

Biological Control using Mites

Greg Baker and Peter Crisp, SARDI

Developments

Several species of predatory mites large enough to tackle aphids (certainly early instar) have been identified in soil around lettuce plants and in the outer leaves of lettuce plants. The most promising is a species of *Pergamasus* and has been collected in samples from NSW and SA. In the right conditions the mites seem to be able to persist between plantings, in and around reject heads and other weeds.

A small-scale trial was set up in Virginia testing a range of compost rates, with results showing no detrimental effects on lettuce yield, appearance or disease. There was a noticeable change in the soil structure, with untreated soil forming a surface crust that appeared to reduce water penetration, but because of the drought and the short duration of this trial there was no observation of any mite treatment effects. However, this trial has now given growers confidence to allow a large-scale trial to be developed. (See future work below.)

Difficulties

Due to the drought and short supply of lettuce in the market there has been great pressure on growers to take a "No risk" approach this season and finding suitable sites for large scale trials with reduced pesticide use has been impossible. Additionally, other suitable sites became unavailable as a result of water restrictions (grower ceased lettuce production). Some sites that are available use an 18 month rotation between lettuce crops, which reduces their suitability. A further problem with the trials is the very low base populations of arthropods in the soil, meaningful communities can not be established in the 6-8 weeks of a crop so availability of refuges between crops may be important in maintaining viable populations. However, three sites have now been selected for large scale long term assessment and the first of these will be established in late March.

At this stage attempts to rear the *Pergamasus* species has not been successful, the longest a colony has been able to be maintained has been a little over 5 weeks.

Future work

Large scale (4 ha) longterm trial plots are being established in lettuce only (ie. continuous lettuce cropping) and rotation (lettuce/fallow/wheat type rotations) fields. The first of these is in Virginia, and it is expected to establish a similar trial at Murray Bridge in about early April. The treatments consist of farmer's current practice (control) vs. 30 m³/ha Jeffries composted green waste in a 4 rep design. These sites will be monitored for soil arthropod populations, crop development and health, soil carbon and other agronomic aspects over 12-18 months.

Soil and lettuce samples are being taken from another Virginia property to examine invertebrate activity where current soil amendment consists of matured chicken manure with coal dust.

Also, the perimeter planting of native chenopod species is planned as soon as seedling plants are available (April-May).

Methomyl on Field-Grown Lettuce

APVMA Permit No. PER-9932 is in force from 23 March 2007 to 29 February 2008 and allows for any registered product containing 225g/L methomyl as its only active ingredient to be used on field-grown head and leafy lettuce (not hydroponic lettuce) to control *Helicoverpa* sp., Cluster caterpillar and Western Flower Thrips.

RESTRAINTS:

- DO NOT use on hydroponically grown lettuce regardless of whether it is grown in-field or under cover.
- DO NOT use in covered or protected situations such as glasshouses, greenhouses or plastic tunnels.
- DO NOT apply more than 6 applications per crop.
- There MUST be at least a 7-day interval between consecutive applications.

WITHHOLDING PERIOD: Do not harvest for 3 days after application

JURISDICTION: ACT, NSW, QLD, SA, TAS, NT, WA only.

For further information visit the APVMA website

www.apvma.gov.au and click on Permits & Minor Use, then Permit Search, then enter Permit No. 9932.

2,4-D Herbicide Periodic Ban

In October 2006 the Australian Pesticide and Veterinary Medicines Authority (APVMA) suspended use of 2,4-D products containing a high volatile ester (HVE) formulation, due to the risk of these products volatilising and causing off-target damage to the environment and sensitive crops through vapour movement.

The products affected by this suspension are those that contain 2,4-D ethyl ester, butyl ester or isobutyl ester.

An Australia wide 'no spray window' was put in place between 1 September and 30 April, meaning that these products cannot be used at all during this period.

No 2,4-D HVE products can be used legally anywhere in Australia, except between 1 May and 31 August, even if they were purchased before the suspension came into effect.

For further information visit the APVMA website

www.apvma.gov.au and click on the 'chemical reviews' link.

State Roundup

Western Australia -Sonya Broughton, DAWA

There have been no further reported detections of CLA since finding it on two properties north of Perth in December 2006.

This means it is still only present in areas north of Perth including Carabooda, Gingin and Wanneroo.

Queensland - John Duff, DPI Qld

Growers in the Lockyer Valley are beginning to harvest lettuce with no reported issues of insects or diseases.

CLA is on the move and has now been found in the Brisbane region, the Granite Belt and most recently, the Darling Downs. There has been none reported from the Lockyer Valley but this could be due to the use of Confidor® on seedlings.

Heliothis numbers were increasing but with the cooler night temperatures numbers have dropped back.

Growers are still concerned about the restricted use of methomyl as an ovicide but this restriction could help the IPM cause considerably as growers were still relying on the chemical until just before harvest.

John Duff has taken up a new position as Senior Plant Pathologist, still with the Queensland DPI. John's replacement is Austin McLennan.

NSW - Tanya Shaw, & Sandra McDougall NSW DPI

Field lettuce production was reduced this autumn in the Sydney basin. Many hydroponic growers are moving away from NR lettuce varieties over the autumn-winter because they are unhappy with the quality compared to their usual non- NR varieties.

CLA has been a minor issue but may increase with the variety shifts. Despite weed sampling CLA hasn't been found on weeds on farms in Sydney.

Hay growers are in production at slightly lower levels than normal and are likely to be reducing plantings over the late winter unless good rainfall comes. CLA has yet to be found at Hay and although WFT is very common there is very little TSWV present. Heliothis pressure is low.

Victoria - Slobodan Vujovic, DPI Vic

In the Melbourne metropolitan growing regions (Cranbourne, Werribee South and Bacchus Marsh) the lettuce season is ending. Many growers had to reduce their normal production of lettuce during the summer months. This was due to the drought with growers in Werribee South and Bacchus Marsh receiving only 10% of their total water allocation for the whole season. Majority of Cranbourne and Werribee South lettuce growers supplemented their irrigation requirements using Class A recycled water.

Pest pressure has been relatively low this season in Victoria. *Helicoverpa armigera* have become active (moderate) with two peaks in Melbourne metro area - the first mid November to mid December and second at the end of February till mid March. *Helicoverpa punctigera* had its peak at the end of November and a smaller peak in second half of January. There were no reported difficulties in managing lettuce aphids this season. The biggest problem apart from the drought was increased salinity that had an affect on yield.

Applied Horticultural Research Training Days

On March 15th at the Hay Services Club a small but broadly representative group had the *Optimising Yield and Shelf Life of Iceberg and Cos Lettuce* training. AHR presented the results of a three year HAL-One Harvest funded project. The topics at the workshop all focused on how to maximise postharvest quality and shelf-life. Factors presented that impacted on quality or shelf-life included: harvest timing, cooling, storage and weak coolchain links; crop nutrition, water management, and planting density. Towards the end of the day we had orders for Cos and Iceberg lettuce to be delivered on a specified day and using a crop scheduling tool we worked out our planting dates, numbers of seedlings and

the area of land we needed. We finished up with a discussion about varieties and classifying them into type groupings. This would help discussions between regions and seasons so instead of talking about specific varieties, which may be superseded within a few years or not grown in your area, we talk about a 'Saliinas' type iceberg or a Mini Cos type cos.

At Hay we all learnt something new from this training session. The up coming sessions are:

District	Day	Date	Venue
Cowra, NSW	Thursday	24 th May	Ex Servicemens' Club
Gippsland, VIC	Wednesday	20 th Jun	Bairnsdale Motor Inn
Melbourne, VIC	Thursday	21 st Jun	Knoxfield Research Station
Perth, WA	Wednesday	4 th Jul	TBC
Virginia, SA	Friday	6 th Jul	Virginia Hort Centre
Stanthorpe, QLD	Wednesday	29 th Aug	Stanthorpe Research Station
Sydney, NSW	Friday	31 st Aug	Panthers Leagues Club
Davenport, TAS	Wednesday	5 th Sep	Forthside Research Station

Enquiries and registrations can be made to AHR by phone on 02 95270826 or by email lynn@ahr.com.au

Reducing the Disease & Insect Load

Sandra McDougall NSW DPI

We focus a lot of effort on the control side of pest and disease management e.g. finding new chemistry. Too little effort is focused on the preventative side – not getting the pests or diseases in the first place.

In looking for long-term pest and disease management strategies for lettuce we have come up against Tomato Spotted Wilt virus (TSWV) as a major stumbling block. One of its main vectors- Western Flower thrips (WFT) has one or two chemicals registered for use in lettuce depending on whether you are a hydro or field lettuce grower. WFT is already developing resistance to the one chemical available in both systems: spinosad, and at this point methomyl is unlikely to come back for hydro growers. So what do we do?

Although there is some new chemistry coming through it all has limitations, is usually expensive and the earliest we will see a permit or registration is later this year. Yet a very low tech solution stares us in the face – **Sanitation**

Sanitation probably invokes images of hospitals and disinfectant but in the context of vegetable production it includes:

1. Managing weeds within and outside crops

TSWV is found in many crops and weeds, and they do not necessarily show symptoms. Keeping weeds cleared at all times can greatly reduce the reservoir of TSWV.

2. Removing diseased plants

Don't wait until 10% or more of the crop is showing symptoms because by then probably 50% are already infected. Or worse relying entirely on chemical options to control thrips. Removing diseased plants when only one or two are showing symptoms will greatly reduce the disease load later on. And chipping out or dropping below the tables is NOT good enough – they need to be buried or bagged.

3. Having thrips proof and clean nurseries for seedling production

Starting with thrips and TSWV free seedlings gives a good start.

Attention to sanitation can reduce the need for chemicals!