NEW

TECHNOTE 2020

CANOLA

HYOLA GARRISON XC

XX CL TRUFLEX® + CLEARFIELD®

TruFlex® CANOLA with Roundup Ready® Technology

Clearfield® Production System

High yielding TruFlex® + Clearfield® hybrid protecting growers' investment & returns

HYBRID ATTRIBUTES

XC technology shows up to $750/ha value in crop protection from group B IMI soil residue (*PSPE application timing)

Excellent crop protection for group B IMI soil residue management as an enhanced risk mitigation tool after low rainfall summer dry profiles

High grain yields and oil% with very competitive gross returns in $/ha across Australian environments v hybrids Xseed Raptor, 44Y27, GT53, InVigor R5520P, InVigor R3520 and DG408RR

High quantitative resistance with a blackleg rating of "R" with quad-gene groups ABDF, great for rotating effective combinations of major genes

Good lodging resistance, even flowering and manageable height for direct harvesting

Yield adaptability	1.0 - 3.5t/ha
Blackleg rating	R
Blackleg groups	ABDF (p)
Oil potential	High
Herbicide tolerance	XX + CL
Maturity	Mid - Early
Plant vigour	8.5
Plant height	Medium - High
#Lodging resistance	8
**Shatter tolerance	8
^Hectolitre weight	8
Growing regions	NSW, SA⁺, Vic, WA
Irrigation/dryland	Both
Alternatives to	Xseed Raptor, InVigor 4022P, 44Y27, GT53, InVigor R5520P, InVigor R3520, DG408RR

+ means only if approved for commercial release in 2021 by SA government regulations.
(P) Indicates provisional rating and blackleg groups from Pacific Seeds blackleg nurseries and R gene screening
# Indicates observed visual rating from Pacific Seeds R&D internal replicated research trial evaluations
*Indicates observed visual rating from Pacific Seeds R&D internal replicated research trial evaluations
**Indicates observed visual rating from Pacific Seeds R&D replicated research trial evaluations comparing Hyola products
^ Indicates calculated weight rating from Pacific Seeds R&D internal replicated research trial evaluations
Scale: 1 = poor - 9 = best

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2019 IMI Residue Research Trials showed up to $750 per Ha Crop Protection

XX Technology with High IMI Soil Carryover

XC Technology with High IMI Soil Carryover

Compared to XC Technology	Summary of Treatment Results (XX 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 Yielding Trial Sites		
PSPE Low IMI Residue/XX spray - 93.75mL/ha Intervix®	50 - 620	14.0 - 15.4	34 - 347
PSPE High IMI Residue/XX spray - 375mL/ha Intervix®	110 - 1080	22.6 - 26.7	61 - 602
PSPE IMI Residue/XX spray - 5g/ha OnDuty®	150 - 730	18.1 - 39.5	85 - 405
PSPE IMI Residue/XX spray - 20g/ha OnDuty®	260 - 1420	60.5 - 97.0	141 - 770
(4-6L) IMI Tank Contamination/XX spray - 30mL/ha Intervix®	140 - 350	8.70 - 32.6	76 - 198

2019 Pacific Seeds Hyola XC Replicated IMI Residue Trials over 4 locations across Australia where Trial mean yields ranged from 0.26 – 3.70t/ha

*Effects are greater in soil types where the herbicides were more mobile due to acid soils and higher rainfall after sowing. Hyola® XC 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® XC Stewardship guide for specific growing guidelines.
Clearfield®, Intervix® and OnDuty® are registered trademarks of BASF.

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Hyola XC IMI Residue and Tank Contamination - Herbicide Treatment Comparisons

Hyola® 540XC

Low IMI Residue	Mod IMI Residue	Low OnDuty® Residue	High OnDuty® Residue	Low Glean® Residue	High Glean® Residue	Low IMI Contamination	Low Glean® Contamination	Standard XX Control
Stage: IBS **Rustler®** 1L/ha *Stage:* PSPE **Intervix®** 93mL/ha *Stage:* Post Em (4-6Leaf) **RR** 1.3Kg/ha *Stage:* 1st Flower **RR** 1.3Kg/ha	*Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **Intervix®** 375mL/ha *Stage:* Post Em (4-6Leaf) **RR** 1.3Kg/ha *Stage:* 1st Flower **RR** 1.3Kg/ha	*Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **OnDuty®** 5g/ha *Stage:* Post Em (4-6Leaf) **RR** 1.3Kg/ha *Stage:* 1st Flower **RR** 1.3Kg/ha	*Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **OnDuty®** 20g/ha *Stage:* Post Em (4-6Leaf) **RR** 1.3Kg/ha *Stage:* 1st Flower **RR** 1.3Kg/ha	*Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **Glean®** 2.5g/ha *Stage:* Post Em (4-6Leaf) **RR** 1.3Kg/ha *Stage:* 1st Flower **RR** 1.3Kg/ha	*Stage:* IBS **Rustler®** 1L/ha *Stage:* PSPE **Glean®** 10g/ha *Stage:* Post Em (4-6Leaf) **RR** 1.3Kg/ha *Stage:* 1st Flower **RR** 1.3Kg/ha	*Stage:* IBS **Rustler®** 1L/ha *Stage:* Post Em (4-6Leaf) **Intervix®** 30ml/ha **RR** 1.3Kg/ha *Stage:* 1st Flower **RR** 1.3Kg/ha	*Stage:* IBS **Rustler®** 1L/ha *Stage:* Post Em (4-6Leaf) **Glean®** 1g/ha **RR** 1.3Kg/ha *Stage:* 1st Flower **RR** 1.3Kg/ha	*Stage:* IBS **Rustler®** 1L/ha *Stage:* Post Em (4-6Leaf) **RR** 1.3Kg/ha *Stage:* 1st Flower **RR** 1.3Kg/ha

Hyola® 410XX

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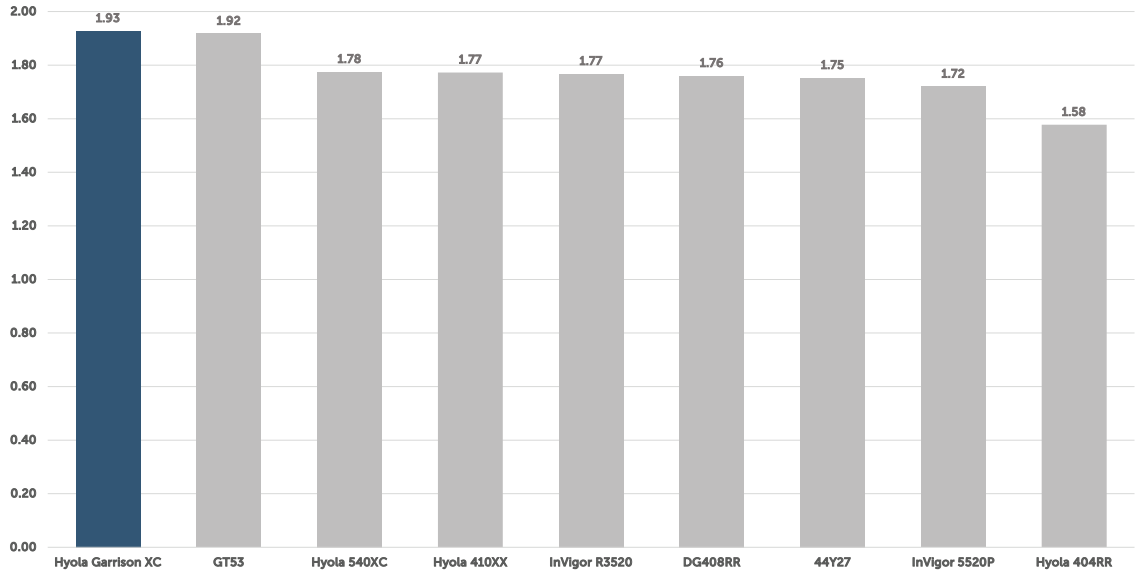
2019 Pacific Seeds National Research GM Trials - Mean Analysed Yield (t/ha)



2019 Pacific Seeds Breeding Research GM Trials - Mean Analysed Yield (t/ha) over 10 Sites where all varieties where common.

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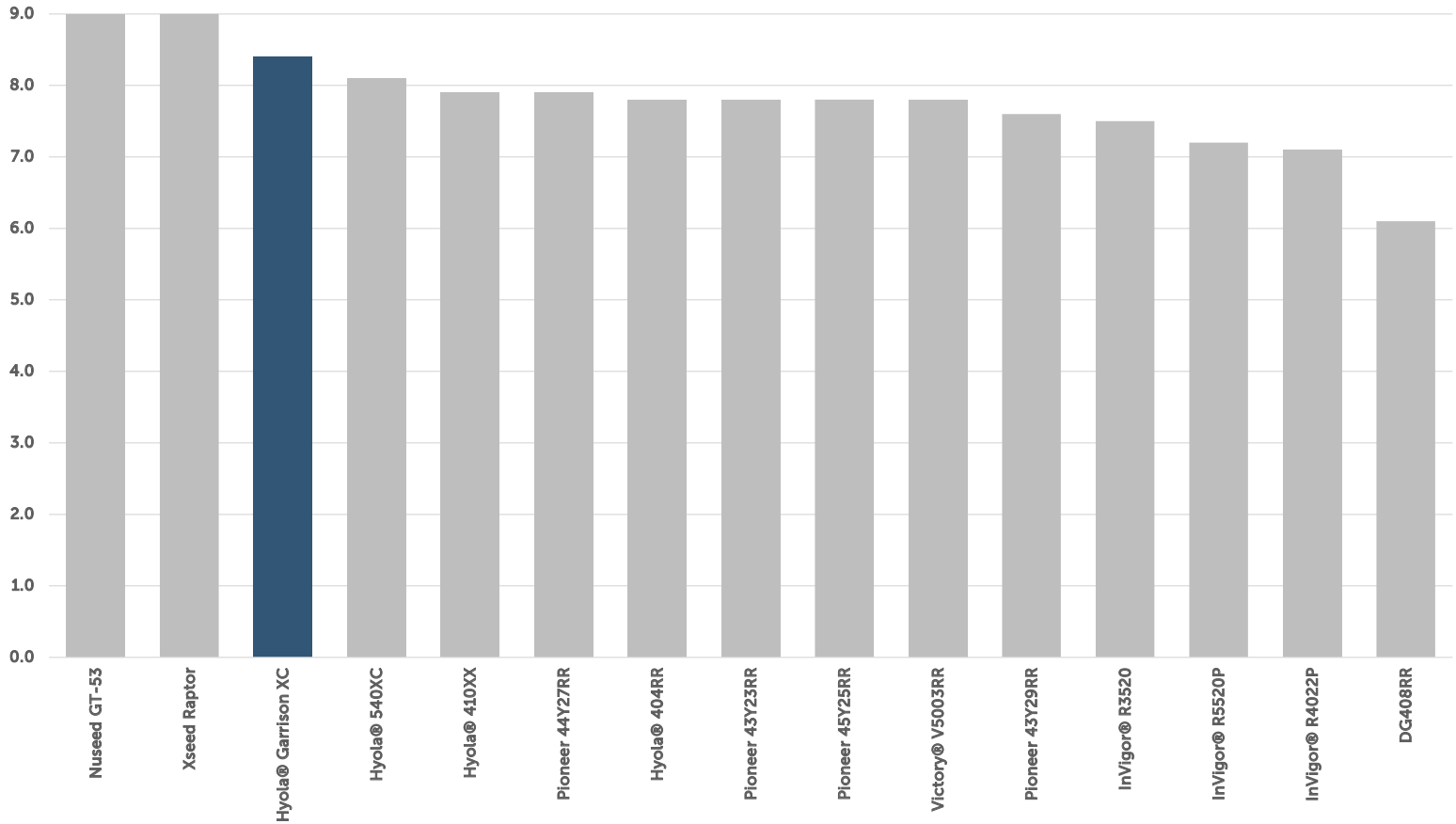
Hyola XC Technology hybrids exhibit Official high ratings of "R" for Blackleg Resistance



Value	Rating
8->	R
7.5-7.9	R-MR
6.5-7.49	MR
6-6.49	MR-MS
5-5.9	MS
4-4.9	MS-S
3-3.9	S
2-2.9	S-VS
0-1.9	VS

2020 Official GRDC Autumn Blackleg Ratings (bare seed comparison based on analysed values)

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HYOLA XC - CROP INVESTMENT PROTECTION BENEFITS TO GROWERS

Hyola® XC is technology is the latest in flexibility of spray timing with both quick knock down and extended residual protection available using key chemical groups that growers need, Hyola® XC technology has become a vital part in IWM soil residual carryover canola toolboxes and provide growers with inbuilt crop and investment protection.

Mixing and rotating herbicide actives in crop is now the most valuable tool in resistance management when compared to rotating over successive seasons with individual chemistries.

Visit: www.crop.bayer.com.au/tools-and-services/mix-it-up/ for more details.

Photo: Hyola 410XX (L) vs Hyola XC Technology (R), both with 93ml/ha simulated IMI chemistry soil carryover in 2019 agronomy extension trials (PSPE Application timing).

SOIL RESIDUAL FACTORS

Hyola XC technology can be used to overcome plantback constraints often associated with the use of Imidazolinone herbicides, particularly in low rainfall environments and/or on soils of lower pH.

Sulfonylurea (SU), imidazolinone (IMI) or triazine herbicides are likely to cause the most concern, and residues, from the previous season may affect crop emergence or even kill sensitive crops or crop cultivars in the next season.

The soil pH will have an impact on which herbicides are more likely to persist. All other things being equal, imidazolinones will be more persistent on acid soils and sulphonyl ureas on alkaline soils.

Source: https://www.agric.wa.gov.au/grains-research-development/

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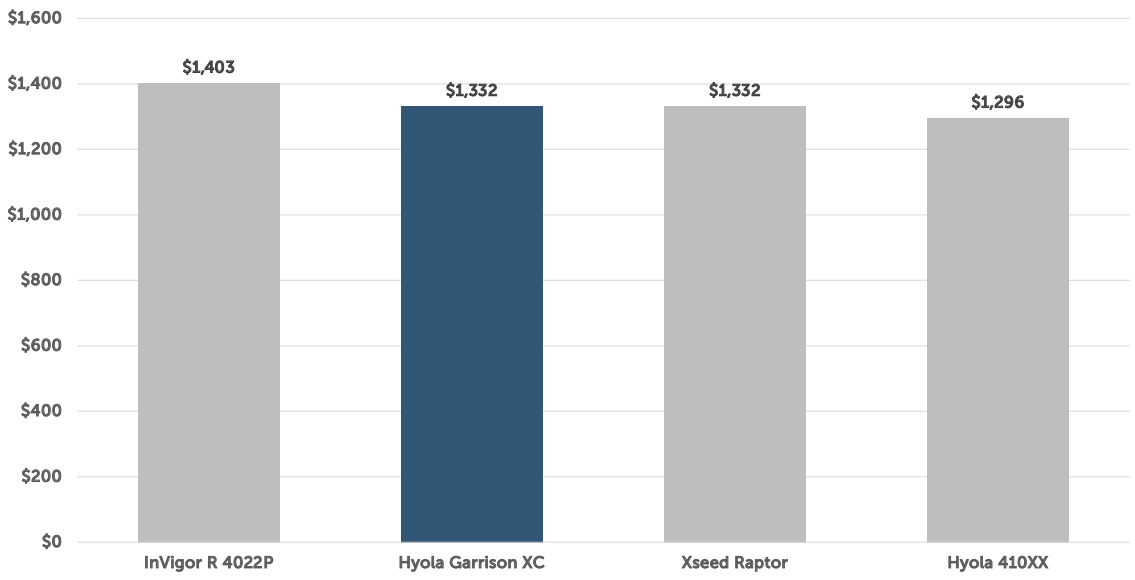
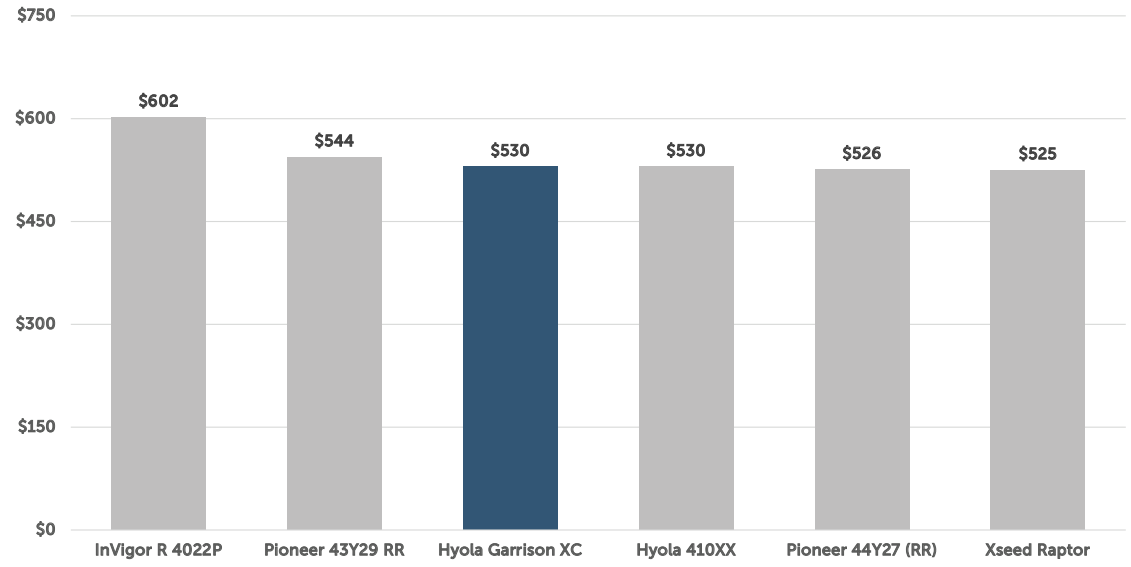
2019 National GRDC NVT Mid GM Trials - Gross Returns ($/ha)
Mean Trial Site Yields (>1.50 to <3.21 t/ha)



2019 GRDC NVT Mid & Early GM Trials over 16 locations where all TruFlex® varieties are common and where site mean yields are >1.50t/ha to 3.21t/ha. Gross returns $/ha based on Mean Analysed Yield (t/ha) * $550/MT including Oil% bonuses or deductions.

2019 National GRDC NVT Early GM Trials - Gross Returns ($/ha)
Mean Trial Site Yields < 1.21/ha



2019 GRDC NVT Mid & Early GM Trials over 7 locations where all varieties are common where site mean yields are all less than 1.21t/ha. Trial Site locations included Wunghnu Vic, Diggora Vic, Merredin WA, Buntine WA, Cunderdin WA, Yuna WA, Calingiri WA. Gross returns $/ha based on Analysed Mean Yield (t/ha) * $550/MT including Oil% bonuses or deductions.

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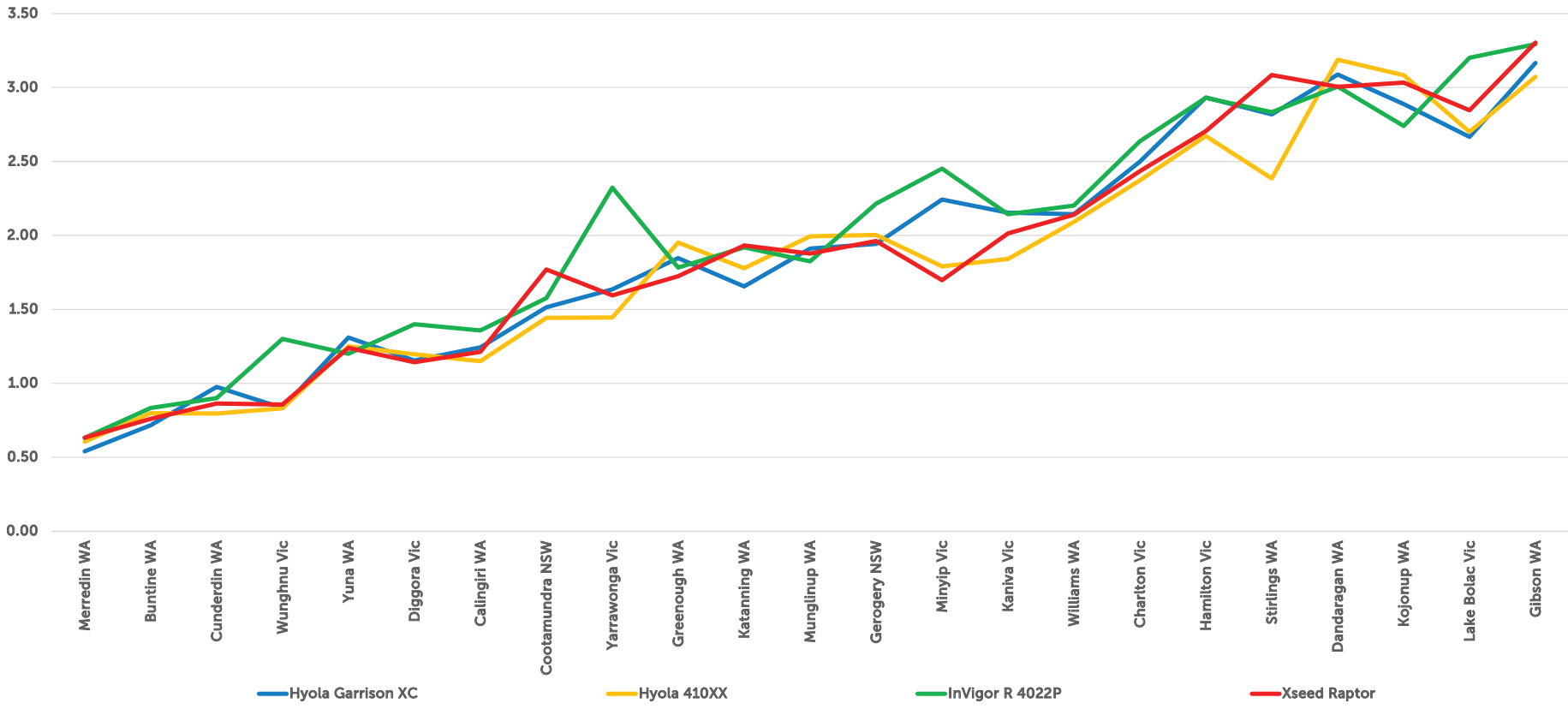
2019 GRDC NVT GM Trials - Hyola Garrison XC Performance - Mean Analysed Yield (t/ha) - Low to High Yield Environments



2019 GRDC NVT Mid and Early GM Trials over 24 locations using published analysed mean yields (t/ha) where all TruFlex® varieties are common.

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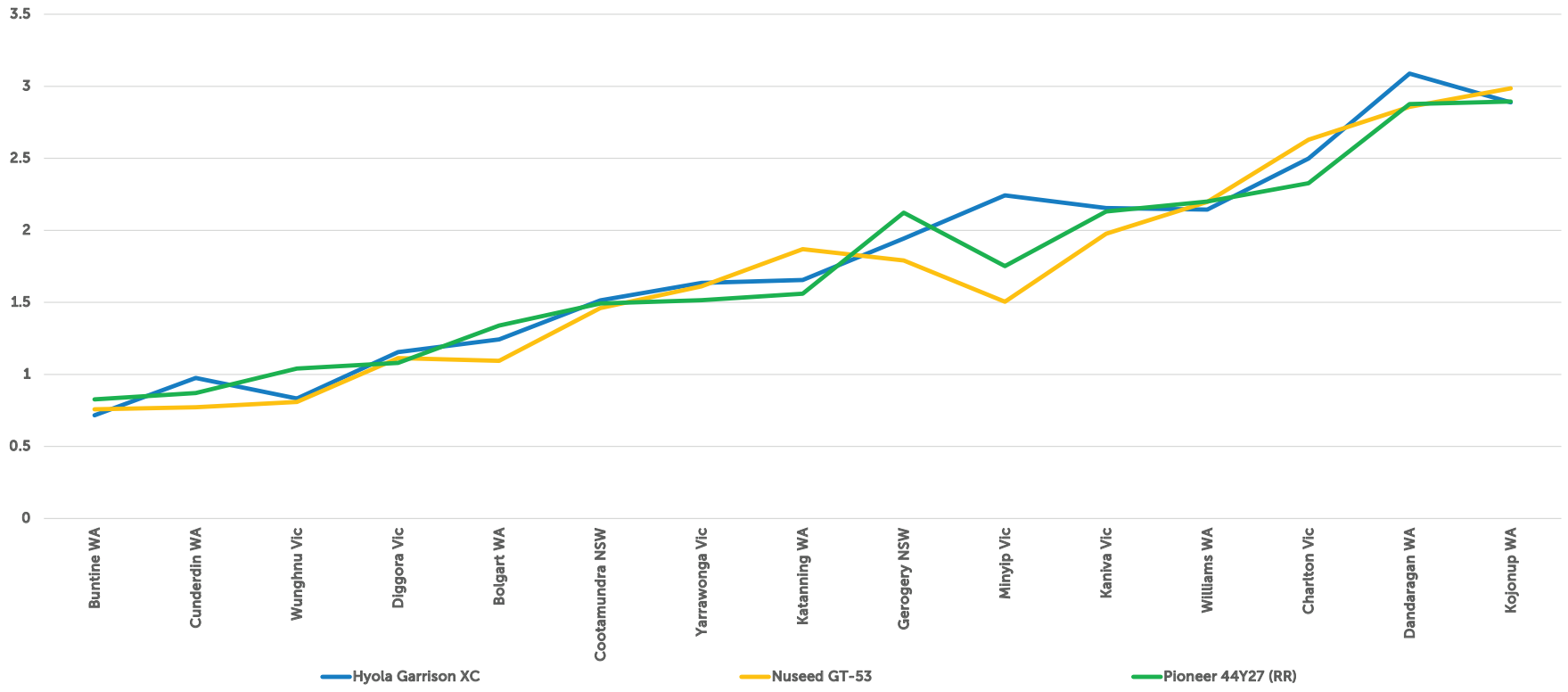
2019 GRDC NVT GM Trials - Hyola Garrison XC Performance - Mean Analysed Yield (t/ha) - Low to High Yield Environments



2019 GRDC NVT Mid and Early GM Trials over 15 locations using published analysed mean yields (t/ha) where all 3 hybrid varieties are common

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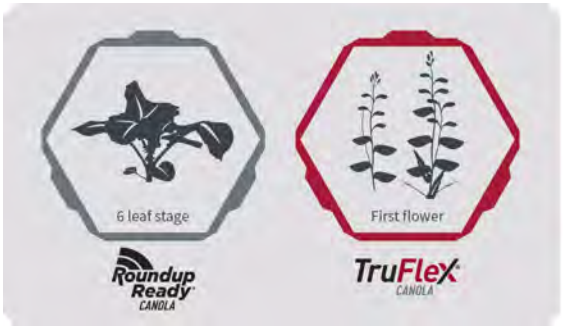
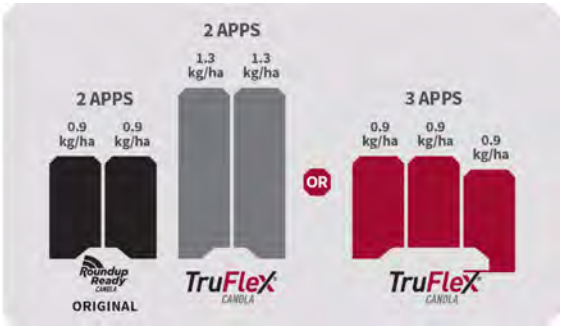
HYOLA XC - **GROWER** BENEFITS OF TRUFLEX TECHNOLOGY

EXTENDED SPRAY WINDOW EMERGENCE TO FIRST FLOWER



The window of application for Roundup Ready Herbicide with PLANTSHIELD by Monsanto will extend past the six-leaf stage all the way to first flower.

THE RATE FARMERS NEED FOR THEIR WEED CHALLENGES*



* Of Roundup Ready Herbicide with PLANTSHIELD by Monsanto.
* Either apply three applications at 0.9 kg/ha or apply two applications of 1.3 kg/ha of Roundup Ready Herbicide with PLANTSHIELD by Monsanto.

One of the smartest routes to high yield potential is through effective weed control.ol Here's how TruFlex® canola with Roundup Ready® Technology can help make it happen:

WEED CONTROL GROWERS CAN RELY ON

TruFlex® canola with Roundup Ready® Technology and Roundup Ready® Herbicide with PLANTSHIELD® by Monsanto were designed to work with each other. This combination provides you with the tools you need to effectively control weeds in your canola fields.

FLEXIBILITY IN SPRAY RATES AND TIMING

TruFlex canola gives you increased weed control flexibility. The window of application for Roundup Ready Herbicide with PLANTSHIELD by Monsanto will extend past the six-leaf stage to first flower. From emergence to first flower either apply three applications at the current rate of 0.9 kg/ha or apply two higher rates of 1.3 kg/ha.

SUPERIOR YIELD POTENTIAL

New advances in trait technology will help enable better weed control and crop safety compared to Roundup Ready® canola. It's a combination that could give you the opportunity to see a lot more yield potential at harvest time.

TruFlex® CANOLA with Roundup Ready® Technology

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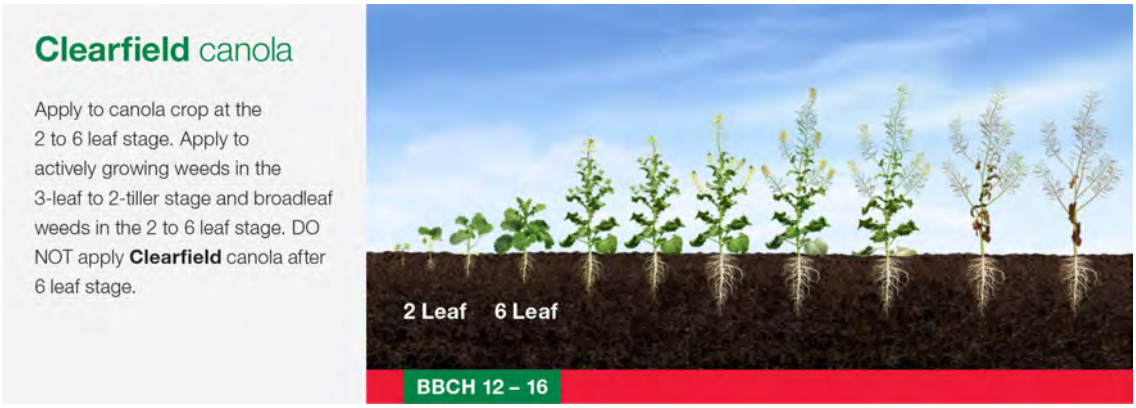
HYOLA XC - CLEARFIELD HERBICIDE CHEMISTRY MANAGEMENT

When utalising the XC technology, a sound IWM strategy utilizing alternative modes of action across pre-emergent, post emergent and fallow application in different crops should be adopted.

Also, the ongoing strategy should consider non-herbicide control measures such as harvest weed seed control (chaff carts, seed destructors, narrow windrow burn, chaff lining, Chaff baling etc.).



To preserve the effectiveness of any herbicide a good resistance management approach is recommended. Intervix herbicide is a Group B herbicide. Other group B (ALS inhibitors) include sulfonylureas, and triazolopyrimidines (sulphonamides). To assist with resistance management, rotate Clearfield winter crops with spring crops to break the cycle of winter annual weeds and allow the use of alternate site of action herbicides.

If winter cropping is rotated with a fallow season, control weeds before they set seed and use alternate mode of action herbicides. ALS-inhibiting herbicides should not be used more than 2 out of 4 years.

This aligns well with the industry WEEDSMART's "The Big 6" basis for an IWM program (https://weedsmart.org.au/the big-6/), which can be summarized as followed:

1. ROTATE CROPS AND PASTURES
2. DOUBLE KNOCK – TO PRESERVE GLYPHOSATE
3. MIX AND ROTATE HERBICIDES
4. STOP WEED SEED SET
5. CROP COMPETITION
6. HARVEST WEED SEED CONTROL

BASF We create chemistry | Clearfield Production System

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