

NSW Vegetable IPM Newsletter



Integrated Pest Management for Insects and Viruses in Sydney Vegetables



**Introducing Stacey Azzopardi, Vegetable IPM Project Officer,
NSW DPI Hawkesbury, working with
Sydney vegetable growers on their pest and disease problems.**

*This project is facilitated by HAL in partnership with AUSVEG
and is funded by the National Vegetable levy.
The Australian Government provides matched funding for all HAL's R&D activities.*

Issue 1

Your Levy at Work

July 2005

IPM in the Sydney basin: Introduction & Aims

The focus of this Horticulture Australia Limited (HAL) extension project (funded by the National Vegetable levy) is on insect vectors and their associated plant viruses with particular emphasis on western flower thrips (WFT) and tomato spotted wilt virus (TSWV).

The main aim is to help growers improve their ability to identify pest problems, to recognise viruses carried by different insects and to have an understanding of IPM practices that can help them to avoid large crop losses caused by virus infection without heavy spraying.

Stacey Azzopardi, the Vegetable IPM Project Officer based at the new NSW DPI Advisory Office in Richmond is:

- Helping growers develop *practical IPM strategies* on their vegetable farms in the Sydney region; and,
- Developing a *commercial IPM service* to provide ongoing technical support and help in getting pest and disease problems identified.

The **five year project**, led by Dr Stephen Goodwin, Senior Research Scientist for NSW DPI at Gosford Horticultural

Institute, also involves Marilyn Steiner also at Gosford, Len Tesoriero in the NSW DPI Plant Health Diagnostic Service and Dr Grant Herron, Insecticide Resistance at EMAI in Camden, Dr Sandra McDougall, Technical Specialist at Yanco, Alison Anderson, NSW Vegetable IDO and DPI Horticulturists.

South Australian farmers have already seen the benefits of IPM, with Tony Burfield, the WFT Extension Officer for SARDI having helped growers to implement programs since 2002.

What are the initial activities?

Implementing IPM on a number of demonstration farms around Sydney, to conduct virus surveys in the key vegetable crops and to gain benchmarking information on pest and disease management practices currently implemented by Sydney vegetable growers.

What crops are we working with?

lettuce cucumber tomato
capsicum zucchini eggplant

Other crops that contribute to the National Vegetable levy are also included.

As an encouragement to growers, the project will fund the identification of pests and diseases for farms who want to improve their practices and make progress toward IPM.

Thrips on the web

Do you have internet access?
Visit the NSW DPI website for current thrips information at:

<http://www.agric.nsw.gov.au/reader/thrips>



You will find a guide to the identification of key thrips species that transmit TSWV in the 'Which thrips is that?' series, along with an insecticide resistance management plan for your crop.

A Commercial IPM Service

The project will soon be working with interested parties to develop a commercial IPM service for Sydney basin vegetable growers. Commercial interests will be invited to participate in IPM training sessions and farm demonstrations specific to their client needs. Through this, they will be able to access a network of information sources and technical support to adequately service their growers.



Sticky trap monitoring in hydroponic lettuce

Benchmarking Survey

In order to measure the progress vegetable growers have made with IPM over the course of the project, a set of questions is being asked to interested growers at the start of the program. Ten Sydney farms have so far participated in the survey – including field vegetables, hydroponic lettuce and greenhouse tomatoes and cucumbers.

Some of the key questions include:

- ✓ *Do you monitor for pests or beneficial insects?*
- ✓ *Do you use sticky traps?*
- ✓ *Do you use a diagnostic service to find out what diseases are affecting your crop?*
- ✓ *Do you remove virus affected plants?*

The aim is to find out how much IPM is currently occurring on Sydney farms. Most farmers do claim to monitor their crops, but it tends to be only while they are working in the crop, for example pollinating or picking. Most growers surveyed still maintain a calendar based chemical usage practice, but understand that it is far more economical to only spray when pests exceed the action thresholds, unfortunately withholding periods and harvesting can interfere.

It is anticipated that over the course of the project, pest management on those farms surveyed will change, growers will be more informed and when the same questions are asked about IPM on their farms in 3 or 4 years time, the answers will be very different.

Growers interested in participating in IPM demonstrations or pest and disease surveys are encouraged to contact Stacey Azzopardi on 02 4588 2135.

Demonstration farms & the Sydney vegetable IPM project

A new start in pest and disease management for vegetable producers

Weekly pest and disease monitoring of demonstration farms in each of the key Sydney vegetable groups is enabling growers to address issues such as chemical usage, farm hygiene and pest and disease management. Case studies of cooperating growers will be used to help other growers make progress towards IPM. The work being done on these farms will be presented to other interested growers over the next few months in a series of Farm Walks and Workshops, aimed to help growers reduce the losses experienced from viruses and insect pests such as thrips and aphids.

Hydroponic Lettuce IPM and Insecticide Resistance



*Joe and Robert D'Anastasi,
Glenorie Hydroponics*

The introduction of IPM to hydroponic lettuce is limited due to issues related to marketability of the crop. The demonstration farm selected has a supermarket quality assurance accreditation, which defines the presence of live insects as a major defect that must not exceed 2% of the consignment. This limits the incorporation of beneficial insects, as the presence of these insects can also be regarded as consignment contaminants. However, on the bright side, discussions were recently held with supermarkets to overcome this issue.

There has been moderate to high WFT pressure on this farm, with losses to tomato spotted wilt virus (TSWV). Joe has only had methomyl and spinosad to use against this problem and rotations between only two chemical groups increases the chance of insecticide resistance developing. It is important for growers to read the label directions and follow the resistance management plan as detailed on the last page of this Newsletter.

Thrips collected from Sydney hydroponic lettuce farms are currently being tested for insecticide resistance by the NSW DPI insecticide resistance management group led by Dr Grant Herron at Elizabeth Macarthur Agricultural Institute in Camden. This information will show us just what impact the lack of choice of insecticides has had on resistance levels.

TSWV affected plants are removed from the system and disposed of to prevent further spread. Data collected from weekly sticky trap counts and scouting along with pending resistance results will assist in developing a spray program and the setting of a WFT action threshold.

Greenhouse Cucumbers and Biological Control

When the benchmarking survey was conducted with Moustafa Osman in December, thrips were the biggest problem, with up to 30% of fruit damaged. Hygiene on the farm has since improved with weeds controlled to a minimum 5m buffer zone around the greenhouse, along with removing old crop waste away from the greenhouse.

WFT numbers were excessive and unable to be controlled chemically due to lack of registrations and withholding period (WHP) restraints. The recent permit for spinosad with 1 day WHP (see below) has enabled the grower to have a chemical option should thrips numbers increase,

however good farm hygiene has kept numbers in check.

Weekly scouting revealed minimal thrips this year, with sticky traps averaging one thrips/trap/week, with a maximum of five WFT on one trap. No fruit has been discarded this year due to thrips damage.

A farm walk held on Moustafa's farm on 26 May demonstrated IPM to interested growers, emphasising the importance of pest and disease monitoring, weed management and maintaining a clean house in keeping pest numbers at a minimum.

The current crop is being managed using biological control agents in an IPM program and targeted spraying of soft chemicals where necessary. Refer to the July edition of Good Fruit and Vegetables for more information on the cucumber IPM program and farm walk.



Alison Anderson, Stacey Azzopardi and cucumber grower Moustafa Osman at the May farm walk

(Photo: M Lamond, Good Fruit and Vegetables)

IPM in Sydney Vegetables

Grower education in chemical usage – knowing what is registered or what has a permit, plus which chemicals are compatible with an IPM program seem to be key points that need to be addressed with growers and agricultural retailers. Gaining an understanding of when pests such as whiteflies in greenhouse tomatoes are at a vulnerable stage for control, as well as finding the source of infestations such as piles of crop waste and open vents are all important for growers to be able to use IPM on their farms.

Eddie Galea, field vegetable grower

With weekly monitoring for pests and diseases by Andy Ryland, IPM consultant from the Beneficial Bug Company in Richmond, Eddie, along with a number of growers in the Camden District has made significant progress with IPM in field vegetables. Producing mainly brassicas and lettuce, Eddie is committed to IPM on his farm, and supplying safe produce to market free of toxic chemicals.

Micallef family, field vegetable growers

With the assistance of agronomists from Elders at Windsor, the Micallefs have been applying soft chemicals to their brassica, lettuce, sweet corn and melon crops on the river flats at Richmond for the past few years. Weekly visits from Elders staff ensure that key pests are targeted with chemical applications and diseases are diagnosed without delay.

Despite the use of soft chemical options by the Micallefs over a lengthy period, beneficial numbers are quite low. This looks to be attributed to the drenching of seedlings with imidacloprid – a practice permitted for lettuce aphid control that is evidently having an effect on natural predators such as lady beetles and lacewings. The residual toxicity of imidacloprid on beneficials was also observed in lettuce aphid field trials in Tasmania and New Zealand, something that growers using IPM need to be aware of.

John Vella, seedling producer

Regular monitoring and targeted insecticide applications ensure that seedlings are free of insect pests that can contaminate consignments or spread viruses. It is also important that seedlings are not contaminated with harmful insecticide residues that can make biological control difficult to establish in greenhouse crops or to encourage in field crops on the farm. Routine disease monitoring also ensures early detection of problems and healthy seedlings for growers.

IPM in Greenhouse Tomatoes



**Sam Aloï and Peter Doueihi,
Greenhouse Tomato Growers**

This demonstration greenhouse utilises high-end technology for production of truss tomatoes. An initial IPM benchmarking survey identified IPM practices including physical exclusion of pests and diseases through double door entry, foot baths, gloves, and solid walls. Unfortunately unscreened roof vents, allow entry of flying insects such as whiteflies into the greenhouse. Whiteflies will be targeted in the biological IPM program due to begin with the new crop later this year.

Virus Management and the Importance of a Diagnosis

A number of farms in the Sydney region have experienced significant losses due to mosaic virus infections in crops including zucchini and lettuce.

The vegetable IPM project provides for virus diagnostic testing in vegetables. If you suspect a virus in your crop, do not delay in having it tested. Once a plant is infected with a virus, you can't fix it – no matter how much you spray!



**A distorted cos lettuce affected by
lettuce mosaic virus**

If you have the plant tested by the Plant Health Diagnostic Service in Camden, you can then find out which insect may be spreading it and prevent further crop losses. Timely application of specific insecticides rather than repeated spraying of broad-spectrum chemicals will save you money on your chemical bill and ensure far better control of the problem.

Samples can be submitted by contacting the diagnostic lab on 02 4640 6428 or Stacey Azzopardi on 02 4588 2135.

WFT, Chemical usage and Insecticide Resistance Management

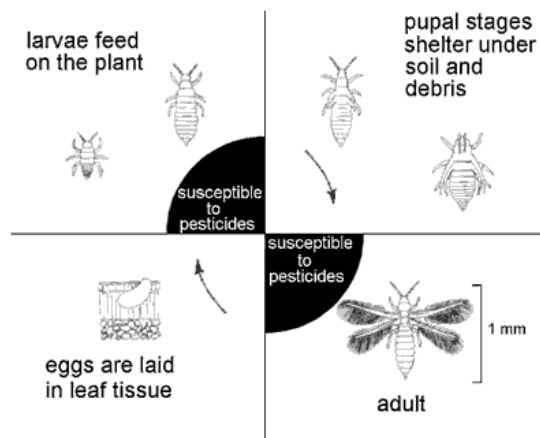
Insecticide resistance is a big problem in WFT. Using IPM, growers will be able to reduce their use of chemicals and avoid serious problems like resistance from interfering with their pest management programs. The permit system enables growers to temporarily access new chemicals not registered for a particular use. This can increase the choice of chemicals in different activity groups, an important factor in insecticide resistance management.

An example of a recent new permit for cucumbers with WFT is Permit 6793 for spinosad (Success) with expiry date 30 June 2006. Growers wanting to apply this on their farm must obtain a copy of the permits prior to use. For copies of chemical permits, contact Alison Anderson, NSW Vegetable IDO on 02 9746 1865.

IPM strategies can better manage thrips, aphids and other insect pests by encouraging natural enemies, the 'good bugs' in field vegetable crops, and in turn reduce the risk of tomato spotted wilt virus and mosaic viruses from occurring.

An important first step for vegetable growers is to make sure insecticide programs contain chemicals from different activity groups to reduce the risk of resistance from occurring.

As you can see in the thrips life cycle, there are some stages that insecticides can't reach. On chemical labels, you can read specific instructions for WFT Resistance Management in the Directions of Use.



A series of three sprays of the same chemical several days apart is recommended against a single generation of WFT for effective control. However, this assumes, and often assures, that no natural enemies are present that might contribute to control. Alternatively, use of low-risk chemicals, correct timing, regular

monitoring, and good numbers of natural enemies may allow growers to adopt quite a different strategy. A single spray at a reduced rate or spot application of a single pesticide may be all that is needed. This is what IPM is all about.

The interval between applications varies with temperature. The higher the temperature, the shorter the interval between sprays. When the 3-spray-series is not used, growers are increasing the chances of developing insecticide resistant thrips.

For those with internet access, visit <http://www.agric.nsw.gov.au/reader/thrips/wft-insecticide-mgt-plan.htm> for more detailed information on insecticide resistance management (IRM) for western flower thrips. This information has been provided by Dr Grant Herron, Senior Research Scientist working on insecticide resistance at Elizabeth Macarthur Agricultural Institute in Camden.

For more information, copies of chemical permits or WFT Resistance Management Fact Sheets contact Stacey Azzopardi, NSW DPI Vegetable IPM Project Officer on 02 4588 2135 or Alison Anderson, NSW Vegetable IDO on 02 9746 1865

COMING EVENTS

(Dates yet to be advised)

Meetings for Sydney Vegetable growers

Helping vegetable growers to better understand and manage their pest and disease problems:

- Discuss your pest and disease problems
- Ask about new chemicals for thrips, whiteflies, aphids and other major pests
- Hear about new information on WFT – what you can do to prevent it damaging your crops
- Viruses and insects that spread them: How can you tell which one is responsible?

Other Activities include grower and consultant meetings to provide:

- On-farm help and skills training
- Diagnostic support
- Discuss seasonal pest and disease problems
- Provide help with chemical spray programs
- Working with IPM consultants to develop services for growers

SMARTtrain®

- Level III and IV Chemical Application Courses
- Contact Maryke Archbold-Hession, NSW DPI on 02 4640 6333