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National Vegetable Industry Centre Newsletter

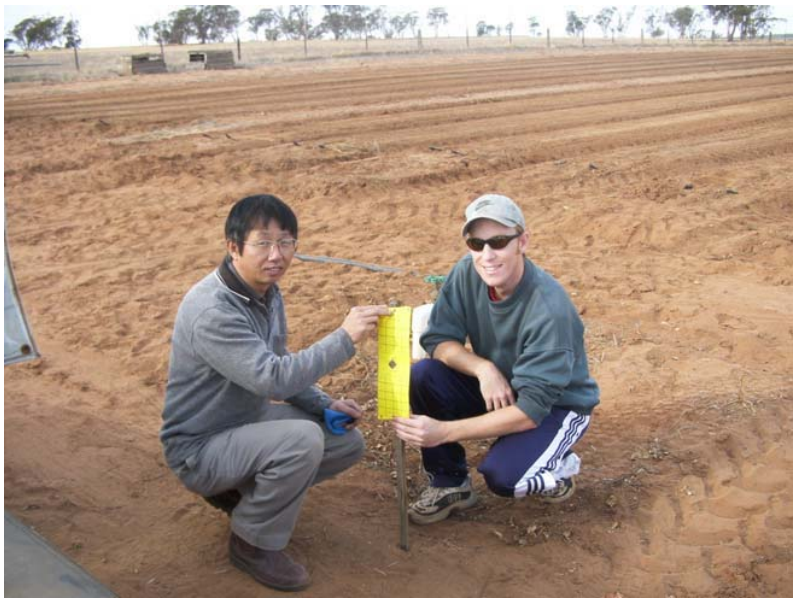
Think Tank on Onion Thrips

Mark Hickey

Onion specialists from around Australia gathered for a workshop at Camden recently to tackle some of the major issues concerning onion thrips. One of the issues facing the project team is the lack of information on the biology of the onion thrips. There is still a lot to learn about the onion thrips, such as its life cycle, its ability to overwinter, and what conditions trigger rapid population growth in this pest. There is debate about what time of day thrips are most actively feeding on crops, and how this knowledge can be used to control them better. Unlike other thrips species, onion thrips are all females, and this may enhance their ability to build up in numbers very quickly and damage onion crops in a matter of days.

Timing and method of applying sprays for the control of the pests are some of the issues being addressed in the project. Onion growers have a limited range of chemicals to choose from, and there is some evidence of resistance to some of the older chemicals. An extensive series of chemical trials has also been conducted over the past two seasons in all states and surprisingly, the results are not consistent. Some products that were very effective in NSW on furrow irrigated onion crops were much less effective under centre pivot irrigation in South Australia. This pattern was repeated over two seasons, so obviously the growing system has a major effect on product effectiveness.

Early monitoring results in Queensland show thrips are present at a much earlier stage in the onion crop than has been the case for trials carried out in other states. On-farm investigations in a Queensland onion crop show onion thrips are present as early as the 1-2 leaf stage whereas thrips were not found in crops in NSW until the 7-8 leaf stage. An efficacy trial has been established in Queensland where nine chemical treatments are to be evaluated.



Project leader Dr Jianhua Mo helps technical assistant Scott Munro set up sticky traps to monitor emerging populations of thrips at the Yanco onion trial blocks

Dr Jianhua Mo, project leader with NSW Department of Primary Industries at Yanco is optimistic the project is making solid gains in both new knowledge and tools for the industry. Dr Mo said “In the short term we hope to soon have the first of a shortlist of new chemicals available under minor use permit for the industry, but in the long term, we need to look at new registrations of products that have been thoroughly tested, with low risk of resistance to those chemicals developing in thrips populations”.

In the coming season the project team are looking closer at new products with systemic action properties, and soil drenches as an alternative to foliar sprays. The team will also be focussing on the onion thrips life cycle, using emergence traps to gauge the importance of soil pupation in new infestations, monitoring alternate weed hosts and using a “mark and recapture” method early in the season, to help measure population build-up and movements coming out of winter.

For more information on the national onion thrips project, contact Mark Hickey at Yanco Agricultural Institute on (02) 6951 2523

Lettuce Aphid Outbreak in Victoria

Tony Napier

The vegetable industry has kept a very close check on the Lettuce Aphid since it was first detected in Tasmania during March 2004. Unfortunately it was detected on three properties in the Melbourne Metropolitan area during the second week of May 2005. By mid June, lettuce aphids were detected at Kooweerup in an untreated commercial lettuce crop close to harvest. Kooweerup is about 50 km SE of the previous detections. Over time, it is expected that the lettuce Aphid will gradually spread across mainland Australia. Just how quick the Lettuce Aphid spreads depends on many factors including environmental conditions and temporary restrictions to interstate trading.

Aphids are not new to lettuce growers in Australia as they are commonly found on the outer wrapper leaves. What is different with the lettuce aphid is that it prefers to colonize the centre of the lettuce, making it very difficult to control with foliar insecticides. The direct damage from the lettuce aphid is limited on lettuces, though large numbers of aphids may stunt younger plants. A more serious consequence of infestation is that the lettuce simply becomes unsaleable due to the actual presence of the pest.

As a consequence of the outbreak, the movement of lettuce from Victoria to other states has been restricted. The movement of lettuce to NSW will need to meet a number of conditions which are comprehensively listed in the approval (P152/05/01) under proclamation P152 of plant diseases act 1924. In general the approval states that if the lettuce is being sourced from an area that is certified free from the pest, all that is required is the appropriate certificates plus inspection of seedlings. If the lettuce is being sourced from an area where the pest has been detected, much more onerous conditions apply. These conditions including insecticide or fumigation treatments, thorough washing and inspections after treatments.

A copy of approval (P152/05/01) can be found on the Ausveg webpage at http://www.ausveg.com.au/ For further information relating to the lettuce aphid, contact Dr Sandra McDougall at Yanco Agricultural Institute on (02) 6951 2611

Lettuce Aphid Soil Drench Trial

Tony Napier

Due to the detection of lettuce aphid in Tasmania, the APVMA have allowed the emergency use of imidacloprid in all states of Australia for its control. The permit only allows for Confidor® 200SC (containing 200 g/L imidacloprid) to be applied as a seedling foliar drench to cell trays at a rate of 35-55 mL/1000 plants. Unfortunately the permit does not make allowances for growers that produce lettuce from direct seeding. Therefore, when the lettuce aphid reaches districts where producers only grow by direct seeding, there is no registration or permit to allow them to use Confidor® or any other insecticide as a soil drench.

Establishing the soil drench trial at Hay

A trial was established in Hay during the 2004 season to obtain efficacy data on two insecticides, including Confidor®, when used as a soil drench for aphid control on lettuce. Confidor® was applied at both 25 and 12 mL/100m row. An unregistered insecticide was also trialled at various rates in a liquid and a granular formulation. All treatments were applied about a week prior to planting using a gandy box and modified spray equipment mounted on a tool bar. The equipment delivered a chemical band 10cm below the bed surface, under each lettuce row.

The trial area was monitored on a weekly basis for aphids. The natural aphid pressure was low, making it difficult to determine wether the insecticides were working. Therefore, nine weeks after planting, approximately 400 brown sowthistle aphids were applied to each plot. The plots were then checked weekly to see if the aphid would multiply or even survive in any of the treatments.

Final assessments showed that both rates of Confidor® and the experimental insecticide controlled aphids for the 14 week duration of a winter sown lettuce crop at Hay. There was no difference in control between 25 mL/100m of row to 12 mL/100m of row. The effects of these soil applied insecticide drenches on pest thrips could not be determined in this trial but it appeared that predatory beneficial insects were indirectly poisoned.

For further information relating to the lettuce aphid trials, contact Andrew Creek at Yanco Agricultural Institute on (02) 6951 2611

Early Paste Tomato Trial in the MIA

Tony Napier

As part of the national variety evaluation program, an early paste processing tomato trial was sown at Darlington Point on the 8th October 2004. The trial was sown in double rows on a grey self mulching clay soil and furrow irrigated. The surrounding crop of ENP 113 and trial area looked very good all year and was relatively high yielding. Each plot was 388m long and was harvested on the 4th March 2005. Yield assessment was made by machine harvesting the full length of each 388m plot.

The varieties have been listed in order of highest to lowest solids yield per hectare. The ripe yield and solids are also listed. The local standard of Heinz 8704 had the lowest solids, but its high ripe yield gave it the second highest solids yield in the trial. TOP 2312 was the most promising variety in the trial. It was high in both yield and solids and was holding firm even though the harvest was delayed.

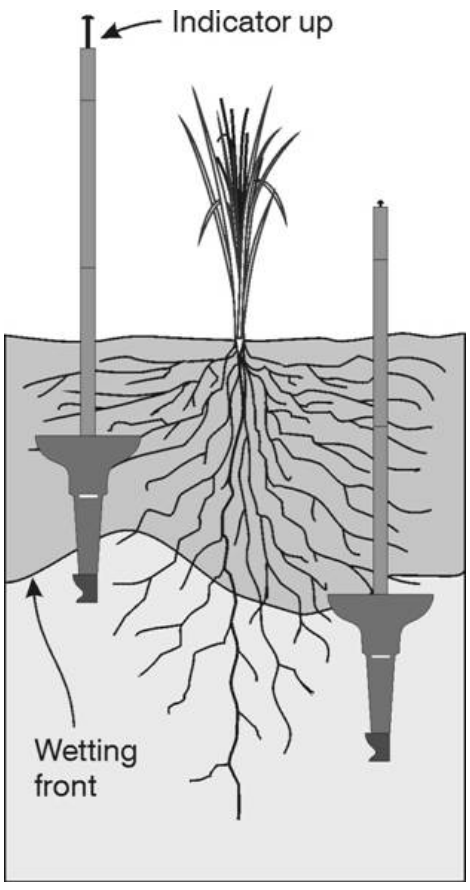
Detailed information on these trials will be published in the next edition of the "Australian Processing Tomato Grower" magazine or contact the District Horticulturist at Yanco on (02) 6951 2611. The processing tomato trials are funded by the APTRC, the Victorian and NSW DPI.

Table 1: Early paste processing tomato trial results.

Varieties	Ripe Yield (t/ha)	Solids (%)	Solids yield (t/ha)
TOP 2312	125	5.17	6.45
HZ 8704	137	4.57	6.28
CXD 204	120	5.13	6.15
ENP 113	125	4.83	6.06
Hz. 3002	112	5.03	5.65
SUN 642	122	4.57	5.57
Hz. 9280	112	4.70	5.26
TSH 4	88	4.77	4.22
TSH 18	78	4.70	3.67

What is a FullStop Wetting Front Detector?

Dr. Richard Stirzaker, CSIRO



Above: When a wetting front reaches the detector a red indicator pops up. Detectors are usually placed in pairs, about one third and two thirds down the active root zone

Scientists and extension workers make irrigation scheduling sound easy. The soil holds water like a bucket. An irrigator should not add too much water and overfill the bucket – that would be a waste. The irrigator must also not let the bucket get too empty – that would stress the crop. Irrigators know that irrigation scheduling is not always so easy. Which is the best tool to use? Should I measure water content or suction? Should data be collected weekly, daily or hourly? Where should the instrument be placed relative to a drip emitter? What about variability across the field?

There are some excellent tools on the market for monitoring the soil water status, but the FullStop Wetting Front Detector might be the simplest of them all. The FullStop is comprised of a specially shaped funnel, a filter and a float mechanism. The funnel is buried in the soil within the root zone of the plants or crop. When rain falls or the soil is irrigated, water moves downwards through the root zone. The water gets focused inside the funnel and the soil at the base becomes so wet that water seeps out of it, passes through a filter and is collected in a reservoir. This water activates a float mechanism, which in turn operates an indicator flag above the soil surface. There are no wires, no electronics and no batteries.

As well as informing the irrigator that the wetting front has reached a certain depth, the detector retains a sample of water which can be extracted via a tube using a syringe and analysed for its salt or nitrate concentration. This is done using a simple field salinity meter or colour nitrate test strip. For more information contact James Hill at CSIRO Land and Water, Canberra on 02 6246 5947 or e-mail James.Hill@csiro.au . Also, you can learn more about the FullStop Wetting Front Detector at the website www.fullstop.com.au .

Making Insect Monitoring Easier

Tony Napier

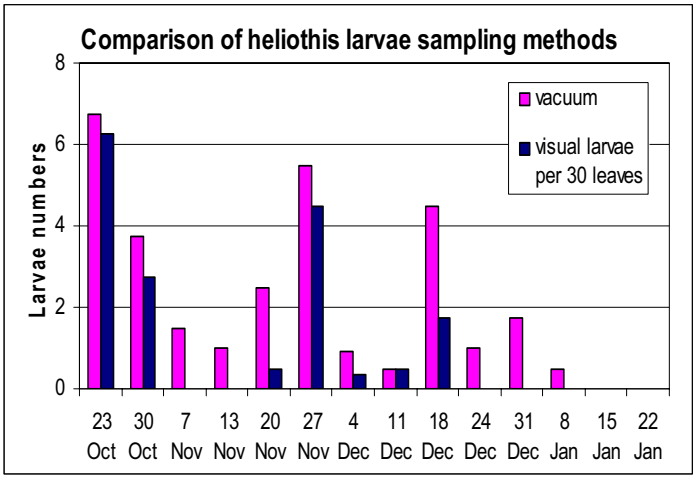
The success of any pest management program is regular scouting of the crop. This means someone getting out into the crop to see what is there. When a scout is in a crop to monitor for insects pests, they are also looking for presence of beneficial insects, plant diseases, environmental disorders, and improper cultural practices.

There are several tools that scouts have traditionally used to help with monitoring including sweep nets and trapping devices. A relatively new scouting tool is currently being evaluated by Andrew Creek on lettuce and tomato crops in the Riverina. A garden blower/vac is being used to suck up insects from a crop and then the contents are checked so insect numbers can be identified and counted. This method also suits IPM programs as beneficial insects are also identified and counted at the same time.

The vacuum method has been used for a number of years at Werribee and is now starting to be used in lettuce crops at Hay. The traditional method of checking random plants across a paddock is time consuming and involves a lot of bending over to closely inspect the crop. The vacuum method is quicker and involves much less bending. After a pre-determined number of plants are vacuumed, the captured insects are poured onto a white tray for counting and identification. Where broad spectrum insecticides are being used, 4 heliothis larva per 100 plants is the action threshold. Where an IPM program is being used, the threshold varies depending on the number and type of beneficial insects found.

Using the vacuum method for insect scouting in a lettuce crop

The vacuum method was also tried on processing tomatoes for the first time last year. A monitoring protocol and pest thresholds was developed in the early 1990's and involved visual observations of numerous tomato leaves. When a threshold of 5 viable heliothis eggs or 1 heliothis larva per 30 leaves was reached, it triggers a control action. The vacuum method was compared against this visual observation method and found to give consistent results. The data suggests a heliothis threshold of two small larvae when vacuuming for 60 seconds.



Comparison of heliothis sampling methods in processing tomatoes

The vacuum sampling method is just another tool for scouts to use when checking crops for insects. The big advantage is a quicker and more efficient way of monitoring some crops. Population trends can be gained for heliothis, thrips, leafhoppers, rutherglen bugs, wasps and other insect types. Unfortunately it is more difficult to establish a universal set of pest thresholds for vacuum sampling than it is for visual counts. The insects caught in a vacuum sweep will vary with the way an individual samples and the different suction strength between different blower/vac models. Each scout needs to use this method in conjunction with their usual monitoring method until they get familiar with the new thresholds. The vacuum suction method is not suited to all crops. It was tried in onions for determining thrips numbers but proved to be inadequate for that crop. This was due the thrips living and feeding in the inner leaf folds of onions where it is difficult to suck them out without also sucking up large amounts of soil.

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