SARDI Entomology Pest Facts
SA & western Victoria Edition

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Update on green peach aphid and beet western yellows virus

BWYV is widespread in canola crops with confirmed distribution as shown here. This follows widespread infestations of green peach aphid (GPA) (*Myzus persicae*), the principal vector of BWYV, during autumn and early winter.

Some crops in the lower north region of SA have been badly damaged, having been infected at the highly susceptible rosette stage. The majority of crops appear to have been infected at a slightly later growth stage and while they may have suffered yield loss, these losses are expected to be less than in the crops infected earlier.

Over the past week, GPA populations have been increasing on Eyre Peninsula and have been treated with a variety of products. Chlorpyrifos has proved unsuccessful and growers are using Transform® (Ed Hunt). Virus symptoms are reportedly beginning to appear in canola on Eyre Peninsula near **Kimba** and samples are being virus tested (Hayden Whitwell, Agsave Merchandise). On upper Yorke Peninsula, GPA including winged aphids have been confirmed from canola east of **Moonta**. Using a sweep net, 6-10 aphids were captured per 10 sweeps with higher numbers of winged aphids caught on plants at bolting and flowering (Zack Zweck, A W Vater). On Eyre Peninsula, aphids have been reported causing direct feeding damage (Tim Richardson, Carrs Seeds), and some crops with higher numbers of aphids may need treatment (Nigel Myers, Cummins Ag). In the South East, 1-2 GPA aphids per plant were confirmed in canola with virus from east of **Bordertown** (Josh Modra, D & M Rural). For more information and background on GPA/BWYV: PestFacts Issue 6, 2014 (pdf) and Crop Watch Vol 11 No 5 (pdf).

Virus testing results

Vic DEPI pathology staff and virologists have been testing canola samples with tissue blot immunoassay (TBIA) to assess plants for BWYV. 180 crop samples have been submitted for virus testing and 940 plants have been tested for BWYV, Turnip mosaic virus (TuMV) and Cauliflower mosaic virus (CaMV). All plants tested were negative for TuMV and CaMV.

The overall result for BWYV testing showed 75% of plant samples were positive for BWYV. The severity or amount of BWYV in crops will be assessed using a transect survey due to start next week. The incidence of BWYV in plant samples from crops tested by state is: SA = 85% infection, Vic = 59% infection, NSW = 48% infection (note: limited samples from Mildura, Robinvale and Swan Hill).

In Victoria, samples tested for BWYV from the Mallee had 67% infection, the Wimmera 59% infection. So far, no pulse crops have tested positive for BWYV, though the number of

samples has been limited. The latest detailed information on BWYV can be found on the eXtension website.

Fast-tracked project

GRDC and SAGIT have recently approved funding to investigate BWYV and insecticide resistance levels in GPA. The project is led by SARDI, with Ken Henry (0422 002 292) and Bill Kimber (08 8303 9536) acting as coordinators. Crop and weed virus surveys will be conducted in regions of SA, Victoria, and NSW, and cesar will be screening field populations of GPA for resistance. These results will be used to assist with recommendations for spraying in spring for both pulses and canola. Contact one of the project coordinators (above) for further information.

Monitoring aphids

We suggest that growers and advisors in high-risk areas should be closely monitoring for the first signs of aphid flights, and be prepared to immediately apply appropriate insecticide treatments to protect susceptible crops. Aphids (and potential flights) can be monitored using a combination of yellow sticky traps, and directly searching for aphids on plants. Aphid flights are generally preceded by environmental conditions which cause increased production of winged adults in the population. Sweep nets are useful for rapidly assessing the presence of GPA and numbers of winged adults in the population, and will assist with monitoring for diamondback moth larvae.

For visual searches, check at least 5 points in the crop and inspect 20 plants at each point. Aphid populations are often patchy (radiating from hotspots) and densities at crop margins may not be representative of the whole field. GPA are most commonly found on the undersides of leaves, but also check stems, amongst buds, and flowering heads (note: turnip aphid and cabbage aphid are the most common aphids to infest buds and flower heads). Regular monitoring, ideally on a weekly basis, from early flowering to pod set is required to detect rapid increases of aphid populations.

Sticky traps have a useful life of one or more weeks, depending on the field conditions; winter conditions may allow greater endurance, but dust shortens their useful life considerably. Sticky traps are available on-line through the **Australian Entomological Supplies** or **Entosol**, and locally from **Biological Services, Loxton (08 8584 6977)**. Sticky traps should ideally be placed at several points 5-25 metres in from the crop edge. Check once per week now, but more frequently when warmer weather occurs.

Our advice

We are generally advising against spraying to control aphids while winter conditions persist, however this largely depends on the local movement of GPA. If GPA are flying, or populations begin flights, sprays should be considered as this increases the risk of virus infections into new crops. This is particularly so in regions where BWYV is prevalent.

Monitoring aphid movement, preferably using sticky traps, is critical. In areas where temperatures remain low, insecticides may not be necessary until late winter or early spring. Generally, the yield consequences of BWYV decrease with infection at later stages of crop development. However, canola crops remain susceptible to yield losses from BWYV infection until approximately the mid-podding stage.

Pulse crops may also be at risk of BWYV infection. Chickpeas, lentils, faba beans and field peas are all susceptible to this virus, although lupins are not affected. GPA may transfer BWYV into these crops, and further spread can occur via cowpea aphid (*Aphis craccivora*),

although at a much lower level than GPA. If pulse crops are in close proximity to virus-infected canola, it is advisable to apply insecticides to the canola crop when GPA flights have begun.

Aphid infestation can be reduced by heavy rain events or sustained frosts. If heavy rain occurs after a decision to spray has been made, but before the spray has been applied, check the crop again to determine if the treatment is still required. Note, frosts will suppress GPA populations, but are very unlikely to kill all aphids.

Insecticide resistance and guidelines

Deciding on the most appropriate chemical to use against GPA is challenging due to its widespread resistance in Australia to synthetic pyrethroid (group 3A), organophosphate (group1B) and carbamate (group 1A) chemistries. A reminder that use only of insecticides registered for the crop and situation, compliance with all label directions for the application method, not exceeding application or frequency rates, and adherence to withholding periods, is of the utmost importance, as reported in PestFacts Issue 6, 2014 (pdf). Some general guidelines on the various registered options are provided here, however insecticides should always be chosen carefully, ideally in consultation with your agronomist or reseller:

Canola crops:

- Synthetic pyrethroids, group 3A (e.g. alpha-cypermethrin, etc): GPA resistance is widespread in SA. These products are unlikely to provide any mortality or repellency/anti-feed effects on GPA and are not recommended for GPA control.
- Carbamates, group 1A (e.g. pirimicarb): GPA resistance is patchy in SA. Further lab tests are being conducted (July-August) to identify the extent of resistance, and guidelines will be issued. For these products, consider small scale strip applications to test efficacy against aphids before treating large areas.
- Organophosphates, group 1B (e.g. dimethoate, omethoate, chlorpyrifos, etc): As for carbamates.

Transform® insecticide, 240 g/L sulfoxaflor, group 4C: Field reports are suggesting that this product has provided good control of GPA so far this season.

Pulse crops:

- Pirimicarb products are registered in lupins only. An APVMA emergency permit for the use of pirimicarb to control aphids in other pulse crops has been requested for this spring, but is not yet approved.
- Synthetic pyrethroids, group 3A (e.g. alpha-cypermethrin, etc): GPA resistance is widespread in SA. These products are unlikely to provide any mortality or repellency/anti-feed effects on GPA and are not recommended for GPA control.
- Transform® insecticide is ***not*** registered in pulses. It is understood that there is insufficient residue data in pulses to apply for an emergency permit.

Finally, the decision to spray should also consider the proximity and impact on local beehives. We recommend providing beekeepers with sufficient advanced notice so that bees can be withdrawn if necessary.

Information sessions: SARDI scientists Jenny Davidson (Pathology) and Greg Baker (Entomology) have conducted several information sessions in South Australia on the GPA and BWYV issue. Upcoming sessions (open invitation to agronomists and growers):

- Cummins Bowling Club 11.00am, Tuesday 29th July

- Kadina Farm Shed 10.30 am Wednesday 30th July

Cereal aphids and barley yellow dwarf virus

High cereal aphid populations, including a high proportion of winged aphids, have caused feeding damage to patches of a barley crop on Yorke Peninsula (Zack Zweck, A W Vater). Symptoms include stunting and dieback of plants, which can be symptomatic of Barley Yellow Dwarf Virus (BYDV) (not confirmed). Low numbers of corn aphid were present in a healthy barley crop at **Port Rickaby** (Mick Brougham, Elders).

On Eyre Peninsula, oat/wheat aphid (*Rhopalosiphum padi*) has been confirmed in low numbers from a late-tillering barley crop near **Cleve** (Sarah Traeger, Cleve Rural Traders), in 3-4 leaf stage wheat north of **Buckleboo** and in wheat near **Kimba** (Amy Murray and Hayden Whitwell, Agsave Merchandise). Cereal aphids (5-10 aphids per leaf) were reported in wheat and barley crops around **Lock** (Chris Pearce, Elders). in the Mid North At **Booleroo Centre**, high cereal aphid populations are associated with patches of yellowing in barley, which can be symptomatic of BYDV, and crop samples are currently being virus tested (Matt Foulis, Northern Ag).

The two main cereal aphids in southern Australia are oat/wheat aphid (*Rhopalosiphum padi*) and corn aphid (*R. maidis*). Oat aphids mainly attack oats and wheat but can occur on all cereals and grasses, while corn aphid is more common on barley. Both species can cause yield losses from direct feeding and through transmission of BYDV.

Higher rainfall zones are often more prone to BYDV, although the risk in all regions is heavily dependent on seasonal conditions. Given the widespread infection of canola crops with beet western yellows virus in canola crops this season, there is potential for other aphids and viruses to be more prevalent this year.

The impacts of BYDV infection on yield are greater when plants are infected early relative to later infection. Virus management is based on preventative strategies implemented early in the season. Growers need to individually assess the risk of BYDV each season before making decisions on treatment with insecticides. In higher risk situations, seed treatments are an option to reduce early aphid infestation.

Crops should be checked for oat aphid from 3 leaf stage onwards. More information: Cereal Aphids, GRDC (pdf) and BYDV and aphids - DAFWA.

Diamondback moth

Diamondback moth (DBM) (*Plutella xylostella*) larvae are still unusually active in canola crops in a number of districts, despite cold and wet conditions.

On Yorke Peninsula, the presence of DBM at this time of the year is causing concern for the potential for spring build-up (Matt Smith, Landmark). DBM larvae have caused foliar damage in numerous paddocks, and crops are now being closely monitoring in anticipation of increased risk of DBM pressure later in the season (Sam Holmes, Holmes Consulting). East of **Moonta**, where early foliar damage from DBM was observed, larvae are causing some chewing damage to flower buds in bolting canola (Zack Zweck, A W Vater). High numbers of larvae are present on plants that are beginning to flower, with up to 2-3 larvae per plant eating out flower buds in canola crops monitored on the Fleurieu Peninsula and in the Murray Flats area south of Murray Bridge (Orville Hildebrand and Ryan Bateman, FPAG). Damage caused by DBM has been reported in the Mid North, and in the SA Mallee at **Sedan** and **Truro** (Craig Davis, A W Vater) and larvae are active in crops at **Roseworthy** (SARDI).

Bill Kimber (08) 8303 9536 bill.kimber@sa.gov.au
Helen DeGraaf (08) 8303 9543 Michael Nash (08) 8303 9537
Kym Perry (08) 8303 9370 Greg Baker (08) 8303 9544
www.sardi.sa.gov.au/pestfacts

In some areas of Eyre Peninsula, DBM numbers appear to have decreased from earlier in the season, while in other areas, activity is higher.. On Lower Eyre, larvae have been observed feeding on flower buds (Nigel Myers, Cummins Ag). On Upper Eyre, approximately 16 larvae per 10 sweeps) are present in canola crops near **Heggaton** Conservation Reserve (Cindy Martin, Cleve Rural Traders).

DBM are generally most abundant during spring. This season, Brassica green-bridge and the warmer autumn conditions have resulted in higher than usual activity. Current rates of development will be relatively slow due to the cool weather conditions (see the DBM development calculator). Mortality from rain dislodgement and *Zoopthora* fungal infection observed this week at **Roseworthy** (Greg Baker, SARDI) will limit their build-up whilst wet weather persists. As conditions warm, DBM can have significant effects on canola yields.

Monitoring and control options

We recommend checking canola crops for DBM larvae and damage. Pay particular attention to damage targeting the tip of young inflorescences. While weather conditions continue to limit population growth, spray decisions should be based on whether larval populations pose an immediate threat of yield loss to the crop. In many instances, during the mid-winter phase, most crops should out-grow the impact of DBM. Crops infested should be regularly monitored when conditions become relatively dry or warm.

Sampling crops at several locations is important to determine whether numbers are increasing or decreasing before any spray decision is made. Refer to the GRDC Factsheet 'Diamondback moth in canola' for monitoring and threshold guidelines.

If control is needed, keep in mind that moderate to high levels of resistance to synthetic insecticides (SP) and organophosphates (OP) is widespread in Australian DBM populations. Avoid SP's or OP's, either alone or in mixtures, because they are ineffective for DBM control and will destroy beneficial insects, potentially leading to other problems (e.g. DBM or aphid resurgence). *Bacillus thuringiensis* products and two new synthetic insecticides, Affirm® and Success Neo®, are registered for DBM control in canola, and are less disruptive to beneficial insects. Furthermore, no single insecticide application will completely eliminate the DBM population. In years when populations are large, a two-spray strategy is recommended.

DBM larvae are pale, yellowish green and tapered at each end of their body, which grows to about 12 mm long. They often wriggle rapidly when disturbed. The moths are about 10 mm long and are grey-brown in colour. They have a characteristic whitish strip of uneven width down the back, which resembles diamond patterns. Fungal-diseased caterpillars are white, brittle, flat and covered with fungus and attached to the plant leaves. More information on diamondback moth, refer to PestFacts Issue 6, 2014 and Diamondback moth in canola, SARDI (pdf).

Resources

- **Insect diagnostics**: SARDI Entomology offers an insect diagnostic service for PestFacts subscribers. Please send at least two intact specimens in a non-crushable container along with host food, collection details, description of crop damage and contact details, to: NIPI diagnostics SARDI Entomology Unit GPO Box 397, Adelaide SA 5001.
- **PestFacts map** is a new interactive service available on the SARDI website at www.sardi.sa.gov.au/pestfacts-map. The map allows users to search and view all historical pest reports across South Australia and Western Victoria. Search by crop, pest or beneficial invertebrate, and time period of interest. The map will be updated with each issue to include new reports.

- ❖ **'Best Bet' IPM strategies** for major pests of grains crops are available in easy-to-use tables, downloadable from the IPM workshops website.
- ❖ **IPM guidelines for grains:** The new national IPM guidelines for grains website provides a comprehensive collection of tools and strategies to manage pests in grain cropping systems across Australia.

● Previous issues of PestFacts ● ● PestFacts map ● Images of insects and damage ● I SPY manual ● Crop mites: back pocket guide ● Crop weevils: back pocket guide ●

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