2024

Western Australian Regional News & Trial Updates

DELTA AGRIBUSINESS

Delta Ag are a leading independent provider of farm inputs, farm advisory and agency services across regional Australia.

In Western Australia we have an expansive branch network dedicated to serving our regional agricultural customers. This network includes both branches directly owned by us and partnerships formed with independently owned businesses in WA.

Delta in WA

100
EMPLOYEES

12
OWNED BRANCHES

38
AGENT PARTNER BRANCHES

This booklet contains a summary of key trials conducted in the 2023 season, throughout the grain growing regions of Western Australia.

This publication is the result of the joint effort of companies that trust AgroAdvantage to measure the performance of their products and the farmers who contribute ideas, concerns as well as experimental sites to our work team.

Many thanks to the growers, supplier companies and advisors for their contributions.

Foreword

The 2023 growing season was a challenging one for many farmers across Western Australia – during this difficult season the Delta businesses continue to consolidate and expand into new areas. Our agent stores also continued to grow and support the Delta brand.

The AgroAdvantage program worked with these stores to conduct more than 70 trials throughout the network – working with independent consultants – store owners and farmers to provide a close up look at relevant products in order to assist with developing solutions for local problems.

Thanks to all the contributing store owners/managers, consultants along with our AgroAdvantage team; Haydn Edwards, Josh Bach, Gray Yates, Guillermo Arrua, Joe Goy, Cameron Quenby and Lleyton Whitely-Yzerman for all their work in making this a successful program.

Special thanks to our Consulting agronomists and advisors:

Graham Laslett – Combined Agronomic services
Joel Lancaster – Synergy Consulting
David Stead – Anasazi Agronomy
Sam Bald – Wheatbelt Ag
Hillary Witwer – Farmwork's Narrogin

John McBride

AgroAdvantage Manager

Contents

Message from the CEO

2023 was a year of mixed fortunes across Australia with generally positive outcomes in Southern NSW, Victoria, South Australia, and Southern Western Australia, whilst dry conditions for much of the growing season in Central and Northern NSW and the Eastern and Northern Wheatbelt in WA resulted in poor yields and well below average grain receivals. The Western Australian crop was estimated to be 13MT on the back of 26MT in 2022 and 24MT in 2021.

Rains across much of the eastern states in the past 6-8 weeks, including Central and Northern NSW, has resulted in positive outlooks in 2024. Whilst there has been some patchy thunderstorm activity across WA most of the wheatbelt remains hot and dry which is entirely normal for this time of year.

The rains in the eastern states have created a huge demand for nearly all farm inputs and farmers across the country are encouraged to get themselves organised for the 2024 cropping season. Good news for WA growers is nearly all products are currently in a readily available supply position and the cost of many at record all-time lows, this combined with the positivity of strong commodity pricing – Wheat, Oats, Barley, Lupins and Canola, is generally seeing a positive result in farm budgets that are currently being undertaken.

The Delta Ag Team from across Australia wish all our much-valued growers and other customers all the best for the 2024 season.

Warren Stirrat

CEO – Delta Ag WA

Delta RI – Pre and Post Emergent Herbicide Trials. Dumbleyung, 2023.

Regional News

Regions

MID WEST

Northampton (Andrew Cripps)
Geraldton (Andrew Cripps)
Perenjori (Andrew Cripps)

CENTRAL WHEATBELT

Bolgart (Lester Snooke)
Brookton (Richard Wilkinson)
Karlgarin (Sam Bald)

SOUTHERN WHEATBELT

Dumbleyung (Gray Yates)
Lake Grace (Craig Shaw)

SOUTH COAST

Wellstead, Gairdner (Nathan Dovey)
Esperance (Cameron Quenby)

Andrew Cripps

LOCATION: **GERALDTON, NORTHAMPTON & PERENJORI**

2023 Season

The lowest rainfall in 16 years presented a very challenging year for many of our growers. Patchy crop establishment followed by a hot spring saw production levels fall to half our 5-10 year average.

From a business perspective we have had a big year. We have added another store (Northampton) and with that we have added five new members to our team as well as other people stepping into new roles. This has been fantastic to get to know these wonderful new people. We have also had two weddings with 3 of our team getting hitched. We had 3-4 premierships in various sports. The business also turned 10 years old with celebrations to come.

Trial Comments

Our trials program was very focused this year with the added complexities of a new store and people learning new roles. We had a good post emergent broad leaf trial at Northampton and one at Perenjori, looking at new pyrasulfotole products. Inclusion of Terrain Flow and Voraxor into these trials next time around will make these even more interesting.

2024 News

We have a bigger trials program planned for next year with people settling into their new roles. There is a big lime and systems trial to go into Perenjori along with a look at Ultro and a post em propyzamide trial in canola planned.

We hope to have a good season where farmers can have a more productive season and we can consolidate our business. We will continue to strive for better customer service and support our farmers and our community.

Thanks to our customers and staff for all their hard work during this challenging year.

Lookout for our 10 year celebration in 2024.

Cheers,

Andrew.

Lester Snooke

LOCATION: **BOLGART**

TRIAL LOCATION: **WANDARRI FARM - 15KM NORTH-WEST OF BOLGART**

Wandarri Rainfall

GSR 277mm, Total 317mm

January	0
February	0
March	27
April	18
May	26
June	102
July	46
August	25
September	56
October	3
November	13
December	0

2023 Season

2023 will be remembered as the season we had to have or rather, were all expecting. After the previous two belter years, this year saw the vast majority of rainfall events shrink to single digits. As a consequence of this, sub-soil moisture was nonexistent and combined with some hot days and cold nights, the finish to the season was less than ideal.

For those farming east and south of Bolgart, the opening rain of 25mm came on the 26th of March with a perfect follow up of 40mm 5 days later.

Those farming north and west of town received 2mm and 25mm respectively. Any canola planted on this early moisture jumped out of the ground and would continue to set the benchmark for the entire season.

April and May were littered with single digit rainfall events which saw seeding continue and in most cases a surprise germination of both crop and weeds resulted. Bryobia mite numbers exploded and many cotyledon - 4 leaf canola crops were sprayed during this dry and warm period. It wasn't until 25mm of rain on the 1st of June and another 50mm a week later that crops got established and pre-emergent herbicide activity kicked in.

June was the only month of the year that average rainfall was received (85-100mm) followed by decile 2 July and August, which allowed for spraying and fertiliser applications to be performed without the need for bog chains!

By September the vast majority of crops were hanging in the balance and looking for a kind finish to realise their full potential. 40 - 60mm of rain was received by mid-month and confidence of an above average harvest was restored. However, it was not to be, the rain stopped, some hot days and some cold nights resulted in basically a cut-off season.

A mid-October start to harvest, the earliest on record, and very few rain delays allowed for an early finish. The grain quality was excellent, low screenings and generally high proteins. The vast majority of barley achieved malt classification. Canola oil was generally lower than in the previous few years. A summary of crop yields:

Canola (early seeded)	2.5-3.3T/ha
Canola (seeded after mid April)	1.5-2T/ha
Wheat	2.5-3.5T/ha
Barley	3-4T/ha
Lupins	1-2T/ha
Hay (excellent quality)	4-7T/ha

I would like to thank the entire Delta family, in particular Joe, Gray and Haydn for the professional manner in which they conducted the trials. There were 3 field days hosted at the trial site throughout the year, with more than 60 growers in total in attendance. A couple of BBQ's and few Export cans around the fire, made for the perfect learning environment.

Delta RI – Pre-em Grass Control Trial during harvest. Bolgart, 2023.

Richard Wilkinson

LOCATION: **BROOKTON**

It was a very challenging year within the store, George Nelson passed away in June after holding this position for 9 or 10 years, the man was a legend in the store and the community. Our managers, Anton and Tamara were married in September which was very exciting and helped bring our happy vibes back into the store. We also appointed a new agronomist, Johan Haumann to join myself which will strengthen our on-farm presence.

Agronomy perspective: The year started with very heavy early rainfall. This delayed seeding in some areas and others cancelled their entire canola program as they did not have the ability to get onto paddocks. What canola was sown early germinated well into great moisture. Cereals which were sown later in the season suffered by being too cold, germinating into freezing temperatures and frost events which occurred in late June and early July. This did impact yield significantly as it limited the plant's ability to tiller out. Towards the end of the year the opposite happened, and the moisture dried up too quickly, a lot of canola that was planned to be swathed before harvest was direct headed instead as it dried out too quickly. This also caused cereals to be pinched off, not achieving their full yield potential.

On the positive side, oat prices were higher than they have ever been, and this has certainly balanced some of the losses of the year out. A lot of growers in our area are still moving forward despite uncertainty in the live export market, regardless of current prices live stockers are maintaining numbers in the hopes of a bounce back in 2024. We in Brookton had a lot more rain and opportunities than the rest of WA and are happy to take home the wins as we've been given them.

Richard

Sam Bald

LOCATION: **NAREMBEEN**

Finishing Harvest in Karlgarin

2023 Season

Average to below in the area this season. Another promising start with 50-100mm throughout the district last week of March/1st week of April. Canola hectares were again high. The moisture held on for oats, some lupins and early sown wheat, however most cereals didn't germinate until the rain in early June, this put a ceiling on yields. June/July were challenging with 25 frosts in 50 days for not only crop growth but weed kill. A lot of broadleaf weeds held on the first spray requiring a second tidy up. Crops were clean early however, given later season rainfall, ryegrass was still germinating and survived.

Some frost put a dampener on canola and early sown wheat. Hay was good without being spectacular and canola yields were on just shy of cereal yields for the most part. Most growers and advisors are happy to put 2023 in the rear-view mirror with an early start and very early finish. Most done in November!

Trial Comments: Canola was a highlight in 2023 receiving all available growing season rain. We just missed a crucial 5mm that would have got the 2nd time of sowing germinating nicely.

2024 News

Expect a slight rebound in some barley hectares although lack of chemical options will keep hectares from sky rocketing. Oats for grain will increase especially if delivery options improve. Canola will depend on the break of the season.

Craig Shaw

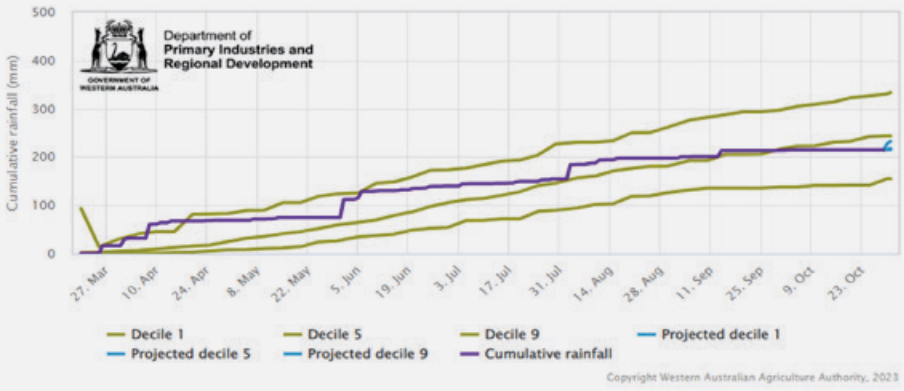
LOCATION: **LAKE GRACE**

2023

The season that finished as abruptly as it began.

Period	Cumulative rain (mm)	Decile
Summer 1/1/2023 to 19/3/2023	6.4	2
Growing Season 20/3/2023 to 31/10/2023	214.8	4

Rainfall to date 2023 - Lake Grace - As of 30/10/2023



2023 was characterized by an early start to seeding followed by a dry May, and a hot/dry September to finish up. Cropping has produced average yields with strong grain prices in an extremely political year for agriculture. The poor livestock markets have not been helped by talk of a live export ban. In WA cultural heritage laws caused much consternation by threatening freehold property rights.

Strategic planning ahead for 2024 is going to be crucial following the season we have just had – 2023 saw urea favoured over liquid this season due to a price differential, Fert and chem pricing continued falling even as seeding progressed. Buying for the month ahead was a good strategy last season. 2024 presents a more stable market pricing wise and will enable more reliable budgeting and allow forward ordering to ensure availability.

Field Days

We concluded FD season with an excellent LIFT Day organised by Justine Tyson. We visited local trials alongside all the others conducted by the AgroAdvantage team. Some results are included in this booklet.

Store News

Unfortunately, we lost Sam in September to filmmaking with Nick Cage – could be worse! We wish him all the best as he goes travelling next year and we should expect to see him in the footy district thereafter. I'd like to thank him for everything he's done to help our customers and ourselves – it was an awesome couple of years!

We welcomed Deb back to the store in March. She very quickly restored some order to the admin side of the equation – I'm a very relieved man! Joe Goy has recently joined us after spending a couple seasons doing research for the Delta AgroAdvantage team. He'll be eager and able to extend that experience into helping our customers get the right inputs – at the right price, at the right time and in the right amount. I'm looking forward to 2024 and seeing this team at full stretch. Lastly a big thanks to our valued customers for all your support, and all the best for the coming season.

Lake Grace AgroAdvantage Trial Site 2023.

Nathan Dovey

LOCATION: **WELLSTEAD**

2023 Season

A growing season with lots of ups and downs has seen many of our clients just above or just below long-term yields for wheat, barley, and canola. However, some growers suffered severe waterlogging in paddocks that required multiple re-seeding attempts and unfortunately yields were poor with a very dry spring. The early cut-off meant that many growers finished harvest in the first week of December, and hopefully they enjoy a little extra unplanned rest.

Delta Wellstead had variety trials in the Gairdner region for TT canola, barley, main season wheat and long-season winter type wheat. The trial mean yields were 2.22 t/ha (TT canola), 3.62 t/ha (barley), 4.11 t/ha (main season wheat) and finally 4.25 t/ha (long season wheat) which is not bad with an early finish. We look forward to sharing this data with clients and enabling them to make better variety decisions in the coming season. Thank you to the Delta Agroadvantage team for doing such a professional job.

Gairdner Trial Site, 2023.

Cam Quenby

LOCATION: **ESPERANCE**

2023 Season

2023 has made for a difficult year in managing trials, much like the rest of Esperance farms this season. A dry season was forecast, but a good rain break in early April gave a good sowing window for canola across the region. This breaking rain was followed by 4-5 weeks of dry conditions which impacted canola germination. These patchy germinations caused headaches throughout the year with herbicide timing restrictions and maturation timing for harvest.

June tipped the scales in the complete opposite direction with over 200mm of rain falling for coastal farmers and ~100mm for lower rainfall areas. Coastal crops remained underwater for a majority of June-August which severely knocked yield potential. September and October saw the end of the rain and the tap turned off, quickly, coinciding with temperatures in the mid-30's for some weeks turned crops rapidly making for a very tough finish across the district.

With most of the harvest starting to wrap up, a general comment for the yields observed would be "pleasantly surprised". Nowhere near any records, but not as bad as it could have been given the very challenging conditions throughout the growing season. Logistically, a much better harvest than last year, and less harvest moisture taking the pressure off summer weed spraying.

Esperance Trial Site

Trial Comments

Without a proper rain break, we were forced into a later than ideal seeding timing at the end of May which was still dry seeding but with 10-15mm of rain forecast. That 10-15mm forecast turned into 50mm+, and for the month of June we had more than 200mm fall, making for very difficult conditions. These waterlogged conditions, in combination with low soil temperatures made for slow crop establishment but also created high weed pressure environments, perfect for our trial applications. In the wheat, the annual ryegrass population was just shy of 150 plants/m^2 and in the barley it was ~110 plants/m^2. The Mateno trial in barley is also focussing on broadleaf weeds, which at this site came in the form of flatweed (~58/m^2) and capeweed (~15/m^2). These high populations, as well as staggered weed germinations really put the trial applications to the test. After 150 units of N, the main cereal trials pushed through and ended up returning some great yield responses to treatments. Premium products such as Mateno Complete and Sakura were the superior performers across the wheat and barley trials. Trifluralin + Mateno EPE continues to be the most robust herbicide combination for ryegrass as well as broadleaf weeds.

2024 News

Pyroxasulfone (Sakura) coming off patent will be the biggest talking point of 2024. Potentially coming in at half the price per hectare than it has been the last few years, for the premium grass control product on the market. Sakura or generics will be under a significant portion of wheat crops across the state. This might open a door for higher (off label) use rates and use patterns which we will definitely be looking at trialling to assess crop safety and plant back thresholds.

Dumbleyung AgroAdvantage Field Day 2023

Gray Yates – Research Agronomist
Delta Agribusiness

The 2023 Dumbleyung Field Day took place on the 25th of August, a day graced with great weather and an even better turnout! Over 150 growers, coming from Esperance to Geraldton and everywhere in between attended the day. Not often can you go to a field walk and meet a group from such a diversity of rainfall zones and farming systems, so a big thank you to all the growers that came along. In addition, there were numerous supplier representatives as well as industry leading agronomists, all helping to generate engaging discussion, and an opportunity to ask the tough questions, and learn from the experiences of others- which is what the day is all about!

The day has a strong focus on demonstrating new products and ideas, including herbicides, varieties, nutrition etc, but most importantly, the trials provide a platform for discussion around the implementation of these products and ideas.

Some highlights of the day included a herbicide focus session in the morning, with discussion around the use of pre and post emergent grass and BLW strategies in wheat. The afternoon session explored benefits of legumes in the system, taking advantage of early moisture with long season cereal varieties, new biologicals, TT and RR canola varieties and a lunchtime guest speaker, Dr. Susan Orgill from Select Carbon, who discussed the hot topic of carbon credits.

The site had 21 trials this year, and a big thanks to Haydn & Peta Edwards for providing this prime patch of land each year and all the hard work they put in to make the day possible.

Joel Lancaster (Synergy Consulting) flying through a pre-em grass herbicide trial.

Trials

CROP VARIETY

Main Season Wheat (Gairdner)
Main Season Barley (Gairdner)
Canola Time of Sowing (Karlgarin)
Long Season Cereals (Dumbleyung)

PRE-EMERGENT HERBICIDES

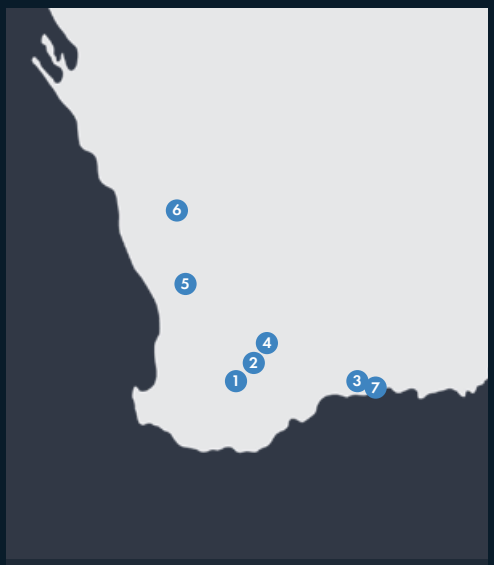
ARG Tank-mix (Dumbleyung, Bolgart & Esperance)
BLW (Dumbleyung & Bolgart)
ADAMA Ultro (Lake Grace)
Mateno Complete (Dumbleyung)

POST-EMERGENT HERBICIDES

FMC Aptitude (Dumbleyung)
Nufarm Galaxy (Perenjori)
BLW Tank-mix (Bolgart & Dumbleyung)

ADJUVANTS

Spraytec additives with Velocity (Dumbleyung)
Adjuvant comparison with Terrad'or (Dumbleyung)



TRIAL SITES

1. Dumbleyung
2. Lake Grace
3. Gairdner
4. Karlgarin
5. Bolgart
6. Perenjori
7. Esperance

TRIAL RESULTS

Crop Varieties

Trial: Main Season Wheat Varieties

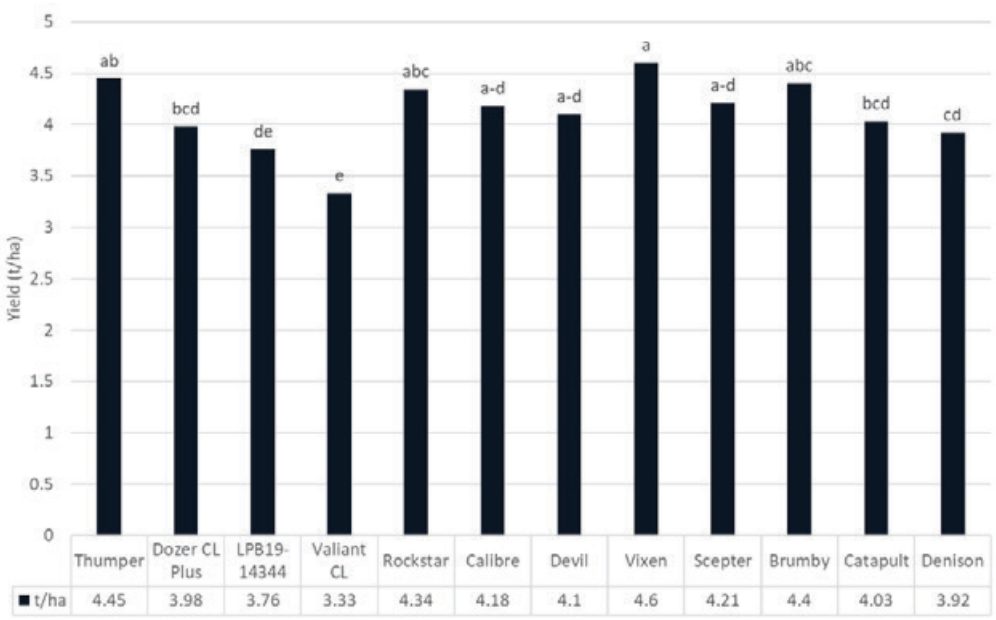
LOCATION: **GAIRDNER**

Objective

To attain grain yields of each variety and be able to compare yield and grain quality results between all main season wheat varieties.

Results

Wheat Variety Yields (t/ha)



Sowing Date: 10/05/2023.

Seed Rate: 70 kg/ha. Fertilization: All Phos 100 kg/ha + SOP 50 kg/ha (seeding).

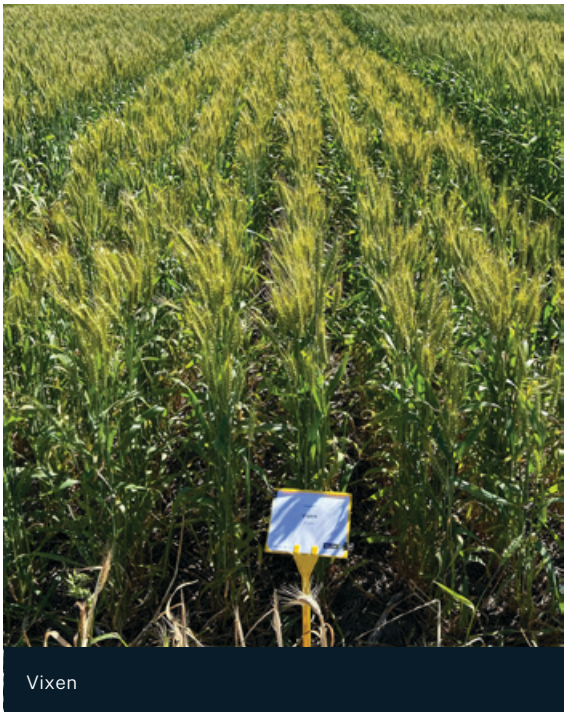
Flexi N: 300 L/ha (Total) split between three applications.

Grain Protein Content (%)	
Variety	**Protein(%)**
Thumper	11.18 a
Dozer CL Plus	11.23 a
LPB19-14344	11.88 a
Valiant CL	12.25 a
Rockstar	10.95 a
Calibre	11.58 a
Devil	11.28 a
Vixen	11.25 a
Scepter	11.43 a
Brumby	11.03 a
Catapult	11.28 a
Denison	11.25 a

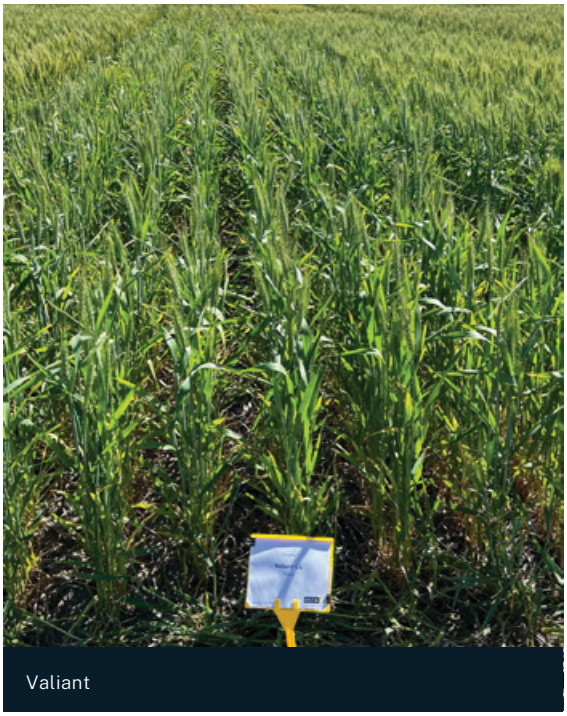
Key findings

- Vixen led the charge this season achieving a 4.6t/ha yield, which was just over a tonne ahead of our lower performing varieties.
- Although there was no significant difference in protein between varieties, Valiant CL had a much higher protein level numerically (12.25%) compared to Rockstar with a protein of 10.95%.

21/09/2023 – 19 WAS



Vixen



Valiant

Trial design: RBD x 4 replicates. Lowercase letters indicate significant differences between treatments (P<0.05).

Trial: Main Season Barley Varieties

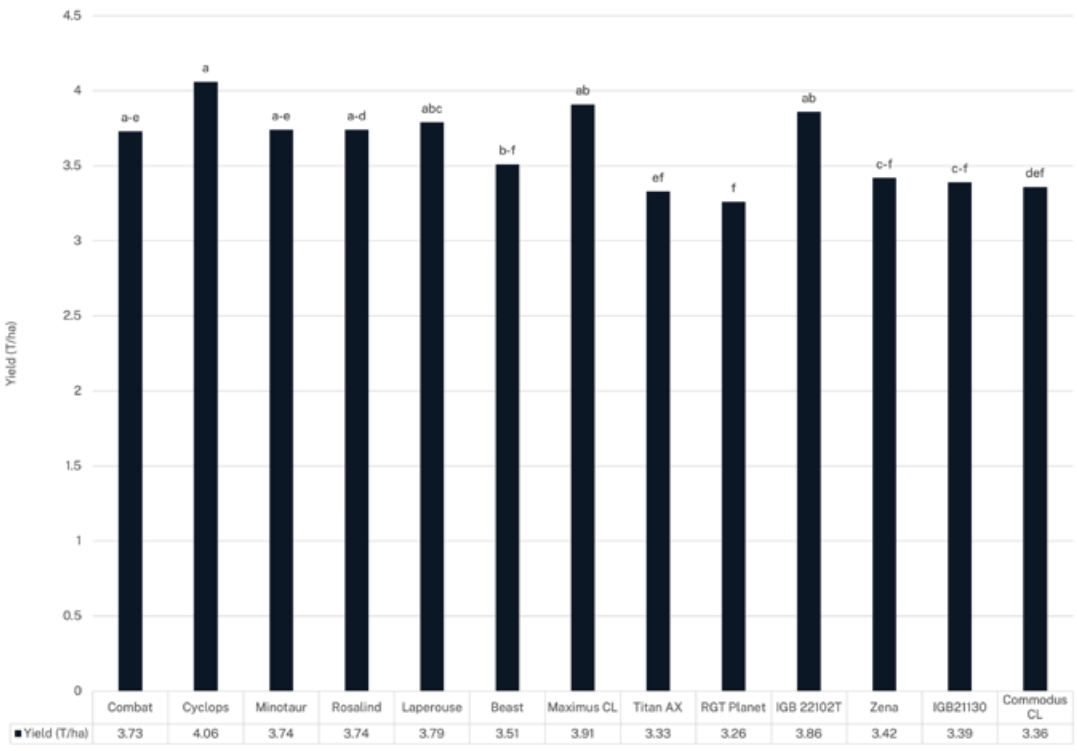
LOCATION: **GAIRDNER**

Objective

Assess differences in main season barley varieties yield and protein.

Results

Barley Yield (t/ha)



Sowing Date: 10/05/2023.

Seed Rate: 70 kg/ha. Fertilization: All Phos 100 kg/ha + SOP 50 kg/ha (seeding).

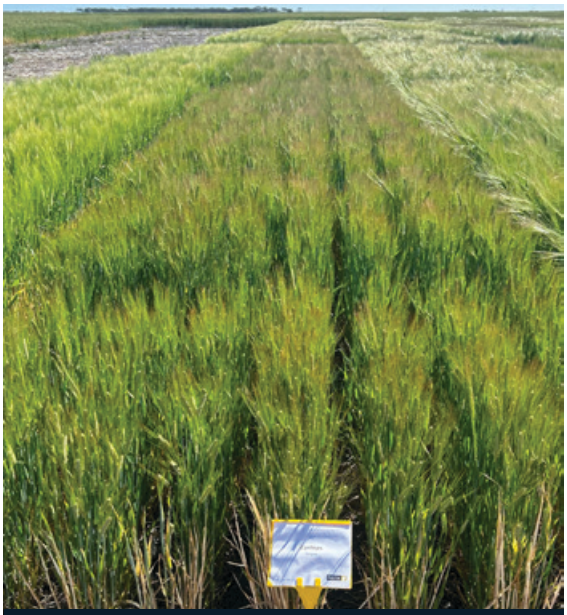
Flexi N: 300 L/ha (Total) split between three applications.

Grain Protein Content (%)	
Variety	**Protein(%)**
Combat	10.83 bcd
Cyclops	10.98 abc
Minotaur	10.3 de
Rosalind	11.18 ab
Laperouse	10.48 cde
Beast	11.6 a
Maximus CL	10.98 abc
Titan AX	10.75 bcd
RGT Planet	10.98 abc
Neo	9.98 e
Zena	10.93 bcd
IGB21130	10.8 bcd
Commodus CL	10.98 abc

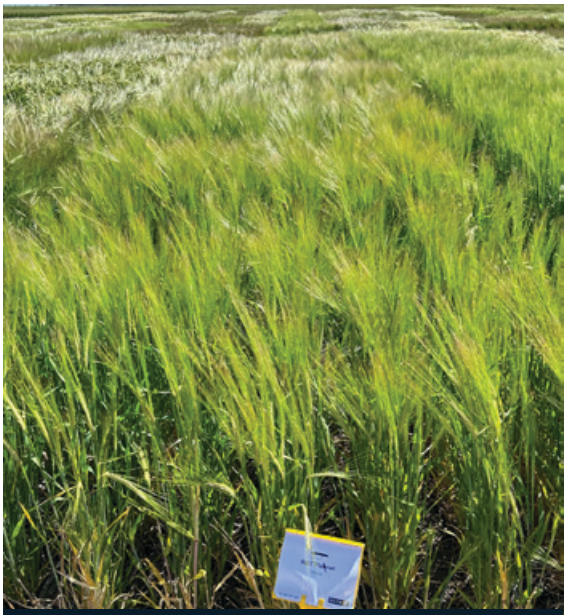
Key findings

- Cyclops was the highest yielding variety at 4.06t/ha while RGT Planet suffered a large reduction in yield at 3.26t/ha with a significant difference notable.
- Protein varied between some varieties, with Beast having the highest protein percentage at 11.18 %, whilst Neo had the lowest protein content at 9.98 %.

21/09/2023 – 19 WAS



Cyclops (highest yielding)



RGT Planet (lowest yielding)

Trial design: RBD x 4 replicates. Lowercase letters indicate significant differences between treatments (P<0.05).

Trial: RR Canola Varieties: Early Vs Late Sowing

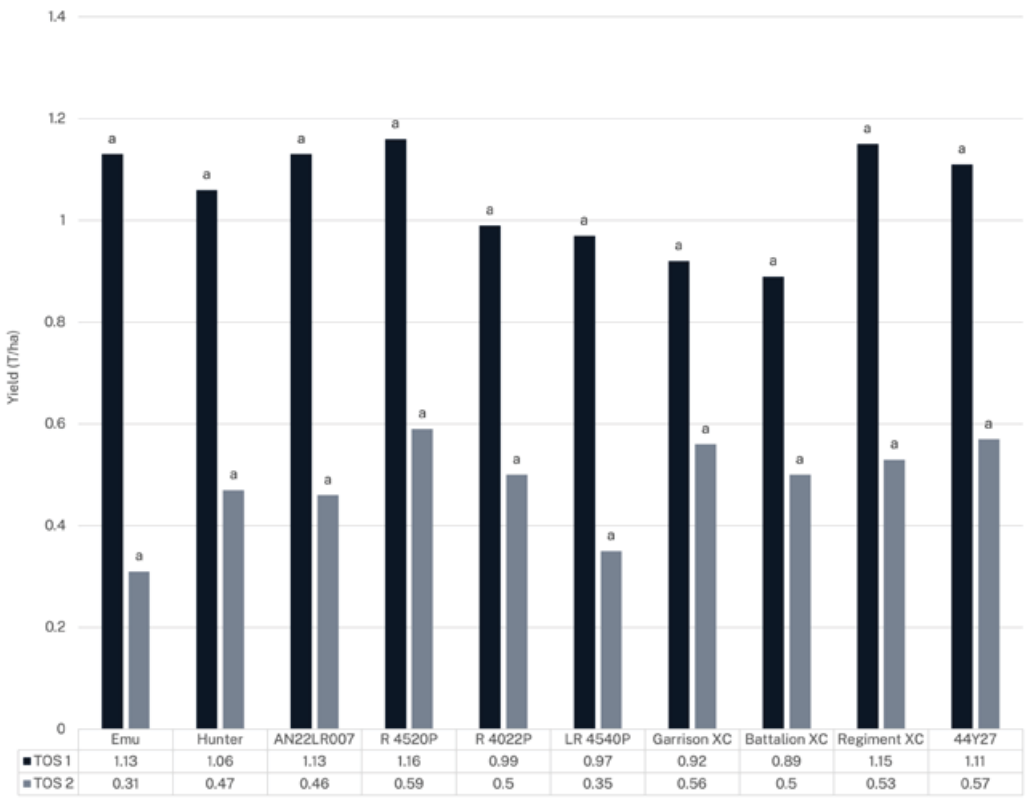
LOCATION: **KARLGARIN**

Objective

To determine the feasibility of late sowing Roundup Ready canola in the eastern wheatbelt.

Results

Early Vs Late Seeding



	Emu	Hunter	AN22LR007	R 4520P	R 4022P	LR 4540P	Garrison XC	Battalion XC	Regiment XC	44Y27
TOS 1	1.13	1.06	1.13	1.16	0.99	0.97	0.92	0.89	1.15	1.11
TOS 2	0.31	0.47	0.46	0.59	0.5	0.35	0.56	0.5	0.53	0.57

The significance letters correspond to varieties within each TOS, not between the two times of sowing.

TOS 1 (time of sowing 1): 18th of April

TOS 2 (time of sowing 2): 9th of May

Key findings

- At TOS 1, there was even crop emergence whilst TOS 2 experienced a staggered emergence in a drying profile. On average, a 54% yield reduction occurred between TOS 1 and TOS 2.
- There were no significant yield differences between varieties for either time of sowing, however there was a range of 270kg/ha for TOS 1 and 280kg/ha for TOS 2.
- Seeding into a drying profile, combined with a hard finish to the season severely reduced the performance of the late sown canola varieties.

Trial design: RBD x 4 replicates. Lowercase letters indicate significant differences between treatments ($P<0.05$).

Trial: Long Season Cereal Varieties

LOCATION: **DUMBLEYUNG**

Objective

Taking advantage of early moisture with long season wheat varieties vs main season practice with mid-spring varieties.

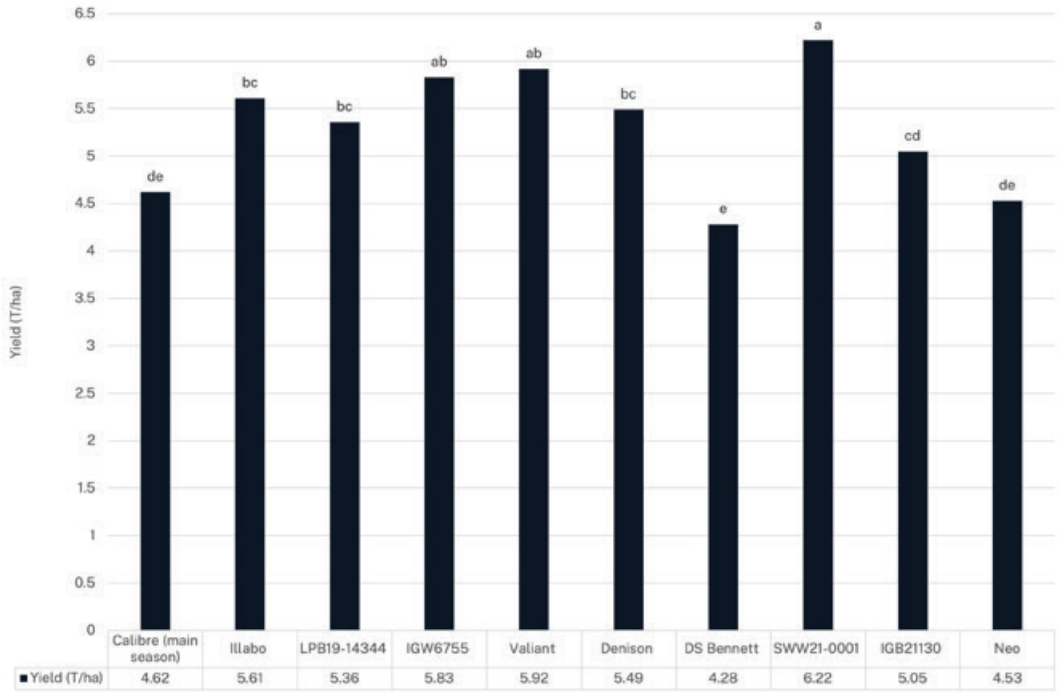
Treatment List

No	Varieties	Rate (kg/ha)	Maturity / Type	Company
1	Calibre (late -W)	70	Quick-mid / Spring	AGT
2	Illabo (W)	70	Quick-mid / Winter	AGT
3	LPB19-14344 (W)	70	Unknown	AGT
4	IGW6755 (W)	70	Very long / Spring	Intergrain
5	Valiant (W)	70	Long / Spring	Intergrain
6	Denison (W)	70	Long / Spring	AGT
7	DS Bennett (W)	70	Mid / Winter	Trigall Australia
8	SWW21-001 (W)	70	Quick / Winter	Trigall Australia
9	IGB21130 (B)	70	Long / Spring	Intergrain
10	Neo (B)	70	Mid / Spring	Intergrain

(W): wheat; ***(B)***: barley.

Seeding dates: Calibre-25th of May. All other varieties-12th of April.

Grain Yield (t/ha)



Grain Quality

Treatment	Protein(%)	Hectolitre weight (kg/hl)
Calibre (main season)	11.75 a	79.03 a
Illabo	10.60 abc	80.60 a
LPB19-14344	10.85 ab	82.95 a
IGW6755	10.45 abc	61.08 a
Valiant	10.93 ab	85.38 a
Denison	10.30 abc	83.32 a
DS Bennett	11.35 a	82.29 a
SWW21-0001	9.25 bc	83.86 a
IGB21130 (B)	8.98 cd	70.61 a
Neo (B)	7.48 d	71.24 a

Key findings

- Apart from DS Bennett, which was too slow for this environment, all other long season wheat varieties had a significant yield advantage of 0.7 –1.6 T/ha over Calibre.
- The trial demonstrated the potential benefits of utilising longer season varieties in an early seeding window, with significant yield improvements over the main season seeding timing. Taking advantage of early rainfall was successful this season in Dumbleyung.
- There were no significant differences in protein between the long season varieties. Numerically, Calibre had the highest protein (11.75%). There were no significant differences in hectolitre weight between varieties, with most around 80%.
- There were no significant differences in **hectolitre weight** and **protein** between the two barley varieties.

14/09/2023 – 22 WAS

Cyclops (highest yielding)

Trial design: RBD x 4 replicates. Lowercase letters indicate significant differences between treatments (P<0.05).

Delta Pre-emergent Herbicide Trial Harvest, Dumbleyung

TRIAL RESULTS

Pre – Emergent Herbicides

Herbicides have become a topic of interest over the last few years with a flush of new pre and post emergent herbicides hitting the market. This season we pulled together three herbicide comparisons in wheat. These comparisons included pre-emergent annual ryegrass control, pre-emergent broadleaf weed control, and post emergent broadleaf weed control. To provide a fair representation in different soil types and seasonal weather conditions, each trial was replicated in Bolgart for the northern region, Dumbleyung for the central region, and Esperance for the southern region.

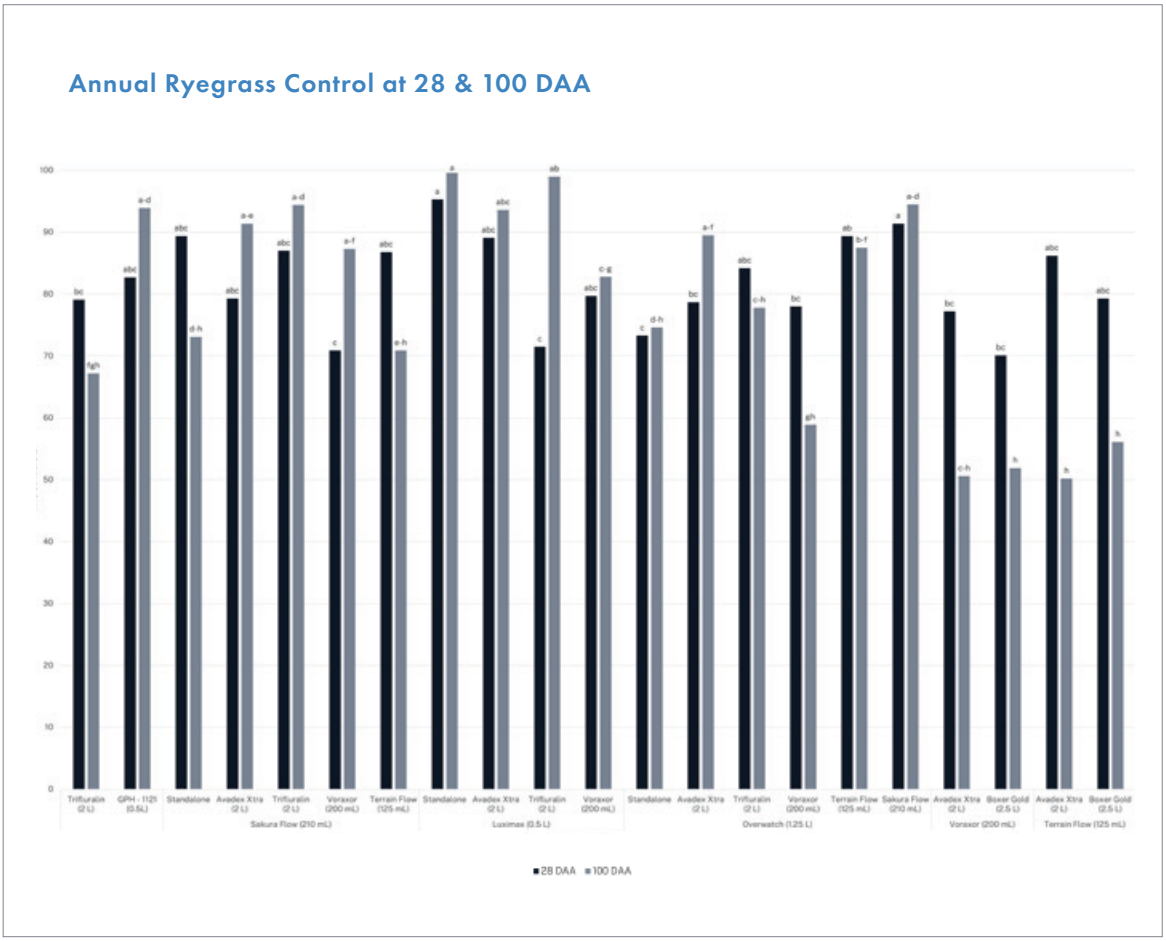
Trial: Delta Replicated Inclusion Trial: Pre-emergent ARG Control

LOCATION: **DUMBLEYUNG**

Objective

Evaluate different IBS options for crop safety and ARG control in wheat.

Results



Relevant notes/scales

Significant letters for the UTC were ‘d’ for 28 DAA and ‘i’ for 100 DAA. Treatment rates were in units/ha.

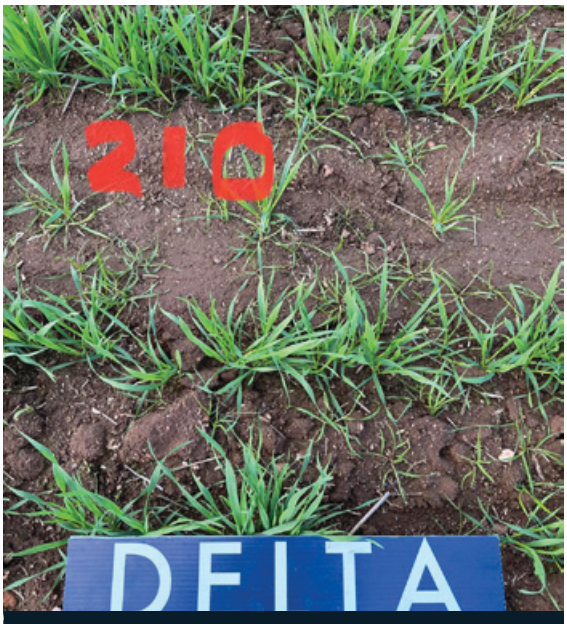
ARG Burden (Control)

23.5 plants/m^2 at 28 DAA and 25.4 panicles/m^2 at 100 DAA in the UTC.

Key findings

- Mixtures of Sakura Flow or Luximax with products such as Avadex Xtra, Overwatch, Trifluralin or Voraxor had a high residual activity, with ARG control in most cases being greater than 90% on average by the last assessment timing.
- Mixtures with Voraxor, excluding Luximax and Sakura, had reduced ARG control by the last assessment timing. Terrain Flow had a good performance in the mix with Overwatch however, when mixed with herbicides with shorter persistence such as Boxer Gold or Avadex Xtra, it resulted in more seed heads per square meter.
- None of the treatments presented a statistically different grain yield.
- Despite the higher phytotoxicity in the Luximax treatments there was no yield penalty. Being from a different herbicide group, Luximax may help with resistance management in the future.

25/7/2023 – 56 DAA



Untreated Control

Avadex Xtra (2000 mL/ha) + Luximax (500 mL/ha)

Trial design: RBD x 4 replicates. Lowercase letters indicate significant differences between treatments (P<0.05).

Trial: Delta Replicated Inclusion Trial: Pre-emergent ARG Control

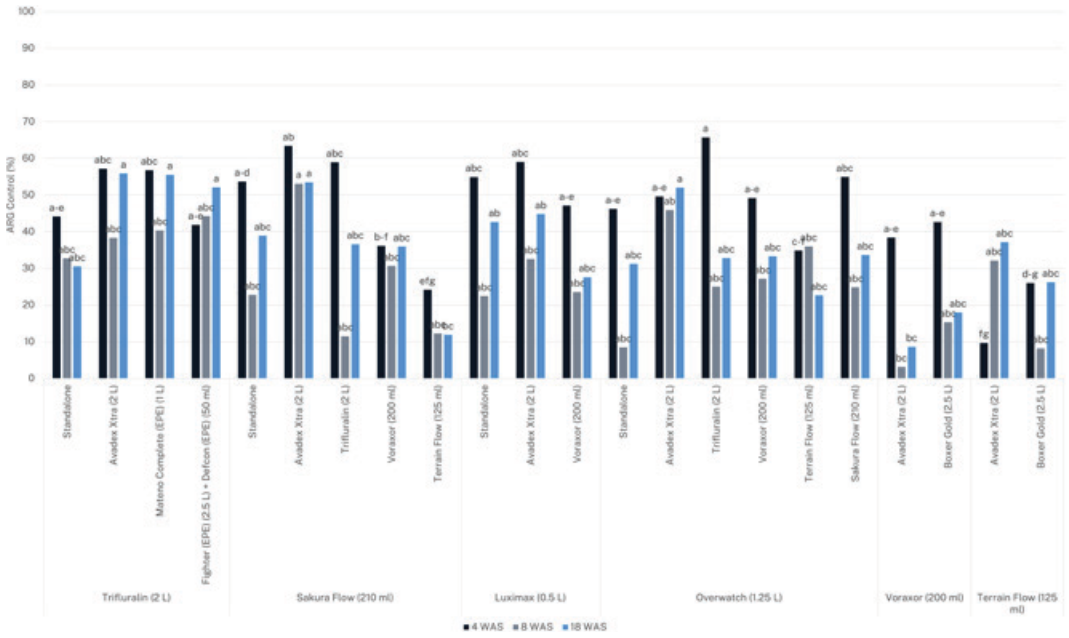
LOCATION: **BOLGART**

Objective

To determine the efficacy of ARG pre-emergent herbicides and tank mix combinations.

Results

Annual Ryegrass Control at 28, 56 and 127 DAA.



Relevant notes/scales

Significant letters for the UTC were ‘g’ for 4 WAS, ‘c’ for 8 WAS and ‘c’ for 18 WAS. Treatment rates were in units/ha.

Weed Burden

100 plants/m^2 in the UTC at the first assessment and 40 plants/m^2 at the final assessment.

Key findings

- The ARG control of the four pre-emergent stand-alone treatments were not different from each other.
- The Avadex Xtra and Trifluralin tank mix partners had a numerically higher weed control than Voraxor and Terrain Flow. These differences were not statistically significant.
- The pre-emergent products struggled to perform well in this trial due to the heavy weed burden at the site, which provided a challenging environment. This underperformance was evident in the premium preem products which generally had less than 50% weed control.
- Some treatments had significantly higher crop phytotoxicity at 28 DAA including Overwatch, Avadex Xtra + Sakura Flow and Trifluralin + Overwatch however, the phyto was less than 10%.
- The greatest yield was achieved in the Trifluralin + Mateno Complete (EPE) treatment (2.2 t/ha) whilst Voraxor + Avadex Xtra had the lowest yield at 1.4 t/ha.

8/6/2023 - 28 DAA

Untreated Control

Terrain Flow (125 mL/ha) + Overwatch (1250 mL/ha

Trial design: RBD x 4 replicates. Lowercase letters indicate significant differences between treatments (P<0.05).

Trial: Delta Replicated Inclusion Trial: Pre-emergent ARG Control

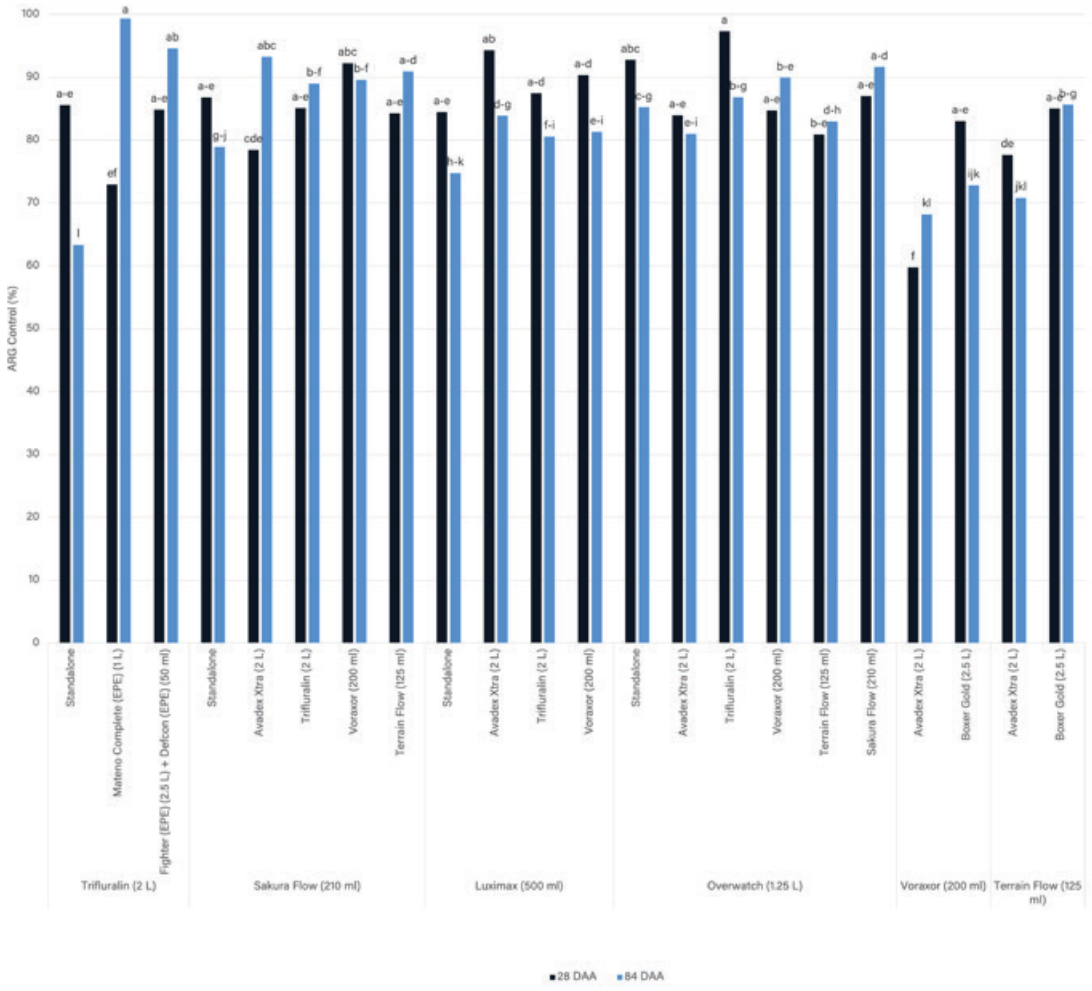
LOCATION: **ESPERANCE**

Objective

Evaluate the efficacy of ARG pre-emergent herbicides and tank mixture combinations.

Results

Annual Ryegrass Control at 28 & 84 DAA.



Relevant notes/scales

Significant letters for the UTC were ‘g’ for 28 DAA and ‘m’ for 84 DAA. Treatment rates were in units/ha.

Weed Burden

100 plants/m^2 in the UTC at the first assessment (28 DAA), and 100 plants/m^2 in the 84 DAA.

Key findings

- The weed control efficacy of the four distinct pre-emergent standalone treatments exhibited statistically significant variations at 28 DAA. Subsequently, at 84 DAA, no significant differences were observed among the standalone treatments.
- The Voraxor + Avadex Xtra mixture demonstrated a numerically superior weed control performance in contrast to the Voraxor + Sakura Flow tank mixture, which exhibited suboptimal results in this trial. These differences were statistically significant.
- The pre-emergent products showcased commendable performance in this trial, with nearly all products inducing a weed control efficacy exceeding 60% across various products and tank mixtures. This trial successfully investigated the efficacy of different pre-emergent products and mixtures in addressing weed burden control.
- The Voraxor + Avadex Xtra mixture had the lowest ARG control for the 28 DAA assessment, with a 60% control of ARG. Furthermore, it can be mentioned that the Trifluralin + Overwatch mixture performed outstanding, having an ARG control exceeding 95% on the 28 DAA. These differences were statistically significant.

Trial design: RBD x 4 replicates. Lowercase letters indicate significant differences between treatments ($P<0.05$).

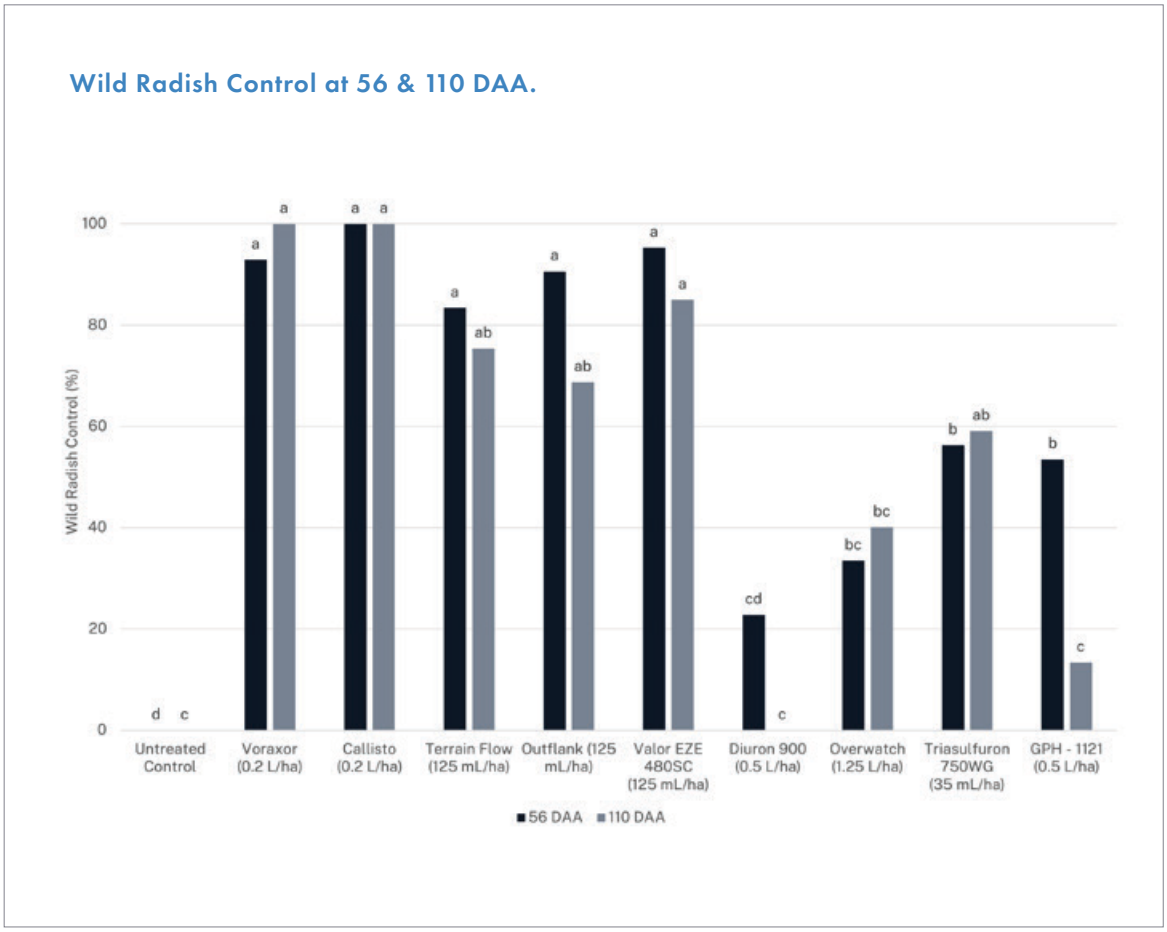
Trial: Delta Replicated Inclusion Trial: Pre-emergent BLW Control

LOCATION: **DUMBLEYUNG**

Objective

To determine the efficacy and crop safety of emerging and available pre-emergent herbicide for the control of wild radish in wheat.

Results



Weed Burden

6.84 plants/m^2 in the UTC at 56 DAA and 2.85 plants/m^2 at 110 DAA.

Key findings

- Voraxor, Callisto and the Flumioxazin herbicides (Terrain Flow, Outflank and Valor EZE) had significantly higher WR control at 56 DAA (>80% control) compared to the other products in this trial.
- At 110 DAA, no significant differences were observed between Voraxor, Callisto, Triasulfuron, and the Flumioxazin herbicides however, it is important to highlight the great numerical control obtained by Callisto and Voraxor (100% control).
- No differences in yield were observed between treatments.
- All treatments recorded statistically similar growth reduction at 56 DAA (10-15%) however, this became negligible by 110 DAA.

12/9/2023 – 100 DAA

Untreated Control

Callisto (200 mL/ha)

Trial design: RBD x 4 replicates.
Lowercase letters indicate significant differences between treatments (P<0.05).

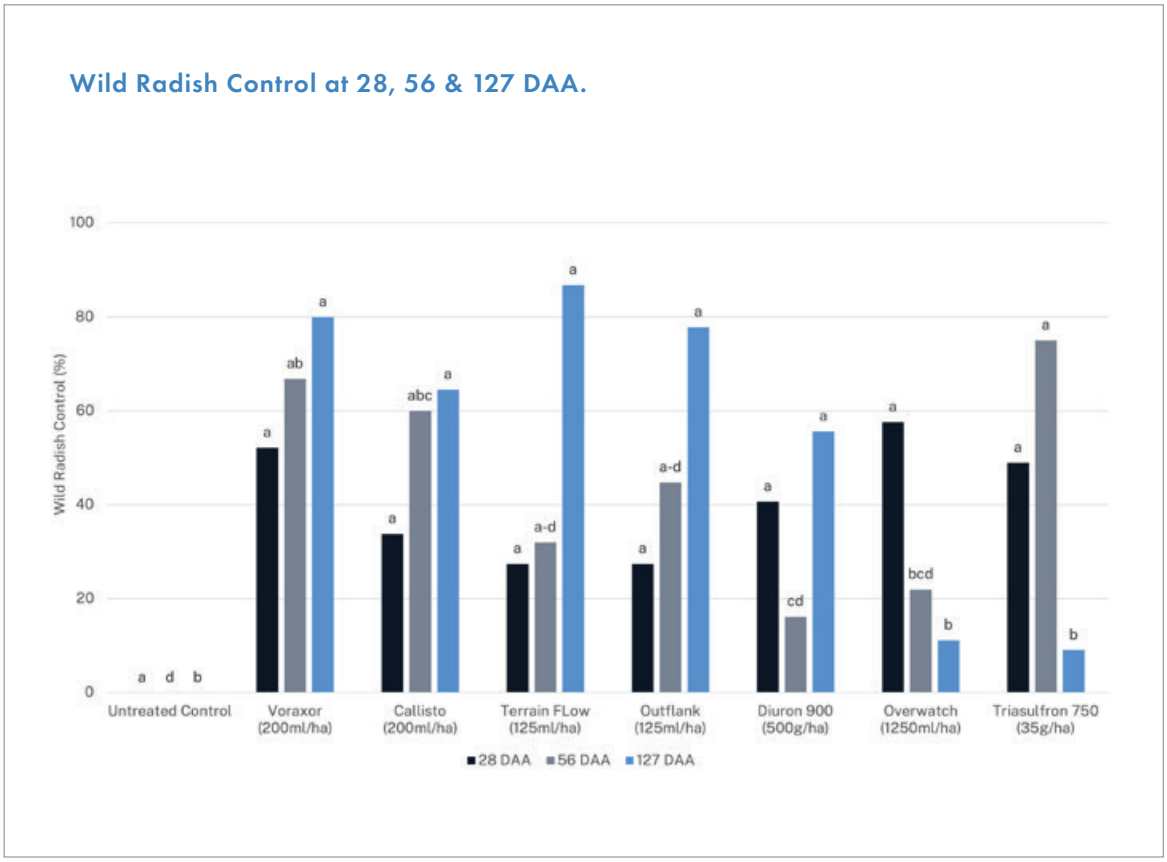
Trial: Delta Replicated Inclusion Trial: Pre-emergent BLW Control

LOCATION: **BOLGART**

Objective

To determine the efficacy of emerging and available pre-emergent herbicides for the control of wild radish in a wheat crop.

Results



Weed Burden

2 plants/m² in the UTC at the first assessment and 1.7 plants/m² by the final assessment.

Key findings

- Most products had strong residual weed control with better WR control at the later timings except for Overwatch and Triasulfron, which had poorer control at the last assessment time.
- There was no statistical difference in WR control between Voraxor, Callisto, Terrain Flow and Outflank at all timings, with these products generally outperforming Diuron, Overwatch and Triasulfron, particularly at the later timings.
- As stand-alone treatments in this trial, these products have not provided adequate control of WR.
- There were no significant differences in crop phytotoxicity or yield between treatments.

7/6/2023 - 28 DAA

Untreated Control

Voraxor (200 mL/ha)

Trial design: RBD x 4 replicates.
Lowercase letters indicate significant differences between treatments (P<0.05).

Trial: ADAMA Ultro: Ryegrass Control Options in Lupins

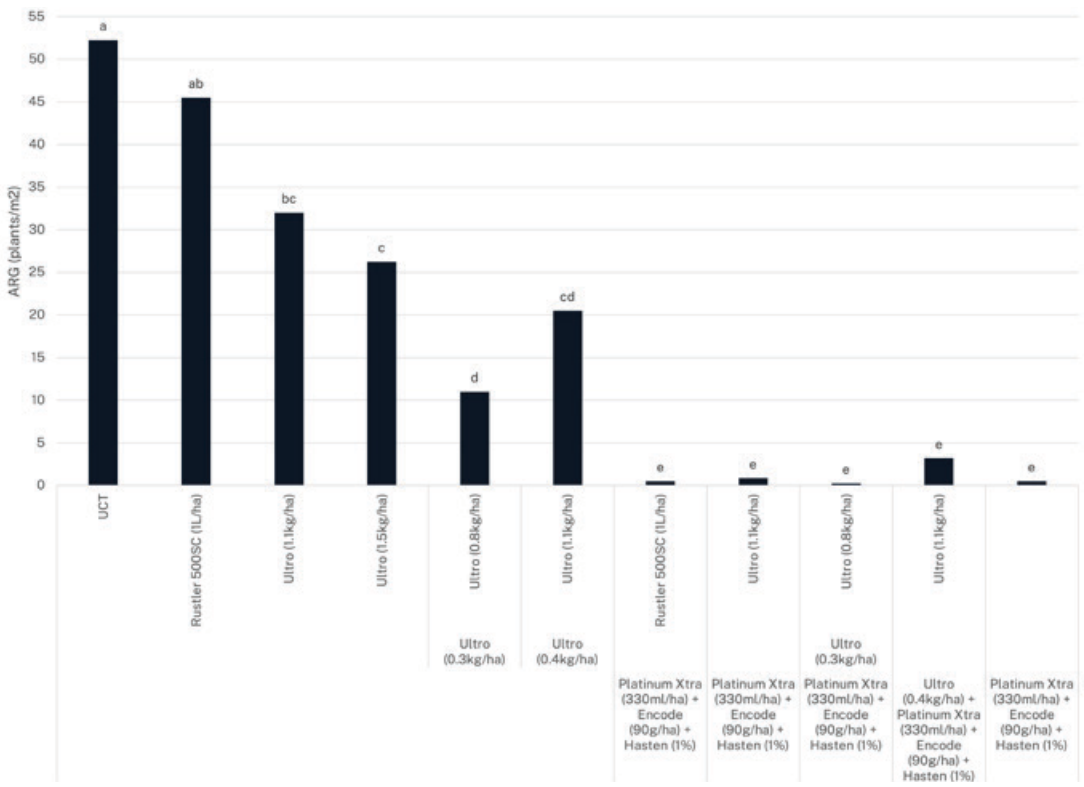
LOCATION: **LAKE GRACE**

Objective

Evaluate the pre-emergent vs split application systems and their tank mixtures with clethodim and butroxydim.

Results

ARG Panicle Counts (11/10/23- desiccation timing)



Key findings

- In terms of IBS applications, Ultro 1.7kg/ha provided significantly better control than Rustler 500SC 1L/ha.
- The lower rate split application of Ultro statistically improved control over IBS applications. The lower rate split application also had a numerically higher control than the higher rate split application however, these were not statistically different from each other.
- Almost complete control was achieved with a post-em application of Clethodim + Butroxydim + Hasten however, there were minimal ryegrass germinations post this application.

Untreated Control

'Ultro 0.8 kg/ha + 0.3 kg/ha (Split Application)'

Trial design: RBD x 4 replicates.
Lowercase letters indicate significant differences between treatments (P<0.05).

Trial: Mateno Complete: IBS options prior to EPE timing in Barley

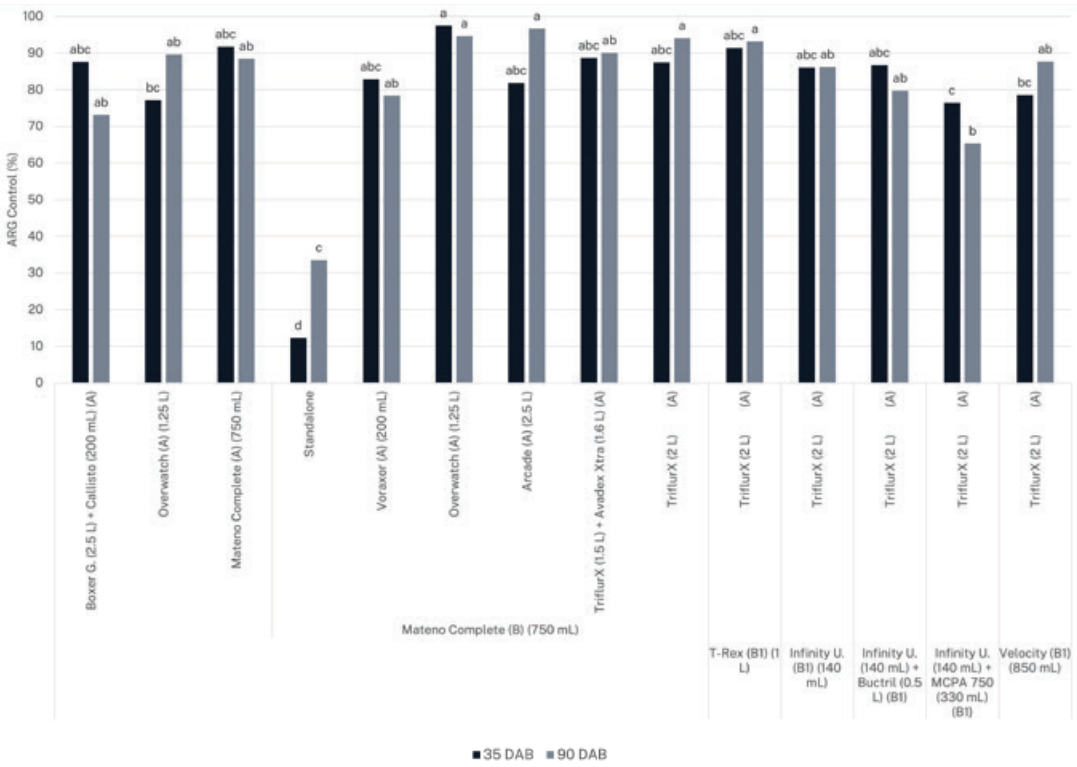
LOCATION: **DUMBLEYUNG**

Objective

Evaluate different IBS options prior to EPE timing for crop safety and efficacy of grass and BLW in Barley.

Results

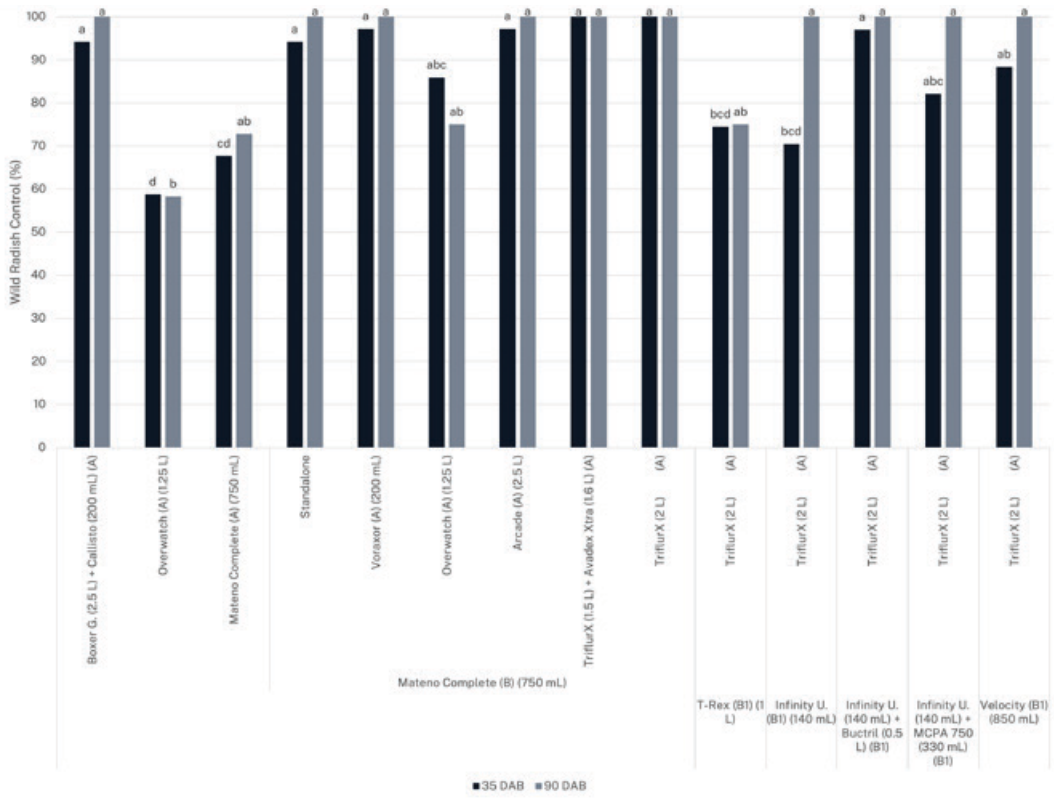
Annual Ryegrass Control (%) at 35 and 90 DAB.



Relevant notes/scales

Significant letters for the UTC were ‘d’ for 35 DAB and ‘d’ for 90 DAB. Treatment rates were in units/ha.

Wild Radish Control (%) at 35 and 90 DAB



Relevant notes/scales

Significant letters for the UTC were ‘e’ for 35 DAB and ‘c’ for 90 DAB. Treatment rates were in units/ha.

(A) = IBS: Incorporated by sowing.

(B) = EPE: Early Post emergent.

(B1): 10 days after EPE (typical timing for BLW).

Pre EPE spray weed counts: 48.4 ARG/m^2 and 7.1 WR/m^2.

Key findings

WR CONTROL

- Mateno Complete (EPE) obtained great WR control (> 94% at both evaluation times). For this reason, the inclusion of other herbicides with action on BLW applied IBS did not significantly increase the control of WR in this trial.
- For B1 applications, the addition of Buctril (Bromoxynil) to Infinity Ultra had the highest level of wild radish control 25 DAA, but no differences were found between treatments at 80 days after application (100% WR control).

ARG CONTROL

- The use of IBS herbicides such as: Overwatch, Voraxor, Trifluralin +/- Avadex Xtra or Arcade before the application of Mateno EPE significantly increased the control achieved by Mateno, having among the highest levels of ARG control of this trial.

CROP SAFETY

- None of the treatments negatively affected crop yield.

35 DAB

Untreated Control | Mateno Complete (A-IBS) 750 mL/ha | Mateno Complete (B-EPE) 750 mL/ha

Trial design: RBD x 4 replicates.
Lowercase letters indicate significant differences between treatments (P<0.05).

Trial: Mateno Complete: IBS options prior to EPE timing in Barley

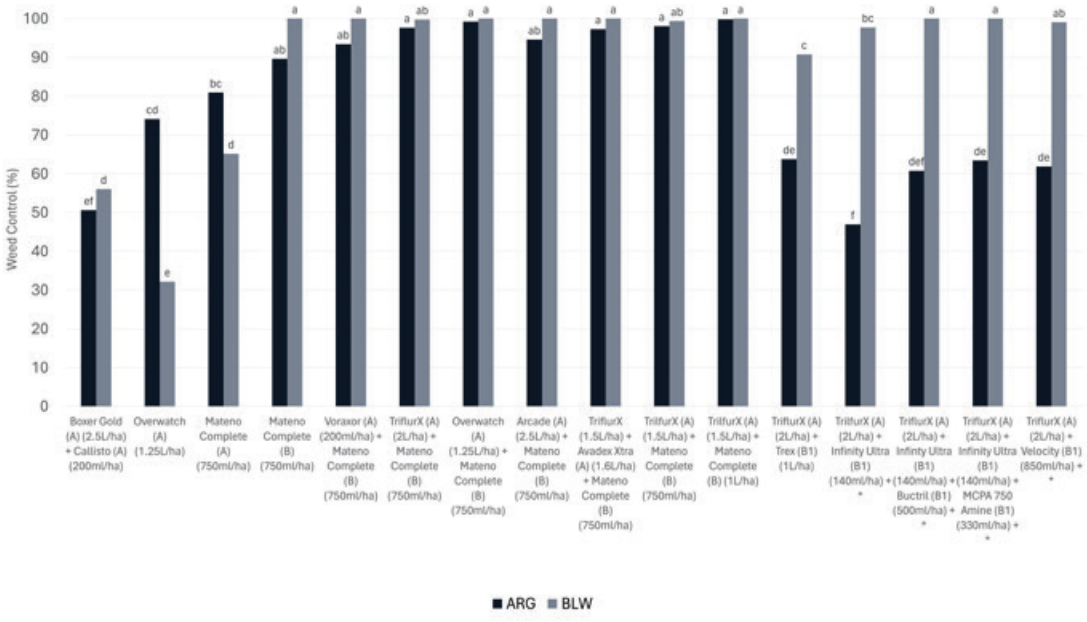
LOCATION: **ESPERANCE**

Objective

Evaluate different IBS options prior to EPE timing for crop safety and efficacy of ARG and BLW in barley.

Results

Annual Ryegrass Control (%) and Broadleaf Weed Control (Flatweed + Capeweed) at 35 DAB.



Relevant notes/scales

Significant letters for the UTC were ‘g’ for ARG and ‘f’ for BLW.

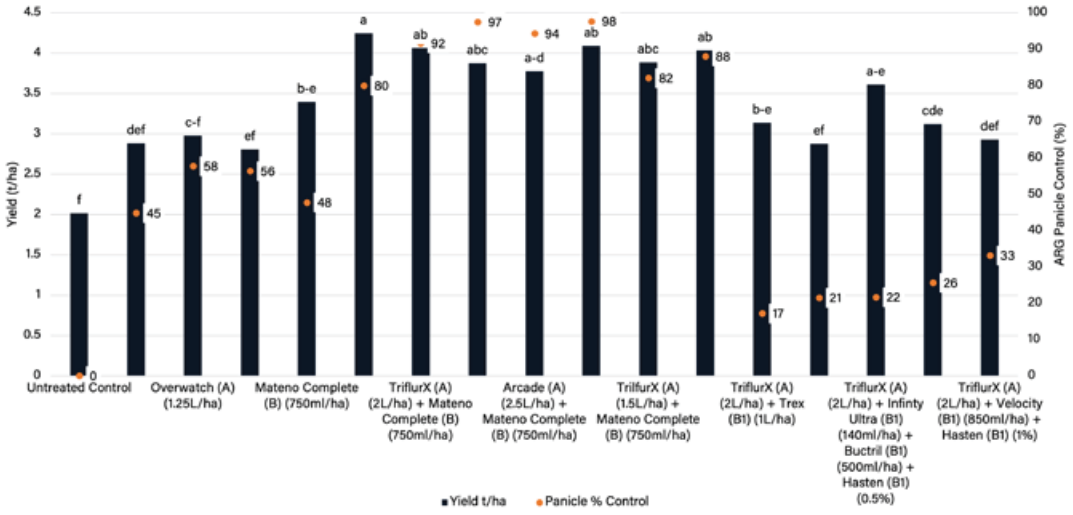
Treatment rates were in units/ha.

IBS: Incorporated by sowing. EPE: Early Post emergent. Post-Em: 10 days after EPE (typical timing for BLW).

Pre EPE spray weed counts:

110 ARG/m^2 and 73 BLW/m^2.

Final Yield (t/ha) and Percent Control of ARG Panicles Pre-Harvest



Relevant notes/scales

IBS: Incorporated by sowing. EPE: Early Post emergent.

Post-Em: 10 days after EPE (typical timing for BLW).

Weed Counts

UTC= 247 Panicles/m.

Key findings

- The highest yield was achieved by Voraxor fb Mateno Complete, TriflurX fb Mateno Complete (High and Low rates), and TriflurX + Avadex Xtra fb Mateno Complete. All these treatments yielded >4t/ha. These treatments had significantly higher yield than all treatments with just IBS applications.
- Much like the ARG % control at 35DAA, the highest control of ARG panicles was achieved by treatments with Mateno Complete EPE with an IBS application. This highlights the importance of in-furrow control for weeds which can be accomplished by the EPE applications.
- All treatments with Mateno Complete had significantly higher yield than the Untreated Control, except for Mateno Complete applied IBS.

TRIAL RESULTS

Post – emergent Herbicides

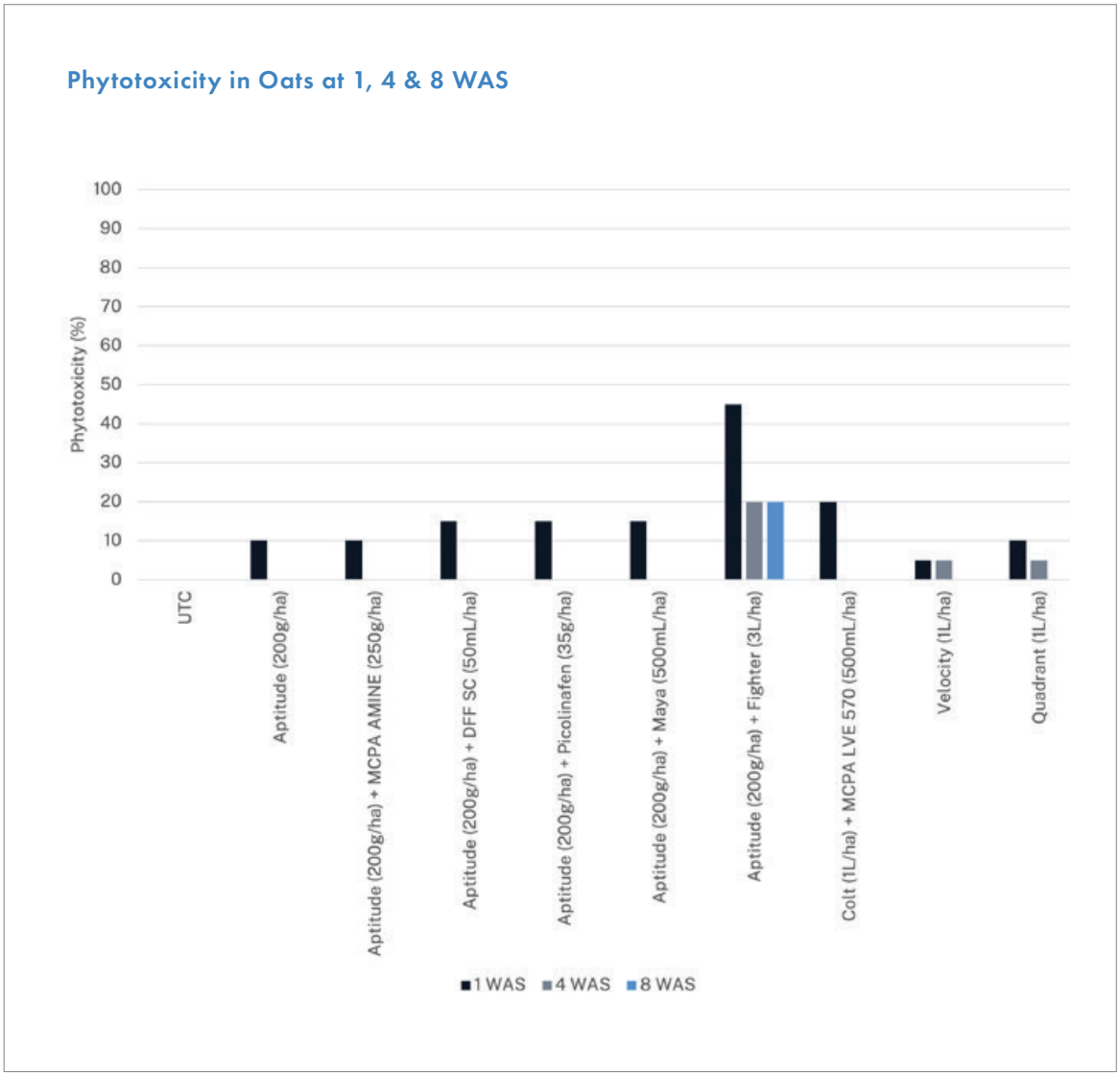
Trial: FMC - Aptitude (carfentrazone 90g/kg + metribuzin 375g/kg)- Crop Safety in Oats, Barley, and Wheat.

LOCATION: **DUMBLEYUNG**

Objective

Demonstrate the crop safety of Aptitude in oats, barley, and wheat.

Results



Key findings

- Most treatments caused minor early phytotoxicity, before demonstrating full recovery, except for Aptitude + Fighter, which caused severe early phytotoxicity.
- The most severe biomass reduction occurred in oats, persisting to 8 WAS.
- The same trend was observed in barley, however, Aptitude + Fighter only resulted in a slight biomass reduction at 8 WAS.
- Full crop recovery occurred in wheat.

PHYTOTOXICITY IN OATS (1 WAS)

Untreated Control

Aptitude (200g/ha)

Aptitude (200g/ha)+ Flighter (3L/ha)

Trial design: Demonstration - 1 replicate.

Trial: Nufarm Galaxy

LOCATION: **PERENJORI**

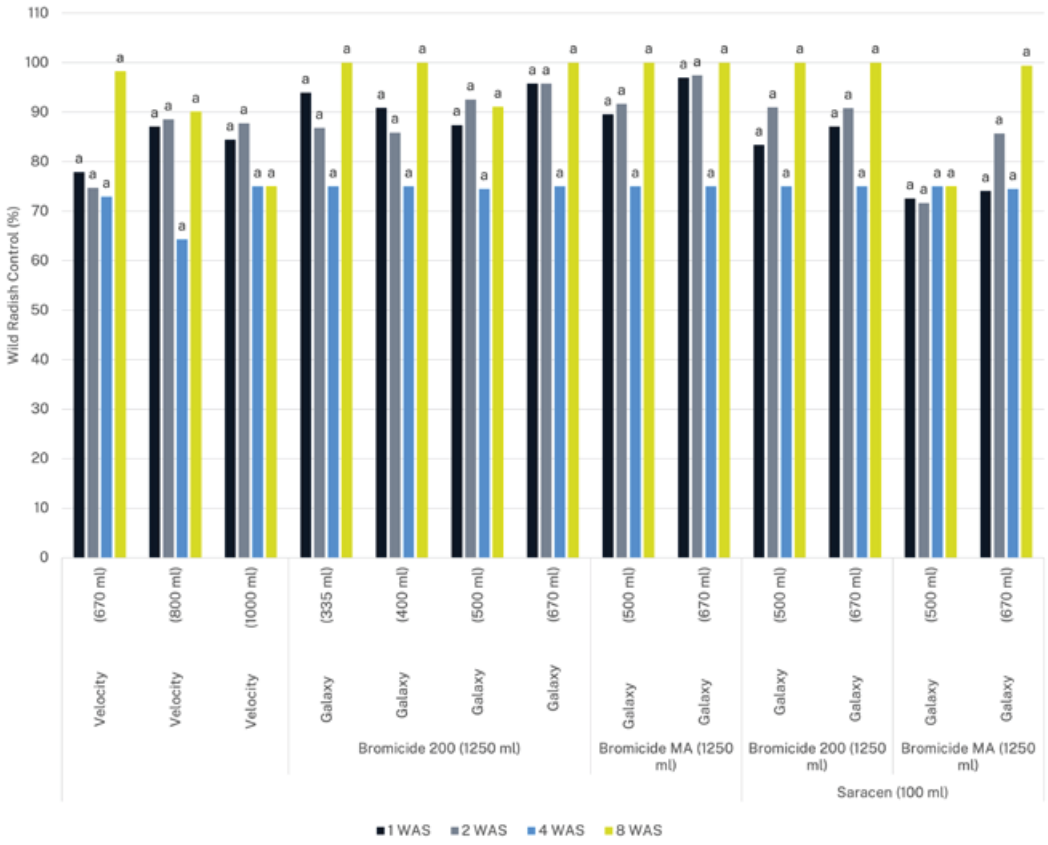
Objective

Demonstrate the flexibility of Galaxy, being able to tailor the tank mix partners and rate ratios.

Results

The extremely dry conditions this year compromised the results from this trial, crop and weeds were dying due to lack of moisture.

Wild Radish Control at 1, 2, 4 & 8 WAA



Relevant notes/scales:

Significant letters for the UTC were ‘b’ at all timings. Treatment rates were ml/ha.

Weed Burden

18.35 plants/m^2 in the UTC at application and 6.7 plants/m^2 at the final assessment.

Key findings

- The WR control of the Galaxy treatments was not statistically different from the industry benchmark (Velocity) at all 3 different rates.
- Standalone products (Velocity) were not significant from one another. However, tank mixtures overall performed well, exceeding 60% WR control. There was no statistical difference between the different tank mixtures at all timings.
- There were no significant differences in crop phytotoxicity between treatments at all timings.

12/7/2023 – 1 WAA

Velocity (670 mL/ha)

Galaxy (500 mL/ha) + Bromicide 200 (1250 mL/ha)

Trial design: RBD x 4 replicates.
Lowercase letters indicate significant differences between treatments (P<0.05).

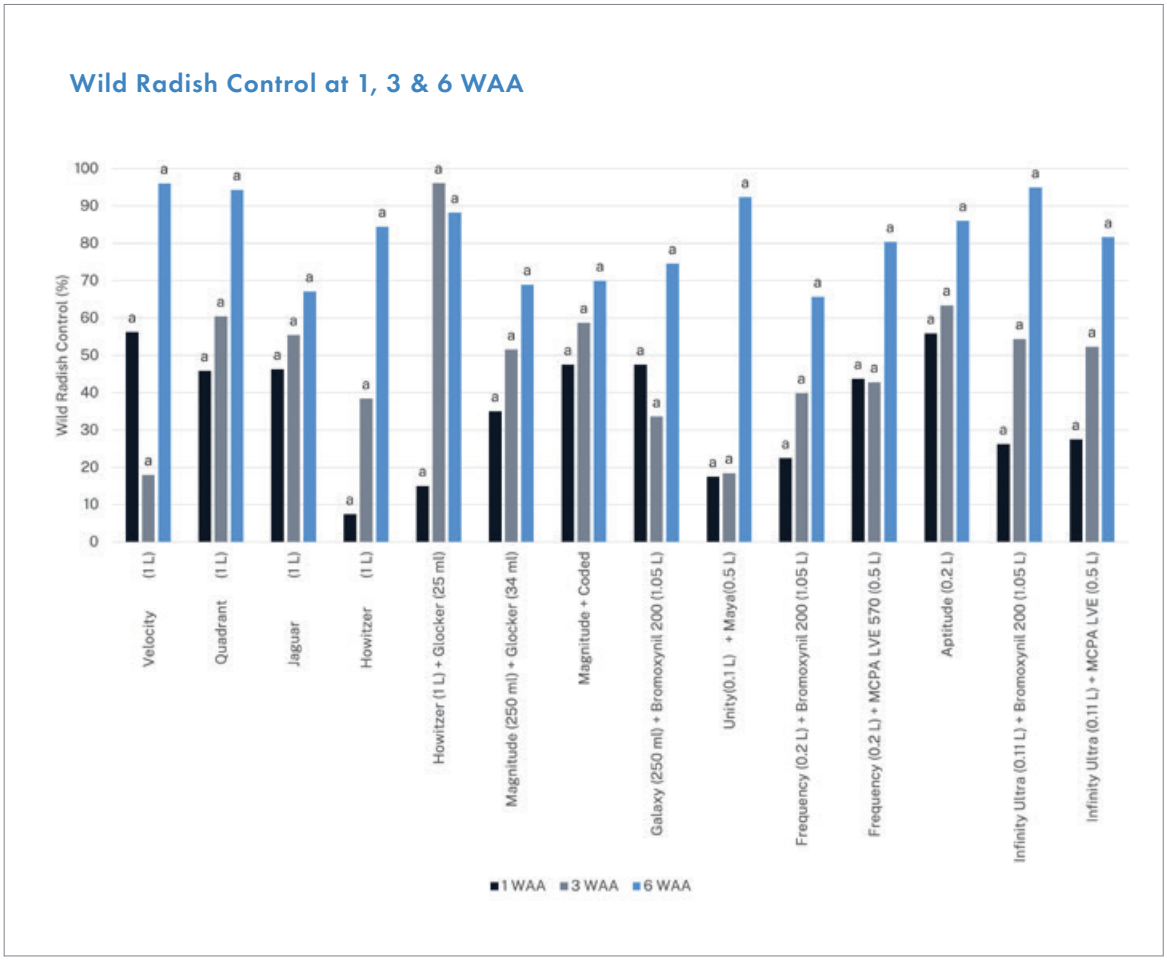
Trial: Delta Replicated Inclusion Trial: Post Emergent BLW Control

LOCATION: **BOLGART**

Objective

To determine efficacy of new and commercially available post emergent BLW herbicides in wheat.

Results



Relevant notes/scales

Significant letters for the UTC were 'b' for all timings. Treatment rates are in units/ha.

Weed Burden

0.5 plants/m^2 in the UTC on the day of treatment application and 0.3 plants/m^2 at the final assessment.

Key findings

- All treatments had a high level of efficacy by the last assessment timing, with Velocity, Quadrant, Unity + Maya and Infinity Ultra + Bromoxynil 200 having > 90% wild radish control by the last assessment.
- Despite numerical differences, none of the treatments had statistically different wild radish control from each other.
- There was some initial phytotoxicity with Quadrant, Jaguar, Howitzer + Glocker, and Magnitude + Glocker having > 10% phytotoxicity however, differences became negligible from 3 WAA onwards.
- There were no significant differences in yield between treatments.
- Due to the inconsistency in the distribution of rainfall, we have observed a lower-than-expected control by all the Pre-emergent herbicide, attributed to insufficient moisture for the translocation of the active ingredient through the plant.

17/8/2023 – 6 WAA

Untreated Control

Quadrant (1 L/ha)

Trial design: RBD x 4 replicates.
Lowercase letters indicate significant differences between treatments (P<0.05).

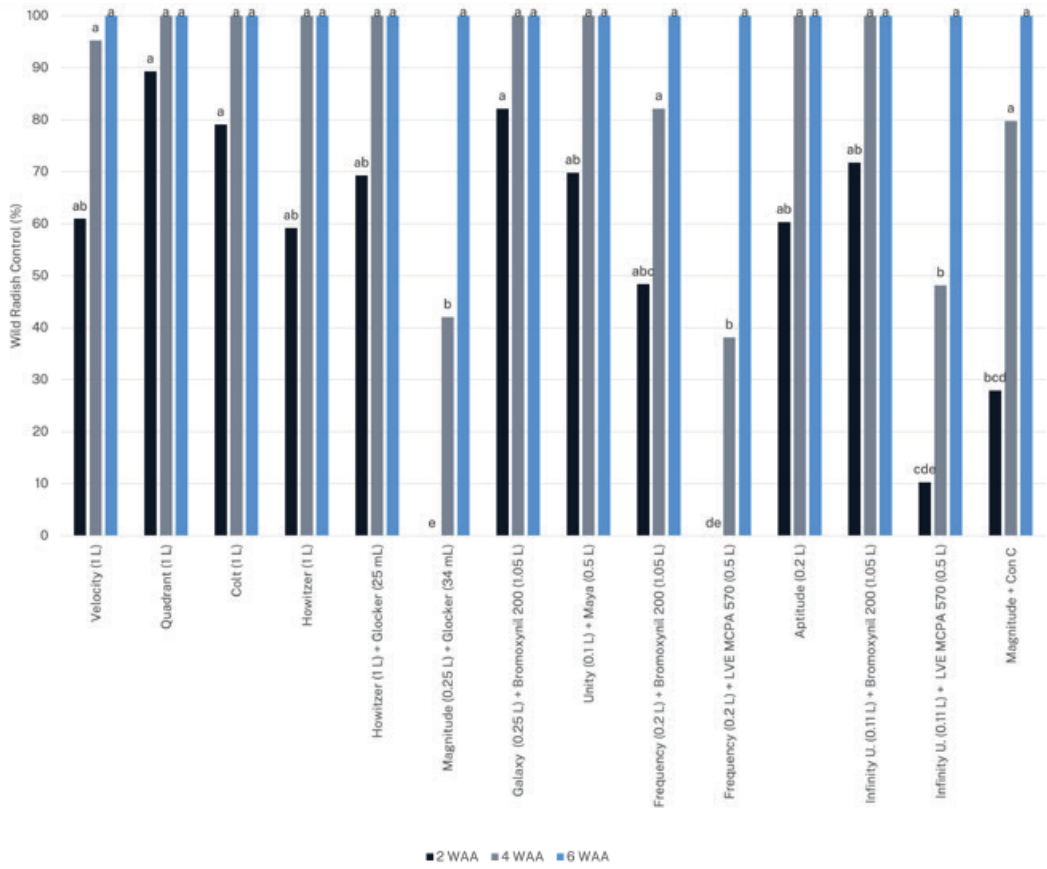
Trial: Delta Replicated Inclusion Trial: Post-emergent BLW Control

LOCATION: **DUMBLEYUNG**

Objective

Evaluate different post emergent options for crop safety and wild radish control in wheat.

Results



Relevant notes/scales

Significant letters for the UTC were ‘de’ for 2 WAA, ‘c’ for 4 WAA and ‘b’ for 6 WAA.

Treatment rates are in units/ha. Treatments applied on July 31st (Magnitude + Con c sprayed a week later).

WR Growth Stage: 6-leaf. Wheat Stage: Z 31.

Weed Burden

2.73 plants/m^2 in the UTC at 2 WAA and 2.35 plants/m^2 at 6 WAA.

Key findings

- Magnitude + Glocker, Frequency + LVE MCPA 570 and Infinity Ultra + LVE MCPA 570, presented the lowest control at 2 and 4 WAA, indicating that the mix of these products is much slower acting than the other products trialled.
- Frequency and Infinity Ultra showed significantly faster control at 2 and 4 WAA when mixed with Bromoxynil 200 instead of LVE MCPA.
- By the last assessment all treatments had 100% control on wild radish.
- None of the treatments affected crop biomass, colour or yield significantly.

12/9/2023 - 6 WAA

Untreated Control

Magnitude (0.25 L/ha) + Glocker (34 mL/ha)

Trial design: RBD x 4 replicates.
Lowercase letters indicate significant differences between treatments (P<0.05).

TRIAL RESULTS

Adjuvants

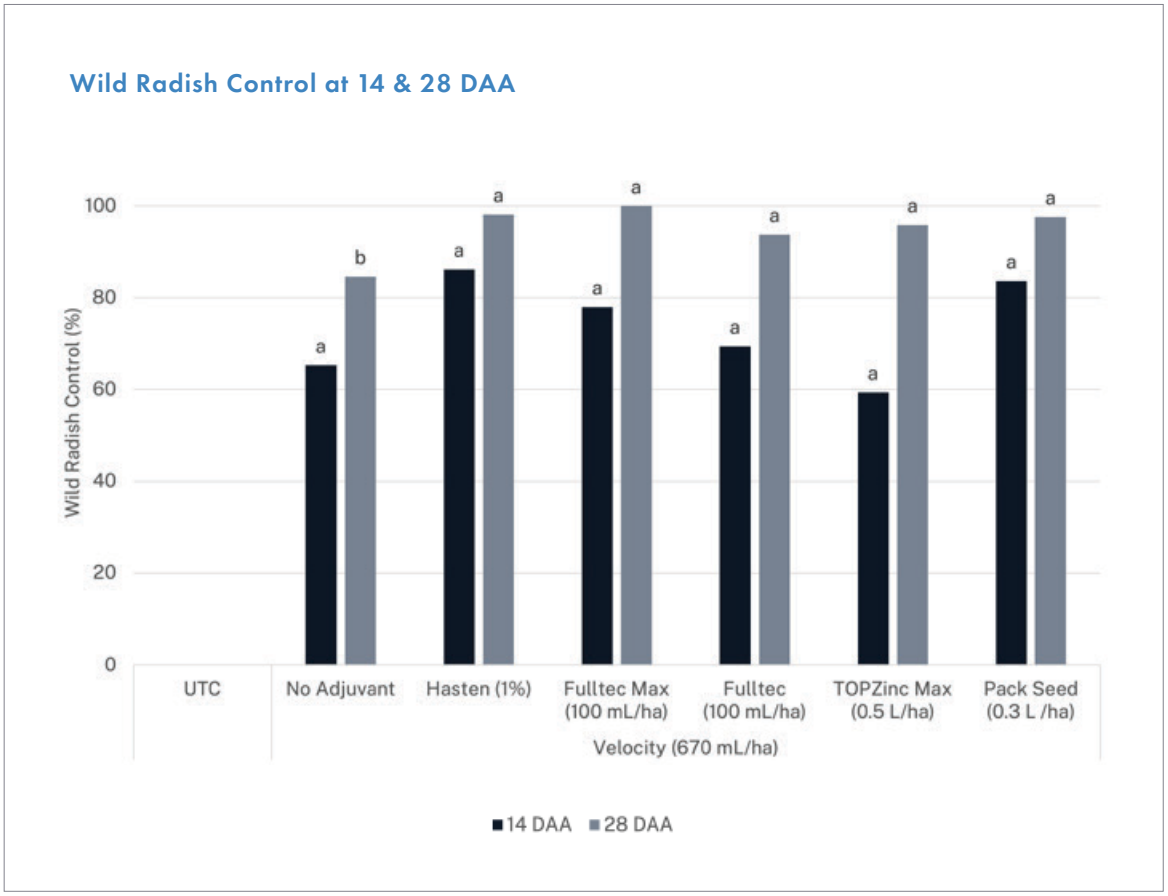
Trial: Spraytec Critical Post Emergent Application in Wheat

LOCATION: **DUMBLEYUNG**

Objective

Assessing the efficacy of Spraytec's phytostimulants for critical post emergent application in wheat.

Results



Weed Burden

5 plants/m^2 in the UTC (28 DAA).

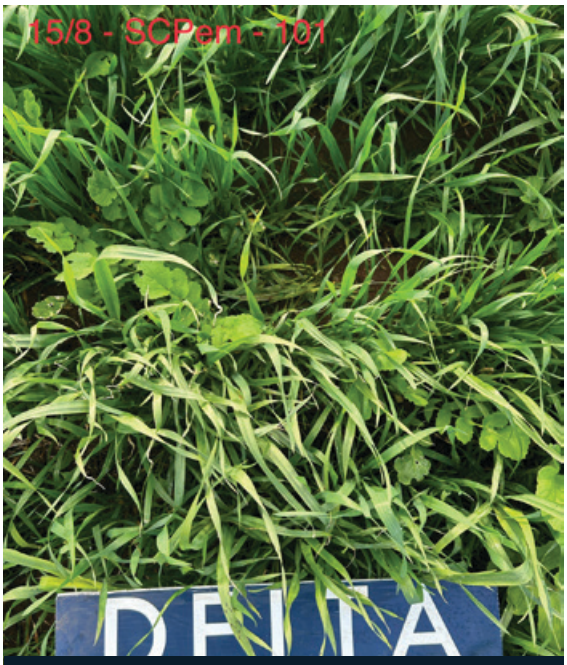
Treatments were applied on the 20th of July at the crop growth stage Z 31 and WR growth stage of 5 leaves.

Note: Velocity at 670ml/ha.

Key findings

- There was no statistically significant difference in wild radish control between any of the treatments at 14 DAA.
- At 28 DAA treatments containing an adjuvant, provided statistically greater control over wild radish compared to the stand-alone Velocity treatment.
- There were no significant differences in yield and crop phytotoxicity between treatments.

15/08/2023 – 26 DAA



Untreated Control

Velocity (670mL/ha) + Fulltec Max (100mL/ha)

Trial design: RBD x 4 replicates.
Lowercase letters indicate significant differences between treatments (P<0.05).

Trial: Terrad'or Knockdown

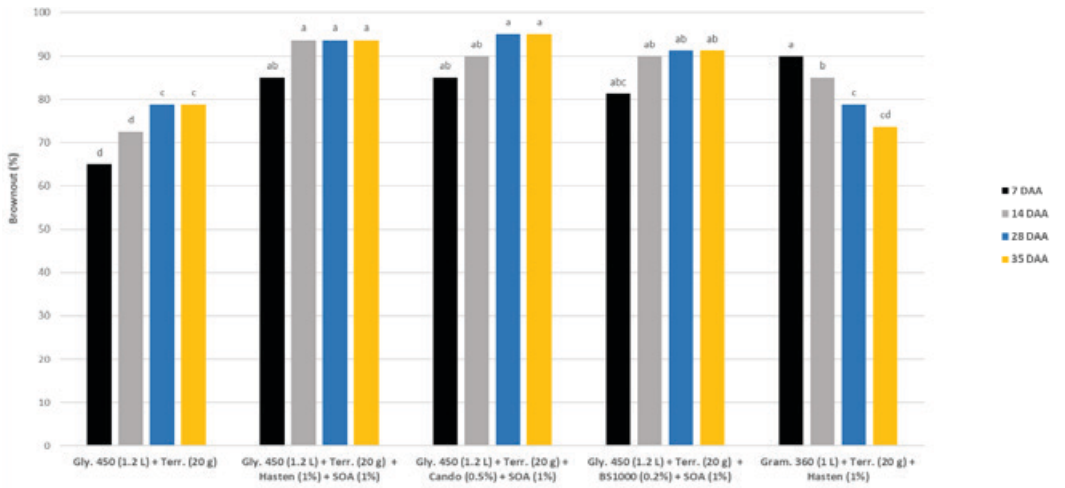
LOCATION: **DUMBLEYUNG**

Objective

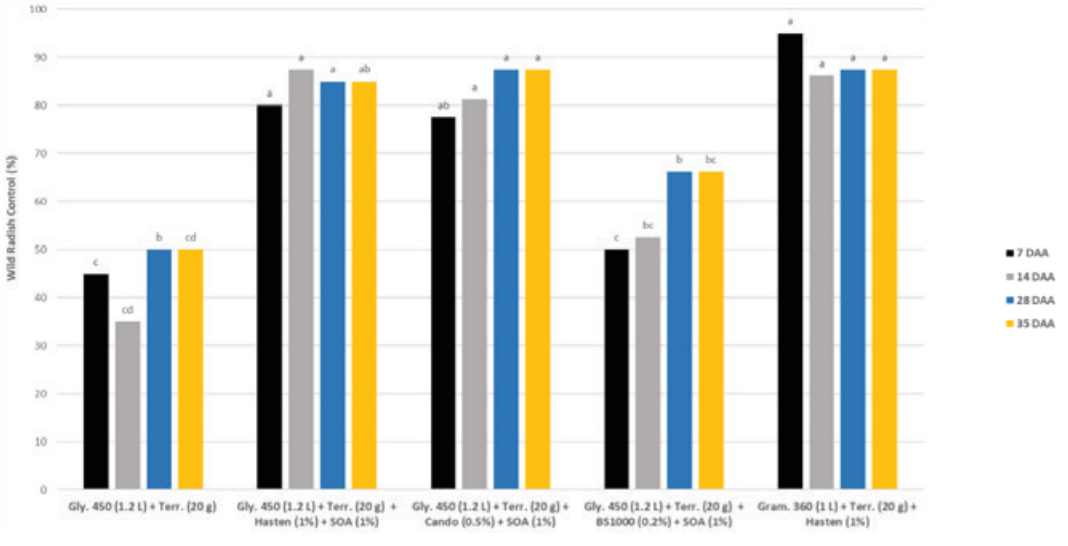
Assessing the efficacy of different additives in a Terrad'or knockdown spike. Terrad'or requires a Methylated Seed Oil adjuvant. Tease out differences in adjuvant contribution. Compare weed brownout response with lowered rates of a Terrad'or knockdown.

Results

Brownout visual percentage 7, 14, 28 & 35 DAA



Wild Radish Control at 7, 14, 28 & 35 DAA



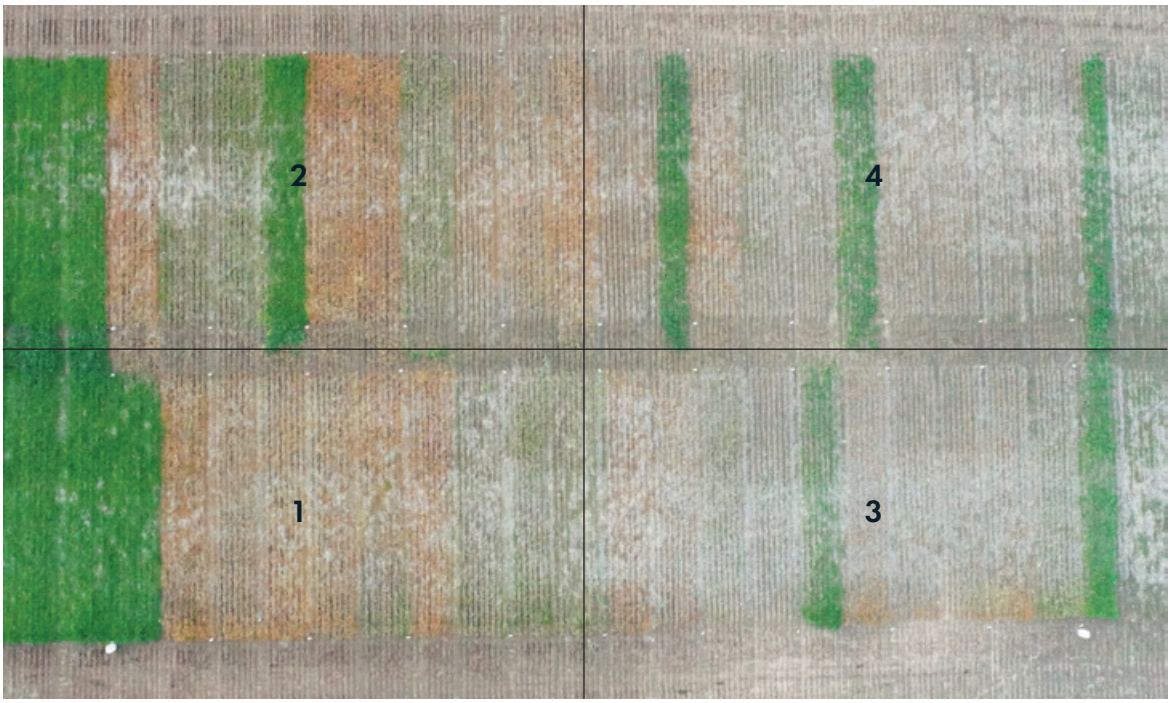
Relevant notes/scales

Knockdown treatments were applied on the 31st of July, 8 weeks after sowing at the 4-leaf stage for wild radish and 3-tiller for annual ryegrass.

Key findings

- There were significant differences in Brownout (%) between the first treatment and the rest of the treatments containing Glyphosate at all timings. This demonstrates the importance of using oil adjuvants with Terrad'or, or other group 14 herbicides with a spike use pattern to assist with the product getting through the cuticle waxes and giving better efficacy.
- Gramoxone 360 presented significant differences with the first treatment only at the first two timings.
- In the case of wild radish control, significant differences were observed in the treatments that had an oil adjuvant (Hasten and CanDo).

15/08/2023 – 15 DAA



Trial design: RBD x 4 replicates.
Lowercase letters indicate significant differences between treatments (P<0.05).

Glossary

Throughout this publication you will find some acronyms:

Time between an action and an assessment

DAA	Days After Application
WAA	Weeks After Application
WAS	Weeks After Sewing

Herbicide use pattern

IBS	Incorporated By Sowing
EPE	Early Post Emergent

Target Weed

ARG	Annual Ryegrass
WR	Wild Radish
BLW	Broad Leaf Weed

Referring to Treatments

UTC	Untreated Control

Thanking our suppliers

We thank all our trial cooperators and suppliers for their assistance in helping to make this program viable and relevant.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AGRIBUSINESS

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