Department of
Primary Industries and
Regional Development

GOVERNMENT OF
WESTERN AUSTRALIA

6 June 2018

Tomato potato psyllid complex
Industry Update

Transition to management phase winds up

The cost-shared component of the Tomato potato psyllid (TPP) Transition to management phase has recently finished.

Final reporting requirements are being compiled by the WA Department of Primary Industries and Regional Development (DPIRD) for submission to other states and affected industries through the Consultative Committee on Emergency Plant Pest.

Transition to management followed national agreement that TPP could not be eradicated, and efforts should focus on developing strategies to help industry and government effectively manage the pest. The Transition to management plan was funded by Australian and state governments, and industry.

The plan aimed to improve the capacity of Australia's horticulture sector to manage TPP, and build confidence around the status of the bacterium *Candidatus* Liberibacter solanacearum (CLso), associated with TPP in other parts of the world and causes the serious 'zebra chip' disease in potato.

CLso has not been detected in Australia to date.

Outcomes from the Transition to management phase are being used to inform future TPP/CLso research and management strategies to be continued through the development of a National Management Plan for TPP.

TPP R&D results snapshot

The TPP R&D program was a major component of the Transition to management plan.

DPIRD managed the research program which included:

- screening toxicity of chemicals registered in Australia for other pest species, against TPP;
- screening the potential of commercially-available biological control agents (BCAs);
- evaluating the efficacy of insecticides in conjunction with BCAs;
- evaluating effectiveness of ethyl formate against TPP and phytotoxicity on host fruits; and

- a review of available literature to identify practical management strategies currently used where TPP is present elsewhere in the world, and to identify R&D knowledge gaps relevant to Australian conditions.

While there are a number of positive results from the desktop studies, and laboratory and glasshouse trials, further work in the field is needed to validate this research.

1. Insecticides – laboratory trials

- A list of 15 potential insecticides including Abamectin (Vertimec®), Cyantraniliprole (Benevia®), Spirotetramat (Movento®), Flonicamid (Mainman®), Spinetoram (Success®), Sulfoxaflor (Transform™), Methidathion (Suprathion), Methomyl (Methomyl 225), Chlorpyrifos (Chlorpyrifos 500EC), DC-164 (experimental chemical of Bayer Crop Science), Imidaclorpid (Confidor® 200SC), Eco-Oil®, AGRI-50NF, Paraffinic oil (SACOA BioPest), Azadirachtin (Azamax)) were tested in laboratory bioassays for their toxicity against TPP life stages (eggs, nymphs, adults) in capsicum, tomato and potato.
- These chemicals are registered in Australia for use against other sucking insect pests in capsicum, tomato, potatoes and other crops, but not currently registered for control of TPP. Field data will be required to support registration by the Agricultural Pesticides and Veterinary Medicines Authority.
- 14 insecticides were tested as foliar application, and one (imidacloprid) was tested as soil drench.
- Abamectin, spinetoram, methidathion, methomyl, chlorpyrifos, cyantraniliprole, DC-164 (experimental chemical) and sulfoxaflor are very toxic and caused 100% mortality to the TPP life stages.
- Spirotetramat is a slow acting chemical requiring longer time to cause significant TPP mortality.
- Cyantraniliprole and flonicamid are less toxic to TPP young nymphs (1st-2nd instar).
- All plant-based derivatives (azadirachtin, eco-oil, agri-50 and paraffinic oil) are the least toxic to TPP matured nymphs (3rd-5th instar).
- Azadiractin is very toxic to TPP adults. Spirotetramat, flonicamid, paraffinic oil, agri-50 and eco-oil in potato and capsicum are less toxic to TPP adults. Egg laying was observed with agi-50, eco-Oil, paraffinic oil, flonicamid and spirotetramat in all plant types but none hatched after 7 days.
- Of 13 chemicals tested against eggs, hatching was observed with spirotetramat, abamectin, methomyl, chlorpyrifos, eco-oil, paraffinic oil and azadirachtin, but none developed to adult.
- Imidacloprid soil drench is toxic to TPP life stages causing significant mortality for up to 10 days post drench.
- To prevent insecticide resistance from developing in TPP populations, insecticides from different chemical classes need to be used in rotation.
- Growers are encouraged to contact their chemical advisors to talk through an appropriate Insecticide Resistance Management strategy for their own business.
- Insecticides are only effective against TPP and do not prevent the spread of CLso.

2. Biological control agents (BCA) – laboratory trials

- 9 species of commercially-available BCAs were trialled, including 6 species of ladybird, an anthocorid bug, a mirid and a lacewing.
- The lab trials indicate all BCAs will feed on TPP, but that some are more voracious feeders than others.
- These initial results indicate more research is required to determine the most suitable biological control agents for TPP in different crops and growing conditions.

3. Efficacy of insecticides with BCA's against TPP in capsicum, tomato and potato – glasshouse trials

- Three applications, at 21 day intervals, of abamectin, cyantraniliprole and spirotetramat in capsicum, tomato and potato, and flonicamid in tomato, effectively suppressed TPP populations
- Three releases at 21 day intervals, of mirid bug (*Nesdiocoris tenuis)* in tomato effectively suppressed TPP populations in the glasshouse trial.

4. Post-harvest disinfestation – laboratory trials

- DPIRD has identified a potential benefit in combining post-harvest disinfestation treatment for Mediterranean fruit fly and TPP for tomato, capsicum and eggplant.
- Ethyl formate controlled eggs, nymphs and adults of TPP. Eggs were the most tolerant, requiring a higher concentration of 0.5 to 2% ethyl formate.
- Ethyl formate did not cause phytotoxicity to chilli, cherry or round tomato, eggplant or capsicum at the maximum rate of 2%.

Further results from the R&D program will be provided to industry over the coming weeks.

The Transition to management phase has provided a boost to TPP R&D in Australia and will continue to grow as the National R&D Program is progressed through the role of National TPP Coordinator.

TPP pre-harvest control options

Growers are reminded there are a number of pre-harvest control options currently available to assist with the management of TPP.

Emergency permits from the Australian Pesticides and Veterinary Medicines Authority (APVMA) have been made available for use in host crops and nursery stock.

Download permits at

- www.agric.wa.gov.au/tpp/industry-information or
- APVMA permits search portal

Growers have a responsibility to ensure chemicals are used according to the label/permit instructions.

WA Quarantine Area reminder

A Quarantine Area is currently in place to direct the movement and treatment of TPP host plants within Western Australia.

The Quarantine Area includes the Perth metropolitan area and a number of surrounding local government areas.

Prescribed treatment is required for host plants, such as seedlings or nursery stock, where they are moving from the Quarantine Area to 'specified local government areas' in WA.

Growers should be familiar with the prescribed treatments outlined in the Quarantine Area Notice. Additional treatment options are also provided in the 'Approved manner of preparation for movement from the TPP Quarantine Area'.

For full details including the published Quarantine Area Notice, additional treatment options and a list of areas in the Quarantine Area and specified local government areas, please visit www.agric.wa.gov.au/tpp/tpp-quarantine-area

Check and report

Commercial growers are encouraged to check for, and report sightings of unusual insects or damage to their plants through the MyPestGuide reporter app.

Good farm biosecurity procedures should be in place to prevent the entry, establishment and spread of pests and diseases. More information on biosecurity is available at the Farm Biosecurity website www.farmbiosecurity.com.au

Contacts for growers

vegetablesWA
Phone: 08 9486 7515
Email: office@vegetableswa.com.au

Potato Growers Association of WA
Phone: (08) 9481 0834
Email: admin@wapotatoes.com.au

Nursery and Garden Industry Western Australia
Matthew Lunn, Chief Executive Officer
Phone: 0410 714 207
Email: matthew@ngiwa.com.au

Department of Primary Industries and Regional Development
Ian Wilkinson, TPP Project Manager
Phone: 08 9780 6278
Email: ians.wilkinson@dpird.wa.gov.au

Further information and general enquiries
Pest and Disease Information Service
Phone: 08 9368 3080
Email: padis@dpird.wa.gov.au
agric.wa.gov.au/tpp