Pacific Seeds

Growing possibilities

2020 Pacific Seeds Hyola® CT IMI Residue Trial Results

Hyola CT Technology Stacked Value

Delivering Flexible Solution-Driven Profits to Growers

Increased Dual Herbicide Ryegrass Control Efficacy
Over Single Trait OP TT Strategy***

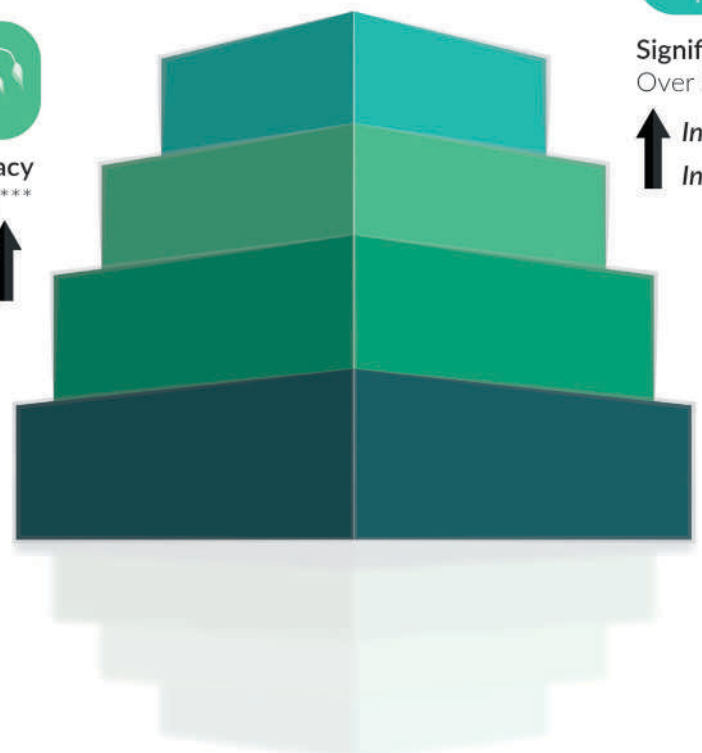
Increased Ryegrass Weed Control 17%

Increased Ryegrass Spikelets Control 45%

IMI Soil Carryover Crop Protection Benefits
Over Single Trait OP TT Canola**

Increased Grain Yield 160kg/ha - 1570kg/ha

Increased Gross Returns $110/ha - $1018/ha



Significantly Increased Grain Yields & Gross Returns
Over Single Trait OP TT Canola***

Increased Grain Yield 270kg/ha - 880kg/ha

Increased Gross Returns $162/ha - $528/ha

IMI Boom Spray Contamination Protection Benefits
Over the Single Trait OP TT Canola*

Increased Grain Yield 40kg/ha - 183kg/ha

Increased Gross Returns $26/ha - $1064/ha

*Based on Pacific Seeds 2019 Replicated Technical Extension Research Trials using 30ml/ha Intervix® applied at 4-6 leaf Stage, conducted over 5 environments.
**Based on Pacific Seeds 2020 Replicated Technical Extension Research Trials with 5 different IMI chemical treatments applied in Summer, conducted over 3 environments.
***Based on Pacific Seeds 2020 Replicated Technical Extension Research IWM Trials using various CT vs TT chemical strategies, conducted over 3 environments.

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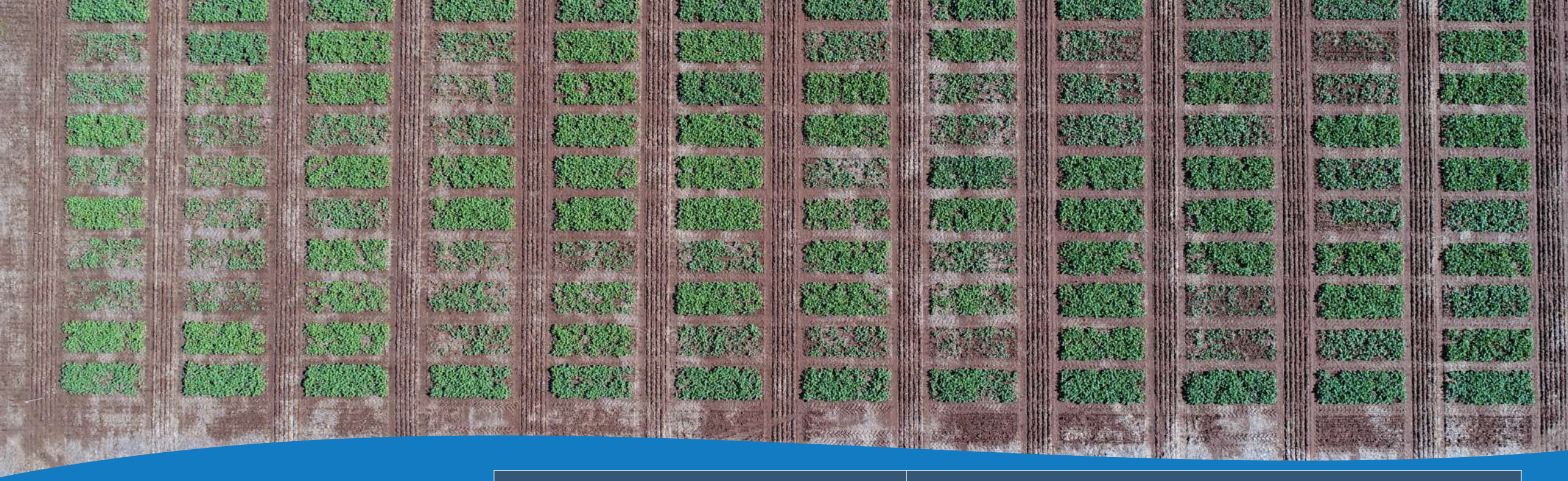

Hyola® CT Crop Protection Benefits

(Summer Applied Treatments - 4 *MBS)

Months before Sowing

Compared to CT Technology	*Summary of Treatment Results (TT Canola Losses)		
Herbicide Treatment Description	Yield kg/ha Loss Range	% Yield Loss Range	Gross Returns $/ha Loss Range
Application Timing/IMI Rates	Loss Expressed from Lowest to Highest Values across Trial Sites		
Summer Applied Low IMI Residue/TT spray - 375mL/ha Intervix®	260kg/ha to 800kg/ha	13% to 50%	$169/ha to $518/ha
Summer Applied High IMI Residue/TT spray - 750mL/ha Intervix®	230kg/ha to 930kg/ha	12% to 58%	$152/ha to $604/ha
Summer Applied IMI Residue/TT spray - 40g/ha OnDuty®	430kg/ha to 1550kg/ha	14% to 77%	$280/ha to $1008/ha
Summer Applied IMI Residue/TT spray - 45g/ha Raptor®	160kg/ha to 890kg/ha	8% to 56%	$101/ha to $582/ha
Summer Applied IMI IMI Residue/TT spray – 70g/ha Spinnaker®	310kg/ha to 1570kg/ha	10% to 78%	$201/ha to $1018/ha

2020 Pacific Seeds Hyola CT Replicated IMI Residue Trials over 3 locations across Australia where Trial mean yields ranged from 1.64 – 2.97t/ha

*Effects are greater in soil types where the herbicides were more mobile due to acid soils and higher rainfall after sowing and not always individual trial total rainfall. Hyola® CT Technology has been developed specifically for normal crop growth protection against Imidazolinone soil residues and is not promoted or recommended for use as having high levels of tolerance to levels of Group B - SU carryover. Refer to Pacific Seeds Hyola® CT Stewardship guide for specific growing guidelines.

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Hyola® CT Hybrid Technology vs OP TT Variety
Group B - IMI & SU Residue Herbicide Treatment Comparisons

CL

TT

Low IMI Residue

Stage: Summer 4 MBS
Intervix® 375ml/ha
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High IMI Residue

Stage: Summer 4 MBS
Intervix® 750ml/ha
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High OnDuty® Residue

Stage: Summer 4 MBS
OnDuty® 40g/ha
Hasten® 500ml/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High Raptor® Residue

Stage: Summer 4 MBS
Raptor® 45g/ha
Hasten® 500ml/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High Spinnaker® Residue

Stage: Summer 4 MBS
Spinnaker® 70g/ha
Hasten® 500ml/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High Monza® Residue

Stage: Summer 4 MBS
Monza® 20g/ha
DCTrate® 2L/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High Logran® Residue

Stage: Summer 4 MBS
Logran B-Power® 50g/ha
Hasten® 500ml/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High Glean® Residue

Stage: Summer 4 MBS
Glean® 15g/ha
Wetter 1000 100ml/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High Ally® Residue

Stage: 10 DBS
Ally® 5g/ha
Wetter 1000 100ml/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

Standard TT Control

Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

TT

2020 Hyola® CT vs OP TT IMI Residue Trial Details & Background Information

2020 Hyola® CT IMI Residue Trial – Agronomic Details

2020 Pacific Seeds Hyola CT IMI Residual Trial - Overall Details							
Trial Location	Trial State	Trial Service Provider	# of Plots (incl Buff) - Reps	Crop History	Sowing Date	4-6 Leaf Spray Date	GSR (mm) Rainfall
Wallendbeen	NSW	Kalyx Australia	96 - 3	W,C,W	04.05.20	29.06.20	485
Morbinning	WA	SLR Research	96 - 3	W,F,B	28.04.20	10.06.20	196
Horsham	VIC	Kalyx Australia	96 - 3	B,L,B	05.05.20	17.06.20	312

2020 Pacific Seeds Hyola CT IMI Residual Trials - Soil Details							
Trial Location	Trial State	Soil Type	pH (0-10) CaCl2	pH (10-20) CaCl2	EC dS/m (0-10)	OC % (0-10)	PBI Score
Wallendbeen	NSW	Reddish Brown Loam	6.3	5.8	0.11	2.00	50.0
Morbinning	WA	Grey-Brown Loam	5.4	4.8	0.05	1.20	37.0
Horsham	VIC	Grey Clay Loam	5.4	5.3	0.22	2.00	48.0

2020 Pacific Seeds Hyola CT IMI Residual Trials - Sowing Details							
Trial Location	Trial State	Sowing Equipment	Tillage Type	Soil Moisture Depth (0-10cm)	Seed Bed	Seeding Depth (cm)	Stubble Loading
Wallendbeen	NSW	KPPW	Minimum tillage	Moist	Friable	1.0	30%
Morbinning	WA	PA	Direct drilled	Damp	Stubble	2.5	80%
Horsham	VIC	KPPW	Direct drilled	Moist	Friable	1.0	<10%

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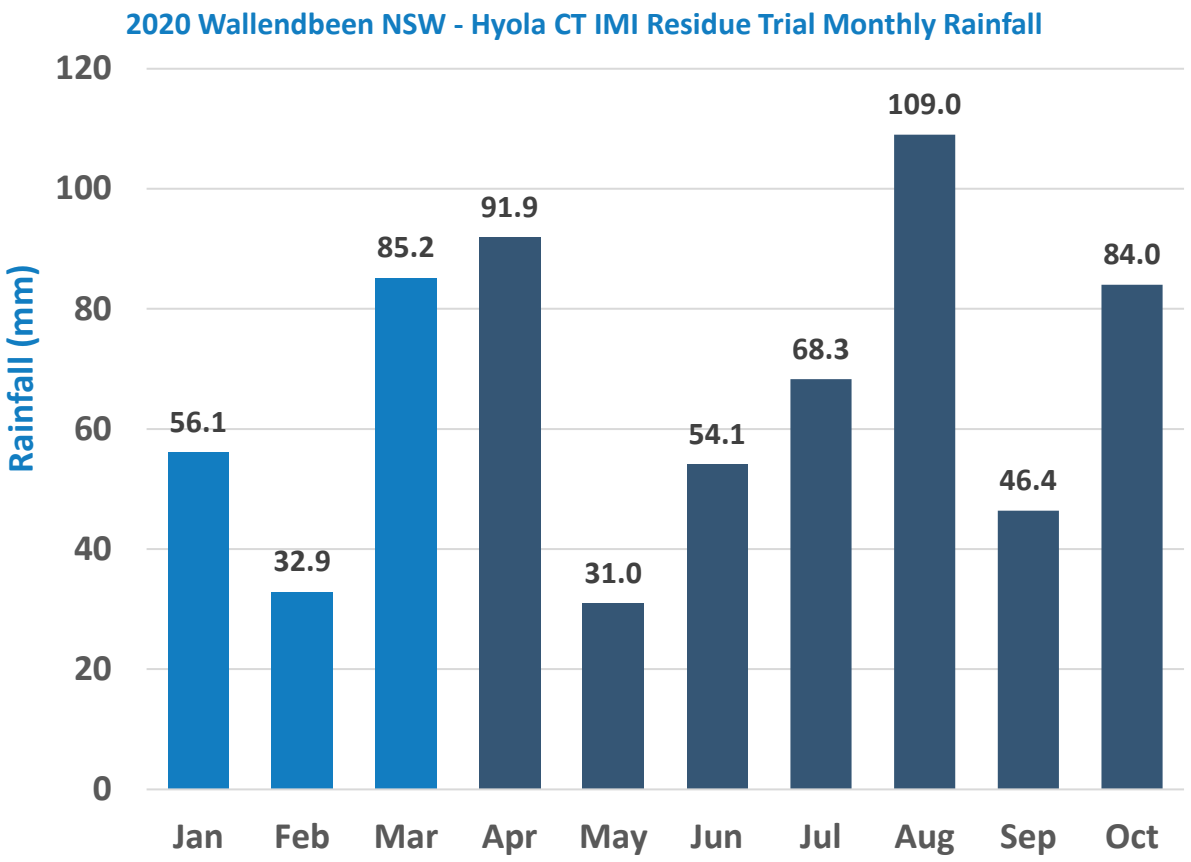
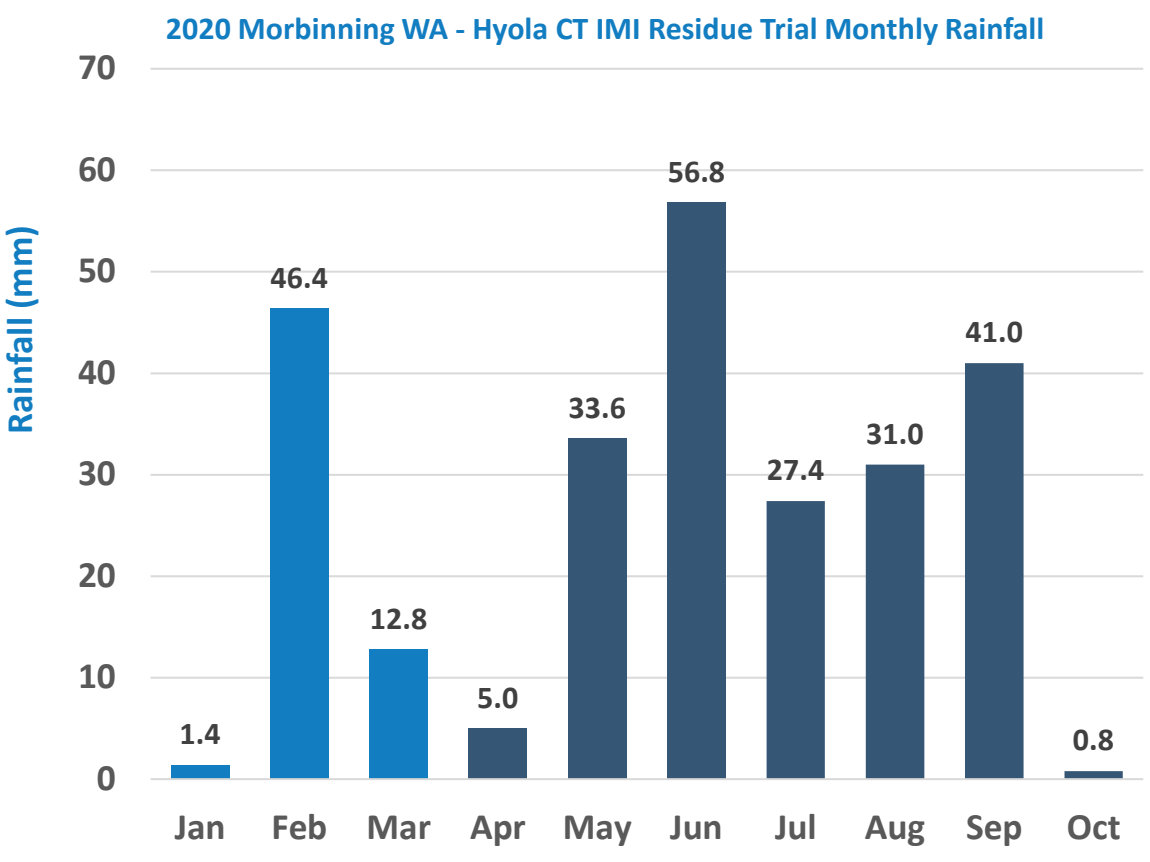
2020 Hyola® CT IMI Residue Trials - Rainfall Distribution Details





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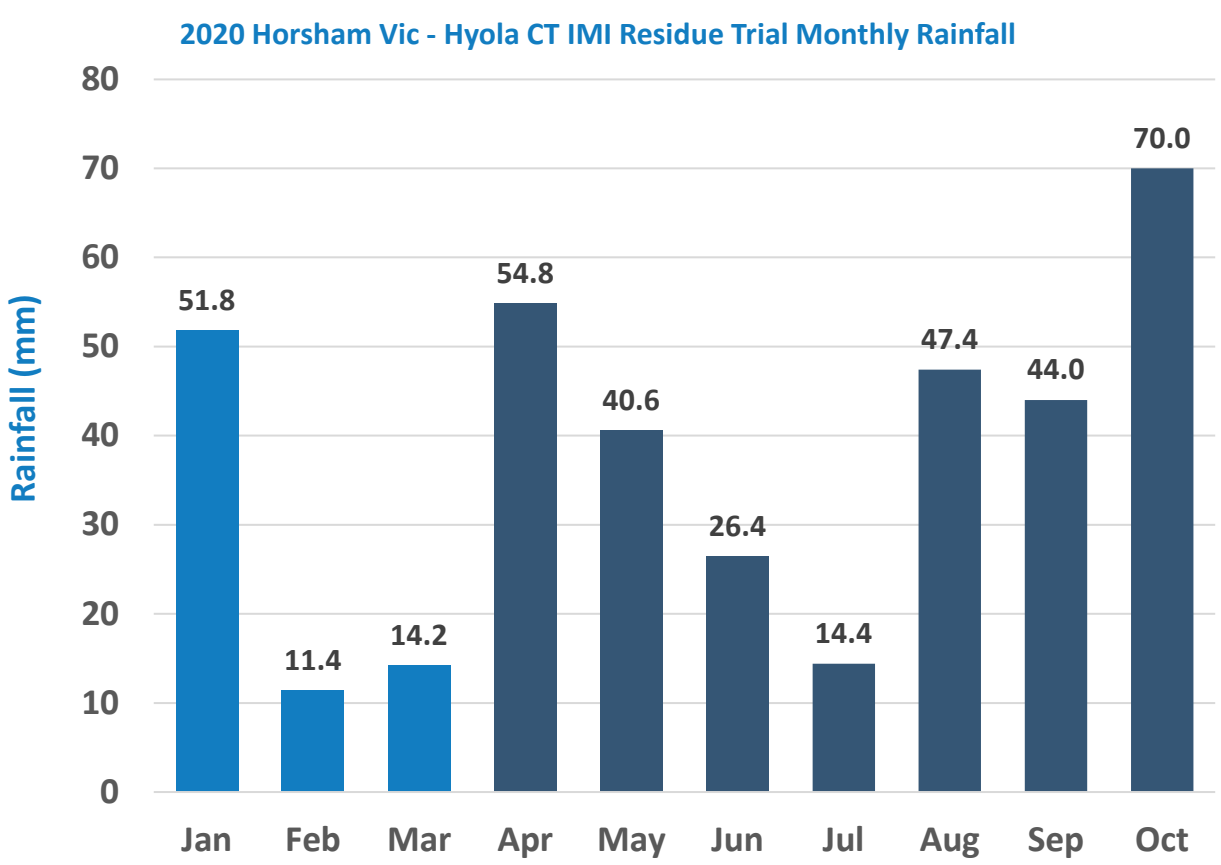
2020 Hyola® CT IMI Residue Trials - Rainfall Distribution Details



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2020 Hyola® CT IMI Residue Trials – Herbicide Treatment Listing

Variety	Treatment	Seed Number	TRT	Treatments:	TRT	Canola	Target Density	Herbicide Treatments, Timing and Rates				
Reference	Reference	per Packet	#	Scenario	#	Variety	Seeding Rate	January 2020 (Code Y)	10 DBS (Code Z)	IBS (Code A)	PSPE (Code B)	Post Em (Code C)
Hyola Enforcer CT	CT-1xCLH2xTT	400	1	4 Month - High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	1	CT	40/m2	375mL/ha Intervix		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
ATR Bonito	OPTT-1xCLH2xTT	400	2	4 Month - High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	2	OPTT	40/m2	375mL/ha Intervix		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
Hyola Enforcer CT	CT-1xCLVH2xTT	400	3	4 Month - Very High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	3	CT	40/m2	750mL/ha Intervix		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
ATR Bonito	OPTT-1xCLVH2xTT	400	4	4 Month - Very High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	4	OPTT	40/m2	750mL/ha Intervix		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
Hyola Enforcer CT	CT-1xODVH2xTT	400	5	4 Month - Imi Residues/TT spray regime - On Duty- 525g Imazapic - 175g Imazapyr	5	CT	40/m2	OnDuty 40gm/ha, Hasten 500ml/100L		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
ATR Bonito	OPTT-1xODVH2xTT	400	6	4 Month - Imi Residues/TT spray regime - On Duty- 525g Imazapic - 175g Imazapyr	6	OPTT	40/m2	OnDuty 40gm/ha, Hasten 500ml/100L		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
Hyola Enforcer CT	CT-1xRAPVH2xTT	400	7	4 Month - Imi Residues/TT spray regime - Raptor- 700 g Imazamox	7	CT	40/m2	Raptor 45gm/ha, Hasten 500ml/100L		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
ATR Bonito	OPTT-1xRAPVH2xTT	400	8	4 Month - Imi Residues/TT spray regime - Raptor- 700 g Imazamox	8	OPTT	40/m2	Raptor 45gm/ha, Hasten 500ml/100L		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
Hyola Enforcer CT	CT-1xSPKVH2xTT	400	9	4 Month - Imi Residues/TT spray regime - Spinnaker - 700g - Imazathapyr	9	CT	40/m2	Spinnaker 70gm/ha, Hasten 500ml/100L		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
ATR Bonito	OPTT-1xSPKVH2xTT	400	10	4 Month - Imi Residues/TT spray regime - Spinnaker - 700g - Imazathapyr	10	OPTT	40/m2	Spinnaker 70gm/ha, Hasten 500ml/100L		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
Hyola Enforcer CT	CT-1xSUMNZVH2xTT	400	11	4 Month -SU Residues/Standard TT spray regime - Monza - 750g Sulfosulfuron	11	CT	40/m2	Monza 20g/ha + DC Trate at 2L/100L		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
ATR Bonito	OPTT-1xSUMNZVH2xTT	400	12	4 Month - SU Residues/Standard TT spray regime - Monza - 750g Sulfosulfuron	12	OPTT	40/m2	Monza 20g/ha + DC Trate at 2L/100L		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
Hyola Enforcer CT	CT-1xSULOGVH2xTT	400	13	4 Month - SU Residues/Standard TT spray regime - Logran - 520g Triasulfuron + 200g Butafenacil	13	CT	40/m2	Logran® B-Power 50g/ha, Hasten 500ml/100L		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
ATR Bonito	OPTT-1xSULOGVH2xTT	400	14	4 Month - SU Residues/Standard TT spray regime - Logran - 520g Triasulfuron + 200g Butafenacil	14	OPTT	40/m2	Logran® B-Power 50g/ha, Hasten 500ml/100L		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
Hyola Enforcer CT	CT-1xSUGLNVH2xTT	400	15	4 Month - SU Residues/Standard TT spray regime - Glean 750g chlorsulfuron	15	CT	40/m2	Glean 15gm/ha, 1000 wetter 100ml/100L		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
ATR Bonito	OPTT-1xSUGLNVH2xTT	400	16	4 Month - SU Residues/Standard TT spray regime - Glean 750g chlorsulfuron	16	OPTT	40/m2	Glean 15gm/ha, 1000 wetter 100ml/100L		1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
Hyola Enforcer CT	CT-1xSUALYVH2xTT	400	17	10 Days - SU Residues/Standard TT spray regime - Ally 600g Metsulfuron Methyl	17	CT	40/m2		Ally 5gm/ha, 1000 wetter 100ml/100L	1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
ATR Bonito	OPTT-1xSUALYVH2xTT	400	18	10 Days - SU Residues/Standard TT spray regime - Ally 600g Metsulfuron Methyl	18	OPTT	40/m2		Ally 5gm/ha, 1000 wetter 100ml/100L	1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
Hyola Enforcer CT	CT-1xCL3752xTT	400	19	2 * TT + Intervix 375ml/ha Control Treatment	19	CT	40/m2			1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake + 375mL/ha Intervix
Hyola Enforcer CT	CT-1xCL7502xTT	400	20	2 * TT + Intervix 750ml/ha Control Treatment	20	CT	40/m2			1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake + 750mL/ha Intervix
Hyola Enforcer CT	CT-2xTT Control	400	21	2 * TT Control Treatment	21	CT	40/m2			1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
ATR Bonito	OPTT-2xTT Control	400	22	2 * TT Control Treatment	22	OPTT	40/m2			1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
CT200251	HYBTT1-2xTT Control	400	23	2 * TT Control Treatment	23	HYBTT1	40/m2			1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake
HyTTec Trophy	HYBTT2-2xTT Control	400	24	2 * TT Control Treatment	24	HYBTT2	40/m2			1L/ha Rustler 500	1.1kg/ha Kelpie A-zine	1.1kg/ha Kelpie A-zine + 500mL/ha Select + 0.5% Uptake

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GROUP B – IMI IMIZAPIC CHEMISTRY GENERAL PROPERTIES – ALS INHIBITORS

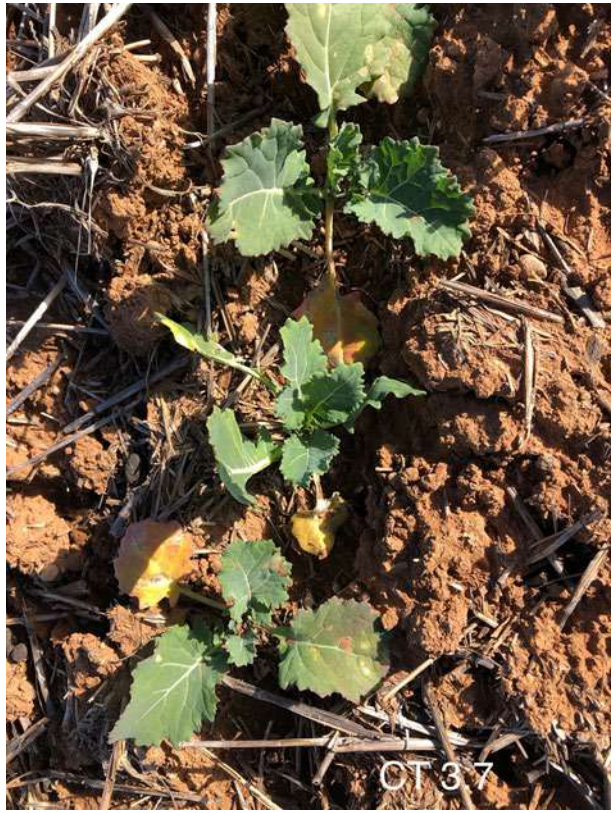
Imidazolinones

Imazapic

Getting to the soil			When in the soil		
Solubility (mg/L)	2 230	High	Binding (K_{oc})	137	Moderately mobile
Volatility (mPa)	0.01	Non-volatile	Half-life (DT_{50})	31-410 (av. 232)	Persistent
Photodegradation	Negligible		Mobility	Moderate due to high solubility and only moderate binding	
Breakdown	Predominantly microbial.				

Practical considerations:

- With volatility and photodegradation both being low, the herbicide will not breakdown rapidly on the soil surface after application.
- High solubility and only moderate binding allows for the herbicide to be readily washed off stubble and incorporated with rainfall.
- Moderate binding prevents excessive losses via leaching. Binding increases at lower soil pH.
- Very persistent due to slow microbial breakdown, especially under conditions of low soil pH and low soil moisture. Substantial plantback constraints exist. Observe label constraints for pH, time and rainfall requirements.



Source: 2019 GRDC PUBLICATION - SOIL BEHAVIOUR OF PRE-EMERGENT HERBICIDES IN AUSTRALIAN FARMING SYSTEMS

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GROUP B – IMI IMIZAPYR CHEMISTRY GENERAL PROPERTIES – ALS INHIBITORS

Imazethapyr

Getting to the soil			When in the soil		
Solubility (mg/L)	1 400	High	Binding (K_{oc})	52	Mobile
Volatility (mPa)	1.3×10^{-2}	Non-volatile	Half-life (DT_{50})	14-290 (av. 51)	Moderately persistent
Photodegradation	Negligible		Mobility	Mobile in the soil water	
Breakdown	Predominantly microbial.				

Practical considerations:

- With volatility and photodegradation both being low, the herbicide will not breakdown rapidly on the soil surface after application.
- Imazethapyr has post-emergent and pre-emergent activity. Once in the plant it is readily translocated.
- Low binding in neutral and alkaline soils means the herbicide is likely to be freely available in soil water in many soils. Binding increases in soils with higher organic matter and soils where pH is below 6.5.
- Persistence is moderate, however it can be quite long under conditions of low soil pH and low soil moisture, where binding increases and microbial activity is reduced. Substantial plantback constraints to susceptible crops exist. Observe label constraints for pH, time and rainfall requirements.
- Crop selectivity comes from rapid metabolism in tolerant plants.

With imidazolinone herbicides, microbial breakdown is the primary route of degradation and is typically very slow for most imidazolinones. Persistence in the soil increases with lower soil pH (acidic soils) as binding increases, making the herbicide less available for microbial breakdown.

Source: 2019 GRDC PUBLICATION - SOIL BEHAVIOUR OF PRE-EMERGENT HERBICIDES IN AUSTRALIAN FARMING SYSTEMS

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GROUP B - SU CHEMISTRY GENERAL PROPERTIES – ALS INHIBITORS

Sulfonylureas

Chlorsulfuron

Getting to the soil			When in the soil		
Solubility (mg/L)	12 500	High	Binding (K_{oc})	40[a]	Mobile
Volatility (mPa)	3.07×10^{-6}	Non-volatile	Half-life (DT_{50})	10 - 185 (av. 36)	Moderately persistent
Photodegradation	Negligible		Mobility	Mobile in the soil Potential to leach, especially at higher pH	
Breakdown	Hydrolysis cleaves the sulfonylurea bridge with the speed of breakdown increasing with lower soil pH. Microbial breakdown is slow.				

[a] Shaner, D. (2014). Herbicide Handbook (10th Edition) Weed Society of America

Practical considerations:

- With volatility and photodegradation both being low, the herbicide will not breakdown rapidly on the soil surface after application.
- Solubility is high and binding to organic matter is low, assisting rainfall to wash herbicide off the stubble.
- Speed of breakdown depends on soil pH and moisture content. Plantback to sensitive crops can be very long in alkaline soils, especially under dry summer conditions. Observe label constraints for time and rainfall requirements.
- This also means the compound is freely available for root uptake and translocation once in the soil, however there is potential for leaching down the profile following large rainfall events, particularly in alkaline soils. If applied to dry soil without mechanical incorporation and followed by a significant rainfall event during emergence, there is potential for it to move down the profile and damage germinating crops.

For many of the sulfonylureas, hydrolysis is the primary breakdown mechanism. This can be relatively fast or quite slow, depending upon the individual compound. However, as the soil pH becomes alkaline this reaction slows, or stops, and then slow microbial degradation becomes the primary method of breakdown. For this reason, many sulfonylureas persist much longer in alkaline soils, where hydrolysis is very slow or does not occur.

Source: 2019 GRDC PUBLICATION - SOIL BEHAVIOUR OF PRE-EMERGENT HERBICIDES IN AUSTRALIAN FARMING SYSTEMS

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Hyola® CT Hybrid Technology vs OP TT Variety
Group B - IMI & SU Residue Herbicide Treatment Comparisons

2020 Horsham VIC

Hyola® Enforcer CT

Low IMI Residue

Stage: Summer 4 MBS
Intervix® 375ml/ha
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High IMI Residue

Stage: Summer 4 MBS
Intervix® 750ml/ha
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High OnDuty® Residue

Stage: Summer 4 MBS
OnDuty® 40g/ha
Hasten® 500ml/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High Raptor® Residue

Stage: Summer 4 MBS
Raptor® 45g/ha
Hasten® 500ml/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High Spinnaker® Residue

Stage: Summer 4 MBS
Spinnaker® 70g/ha
Hasten® 500ml/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High Monza® Residue

Stage: Summer 4 MBS
Monza® 20g/ha
DCTrate® 2L/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High Logran® Residue

Stage: Summer 4 MBS
Logran B-Power® 50g/ha
Hasten® 500ml/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High Glean® Residue

Stage: Summer 4 MBS
Glean® 15g/ha
Wetter 1000 100ml/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

High Ally® Residue

Stage: 10 DBS
Ally® 5g/ha
Wetter 1000 100ml/100L
Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

Standard TT Control

Stage: IBS
Rustler® 1L/ha
Stage: PSPE
TT 1.1kg/ha
Stage: Post Em (4-6Leaf)
TT 1.1kg/ha
Select® 500ml/ha
Uptake® 0.5%

OP TT

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Hyola® CT Hybrid Technology vs OP TT Variety

Group B - IMI & SU Residue Herbicide Treatment Comparisons

2020 Wallendbeen NSW

Hyola® Enforcer CT

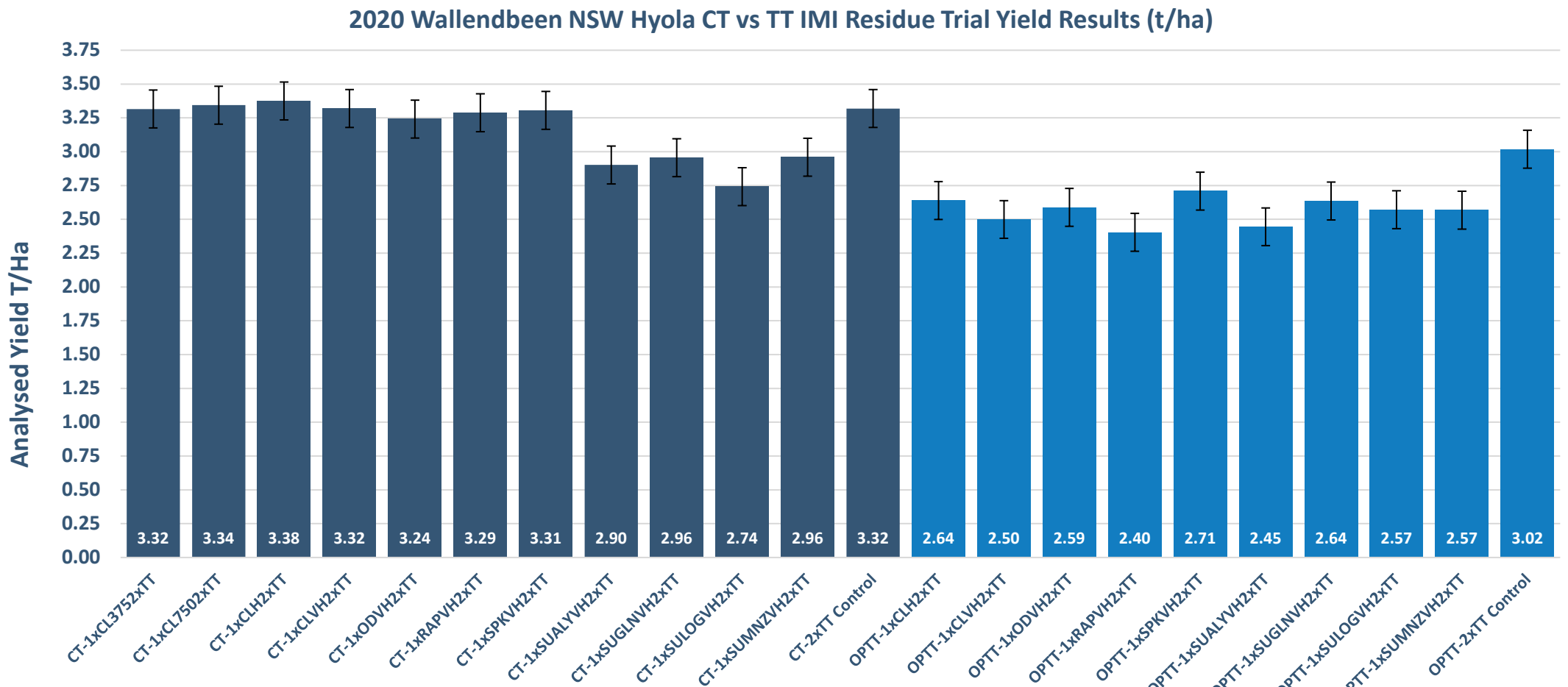
Low IMI Residue	High IMI Residue	High OnDuty® Residue	High Raptor® Residue	High Spinnaker® Residue	High Monza® Residue	High Logran® Residue	High Glean® Residue	High Ally® Residue	Standard TT Control
Stage: Summer 4 MBS **Intervix®** 375ml/ha *Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **TT** 1.1kg/ha *Stage:* Post Em (4-6Leaf) **TT** 1.1kg/ha **Select®** 500ml/ha **Uptake®** 0.5%	*Stage:* Summer 4 MBS **Intervix®** 750ml/ha *Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **TT** 1.1kg/ha *Stage:* Post Em (4-6Leaf) **TT** 1.1kg/ha **Select®** 500ml/ha **Uptake®** 0.5%	*Stage:* Summer 4 MBS **OnDuty®** 40g/ha **Hasten®** 500ml/100L *Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **TT** 1.1kg/ha *Stage:* Post Em (4-6Leaf) **TT** 1.1kg/ha **Select®** 500ml/ha **Uptake®** 0.5%	*Stage:* Summer 4 MBS **Raptor®** 45g/ha **Hasten®** 500ml/100L *Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **TT** 1.1kg/ha *Stage:* Post Em (4-6Leaf) **TT** 1.1kg/ha **Select®** 500ml/ha **Uptake®** 0.5%	*Stage:* Summer 4 MBS **Spinnaker®** 70g/ha **Hasten®** 500ml/100L *Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **TT** 1.1kg/ha *Stage:* Post Em (4-6Leaf) **TT** 1.1kg/ha **Select®** 500ml/ha **Uptake®** 0.5%	*Stage:* Summer 4 MBS **Monza®** 20g/ha **DCTrate®** 2L/100L *Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **TT** 1.1kg/ha *Stage:* Post Em (4-6Leaf) **TT** 1.1kg/ha **Select®** 500ml/ha **Uptake®** 0.5%	*Stage:* Summer 4 MBS **Logran B-Power®** 50g/ha **Hasten®** 500ml/100L *Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **TT** 1.1kg/ha *Stage:* Post Em (4-6Leaf) **TT** 1.1kg/ha **Select®** 500ml/ha **Uptake®** 0.5%	*Stage:* Summer 4 MBS **Glean®** 15g/ha **Wetter 1000** 100ml/100L *Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **TT** 1.1kg/ha *Stage:* Post Em (4-6Leaf) **TT** 1.1kg/ha **Select®** 500ml/ha **Uptake®** 0.5%	*Stage:* 10 DBS **Ally®** 5g/ha **Wetter 1000** 100ml/100L *Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **TT** 1.1kg/ha *Stage:* Post Em (4-6Leaf) **TT** 1.1kg/ha **Select®** 500ml/ha **Uptake®** 0.5%	*Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **TT** 1.1kg/ha *Stage:* Post Em (4-6Leaf) **TT** 1.1kg/ha **Select®** 500ml/ha **Uptake®** 0.5%

OP TT

2020 Hyola® CT IMI Residual Trials

Analysed Grain Yield Results

2020 Wallendbeen NSW – Hyola® CT IMI Residual Trial - Analysed Grain Yield Results



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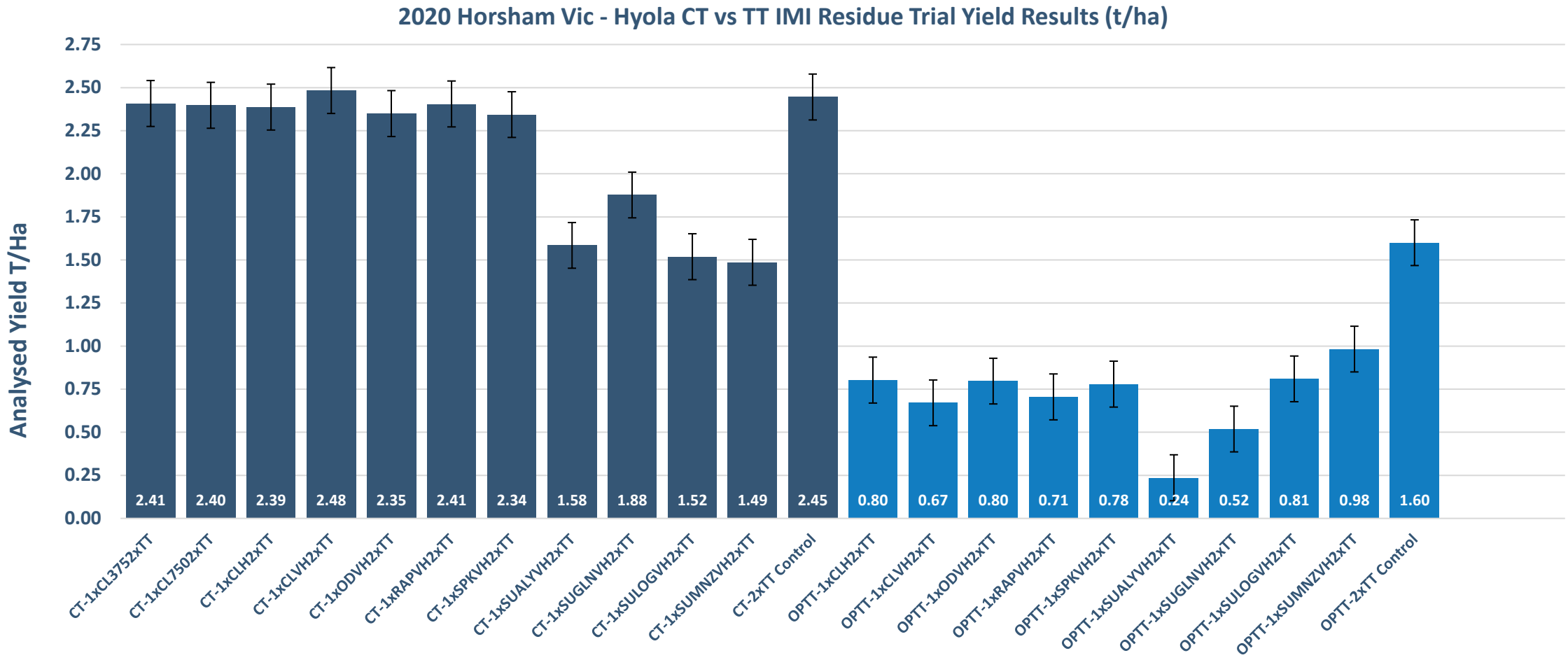
2020 Horsham Vic – Hyola® CT IMI Residual Trial - Analysed Grain Yield Results



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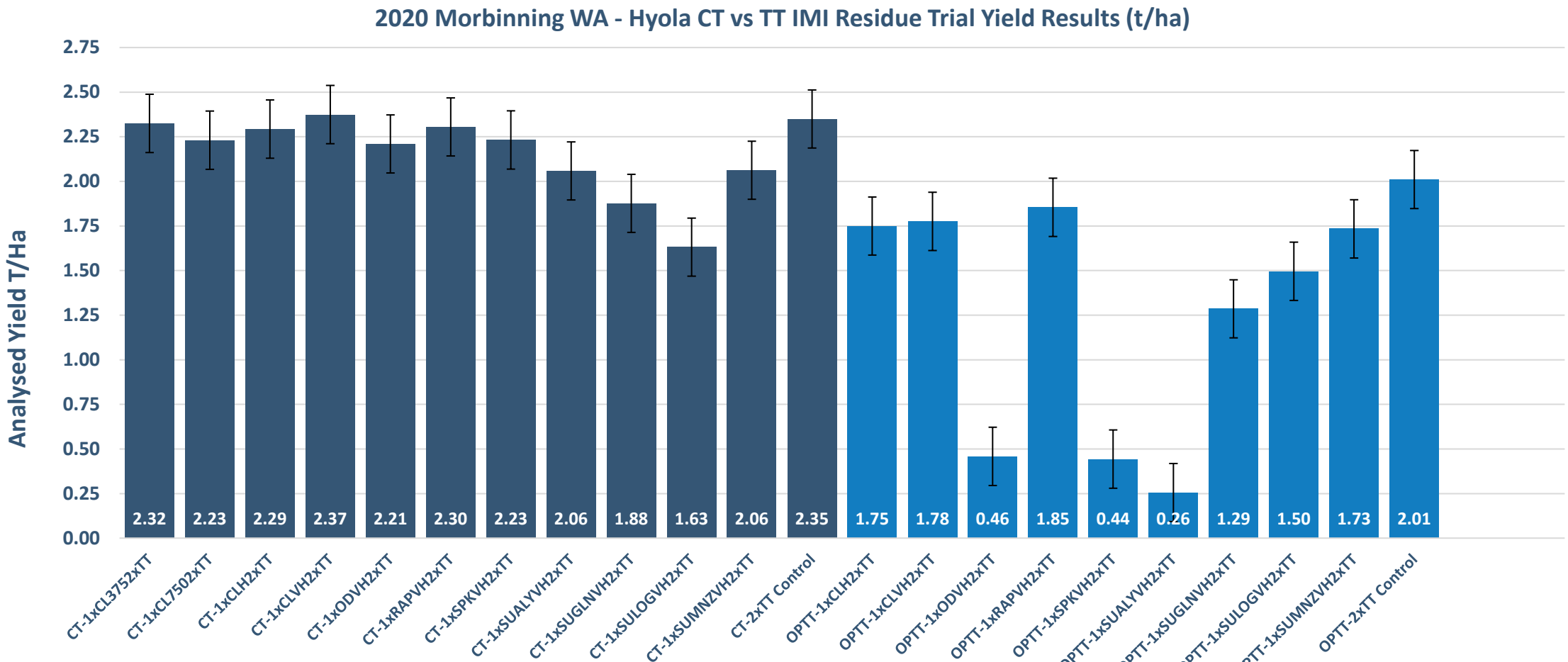
2020 Morbinning WA – Hyola® CT IMI Residual Trial - Analysed Grain Yield Results



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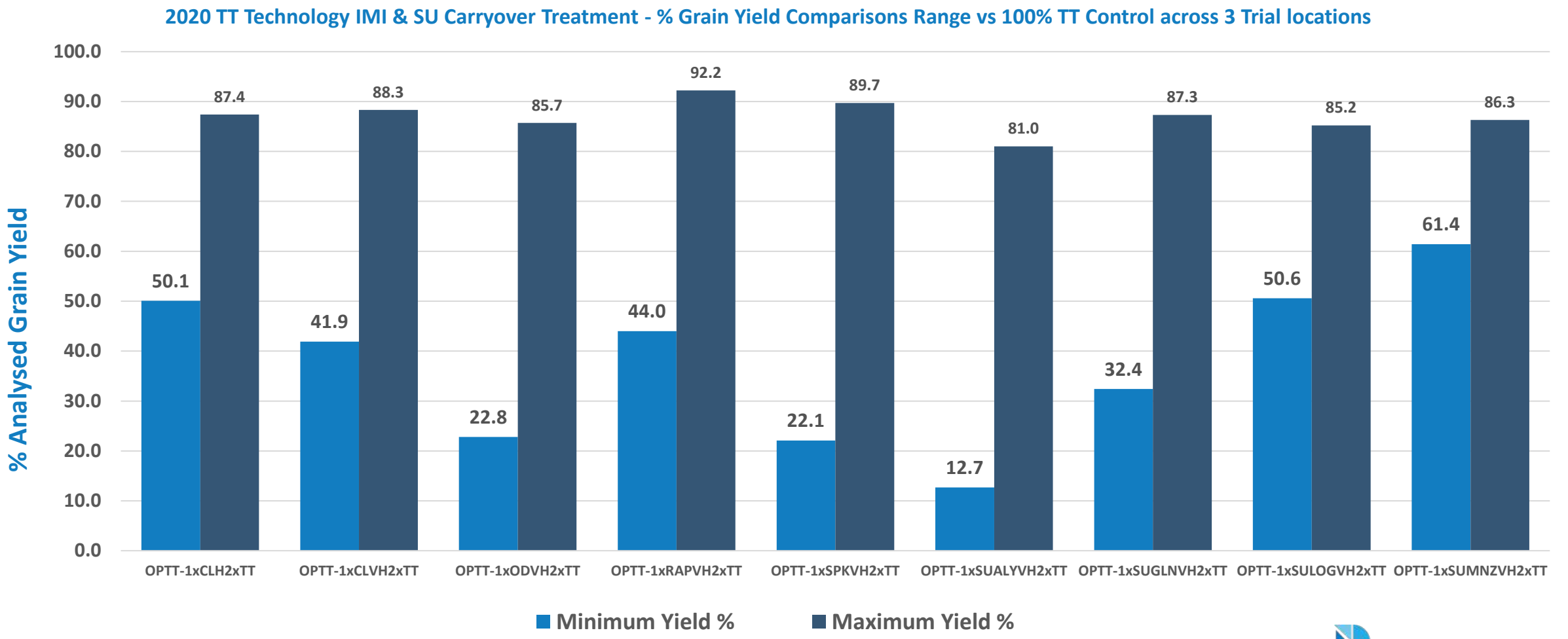
2020 Hyola® CT IMI Residue Trials – OP TT % Range of Grain Yield vs 100% TT Control



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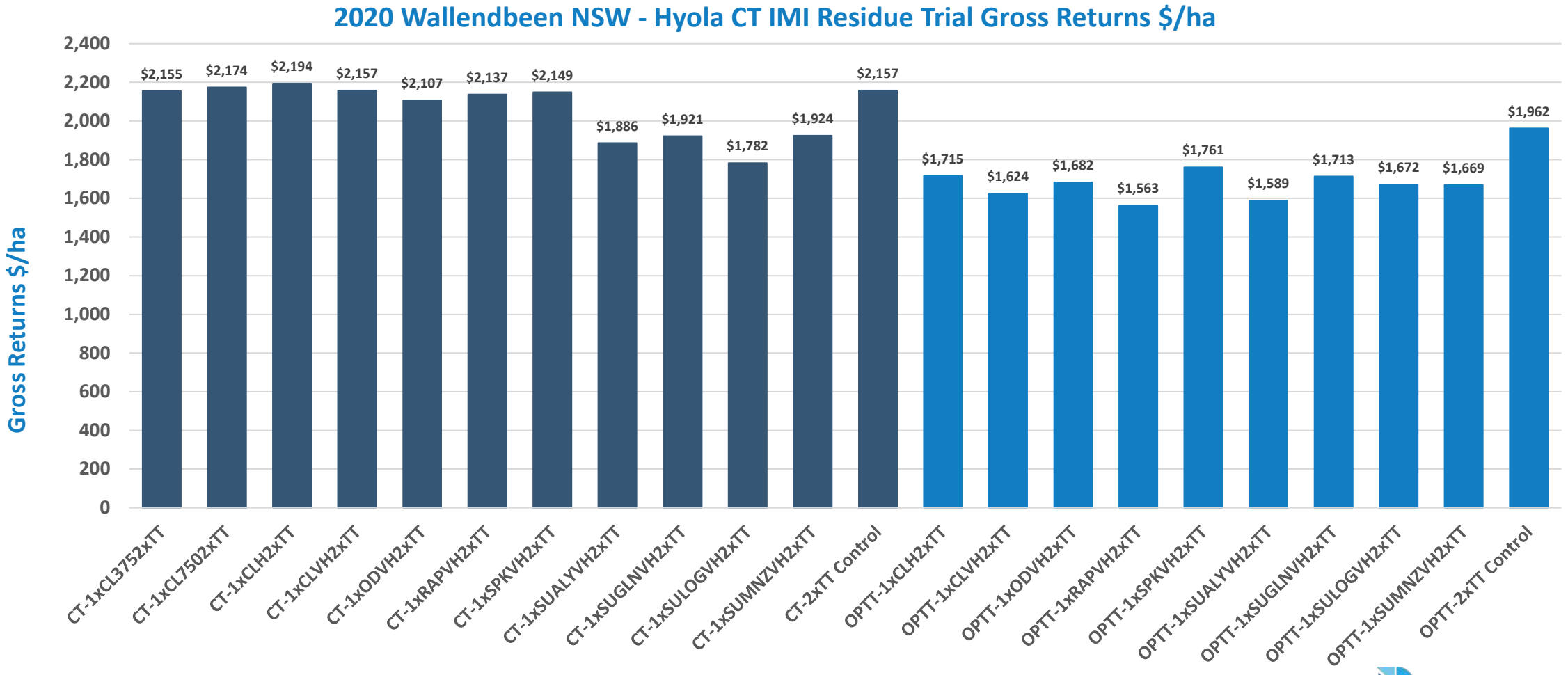
2020 Hyola® CT IMI Residue Trials

Gross Return $/ha Results (*based on Yield & Price only*)

2020 Wallendbeen NSW – Hyola® CT IMI Residual Trial Gross Return $/ha Results



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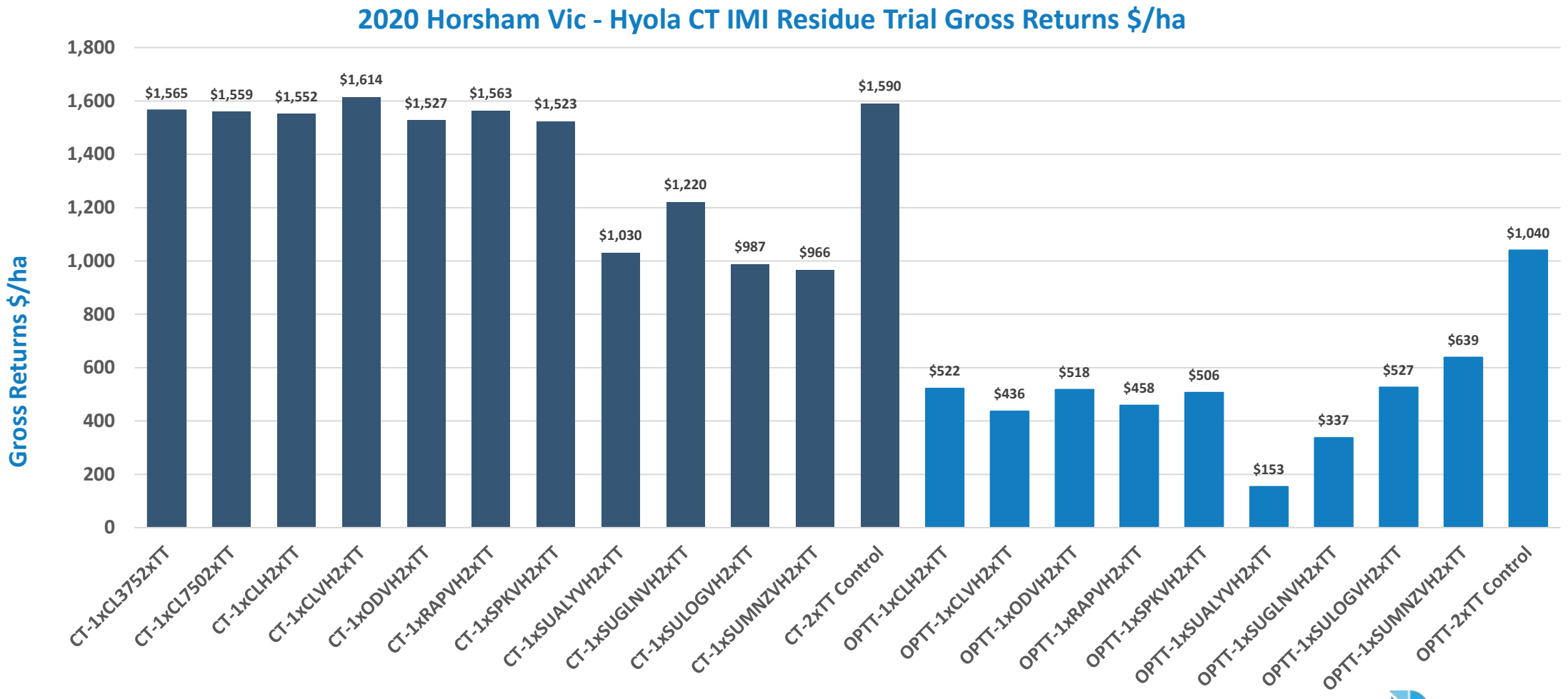
2020 Horsham Vic – Hyola® CT IMI Residual Trial Gross Return $/ha Results



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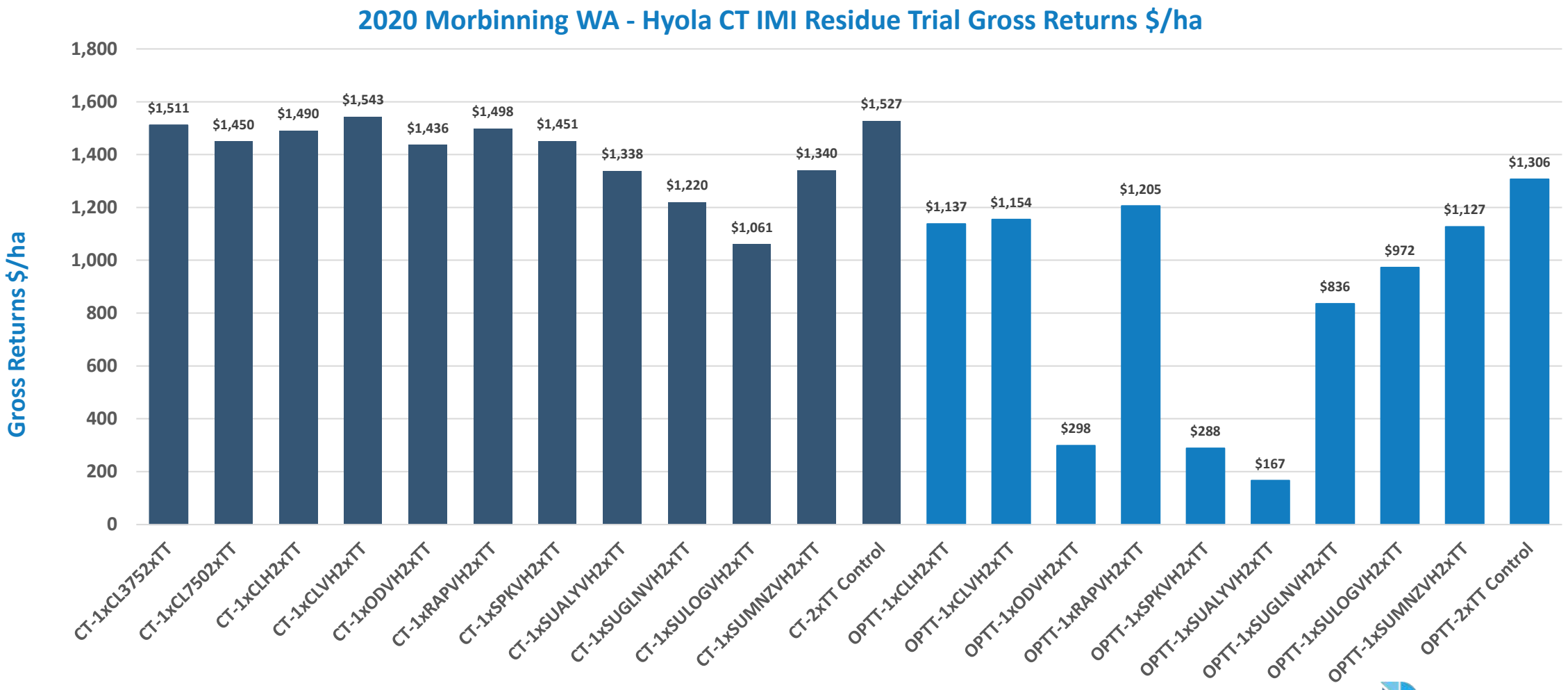
2020 Morbinning WA – Hyola® CT IMI Residual Trial Gross Return $/ha Results



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2020 Hyola® CT IMI Residue Trials

Overall Results

Data Tables

2020 Wallendbeen NSW – Hyola® CT IMI Residual Trial Overall Results Table

Herbicide Treatment	Herbicide Treatment Application Description	Yield t/ha	Yield t/ha vs CT Control	% Yield vs CT Control	$/ha Difference vs CT Control
HYOLA CT - CLEARFIELD + TRIAZINE TECHNOLOGY					
CT-1xCL3752xTT	2 * TT + Intervix 375ml/ha Control Treatment	3.32	0.00	100%	-$2
CT-1xCL7502xTT	2 * TT + Intervix 750ml/ha Control Treatment	3.34	0.02	101%	$17
CT-1xCLH2xTT	4 Month - High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	3.38	0.06	102%	$37
CT-1xCLVH2xTT	4 Month - Very High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	3.32	0.00	100%	$0
CT-1xODVH2xTT	4 Month - Imi Residues/TT spray regime - On Duty- 525g Imazapic - 175g Imazapyr	3.24	-0.08	98%	-$50
CT-1xRAPVH2xTT	4 Month - Imi Residues/TT spray regime - Raptor- 700 g Imazamox	3.29	-0.03	99%	-$20
CT-1xSPKVH2xTT	4 Month - Imi Residues/TT spray regime - Spinnaker - 700g - Imazathapyr	3.31	-0.01	100%	-$8
CT-1xSUALYVH2xTT	10 Days - SU Residues/Standard TT spray regime - Ally 600g Metsulfuron Methyl	2.90	-0.42	87%	-$271
CT-1xSUGLNVH2xTT	4 Month - SU Residues/Standard TT spray regime - Glean 750g chlorsulfuron	2.96	-0.36	89%	-$236
CT-1xSULOGVH2xTT	4 Month - SU Residues/Standard TT spray regime - Logran - 520g Triasulfuron + 200g Butafenacil	2.74	-0.58	83%	-$375
CT-1xSUMNZVH2xTT	4 Month -SU Residues/Standard TT spray regime - Monza - 750g Sulfosulfuron	2.96	-0.36	89%	-$233
CT-2xTT Control	2 * TT Control Treatment	3.32	0.00	100%	$2,157

Herbicide Treatment	Herbicide Treatment Application Description	Yield t/ha	Yield t/ha vs TT Control	% Yield vs TT Control	$/ha Difference vs TT Control
OP TT - TRIAZINE TECHNOLOGY					
OPTT-1xCLH2xTT	4 Month - High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	2.64	-0.38	87%	-$247
OPTT-1xCLVH2xTT	4 Month - Very High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	2.50	-0.52	83%	-$338
OPTT-1xODVH2xTT	4 Month - Imi Residues/TT spray regime - On Duty- 525g Imazapic - 175g Imazapyr	2.59	-0.43	86%	-$280
OPTT-1xRAPVH2xTT	4 Month - Imi Residues/TT spray regime - Raptor- 700 g Imazamox	2.40	-0.62	80%	-$399
OPTT-1xSPKVH2xTT	4 Month - Imi Residues/TT spray regime - Spinnaker - 700g - Imazathapyr	2.71	-0.31	90%	-$201
OPTT-1xSUALYVH2xTT	10 Days - SU Residues/Standard TT spray regime - Ally 600g Metsulfuron Methyl	2.45	-0.58	81%	-$373
OPTT-1xSUGLNVH2xTT	4 Month - SU Residues/Standard TT spray regime - Glean 750g chlorsulfuron	2.64	-0.38	87%	-$249
OPTT-1xSULOGVH2xTT	4 Month - SU Residues/Standard TT spray regime - Logran - 520g Triasulfuron + 200g Butafenacil	2.57	-0.45	85%	-$290
OPTT-1xSUMNZVH2xTT	4 Month - SU Residues/Standard TT spray regime - Monza - 750g Sulfosulfuron	2.57	-0.45	85%	-$293
OPTT-2xTT Control	2 * TT Control Treatment	3.02	0.00	100%	$0

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2020 Morbinning WA – Hyola® CT IMI Residual Trial Overall Results Table

Herbicide Treatment	Herbicide Treatment Application Description	Yield t/ha	Yield t/ha vs CT Control	% Yield vs CT Control	$/ha Difference vs CT Control
HYOLA CT - CLEARFIELD + TRIAZINE TECHNOLOGY					
CT-1xCL3752xTT	2 * TT + Intervix 375ml/ha Control Treatment	2.32	-0.03	99%	-$16
CT-1xCL7502xTT	2 * TT + Intervix 750ml/ha Control Treatment	2.23	-0.12	95%	-$77
CT-1xCLH2xTT	4 Month - High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	2.29	-0.06	98%	-$37
CT-1xCLVH2xTT	4 Month - Very High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	2.37	0.02	101%	$16
CT-1xODVH2xTT	4 Month - Imi Residues/TT spray regime - On Duty- 525g Imazapic - 175g Imazapyr	2.21	-0.14	94%	-$91
CT-1xRAPVH2xTT	4 Month - Imi Residues/TT spray regime - Raptor- 700 g Imazamox	2.30	-0.05	98%	-$29
CT-1xSPKVH2xTT	4 Month - Imi Residues/TT spray regime - Spinnaker - 700g - Imazathapyr	2.23	-0.12	95%	-$76
CT-1xSUALYVH2xTT	10 Days - SU Residues/Standard TT spray regime - Ally 600g Metsulfuron Methyl	2.06	-0.29	88%	-$189
CT-1xSUGLNVH2xTT	4 Month - SU Residues/Standard TT spray regime - Glean 750g chlorsulfuron	1.88	-0.47	80%	-$307
CT-1xSULOGVH2xTT	4 Month - SU Residues/Standard TT spray regime - Logran - 520g Triasulfuron + 200g Butafenacil	1.63	-0.72	69%	-$466
CT-1xSUMNZVH2xTT	4 Month -SU Residues/Standard TT spray regime - Monza - 750g Sulfosulfuron	2.06	-0.29	88%	-$187
CT-2xTT Control	2 * TT Control Treatment	2.35	0.00	100%	$0

Herbicide Treatment	Herbicide Treatment Application Description	Yield t/ha	Yield t/ha vs TT Control	% Yield vs TT Control	$/ha Difference vs TT Control
OP TT - TRIAZINE TECHNOLOGY					
OPTT-1xCLH2xTT	4 Month - High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	1.75	-0.26	87%	-$169
OPTT-1xCLVH2xTT	4 Month - Very High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	1.78	-0.23	88%	-$152
OPTT-1xODVH2xTT	4 Month - Imi Residues/TT spray regime - On Duty- 525g Imazapic - 175g Imazapyr	0.46	-1.55	23%	-$1,008
OPTT-1xRAPVH2xTT	4 Month - Imi Residues/TT spray regime - Raptor- 700 g Imazamox	1.85	-0.16	92%	-$101
OPTT-1xSPKVH2xTT	4 Month - Imi Residues/TT spray regime - Spinnaker - 700g - Imazathapyr	0.44	-1.57	22%	-$1,018
OPTT-1xSUALYVH2xTT	10 Days - SU Residues/Standard TT spray regime - Ally 600g Metsulfuron Methyl	0.26	-1.75	13%	-$1,140
OPTT-1xSUGLNVH2xTT	4 Month - SU Residues/Standard TT spray regime - Glean 750g chlorsulfuron	1.29	-0.72	64%	-$471
OPTT-1xSULOGVH2xTT	4 Month - SU Residues/Standard TT spray regime - Logran - 520g Triasulfuron + 200g Butafenacil	1.50	-0.51	74%	-$334
OPTT-1xSUMNZVH2xTT	4 Month - SU Residues/Standard TT spray regime - Monza - 750g Sulfosulfuron	1.73	-0.28	86%	-$180
OPTT-2xTT Control	2 * TT Control Treatment	2.01	0.00	100%	$0

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2020 Horsham Vic – Hyola® CT IMI Residual Trial Overall Results Table

Herbicide Treatment	Herbicide Treatment Application Description	Yield t/ha	Yield t/ha vs CT Control	% Yield vs CT Control	$/ha Difference vs CT Control
HYOLA CT - CLEARFIELD + TRIAZINE TECHNOLOGY					
CT-1xCL3752xTT	2 * TT + Intervix 375ml/ha Control Treatment	2.41	-0.04	98%	-$25
CT-1xCL7502xTT	2 * TT + Intervix 750ml/ha Control Treatment	2.40	-0.05	98%	-$31
CT-1xCLH2xTT	4 Month - High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	2.39	-0.06	98%	-$38
CT-1xCLVH2xTT	4 Month - Very High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	2.48	0.04	102%	$24
CT-1xODVH2xTT	4 Month - Imi Residues/TT spray regime - On Duty- 525g Imazapic - 175g Imazapyr	2.35	-0.10	96%	-$63
CT-1xRAPVH2xTT	4 Month - Imi Residues/TT spray regime - Raptor- 700 g Imazamox	2.41	-0.04	98%	-$26
CT-1xSPKVH2xTT	4 Month - Imi Residues/TT spray regime - Spinnaker - 700g - Imazathapyr	2.34	-0.10	96%	-$67
CT-1xSUALYVH2xTT	10 Days - SU Residues/Standard TT spray regime - Ally 600g Metsulfuron Methyl	1.58	-0.86	65%	-$560
CT-1xSUGLNVH2xTT	4 Month - SU Residues/Standard TT spray regime - Glean 750g chlorsulfuron	1.88	-0.57	77%	-$370
CT-1xSULOGVH2xTT	4 Month - SU Residues/Standard TT spray regime - Logran - 520g Triasulfuron + 200g Butafenacil	1.52	-0.93	62%	-$603
CT-1xSUMNZVH2xTT	4 Month -SU Residues/Standard TT spray regime - Monza - 750g Sulfosulfuron	1.49	-0.96	61%	-$624
CT-2xTT Control	2 * TT Control Treatment	2.45	0.00	100%	$0

Herbicide Treatment	Herbicide Treatment Application Description	Yield t/ha	Yield t/ha vs TT Control	% Yield vs TT Control	$/ha Difference vs TT Control
OP TT - TRIAZINE TECHNOLOGY					
OPTT-1xCLH2xTT	4 Month - High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	0.80	-0.80	50%	-$518
OPTT-1xCLVH2xTT	4 Month - Very High Imi Residues Rate Response/TT spray regime - Intervix - 33g Imazamox - 15g Imazapyr	0.67	-0.93	42%	-$604
OPTT-1xODVH2xTT	4 Month - Imi Residues/TT spray regime - On Duty- 525g Imazapic - 175g Imazapyr	0.80	-0.80	50%	-$522
OPTT-1xRAPVH2xTT	4 Month - Imi Residues/TT spray regime - Raptor- 700 g Imazamox	0.71	-0.89	44%	-$582
OPTT-1xSPKVH2xTT	4 Month - Imi Residues/TT spray regime - Spinnaker - 700g - Imazathapyr	0.78	-0.82	49%	-$534
OPTT-1xSUALYVH2xTT	10 Days - SU Residues/Standard TT spray regime - Ally 600g Metsulfuron Methyl	0.24	-1.36	15%	-$887
OPTT-1xSUGLNVH2xTT	4 Month - SU Residues/Standard TT spray regime - Glean 750g chlorsulfuron	0.52	-1.08	32%	-$703
OPTT-1xSULOGVH2xTT	4 Month - SU Residues/Standard TT spray regime - Logran - 520g Triasulfuron + 200g Butafenacil	0.81	-0.79	51%	-$514
OPTT-1xSUMNZVH2xTT	4 Month - SU Residues/Standard TT spray regime - Monza - 750g Sulfosulfuron	0.98	-0.62	61%	-$401
OPTT-2xTT Control	2 * TT Control Treatment	1.60	0.00	100%	$0

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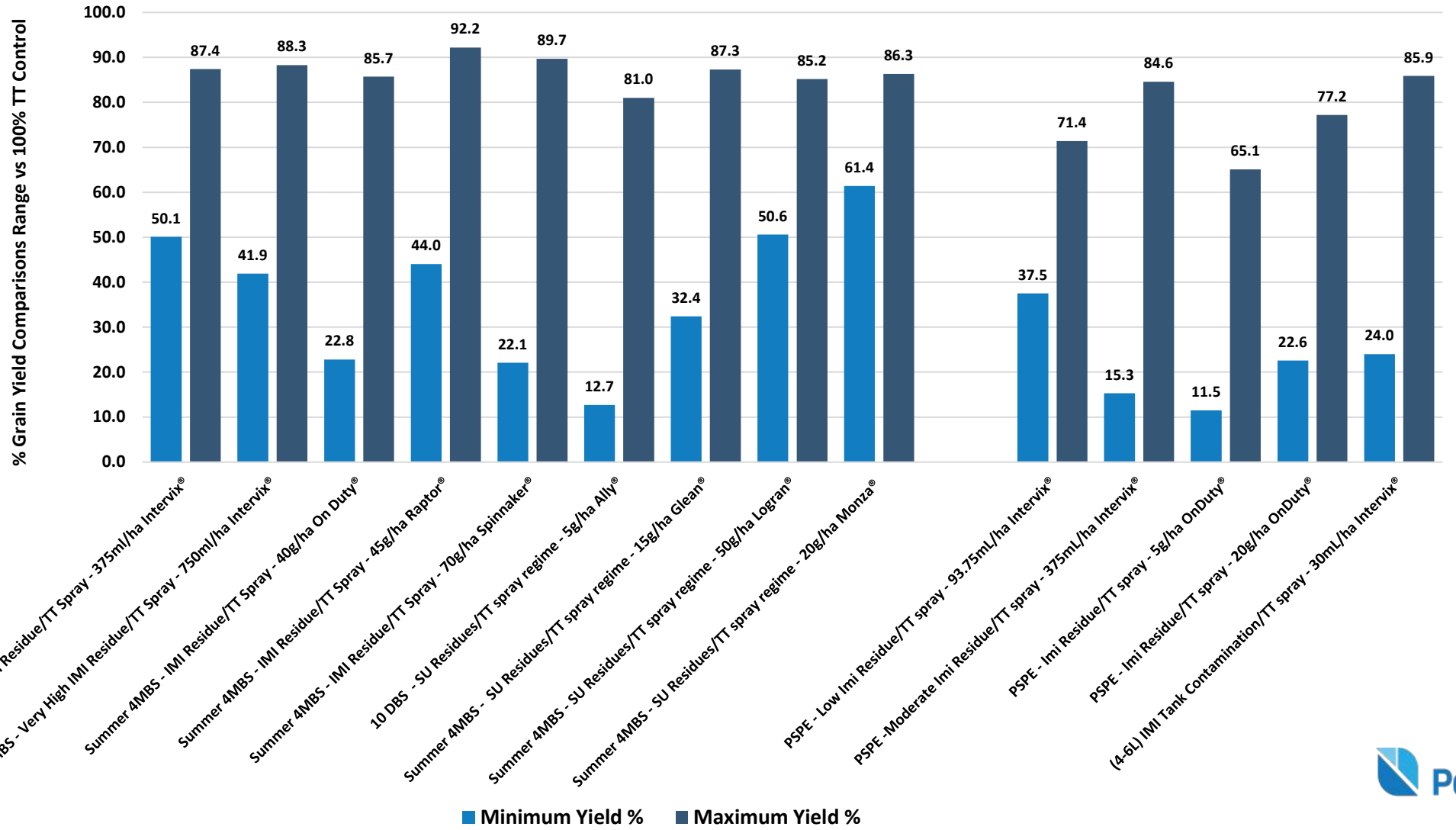
2020 Summer Applications (3 Trials) vs 2019 PSPE Applications (5 Trials)
Triazine Technology IMI & SU Treatment Comparisons



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Thank You