

WHAT IS TRUFLEX[®] CANOLA?

TruFlex[®] canola is Bayer's second-generation weed control trait offering farmers greater flexibility through an extended glyphosate application window up to first flower and an opportunity to apply Roundup Ready[®] herbicides at higher rates for enhanced weed control.

TRUFLEX CANOLA – SECOND GENERATION CANOLA TRAIT

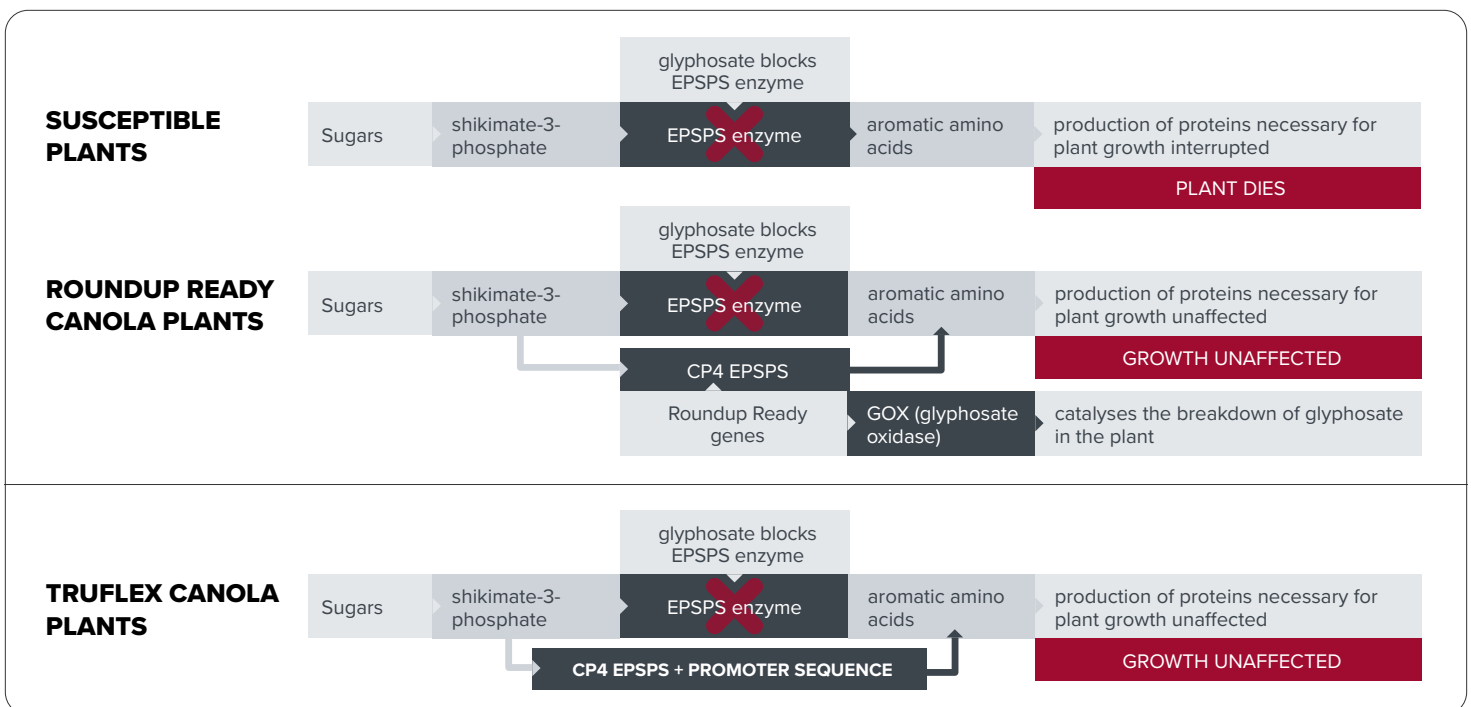
Bayer has developed a second generation glyphosate tolerant-trait, TruFlex canola. This new technology contains the same *cp4 epsps* gene as Roundup Ready canola, however does not contain the *gox* gene. The *cp4 epsps* gene imparts field level tolerance to glyphosate by encoding production of the CP4 EPSPS enzyme in the same way as Roundup Ready canola. Gene expression of *cp4 epsps* in TruFlex canola is enhanced by the addition of a new promoter sequence. This enhanced tissue expression provides increased tolerance to glyphosate-based herbicides relative to Roundup Ready canola, providing greater glyphosate application flexibility.

BUILDING ON FIRST GENERATION ROUNDUP READY[®] CANOLA

Roundup Ready canola is the result of two genes being introduced into the canola genome:

- the *cp4 epsps* gene, derived from common soil bacterium *Rhizobium radiobacter* strain CP4, which encodes production of the CP4 EPSPS enzyme; and
- the *gox* gene from the *Ochrobactrum anthropi* strain LBAA, which encodes production of the enzyme glyphosate oxidase (GOX).

Both gene products, CP4 EPSPS and GOX proteins, are expressed constitutively in the plant, and together are responsible for conferring tolerance to glyphosate. CP4 EPSPS has a naturally high tolerance to glyphosate, therefore, Roundup Ready canola plants continue to grow normally after treatment with glyphosate. Furthermore, the GOX protein catalyses the breakdown of glyphosate into glyoxylic acid and aminomethylphosphonic acid (AMPA) hence, minimal crop damage is seen with glyphosate applications.



TRUFLEX CANOLA - USING ROUNDUP READY HERBICIDES

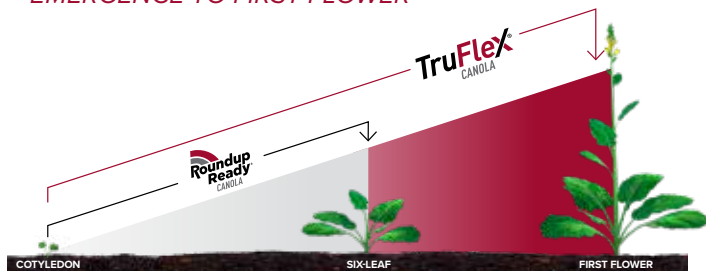
Roundup Ready herbicides can be safely applied at any stage up to, and including, the first flower stage.

■ A maximum of two applications of up to 1.3 kg/ha or 1.67 L/ha may be made in any one crop of Roundup Ready Herbicide with PLANTSHIELD or Roundup Ready PL Herbicide with PLANTSHIELD Technology, respectively.
Or

■ A maximum of 3 applications of up to 0.9 kg/ha or 1.15 L/ha may be made in any one crop of Roundup Ready Herbicide with PLANTSHIELD or Roundup Ready PL Herbicide with PLANTSHIELD Technology, respectively.

Provided that the applications occur within the correct timing window (up to first flower stage).

EXTENDED SPRAY WINDOW – EMERGENCE TO FIRST FLOWER



When applying Roundup Ready Herbicides at registered rates
The window of application for Roundup Ready herbicides extends past the six-leaf stage all the way to first flower.

THE RATE FARMERS NEED FOR THEIR WEED CHALLENGES

PRODUCT	ACTIVE INGREDIENT	Roundup Ready CANOLA	TruFlex CANOLA	TruFlex CANOLA
Roundup READY HERBICIDE "PLANTSHIELD"	690 g/kg glyphosate	2 apps @ 0.9 kg/ha	2 apps @ 1.3 kg/ha	3 apps @ 0.9 kg/ha
Roundup READY PL HERBICIDE "PLANTSHIELD"	540 g/L glyphosate	2 apps @ 1.15 L/ha	2 apps @ 1.67 L/ha	3 apps @ 1.15 L/ha

CROP SAFETY

When off-label glyphosate applications (incorrect application rate or timing) are made to Roundup Ready canola the crop may experience 7% or more yield loss. Symptomology during the season from off-label applications in Roundup Ready canola may include: vegetative chlorosis, biomass reduction and flower bleaching.



(Left) Roundup Ready canola **(Right)** TruFlex canola
TruFlex canola rate of Roundup Ready Herbicide with PLANTSHIELD applied at first flowering.



(Left) Roundup Ready canola **(Right)** TruFlex canola
2 x TruFlex canola rate of Roundup Ready Herbicide with PLANTSHIELD applied at 4–6 leaf stage – Calingiri, WA 2017.

Canola Service Desk email: canola.business@bayer.com or call **1300 268 940**
To find your nearest TSP visit roundupreadycanola.com.au

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