content in as shorter time as possible to reduce dry matter and quality losses from plant respiration and potential rain damage.

To quicken the curing process, cut after the morning dew has lifted. Cut with a mower conditioner to crush the stems and nodes, to increase the rate of moisture loss. Leave the windrows behind the mower as wide as possible (75 – 90% of the mower width).

A tedder can be utilised to further spread the forage, reducing the thickness of the windrow and fluffing up to aid early drying.

Ideally hay should be baled at 10 to 15% moisture. Hay should not be baled over 18% moisture as there is risk of spoilage from microbial activity and the heat generated may result in hay fires.

A practical method of determining if cereal hay is ready to bale is to take a tightly bound handful of hay and wind it rapidly in a circular motion to produce shearing. If it doesn't break within 3 turns it most likely isn't cured enough.

Sarah Clack, Agriculture Victoria Dairy Extension Officer

A germination test of soybean seeds. The team found that measuring RNA integrity detected aging in soybean seeds much earlier than using germination assays.

STUDY MEASURES EARLY DETECTION OF AGING IN SEEDS

Aging is a part of life, and plants are no exception. The life cycle of a plant is felt in genebanks that store plant materials, such as seeds. Plant materials in genebanks may be accessed by farmers, researchers, conservationists, and others for breeding.

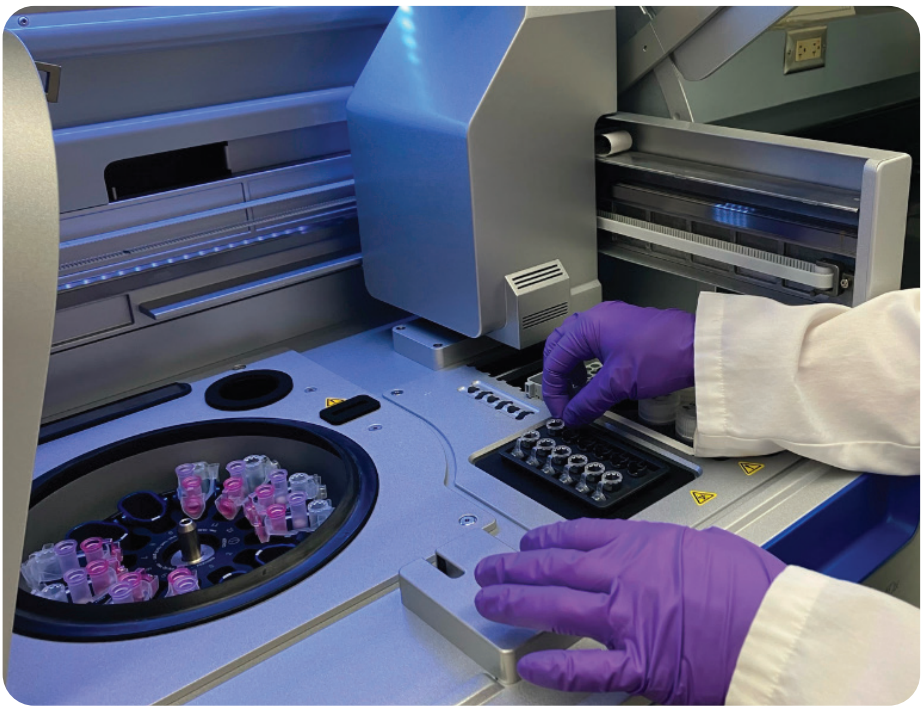
But for a genebank to provide useful germplasm to growers, the seeds stored there must be alive when harvested. And as the stored seeds start to age, fewer and fewer of them live long enough to germinate. So, genebanks must continuously monitor stored seeds to ensure they haven't aged beyond their 'expiration date' and lose ability to germinate.

In a new study, researchers successfully measured aging in stored soybean seeds by checking the integrity of RNA in the seeds. Ribonucleic acid (RNA) is a nucleic acid present in all living cells. Its principal role is to act as a messenger carrying instructions from DNA for controlling the synthesis of proteins. The new method is faster and used less material than checking whether stored seeds germinate when planted, the current 'gold standard' of measuring seed age and viability.

The study was published in Crop Science, a publication of the Crop Science Society of America.

"We could detect changes in seed age by measuring RNA integrity about five times sooner while using only a fraction of the seeds one would use for a germination assay," says Christina Walters, the lead author of the study. Walters is a researcher at the USDA-ARS National Laboratory for Genetic Resources Preservation in Fort Collins, Colorado.

Germination tests can also be expensive and need a lot of human resources. "Large seed collections simply don't have the resources to be testing and regenerating seeds unnecessarily," says Walters. But waiting too long between germination tests can also be a problem. The seeds may



RNA being extracted from soybean seeds in a lab. Extracting RNA using a robot reduces variation in RNA integrity number (RIN) and increases the sensitivity of detecting changes. Measuring RNA integrity accurately predicts aging rates of different species.

die between monitoring intervals and the collection would be completely lost. “So we thought, wouldn’t it be great if we had a crystal ball that gave us certainty about seed age without needing to germinate?” says Walters.

Much like it’s more famous ‘cousin’ DNA, RNA occurs in strands of various lengths. Walters and colleagues measured the sizes of RNA strands in stored soybean seeds over several years. In previous research, they could detect changes in RNA fragment sizes before detecting other symptoms of aging or death in seeds. In this study, the researchers compared results of their RNA integrity measurements with results from germination tests.

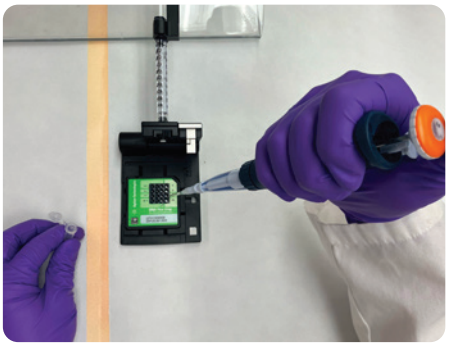
The team found that measuring RNA integrity detected aging in soybean seeds much earlier than using germination assays. For example, changes in seed health could be detected within 7 years of storage using the RNA integrity method. In contrast, using the same seeds, germination tests could detect changes after 15-17 years. By that time, loss of seed viability was already problematic. “You actually want to catch changes in seed lots before they stop germinating,” says Walters. Measuring RNA integrity could help genebank managers do just that.

For soybean, the results from the RNA testing could be achieved with many fewer seeds. In some cases, significant declines in seed health could be detected with as few as 22 soybean seeds using the RNA integrity method. Detecting the same declines using germination assays would have used up hundreds of valuable seeds.

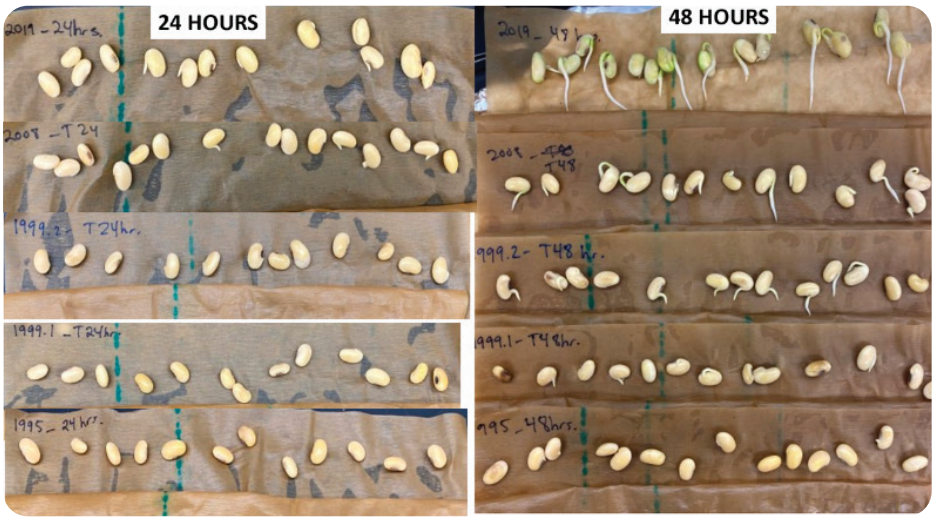
Walters and her team have used RNA integrity assays on a few other species in addition to soybean. “Measuring RNA integrity accurately predicts aging rates of these different species,” says Walters. “Now we need to explore an even broader group of species.”

Ultimately, Walters hopes these findings will help genebanks. “Sometimes genebanks are so much a part of infrastructure that they become invisible,” says Walters. “But I think the service genebanks provide is fundamental to the future that we’ll leave for our children.”

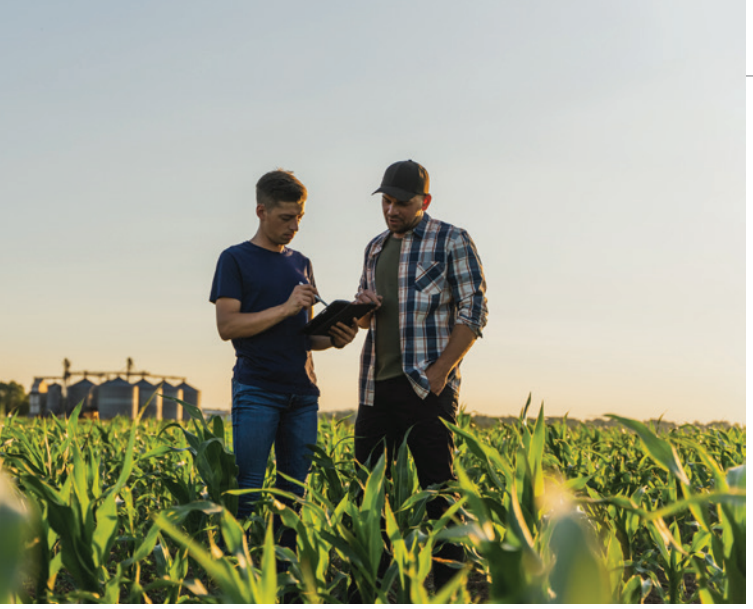
Auithor: Adityarup "Rup" Chakravorty



Extracted RNA is loaded onto chips and ready for electrophoresis that will detect fragmentation patterns. RNA integrity number (RIN) describes that pattern in a calculation. In this study, the researchers compared results of their RNA integrity measurements with results from germination tests.



The process of germination in aging soybean seeds. These are ‘Williams ‘82’ soybean that were harvested (top to bottom) in 2019, 2008, 1999 (2 rows) and 1995 and germinated in 2022.



INDUSTRY PERSPECTIVES ON EMERGING ISSUES FOR SEASON AHEAD

THE DEPARTMENT OF PRIMARY INDUSTRIES AND REGIONAL DEVELOPMENT HAS MET WITH KEY INDUSTRY LEADERS TO HELP PREPARE FOR EMERGING ISSUES FACING THE STATE'S AGRICULTURE AND LIVESTOCK SECTORS.

Industry leaders from WA Farmers, Grower Group Alliance, the Pastoralists and Graziers Association, Rural West, Cooperative Bulk Handling, Rural Business Development Corporation, the WA Meat Industry Association, sheep consultants and senior DPIRD staff were joined by Agriculture and Food Minister Jackie Jarvis yesterday to discuss the challenges of the current season.

DPIRD Acting Deputy Director General of Primary Industries Development David Ferris said it was important to hear from industry to gauge the full extent of emerging issues for the season and how Government could assist.

Dr Ferris said industry was looking to the Government to help increase confidence in the industry by supporting a broader range of options for turning off stock and market access.

He said attendees also raised the need for timely technical advice and information to support those who may not have experienced difficult seasons and market conditions before.

"The 2023-24 season has dried off significantly, and livestock prices have fallen dramatically creating some very hard conditions for some farmers," Dr Ferris said.

"DPIRD is committed to working with industry and has a strong focus on supporting mental health, land condition and animal welfare, as well as associated businesses.

"We want to ensure that farmers and business owners experiencing seasonal distress have access to the relevant support services."

Dr Ferris said DPIRD would continue to monitor the season and update information to support industry through its web content on the Season 2023 webpage and related field days and other events.

"DPIRD has stood up a seasonal response team across the department to ensure we have the resources and expertise to focus on supporting industry through the next 4-6 months," he said.

UPDATED REGISTRATION FOR CONTROL OF SLW IN COTTON

Australian cotton growers have access to a better option for controlling Silver Leaf Whitefly (SLWF). AceTam 225 from eChem (Aust) has recently been registered for the control of SLWF. This New label extension (300 – 500ml/ha) provides greater flexibility for growers in managing this damaging pest, while continuing to provide reliable control of Cotton Aphid and Green Mirid.

The commitment of eChem (Aust) to the Australian cotton industry is showcased by the extensive local research that was conducted to allow this new use pattern for eChem AceTam 225. It is the only acetamiprid product registered at such an extended application for the control of SLWF. As a Group 4A insecticide, it provides a cost-effective option with an alternate mode of action to other SLWF products. This will help growers to reduce the risk of honeydew contamination in their crops while preserving the effectiveness of products from other insecticide groups. The development of resistance to products such as pyriproxyfen has highlighted the importance of resistance management in SLWF populations over recent seasons.

eChem AceTam 225 controls all stages of SLWF. It should be used in the early stages of population build-up before the infestation becomes established in the crop. If monitoring indicates that retreatment is necessary, an insecticide from a different mode of action group should be used before applying a second application of eChem AceTam 225. No more than two applications may be used per crop. The application rate for eChem AceTam 225 is now up to 500mL/ha and must always be applied and adjuvant, either 0.2% v/v organosilicone penetrant or the label rate of a non-ionic surfactant. eChem AceTam 225 can be applied at any stage of the Insecticide Resistance Management Strategy.

eChem (Aust) is a wholly Australian owned Ag Chemical Company.

For more information, contact the eChem (Aust) team on **1300 781 649**, or visit **www.echem.com.au**

100% Australian Owned for the Australian Cotton Grower

CROP	PEST	STATE	RATE	CRITICAL COMMENTS
Cotton	Silverleaf Whitefly (Bemisia tabaci Biotype B)	All States	340 – 500 mL/ha	eChem AceTam has activity on whitefly adults, nymphs and pupae and evidence of activity will be slower than typical contact insecticides. Apply eChem AceTam when whitefly first appears and prior to heavy populations becoming established in the crop. Use the higher rate when conditions favour a rapid increase in the whitefly population, for longer residual control, during periods of rapid crop growth or when crop is well advanced. After application, continue to monitor the crop and if a second spray is required, apply an insecticide from a different mode of action group before applying a second application of eChem AceTam. DO NOT apply more than 2 sprays per crop per season. Adjuvant: Apply with 0.2% v/v organosilicone penetrant or the label rate of a non-ionic surfactant.

GETTING A NEW EDGE WITH A GLOBAL LEADER IN BIOLOGICAL SOLUTIONS FOR FARMERS

New Edge Microbials (NEM) partners with global biocontrol, bio-stimulant and bio-fertiliser group, Lallemand Plant Care, a division of Canada's Lallemand Inc.

The partnership will deliver new and globally proven biological products for distribution to farmers in Australia and New Zealand, significantly improving soil health, crop yield, and sustainability. It will facilitate access to global markets for NEM's Australian technologies.

NEM remains majority Australian-owned, regionally-based (Wodonga, Victoria) and committed to harnessing the best science for soil and plant health. New Edge Microbials, a business started by microbiologist Sandy Montague 20 years ago, has partnered with Canada's Lallemand Inc. in a deal that will contribute to significant transformation in the productivity and sustainability of broad acre and horticulture farming in Australia and New Zealand.

The NEM-Lallemand partnership brings together: NEM's powerful platform in Australia; NEM has developed, manufactures and markets more than 50 proven biological products used across approximately one million hectares each year, and Lallemand Plant Care's extensive world-class product range; Lallemand is a global leader in the development, production, and marketing of yeast, bacteria, fungi and related solutions across the baking, food ingredients, human and animal nutrition and health, crop protection/nutrition, wine-making, brewing, alcohol, and biofuel sectors. It has a presence in 50 countries, operating 48 production plants and employing over 5,000 people.

Under an exclusive partnership, NEM will introduce an extensive range of Lallemand Plant Care products to Australia and New Zealand, starting with initial field trials in 2024 and a steady stream of new product launches from 2025 onwards. The company anticipates that this will lead to significant market growth in the biological segment and help farmers in Australia and New Zealand increase soil health, crop yields, and quality.

NEM's current products, used throughout Australia, include a full range of rhizobia-based seed and soil treatments that support nitrogen fixation in legume crops, and an emerging range of bio-stimulants for fruit, vegetables, and horticulture.

NEM remains majority Australian-owned and regionally based and continues its commitment to harnessing the best Australian and global science for soil and plant health. Lallemand and NEM

NEM's current products, used throughout Australia, include a full range of rhizobia-based seed and soil treatments that support nitrogen fixation in legume crops, and an emerging range of bio-stimulants for fruit, vegetables, and horticulture."

are committed to substantial investment in new product development. NEM has grown from a business providing an initial range of rhizobia products out of a small factory in Albury in 2004 to its recent move to a modern, high quality facility in Wodonga with 42 employees embodying Australia's leading capability for end-to-end development of bio-stimulants and bio-fertilisers from research to commercial supply.

The partnership with Lallemand Plant Care, a leading global organisation, is an important next step for the business. According to Lallemand Plant Care CEO, Frederic Chagnon: "The future of farming lies in scientifically proven biological products that enhance yield, profitability, and soil health without harm to the environment. Our experience globally indicates a rapid adoption of biological products, a trend which is currently underway in Australia and New Zealand where NEM is the leading independent player and the ideal partner for Lallemand in this region."

From left to right, Cornelius van Dyk, Jean Chagnon, Alex Turney and Bruce Parncutt

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NEM Wodonga Team hosting Lallemand key people

‘TRIPLE TRAIT’ CANOLA GIVES AUSTRALIAN GROWERS EXTRA FLEXIBILITY AND STRONG YIELDS

True flexibility has arrived with the addition of BASF’s best canola variety yet, InVigor LR 4540P, providing growers with their first opportunity to sow a ‘triple trait’ TruFlex variety. InVigor LR 4540P joins InVigor LT 4530P (launched in 2021) as the only varieties bred with three different trait technologies. Both varieties contain the LibertyLink and PodGuard traits - which are exclusive to InVigor hybrids - however the new InVigor LR 4540P also contains the TruFlex trait, making it an appealing variety to wide range of growers.

“We’re very excited to be able to offer growers Australia’s first triple trait TruFlex variety,” said Gavin Heard, Head of BASF Seeds and Traits, Australia and New Zealand.

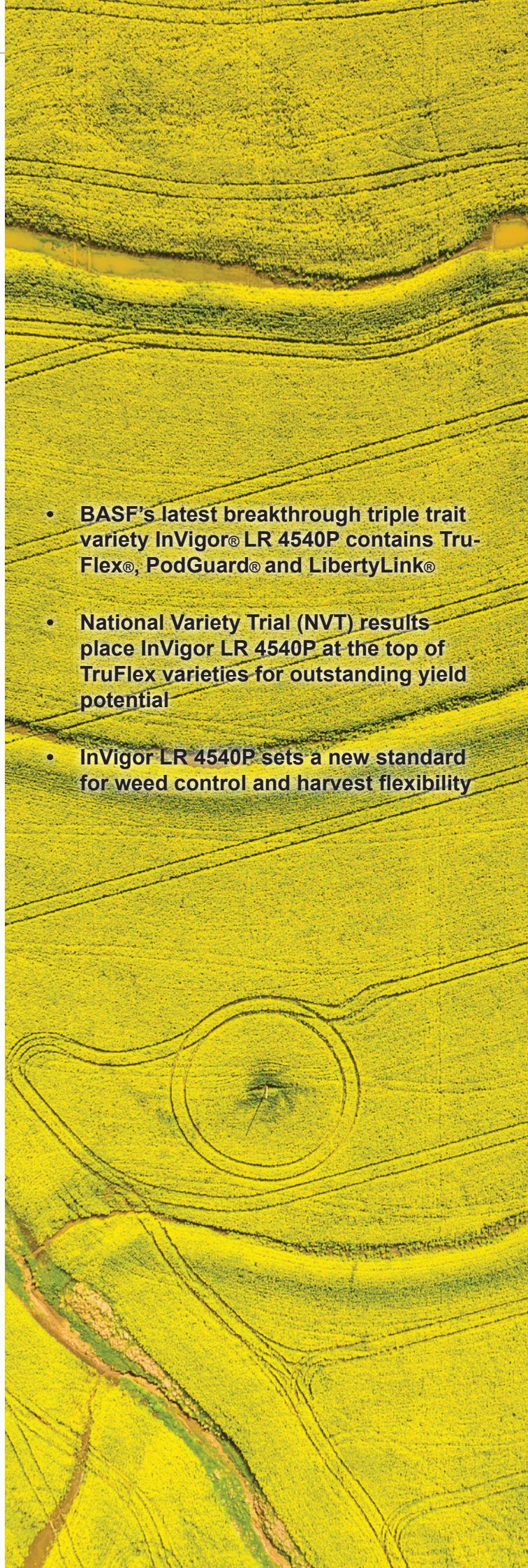
Last year’s National Variety Trials (NVT) results, placed InVigor LR 4540P amongst the top of the TruFlex varieties, emerging as one of the strongest performers in the low to medium rainfall environments with plenty of upside, as well as being number one for harvest flexibility and a standout for weed control. InVigor LR 4540P is also an excellent performer in medium to high rainfall areas.

InVigor LR 4540P includes BASF’s unique PodGuard trait, providing a much higher level of shatter-tolerance than traditional breeding programs can achieve. The superior PodGuard protection and compact plant height allows growers greater harvest timing flexibility and reduces harvest yield loss.

“Growers now have the opportunity to introduce Liberty Herbicide on top of their TruFlex spray program. InVigor LR 4540P provides a valuable opportunity to introduce a new mode of action, not previously used in broadacre cropping, into their canola program. This will give more flexibility than any other variety on the market and further improve control of certain weeds. In particular, those which have developed resistance to other herbicides, such as annual ryegrass,” Heard said.

InVigor LR 4540P is scheduled for commercial release in time for the 2024 cropping season. If trial results are an indication, this would suggest it will be in high demand as it offers growers excellent yield potential and greater flexibility throughout the season. The TruFlex and LibertyLink traits are produced by genetic modification, so InVigor LR 4540P canola will be classified as GM and subject to the same management requirements as other LibertyLink and TruFlex crops.

For more information, please visit crop-solutions.basf.com.au/



- **BASF’s latest breakthrough triple trait variety InVigor® LR 4540P contains Tru-Flex®, PodGuard® and LibertyLink®**
- **National Variety Trial (NVT) results place InVigor LR 4540P at the top of TruFlex varieties for outstanding yield potential**
- **InVigor LR 4540P sets a new standard for weed control and harvest flexibility**

AUSTRALIAN CANOLA INDUSTRY'S EMISSION CREDENTIALS RECOGNIZED BY EUROPEAN COMMISSION

New analysis from CSIRO, Australia's national science agency, has led to the European Commission's recognition of the Australian canola industry's low-emissions credentials for the second time, enabling local canola growers continued access to lucrative international markets.

Australia is a major supplier of canola to the European Union (EU) biodiesel market, with over 1.8 million tonnes exported annually to European countries.

CSIRO's report, *Greenhouse gas emissions from the cultivation of canola oilseed in Australia*, looked at the footprint of Australian canola growing at every stage, from fertilisers to pesticide use and found it met the European Commission's greenhouse gas (GHG) savings targets for biofuels entering the EU transportation fuel market.

Speaking at an international canola conference in Sydney, CSIRO's Dr Maartje Sevenster said the report, now approved by the European Commission, gives EU biofuel producers the certainty that they can source canola from Australia and still meet the GHG savings target.

"This demonstrates that the emissions of Australia's canola industry are well below the default allowing Australian canola growers to maintain access to important EU markets," Dr Sevenster said.

"To secure this ongoing certainty for our growers, we needed to demonstrate once again that canola can be grown at a low enough carbon footprint so that once all processes of shipping and refining are added, the final product can be delivered within the target emissions range.

"From 2 October this year, Australian canola will be used in European biofuels with the updated carbon footprint results."

CEO of the Australian Oilseeds Federation Nick Goddard welcomed the news and said it was another boost for Australia's canola industry, now the country's second most valuable grain crop after wheat.

"This shows our canola farmers are leading the way in demonstrating solid environmental standards and social licence to operate," he said.

"Australia remains one of only a few non-European countries that continue to demonstrate low GHG emissions for canola production globally."

The report, commissioned by the Australian Department of Agriculture, Fisheries and Forestry, is the second prepared by CSIRO supporting the competitiveness of the Australian canola industry in the European biofuel market.

The first report was approved by the European Commission in 2017.

Learn more about CSIRO's research in canola and other oilseed crops.

"To secure this ongoing certainty for our growers, we needed to demonstrate once again that canola can be grown at a low enough carbon footprint so that once all processes of shipping and refining are added, the final product can be delivered within the target emissions range."

Dr Maartje Sevenster

CSIRO

Senior CSIRO scientist Dr Surinder Singh who has engaged in extensive research in canola.

GROW FOOD, SAVE THE WORLD

GROW IT LOCAL REPORT HIGHLIGHTS THE IMPACTS OF GROWING FOOD IN COMMUNITIES ACROSS AUSTRALIA.

***Grow It Local*, a homegrown movement dedicated to helping more Australian's grow, share and eat locally grown food, has today launched the *Grow It Local* Report - an annual study into the impacts of growing food in communities across Australia.**

Produced by Taverner Research, the *Grow It Local* Report is based on 1,448 surveys completed by home growers in every Australian state and territory.

Paul West, *Grow It Local* co-founder, chef and River Cottage Australia host, commented that the *Grow It Local* Report reinforces that growing food is a force for good.

"Growing your own food provides a connection to nature, promotes positive wellness and mental health, is a gateway to sustainable living, enables healthy eating habits. This leads to a greater appreciation for food, which ultimately reduces food waste and carbon emissions. We want to explode these positive impacts by helping all Australian's learn to grow."

What began as a grass roots initiative in Bondi Beach in 2019 has grown into a truly national homegrown community supported by 32,000 aspiring growers, 31 councils, three state/territory governments and partnerships with leading sustainability and environmental organisations Patagonia and Seasol.

"*Grow It Local* is a mission to get more people growing, sharing and eating locally grown food. We work with Australia's leading growers, chefs and local food heroes to give people the knowledge, skills and support they need to successful grow from patch-to-plate," says **Paul West.**

Grow It Local provides free monthly digital learn to grow workshops, seasonal community grow-alongs, a subscription seed service and the world's most creative and colourful gardening awards program to engage and inspire budding growers.

"The *Grow It Local* Report is all about helping to quantify and qualify the positive impacts that home growers are achieving in communities across Australia," commented **Darryl Nichols**, *Grow It Local* co-founder.

"We want to give more people, more reasons to start growing. Growing food is an accessible grass roots action that anyone can take to help save the world and live a happier, healthier and more delicious life!"

In a time of inflationary pressures, the *Grow It Local* Report highlights that growing food is also helping Australians save money with the average respondent stating they save $550 per year through their homegrown activities.

TV presenter and *Grow It Local* Patron **Costa Georgiadis** noted, "Growing food is a powerful action, it's a habit you can exercise every day that teaches you about nature and the world around you."

"Most importantly it connects you, your family and your community to the food that you eat," **Costa Georgiadis** says.

The *Grow It Local* Report reveals:

- **87% of home growers only pick what then need from the garden.**
- **90% don't discriminate against wonky produce.**
- **84% of growers plant pollinator friendly varieties to encourage biodiversity.**
- **74% use natural methods to control pests.**
- **74% conserve as much water as possible.**

"When it comes to wellbeing 93% of growers say gardening is good relaxation and good for their mental health with 92% reporting that they feel happier when in their garden. That's why we believe growing food is a powerful action for ourselves, our communities and the planet too," says **Paul West.**

Read the *Grow It Local* Impact Report in full here.

Grow It Local is presently raising funds* through equity crowdfunding platform *Swarmer* to expand their impacts through recruiting and helping more Australians to grow. Grow It Local believes they can teach even more of Australia how to cultivate on any scale from patch to plate.

Costa Georgiadis (Landscape Architect) and Paul West (Co Founder *Grow It Local*)

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OUTRIGHT 770 is your solution to hard water challenges, ensuring herbicides remain effective in high-mineral content water, preventing deactivation.

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"BRANCHING OUT"
EXPLORING INNOVATIVE FOREST DEVELOPMENT

The Australian Government is seeking expressions of interest to establish two research centres under Australian Forest and Wood Innovations (AFWI) to deliver innovative forestry research and development.

Assistant Secretary for Agvet Chemicals and Forestry Julie Gaglia said that the new research centres will support long-term innovation in the forest and wood products industry.

“The centres will focus on different research themes which are likely to include supporting Australian made solutions to climate change, sustainable forest management, and future wood supply,” Ms Gaglia said.

“AFWI research centres will work collaboratively with industry to deliver applied research that can be adopted.

“With growing demand for wood and fibre products both domestically and internationally, and the impacts of climate change, we need to deliver research that will support the management of our forests, and the wood and fibre products they produce.

“This new research will help Australian forest growers, and wood and fibre processors prepare for future demands.

“The total export value of Australian forest and wood products for 2020-21 was more than $2.9 billion. This initiative will support industry’s work towards increasing this value while creating career opportunities for forest and wood products researchers.

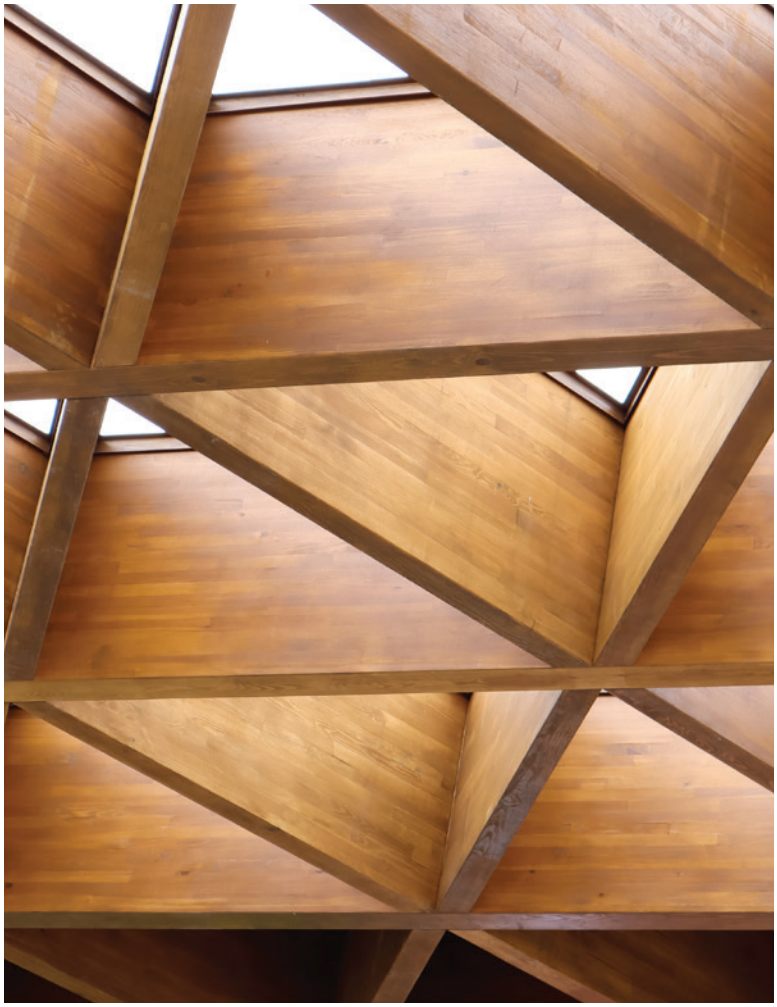
“We look forward to seeing what the centres will deliver.”

Expressions of interest will be used to identify and recommend applicants for the University of Tasmania (UTAS) to contract as AFWI research centres. The two research centres will be in addition to the research centre at UTAS in Launceston.

Commonwealth funding for the research centres, established under the $100 million grant to UTAS, is available from 2023-24 to 2026-27.

Expressions of interest are open from Wednesday 11 October 2023 to Wednesday 6 December 2023 for eligible organisations.

Details are available at: **www.agriculture.gov.au/agriculture-land/forestry/national/australian-forest-and-wood-innovations**



CELEBRATING OUR ROBUST BIOSECURITY SYSTEM

Recent 2022-23 performance data paints a clear picture of the essential work conducted by Agriculture Victoria staff on the ground. Throughout the year, Agriculture Victoria conducted a total of 10,490 inspections, audits, and investigations of plants, animals, chemicals and invasive species, reflecting the dedicated effort to ensure the health and safety of Victoria's agriculture.

In addition, they processed 26,611 services and permits online, streamlining the processes that support the agricultural industry. Agriculture Victoria's commitment to safeguarding the state's agriculture is further exemplified by their response to animal disease investigations. Agriculture Victoria staff handled 1,764 animal disease investigations, of which 434 were conducted to exclude emergency animal diseases.

Agriculture Victoria responded to 16 biosecurity emergencies and incidents during the year, demonstrating their readiness to address unexpected challenges in the sector. Staff successfully completed three biosecurity emergency response exercises, highlighting their effectiveness in managing potential threats.

"These numbers articulate the resilience and profound significance of our agricultural industry," Agriculture Victoria Biosecurity Executive Director Katherine Clift said.

"Reflective in the numbers, our staff quickly mobilised their expertise, initiated extensive surveillance and offered support measures following the varroa mite detection just over the Victorian border in NSW.

"Their swift response not only illustrates their commitment to biosecurity but also highlights their dedication to protecting Victorian bees, a vital component of a sustainable environment."

In addition to these remarkable efforts, Agriculture Victoria conducted 669 investigations related to suspect and emergency plant pests and surveyed a staggering 1.77 million hectares of grain crops, which accounts for nearly half of the grain produced in Victoria. They also responded to 73 exotic pest animal reports, resulting in 16 positive detections across seven different species, and eradicated 100 state-prohibited weed sites.

On the trade front, Agriculture Victoria issued 4,986 livestock health export certificates and 3,791 plant health certificates, enabling safe and efficient movement of agricultural products.

We encourage all Victorians to take a moment to reflect on the outstanding achievements of our agricultural sector of our biosecurity system in protecting and supporting our agriculture sector which is a cornerstone of the Victorian economy supporting over 68,870 jobs and generating more than $20 billion annually in 2021-22.

FIRST ON-FARM GRAIN STORAGE CHEMISTRY IN DECADES APPROVED FOR USE IN WESTERN AUSTRALIA

GROWERS IN WESTERN AUSTRALIA STORING GRAIN ON FARM NOW HAVE ANOTHER CHEMISTRY WITH A DIFFERENT MODE OF ACTION TO ADD TO THEIR ROTATION FOR THE CONTROL OF INSECT PESTS THANKS TO THE RECENT APVMA APPROVAL FOR THE ON-FARM USE OF K-OBIOL® EC COMBI.

K-Obiol, which contains the active ingredient deltamethrin, is a synergised grain protectant that can be used to treat malt barley, wheat, oats, sorghum, rice, maize and other cereal grains, and provides protection against the main stored grain insect pests, in particular lesser grain borer, for up to nine months.

Segment business manager at Envu, Paul Crack, says the approval of K-Obiol for on-farm use in WA means growers will now have multiple options to control insect pests in stored grain, which provides a range of benefits, particularly from a resistance point of view.

“Previously growers only had the option of fumigation or very old chemistry in Fyfanon, so K-Obiol is another product that has never been used in Western Australia before, and it will be very strong and effective in controlling a range of insect pests,” Paul explains.

“From an industry stewardship point of view, having another insecticide that is available in the grain storage market that is a different mode of action to anything else that has been used in Western Australian market before is a really big win for the industry in terms of insecticide resistance.

“Resistance is a growing issue across the entire country, and repeated uses of the same product over many decades has resulted in many populations of insects becoming resistant to many commonly used insecticides. This being a new mode of action will extend that resistance period out even longer by allowing for the rotation of chemistry.”

Grain Producers Australia Chair and WA grain producer, Barry Large, said his organisation supported the delivery of new technologies and tools that helped growers become more profitable and sustainable, so the approval is a welcome one for Western Australian growers.

“We know insecticide resistance is an issue that we need to manage as an industry and growers need more options to help them get the job done properly,” he said.

“That’s why this is a good outcome for growers with another option to help protect their grain from damage by insect pests.”

While any product in WA that will be delivered to Co-operative Bulk Handling (CBH) facilities needs to be pesticide residue free (PRF) and cannot be treated with K-Obiol, the latest APVMA approval is a really big win for those growers that are storing grain on-farm.“Growers can use a product like K-Obiol to store their grain on-farm for up to nine months and keep it pest free while maintaining grain quality, which is one of the biggest challenges,” Paul says.

“If grain quality decreases because of insect infestation then grain price drops as well, so by using a reliable product like K-Obiol it allows farmers to confidently play the grain market knowing they will have insect free grain when it comes time to market it. That will give them a big advantage in capturing the best price possible for their grain.”

To ensure no pesticide treated grain enters the PRF market, Paul says Envu has strict protocols in place for both agents selling K-Obiol, and growers who intend on purchasing it.

Segment business manager at Envu Paul Crack says K-Obiol will be very effective in controlling a range of insect pests in Western Australia.

"All agents selling K-Obiol need to undergo a stewardship training process to ensure they understand the limitations around using K-Obiol, and growers wishing to purchase K-Obiol also need to have undertaken a stewardship program prior to purchase," Paul says.

"That program outlines all of the different constraints around using K-Obiol and the markets that it excludes growers from if they do use it. The stewardship program is accessible via an easy-to-use online portal that we have developed, and once successfully completed, growers and agents will get a certificate of completion. "To uphold their end of the stewardship program, agents will also have the ability to search through a database to see that growers have completed the program and are approved to purchase the product."

Paul says while knowing the different constraints around using any product, not just K-Obiol, is really important, reading the label to understand use rates and restrictions around the PRF market in WA is essential. "For K-Obiol in Western Australia, it is extremely important to understand the use rates and to make sure you do not exceed any of the existing MRLs. It is also outlined on the label that any grain to be treated and delivered to the CBH requires pre-approval to ensure the export market is not compromised," Paul says."It is also important to wear the correct safety gear, so following the label directions carefully is essential."

Applied via a pump and tank arrangement with a nozzle that sprays product onto the grain as it moves up the auger, K-Obiol is suitable for use in both sealed and unsealed silos, which will provide Western Australian growers with greater flexibility.

In order to treat grain properly, K-Obiol must be applied alongside the registered organophosphate in WA, malathion, and growers should stick precisely to the recommended dilution and application rate. This will help protect against insecticide resistance and ensure the entire spectrum of stored grain pests are controlled.

While K-Obiol will give grain long-term protection from insect infestations, it is not registered to control live insects, so it is important that grain is not infested before treatment.

For more information on K-Obiol EC Combi insecticide visit the Envu website. Always read the label before use.

About Envu

Envu was founded in 2022, a new company built on years of experience, for the sole purpose of advancing healthy environments for everyone, everywhere. Envu ANZ offers dedicated services in: Professional Pest Management, Golf, Ornamentals, Industrial Vegetation Management, Lawn & Landscape and Range & Pasture. Across each of its lines of business, Envu focuses its work in chemistry and beyond, collaborating with customers to come up with innovative solutions that will work today and well into the future. Globally, the Envu portfolio consists of over 180 trusted and well-known brands. The company employs nearly 900 people and operates in more than 100 countries with four global innovation hubs.

Find more information at **www.au.envu.com**

Follow us on LinkedIn at **www.linkedin.com/company.envu**

K-Obiol has been approved for on-farm use in Western Australia, giving growers another grain protectant with a different mode of action to add to their armoury.

All agents selling, and growers buying, K-Obiol will need to complete a stewardship training program to understand the insecticide limitations in Western Australia.

MIRAVIS® DUO CHEMIGATION HITS THE TARGET

Michelmore Farms at Langhorne Creek, South Australia grow approximately 250 hectares of crisping potatoes. Increasing organic matter levels in their sandy soil is a priority and so potatoes are grown in rotation with carrots, wheat, canola, triticale and vetch or beans as green or brown manure crops.

Potatoes are planted from July to March each year, with autumn often the worst time for one of their major potato diseases – target spot. Owner of Michelmore Farms, Steve Michelmore applies MIRAVIS® fungicide with his boom spray for control of target spot and found it a game changer. After talking to Dr Brandy Rawnsley, Syngenta Technical Services Lead, Mr Michelmore learnt about the registration of MIRAVIS® Duo fungicide for chemigation application in potatoes.

"I talk to Brandy a lot – she started my thought process about using MIRAVIS® Duo through chemigation," said Mr Michelmore."Because Brandy had actually done trials herself comparing boom spray and chemigation application of MIRAVIS® Duo I took more notice than if I'd just seen it on a graph or in a pamphlet somewhere."

MIRAVIS® Duo is the only potato fungicide registered for chemigation application in Australia. Mr Michelmore started chemigating with MIRAVIS® Duo for target spot last season and said it was a bit of a trial, but he was pleased with how well it worked."I used MIRAVIS® Duo in my very big canopy potato crops. I didn't need to put the boom spray in the crop for anything else but was already fertigating, so it fitted in well," said Mr Michelmore."It meant we weren't bashing down a big canopy for just one fungicide boom application."

"I didn't do any organised trials, but by eye and by gut [feeling], the target spot control with chemigation was as good as using MIRAVIS® Duo with the boom spray." "The more times you run over the crop with the boom spray the more damage you do and the more points of entry for disease."

"In a half a pivot you might have 20 spray runs and you're losing yield every time you run over the crop." Mr Michelmore used the high label rate of MIRAVIS® Duo and applied it with trace elements and biological growth stimulants. "We do a lot of fertigating, and we've got good dosing equipment so found it easy to use MIRAVIS® Duo through our system," said Mr Michelmore. "We made sure the agitation system was working really well, we actually upgraded that, which was cheap and easy and that has actually improved the application of other products as well."

With Lake Alexandrina on one side as well as the Southern Ocean to deal with, it can be almost impossible for Michelmore Farms to apply fungicides on a single ideal spray day. When spraying opportunities are scarce, applying MIRAVIS® Duo fungicide via chemigation can free up the boom spray to be in another paddock at the same time.

"In certain situations, chemigating with MIRAVIS® Duo is actually easier and more cost-effective than using the boom spray. For us, that means when we've got big canopies and favourable target spot conditions and we're trying to get an application on before disease becomes a problem, using chemigation is ideal," said Mr Michelmore.

Dr Rawnsley explained that the difenoconazole component in MIRAVIS® Duo makes it well suited to preventative use later in a fungicide program. "Pydifluemtofen acts primarily on fungal spore germination and germ tube elongation whereas the difenoconazole component in MIRAVIS® Duo acts on later stages in the fungal life cycle," said Dr Rawnsley.

"This makes MIRAVIS® Duo ideally suited to later in a spray program for preventing disease development in those larger canopies." Mr Michelmore said MIRAVIS® Duo definitely has a fit in his integrated pest and disease management program in future seasons.

"MIRAVIS® Duo has a different fit in our program than MIRAVIS®. It's good to have the two actives in MIRAVIS® Duo, it means it works well in fungicide rotations and we know we've got that different type of activity later in the season," said Mr Michelmore. "Chemigating with MIRAVIS® Duo gives us another really good tool and those big canopy crops is really where it fits for us."

For more information, please contact your local Syngenta representative or visit www.syngenta.com.au/potatoes

ENERGY SAVING PROGRAM EXPANDED BY QUEENSLAND FARMERS FEDERATION

The Queensland Farmers' Federation announce the expansion of their free energy saving program, Energy Southern Queensland (EnergySQ) to the Toowoomba and Western Downs regional council areas.

The program, which commenced in April 2023 and is free for participating farms, has been assisting growers and producers in the Southern Downs and Goondiwindi regional council areas to identify tangible ways that they can achieve increased energy productivity and efficiencies while lowering their emissions on-farm. The expansion of the program will now give access to farms in all four regional councils areas supported to develop an Energy and Carbon Action Plan specific to their operation.

Producers and growers are invited to participate individually or in a 'cluster'. Their participation in the project is anticipated to take between two and three months, with ongoing follow-up and support.

The Queensland Farmers' Federation CEO Jo Sheppard said that the program has already resulted in positive outcomes for growers and producers, and that the expansion will allow more farmers to access free energy efficiency audits.

"We are really pleased to be able to expand this program to support farmers across the Toowoomba and Western Downs regions to identify ways in which they can become more efficient in their on-farm use of energy to save costs, improve productivity and reduce emissions," Ms Sheppard said.

"Queensland farmers continue to develop some of the most innovative solutions to achieve efficiencies on-farm so that they can remain competitive in an increasingly competitive operating environment.

"The Queensland Farmers' Federation has a great track record when it comes to energy projects and the feedback from farms that have participated in the EnergySQ program to date has been really positive with some significant savings identified."

The Queensland Farmers' Federation have partnered with ACCIONA Energía Australia to enable this program to be delivered to farms in the designated region at no cost to the producer. ACCIONA Energía are developing the MacIntyre Wind Farm near Warwick.

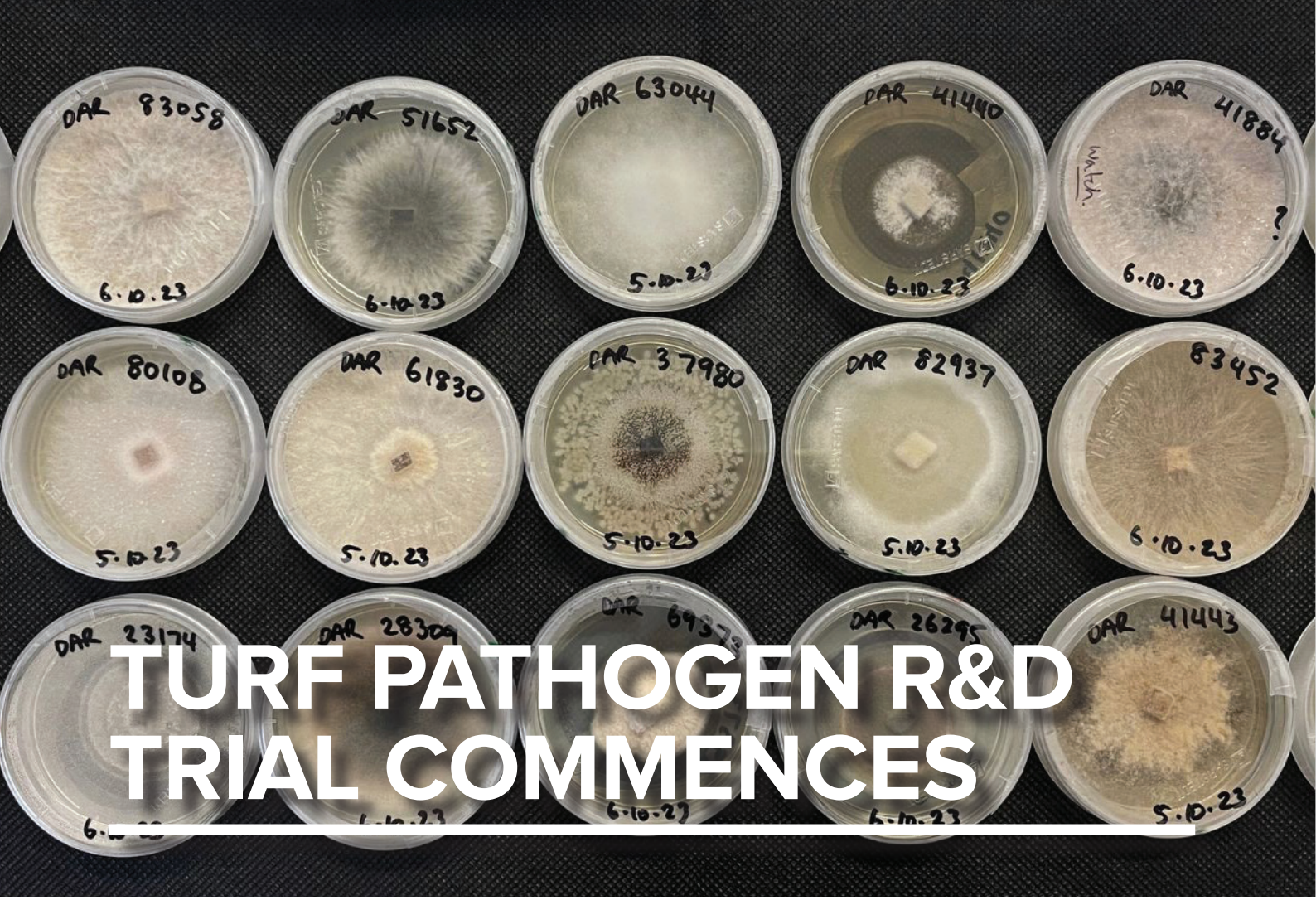
"We're proud to be supporting QFF as they extend the program's coverage to Toowoomba and the Western Downs, to help even more primary producers manage their energy use. Pressures faced by farmers have never been greater and by supporting this program we hope we can assist as they continue to play their vital role across Queensland," said ACCIONA Energía Managing Director Brett Wickham.

> **"Queensland farmers continue to develop some of the most innovative solutions to achieve efficiencies on-farm so that they can remain competitive in an increasingly competitive operating environment."**
>
> *Jo Sheppard*
> *The Queensland Farmers' Federation CEO*

"We encourage farmers within the Toowoomba and Western Downs regional council areas who would like to understand more about this initiative to contact the team at QFF to find out more and register their interest," Ms Sheppard said.

For more information about the program and to express interest in participating, visit **https://www.qff.org.au/energy-sq/**

Producers and growers can also contact The Queensland Farmers' Federation energy team via email **energysq@qff.org.au** or phone **07 3837 4729.**



TURF PATHOGEN R&D TRIAL COMMENCES

Did you know that every year, Australia produces 38 million square metres of turf with a value of close to $300 million? From the humble patch of lawn in a backyard to larger commercial grounds that rely on healthy turf such as golf courses, sporting grounds and public parks, lawn holds a strong place in Australia's outdoor experience - but that doesn't come without its challenges.

"As turf is often a single or a limited number of grass species, it can be considered a monoculture. This makes it prone to disease, particularly fungal diseases which can greatly reduce the value of the turf and effect the visual look and playability of the surface" says Neutrog R&D Manager, Dr Uwe Stroeher.

"At Neutrog, we have obtained approximately 30 fungal pathogens from the Department of Primary Industries NSW via the Plant Pathology and Mycology Herbarium, which have been isolated from various turf varieties.

With these samples, we can begin to investigate potential inhibitors of these fungal pathogens. Currently, Neutrog's R&D department have over 60 isolates which show inhibition of a variety of plant fungi, and have had previous success in the inhibition of Pythium in turf (Pythium is not a fungal pathogen, but an oomycete or water mould).

Chemicals are restricted in their usage and efficacy, which is why we believe that finding suitable inhibitors will provide a breakthrough for both home gardeners and the turf growing and sporting field management industries."

Source: Neutrog

FARMERS APPLAUD TRADE MINISTER FOR STANDING FIRM ON EU

The National Farmers' Federation has congratulated Trade Minister Don Farrell for turning down an EU trade offer that would have disadvantaged Aussie farmers.

Speaking following the briefing of industry representatives in Osaka, NFF President David Jochinke said the Minister had made the right call for Australia.

"Today's decision was a hard one, but ultimately it was the right one. We thank Minister Farrell and Agriculture Minister Murray Watt for standing by Australian farmers and walking away from an unacceptable offer," Mr Jochinke said.

"It's disappointing the Europeans weren't willing to put something commercially meaningful on the table. This was always going to be a tough negotiation with no guarantee of an outcome.

"What was on offer would have hardwired protectionism into our trading relationship with Europe for another generation. It would have locked our farmers in at a disadvantage to competitors in New Zealand, Canada and South America.

"Australia has always been a champion for open and fair trade on the world stage. Today's decision by Minister Farrell continues that legacy.

"Ultimately, we all want a deal with the EU that benefits both sides. We encourage the Government to maintain dialogue with the EU to work towards this if and when the time is right.

"It should be clear though to the EU from today's events that Minister Farrell isn't willing to throw Aussie farmers under the bus just to get the deal done.

"He's held firm to protect Australia's interests in the face of intense pressure from EU negotiators, and for that we're incredibly grateful.

"We'd like to thank Australia's team of negotiators and the team from the Department of Agriculture, Fisheries and Forestry who have worked tirelessly to produce a meaningful outcome, we hope those efforts will be rewarded with a deal in the future," Mr Jochinke concluded.

INDIGENOUS COMMUNITIES TAKING THE BUSHFOOD INDUSTRY HIGH-TECH

Madonna Thomson from Nyanda with UQs Prof Yasmina Sultanbawa

A University of Queensland project is using technology to create a native food value chain to ensure Indigenous communities and businesses benefit from the thriving bushfood industry.

Professor Yasmina Sultanbawa, director of UQ's ARC Training Centre for Uniquely Australian Foods said the food value chain brings together Indigenous knowledge, science and technology.

"We've been working on this project with our Indigenous Enterprise Group and software development company Smart Trade Networks," Professor Sultanbawa said.

"This is a global first - enabling communities to take the lead, get a premium quality product and access to national and international markets."

The value chain covers any bushfood product from conception, through the production process to the delivery to the consumer.

The project aims to ensure Indigenous businesses and communities have benefit sharing agreements in place, to ensure they have capacity to upscale as demand increases.

Indigenous Enterprise Group chair, Jagera, Yugambeh and Githabul woman Madonna Thomson said the rest of the world was realising the commercial and economic viability of bushfood.

"Our communities need to be shaping this industry or there's a risk they could become marginalised as others begin to buy and grow native plants on a larger scale," Ms Thomson said.

"It's not just about how much money people can make but recognising the importance of Australia's Indigenous communities and the cultural connection they have to the bush.

"This project will create equity, provenance and protection for our communities and businesses that harvest native bushfoods."

Smart Trade Network Chair Warwick Powell said an app had been developed to allow communities to upload their knowledge on Country.

"The digitalisation of Australian agriculture, particularly in areas where provenance value is central to the long-term competitive value proposition, is hugely important," Mr Powell said.

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“The digitalisation of Australian agriculture, particularly in areas where provenance value is central to the long-term competitive value proposition, is hugely important,” Mr Powell said.

“I’m very happy to have communities we have worked with over the past decade joining us on this journey and putting Australia’s Indigenous communities on the map,” she said.

This project is funded with a National Agriculture Traceability Grant from the Australian Department of Agriculture, Fisheries and Forestry.

Warwick-Powell - Image by Megan-Pope

NATIONAL OVERVIEW

PLANTING OF SUMMER CROPS IN 2023–24 TO FALL UNDER THE EXPECTATION OF BELOW AVERAGE RAINFALL FOR SPRING AND SUMMER.

Area planted to summer crops in 2023–24 is forecast to fall by 15% to 1.3 million hectares. The fall in summer crop plantings reflects the expectation of below average rainfall and declining levels of stored soil moisture in key summer cropping regions in Queensland and New South Wales. If the below average rainfall outlook for spring is realised, it will likely see total Australian summer crop production fall by 19% to 4.1 million tonnes in 2023–24.

Sorghum production is forecast to fall by 39% to 1.5 million tonnes in 2023–24. The increased chance of dry spring and summer conditions and low soil moisture levels are expected to negatively affect the production potential of sorghum crops. Area planted to sorghum is forecast to fall by 22% year-on-year to 527 thousand hectares, but remain 1% above the 10-year average to 2022–23.

Production of cotton lint in 2023–24 is forecast to fall by 8% to 1.2 million tonnes but remain 49% above the 10-year average. Area planted to cotton is expected to fall by 16%, driven by a reduction in dryland cotton plantings under the expectation of dry conditions.

Cotton production is likely to remain above average as planting of irrigated cotton will be supported by high levels of water storages in the Murray-Darling Basin following three consecutive years of above-average rainfall.

High water storage levels, carryover water and irrigation allocations are expected to support irrigated cotton yields despite the expected onset of hot and dry climate conditions; this is expected to offset reductions in dryland cotton yields.

Production of rice is estimated to recover in 2023–24, rising by 26% to 656 thousand tonnes. This is driven by a forecast increase in area on the back of expected improvements in planting conditions from 2022–23 (which was impacted by wet conditions).

Value of wheat production to fall in 2023-24

The gross value of Australian wheat production is forecast to fall by 39% to $9.5 billion in 2023–24. Despite being a significant fall from the estimated 2022–23 record of $15.7 billion, this is still well above average and would be the fourth highest value on record (Figure 1.1).

The forecast fall in value is driven by easing world prices and lower Australian production. World wheat prices are

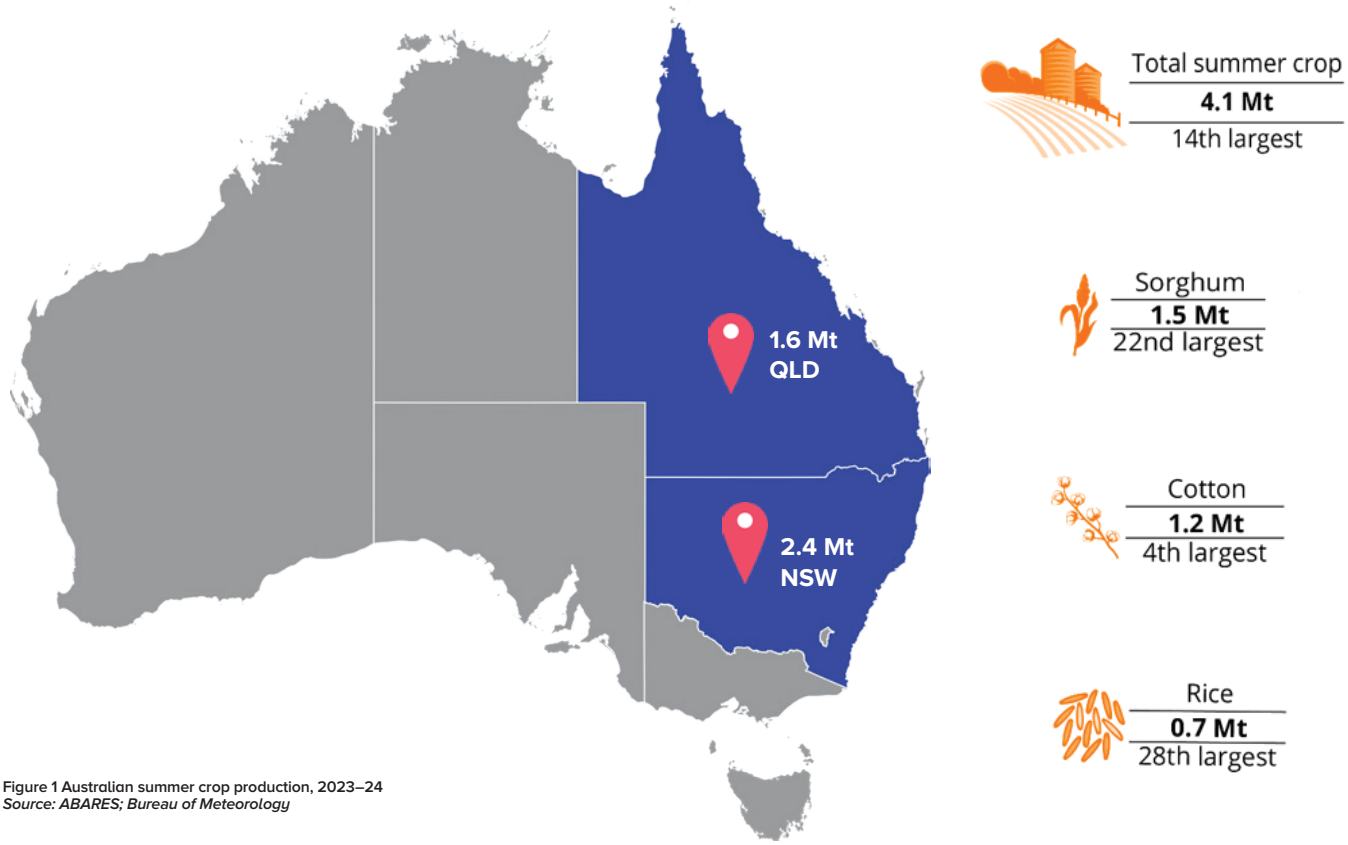

Figure 1 Australian summer crop production, 2023–24
Source: ABARES; Bureau of Meteorology

WORLD WHEAT PRICES TO EASE BUT REMAIN ELEVATED

- Value of Australian wheat production to fall in 2023–24 to $9.5 billion, the fourth highest on record.
- Value and volume of Australian wheat exports to fall in 2023–24 from previous year record highs.
- Wheat production to fall due to drier conditions in northern cropping regions.
- World wheat prices to fall in 2023–24 reflecting easing supply uncertainty.

forecast to remain below the previous year's highs because of easing supply uncertainty, but remain elevated. Australian wheat production is expected to decrease following three consecutive record production years:

Dry conditions in northern cropping regions will likely see Australian wheat production fall in 2023–24, with yields forecast to be below average.

This is likely to be partially offset by more favourable winter crop prospects in southern cropping regions where stored soil moisture and early winter rainfall were beneficial for winter crops.

While El Niño is expected to develop and reduce production prospects, the extent to which it influences Australian rainfall and temperatures presents a key downside risk to the outlook.

Analysis of past El Niño events suggests that climate impacts can be variable. If conditions are even drier and hotter than expected, this is likely to see crop prospects deteriorate further in regions where winter crops have little soil moisture.

The gross value of Australian wheat production forecast for 2023–24 is $200 million lower than in the June Agricultural Commodities Report. This largely reflects a slight downwards revision in wheat production volumes owing to lower-than-expected winter rainfall in some regions.

Australian production and exports to fall

Australian wheat production is forecast to fall by 36% to 25.4 million tonnes in 2023–24. This is below the 10-year average to 2022–23 of 26.4 million tonnes.

While production is forecast to fall overall, varying seasonal conditions across Australia point to different state-level outlooks (see Australian crop report):

Planting and establishment conditions were unfavourably dry in Queensland, northern New South Wales and northern cropping regions of Western Australia.

This has led to crops experiencing moisture stress, with wheat yields forecast to be below average.

By contrast, wheat crops in southern New South Wales, Victoria, South Australia and southern cropping regions of Western Australia have developed well following early winter rainfall and have excellent yield potential heading into spring.

The increased chance of an extremely dry spring is expected to negatively affect yield potential. Crop prospects in regions where winter crops have little soil moisture will likely deteriorate further.

Lower production is expected to reduce Australian wheat exports; wheat export volumes are forecast to fall to 20.4 million tonnes in 2023–24. This is 10% above the 10-year average to 2022–23 of 18.6 million tonnes.

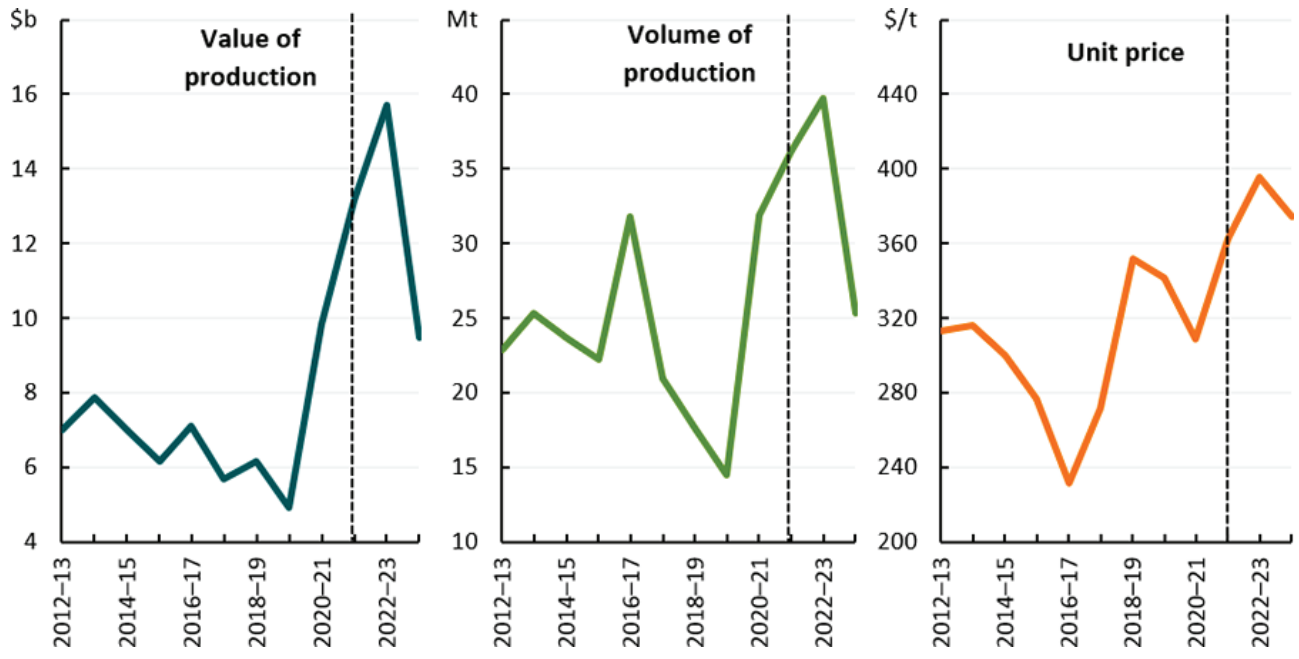

Figure 1.1 Annual gross value, volume and unit price of Australian wheat production
Source: ABARES; ABS

THE VIBRANT WORLD OF POMEGRANATES

Source: Neutrog Biological Fertilisers

Pomegranates are such hardy plants. The foliage is a gorgeous glossy green, flowers are a brilliant vermillion and during late autumn, the globes of crimson fruit hang beautifully on the tree.

Deb and Robert live near Albany in Western Australia and grow a significant number of pomegranates – 5000 in fact. Deb is a breast cancer survivor. Whilst dealing with chemotherapy Deb's niece suggested including pomegranates as part of her diet to help in Deb's healing after finishing chemotherapy and radiation treatment.

Pomegranates are high in polyphenols and antioxidants which would provide nutrition to her body. She also found out that she was unable to source any pomegranates grown in Australia. All commercially bottled pomegranate juice was either made from highly processed concentrate or pasteurised, both processes involving heat and diminishing any antioxidants in the meantime.

Together with her husband Robert, they researched the pomegranate and found that their 40HA near Albany Western Australia was an ideal location to grow these wonderful fruits.

They planted a few rows in 2014 as a test and when very positive results were collated they decided to expand.

Gyganic for Veggies Fruit & Citrus played a huge part when they struck difficulties in 2018 after a severe black frost damaged every tree and placed the trees in shock. Finding a nutritional supplement for the trees that also nurtured the soil microbial activity was very important to their "eat healthy" business ethos. *Gyganic* and *Seamungus* are applied regularly and GOGO Juice is fed to the trees via dripper lines at regular intervals.

"We are very impressed with the lush condition of our trees since using Neutrog products and we consider the company an important advantage to our business because the quality of the products and technical advice are reliable and very knowledgeable."

Six years down the track, they now grow 3 varieties; Wonderful, Acco, Big Reds and a few of the Turkish variety Hijaz. They begin harvest in April and supply to local restaurants and markets with plans to process and sell pomegranate related products from their farm. They have sourced a hand juicer which they sell so the buyer of their fruit can juice directly from the fruit.

If you love pomegranates you would enjoy their Facebook and Instagram page Pomegranate Hill, where there are great tips on how to tell if your fruit is ripe, how to harvest the arils and recipes such as Banana & Sultana Muffins with Pomegranate Icing and Sprinkles.

EXPLORING THE BROAD SPECTRUM OF FUNGICIDE EFFICIENCY THROUGH INDEPENDENT RESEARCH

INDEPENDENT FIELD RESEARCH IS SET TO CONTINUE INTO THE WIDER EFFECTIVENESS OF KEY FUNGICIDES AGAINST VARIOUS DISEASE COMPLEXES IN MACADAMIAS.

Tebuconazole and azoxystrobin are well known fungicides and their combination in the product, Custodia Forte, which is a higher concentrate version of the original Custodia, has been welcomed against husk spot. The higher concentrate, low odour formulation is applied at about half of the recommended application rates of the former Custodia.

Husk spot costs the industry around $10 million a year. It infects the fibrous husk around the macadamia shell, causing nuts to drop-off prematurely, and spreads from old husks to new green ones.

Independent research over a number of years already has confirmed the efficacy of Custodia Forte for husk spot, and now the fungicide will feature in further research in the Bundaberg area in Queensland and the Northern Rivers region in New South Wales.

The latest independent research would investigate the potential effectiveness of Custodia Forte for disease complexes in macadamia, including prior to flowering.

Jim O'Connor, Market Development Manager with ADAMA Australia in Queensland, said the research also will evaluate the use of in-field sensing systems to determine the development of disease and infection risk. This analysis will produce valuable information for growers to ensure more timely applications of fungicides like Custodia Forte.

Jim said the technologies would further the understanding of the impact of fungicides on disease and determining the optimum timing of applications. For husk spot prevention, Custodia Forte is applied from match head stage, with a maximum of two applications per season spaced 14 to 28 days apart, separated by another fungicide treatment with a different mode of action.

It is also compatible for tank mixing and has a harvest withholding period of 15 days.

Jim said specific fungicide programs for husk spot in macadamias should be determined by the particular disease levels, prevailing conditions and orchard hygiene, which, in more recent times, has been enhanced by cultural methods including tree shaking.

"Mechanically shaking of trees and adoption of other cultural controls to improve orchard hygiene is increasingly playing a key role in conjunction with new fungicide tools to reduce the risk of husk spot infection in macadamias," Jim said.

"The industry has continued to evolve and become more sophisticated and this has resulted in greater understanding and fine-tuning around husk spot disease control in order to maximise yields and quality."

Jim O'Connor ADAMA

BEECONNECTED® APP LAUNCHED: INTRODUCING A NEXT-GENERATION COMMUNICATION TOOL FOR BEST-PRACTICE FARMING AND POLLINATOR PROTECTION

The next-generation upgrade of the world-leading BeeConnected app has been launched today by Minister for Regional Development, Local Government and Territories, the Hon. Kristy McBain at Parliament House. The two-way communication platform, developed by CropLife Australia in partnership with the Australian Honey Bee Industry Council, enables farmers, beekeepers and spray contractors to work together to protect managed honey bee hives.

"Using precise GPS capabilities, BeeConnected allows farmers to map the circumference of their properties and log their spray activities. It also allows beekeepers to securely register the location of their beehives now and in the future.

Matthew Cossey
Chief Executive Officer of CropLife Australia

"Australia is fortunate to have excellent farming practices, a professional agricultural sector alongside a strong honey bee industry," said Matthew Cossey, Chief Executive Officer of CropLife Australia the national peak industry organisation for the plant science sector. The next-generation BeeConnected app has been re-designed and built in Australia following extensive feedback and contributions from farmers and apiarists from around the country.

The BeeConnected app was originally developed in Australia, for Australia and is now also an international award-winning innovation that has been adopted for use all over the world including Canada, South America, and India.

"A thriving healthy honey bee population is crucial for many farming sectors, especially in horticulture, which is why the entire farming sector needs to ensure that everything is done to protect pollinators. That is why CropLife and our members have heavily invested in this important tool to enable cooperation and coordination between farmers and apiarists in protecting honey bees. This is even more important than ever with Varroa mite having hit Australia. This has made it a tough time for beekeepers and the growers of crops relying on honey bees for pollination. BeeConnected is a practical way for Australian farmers to support the honey bee industry by not only avoiding unintentional harm but optimising pollination activities, " said Mr Cossey.

"Using precise GPS capabilities, BeeConnected allows farmers to map the circumference of their properties and log their spray activities. It also allows beekeepers to securely register the location of their beehives now and in the future. When a beehive is detected near farming activities, both are sent an instant confidential notification allowing them to communicate and coordinate for optimal pollination without compromising or identifying specific locations. This collaboration empowers both farmers and beekeepers to protect these important pollinators," said Mr Cossey.

Over the past nine years the original BeeConnected has had widespread uptake with all of Australia's state farmer organisations supporting its use it as an important decision-making tool in day-to-day operations and spray activities.

"It's exciting to see commodities like the almond industry also get behind this tool by incorporating it as a best practice recommendation in their codes of practice and extension resources. With these substantial upgrades BeeConnected will be even more effective and useful and remain fit for purpose into the future, " said Mr Cossey.

A 2023 report by Deloitte Access Economics calculated that 73 per cent of Australian agricultural crop production can be attributed to the use of crop protection pesticide products. At the same time, around 65 percent of the crop species grown in Australia benefit from pollination. When used responsibly and in accordance with approved label instructions, crop protection products do not pose a risk to honey bee health which is why best practice in farming is so important.

"The Australian Honey Bee Industry Council is proud to be part of this world-leading initiative," said Danny Le Feuvre, Chief Executive Officer of the Australian Honey Bee Industry Council. "Improving communication between users of crop protection products and beekeepers can further reduce the risk of accidental exposure of bees to any products which may have the potential to negatively impact on bee health." Mr Cossey concluded,

"We know that Australian farmers are proactive when it comes to the adoption of new tools and next-generation technologies to help them farm more productively and sustainably. Just like weather, temperature and timeliness of information plays an important role in informed decision making for best-practice product application, spray applicators are urged to make use of this reliable tool to protect Australia's managed beehive colonies with spraying this season."

BeeConnected is part of CropLife's StewardshipFirst Pollinator Protection Initiative which supports the safe and responsible use of pesticides for the benefits of pollinators, Australian farming and the environment. BeeConnected can be downloaded for free as an iPhone or Android App, or accessed on a desktop computer via a web browser. For more information, visit **www.beeconnected.org.au**

DECADES OF SOYBEAN RESEARCH DRIVE RESULTS FOR CANEGROWERS

MORE THAN 20 YEARS OF PAINSTAKING RESEARCH INTO SOYBEANS IS PAYING DIVIDENDS FOR QUEENSLAND'S SUGAR GROWERS.

The Department of Agriculture and Fisheries (DAF) is working closely with the farming sector and the Grains Research and Development Corporation (GDRC) to double soybean production within three years.

DAF Principal Farming Systems Agronomist Neil Halpin said the research findings show soybeans are a great fit in high-rainfall coastal and hinterland areas such as Bundaberg, Mackay and the Burdekin for farmers wanting a legume rotation crop.

"Our department has been involved in a range of soybean research projects over the last 20 years or so and we've come to understand just how valuable this legume is in the sugarcane farming system," Mr Halpin said.

"Research that was undertaken as part of the 'Sugar Yield Decline Joint Venture' has shown that cane farmers can expect a 10% yield increase in the plant cane crop following a well-grown soybean crop compared to a plough-out re-plant.

"Not only do soybeans supplement our income, they also improve our soil structure, return nitrogen to the soil, and allow us to reduce cultivation in our farming system."

Jeff Plath

"In fact, our research shows that the yield increase continues through the ratoon cycle and that the monoculture plots were due for plough-out a year earlier than our legume rotation plots."

Mr Halpin said the DAF research also showed that a well-grown crop of soybeans can return 300kg of plant-available nitrogen to the soil for the following crop to use if green manured.

"Growers who are growing soybeans for harvest can gain extra income from the soybeans and still expect 60kg or more of 'free' nitrogen for their next crop," he said.

By improving soil health and the soil's biological, physical and chemical fertility, growers can increase sugarcane yield, thereby improving input use efficiency, improving profits for the farmer while reducing environmental loss pathways.

Mr Halpin said the soybean expansion project jointly funded by DAF and the Grains Research and Development Corporation (GRDC) will hold several pre-season and in-season soybean agronomy field days beginning in November 2023.

Growers who are interested in more details about upcoming events are urged to subscribe to the DAF Soybean Update by emailing their details to carla.atkinson@daf.qld.gov.au.

Long-term soybean growers Jeff and Judy Plath from Childers believe the benefits soybeans offer their farming business go well beyond a simple pay cheque for their crop.

"I saw the immediate benefits of soybeans in our farming system when I first grew them around 20 years ago," said Mr Plath, who has incorporated the popular legume into his cane farming rotation ever since.

"Not only do soybeans supplement our income, they also improve our soil structure, return nitrogen to the soil, and allow us to reduce cultivation in our farming system."

The Plaths use a zero-tillage planting system that allows them to plant the soybeans directly through the trash from the previous cane crop.

After the soybeans are harvested, the soybean trash is left intact for as long as possible to protect the soil from erosion, conserve soil moisture, improve soil organic matter levels, and allow strategic release of the nitrogen stored in the soybean plant material.

This practice better aligns the release of nitrogen from the soybean residue with when the sugarcane crop needs it.

"Prior to planting sugarcane, I cultivate the soybean paddock with two passes, which saves time and money and conserves moisture and nutrients in the soil," Mr Plath said.

"Occasionally the seasonal conditions mean I need to cultivate earlier, or more often, but in general over the last 10 years or more I have been able to plant most of my soybean blocks back to sugarcane with minimal cultivation."

COUNTING THE FUTURE BENEFITS FOR ORCHARDS

Orchard researchers are continuing to find new applications for an Agtech device called a 'Cartographer' at Agriculture Victoria's Tatura SmartFarm.

Cartographer — invented by AgTech firm Green Atlas — is mounted on an electric All-Terrain-Vehicle at the farm and uses a combination of cameras, scanner, strobe lighting and GPS to capture flower, fruit and canopy data from tree crops.

Agriculture Victoria Research Leader for Crop Physiology, Dr Ian Goodwin said the Cartographer was originally trialled in a 2020 - 2022 research project exploring the use of sensors to assess fruit quality of peach, nectarine, plum and apricot for export.

'The Cartographer can travel along orchard rows capturing data from both sides of the row at up to 10 km/h making it much quicker and more accurate than manual methods and less labour intensive,' said Dr Goodwin.

'It uses artificial intelligence to identify, count and measure fruit traits from its cameras such as fruit size and colour to help us calculate potential harvest yields.

'The Cartographer has become a very handy scientific instrument for us that can rapidly analyse an entire orchard block, so we are now using it in wide range of orchard research.

'It's been used for stone fruit, apple and pear research and we're now studying its economic value for growers as an orchard management tool.

'We manually calibrate the Cartographer for accurate fruit counts, but otherwise its entirely machine-driven data capture for fruit size, fruit colour and canopy size so the labour-save and return on investment would be of interest to producers.'

Mildura SmartFarm has also purchased a Cartographer to help researchers analyse quality and production within its almond experimental orchard and potentially in citrus and olive groves.

WORLD'S FIRST COFFEE WASTE FERTILISER TO PUT MEALS ON THE TABLE!

"Creating innovative products that re-purpose waste, is what our entire business has been founded on and ever since reading a Planet Ark report in 2017, I have been determined to find a way to create a product from coffee waste. I knew we had the ability to create a premium fertiliser with coffee, but it is the human element to Human Beans that motivated us further to persist to where we are today. It's a world first product and I couldn't be more proud."

Angus Irwin, Managing Director, Neutrog Australia

HUMAN BEANS™ – GROUNDS FOR GOOD.

In a world first, South Australian biological fertiliser company Neutrog has launched a fertiliser made from coffee waste, packaged in compostable paper - all to support Foodbank!

Every day around the world tonnes of coffee waste is destined to end up in landfill, thereby missing a vital opportunity to unlock its nutritional value to feed plants and improve soil quality. Until now two key challenges have stood in the way of reducing this growing waste stream. The first was how to manufacture that waste into a commercially viable product and the second was; how to economically collect the coffee waste.

Neutrog Australia Managing Director Angus Irwin recognised the opportunity of coffee waste as an organic input in fertiliser and knew that the specific method of composting undertaken by Neutrog would activate the nutrients within the coffee waste, making them readily available to plants.

Foodbank South Australia, visits a range of organisations daily to collect food donations and partnered with Neutrog in a trial to collect coffee waste. This innovative South Australian-based trial spanning nearly two years, saw coffee waste collected from Bunnings cafés, OTR service stations, and Bedford Industries, organisations all keen to demonstrate their commitment to improving their waste footprint.

This partnership between Neutrog and Foodbank SA resolved the challenges of how to use the coffee waste and how to collect it, which has led to the launch of the world's first coffee fertiliser, **Human Beans.**

About the Human Beans Product

Human Beans is an organic, versatile, easy-to-use pelletised fertiliser that feeds plants and improves soil health through a combination of nutritionally dense ingredients and the unique capability of billions of diverse bacteria and fungi in POPUL8TM. POPUL8 is an advanced biological formula developed and manufactured exclusively by Neutrog with specifically chosen bacteria and fungi (microbes) that literally 'populate' through the soil around the root zone. These microbes help to promote nutrient cycling and liberation, growth promotion, stress resistance and overall plant health above and below ground.

The sustainable focus of Human Beans also flows through to the packaging and working with SA packaging company Detpak, has enabled Neutrog to create the first ever fertiliser product packaged in paper. This means that the empty bag can be added directly into a compost bin or kerbside recycling.

Human Beans – The Grounds For Good

Gardeners who use Human Beans will be choosing an environmentally sustainable product that will add organic matter, nutrition and powerful beneficial biology to their plants and soil. Which leads to the final aspect of this truly unique project, which is the capacity to support not only the environment, but importantly - our community

Sales of Human Beans will generate a royalty for Foodbank allowing them to generate a new income stream to help provide meals for those in need. With 100% of the royalties used to get food relief to where it is needed the most.

Human Beans, a world first product, truly demonstrates that through innovation and partnerships, products can be developed that embody a circular economy along with a community and environmental conscience. Human Beans is stocked exclusively by Bunnings nationwide.

Why "Grounds for Good"?

Businesses divert their coffee waste from landfill and save on the cost of waste management; Neutrog create an innovative, sustainable biological fertiliser, turning waste into a valuable garden product that improves plant and soil health; Foodbank receives a royalty from the sale of Human Beans, helping to support those in need; Gardeners use Human Beans in their gardens, re-purposing a waste product while encouraging healthier plants, more biologically active soil and helping to support the community.

TRIALS SHOW FURTHER BENEFITS WITH NEW CEREAL, FALLOW WEED CONTROL HERBICIDE

CEREAL GROWERS ARE SET TO GAIN ADDITIONAL POST-EMERGENT WEED CONTROL BENEFITS, AS WELL AS SEVERAL ADVANTAGES WHEN TARGETING DIFFICULT WEEDS IN FALLOWS,

Cereal growers are set to gain additional post-emergent weed control benefits, as well as several advantages when targeting difficult weeds in fallows, following further development trials with a new broadleaf herbicide released during this season

The registration of Infinity® Ultra in Australia this season allowed some growers to become the world's first users of the new herbicide for post-emergent broadleaf weed control in cereals. Growers were pleased with its performance, and agronomists have also recognised its flexibility to be safely mixed with herbicide tank mix partners to broaden the weed control spectrum, as well as with fungicides.

Developed by Bayer to help Australian growers address local broadleaf weed control challenges, Infinity Ultra comprises a complementary co-formulation of Groups 27 and 12 (formerly Groups H and F) herbicides, pyrasulfotole and diflufenican.

Bayer Market Development Agronomist in New South Wales, Gus MacLennan, said Infinity Ultra had mainly been used to target wild radish, sowthistle and wireweed, and it had been applied in mixes with other broadleaf and grass selective herbicides to achieve wider weed control.

"MCPA LVE has been a popular partner, as well as bromoxynil and clopyralid, to provide robust control and broaden the spectrum to include other weeds such as fumitory, volunteer pulses and larger wild radish and sowthistle," Gus said.

He said plot trials across the country last year revealed a strong performance by Infinity Ultra, showing it was equal to standard commercial herbicides for control of the specific weed spectrum in the different regions.

Trials in wheat, barley and oats this season have evaluated Infinity Ultra in various tank mix combinations and in fallow situations.

Bayer Market Development Agronomist in Northern NSW and Queensland, Richard Jackman, said Infinity Ultra offered a new herbicide mode of action for targeting sowthistle in fallows and had been highly effective against the hard-to-control weed applied alone or in mixes with glyphosate.

"Infinity Ultra is an ideal mixing partner with glyphosate for sowthistle compared with alternative partners such as 2,4-D and fluroxypyr. It is less antagonistic to glyphosate, and there is reduced risk of volatilisation and off-target damage to sensitive surrounding crops such as cotton in northern areas," Richard said.

Plot trials showed almost 100 per cent control of sowthistle and bladder ketmia when tank mixes of Infinity Ultra and glyphosate were applied, compared with about 15 per cent reduced control where glyphosate was applied alone or in mixes with fluroxypyr.

Richard said there was some confirmed resistance to glyphosate in sowthistle populations in the northern region. However, trials had shown when mixed with Infinity Ultra, resistant sowthistle was controlled.

Importantly, Infinity Ultra also offers a favourable re-cropping profile compared with alternatives, especially with its short plant-back period for following pulse and other winter crops.

"Depending upon rainfall patterns, one to two knockdown applications can be required on northern fallows and Infinity Ultra and glyphosate tank mixes could be applied at various timings," Richard said.

"Typically, it has a big fit after winter pulse crops, including chickpeas, faba beans and canola, where there won't be carryover from picloram and aminopyralid herbicide applications."

> **"Depending upon rainfall patterns, one to two knockdown applications can be required on northern fallows and Infinity Ultra and glyphosate tank mixes could be applied at various timings,"**
>
> *Richard Jackman,*
> *Bayer Market Development Agronomist*
> *Northern NSW and Queensland,*

He said latest development trials also were exploring further fallow use patterns for Infinity Ultra, including its use with optical spot spraying technology and its activity on additional weeds such as flaxleaf fleabane.

Gus said following the development trials, registration for Infinity Ultra was anticipated to be expanded, including with more tank mix partners and control of additional weed species.

Gus MacLennan, Market Development Agronomist with Bayer in New South Wales, says following further development trials with the new Infinity Ultra post-emergent broadleaf herbicide this season, its registration is anticipated to be expanded to include more tank mix partners and control of additional weed species.

INNOVATING ONION EXPORT STRATEGIES

A NEW ROADMAP TO DRIVE EXPORT SUCCESS

A new export strategy has been launched providing Australian onion growers with a strategic roadmap to guide the industry's export development investment decisions to ultimately improve both the export and domestic onions market.

As part of a Hort Innovation levy-funded project 'Onion Industry Export Strategy' (VN20003) strategic planning consultancy McKINNA et al has created a strategic five-year export plan 2021-2026 for the Australian onion industry.

The Export Strategy was developed following a detailed market and competitor analysis, known as the Market Mapping Report with leading onion exporters and marketers also included in the consultation.

The project has resulted in two key outcomes:

1. a clear understanding of which export markets offer growth opportunities and;
2. industry consensus on export development and growth priority activities and investments.

The Export Strategy recognises that the global market for onions is highly competitive and dominated by India and China, who set price expectations in many of the markets in which Australia competes. Therefore, Australian exporters must compete based on premium quality and product integrity.

Onion Export Strategy project lead Dr David McKinna said the strategy hopes to grow the onion export market as the opportunities exist; they just need to be explored.

"There is opportunity to grow our market, if industry exports, pressure is taken off the domestic onion market.

"The strategy aims to reduce domestic price drops by taking small amounts of onions off the market and creating a knock-on effect, meaning there is a substantial cause for onion levy payers to invest in their exports, even if they are not exporting. If we sell on the export market at or below cost, the effect on the domestic market is great," Dr McKinna said.

"This strategy details how Hort Innovation, and the onion industry should be investing the levy, as we are currently under-investing in export market development.

Jim Ertler, Mike Ertler and Rick Ertler (left to right).

"To develop our international markets, it is all about improving relationships, ensuring we have trust and a good working relationship with those markets- particularly in Asia, as they turn to Australian onions," said Dr McKinna

It is estimated that there are less than 10 major grower/exporters in Australia that produce the bulk of Australia's export onions.

"The Onion Export Strategy will, assist in building brand awareness and sustainability. This use of levy funds will support growers in their business strategies particularly if they are currently not exporting.

Jim Ertler,
Owner of Premium Fresh ,Tasmania

Tasmania, South Australia, and Western Australia are producing 97 per cent of the export volume, with Tasmanian onions accounting for 52 per cent of the total export trade.

Although around 15 per cent of Australia's onion volume is exported, it used to be a much higher proportion of total production. "We need to continue to drive our advantages, as we do need to sell at a substantial premium to international markets, so having that quality edge is critical to putting Australian onions on the map.

"I encourage growers to read the export strategy even if they're not exporting themselves, as it does give great insight into the industry and it is important for all growers to understand the importance of exports," Dr McKinna said.

A grower that agrees with the new strategy and Dr McKinna's sentiments is Jim Ertler, Owner of Premium Fresh in Tasmania which has been operating since the early 2000's and exporting for the last 14 years.

He believes the export strategy is key in supporting growers' exporting business plans and replacing the decreased demand in domestic markets due to recent oversupply.

"Over the last 18 months we have seen peaks in domestic market demand. Export markets have provided an alternative route for Premium Fresh in replacing domestic market lulls, but not without the challenges of shipping and fulfilling orders continuing.

"The Onion Export Strategy will, assist in building brand awareness and sustainability. This use of levy funds will support growers in their business strategies particularly if they are currently not exporting.

"There are no benefits in selling product below cost, we need to all work towards managing the volumes placed on the domestic market to ensure that it is not oversaturated. The strategy can be part of growers plans to manage supply volumes on the domestic market which will benefit all."

"With building more sustainable export markets one of the key recommendations of the strategy, Premium Fresh has taken a proactive stance and delved further into both the European and SouthEast Asian Markets. We are keen to explore our new markets particularly with the guidance and support of the export strategy findings," Mr Ertler said.

For more info on the about the project, visit: **https://www.horticulture.com.au/growers/help-yourbusiness-grow/research-reports-publications-fact-sheets-and-more/vn20003/**

For more information on domestic and international trade and industry support, visit:
https://www.horticulture.com.au/growers/Trade-hub

NUSEED PARTNERS WITH FRRR TO STRENGTHEN RURAL COMMUNITIES

ADDITIONAL $150,000 PER YEAR GOING INTO CANOLA GROWING AREAS TO SUPPORT SUSTAINABILITY INITIATIVES

Foundation for Rural and Regional Renewal has welcomed a three-year commitment from canola seed business Nuseed to support its flagship small grants program, Strengthening Rural Communities.

Announced at an event in Horsham, Nuseed Australia GM Rachel Palumbo said that with deep roots in rural communities, they wanted to give back to causes and organisations that are important to the farmers who invest in their seed, particularly around sustainability initiatives.

Ms Palumbo said "Our team works hard to develop high-performing canola varieties for Australian farmers, and we know that we are successful because of the support we get in the local communities in which we operate. By partnering with FRRR we can support canola growing communities in a tangible and significant way. The majority of our Nuseed team are also based in communities just like this, and see the benefits that community-focused projects can bring."

"Nuseed is delighted to be adding our name to the list of organisations that are partnering with FRRR to ensure that funds get to the projects that really need support. Our funding will be directed at projects in canola growing areas across the country that focus on sustainability related initiatives, in line with our strategic intent to provide plant-based solutions to some of food and fuel challenges we're facing."

Jill Karena, FRRR's Place Programs Portfolio Lead said the $150,000 annual donation will mean that many more community groups can invest in projects that they know will make a difference to the liveability and vitality of their communities.

"We are seeing more and more requests from community groups to help them respond to their changing needs, so it's wonderful to be able to have dedicated funding available in canola-growing areas to be able to support these great projects.

"In some communities, that might look like installing air-conditioning in community owned buildings to reduce energy costs, providing sustainability focused education, undertaking tree planting, or waterway restoration initiatives. For other communities, it could be that the priority is to have a backup generator, solar panels or water tanks to ensure community gardens can be maintained.

"That's the value of small grants programs like Strengthening Rural Communities. They are flexible and allow communities to get the funding to support the projects they prioritise, so we are really grateful for Nuseed's support of this program. Our partnership will also mean that community groups get access to advice and support that builds their confidence and enables them to lodge a great application. We look forward to awarding many more grants thanks to their contribution," Ms Karena said.

The Nuseed funding will be included in the next round of SRC, which is open now and will be announced by late February 2024. Community groups can already apply for SRC support, as this program is always open, with quarterly assessments. The program offers grants up to $10,000 through the Small and Vital stream for projects that strengthen community connections and meet local priorities.

FUTURE ROUNDS

ROUND 20

OPENS:
5 DECEMBER 2023

CLOSES:
26 FEBRUARY 2024

FUNDING ANNOUNCED MID MAY

Learn more at frrr.org.au/SRC.

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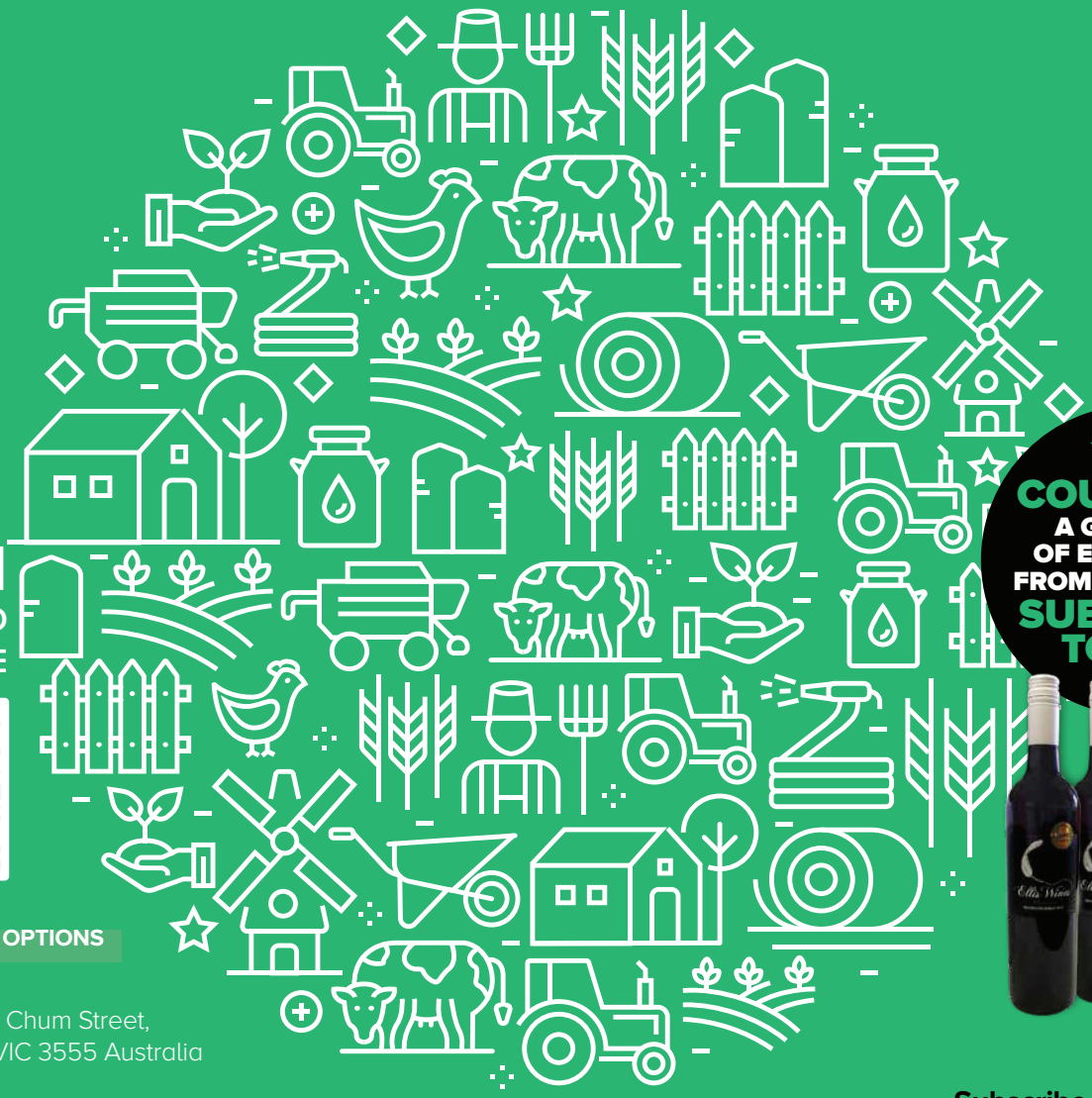

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FATHER-SON FARMING DUO ACHIEVE REMARKABLE SORGHUM YIELD IN CHALLENGING CONDITIONS

Graham and David MacGregor, a father and son farming team near Parkes, have demonstrated their expertise and resilience, achieving exceptional sorghum yields despite facing adverse weather conditions and minimal in-crop rainfall.

Having worked alongside neighbouring farmer Bruce Watson for several years, the MacGregors embraced the opportunity to venture into sorghum cultivation, resulting in remarkable outcomes exceeding expectations.

Determined to make the most of the season, Graham said the father-son duo had to adjust their plans to explore the potential of sorghum when wet weather significantly reduced their intended winter crop area.

“Working with Bruce over the years we have been able to observe some of the great yield results he and his family have been able to achieve in a non-traditional sorghum growing area,” Graham said.

“We commenced the season originally planning to plant 400 hectares of MR Buster, however the season’s unfavourable weather conditions didn’t allow us to get on to our land until November.”

With time constraints and the need for a quicker-maturing variety, the MacGregors made a strategic decision to switch to Viper IG, a new grain variety by Pacific Seeds known for its rapid growth – specifically opting for its quickness rather than its IMI technology.

“The delayed planting meant we had to reduce our intended planting area, planting the sorghum crop at a seeding rate of 2.5kg/ha or 75,000 seeds/ha in early November, which was quickly followed by 75-100mm of unexpected rainfall just two days later, resulting in the crop having to be replanted,” Graham added.

“The quickness of the Viper IG variety meant we were able to replant promptly and mitigate potential yield losses, allowing us to harvest more than two tonnes per hectare with excellent grain quality. A remarkable result considering the crop only received 40mm of total in-crop rainfall, with the highest individual fall measuring 5mm.

“We implemented a comprehensive input management strategy, applying 60kg of monoammonium phosphate (MAP) and 180kg of urea per hectare, in addition to two litres of Atrazine and Duel per hectare to control weeds.”

Graham expressed his confidence in sorghum farming and their plans to continue cultivating the crop in the upcoming season, with the successful experiment serving as a testament to their adaptability in the face of challenging circumstances.

The MacGregor’s remarkable sorghum yield highlights the potential for innovation and resilience in the agricultural industry. Pacific Seeds Viper IG is ideal for dryland, limited soil water cropping scenarios and as a late sorghum option due to its quick maturing.

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*** Ref: GRDC Double Inoculant Rates Fact Sheet - June 2021**

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