



Crop Management Plan



 **BASF**
We create chemistry

**LIBERTY
LINK** 

The LibertyLink[®] trait

The availability of varieties containing the LibertyLink trait gives Australian canola growers the option of using Liberty[®] Herbicide (glufosinate-ammonium) over the top for broad-spectrum in-crop weed control.

The LibertyLink trait was developed using genetic modification and LibertyLink varieties are GM.

The LibertyLink trait is combined with other herbicide tolerances in InVigor[®] varieties to give you extra flexibility and a combination of weed control options to suit your individual circumstances.

LibertyLink combinations

The first LibertyLink canola released in Australia was an InVigor LT variety, tolerant to Liberty and triazine herbicides. InVigor LR canola varieties combine Liberty tolerance with the popular TruFlex* technology.

Selection of Liberty-tolerant varieties should be made in a rotation planned to sustain the use of Liberty and other herbicides.



Sustainability

The purpose of the LibertyLink Crop Management Plan is to promote the responsible and sustainable use of LibertyLink canola in the Australian cropping system. This document provides important information on the coexistence of different types of canola in the Australian production system.

Coexistence

Coexistence of various production methods is a familiar concept to the agricultural community. Farmers have practiced coexistence for generations, to meet demands for different types of products and to meet different quality standards for their customers. Growers may choose to preserve the identity of their crops to meet specific markets.

Genetically modified (GM) and non-GM canola crops have been successfully grown alongside each other in Australian cropping systems since 2008. Industry-developed guidelines have ensured the successful coexistence of GM canola with other forms of canola production in Australia. The ongoing success of coexistence strategies requires consideration of a range of factors.

Communication

While it is not possible to achieve 100% purity of seed or grain in any crop production system, there has been successful coexistence of GM and Non-GM in Australia for over ten years.

You should communicate beforehand with neighbours and contractors regarding the isolation and hygiene requirements for your GM or non-GM canola cropping program.

Communication with all stakeholders is essential to maintaining good stewardship of GM and non-GM canola technology and ensuring the identity preservation of each grower's canola crop.

Requirements for growing LibertyLink canola adjacent to other canola crops

Minimum distances for keeping low level presence of GM grain under 0.9%

Grain production	GM & non-GM canola (See AOF Quality Standards: Table 1 CSO1 and Table 2 CSO1-a)	5 metres
Seed production	Certified or Foundation Seed canola (or farmer-saved seed) (See OECD or ASF requirements.)	400 metres

Reference: Australian Oilseeds Federation Standards Manual
www.australianoilseeds.com/Technical_Info/standards_manual

Outcrossing with neighbouring canola

The rate of cross-pollination between two adjacent canola fields is low. From the edge of the canola paddock, the amount of cross-pollination with the neighbouring paddock rapidly declines with distance.

Research in Australian production conditions has shown that in most cases the amount of cross-pollination was <0.03% between neighbouring fields.¹

The low-level presence of up to 0.9% of GM events approved by the Australian Government Office of the Gene Technology Regulator is permitted. The requirements shown at the top of the page have been developed in consultation with canola industry stakeholders and take into account scientific evidence and market-driven confidence limits. These recommendations are subject to updates as deemed appropriate by the canola supply chain.



Outcrossing to related brassica species

Canola is largely self-pollinating (approx. 70%) but can cross-pollinate with closely related species (e.g. *Brassica juncea* or *Brassica rapa*). Gene flow from canola to other species has been extensively reviewed and it has been found that there are significant barriers to the flow of genes to other brassica weeds. There is potential for outcrossing from canola to wild radish (*Raphanus raphanistrum*), Buchan weed (*Hirschfeldia incana*) and charlock (*Sinapsis arvensis*) but this is extremely rare and mainly results in sterile hybrid progeny.

Even if herbicide-tolerance genes were transferred, these genes would only provide a competitive advantage when glufosinate herbicides were used. Because of the limited use of Liberty Herbicide (or glufosinate-ammonium herbicides in general) in the Australian cropping system, there would be limited opportunities for a competitive advantage to be gained.

In the unlikely event that cross-pollination or gene flow occurs, resulting in weeds tolerant to Liberty Herbicide, control of these weeds is still possible by using herbicides from a different mode of action group than Liberty Herbicide, or through mechanical or physical control methods such as cultivation.

Management of volunteer canola

Most of the Australia canola crop is herbicide-tolerant and most growers are familiar with managing herbicide-tolerant volunteers. Numerous herbicide and non-herbicide options already exist for the control of volunteer canola. Volunteers from LibertyLink crops will not be controlled by glufosinate herbicides. (Refer to the GRDC document “Chemical Weed Control in Canola” Section 7: Volunteer canola control in succeeding crops <https://grdc.com.au/chemical-weed-control-in-canola>.)

If outcrossing does occur between different herbicide-tolerant (HT) canola crops, it is possible for these canola volunteers to have multiple herbicide tolerances. Be aware of neighbouring canola crops and the potential for volunteers that have multiple herbicide tolerances when selecting control measures.

It is essential to monitor and control canola volunteers.

Steps to minimise canola volunteers include:

- Select LibertyLink varieties containing the PodGuard® technology
- Ensure timely windrowing/harvesting dates to avoid excess seed loss back onto the paddock
- Set windrowers and harvesters accurately to prevent excessive seed being returned to the field
- Ensure trucks are sealed well to avoid seed loss on farm and onto roadsides.

Steps to control canola volunteers:

- Avoid deep cultivation (>5 cm) in order to reduce canola seed dormancy – ensure at least one good germination of remnant canola seed has occurred before cultivation
- Mix & rotate herbicides – seek agronomic advice on herbicide or tank-mix options that will kill all possible HT canola volunteers including potentially outcrossed volunteers from a neighbouring HT crop
- Rotate crops – choose a following crop that has an appropriate herbicide spectrum to suitably manage all potential HT canola volunteers
- Stop seed-set of canola volunteers – stopping seed-set will reduce the size of the seed bank
- Ensure good crop competition – sowing early can make a big difference to the establishment and seed-set of volunteer canola.

Prevention of seed commingling

You grow a range of different crops on your farm and may choose to grow canola with different herbicide tolerances to manage the agronomic requirements of different paddocks. This may include both GM and non-GM canola. You will need to document your crop plantings and implement strategies to prevent commingling for crops and maintain identity preservation.

Ensure there is appropriate cleaning of equipment and storage facilities before and after use. Cleaning should be implemented for planting equipment, windrowers, harvesters, seed storages and grain transportation vehicles used at seeding and harvest. Harvested grain should be stored in clean storage areas where the identity of the grain can be properly maintained and recorded.

You should also consider the hygiene and cleaning practices of all contractors to prevent commingling of crops whose identity you wish to preserve.

Develop and record crop management and rotational strategies to prevent commingling of canola grain at all stages of crop production. Adopt and record good farm hygiene practices for cleaning seeding, windrowing, harvesting, storage and transporting equipment while growing LibertyLink canola.

Information on LibertyLink seed sales to growers will be recorded on the BASF MySeed website (<https://crop-solutions.basf.com.au/seed/technologies/libertylink>).

Canola seed harvested from LibertyLink herbicide-tolerant crops must be delivered and marketed as CS01 (GM canola seed). As such, this seed should only be delivered to grain receival depots accepting CS01.

BASF recommends you confirm your nearest delivery site with your grain handler prior to planting.

For specific site information (including delivery sites, delivery information, requirements & procedures) please contact your local grain handlers.

LibertyLink Seed Purchase and Accreditation

All growers, distributors, consultants and agronomists working with LibertyLink seed and/or Liberty Herbicide are required to complete the Stewardship training module prior to the purchase and planting of LibertyLink canola seed.

LibertyLink Stewardship training can be completed in person with a BASF representative or virtually via the BASF website (<https://crop-solutions.basf.com.au/seed/technologies/libertylink>).

A record of all LibertyLink Stewardship training will be retained by BASF and may be provided to the OGTR.

FAQs

Q: Is LibertyLink canola classified as Genetically Modified (GM) canola seed?

A: Yes, LibertyLink is genetically modified and any seed containing this trait is classified as GM seed or grain.

Q: What is the minimum distance needed between a non-GM and GM canola crop for keeping the low level presence of GM grain under 0.9%?

A: 5 metres. The AOF recommend that any non-GM canola within 5 m of a GM canola crop be harvested and delivered as GM canola. It is recommended that all non-GM canola being grown for seed production has 400 m isolation from GM canola (see page 3).

Q: Where can I deliver my harvested LibertyLink canola seed?

A: Canola seed harvested from LibertyLink herbicide-tolerant crops must be delivered and marketed as CS01 (GM canola seed). As such, this seed should only be delivered to grain receival depots accepting CS01. BASF recommends you confirm your nearest delivery site with your grain handler prior to planting.

For specific site information (including delivery sites, delivery information, requirements & procedures) please contact your local grain handlers.

Q: What do growers need to complete before buying LibertyLink seed for the first time?

A: LibertyLink Stewardship training.



Scan here for more information on Liberty, visit crop-solutions.basf.com.au or contact your local BASF representative on **1800 558 399**

Reference: 1. Rieger MA et al. Pollen-mediated movement of herbicide resistance between commercial canola fields. *Science*, 2002; 296 (5577): 2386-8.

This LibertyLink Crop Management Plan is intended as general advice only. BASF Australia Ltd accepts no liability for any losses that may result from the failure to segregate LibertyLink GM canola or subsequent LibertyLink canola volunteers from non-GM grain.

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