

Reducing aphid and virus risk

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Early management decisions are key to reducing aphid and virus risk in 2015

KEY POINTS

- Destroy the green bridge over summer and autumn prior to sowing.
- Do not sow canola into desiccating weeds/canola volunteers; otherwise, aphids will move directly from the weeds to the emerging seedlings.
- Monitor green peach aphid (GPA) populations on weeds, volunteers and seedling canola crops.
- Use seed treated with a neonicotinoid insecticide and ensure proper application and coverage of seed dressing for efficacy against GPA.
- Ensure correct identification of GPA before applying insecticides to protect seedling canola.

Current situation

There was significant rain over much of the southern cropping zone and parts of Western Australia during January 2015. In many areas, this rainfall has produced a green bridge (a between-season host for pests and diseases) that includes volunteer canola, wild radish, wild turnip and marshmallow. These weeds and volunteers can host large populations of insects, including aphids, as well as viruses, and need to be destroyed prior to sowing. Widespread infestations of **green peach aphids (GPA) (*Myzus persicae*)** contributed to an outbreak of **Beet western yellows virus (BWYV, syn. Turnip yellows virus)** in southern Australia during autumn and winter 2014. BWYV is not seedborne and is transferred into canola crops by aphids carrying the virus. Several aphid species transmit BWYV, but GPA is the principal vector and the most common species on juvenile canola plants.

Although further rainfall and mild temperatures during summer and early autumn are necessary for an increase in GPA populations and associated virus risk, early weed control will minimise the risk. Growers should continue to pay attention to weather conditions (rainfall and mild temperatures) leading into the winter growing season because this will provide a good indication of the risk of GPA and BWYV.

Background

In 2014, canola crops across the Lower North, Mid North and Eyre Peninsula in South Australia, western Victoria and some parts of New South Wales were severely affected by the BWYV, leading to significant yield losses. The severity of the BWYV outbreak was most likely due to a combination of the following factors:

- summer rainfall, which resulted in a green bridge of weed hosts for aphids and BWYV
- the early start to the season and early sowing times
- mild autumn conditions, which contributed to early (and extended) levels of aphid activity through to late June
- crop management practices, including short intervals between weed control and sowing time
- the prevalence of insecticide resistance in GPA (particularly to pyrethroids, organophosphates and carbamates)
- in some areas, the low proportion of canola seed treated with neonicotinoid insecticide, e.g. Gaucho® (imidacloprid) and Cruiser® Opti (thiamethoxam + lambda-cyhalothrin)
- poor coverage of insecticide on canola seed, which reduced efficacy



Beet western yellows virus symptoms in seedling canola.

Paddock management when sowing in conditions of high virus risk

- Control the green bridge, particularly volunteer canola, wild radish, wild turnip, marshmallow and other broadleaf weeds, which host BWYV and GPA. Apply appropriate herbicides soon after weeds begin to germinate. Re-apply herbicides after any further rainfall events that encourage additional weed germination. **Ensure paddock is weed-free for 10–14 days before sowing.**
- Use canola seed treated with a neonicotinoid insecticide. **Ensure proper application and coverage of the seed dressing for highest efficacy.** This should protect canola seedlings from early season aphid feeding damage.
- Do not sow crops early in the season; sow on usual dates, to avoid early aphid flights.
- Where feasible, sow into standing stubble to reduce aphid landings.
- Sow at rates to achieve an even and uniform plant density that achieves quickest groundcover, to reduce aphid landings.
- Monitor seedling crops before the rosette stage for aphids and symptoms of virus. Aphids can be difficult to find when their population is low, but GPA are often found on the underside of the oldest leaves. Control aphids if required.
- Ensure correct identification of GPA before considering chemical sprays. A Back Pocket Guide to aid in the identification of crop aphids has recently been developed (downloadable from www.grdc.com.au/CropAphidsBackPocketGuide).

Controlling GPA by using chemicals

High levels of resistance to carbamates (e.g. pirimicarb) and pyrethroids (e.g. bifenthrin and alpha-cypermethrin) are common in GPA across Australia, while moderate levels of resistance to organophosphates (e.g. dimethoate and chlorpyrifos) have been observed in many populations. In regions where widespread resistance is identified, growers should consider using sulfoxaflor (Transform™) when GPA numbers have reached threshold levels, but should do so as part of a broader resistance management program. Although Transform™ will control GPA populations that are tolerant to carbamates, pyrethroids and organophosphates, it exhibits only acropetal movement in the plant (i.e. it moves upwards in the sap stream) and does not translocate downwards. In order to control GPA populations colonising older canola leaves, applications should be made before crop closure and by using appropriate spray technologies.

A resistance management strategy for GPA in Australian grain crops was developed in 2014 (downloadable from <http://ipmguidelinesforgrains.com.au/ipm-information/resistance-management-strategies/>). It is of utmost importance to use only insecticides registered for the crop and situation and to comply with all label directions for the application method. Do not exceed application or frequency rates. In addition, the decision to spray should consider the proximity of and impact on local beehives and that beekeepers are provided with sufficient advanced notice so that bees can be withdrawn if necessary.

References and additional resources

‘Diagnosing beet western yellow virus in canola’ (updated 2014) DAFWA: <https://www.agric.wa.gov.au/mycrop/diagnosing-beet-western-yellow-virus-canola>

‘The essential crop management tool—green bridge control is integral to pest and disease management’ (2009) GRDC: http://www.grdc.com.au/uploads/documents/GRDC_GreenBridge_FS_6pp.pdf

‘BWYV and GPA’ Groundcover TV (2014):

Pt 1. <http://youtu.be/s83GyoJLX-w>

Pt 2. <http://youtu.be/iOzkm04fSyA>

Pt 3. <http://youtu.be/7TDd56wwdoE>

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