



Irrigation Research &
Extension Committee

IREC Irrigation Research Update

Presentation Papers 2026





Irrigation Research &
Extension Committee

About Irrigation Research & Extension Committee (IREC)

Established in 1939, IREC is a not-for-profit Farming Systems Group that provides an independent voice for irrigated agriculture across the Murrumbidgee and lower Lachlan Valleys. Since its establishment, the organisation has worked to address the challenges affecting irrigated farming systems by fostering collaboration between farmers, researchers, government agencies, agribusinesses, and industry groups. Over the decades, IREC has become a key advocate for irrigators, helping shape research priorities and extension programs, while supporting cooperation across multiple agricultural industries.

IREC's primary role is to improve the productivity, profitability, and sustainability of irrigated farming through research, education, and knowledge sharing. The organisation conducts and supports research projects, field trials, workshops, seminars, field days, and publications that help growers adopt innovative technologies and best practices in water management, soil health, crop production, and climate resilience. Through events and initiatives such as the Irrigation Research Update, Farmers' Newsletter, crop trials, field days, case studies, demonstration reports, podcasts, and workshops, IREC acts as a vital link between researchers and farmers, ensuring research outcomes are practical and directly beneficial to irrigated agriculture and farming businesses. These collaborative efforts continue to support innovation and the long-term sustainability of the irrigation industry across the Murrumbidgee and broader southern New South Wales.

IREC p. 02 6963 0936 | e. irec@irec.org.au | www.irec.org.au

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PROGRAM

Irrigation Research Update

TUESDAY 25 AUGUST 2026 | 8:30AM - 2:30PM

MURRUMBIDGEE IRRIGATION, BARREN BOX ROOM

TIME	TOPIC	WHO	PAGE NO.
8.30am	Registrations	Iva (IREC EO) and Sarah (IREC PO)	
8.50am	Welcome	Matt Toscan (IREC Chair)	
9.00am	Irrigated Canola NVT Results	Kathi Hertel (NSW DPI)	Page 5
9.30am	Irrigated Wheat NVT Results	Pete Matthews (NSW DPI)	—
10.00am	Green Urea Trials in Soft Wheat	Dr Alice Melland (UNISQ/CSI)	Page 15
10.30am	Morning Tea		
11.00am	Pre-emergent Trial in Wheat	Max Findlay (Sefton Agronomics/Southern Growers)	Page 21
11.30am	Family Farming Succession and Tax Implications	Georgiena Ryan (Regional Business Lawyers)	Page 27
1.00pm	Lunch		
2.00pm	You're invited to join us at our Annual General Meeting (AGM)		

Thank you for attending today's event.
Please complete the 2026 IREC Research Update Evaluation (QR Code below).

If you have any further questions for speakers, please contact us
and we will forward your questions onto the relevant parties.

Iva on 0402 069 643 / iva@irec.org.au

Sarah 0449 511 507 / po@irec.org.au



Evaluation

HAVE YOUR SAY

Thank you to our sponsor



This event is supported by the Australian Government through funding from the Natural Heritage Trust under the Climate-Smart Agriculture Program and delivered alongside Local Land Services, a member of the Commonwealth Regional Delivery Partners Panel.



Australian Government

NVT Canola Performance – Mayrunga 2025

Kathi Hertel

Research & Development Agronomist
Department of Primary Industries and Regional Development, Dubbo



KEY POINTS

- Canola performance at Mayrunga was adversely affected at 2 main growth periods. Crop establishment and early seedling growth was compromised with a rapidly drying seedbed after sowing, accompanied by above average daily temperatures. Consistent higher temperatures throughout an extended period during late pod fill adversely affected yield and oil.
- Average yields of triazine (TT) tolerant, imidazolinone (IMI) tolerant and glyphosate (GLY) tolerant canola variety trials were similar: 2.54 t/ha, 2.6 t/ha and 2.77 t/ha respectively. Similarly, average oil content was 42.2%, 43.2% and 42.9% respectively.
- Varieties within each herbicide tolerance group demonstrated distinct phenology differences.
- Varieties included open-pollinated and hybrids and single and dual-herbicide tolerance traits. Herbicide groups include Groups 2, 5, 9, 5+2, 9+2, 9+5 and 9+10.

Introduction

The GRDC's National Variety Trials (NVT) program aims to assist growers and their advisers in selecting suitable varieties. The information is based on independent, scientifically robust and locally relevant commercial variety comparisons, including yield performance, disease resistance and grain quality.

This report comprises the results of canola varieties from three herbicide technology groups of canola sown in early May 2025 at Mayrunga. These were the only NSW canola NVT trials sown under an irrigated system.

Background

Co-operator: Jake Platfuss, Blighty

Managed by Phil Armstrong – NSW DPIRD

Paddock history: 2022 – faba bean; 2023 – canola; 2024 – wheat

Site soil test results: Sampled 2 April 2025

Results (0-10 cm)

Organic carbon	1.4 %	Phosphorus (Colwell)	47 mg/kg
pH _{Ca}	5.0	Ex. Sodium (%)	2.12
Total N	32.6 mg/kg	EC(1:5 water)	0.1 dS/m

Results (10-60 cm)

pH	7.1	Ex. Sodium (%)	3.58
Total N	9.2 mg/kg	EC(1:5 water)	0.2 dS/m

Sow date: 2 May 2025

Harvest date: 3 December 2025 (214 days after sowing)

Fertiliser: 150 kg/ha MAP Zinc Cote 2.5% + 100 kg/ha urea (61 N : 33 P : 2 S) (2 May)
200 kg/ha urea + 200 kg/ha Gran-Am (132 N : 0 P : 48 S) (7 July)

Herbicide (all trials): IBS: 2.5 L/ha trifluralin herbicide (2 May)

Post-emergent: 0.5 L clethodim + 0.12 L/ha clopyralid herbicides (1 July)

Herbicide (trial specific):

Triazine tolerant	Imidazolinone tolerant	Glyphosate tolerant
1-July	1 July	4 July
1.1 kg/ha Atrazine® 900 WG	0.75 L/ha Intervix®	1.0 L/ha Glyphosate 600

Other pesticides:

- PSPE: 5 kg/ha zinc phosphide rodenticide, 20 kg/ha metaldehyde molluscicide (2 May)
- Post sow. 0.5 kg/ha pirimicarb (9 October)

Fungicide:

- 0.2 mL/ha flutriafol fungicide (fertiliser) (2 May)
- 0.8 L/ha prothioconazole / bixafen fungicide (2 September)

Irrigation:

Irrigation was applied using a lateral move irrigator. Just prior to sowing, 30 mm was applied to ensure suitable seedbed moisture at sowing.

Further in-crop irrigations applied 20 mm on each occasion commencing 4 September during flowering, and then every 7-10 days (Figure 1, Table 1). The final irrigation was applied 10 November.

Applied water totalled 190 mm.

Climate information

Figure 1 shows the daily temperature range, rainfall and applied irrigation at the trial site from sowing to harvest.

A total of 11 sub-zero temperatures were recorded, most during the winter period. One very late frost occurred 12 November where the minimum temperature reached -0.6°C .

Temperatures in October frequently reached well above 30°C during pod fill.

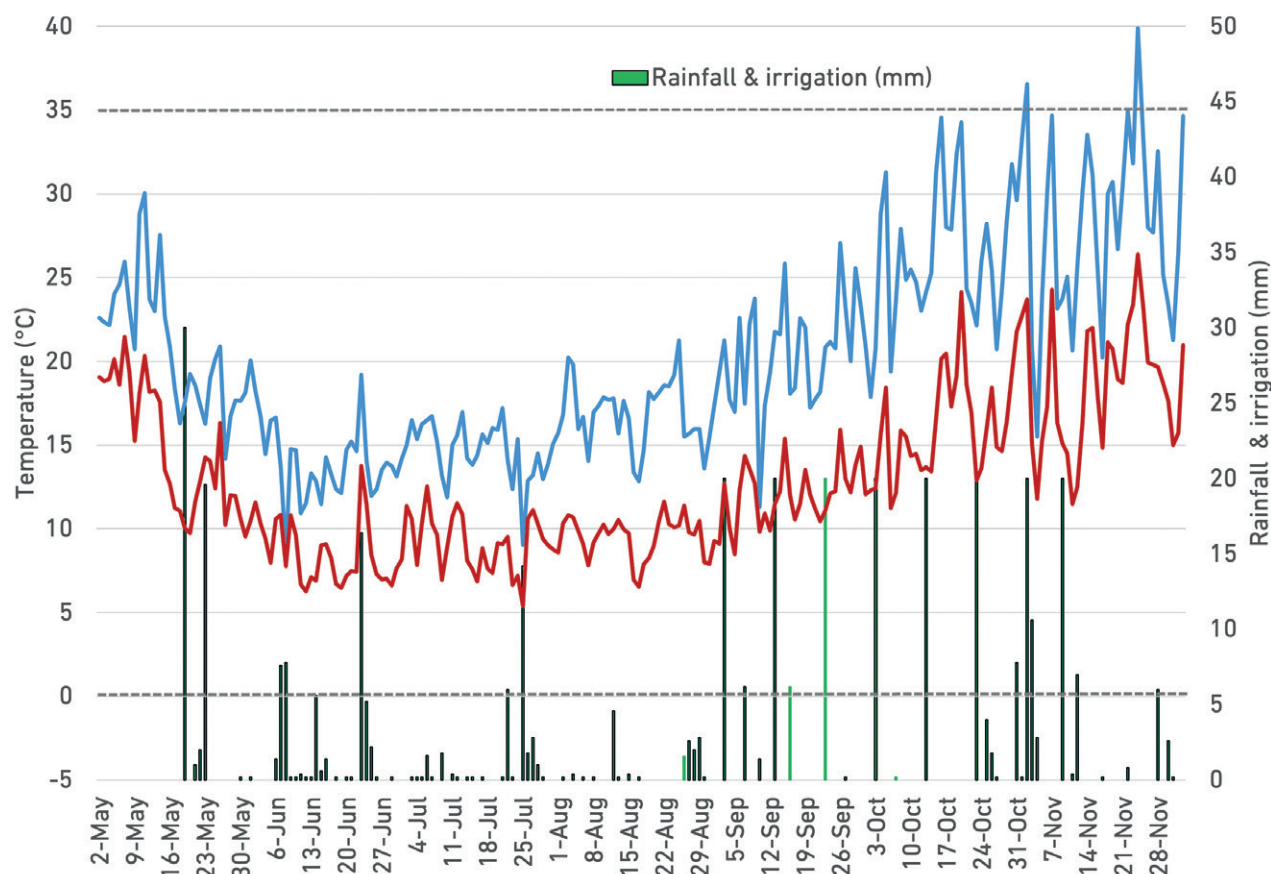


Figure 1. Daily temperature range, rainfall and irrigation at Mayrung canola NVT trials – 2025.

Minimum and maximum temperatures were recorded hourly throughout the growing season at the trial site. A monthly summary of the climate data is shown in Table 1.

Table 1: Monthly summary of in-crop temperature, rainfall and irrigation – Mayrung 2025

Month	Mean temperature (°C)	Minimum temperature (°C)	Maximum temperature (°C)	¹ Rainfall (mm)	Irrigation (mm)	Cumulative total water (mm)
May	14.7	0.23	30.1	22.8	30	52.8
June	7.8	-0.5	20.1	50.6	0	103.4
July	8.7	-1.3	17.2	31.8	0	135.2
August	8.8	-1.7	21.3	15.6	0	150.8
September	11.6	-1.1	27	14	60	224.8
October	15.7	0.6	34.6	6.2	60	291
November	18.9	-0.6	39.9	35.8	40	366.8
² December	21.3	4.9	42.7	2.8	0	
Total in-crop (mm)				179.6	190	

¹ Deniliquin Bureau of Meteorology data

² December data refers up to 3rd December only (harvest date).

Results

Crop establishment

All trials were sown 2 May, following a storm. The seedbed moisture was quickly dried out after sowing as daily temperatures reached up to 30 °C in the 2 weeks after sowing during the critical germination period.

Establishment scores of each plot in each trial were: triazine tolerant trial 55-85%, imidazolinone tolerant trial 71.7-86.7% and glyphosate tolerant trial 55-88.3%. Triazine tolerant variety are known for their poorer vigour, and this is evident in these results.

30 mm of irrigation was applied 20 May however this early beginning impacted the trial going forwards.

Crop growth and development

Using the BBCH scale, the phenological development stage of varieties in the three canola trials was recorded on 21 August, 110 days after sowing. Based on the temperature measurements at the site, using a baseline temperature of 0°C, this was equivalent to 1541 heat units (day degrees). The results are shown in Figures 3, 4 and 5.

For reference, the key to BBCH scale is shown in Table 2.

Table 2: Key to BBCH growth stage

BBCH scale	Description
53	Flower buds raised above the youngest leaves.
55	Individual flower buds (main stem) visible but still closed.
57	Individual flower buds (secondary branches) visible but still closed.
59	First petals visible, flower buds still closed ("yellow bud").
60	First flowers open.
61	10% of main stem flowers open, main stem elongating.
62	20% of main stem flowers open.
63	30% of main stem flowers open.
64	40% of main stems flowers open.
65	Full flowering: 50% main stem flowers open, older petals falling.

Note, this is not the same as the time to start flowering. It demonstrates the variation in the rate of development of the varieties tested in these trials, measured 110 days after sowing in 2025. All growing seasons are different. For example, the 2025 growing season was notable for its higher temperatures compared to the previous growing season at Mayrung.

The variety showing the quickest rate of development in the triazine tolerant trial was HyTTec® Velocity (Figure 2). It was at full flowering 110 days after sowing. In contrast RGT Baseline® and the new 2025 variety PY429T had not yet started to flower on the main stem. The other new variety in the trial was Griffon TTI, the new triazine + imidazolinone tolerant stacked variety at BBCH scale 61.3, indicating 10% of flowers on the main stem were open.

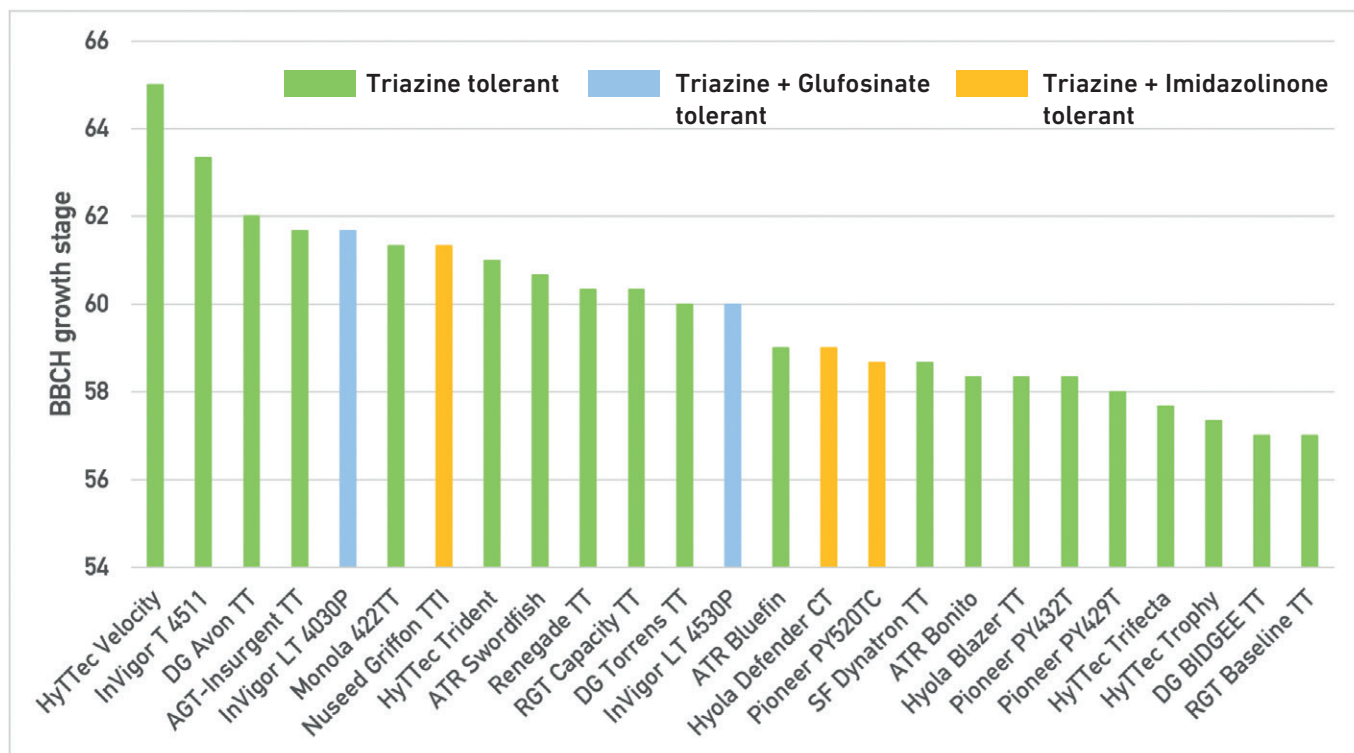


Figure 2. Triazine tolerant canola variety growth stage on 21 August 2025.

The range in the development stage across the varieties in the imidazolinone tolerant trial was narrower slightly wider than that of the triazine tolerant trial (Figure 3) and the glyphosate tolerant trial (Figure 4). Nuseed Ceres IMI was at the most advanced development stage, with 20% of flowers on the main stem open. In contrast, Pioneer PN526C and VICTORY 75-03CL were at growth stage BBCH 55, where secondary branches were not yet visible and flower buds on the elongating main stem were still closed.

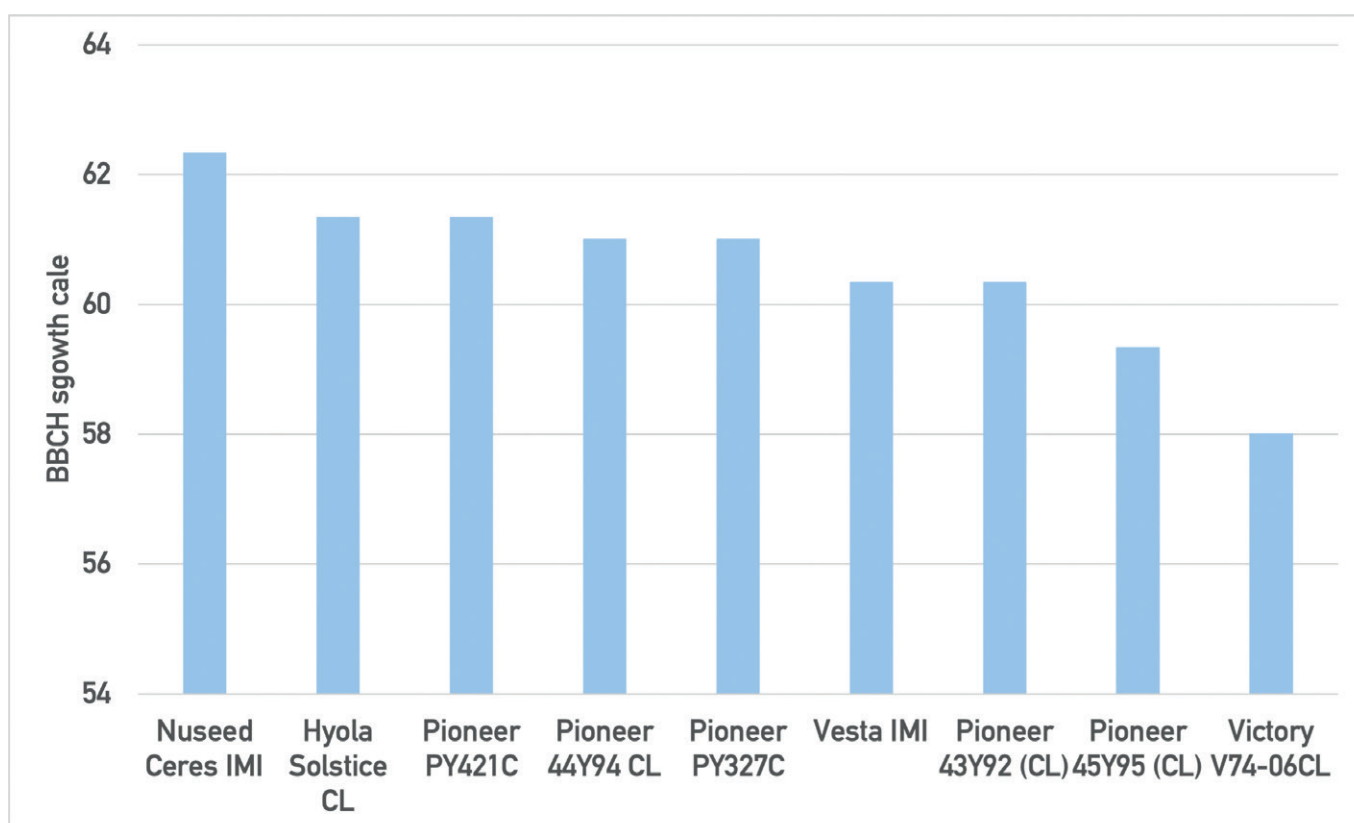


Figure 3. Imidazolinone tolerant canola variety growth stage on 21 August 2025.

The glyphosate tolerant trial showed the most extensive variation in variety development (Figure 4). Nuseed Emu TF was the quickest, at full bloom stage with 50% of flowers on the main stem open, 110 days after sowing. The slowest variety was VICTORY 55-04TF with no open flowers on the elongating main stem.

The new VICTORY 55-08TF was very slow by comparison, with the first flower buds only just appearing above the 'cabbage'.

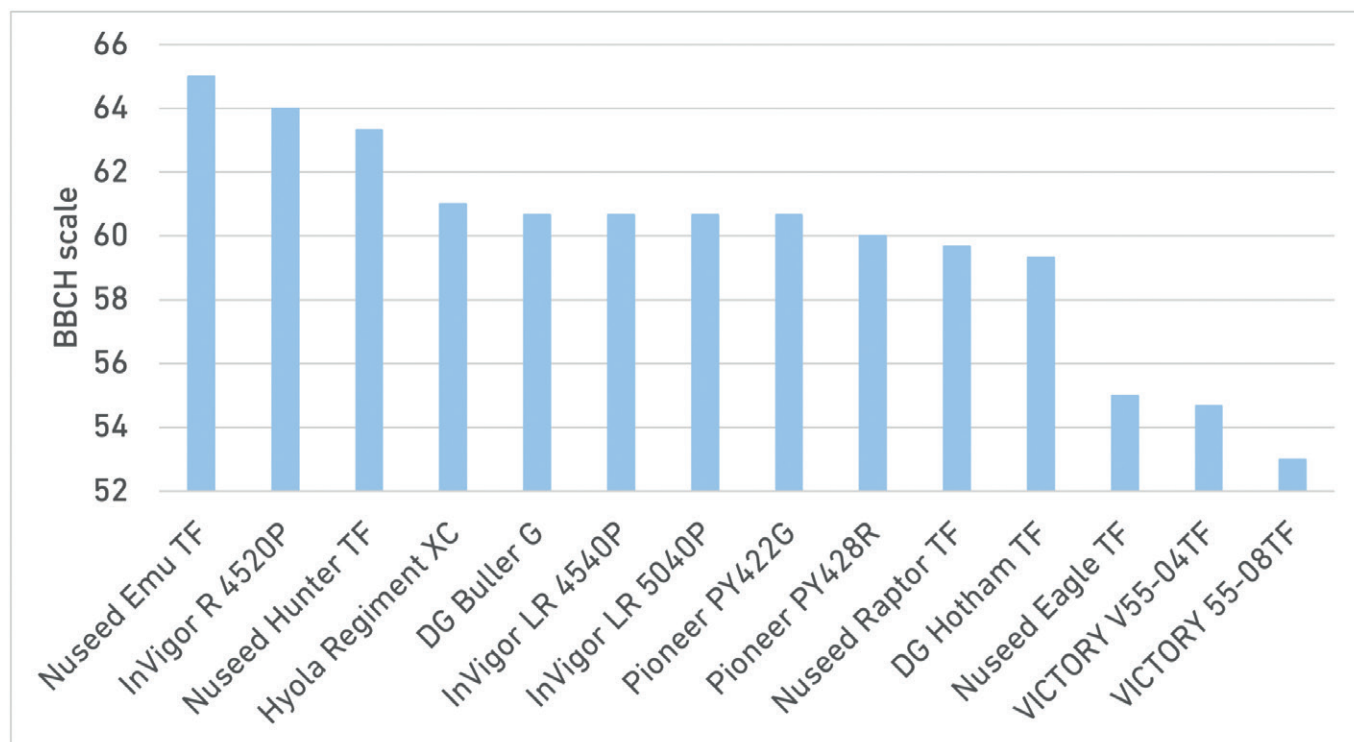


Figure 4. Glyphosate tolerant canola variety growth stage on 21 August 2025.



Figure 5. Mayrunga NVT canola trials 21 August 2025 (110 days after sowing). CREDIT: Kathi Hertel, NSW DPIRD

Crop yield and quality

Triazine tolerant canola

The average yield of the triazine tolerant canola varieties was 2.54 t/ha (Table 3). Yields ranged between 2.96 t/ha and 1.81 t/ha, a difference of 1.15 t/ha. There was no significant yield difference between the top 4 varieties.

Oil content averaged 42.1%, ranging between 40.2% (InVigor LT 4030P) and 44.2% (DG Avon TT) (Table 3).

Table 3: Performance of triazine tolerant canola varieties – Mayrung NVT – 2025.

Variety	Establishment (%) 65 DAS	Yield (t/ha)	Yield compared to site mean (%)	Oil (%) at 6% moisture content	Protein (%) at 10% moisture content	BBCH growth stage score @ 21-August	Long term MET yield (t/ha) & (%) of mean
Pioneer PY432T	58.3	2.96	117	40.7	25.4	73.3	2.93 (116)
HyTTec Velocity	65	2.87	113	41.2	25.7	85	2.81 (111)
Pioneer PY429T	58	2.86	113	41.9	23.3	88.3	2.71 (107)
HyTTec Trifecta	57.7	2.77	109	43.2	24.3	88.3	2.67 (106)
Pioneer PY520TC	58.7	2.75	108	41.6	24.2	83.3	2.63 (104)
InVigor T 4511	63.3	2.73	107	43.5	23.1	86.7	2.64 (105)
Nuseed Griffon TTI	61.3	2.72	107	41.0	26.1	78.3	2.63 (104)
InVigor LT 4030P	61.7	2.67	105	40.2	24.2	75	2.71 (108)
Hyola Blazer TT	58.3	2.67	105	41.9	25.8	83.3	2.65 (105)
SF Dynatron TT	58.7	2.63	104	43.2	25.1	85	2.66 (105)
Renegade TT	60.3	2.62	103	40.4	25.0	73.3	2.64 (104)
RGT Capacity TT	60.3	2.62	103	41.5	25.1	76.7	2.63 (104)
InVigor LT 4530P	60	2.58	102	40.6	25.9	68.3	2.78 (110)
RGT Baseline TT	57	2.56	101	43.3	25.3	78.3	2.57 (102)
DG Avon TT	62	2.55	100	44.2	22.3	78.3	2.24 (89)
ATR Bonito	58.3	2.41	95	42.9	24.0	78.3	2.35 (93)
ATR Swordfish	60.7	2.40	94	43.4	25.4	76.7	2.30 (91)
Hyola Defender CT	59	2.39	94	41.6	26.1	78.3	2.44 (97)
HyTTec Trident	61	2.29	90	42.4	23.1	78.3	2.43 (66)
HyTTec Trophy	57.3	2.34	92	41.7	24.6	78.3	2.61 (104)
AGT-Insurgent TT	85	2.18	86	43.3	23.7	61.7	2.57 (102)
Monola 422TT	61.3	2.18	86	43.6	21.8	71.7	2.14 (85)
DG Torrens TT	60	2.11	83	43.5	22.8	75	2.23 (88)
ATR Bluefin	55	1.99	78	41.0	25.1	59.0	2.03 (81)
DG BIDGEE TT	57	1.81	71	40.5	24.1	78.3	2.24 (86)
Site Mean (t/ha)		2.54		42.2	24.5		
CV (%)		7.54					
Probability		<0.001					
LSD (t/ha)		0.31					

Imidazolinone tolerant canola

The average yield of the imidazolinone tolerant canola varieties was 2.6 t/ha (Table 4). Yields ranged between 3.12 t/ha and 1.96 t/ha. There was no significant yield difference between the top 4 varieties.

Oil content averaged 43.2%, ranging between 46.1% (Hyola® Solstice CL) and 40.8% (VICTORY V75-03CL) (Table 4).

Table 4: Performance of Imidazolinone tolerant canola varieties – Mayrung NVT - 2025

Variety	Establishment (%) 65 DAS	Yield (t/ha)	Yield compared to site mean (%)	Oil (%) at 6% moisture content	Protein (%) at 10% moisture content	BBCH growth stage score @ 21-August	Long term MET yield (t/ha) & (%) of mean
Pioneer 45Y95 (CL)	86.7	3.12	120	43.5	21.7	59.3	2.83 (112)
Pioneer PY421C	81.7	3.11	120	42.4	22.7	61.3	3.03 (120)
Pioneer PY327C	80	2.97	114	43.8	21.6	61	2.83 (112)
Pioneer 44Y94 CL	83.3	2.82	109	42.7	22.4	61	2.86 (113)
Hyola Solstice CL	83.3	2.73	105	46.1	20.8	61.3	2.65 (105)
Nuseed Ceres IMI	86.7	2.73	105	43.7	23.0	62.3	2.75 (109)
Vesta IMI	86.7	2.58	99	45.2	22.6	60.3	2.62 (105)
Pioneer 43Y92 (CL)	71.7	2.43	93	42.9	23.1	60.3	2.54 (101)
VICTORY V74-06CL	80	2.37	92	41.8	23.2	58	2.59 (103)
Pioneer PN526C	80	1.97	76	42.5	24.1	55	1.88 (74)
VICTORY V75-03CL	80	1.96	76	40.8	22.8	55	2.28 (90)
Site Mean (t/ha)	81.8	2.60		43.2	22.5		
CV (%)		7.46					
Probability		<0.001					
LSD (t/ha)		0.31					



Glyphosate tolerant canola

The average yield of the glyphosate tolerant canola varieties was 2.77 t/ha (Table 5). Yields ranged between 3.25 t/ha and 2.46 t/ha. There was no significant yield difference between the top 5 varieties.

Oil content averaged 42.9%, ranging between 43.8% (VICTORY V55-08TF) and 41.6% (InVigor R 4520P, Nuseed Emu TF) (Table 5).

Table 5: Performance of glyphosate tolerant canola varieties – Mayrunga NVT - 2025

Variety	Establishment (%) 65 DAS	Yield (t/ha)	Yield compared to site mean (%)	Oil (%) at 6% moisture content	Protein (%) at 10% moisture content	BBCH growth stage score @ 21-August	Long term MET yield (t/ha) & (%) of mean
InVigor LR 5040P	60.7	3.25	118	42.9	23.3	60.7	3.28 (120)
InVigor LR 4540P	60.7	3.16	114	43.1	22.8	60.7	3.20 (117)
InVigor R 4520P	64	3.13	113	41.6	23.4	64	3.18 (116)
Nuseed Hunter TF	59.3	3.12	113	43	23.9	63.3	3.05 (111)
Hyola Regiment XC	83.3	2.98	108	45.7	21.9	61	2.76 (101)
VICTORY V55-08TF	88.3	2.76	100	43.8	22.3	60.7	2.64 (96)
Nuseed Emu TF	65	2.67	97	41.6	25.4	65	2.82 (103)
Pioneer PY422G	80	2.66	96	43.1	22.8	60.7	2.62 (95)
Nuseed Raptor TF	59.7	2.61	94	43	22.9	59.7	2.52 (92)
VICTORY V55-04TF	83.3	2.57	93	41.7	22.9	54.7	2.53 (92)
DG Hotham TF	85	2.54	92	43.1	23.4	59.3	2.44 (89)
Nuseed Eagle TF	55	2.47	89	43	23.4	55	2.62 (95)
DG Buller G	86.7	2.46	89	43.6	23.3	60.7	2.49 (91)
Site Mean (t/ha)		2.77		42.9	23.3		2.74
CV (%)		6.96					
Probability		<0.001					
LSD (t/ha)		0.31					

Conclusion

The NVT canola trials highlighted the range of available and potential new varieties within each of the major herbicide technology groups, comparing yield and quality grown under a full irrigation regime at Blighty.

The results show significant differences in the yield potential of open pollinated and hybrid varieties within herbicide technology groups. Differences in early crop vigour and crop phenology offer the opportunity select varieties to suit sowing time, environment and to minimise risks of frost/heat stress during flowering and pod fill. This information enables growers and advisors to select appropriate varieties for integrated weed management programs in specific paddocks. These traits combine to increase potential yield and quality, enhancing overall production and profitability of farming systems.

Acknowledgements

These trials are part of the National Variety Trials (NVT) program funded by GRDC on behalf of Australian grain growers.

Sincere thanks to Jake Platfuss for hosting the field trials. The NVT trial program is managed by Peter Matthews (Technical Specialist – Grain Services) and technical support of Phil Armstrong (Technical Officer), both NSW Department of Primary Industry and Regional Development (NSW DPIRD).

Contact: Kathi Hertel | Mobile: 0427 104 344 | Email: kathi.hertel@dpi.nsw.gov.au

NOTES

[illegible]

Cool Soil Initiative Innovation Trial – Urease inhibitor in soft wheat in the Murrumbidgee Irrigation Area

Melland, A.R.^{1,4}, Scheffe, C.^{2,4} and McCaskie, S.^{3,4}

¹ University of Southern Queensland, Toowoomba, QLD, alice.melland@unisq.edu.au

² AgriSci. Pty Ltd. Rutherglen, VIC.

³ Irrigation Research & Extension Committee, Griffith, NSW

⁴ Cool Soils Initiative, Charles Sturt University, Wagga Wagga, NSW

KEY POINTS

- The Cool Soil Initiative supports GHG emissions estimation, reduction and reporting for farmers and supply chains
- A urease inhibitor trial was supported by Arnott's and the Cool Soil Initiative on four irrigated soft wheat farms in the MIA in 2025 as part of the CSI Innovation Paddock Program
- The products were perceived to buy operational time for spreading ahead of forecast rain.
- The trial investigated effects on yield, nitrogen use efficiency and modelled greenhouse gas losses from the ammonia emissions inhibitor fertiliser applied at first topdress (3 farms), or first and second topdress (1 farm) relative to urea
- Two-sample t-tests were used to compare grain yield and protein between treatments
- There was no significant yield or protein difference between the trialled treatments
- Because yield and paddock management activities were the same across treatments, there was no difference in estimated GHG emissions intensities between treatments
- Operational, cost and agronomic considerations will be discussed with CSI soft wheat growers

Cool Soil Initiative

The Cool Soil Initiative (CSI, www.csu.edu.au/cool-soil-initiative) began in 2018, supporting broadacre farmers in Victoria and New South Wales to estimate and lower their greenhouse gas (GHG) emission footprints, while also enabling Scope 3 emission reporting of multinational food companies. CSI is a precompetitive, industry funded program, supported by Charles Sturt University, Mars Petcare, Kellanova, Pepsico, Manildra, Allied Pinnacle and Corson. The program expanded into the IREC irrigated cropping region of the Murrumbidgee Irrigation Area in 2021 (implemented by the Irrigation Research and Extension Committee, IREC) and from 2024 into the oats production region of Western Australia and the summer and winter cropping region of Northern NSW/Southern Qld.

All participating CSI farmers receive emission reports for a selection of their paddocks. The report shows how emissions from each farmer's paddocks compare (anonymously) with those from other farmers across the region, thus showing potential opportunities for improvement. The reports form the basis of further CSI-led discussion around the key levers for emission reduction. Farmers are now able to report on an unlimited number of paddocks and crop types, which is an expansion from the initial scope of five paddocks per farm sown to wheat, maize, canola or oats.

Within each CSI region dedicated support staff recruit and support farmers to compile crop, management and soil data for a selection of paddocks each year, conduct standardised soil tests (0-10 cm) in the selected paddocks, support in-field trials of emission reduction practices through the CSI Innovation Paddock Program, and facilitate peer learning to inform decision making.

The goal of the CSI Innovation Paddock Program is to support farmers to trial innovative practices that have the potential to both reduce GHG emissions and improve soil health. Since 2018, the innovation footprint of the Cool Soil Initiative is at least 2600 ha and has involved over 30 farmers trialling more than 10 types of practice changes.

From 2019 to 2023, as part of annual paddock activity surveys, 119 CSI farmer identified aspects of their cropping that they would like to improve or change, this included 78 hard wheat farmers, 24 maize farmers, 10 canola farmers and 6 soft wheat farmers. Amongst those CSI growers, the five most common areas of interest for future practice change were in the management of lime application, variable rate applications, stubble management, fertiliser management, and cover cropping.



CSI in the IREC region

IREC has engaged maize growers in the CSI since 2021 and soft wheat growers since 2022. For crops sown in 2025 in the IREC region, paddock data were contributed by 26 farmers across 80 paddocks (3162 ha), with GHG reports being completed for hard wheat, in addition to maize and soft wheat.

In the IREC region, CSI innovation work has included:

- split-depth (0-10, 10-30, 30-60 cm) deep soil N testing across seven CSI farms to better understand where and how much plant available N was sitting in the soil profile (2022-2024)
- use of urease and/or nitrification inhibitor (i.e. slow release) urea products applied at second topdressing on soft wheat on two farms (2023)
- growing maize after application of a nitrification inhibitor urea product that was applied and incorporated pre-sowing (2024-25)

Combining areas of farmer interest with possible opportunities for GHG emissions reduction, priority areas for 2025-26 innovation paddock work with participating CSI farmers in the IREC region were identified as; lime incorporation, fertilisers including emission inhibitors, stubble management, organic amendments and legumes (e.g. green or brown manuring, or intercropping). With additional funding from Arnott's, the Cool Soil Initiative was able to support a field trial in 2025 on four farms near Griffith to build on the 2023 innovation study and further investigate options for using urease inhibitor fertilisers, which aim to minimise ammonia volatilisation from urea) in soft wheat production systems.

Urease inhibitor in soft wheat trial – 2025

Background

An opportunity to improve fertiliser N use efficiency and reduce loss of gaseous ammonia nitrogen in irrigated soft wheat production systems by using urea fertiliser treated with a urease-inhibitor was trialled in the Murrumbidgee Irrigation Area, NSW. Urease inhibitors can minimise volatilisation of fertiliser ammonium (NH_4) into ammonia (NH_3) gas in the period between application and subsequent rain or irrigation and crop uptake. Reduced volatilisation can potentially increase fertiliser spreading windows prior to forecast rain and in the absence of follow up rain, may improve fertiliser N use efficiency. Improved N use efficiency reduces the GHG emissions intensity of wheat.

Aim

The aim of the trial was to investigate the operational considerations and effects on yield of applying urea treated with a urease inhibitor at the first, or first and second, topdressing in surface irrigated soft wheat.

Method

The trial investigated operational considerations and effects on yield of broadcast application of urea treated with a urease inhibitor at one (three farms) or both (one farm) in-crop broadcast (topdress) applications (Table 1). The urease inhibitor treatment was compared with a normal urea treatment applied at the same rates and times in one or two different bays of the same paddock (Table 2).

To quantify baseline soil chemical properties, the mineral N (nitrate-N and ammonium-N) content in the soil rootzone (0-60 cm) and a comprehensive suite of soil chemical properties in the topsoil (0-10 cm) was measured in each trial bay. Composite split-depth samples from 2 cores for 0-10, 10-20, 20-30, 30-60 cm were collected in May 2025 at one GPS-recorded location in the inter-row space of each treatment bay. Samples were stored cool prior to being sent for analysis at the CSBP Soil Laboratory.

To compare soft wheat crop responses and N uptake in grain amongst the fertiliser treatments, harvested grain yield was measured by the farmers for the trial bays. Grain yield was also measured using manual cuts of above-ground biomass from 6-10 quadrats per treatment 3-14 days prior to harvest. The biomass was cut at a consistent height no higher than 2 cm above the ground surface over two linear metres (2 adjacent rows x 1m row length) of crop at each sample location. The number of plants over 1m were counted at each site. Row samples were kept separate from each other. All samples were stored in sealed bags and total fresh biomass was weighed on the same or following day. Biomass samples were dried at 72°C for 48h then reweighed to measure biomass dry matter content. From one of the row metres per site, the number of wheat heads (ears) were counted and the grain threshed by hand from the ears, and weighed. The 1000 grain weight was calculated. Grain and non-grain component weights were used to calculate the harvest index. All grain was then combined for each sample location. Subsamples of grain were analysed by the CSBP laboratory for total N percentage (Dumas combustion method). A factor of 5.7 was used to estimate protein percentage from total N percentage.

The Cool Farm Tool (version 2.81.0 AUS) calculator was used to estimate greenhouse gas emissions generated from each trial bay. In the Cool Farm Tool greenhouse gas emissions calculator, no emissions discount is assumed for the use of urease inhibitors, whereas a discount is assumed, for reducing N_2O emissions, when using nitrification inhibitors with urea fertiliser. Discounting emissions only from the use of nitrification inhibitors is consistent with a review of field studies in Australia (Grace et al. 2024) in which both urease and nitrification inhibitor products were used and significant N_2O emissions reductions occurred only from the use of nitrification inhibitors.

The relative costs and benefits amongst the fertiliser treatments will be discussed with farmers and agronomists at a CSI field day in August 2026.

Table 1. Trial summary for each farm. Paddock and bay numbers are in parentheses.

Farm	Farm 1	Farm 2	Farm 3	Farm 4
Location	Griffith, NSW	Griffith, NSW	Griffith, NSW	Griffith, NSW
Year	2025	2025	2025	2025
Crop type	Wheat (soft), Scotch 0.20m row space	Wheat (soft), Scotch 0.25m row space	Wheat (soft), Scotch 0.25m row space	Wheat (soft), Scotch 0.18m row space
Sown	22/04/2025	23/04/2025	29/05/2026	29/04/2025
Harvested	22/11/2025	5/12/2025	5/12/2025	4/12/2025
Crop 2024	Rice	Wheat (soft)	Rice	Rice
Innovation	84% of fertiliser N treated with urease inhibitor Nutrcharge P solubiliser applied at sowing ± topdressing	43% of fertiliser N treated with urease inhibitor	43% of fertiliser N treated with urease inhibitor	44% of fertiliser N treated with urease inhibitor

Table 2. Fertiliser treatments and irrigation

Operation	Date	kg/ha or ML/ha	Urea		Urea with Urease Inhibitor	
Farm 1	Bays		51;4	51;Top	51;2	51;3
Fertiliser Sowing	22 Apr	200	GranulockZ 14S	GranulockZ14S + Nutrcharge	GranulockZ14S + Nutrcharge	GranulockZ 14S
Topdress #1	20 May	125	Urea	Urea	Urea + UI	Urea + UI
Topdress #2	19 Jun	125	Urea	Urea	Urea + UI + Nutrcharge	Urea + UI + Nutrcharge
Irrigation #1	18 Jul	0.9	surface	surface	surface	surface
Irrigation #2	23 Sep	0.8	surface	surface	surface	surface
Farm 2	Bays		1B;3,4		1B;Top,2	
Fertiliser Sowing	25 April	200	70% MAP, 30% SOA + Nutrcharge		70% MAP, 30% SOA + Nutrcharge	
Topdress #1	27 Jun (before rain)	200	Urea		Urea + UI	
Topdress #2	17 Jul (before irrigation)	200	Urea		Urea	
Irrigation #1	18 Jul	0.9	surface		surface	
Irrigation #2	19 Sep	0.8	surface		surface	
Irrigation #3	9 Oct	0.8	surface		surface	
Farm 3	Bays		Q4; Topa, Topc, 2b,2d,3a,3c		Q4;Topb, Topd,2a,2c,3b,3d	
Fertiliser Sowing	29 May	200	70% MAP, 30% SOA		70% MAP, 30% SOA	
Topdress #1	24 July (before rain)	200	Urea		Urea + UI	
Topdress #2	1 Sep (before irrigation)	200	Urea		Urea	
Irrigation #1	3 Sep	1.25	surface		surface	
Irrigation #2	6 Oct	1.25	surface		surface	
Farm 4	Bays		1995 - 2A; 4,5		1995 - 2A; 2,3	
Fertiliser Sowing	29 Apr	190	70% MAP, 30% SOA		70% MAP, 30% SOA	
Topdress #1	30 May	200	Urea		Urea + UI	
Topdress #2	15 Aug	200	Urea		Urea	
Irrigation #1	10 Aug	1.1	surface		surface	
Irrigation #2	30 Aug	0.8	surface		surface	
Irrigation #3	7 Oct	1.1	surface		surface	

Results

Rain was about 40% below the long-term median over the growing season months of April to October 2025, however, one of the trial growers remarked that the growing season conditions were very good for irrigation.

Soil chemical properties were similar amongst trial bays within farms, allowing for reasonable comparison of fertiliser treatment effects on yield (Table 3). The soils were light to medium clay topsoils (0-10 cm) grading to heavy clays in the subsoil (30-60 cm). The topsoil was moderately to strongly acidic at Farms 1 and 4, neutral to slightly acidic at Farm 3, and neutral to mildly alkaline at Farm 2. Cation exchange capacity was high on Farms 2 and 3, and low to moderate on Farms 1 and 4. Soil organic carbon was average to low. Colwell P levels were marginal on Farm 3 and were otherwise moderate to high across the farms. The farm sites had low exchangeable sodium, aluminium, electrical conductivity and high plant-available K. Soil nitrate levels indicated that crops would likely respond to nitrogen fertiliser application.

Yields harvested by the farmers were 7 t/ha, 8.8 t/ha 5 t/ha and 8 t/ha for Farms 1 to 4, respectively, and none observed an effect of the urease inhibitor treatment on yield (Table 4). Similarly, there were no significant differences ($P < 0.05$) in hand-cut yields between urease inhibitor and normal urea treatments on any of the farms. Because there were no differences in yields or fertiliser nitrogen rates applied in the treatments, there were no measurable differences in fertiliser nitrogen use efficiency (NUE; kg grain yield/kg fertiliser applied) due to the inhibitor. Fertiliser NUE was 51, 42, 24 and 38 kg grain/kg fertiliser N at Farms 1 to 4, respectively.

The urease inhibitor cost was an extra 5% (approx. \$42/t) on top of the cost of urea. The products were perceived to buy operational time for spreading ahead of forecast rain. The inhibitors were not applied by three of the farmers at the

Table 3. Baseline topsoil chemistry (0-10 cm depth) and soil mineral N (0-60 cm depth) sampled in May 2025

Fertiliser treatment	Bay	n	pH CaCl ₂	pH H ₂ O	EC _{1:5} dS/m	Organic C _{W&B} %	Colwell P mg/kg	PBI	Colwell K mg/kg	Al %	CEC kg	ESP %	Soil mineral N (nitrate + ammonium N) 0-60 cm kg/ha
Farm 1													
i. Control	51;4	1	4.5	5.2	0.15	1.21	66	282	369	2.8	9	5	1.7
ii. Control + Nutricharge @ sow	51;Top	1	4.4	5.4	0.07	0.74	104	236	215	2.2	12	3	1.8
iv. Urease Inhibitor + Nutricharge @ sow	51;2	1	4.3	5.4	0.05	0.95	46	265	321	2.0	12	2	1.8
v. Urease Inhibitor + Nutricharge @topdress	51;3		5.1	5.9	0.13	1.08	103	254	416	0.3	19	3	2.2
Farm 2													
ii. Control + Nutricharge @ sow	1B;3,4	2	7.1	7.8	0.68	0.91	90	222	312	0.2	28	6	4.6
iv. Urease Inhibitor + Nutricharge @ sow	1B;Top,2	2	6.1	6.7	0.30	1.16	80	216	425	0.4	26	5	3.8
Farm 3													
i. Control	Q4; Topa, Topc, 2b,2d,3a,3c	3	5.6	6.4	0.17	1.2	33	233	319	0.2	26	3.0	8.7
iii. Urease Inhibitor	Q4;Topb, Topd, 2a,2c,3b,3d	3	5.9	6.6	0.19	1.4	26	234	355	0.3	27	3.0	6.3
Farm 4													
i. Control	1995 - 2A; 4,5	2	5.2	5.9	0.08	1.13	67	199	251	1.2	12	2	4.0
iii. Urease Inhibitor	1995 - 2A; 2,3	2	4.3	5.2	0.07	1.11	89	229	293	8.4	8	3	4.7

second topdressing, which was applied 1-2 days prior to planned follow up irrigation on two farms and 5 days after and 15 days prior to irrigation on Farm 4. The urease inhibitor was applied at second topdressing on Farm 1, which was irrigated 29 days afterwards.

Table 4. Crop yield, grain weight and grain nitrogen. Means within farms followed by the same letter are not significantly different (P>0.05).

Fertiliser treatment	Bay	Fertiliser N kg/ha	Harvester	Manual quadrat samples						
			Grain Yield t/ha	n	Grain Yield t/ha	Grain Moisture Content %	Grains/head	Grain weight* g/1000 grains	Harvest Index %	Grain Protein %
Farm 1										
i. Control	51;4	137	7	5	10.3	12.1	48	49	33	8.9
ii. Control + Nutricharge @ sow	51;Top	137	7	5	10.8	13.4	46	48	35	9.6
iv. Urease Inhibitor + Nutricharge @ sow	mean			10	10.5a	12.8a	52a	48a	34a	9.3a
v. Urease Inhibitor + Nutricharge @topdress	51;2	137	7	5	11.0	12.2	56	48	36	9.2
	51;3	137	7	5	11.9	12.9	56	48	34	10.4
	mean			10	11.5a	12.5a	56a	48a	35a	9.8a
Farm 2										
ii. Control + Nutricharge @ sow	1B;3,4	212	8.8	6	10.8a	nd	48a	44a	46a	9.6a
iv. Urease Inhibitor + Nutricharge @ sow	1B;Top,2	212	8.8	6	11.4a	nd	45a	47a	44a	9.5a
Farm 3										
i. Control	Q4; Topa, Topc, 2b,2d,3a,3c	212	5	6	7.1a	nd	34a	46a	43a	9.8a
iii. Urease Inhibitor	Q4;Topb, Topd, 2a,2c,3b,3d	212	5	6	8.3a	nd	39b	46a	45a	9.8a
Farm 4										
i. Control	1995 - 2A; 4,5	210	8	10	9.7a	17.9a	44a	48a	32a	8.3a
iii. Urease Inhibitor	1995 - 2A; 2,3	210	8	10	9.9a	17.8a	43a	47a	34b	9.0a

As well as yields, all paddock management activities other than fertiliser type were the same amongst trial bays within each farm. As a consequence, there were no differences in estimated greenhouse gas emissions between the urease inhibitor and normal urea treatments. All irrigation was gravity-fed surface irrigation and therefore incurred no energy use emissions. There were no changes in land use or land management in terms of tillage or crop system over the last 20 years so the soil organic carbon was assumed to be at equilibrium and no changes in soil organic carbon stock, and associated emissions or sequestration of atmospheric CO₂ was estimated. As expected, nitrous oxide (N₂O) emissions from applied fertiliser was the largest source of estimated emissions, comprising 38-47% of total emissions per tonne or hectare of wheat across the trial bays (Table 5).

Table 5. Greenhouse gas emissions intensity per tonne of wheat grain and per hectare for each emission source and farm, calculated using the Cool Farm Tool (version CFT2.81.0 AUS). Bold type indicates the largest source of emissions per farm.

Farm	1	2	3	4	1	2	3	4
Emission source	kg CO ₂ e/t header-harvested grain				kg CO ₂ e/ha			
Fertiliser production	97	111	196	121	680	980	980	971
Fertiliser application	132	158	278	173	922	1390	1390	1383
Energy use (field diesel)	9	14	11	37	63	122	53	297
Irrigation energy use	0	0	0	0	0	0	0	0
Soil carbon stock	0	0	0	0	0	0	0	0
Pesticide production	8	4	5	1	57	39	26	9
Residue management	103	103	103	103	720	906	515	823
Total	349	391	593	435	2442	3438	2965	3483

Conclusion

The Cool Soil Initiative Innovation Paddock Program provided an opportunity for a semi-replicated trial across four soft wheat farms on enhanced efficiency urea fertiliser options. In the 2025 trial, applying a urease inhibitor at the first, or both the first and second, urea topdressing did not reduce or increase yields or estimated greenhouse gas emissions intensity.

Acknowledgements

The collaboration of four soft wheat growers is gratefully acknowledged. The collaborating growers provided urea fertiliser, labour, skills, conceptual input, paddock activity data, access to their properties and they shared their experiences with the research team. Sarah McCaskie (Irrigation Research Extension Committee) and Sarah Fraser (formerly Charles Sturt University CSI team) managed the trial. The trial was funded by Arnott's and the Cool Soil Initiative.

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NOTES

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Pre-emergent Trial in Wheat

Max Findlay

Sefton Agronomics



Introduction

The overall cost of weeds to Australian grain growers is estimated at **\$3.3 billion annually**, equating to more than **\$140/ha** in losses and control costs (Benjamin, 2015). Annual ryegrass remains one of the most costly and difficult weeds to manage, making effective control a priority for Australian grain producers.

Pre-emergent herbicides have become one of the primary tools for controlling annual ryegrass in cereal crops. While these herbicides provide excellent weed control, they also present challenges regarding crop safety, particularly when different sowing systems are used.

To better understand these interactions, trials were conducted at the **Finley Southern Growers Research Farm** to evaluate the effects of a range of pre-emergent herbicide tank mixes on crop safety, weed control and yield across different sowing methods in wheat.

2025 Method

Trial establishment: Trial area was flood irrigated on **3 April 2025**, but dry conditions meant all treatments were **dry sown** on **20 May 2025**. Crop emergence occurred after **8 mm rainfall (22 May)** and **5 mm rainfall (26 May)**.

Pre-emergent application: All pre-emergent herbicide tank mixes were **applied and incorporated by sowing within 24 hours** under favourable conditions (13°C, 56.3% humidity, 5 km/h SW wind, no inversion).

Sowing details: All treatments were sown with **BOA wheat (80 kg/ha)** and **MAP fertiliser (120 kg/ha)**.

- **Shallow Tyne:** 15–20 mm depth, 12-inch spacing (DBS Ausplow).
- **Deep Tyne:** 40–50 mm depth, 12-inch spacing. (DBS Ausplow).
- **Disc:** 20 mm depth, 6-inch spacing (Gaspardo Gigante pressure disc drill, Single Disc no Aryx wheels).

Post-emergent management: **Mateno Complete** was applied on **19 June**, followed by **150 kg/ha urea** on **20 June** at the 2-leaf stage. A **15 mm rainfall** on **24 June** activated both applications.

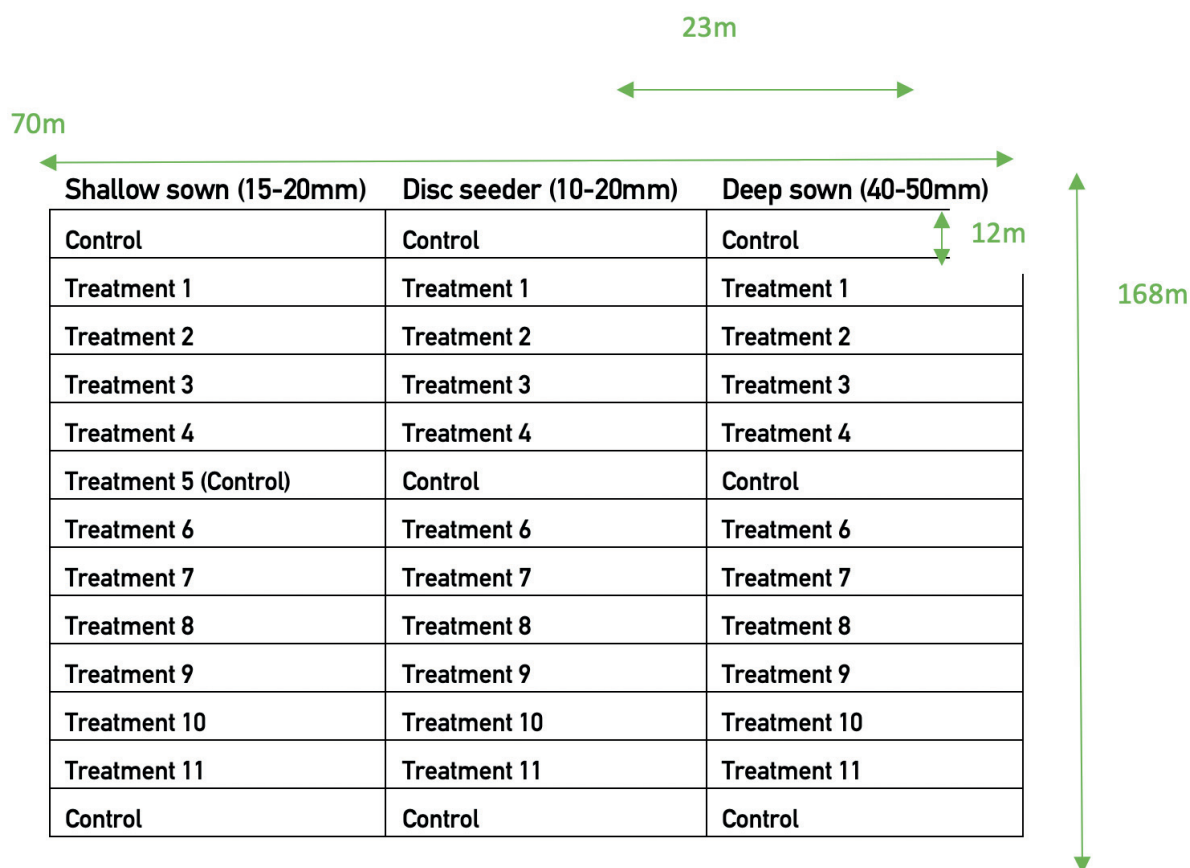
Plant assessments: Plant counts were conducted on **24 June 2025** at the 3-leaf stage. **Ten 50 cm counts** were taken per sub-treatment, totalling **390 counts**, which were converted to **plants/m²** for analysis.

2025 Trial Design

The trial was approximately **70 m wide**, divided into three sowing methods:

- Shallow Tyne
- Disc
- Deep Tyne

Each treatment strip measured approximately **12 m** in length, giving a total trial length of approximately **168 m**, including three untreated control sections.



Treatment Groups

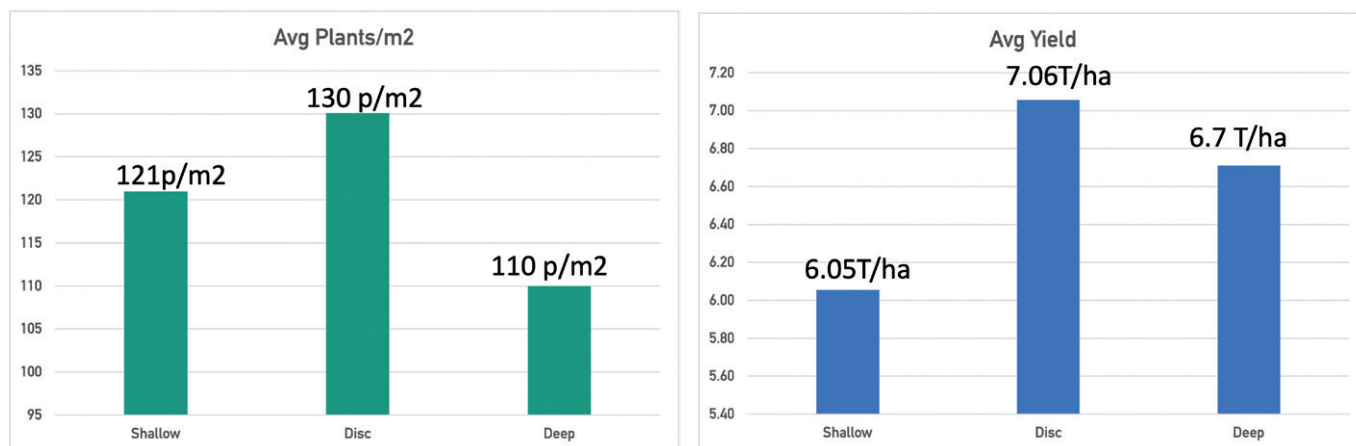
The following 11 pre-emergent herbicide tank mixes were evaluated.

Treatment	Product	Treatment	Product
1	Avadex @ 2L/ha Trifluralin @ 2L/ha Terrain Flow @ 0.125L/ha	7	Avadex @ 2L/ha Luximax @ 0.5L/ha
2	Avadex @ 2L/ha Trifluralin @ 2L/ha	8	Avadex @ 2L/ha Overwatch @ 1.25L/ha
3	Avadex @ 2L/ha Sakura @ 118 g/ha	9	Avadex @ 2L/ha Overwatch @ 1.25L/ha Followed by Mateno @ 1L/ha
4	Avadex @ 2L/ha Sakura @ 118 g/ha Terrain Flow @ 0.125L/ha	10	Avadex @ 2L/ha Trifluralin @ 2L/ha Followed by Mateno @ 1L/ha
Control	N/A	11	Trifluralin @ 2L/ha Boxer Gold @ 2.5L/ha
6	Avadex @ 2L/ha Luximax @ 0.5L/ha Voroxor @ 0.2 L/ha		

2025 Results

Plant Establishment and Yield

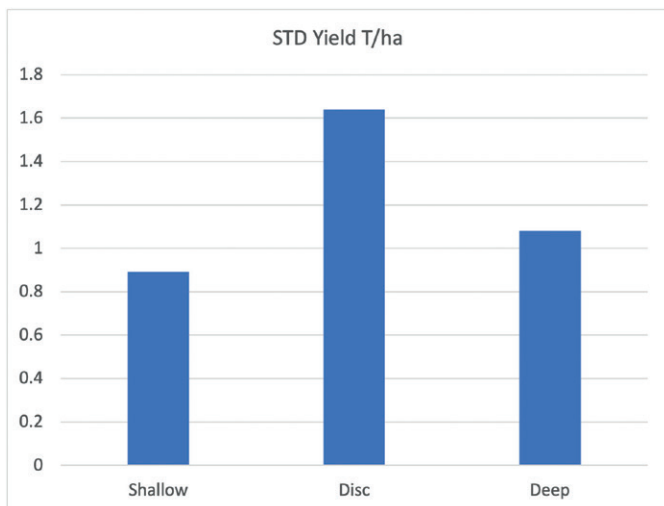
The following graphs compare average plant establishment and average yield across the three sowing systems.



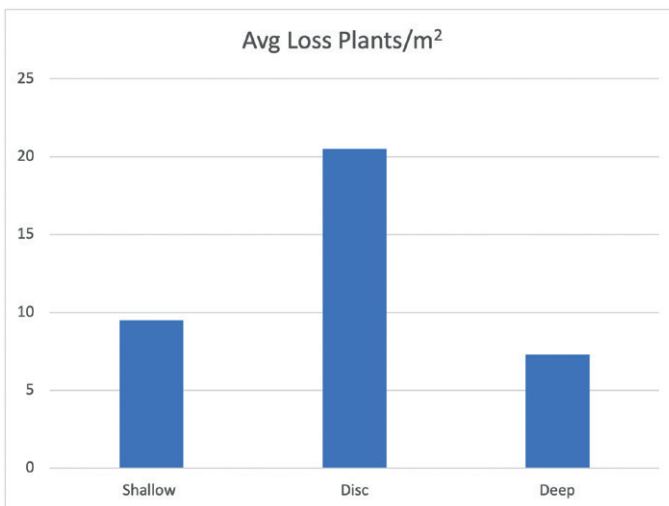
These results show a strong relationship between plant establishment and final grain yield.

- Disc sowing achieved the highest plant establishment, resulting in the highest average yield.
- Shallow tyne sowing produced moderate establishment, but seed placement close to the herbicide layer resulted in greater crop exposure following early rainfall events, reducing yield.
- Deep tyne sowing established the fewest plants due to the dry start and greater energy required for seedlings to emerge from depth. However, deeper seed placement reduced herbicide exposure, allowing these treatments to out-yield the shallow-sown treatments.

Yield Consistency



Plant Loss from Pre-emergent Herbicides



Although the disc treatments produced the highest average yield, they also showed the greatest variability, indicating a higher production risk.

Plant loss was determined by comparing untreated control plots with the average establishment of all pre-emergent treatments.

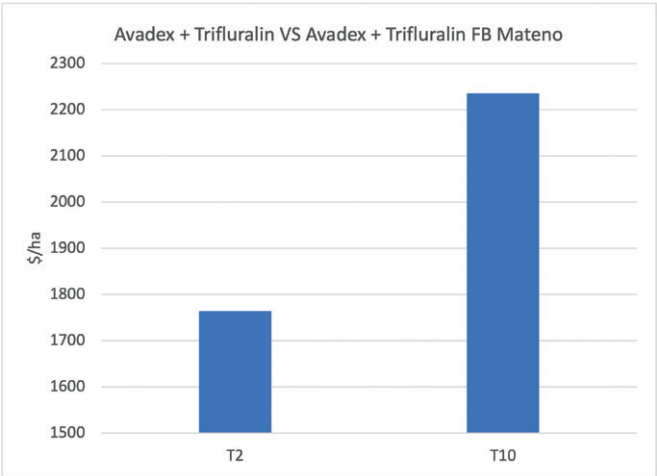
Key findings include:

- Disc sowing lost the greatest number of plants following pre-emergent herbicide application.
- Despite these losses, disc sowing still produced the highest average yield.

Overall, the data demonstrates that **disc sowing offers the greatest potential reward but also carries the greatest establishment risk** when using pre-emergent herbicides.

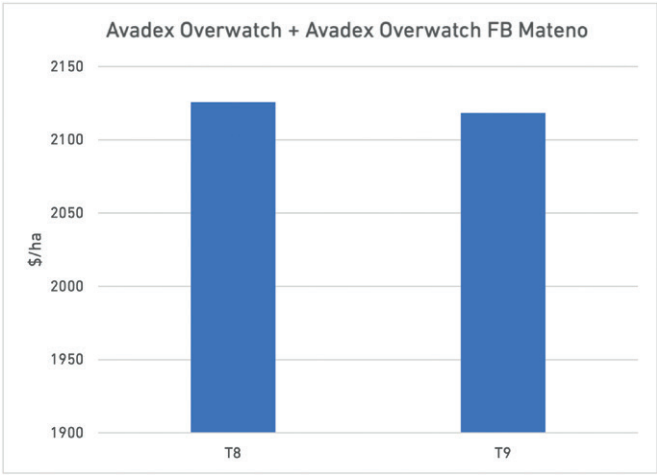
Economic Comparison

The following comparisons evaluate the economics of the different herbicide programs.



Product	\$/L	Rate	\$/ha
Avadex	8.8	2	17.6
Trifluralin	5.4	2	10.8
Mateno	51.4	1	51.4
Wheat	300	1	300

+ 1.81 T/ha Yield
+ \$471/ha Due to the addition of Mateno



Product	\$/L	Rate	\$/ha
Avadex	8.8	2	17.6
Overwatch	34.75	1.25	43.4
Mateno	51.4	1	51.4
Wheat	300	1	300

+ 210kg/ha
-\$7.5/ha due to the addition of Mateno
*this brew is expensive, in high resistance environments may be worthwhile



Pre-emergent trial site. Light green areas show no herbicide applied (control). Demonstrates how pre-emergents are suppressing ryegrass in crop. Photo: Max Findlay.

2026 Trial

The concept of the 2026 trial remained the same as the 2025 trial, with the primary difference being the sowing systems evaluated.

2026 Sowing Methods

1. Tyne machine

• 10-inch row spacing

• 30 mm sowing depth
2. Disc machine with Aryx wheels

• 6-inch row spacing

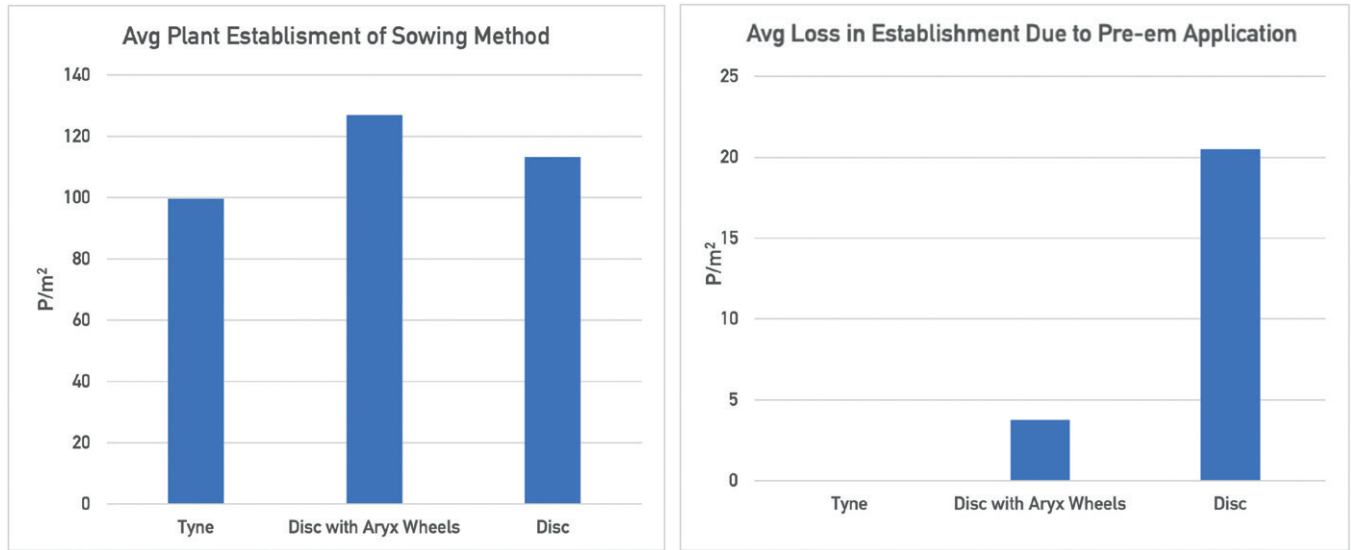
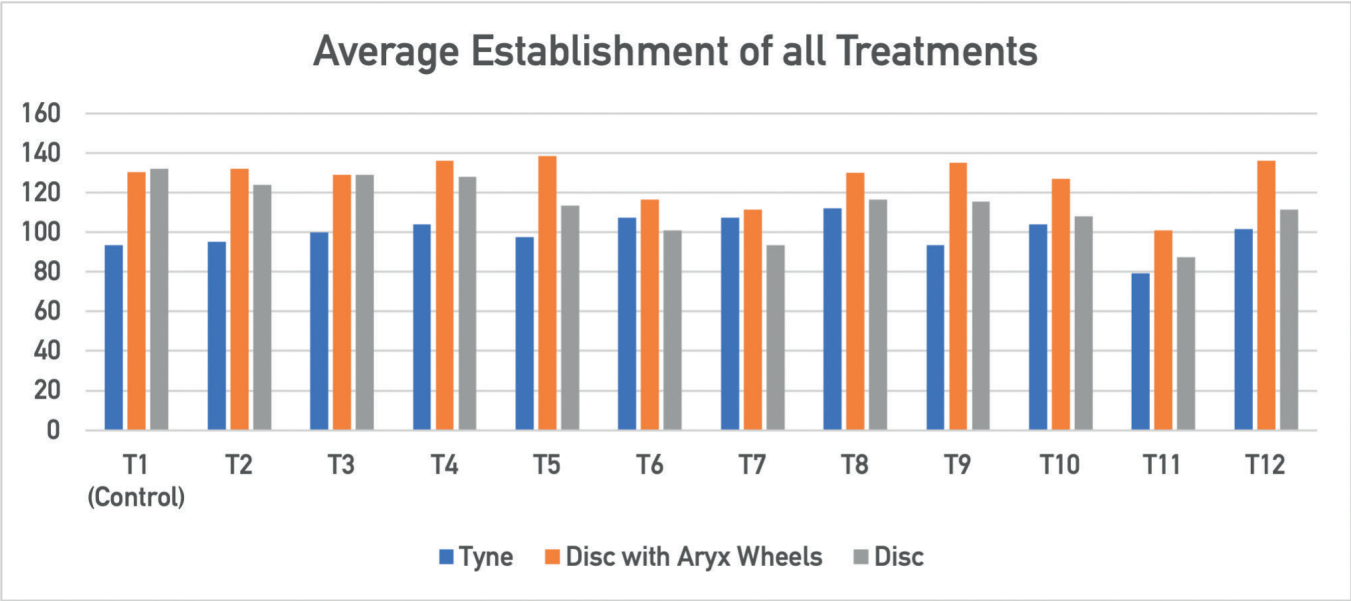
• 20 mm sowing depth
3. Disc machine without Aryx wheels

• 6-inch row spacing

• 20 mm sowing depth

2026 Preliminary Findings

Although the 2026 trial is currently limited in available data, several important trends have already emerged.



- Aryx wheels improved crop establishment and reduced crop injury when used with pre-emergent herbicides.
- Tyne sowing continued to provide the safest establishment in terms of minimising plant loss from pre-emergent herbicides.
- Disc seeders continued to establish significantly higher plant populations than tyne seeders at the same sowing rate, although they also remained the higher-risk system.

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Family Farm Succession and Taxation Implications

Georgeina Ryan

Regional Business Lawyers Pty Ltd



Farm business succession can be complicated. There are so many issues for families to navigate: business management, asset transfers, ensuring equity among family members not to mention the various emotions involved. There are significant costs involved and potentially the greatest financial cost is the taxation burden associated with farm business succession.

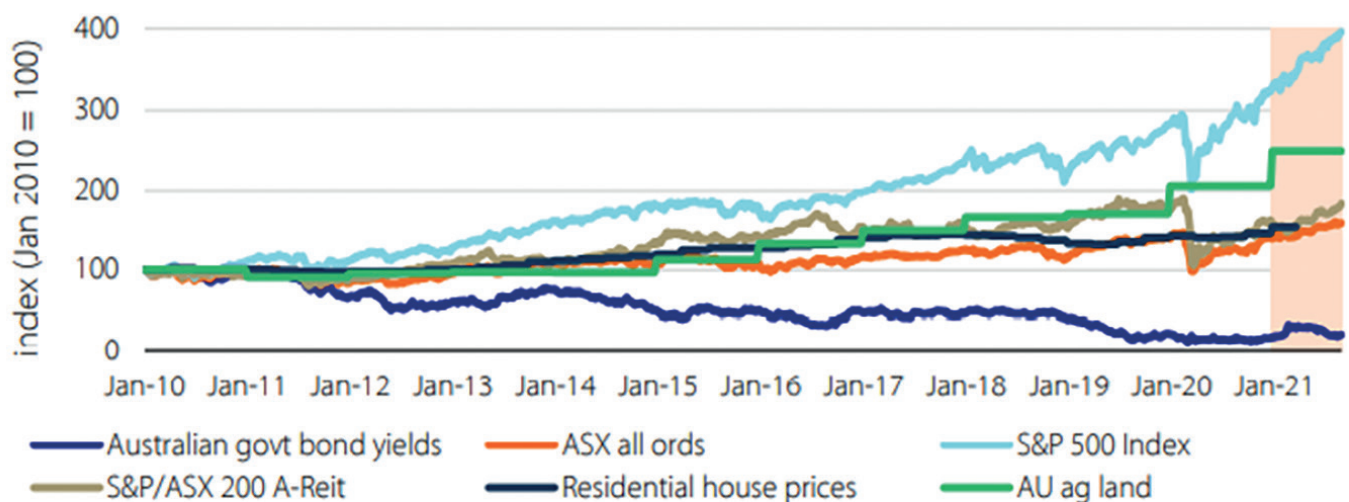
We are currently in an environment that is considerably more complicated than it was six months ago thanks to the changes to capital gains tax and the taxation of trusts introduced by the current government in the May 2026 budget.

It is possible in many instances to mitigate the costs associated with farm business succession, but it may require longer term planning. The most important thing for most families is to understand what their current situation is.

This paper is intended as a very brief introduction to the taxation issues to be considered in succession planning. It is not intended as a substitute for good legal and accounting advice.

Ag land has appreciated at a faster rate than most other asset classes over the past ten years

Capital return of selected asset classes, 2010- Aug 2021



Source: Digital Agricultural Services, Bloomberg, ABS, Rabobank 2021

Note: Ten-year investment CAGR, 2011-2020: Australian government bond yields (-16%), ASX All Ords (4%), S&P 500 Index (11%), S&P/ASX 200 A-Reit (6%), Residential house prices (4%), AU ag land (9%)

Property transfers

Capital gains tax

Capital gains is not the only taxation cost to be considered in farm succession transfers, but it is the most expensive one.

Whilst it has been good for the balance sheet and the equity in businesses, the significant increase in land values from 2012 to 2024 has also increased the size of the capital gains tax problem.

Capital gains tax was introduced on 20 September 1985. If you were a teenager in the 80s and your family is still to complete their farm succession, then there is a possibility that your parents may still have some land that is free of capital gains tax (noting that this 2026 budget has also affected the status of this land). However for anyone under the age of about 60 you can assume that some of the land held by your parents or your companies or trusts controlled by them will be subject to capital gains tax.

There is still land held in companies or trusts that were established to circumvent death duties; and these entities bring with them complications when trying to transfer land out of them or deal with the shares in them.

Capital gains tax is income tax imposed on the gain in value of assets that are transferred. It applies whether those assets are sold or gifted. It does not apply when assets are transferred under a person's will, however, there are some important rules around inheriting assets that are important to understand.

The best way to explain capital gains tax is by way of a simplified example:

Step 1	Ted bought 1,000 acres of land in 2002 for \$800/acre. At the time of buying the property the costs involved were about \$40,000.
Step 2	Teds' "cost base" is \$840,000.
Step 3	Ted is offered \$4,000 per acre by a neighbour to sell = \$4,000,000.
Step 4	The capital gain is \$4,000,000 - \$840,000 = \$3,160,000.
Step 5	In the year he sells, Ted's farming partnership that comprises Ted and his wife makes a profit of \$120,000.
Step 6	Ted's income for that year is then \$60,000.
Step 7	Under the current CGT rules, the capital gain is divided by two: \$1,580,000.
Step 8	This is added to Ted's income of \$60,000.
Step 9	Ted pays tax that year on income being \$1,640,000.
Step 10	The tax payable will be \$704,138.

Step 7 is what is known as the "general 50% discount". So long as you (not being a company) own an asset for more than 12 months you are eligible for the general 50% discount.

This is being replaced from 1 July 2027. From 1 July 2027 the cost base will be indexed against CPI. CPI is figure representing the *All groups CPI weighted average of 8 capital cities* published by the Australian Bureau of Statistics. CPI does not include land and historically land values have increased more than CPI.



Small business CGT concessions

The small business CGT concessions allow a landowner to reduce, disregard or defer some or all of a capital gain associated with the transfer of land used in a small business. The small business CGT concessions are complex and the below is a summary of some of the rules.

The eligibility criteria include:

- The business operated by the landowner (and/or his/her affiliates) must have a turnover of less than \$2million per annum. Turnover is income not profit; and/or
- The landowner and his/her affiliates have less than \$6,000,000 of net assets; and
- The asset must be an “active asset” (meaning it is used in the business; there are rules around for how long the asset must have been used in the business versus how long you have owned it; this is mainly relevant if the asset is leased to a third party).

The CGT cost can then be reduced by one of the following means:

- The 15-year exemption: if you have held the asset for more than 15 years and you are selling/transferring it in connection with your retirement, the entire capital gain can be disregarded
- Small business 50% discount: The gain is reduced by the general 50% discount, then further reduced by the 50% active asset reduction
- Retirement exemption: reduce the gain by a one-off amount of \$500,000 (which may require this amount being placed into superannuation depending on your age)
- Small business roll over: Roll over the gain into the purchase of a new CGT asset

A “small business affiliate” is someone who in relation to their business affairs, acts or could reasonably be expected to act either according to your directions or wishes and/or in concert with you.

There are complex rules for companies and trusts. But what you need to know is this, the CGT rules apply to the sale of assets actively used in businesses carried on by you or your CGT affiliates. Secondly the caps of \$6m, \$2m and \$10M apply to all the assets and businesses carried on by you and your affiliates. The affiliates is a way of grouping entities.

The concession made by the Government in the Budget to increase the turnover threshold to \$10million only allows for a person to receive the small business 50% discount concession. It does not apply to the other three small business CGT concessions.

If an asset is gifted or sold at a reduced price to a related party (being a family member or an entity controlled by a family member), the transfer is deemed to have taken place at market value. Therefore, even if there is no money changing hands, capital gains tax is still payable.

Small business restructure rollover relief

There is an alternative roll over that may assist businesses with a turnover greater than \$2 million but less than \$10 million.

This relief allows the gain to be rolled over to a new entity as part of a business restructure. This means the new entity “inherits” the cost base of the asset from the other entity.

Although the roll over does not allow for a change to the ultimate economic ownership of the transferred assets, meaning the person who owned the asset must own the same interest in the new entity that receives the asset, it may assist businesses to restructure into an entity that might be better in the longer term for succession. Many advisors are using this concession to rollover farmland into trusts as the rules around working out who has ownership of a trust are a bit more flexible.

Advice should definitely be sought from an experienced lawyer before undertaking such a restructure as there are some complex interactions with using this rollover in conjunction with seeking the stamp duty concession.

Stamp duty

Duty is payable on the transfer of land. Duty is calculated on an “ad valorem basis” meaning the rate of duty increases with the value of the asset being transferred.

As a guide, it is approximately 5% of the value of the asset.

The *Duties Act 1997 (NSW)* provides an exemption from duty for the transfer of assets between family members. That exemption extends to the transfer of assets between entities controlled by related family members.

The family members can be parents, grandparents, siblings, aunts/uncles, nieces/nephews but not cousins.

The asset being transferred has to be used in a farming business by a family member or entity (company/trust etc) controlled by them.

The concession is very generous but some of the rules are quite complex.

There are potentially some issues in using this concession in common with the small business restructure rollover.

This concession only applies to land being transferred in New South Wales. Each state has similar concessions so it is important to look at the rules in the duties legislation in the relevant state.

Transfers under wills

A gift made under a will is not subject to capital gains tax. The beneficiary of the gift inherits the asset at the “cost base” of the person who has died. If the deceased owned the asset before the introduction of capital gains tax, then the beneficiary receives it at market value on the date of death. This will change slightly under the new rules, in that the beneficiary will receive an asset bought before 20 September 1985, at the value as at 1 July 2027.

There is a rule in the taxation legislation that allows a beneficiary to retain the benefit of the small business concessions that the deceased would have been entitled to use for a period of two years from the date of death. Please note that this rule also applies to the family home so it is important to obtain advice quickly in relation to estates and try to administer them promptly.

There is no stamp duty on assets gifted under a will. There are occasions where beneficiaries may want to split assets between them rather than receive shares in an asset. There are some complex rules around doing this so it is important to receive advice.

Business transfers

There are also taxation consequences of transferring business assets. The transfer or sale of plant and equipment has income tax consequences as does the transfer of livestock.

There are a number of rollovers available including the small business restructure relief and relief where there are transfers of interests in a partnership.

Understanding your current position

The most important thing with family farm succession is to understand your current position and what is available to you. If the business is currently sitting at a turnover approaching \$2 million you may want to think about whether you want to bring forward some of your plans. It may even be that a “bad year” could be an opportunity to move assets.

In relation to understanding your current position please ask yourself the following questions:

- Do we know who owns what land in our business?
- If the land is owned by a company, do we know who the directors and shareholders of that company are?
- If the land is owned by a trust, do we know who the trustees, the default beneficiaries and the appointors of that trust are?
- Do we know when that person or entity purchased that land or had it transferred or gifted to them?
- Do we know what the purchase price was or what the market value was on that date?
- Have we asked our accountant to calculate the potential capital gain if we were to sell or transfer that asset now?
- Do we know what our business turnover is?
- Have we taken into consideration the potential capital gains tax payable when working out what equity and fairness looks like in our succession planning?

Contact: Georgiena Ryan | Mobile: 0429 380 398 | Email: gryan@regionalbusinesslaw.com.au

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THANK YOU



Irrigation Research &
Extension Committee

p. 02 6963 0936 | e. irec@irec.org.au
www.irec.org.au