



Product Use Guide



Canola Hybrids with the Optimum GLY® Herbicide Tolerance Trait

Introduction

Canola hybrids with the Optimum GLY® herbicide tolerance trait contain a new glyphosate-tolerant technology developed by Vylor. The Optimum GLY herbicide tolerance trait offers growers improved crop safety, enhanced weed control, and a later application window to help maximise yield potential.

This Product Use Guide sets forth the requirements and guidelines for the use of Optimum GLY herbicide tolerance hybrids. This guide is not a product label. Read and follow label directions for the agricultural products you are using.

Please contact your local seed company with any questions, or for information on the trait, visit Vylor at www.vylor.com

Technology User Agreement

Growers planting canola hybrids containing the Optimum GLY herbicide tolerance trait enter into a Vylor Technology Use Agreement (TUA), which licenses the grower to use the Optimum GLY herbicide tolerance trait technology. This agreement outlines the terms and conditions upon which the technology shall be used, including the stewardship obligations.

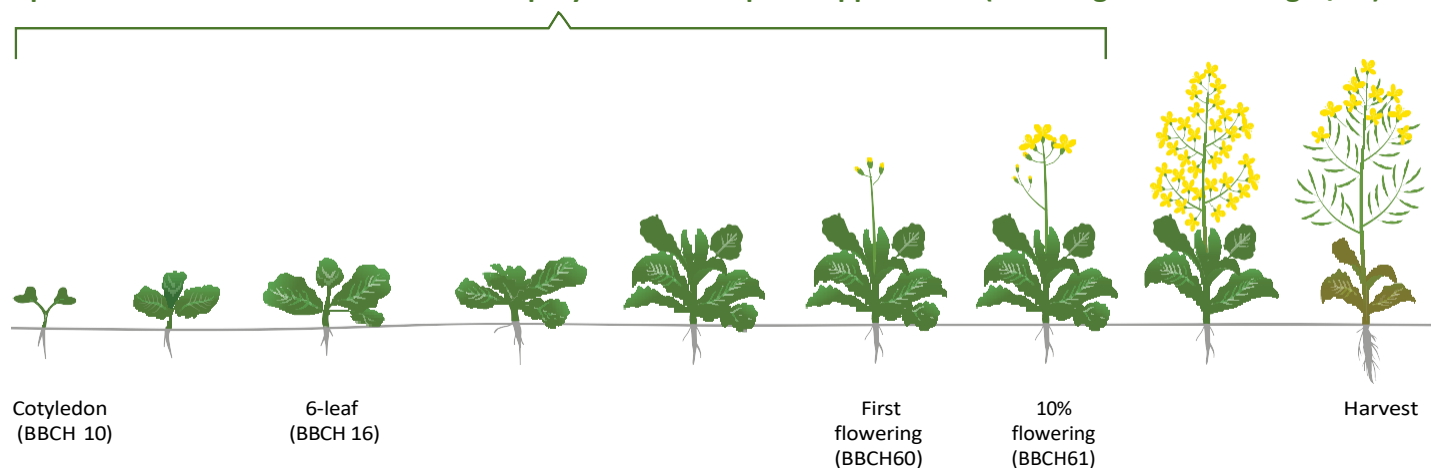
The agreement only needs to be completed once. Growers are asked to provide their contact details so Vylor can inform them if there are any changes to the approved use of the technology or the agreement

Permitted use of Optimum GLY herbicide tolerance trait technology

Canola hybrids containing the Optimum GLY herbicide tolerance trait can be sprayed with glyphosate products labelled for Optimum GLY hybrids in-crop, from emergence through to 10% flowering stage (BBCH61, Figure 1). Optimum GLY herbicide tolerance trait hybrids can have up to 3 glyphosate applications in accordance with the label of the registered herbicide product.

Figure 1: Optimum GLY herbicide tolerance trait spray window

Optimum GLY® herbicide tolerance trait Spray Window – Up to 3 applications (rate range of 621-1080 g ai/ha)



Stewardship of the Optimum GLY herbicide tolerance trait

At Vylor, product stewardship means responsible management of a product through its entire life cycle. This helps to enhance the longevity of the technology, delivering maximum benefits and value to end users, whilst also having minimal impact on the environment and trade. It is imperative that growers comply with regulations, Vylor policies and crop management strategies for hybrids containing the Optimum GLY® herbicide tolerance trait. For growers, responsible management of the trait should be considered during the entire cycle, from planning, through crop production and post-harvest.

The stewardship requirements for use of the Optimum GLY herbicide tolerance trait technology outlined in this guide include, without limitation:

Follow label directions for use

Prior to any trait or pesticide being approved for use in Australia, it must undergo rigorous testing to ensure it will perform as advised, with minimal impact to the environment. Use of products in a way contrary to the label directions can lead to product failure and other unintended consequences. It is incumbent that growers adhere to the directions on all seed, pesticide, or other product labels.

Implement Integrated Weed Management practices

Vylor supports an integrated approach to maintaining clean, weed-free fields. An Integrated Weed Management (IWM) system is defined as the use of a range of weed management techniques, embracing a combination of cultural, mechanical, chemical, and biological methods, without excessive reliance on any one method. Incorporation of an IWM plan is highly encouraged to successfully steward the Optimum GLY herbicide tolerance trait. It is recommended that growers seek advice from their local agronomist or technical advisor to ensure an IWM plan is utilised.

Maintain clean fields by using the following best practices:

1. Start Clean

- Start with a low weed burden.
- Scout fields before and after using any management tactic, identifying any problem weed species.
- Keep accurate records of on-farm management tactics used and their results, including any indications of changes in response with hard-to-control weeds.

2. Keep Clean

- Control weeds early, generally before exceeding 15 cm in height.
- Use the right herbicide(s) for the weed spectrum, with correct rates and appropriate timing of application.
- Rotate herbicide modes of action to prevent resistance.
- Incorporate sound agronomic practices that improve the crop's competitiveness against weeds.

3. Leave Clean

- Control weed escapes prior to seed release.
- Thoroughly clean equipment to avoid field-to-field weed spread.

Utilise resistance management strategies

Herbicide resistance is the ability of a weed biotype to survive an herbicide application, where under normal circumstances that herbicide applied at the recommended rate would kill the weed (HRAC). Weed resistance is a serious problem as it can reduce the available options a grower has to control that weed. For this reason, it is important that weed resistance is considered when developing an IWM plan. Table 1 can help growers assess their risk of herbicide resistance.

Table 1: Assessment of the risk of resistance development with the use of different management options.

Management Option	Risk of Resistance		
	Low	Moderate	High
Herbicide mix or MOA rotation in cropping system	≥3 MOAs	2 MOAs	1 MOA
Integrated Weed Control	Cultural, Mechanical, & Chemical	Cultural & Chemical	Chemical only
Use of same MOA per season	Once	More than once	Many times
Cropping system	Full rotation	Limited rotation	No rotation
Resistance status to MOA	Unknown	Limited	Common
Weed infestation	Low	Moderate	High
Control in last 3 years	Good	Declining	Poor

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Techniques to manage or delay the onset of resistant weeds include:

- Rotation of crops.
- Using multiple strategies for weed control including cultural, chemical and farm hygiene through all phases of crop rotations.
- Rotation of herbicide modes of action.
- Use of herbicides according to label rates and application timings.
- Continually monitor and test surviving weeds for resistance.
- Manage any surviving weeds remaining after application.
- Monitoring effectiveness of resistance management practices.

Access industry weed management resources like WeedSmart at www.weedsmart.org.au

If the risk of developing glyphosate resistance in a specific paddock is high, consider herbicide resistance testing to confirm the status within the paddock and use practices in Table 2 to reduce the weed seedbank of resistant weed population(s) to the lowest level prior to growing hybrids with the Optimum GLY® herbicide tolerance trait.

Control Optimum GLY® herbicide tolerance trait hybrid volunteers

Volunteer canola is one of many weeds likely to be present in summer fallows or subsequent cropping systems following a canola crop. To minimise the presence of volunteer canola, growers should prevent seed loss and spillage, limit seed movement around the farm, practice good hygiene to reduce adventitious presence and choose the correct herbicide during fallow clean up.

When planning control strategies, consider the entire weed spectrum, resistance management objectives, tank mixtures and timing of application. Tips for controlling volunteer canola include:

- Plan ahead.
- Be aware that most seeds germinate within two years and that hybrid canola plants may regrow from the stubble after harvest to establish larger volunteer plants.
- Avoid deep cultivation as it can extend seed dormancy.
- Target plants for control while they are small - (prior to four-leaf stage).
- Monitor any volunteers and control before flowering to prevent seed set.
- Use complementary tools, like non-chemical control methods (e.g. crop windrow burning, grazing, mowing, crop/pasture rotation).
- Know the paddock history and maintain good records as this will affect the herbicide selection. There are many herbicides that can control volunteer canola.
- It is important to maintain records of ALL herbicide tolerant traits within Genetically Modified (GM) canola crops as this will affect herbicide choices when controlling volunteers.
- Use all herbicides at full label rates for improved control.
- Observe minimum re-cropping intervals.
- Control related species (*Brassica rapa* and *B. juncea*) within or adjacent to a GM canola paddock, in a similar way to GM canola.

Table 2: Resistance management practices to consider integrating as part of an Integrated Weed Management system. Adapted from Preston, A. L. (ed) (2019).

	Herbicide	Cultural & Mechanical	Complementary
Start Clean (Pre-planting)	Utilize non-glyphosate knockdown options	Long fallow + weed control	Farm hygiene (seed) Avoid feeding hay on cropping area Avoid spreading weed seeds with livestock
	“Double knock” (glyphosate followed by paraquat)	Cultivate at sowing with full disturbance	
	Use pre-emergent herbicide with different MOA	Crop Rotation – crop choice, sequence e.g. Green manure/Brown manure	
	Pasture manipulation to reduce grasses	Whole paddock burn	
	Optical spray technology	Autumn tickle followed by control	
Keep Clean (In Crop)	Ensure effective weed control	Prevent viable weed seeds from developing	Tramline/precision cropping system Crop nutrition Prevent weed seed set (fence line and roadside) Hand rouging
	Post emergent herbicide (sequences/tank mixes)	Crop competition e.g. row spacing/ seeding rate/row orientation/crop and variety selection in rotations	
	Use different herbicide modes of action to control weed escapes	Grazing and grain, green manure/brown manure, cutting crop for hay/silage	
Leave Clean (Harvest)	Pre-harvest application with herbicide	Swathing/windrowing	Farm hygiene (grain) Cleaning equipment before transport
		Harvest weed seed capture	
		Chaff carts	
		Bale direct	
		Seed destructor	
Plan Clean (Post-Harvest)	Chemical fallowing – use of knockdown and soil-applied residual herbicides in fallow	Tillage to control weeds in fallow	Plan a cropping system that drives down the weed seed bank Minimize burial of seed Graze stubbles
	Alternate pre-emergent herbicide in other rotation crops	Windrow burning/strategic paddock burning	
	Optical spray technology	Strategic Grazing	

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Adhere to geographic restrictions

Canola hybrids containing the Optimum GLY® herbicide tolerance trait may only be grown in Australian states (Queensland, Victoria, New South Wales, South Australia and Western Australia) that allow commercial production of crops with biotech traits (February 2023, Figure 2). It is unlawful to grow GM crops or deliver seed into states with a GM moratorium in place, or export material to countries where an import tolerance has not been granted, including through a third party. For crops containing the Optimum GLY herbicide tolerance trait, growers must confirm trait acceptance and intended uses and destinations with grain handlers prior to delivery or use of those products on-farm.



Figure 2: Australian states that allow growth of canola hybrids with the Optimum GLY herbicide tolerance trait, as of November 2021. Growers should refer to the most recent information on official websites prior to sowing.



Implement grain management techniques

With consideration to the regions where it is unlawful to grow, sell or transport GM crops, it is important to ensure the grain from GM crops does not get mixed with the grain from conventional non-GM crops. It is the responsibility of the GM crop grower to take steps to ensure this doesn't occur. Some strategies include:

- Clearly identify GM paddocks.
- Clean equipment and vehicles used to transport harvest before and after use.
- Exercise caution to prevent grain loss during transportation and storage.
- Pay attention to good harvest, transport and storage hygiene.
- Clearly identify GM status and hybrid name to truck drivers, in storage areas on-farm and at delivery to approved, external receival sites through labels and records.
- Know the market that the grain is going into. It is important when growers are signing contracts to check the importing countries' Maximum Residue Limits (MRLs) in export grain.

It is essential that growers and spray operators adhere to herbicide 'Directions for Use' so that products are applied at the correct crop growth stage, to ensure that Australian and International MRLs for grain and forage are not exceeded.

Comply with coexistence approaches

Australian growers have the choice to use a wide range of management systems to grow crops that meet specific market requirements. Coexistence is the successful production of crops under different management systems, so not to compromise the integrity and marketability of other crops. To support the coexistence of GM and non-GM canola, growers need to consider their production system and implement risk management strategies to minimise any potential negative impacts to other growers.

Growers should consider Australian industry trading standards related to the presence of GM material. The Australian Oilseeds Federation (AOF) website (<http://www.australianoilseeds.com/>) has information on canola trading standards including Low Level Presence thresholds for GM and non-GM canola.

It is therefore incumbent on all growers to consider and implement management practices to satisfy the relevant marketing and stewardship practices required by the desired end market. The ongoing success of coexistence depends upon cooperation, communication and respect for each management system across the entire value chain.

Implement management strategies to prevent mechanical mixing

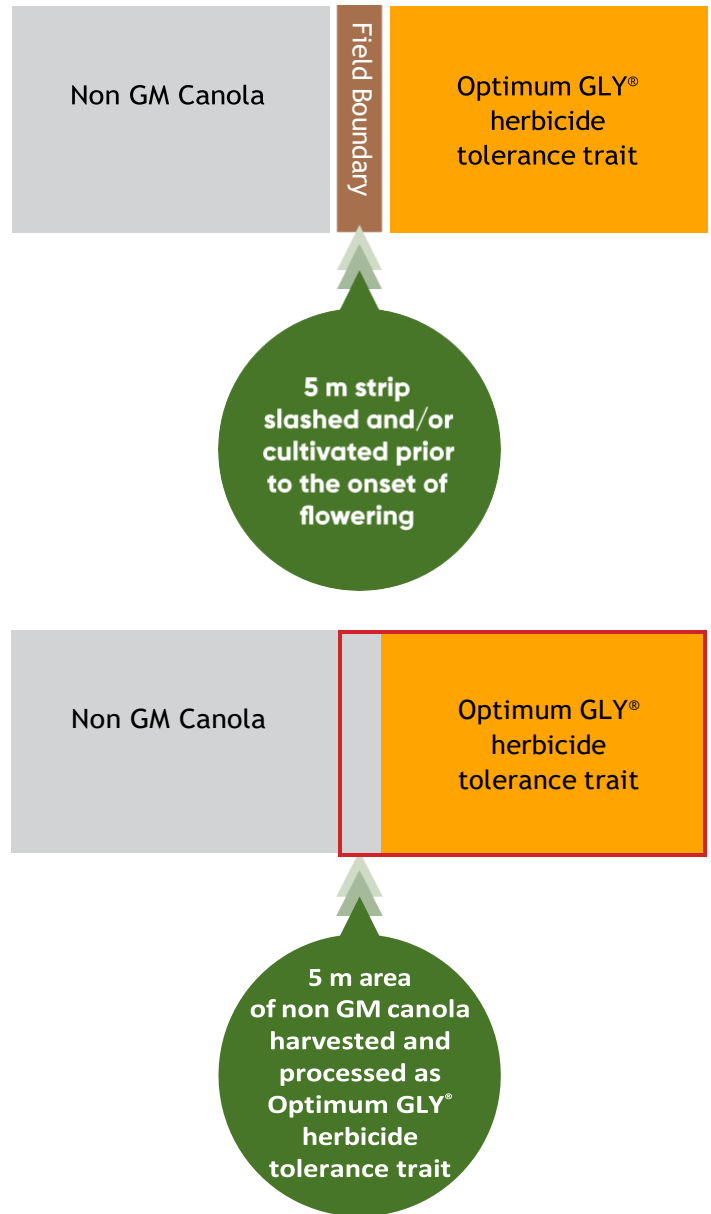
For products intended to be kept separate, growers should implement practices to prevent mechanical mixing.

- A narrow band (at least 5 m) of separation with the Optimum GLY herbicide tolerance trait should be kept between other crops (Figure 3).
- When crops are planted within this distance, the outside 5 m of the non-GM crop must be delivered as GM (Figure 3).

Report performance issues

Growers should report information to Vylor about unintended effects (such as the lack of herbicide tolerance of Optimum GLY herbicide tolerance trait canola hybrids to labelled glyphosate applications), as well as new information relating to risks to human health and safety or the environment, caused by the Optimum GLY herbicide tolerance trait or material from the Optimum GLY herbicide tolerance trait hybrid.

Figure 3: Managing separation of non-GM canola that is in close proximity to hybrids containing the Optimum GLY herbicide tolerance trait.





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