

A new lure for a potential invasive thrips species

Thrips major Uzel (Figure 1) is a widespread pest of a range of flowering plants throughout Europe (Moritz et al. 2004).

It has been implicated in fruit loss in nectarine, peach and strawberries due to extensive damage through feeding and ovipositing (Lewis 1997).

It has not yet been confirmed present in New Zealand.

Crop & Food Research and Plant Research International have developed a lure based on volatile odours that can increase the trap capture of:

- Onion thrips (*Thrips tabaci*);
- Western flower thrips (*Frankliniella occidentalis*);
- New Zealand flower thrips (*Thrips obscuratus*);
- and now *Thrips major* through trials in the Netherlands carried out in a commercial capsicum greenhouse and an outdoor leek field.



Figure 1 *Thrips major* (female, left and male, right).

Method Glasshouse capsicum trials, July-August 2005, Utrecht, The Netherlands

Sticky traps were hung just above crop height, either baited with a prototype lure or un-baited (control).

The lure was applied to:

- yellow sticky traps by spraying it on using a perfume atomiser (trial 1);
- yellow sticky traps by using a cotton dental roll placed inside a plastic sleeve (trial 2); or
- blue sticky traps by using a cotton dental roll alone (trial 3) (Figure 2).

Either 0.5 or 1.0 ml of the volatile odour was used depending on the duration of the trapping period (2 or 3 days).

The numbers of thrips caught on each trap were counted and a subsample of the thrips identified based on morphological characteristics.



Figure 2 Blue sticky trap in capsicum crop baited with a lure using a dental cotton roll.

Results Glasshouse capsicum trials

In capsicum trials there were significantly more *T. major* ($P < 0.001$) on the traps with the treatment than on the control traps (Figure 3).

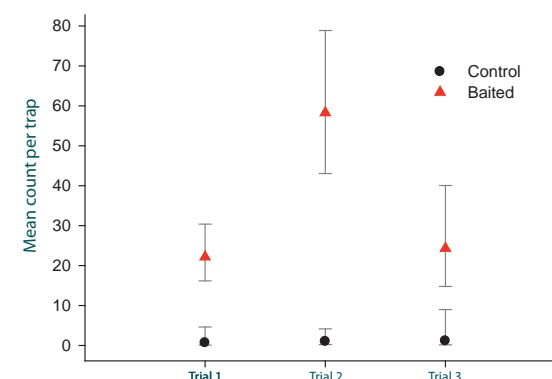


Figure 3 Mean numbers of *Thrips major* caught per trap for three trials carried out in capsicums. Error bars are 95% confidence limits.

Mean numbers on the control traps were below 1 for all three trials, whereas numbers on the lure traps were 34 times, 61 times, and 22 times greater as this for the three trials respectively.

Method Outdoor leek trial, August-September 2007, Vredepeel, The Netherlands

Blue sticky traps were hung 40 cm above the crop, either baited with a commercial lure (LUREM-TR, attached to the top of the sticky traps) or un-baited (control) (Figure 4).

Traps and lures were replaced weekly over a period of 5 weeks in late summer.

The thrips caught on each trap were counted and a subsample of the thrips identified based on morphological characteristics.



Figure 4 Blue sticky traps in leek field baited with a LUREM-TR dispenser.

Results Outdoor leek trial

LUREM-TR baited traps caught between 2 and 13 times more *Thrips major* than the un-baited control traps (Figure 5). This increase was, however, only significant in weeks 2 and 4.

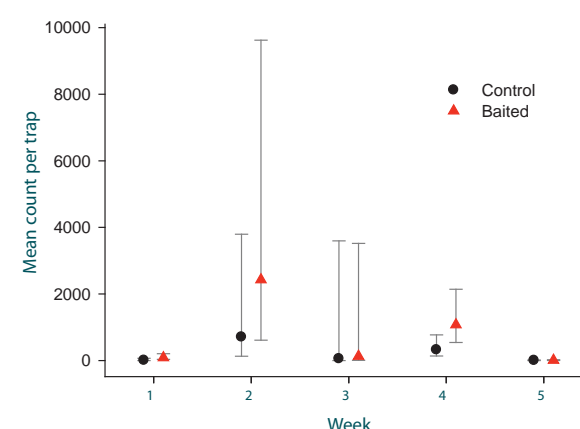


Figure 5 Mean numbers of *Thrips major* caught per trap for each of 5 weeks in leek. Error bars are 95% confidence limits.

Summary

Thrips major showed a marked response to the lures in the glasshouse and in the outdoor leek field. This new lure has potential applications for surveillance and/or delimitation of this potential invasive species.

References

- Moritz G, Mound LA, Goldarazena A 2004. Pest thrips of the world. CD-Rom The University of Queensland, Brisbane.
Lewis T 1997. Thrips as crop pests. Wallingford, Oxon, U.K., CAB International. 740 pp.

LUREM-TR

The thrips lure has been developed by Crop & Food Research and Plant Research International scientists into a commercial product and is now available from PHEROBANK (the Netherlands, www.pherobank.com) and Koppert Biological Systems (the Netherlands, www.koppert.nl/e005.shtml).

LUREM-TR was awarded the silver innovation award in the category for the protection of the environment at the International Horticulture Exhibition in France, Sifel 2008.



David Teulon
E: teulond@crop.cri.nz

Mette Nielsen nielsenm@crop.cri.nz
Willem Jan de Kogel willemjan.dekogel@wur.nl
Rob van Tol rob.vantol@wur.nl
Melanie Davidson davidsonm@crop.cri.nz

Acknowledgements

We thank Laurence Mound for identification of the thrips species and Plant Research International for hosting David Teulon. A special thanks to Ron van Dijk and Harry Versteegen (PPO-Vredepeel) for providing access to their properties. This research was partially funded by a Crop & Food Research Fellowship, Plant Research International (the Netherlands) and New Zealand's Foundation for Research, Science & Technology through contract CO2X0501, the Better Border Biosecurity (B3) programme (www.b3nz.org).

Research undertaken in partnership with



B3 · BETTER BORDER BIOSECURITY