Getting the best out of Trichogramma Wasps

Biological control for macadamia nutborer

Trichogrammatoidea cryptophlebiae dubbed **MacTrix** are tiny wasps only half a millimeter long yet they can have a big impact on macadamia nutborer populations.

The females lay two or three of their own eggs into a nutborer egg. The wasp eggs hatch inside the nutborer egg and develop into fully formed adult wasps thus preventing the caterpillar's development. The egg goes black after 5 days and 2 or 3 wasps emerge from the egg in about 10 days – instead of a caterpillar! The wasps have a short life cycle so are able to increase in number very quickly.

Commercial mass releases of this wasp have been going now for four seasons. The improvement in mass production processes has enabled a considerable area of macadamias to be treated. In the 2004-5 season about 280 hectares were treated. This has risen to over 3,000 hectares treated in the 2010-11 season with the wasps no doubt spreading well beyond treated areas.

Most MacTrix users have saved sprays or not sprayed at all and reported low damage levels in spite of some heavy nutborer pressure. If you are new to MacTrix there's lots more information both general and detailed at the web site or phone BioResources to discuss your particular needs.

Approaches to managing nutborer

The way the farm has decided to manage nutborer and MacTrix will have a bearing on the level of monitoring and the decision making based on that monitoring. For instance, a small farm may have decided to release MacTrix and not do any spraying for nutborer. In this case monitoring is not so important but releases should be made to our recommendations.

On the other hand, larger farms may see the merit of a detailed monitoring routine and the savings in spraying that this is likely to bring. In such a case monitoring for parasitism and some hatching out of "not black" eggs will provide important information and can potentially save a lot of money and time spraying.

Another farm may decide to adopt a regular or strategically timed spray regime (with registered insecticides e.g. beta-cyfluthrin and/or methoxyfenoxide) while still releasing MacTrix to provide a "buffer" in the system as well as late season control.

We therefore suggest consultants and growers discuss the type of management they wish to adopt before the season gets going. Each season we learn more about this important parasitoid with growers and consultants showing a keenness to improve their management of nutborer using this biological control method.

MacTrix releases are successful at the overwhelming majority of farms. That is: in enabling reductions in chemical spraying while maintaining or further reducing losses and damage from nutborer.

The notes overleaf aim to help you get the best from this tiny but amazing creature.

Do's

- Consider MacTrix as a component in a nutborer control program– not necessarily a stand-alone control – although this is often turns out to be the case.
- Talk to your consultant about the type of nutborer management appropriate for your farm.
- Order your MacTrix in advance – preferably by the end of October for Qld and by mid November for NSW. Changes can be made as the season progresses.
- For small farms, order enough for the total area you want the MacTrix to be active. Larger farms can reduce the release rate per hectare considerably if they have good monitoring info that enables them to target "hot spots".
- The base release rate is: 1,000 parasitised eggs per hectare per week for 6 weeks.
- Start releases at least two weeks before the main nutborer pressure period.
- Consider extending your program to 8 or 10 weeks if you want to further minimize the need to spray or if you typically get high nutborer pressure.
- Initially place most of the MacTrix cards in areas where you have had problems in the past – for example, a particular boundary or variety.
- Pheromone traps that catch male nutborer moths can be used to help assessing MNB pressure. Egg laying typically peaks 1-2 weeks after a peak in trap catches.
- When nutborer eggs start showing up in monitoring samples, target those areas if they are identifiable but also increase the area where you place the cards.
- Consider spraying with with a registered insect growth regulator (methoxyfenoxide - Prodigee®) and/or increasing your wasp order if nutborer pressure is high.
- To get the most out of MacTrix and save the most sprays employ a consultant to monitor for nutborer eggs as well parasitism rates.
- Parasitised nutborer eggs go black but as the wasps get going many of the "not black" eggs are likely to be parasitized.
- Crop scouts can hold back any "not black" eggs found and see how many go black over the next few days – a good result is likely to save sprays as well as provide reassurance.

Don'ts

- Don't order your MacTrix at the last minute.
- Don't leave the sealed package in the direct sun or in a closed vehicle.
- Don't order MacTrix and then spread them at below the recommended rate and expect them to perform perfectly.
- Don't release MacTrix just before you apply a broadspectrum insecticide spray. If you want to spray a broadspectrum insecticide, call us to delay your wasp deliver for a week or put them in an unsprayed area of your crop or in a headland.

What ifs?

- If fruitspotting bug is deemed to be at a level requiring spraying, then do so – the adult MacTrix wasps are likely to be killed but some wasps will survive in the parasitized eggs. Your order can be delayed for a week and/or doubled up the following week. Often the wasps can still be released in an unsprayed area.
- If nutborer pressure jumps quickly consider spraying methoxyfenoxide or betacyfluthrin - preferably the former. If detailed monitoring is done then sampling may reveal that parasitism is high enough not to have to spray. See web page for chemical toxicities.
-

For more info and **ORDER FORMS** go to **www.bioresources.com.au**
or phone Richard Llewellyn on (07) 3289 4919 Email: richard@bioresources.com.au