SARDI Entomology Pest Facts
SA & western Victoria Edition

Issue No. 6, 9th July 2014

CONTENTS

Green peach aphid and beet western yellows virus

A high incidence of Beet Western Yellows Virus (BWYV) associated with severe crop damage has been confirmed in canola crops in South Australia. This follows widespread infestations of green peach aphid (GPA) (*Myzus persicae*), the principal vector of BWYV, in canola crops during autumn and early winter.

In the Lower North and Mid North regions of South Australia, up to 10 000 hectares of canola, particularly around **Tarlee**, **Riverton**, **Eudunda** and **Marrabel**, has suffered severe damage (see images) and a number of crops have had to be re-sown. Overall damage has exceeded the level of direct feeding damage that could be expected from the moderate (but widespread) aphid populations present in crops at the time. SARDI pathologist Jenny Davidson has organised for affected plants to be sent to Victorian DEPI virology lab for virus testing and to date, 50 canola crops have been submitted to Frank Henry and colleagues at DEPI Victoria. In the Lower North, all 36 crops tested had 90-100% BWYV infection. In the Mid North, around **Laura** and **Spalding**, test results were variable, with infection rates in some crops at 90-100%, some crops at low levels and others unaffected.

Virus-like symptoms have also been reported in isolated canola crops around **Booleroo Centre** in the Upper North, **Lock** on Eyre Peninsula, **Kadina** and **Arthurton** on upper Yorke Peninsula and **Bordertown** in the South East. High GPA infestations and virus-like symptoms are being reported in the **South Australia Mallee**, and in the **Victorian Mallee**. Crop samples from these regions are currently being virus tested.

Beet Western Yellows Virus (Family Luteoviridae: genus *Polerovirus*) infects the phloem of plants and is persistently transmitted by aphid vectors. BWYV infection can result in significant losses in seed yield and oil content. Symptoms may initially resemble nutrient deficiencies, herbicide damage, physiological stress or other disorders. Leaves may turn yellow and purple, starting from the lower leaves. Other symptoms may include leaf mottling, leaves become thickened and cupping inwards, and premature bolting.

Brenda Coutts (Plant virologist, DAFWA) says that canola is most susceptible to BWYV at the rosette stage, when infection can lead to high yield losses. Generally, the yield consequences of BWYV decrease with infection at later stages of crop development. However, canola remains susceptible to yield losses from BWYV infection until

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approximately the mid-podding stage. Infection after this stage usually results in minimal yield loss but oil quality can still be affected.

Green peach aphid is the most important vector of BWYV (96% transmission efficiency) but cabbage aphid (*Brevicoryne brassicae*) can also transmit it (14% transmission efficiency) as can cowpea aphid (*Aphis craccivora*) and turnip aphid (*Lipaphis pseudobrassicae*). Certain strains of BWYV commonly infect pulse crops in south-western Australia, New South Wales and South Australia, while other strains are limited to canola only. Testing is currently underway by Murray Sharman (Plant Virologist, QDAFF) to identify the strain involved, and whether pulse crops are potentially at risk in spring. Host range experiments are being conducted by Angela Freeman (Plant virologist DEPI Victoria).

Why did this happen?

Heavy rainfall in cropping districts during February and March is likely to have created a green bridge (reservoir) of weed hosts of both BWYV and its most important vector, GPA. Host plants of BWYV include weeds, such as wild radish, wild melon, fleabane, stinkweed, blackberry nightshade, marshmallow, bedstraw, thistles and volunteer canola, and pastures including lucerne, medic and sub-clover. Green peach aphid itself is highly polyphagous and its host plants include wild radish, volunteer canola and a wide range of other broadleaf plants. Systematic virus surveys are being planned to identify the extent of BWYV incidence and identify the most important weed sources.

Warm temperatures continuing through autumn and early winter then appear to have created ideal conditions for aphid population development. Higher population densities combined with warm temperatures are likely to have increased aphid flight activity, resulting in early and widespread colonisation of canola crops. Winged aphids carrying the virus from infected weed hosts will have transmitted the virus to young canola plants before spreading it to other healthy plants.

Where to from here?

Severe crop damage has already occurred. However, the onset of cold and wet weather conditions has now caused aphid populations to decline and GPA is largely inactive within crops. Minimum flight thresholds for aphids are typically around 16-17^{o}C. There are likely to be very few winged adults in the aphid population until numbers begin to build again with rising temperatures from late winter onwards. Consequently, we expect that the risk of further virus spread is currently very low and will remain so while these conditions persist.

Applying sprays to control aphids over the next few weeks will provide no benefit in preventing further virus spread.

However, there is a risk of further virus spread following build up and flights of winged aphids in late winter and early spring. Unaffected canola crops or areas of canola crops remain susceptible to yield loss from BWYV infection until approximately 50% podding (see above). Pulse crops may also be at risk in spring, depending on the BWYV strain involved (currently being identified), which could result in significant yield losses. An update on the identity of the virus strain involved in South Australia will be provided in the next Pest Facts issue.

Aphids are capable of long distance flights over many kilometres. Crops most at risk are those in regions currently affected by BWYV, particularly the Lower North and Mid North of South Australia, and crops adjacent to infected crops or weeds in other regions.

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Our advice

We are generally advising against spraying to control aphids while winter conditions persist. Insecticides may be necessary, later in winter or early spring, to limit virus spread in canola if winged aphids appear before 50% podding. Pulse crops may also need to be protected from aphids (currently being confirmed).

We suggest that growers and advisors in high risk areas should closely monitor for the first signs of winged aphids in the population and/or aphid flight activity, and be prepared to immediately apply appropriate insecticide treatments to protect susceptible crops. Unlike direct feeding damage, virus can be transmitted by relatively few aphids feeding or probing plants. We suggest using a number of yellow sticky traps, ideally placed in a transect from the edge to the middle of the paddock, and frequently checking for the presence / numbers of winged aphids on the traps. We recommend beginning within the next couple of weeks, while flight activity is low or absent, to 'get your eye' in. Check once per week now, but more frequently when warmer weather occurs. Sticky traps are available from a range of outlets but locally from Biological Services, Loxton 08 8584 6977.

Insecticides: the importance of good decision-making

Biosecurity SA Rural Chemical Operations group Manager, Michael McManus, is asking producers and advisers to think very carefully about what could be at risk if poor decisions are made on chemical use in canola for aphid control. South Australia will produce about 400,000 tonnes of canola in 2014, with the majority being exported. It is vitally important to only use products registered for the crop and situation, to comply with the label directions for the application method, to not exceed application or frequency rates, and to follow all withholding periods.

This year, the impacts of GPA and BWYV have challenged producers and their chemical control strategies. Michael is reminding producers that along the supply chain there are a range of measures in place to detect the presence of chemical residues and/or any off-label use of chemicals that may have an impact on our export markets and clean and green premium food reputation, including:

- Potential on-farm regulatory audits of chemical use practices
- Vendor decelerations required by the silo/receiving point - These vendor declarations require sign-off that "Chemicals have been applied in accordance with registered label and approved permit instructions"
- Residue sampling by Australia's National Residue Survey and by our bulk handler silo/receiving points
- Residue sampling in all our major export markets

If your canola crop results in a residue detection in a cell or shipment of canola, it will cost much more than just the value of the product. It could result in the loss of an important market, the loss of our premium food reputation, prosecution(s) and more stringent chemical use requirements for the future. For the sake of the industry, make sure only registered or permitted products are used and that they are used according to label instructions.

Pasture tunnel moth

Pasture tunnel moth (*Philobota productella*) larvae were found causing patchy damage to 3-4 leaf wheat crops following two years of pasture, near **Minlaton** on Yorke Peninsula (Craig Wissell, Team Wiss). Affected patches around two square metres in size were scattered throughout crops. Damage was mainly restricted to chewing of leaves and plants were

considered likely to recover. Similar damage was confirmed in wheat on upper Yorke Peninsula following two years of improved medic pasture (Sam Davies). In the Lower North, larvae of pasture tunnel moth were also confirmed from sub-clover pasture at **Lyndoch** (Andrew Parkinson, Landmark). Continue monitoring paddocks for pasture tunnel moth during July and August. More information: Crop Insects Ute Guide, Southern Grain Belt Edition (pg. 35).

Pasture webworm

Pasture webworm has been confirmed damaging early tillering wheat sown into medic stubble at **Weetulta,** on upper Yorke Peninsula (Craig Davis, A W Vater). More information: PestFacts Issue 5, 2014 (pdf).

Diamondback moth

Diamondback moth (DBM) (*Plutella xylostella*) larvae are still active in canola crops on southern Yorke Peninsula, Western Eyre Peninsula, the Mallee, and the Fleurieu peninsula. Low numbers of around 5-6 DBM larvae per 10 sweeps were found at **Yorketown**, causing only minor damage. (Craig Wissell, Team Wiss). DBM were present in canola at **Two Wells** and **Pinkerton Plains** in the Lower North, causing minor damage to leaves (Chris Butler, Roseworthy Rural), causing damage at **Parilla** in the SA Mallee (Lou Flohr, Agrilink), and active in low numbers around **Tumby Bay** (Craig Davis, A W Vater).

Larvae were also reported feeding on terminal florets of budding canola near **Streaky Bay**. Reports suggest that in this region, these terminal florets often yield the largest seed. It is possible that significant feeding at this growth stage could cause economic damage. There are no thresholds available at this growth stage. We recommend considering the merits of treating in situations where most plants are being affected by this type of feeding, and where this is likely to continue (i.e. absence of forecast wet weather). More information: PestFacts Issue 5, 2014 (pdf).

Vegetable weevil

Vegetable weevil (*Listroderes difficilis*) adults were confirmed feeding on canola near **Cleve** (Chris Pearce, Elders), and larvae damaging canola at **Parilla** in the SA Mallee (Lou Flohr, Agrilink). Larvae and pupae were also confirmed from a sub clover pasture at **Lyndoch** (Andrew Parkinson, Landmark).

Vegetable weevil adults and larvae commonly attack germinating canola in most districts during autumn and winter. This pest is often associated with cape weed, which is a favoured host. Adults move into crop edges soon after emergence and eat leaves and, in severe cases, whole plants. Adult weevils are approximately 10 mm long, dull brown-grey in colour with two pale strips forming a “V-shape” near the middle of the back. Larvae are mainly found during winter feeding on leaves and growing points. Larvae are up to 12 mm long, greenish in colour, and legless with a small dark brown head capsule. Monitoring at night is most effective as this pest is mainly a nocturnal feeder. Healthy plants can usually tolerate some weevil damage, however, if warranted, a standard insecticide over the affected area (e.g. border) is usually effective. Adults can be difficult to control when in high numbers and occasionally a repeat spray is needed. More information: Diagnosing weevils in canola, DAFWA and Vegetable weevil, DAFWA.

Spine-tailed weevil or cereal curculio

Larvae of spine-tailed weevil, otherwise known as cereal curculio (*Steriphus caudata*), were confirmed from sub-clover pasture at **Lyndoch** in the Lower North (Andrew Parkinson, Landmark).

Cereal curculio attacks pasture grasses, some weeds and all cereals. Larvae attack plants at three growth stages: Seeds can be attacked just after sowing, larvae can bore into underground stems of seedlings causing withering and death, or they may bore into tillers also causing withering and death. Larvae are soil dwelling, white, legless grubs to 8 mm long with a yellow head capsule. Adult weevils are greyish black, up to 7 mm in length with a typical weevil snout. Females have two spines on the tail end of the abdomen. More information: Cereal curculio, SARDI (pdf).

False wireworm

False wireworm has been confirmed in canola at **Two Wells** in the Lower North (Chris Butler, Roseworthy Rural) and at **Concordia** east of Gawler (Peter Wendt, Farmer Johns). More information: Wireworms and false wireworms, DEPI Vic and Diagnosing false wireworm, DAFWA.

Cutworm

We have received a report of cutworm damage in wheat around **Clare** in the Mid North. We would like to hear details of any other such reports this season. More information on cutworms: PestFacts Issue 5, 2014 (pdf).

Grass anthelid

Grass anthelid (*Pterolocera* spp.) has been confirmed damaging 4-leaf to early tillering wheat on Eyre Peninsula, near **Waddikee** (Amy Murray, Agsave Merchandise). Treatment with alpha-cypermethrin appeared to be successful. More information: PestFacts Issue 5, 2014 (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 •

__PestFacts__ is a FREE service providing updates throughout the growing season on an "as-needed" basis of the latest information on invertebrate pests in broad acre crops in South Australia and western Victoria. It is supported by GRDC's National Invertebrate Pest Initiative (NIPI). All information is sent by email to subscribers. Please email a coordinator to be placed on the circulation list. Your support and feedback are essential to the success of PestFacts.

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