

NSW VEGETABLE IPM NEWSLETTER

Integrated Pest Management for Insects and Viruses in Sydney Vegetables



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Your Levy at Work

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Summer Pest Problems

Stacey Azzopardi

Flea beetles, Rutherglen bugs, fruit flies and thrips – pest problems this summer have kept Sydney vegetable growers on their toes, with many looking for better management options than heading straight for the chemical store. Aphids haven't really been causing too much of a problem this summer, but numbers are now building up for autumn.

So is there a better way to manage these pests?

Luckily, Dr Grant Herron at NSW DPI in Camden has been on the case for thrips – there are pages of information available for all Sydney crops detailing resistance management plans for WFT on the DPI website www.dpi.nsw.gov.au.

What if your crops are suffering a different pest?

Through your IPM consultant and NSW DPI, each pest can be addressed in an IPM program:

- Rutherglen bugs (pictured) need weeds as habitat nearby before they can cause damage in a lettuce crop – clean up your farm and pest numbers will drop.



Destroy old crops sooner to avoid a breeding ground where crops are no longer sprayed and weeds are left to flourish. Manage weeds in headlands, fallow paddocks and boundaries.

- Flea beetles, known to cause extensive crop losses in many parts of the world, have been causing increasing leaf damage in Sydney brassicas and more recently in silverbeet. Using a trap crop of daikon radish or ensuring all old crops are turned in will help reduce numbers.



- Management of fruit flies (pictured), particularly for capsicum growers, has been developed using area wide management strategies with protein sprays and cue lures.

The Vegetable IPM Project, now in its third year, is here to provide levy paying vegetable growers with IPM alternatives for their farms.

Through your consultants and resellers, pest management questions can be answered; it is up to you, the grower to ask them.

When new pests are found, the sooner growers forward them for identification, the faster we can find solutions. This way, NSW DPI can help minimise crop losses and make horticulture in Sydney more sustainable. For insect enquiries, phone 1800 675 821.

IPM consultant spotlight: The Beneficial Bug Company

Stacey Azzopardi

Andy Ryland of the Beneficial Bug Company has been working as an integrated pest management (IPM) scout for the last three seasons with several vegetable growers in the Camden area of western Sydney. The major crops grown are brassicas, lettuce and potatoes, with smaller quantities of spinach, Chinese cabbages, carrots and some cucurbits.

The key problems in these crops are diamondback moth, heliothis caterpillars, tomato spotted wilt virus (spread by certain thrips species) and, more recently, currant lettuce aphids.

All of these pests have developed high levels of resistance to many pesticides and can cause severe crop losses. There is also wider concern in the community about the use of pesticides in fresh produce and greater scrutiny of farm practices.

Andy Ryland showing grower Eddie Galea (left) crop scouting results during weekly monitoring



Stacey Azzopardi

The IPM service offered consists of weekly pest and disease scouting of the crops and adjacent areas during spring, summer and autumn. From this, the level of pest and disease activity is identified and well timed and targeted management options are recommended.

These management options take into account the level of pest and disease activity, the numbers of naturally occurring beneficial insects that are in the crop and what type of control measure, if any, would be most effective.

If a pesticide application is needed the most suitable chemical can be recommended to help avoid resistance build-up and one that will preserve the beneficial insects where possible.

The Beneficial Bug Co. can be contacted on 02 4570 1331. Contact Stacey Azzopardi Hawkesbury Office for IPM consultants in your area.



**Alison Anderson, hydroponic lettuce grower
Joe D'Anastasi and Stacey Azzopardi
at Richmond, February 23rd**

Image courtesy of Sylvia Jelinek

Pesticide Residues – using IPM to reduce the risk

Stacey Azzopardi

Sydney vegetable growers have a legal responsibility (Duty of care) to choose pest and disease management strategies that will provide safe and high quality products to their customers.

NSW DPI and other agencies are always researching and providing information and advice on the best options available to your industry.

The hydroponic lettuce industry met with NSW DPI for a workshop in Richmond on 23rd February, which gave the growers and industry representatives an opportunity to ask a panel of experts questions about better farm management practices. Led by Glenorie grower Joe D'Anastasi, and NSW Vegetable IPM project Officer Stacey Azzopardi, the discussions covered the current issues facing the industry, and strategies that can help to minimise the consequences of poor management decisions.

Growers discussing thrips and the lack of management options



Image courtesy of Alison Anderson

The key issues being discussed by the growers on the day were the loss of chemical options; increase in pest pressure; insecticide resistance; products being taken off market (eg Lannate) and problems associated with pesticide residues. These include human health concerns – for growers, workers, neighbours and the consumers; fines from the DEC; loss of market access and consumer demand and a bad image for the industry.

Zucchini Viruses - Where are they hiding over winter?

Stacey Azzopardi and Sylvia Jelinek

As with most problems on the farm, there are ways that pests and diseases can persist from season to season.

In the greenhouse, growers must have a break and clean up between crops to break the disease and pest cycle. Hydroponic lettuce growers harvest then disinfect the channels before the new crops are transplanted. Field vegetable growers however must be careful that they don't plant crops that are susceptible to the same pests and diseases, and that

surrounding areas are kept free of potential reservoirs.

The current zucchini mosaic virus demonstration plot at Freeman's Reach is a great example of how growers can break the disease cycle.

After many years of 100% mosaic virus infection in the late summer zucchini crops, the cycle has been broken with a change in crop rotation. Rather than planting zucchini right through summer, only early and late crops were planted. The middle of the season, which is known to be a time when aphids and virus levels build up, no cucurbits were planted on the property and sweet corn was planted instead. Sweet corn is susceptible to a different range of pests and diseases to zucchini. The infection levels are now less than 5% in the crop, and yields have been dramatically increased.

While we have been monitoring virus in the zucchini, we have been investigating the surrounding crops and broadleaf weeds for disease also.

We have found the zucchini viruses to be in globe artichokes, sow thistle and amaranth weeds. These alternate hosts are present on most other Hawkesbury field vegetable farms, so it is a very important result for the management of zucchini crops.



Amaranth and sowthistle, hosts of Papaya ringspot virus, one of the major zucchini diseases, causing mosaic and lumps on the fruit. Images courtesy of Lonan Turton



The aphid responsible for spreading the virus appears to be *Aphis gossypii*, commonly called cotton or melon aphid. We have yet to locate the source of this pest, and the crop or weed that it survives in over winter.

Now that many Sydney zucchini growers are using mosaic virus resistant varieties, they are on the way to zucchini IPM. By controlling aphids and broadleaf weeds, and including crops such as sweet corn in the rotation, the losses we have seen in the past few years can be significantly reduced.

Lannate® - Where has it gone?

Stacey Azzopardi

Despite recent crop survey results in lettuce and many other crops confirming that thrips are the key pest, one of the major insecticides used for thrips management has been restricted.

As many growers will already know, methomyl (Lannate®) use was restricted from January for all leafy vegetables, and all vegetables produced in a protected environment. Lettuce and greenhouse vegetable growers were all disappointed to see the loss of yet another product. Since the restriction, a permit has been released for field crops, but protected vegetable crop growers are still unable to use methomyl.

Research investigating methomyl residues in hydroponic lettuce showed that maximum residue limits (MRLs) were exceeded three-fold after the 1 day withholding period, even though label directions were followed correctly.

For hydroponic lettuce growers, this change to chemical usage will come at a great cost. Thrips need to be managed to prevent the spread of tomato spotted wilt virus. Thrips management has proven difficult since western flower thrips (WFT) were first found in Sydney 13 years ago, due to insecticide resistance.

All products that are available for WFT have a strict resistance management strategy printed on the label or permit. This ensures that the last few products remain effective for as long as possible. In a crop such as lettuce, Lannate® and Success® (spinosad) have been the only recommended products for a number of years. Success® already has resistance problems (down to <25% control), detected by NSW DPI laboratories during population testing in the last two years. Lannate® was the only reliable product left (>90% control) and it has now been taken away. This situation is not ideal, as it places even more pressure on Success® to be effective.

NSW DPI is working with the APVMA to find new chemicals to replace Lannate®. It is unlikely that this product will be available in hydroponic lettuce in the future due to residue risks. Staff at NSW DPI have been submitted a project proposal to HAL to investigate and address the needs of hydroponic lettuce with respect to the management of WFT and TSWV. If this project is funded then lettuce growers can expect several more management tools to be available to them in the future.

Seedling Nursery IPM

Stacey Azzopardi

Chemical usage in all seedling production nurseries should be compatible with an IPM program. If a seedling nursery has clients that are encouraging the conservation of natural predators and parasitoids, or purchasing biological controls for their pests, it is the nursery's responsibility to ensure that there are no toxic chemical residues that can impact negatively on the success of the grower's IPM program.

Research conducted by NSW DPI at Gosford has shown that products such as Talstar® and Monitor® last many weeks on leaves and media. Chemical options with shorter residues should be your first preference in the nursery. Timely applications of softer chemical options can enable nurseries to supply clients with pest and disease free seedlings, without residues.

For vegetable seedling producers, a valuable reference guide is the NSW Nursery and Garden Industry Best Management Practice Guidelines. Produced by the Nursery and Garden Industry Australia, it details the guidelines placed on production nurseries and media suppliers.

Crop and site management information along with pest, disease and weed control options can be found in this resource. While the nursery industry accreditation scheme was written for ornamental and amenity horticulture, the principles for vegetable seedling production are the same. It is recommended reading for all vegetable seedling producers who want to improve the quality of their stock, or are planning on applying for NIASA accreditation.

More information can be obtained from the NSW Nursery Industry Development Officer Michael Danelon, 02 9679 1472 or at www.ngina.com.au.

Greenhouse Modifications

Stacey Azzopardi and Marilyn Steiner

Screening is useful for both shade and pest exclusion. A range of greenhouse crop pests can be screened out with different hole sizes, or with optical additives to the screens that may repel certain pests.

When modifying greenhouses to use screening in an IPM program, there are a number of considerations:

- Cost
- Ventilation
- Ability to retrofit screens
- Lifespan of structure

Types of screens that can be used include:

- OptiNet 40 and 50 mesh (Polysack)
- BioNet 50 mesh (Meteor)
- Antivirus net (Meteor)
- Spidernet (Meteor)
- Econet M (LS)
- Econet T (LS)

Screens can be fitted to:

- Side walls
- Doors
- Vents
- Whole structure

On-farm trials have been underway investigating the benefits of modifying tunnel greenhouses on pest management. Preliminary results are giving Sydney vegetable growers a pest management alternative – pesticide use can be significantly reduced if the insects cannot fly into the greenhouse.

Greenhouse vegetable growers who have visited the on-farm trials learned that by using screening in an IPM program and ensuring adequate ventilation, crops can be more successful.

Tunnel greenhouse in Rossmore with roll up sides protected by whitefly grade insect screening

Stacey Azzopardi



Further Information

www.dpi.nsw.gov.au for pest and disease management information

www.apvma.gov.au for chemical permits and registrations

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