

# MacTriX- Trichogramma Wasps

- Easy to apply
- Cost effective
- Good for the environment



## *Trichogrammatoidea cryptophlebiae* – what we call “MacTriX”

has proved to be a very effective parasitoid of macadamia nutborer with parasitism rates over 90% commonly observed. The need to spray is therefore greatly reduced. The wasps work right into the tops of trees where good spray contact is difficult and continue to work during showery weather when spraying is problematic.

It has also been found that good wasp activity reduces the numbers of overwintering MNB pupae. Trichogramma can be used in an IPM program in combination with more selective products like tetubenzozide and the occasional use of more broad spectrum products.

## Method of release

The Trichogramma wasps are dispatched as parasitised nutborer eggs on sheets of finely corrugated cardboard which are broken up into 24 individual cards. Staple the cards to the back of a leaf around head height in areas where nutborer have been observed; in areas where you expect moths to move into the orchard (e.g. from forest gully) and areas where you've had a problem in the past.

## Timing of release and release rates

Start releases from early November in Bundaberg, Mid-November for SE Qld & Northern NSW and early December for Nambucca Heads – depending on number of weeks in program. Start time is likely to be before many eggs are found in the standard monitoring sample but it is desirable to get some of these early laid eggs parasitized wasps as it will facilitate a rapid increase in wasps as the pressure increases.



The strategy used is initially a **pre-emptive** one, with a more targeted approach as the season progresses. Making numerous releases hedges against sudden rises in nutborer pressure, adverse weather events and the possibility of needing to spray. On high pressure farms, it is desirable to release at least some wasps earlier than the above recommendation.

As a general rule, release 1,000 per hectare per week for at least 8 weeks. Order enough for the total area you want the wasps to be active in. The rate can be much reduced for larger crops when hot spots of nutborer are known. In the first 2 or 3 weeks, place all the strips in known hot spots or along pressure boundaries. When eggs are found release some through the block as well.

If releases start late, then higher rates per hectare can be made in the first 2 or 3 weeks. Discuss your release rate and strategy suitable for your farm with your consultant or call us.

## Chemicals and Trichogramma

Prodigy® for mac nutborer, is not toxic to MacTriX but wasps are killed by many other insecticides. It is desirable to minimise hazardous sprays after the Trichogramma have been introduced. However, if it is deemed necessary to spray a hazardous product, for example for FSB, then do so.

Once MacTriX are established in the crop, the use of “hazardous” sprays, is not as disruptive as many wasps are still developing in the nutborer eggs and are to some extent shielded from the chemicals. In this way, the wasps are able to recover from occasional sprays. For this reason, opportunistic releases in between sprays in the early part of the season can help to establish the wasps early, even if some of them get killed by subsequent sprays.

## Prices and Ordering

MacTriX are sold by the 1,000 parasitised eggs (2 or 3 wasps emerge from each egg) \$49.50 down to \$43.50 per 1,000 (depending on quantity) plus Express Postage and GST. Orders can be placed with your crop consultant. Otherwise contact BioResources.

## What we need:

Name or Company and Address where package will not be left in a hot letter box (post office preferred), Mobile phone and Email address for notifications. Start Date, Quantity (1,000's) per delivery and # of weekly deliveries.

**BioResources Pty Ltd,**

PO Box 578 Samford Qld 4520

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web: [www.bioresources.com.au](http://www.bioresources.com.au) YouTube channel: [youtube.com/@bioresourcesau](https://www.youtube.com/@bioresourcesau)

## About the MacTriX sheets

The density of the parasitised eggs will vary on the sheets. Unfortunately, we are unable to produce identical sheets!

Before dispatch we sort the sheets into low, medium, high and very high density – rating them respectively 500+, 1000+, 1500+ and 2000+ parasitised eggs per sheet (24 strips per sheet). This allows for a wide margin of error – there are many more eggs than this.

To make use of all the sheets we generally send the lower density sheets to the growers with smaller orders and give them more sheets to make up the difference.

High-density sheets usually go to the larger orders and we send less sheets.

Sometimes a small order will have a high-density sheet and sometimes a large order will include some low-density sheets.



We always supply in excess of your order (a quick look and count with a hand lens will make this obvious) and some weeks when we have excess sheets we distribute them among the orders. We cannot store them for more than 5 days. In other weeks when demand is very high you may get closer to the number you ordered.

## Trichogramma wasp emergence info

When your Trichogramma wasps leave our insectary they usually have 3-4 days to emerge when kept at 25°C. We generally dispatch on Tuesdays – the package arrives on Wednesday or Thursday morning – the cards are put out on Thursday or early Friday and the wasps begin to emerge on Friday.

The package contains a note on estimated emergence time. However, temperatures in transit may vary from 25°C. If its hotter they will come out earlier and if its colder, later. So open the parcel when it arrives to check if any wasps have started to emerge.

If the Trichogramma are placed in the field on arrival, and it's cool in the field, it may be several days before the wasps emerge and predators - usually ants - may eat some Trichogramma pupae before the wasps emerge. We therefore suggest you place the cards in the field in the 24 hours leading up to estimated wasp emergence. This will minimise predation.

Alternatively, some strips can be placed in a glass jar on arrival. Place the cards in the field when a few wasps start coming out in the jar.

### Stalling wasp emergence

If wasps start emerging earlier than you expect or if the weather is unsuitable for placement in the field, the Trichogramma emergence can be slowed down by placing them in a cool place.

Wasp development is minimal below 12°C. Place the MacTriX cards in a fridge that runs between 5 and 14°C or in an Esky with several ice bricks. Refrigeration should not exceed 4 days, as wasp fitness will decline beyond this time. Over 12 degrees and they will keep developing and emerge even at 14 degrees.

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