

Phytosanitary treatments
Traitements phytosanitaires

Disinfestation of production site against *Thrips palmi*

Specific scope

This standard describes a treatment programme aimed at eradication of *Thrips palmi*, which is absent from the EPPO region. It is recognized that not all treatments will be available in EPPO countries and emergency procedures (special restrictions) may be required to permit implementation of such an intensive treatment programme. It is recognized that in implementing this intensive treatment programme Maximum Residue Levels may be exceeded and as such the product(s) may not be suitable for consumption.

A risk assessment of the programme will need to be made by individual countries.

Specific approval and amendment

First approved in 2009–09.

Introduction

Thrips palmi (Thysanoptera: *Thripidae* – EPPO A1 list) is a polyphagous pest that has spread widely in tropical and subtropical regions (EPPO/CABI, 1997). *T. palmi* is (largely) absent from Europe (Cannon *et al.*, 2007a), although outbreaks have occurred – and been successfully eradicated – in the Netherlands (1988–1998) and the UK (2000–2001) (Vierbergen, 1996; Cannon *et al.*, 2007b). *T. palmi* adults are small (>2–3 mm), yellow-winged insects, and both sexes are capable of flight. When populations are high, feeding typically causes a bronzing of the leaves, especially along the midrib and veins. Adults, first instar nymphs and the larger, yellow second instar nymphs, are all mobile and responsible for direct feeding damage. The propupae and pupae are relatively sedentary, non-feeding stages, which live in the soil, growing substrates, plant debris, or occasionally on host plants, in moist, enclosed environments. The winged adults emerge from the soil and begin to feed and reproduce soon after. Successful control requires targeting life stages in the soil, on the plants and in the air space. Details on the identification are given in EPPO Diagnostic protocol PM 7/3 *Thrips palmi* (OEPP/EPPO, 2006).

Commodities/regulated articles

Protected ornamental plants and shrubs; and vegetables such as peppers, cucumbers, melons and aubergines.

Pest

Thrips palmi (THRIPL)

Treatment schedule

Treatment name: disinfestation of production for ornamentals and vegetables

Treatment type: insecticide (physical and chemical)

Application: drench, spray and fog

(a) Schedule

- (i) Apply *at least* one foliar spray and one space treatment per week, with a second foliar spray per week if possible. N.B. The second foliar spray may replace the space treatment if there are concerns over phytotoxicity.
- (ii) Apply a soil drench or granular application of an insecticide with systemic action, which should provide longer lasting protection against all feeding stages of the pest.

Week	Foliar spray (chemical)	Foliar spray (physical)	Space treatments for control of flying adults	Soil drench or insecticide treated compost
1	Neonicotinoid	Active substance C	Active substance A	Neonicotinoid*
2	Active substance A	Active substance D	Active substance B	
3	Active substance B	Active substance C	Active substance C	
4	Neonicotinoid	Active substance D	Active substance A	
5	Active substance A	Active substance C	Active substance B	
6	Active substance B	Active substance D	Active substance C	

*If plants have received a neonicotinoid drench, or have been potted in treated compost, either do not spray with another neonicotinoid during this phase, or only use a single spray, i.e. avoid repeating applications of active substances with the same mode of action.

(b) Active substances (see notes 1, 2)

All active substances below are either listed, or pending, in Annex 1 of EU Directive 91/414/EEC. Other active substances may be available in non-EU countries.

Foliar sprays (see note 3)

Synthetic organic insecticides

Neonicotinoids = imidacloprid, thiacloprid, acetamiprid, thiamethoxam, clothianidin

Insect growth regulators (IGR) and juvenile hormone (JH) mimics = teflubenzuron, pyriproxyfen, novaluron

Novel action active substances = spinosad (see note 4); *Verticillium lecanii*

Translaminar active substances = abamectin, emamectin benzoate

Other thrips-active insecticides: methiocarb

Physical acting substances

Products based on, or containing, petroleum oils, plant extracts, starch and plant oils, hydrated propylene glycol alginate, potassium phosphates.

Space treatments (see note 5)

Pirimiphos-methyl, deltamethrin fogs.

Soil treatments (see note 6)

Thiamethoxam, clothianidin, imidacloprid, oxamyl (methyl bromide fumigation: only permitted as a quarantine treatment).

Physical treatments

Physical methods can be effective in an IPM programme by suppressing the population: e.g. silver polyethylene films covering the soil; mass trapping with sticky traps and sticky ribbons.

Efficacy of treatment

Applications of insecticides according to this treatment schedule have been found to be successful in eradicating an outbreak of *T. palmi* in an ornamental nursery in the UK (Cannon *et al.*, 2007b). Monitoring should be carried out using sticky blue traps (a minimum of 20/ha).

Notes

- For details of mode of action see Insecticide Resistance Action Committee (IRAC) Mode of Action Classification scheme (<http://www.irac-online.org/>).
- The number of effective products approved for use against *T. palmi* in a given EPPO member country may be limited, especially for edible crops. It is therefore essential that they be used to maximum effect through accurate timing and targeting of each application. It is a very difficult pest to control and therefore good quality of application is needed to target the pest.
- These active substances should be used in rotation to prevent resistance. Choose 4 active substances (i.e. A–D) available from the list in your country. Opportunities for repeating foliar applications will however vary according to the label instructions and specific regulations in different countries.
- Spinosad works by vapour action, as well as by contact and ingestion.
- If the glasshouse temperatures are maintained below 12°C, the pest is less active and so chemical treatments are unlikely to be effective and so are not recommended.
- If these neonicotinoids are available in Europe as soil treatments.

References

- EPPO/CABI (1997) *Thrips palmi. Quarantine Pests for Europe*, 2nd edn, 538–542. CAB International, Wallingford (GB).
- Cannon RJC, Matthews L & Collins DW (2007a) A review of the pest status and control options for *Thrips palmi*. *Crop Protection* 26, 1089–1098.
- Cannon RJC, Matthews L, Collins DW, Agallou E, Bartlett PW, Walters KFA, Macleod A, Slawson DD & Gaunt A (2007b) Eradication of an invasive alien pest, *Thrips palmi*. *Crop Protection* 26, 1303–1314.
- OEPP/EPPO (2006) EPPO Standard PM 7/35(2) Diagnostic protocol for *Thrips palmi*. *Bulletin OEPP/EPPO Bulletin* 36, 89–94.
- Vierbergen G (1996) After introduction of *Frankliniella occidentalis* in Europe: prevention of establishment of *Thrips palmi* (Thysanoptera: Thripidae). *Acta Phytopathologica et Entomologica Hungarica* 31, 267–273.

Enquiries

Central Science Laboratory, Sand Hutton, York YO41 1LZ (GB).