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### Biological control against the Tomato Leafminer *Tuta absoluta*, using egg parasitoids in IPM strategies

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#### Abstract

Since 2011, new egg parasitoids have been assessed to control the Tomato Leafminer *Tuta absoluta* in the frame of a research program improving IPM strategies (TutaPI program, funded by the French Ministry of Agriculture, 2011-2013). This new invasive pest in the Mediterranean Basin and Europe causes serious damage on tomato crops.

Greenhouse tests under IPM strategies combining inundative release of *Trichogramma achaeae* (species native from the Canary Islands, Spain and sold in all Europe) and *Macrolophus pygmaeus*, showed good results. The predator *M. pygmaeus* is also used against whitefly on tomato crops.

Other species of *Trichogramma* (19) from the whole world were considered. First, a screening of parasitoid efficacy was performed in laboratory conditions with sixty-four strains (long-term rearing in the collection of INRA Provence-Alpes Côte d'Azur, France). Second, thirty strains freshly collected (from tomato crops in southern France last summer by TutaPI partners such as BIOTOP, GRAB,...) were tested.

In the laboratory, some strains from both long-term rearing and field collects showed better efficacy than the control *Trichogramma achaeae*.

The efficacy of those parasitoids has been studied in mesocosm, then will be assessed in greenhouse to select the most efficient strains for biological control and IPM strategies.

All this work together with other actions developed in the TutaPI program, aims to define IPM strategies that are more efficient and at an affordable cost to producers.

**Key words:** *Trichogramma*, inundative release, biological control, tomato, invasive pest, greenhouse, *Tuta absoluta*



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