

Improved biological control of *Tuta absoluta* to reduce damage to tomato crops (TUTA)

Summary

Tuta absoluta is a lepidopteran leafminer native to South America which has become a major pest on tomato plants since its arrival in Spain in 2006. It is now widespread in Europe, Africa and Asia. It mainly attacks the leaves, feeding on the parenchyma, although it can also penetrate the fruit and render it unmarketable. In extreme cases, it can also attack shoots, compromising the growth of the plant. All this damages crop productivity as the leaf area is reduced and more of the fruit is unmarketable. There is also a greater risk of returns from customers when they detect pest damage that was overlooked when preparing fruit for sale. This has a direct impact on farmers' incomes as it lowers the amount of marketable produce and damages their image among customers, which can have an impact on future orders. In this sense, the operational group will tackle with this problem, one of the most important phytosanitary problems for tomato cultivation in our region.

Objectives

The general objective of the pilot project is to improve the control of *Tuta absoluta* in tomato crops in Catalonia, reducing dependence on the use of insecticides by promoting biological control of the pest by using the naturalised parasitoid *Dolichogenidea gelechiidivoris*. This involves three specific objectives:

1. Incorporate *D. gelechiidivoris* in integrated pest management programmes for the biological control of *T. absoluta*, either by managing their natural populations or carrying out inoculative releases in commercial fields in the Maresme production area.
2. Fine tune and/or scale up parasitoid rearing, to obtain enough individuals to carry out incremental releases in commercial crops.
3. Disseminate the results obtained through the Horta.Net programme to improve the control of this moth in Catalonia.

Description of the actions planned in the project

The operational group work plan is structured into four activities:

Activity 1. Setting up and scaling the rearing of *Dolichogenidea gelechiidivoris*. Obtaining parasitoids for release in conventional greenhouses.

Activity 2. Assessing the usefulness of releases of *D. gelechiidivoris* in the control of *T. absoluta*. Providing protocols for releases in commercial greenhouse.

Activity 3. Integrating *D. gelechiidivoris* into the integrated pest management programme. Obtaining information on the side effects of common tomato crop pesticides on populations of *D. Gelechiidivoris*.

Activity 4. Dissemination and transfer of results. Informing the market garden sector (farmers and plant protection technicians) of the actions in the project and their results.

Expected results and practical recommendations

The expected results of the operational group are listed below:

- Establishing protocols for the supply of parasitoids, first for pilot testing and then to farmers interested in this strategy.
- Establishing release and monitoring protocols that permit incremental inoculation of the parasitoid to improve pest control.
- Improving the control of *T. absoluta* and other pests under the new integrated pest management protocol including the release of *D. gelechiidivoris*.
- Dissemination of the project results in the Catalan horticultural sector.

Leader of the Operational Group

ORGANISATION: CONCA DE LA TORDERA, SCCL

Coordinator of the Operational Group

ORGANISATION: IRTA - Institute of Agrifood Research and Technology

Other members of the Operational Group (grant recipients)

ORGANISATION: AGRICOLA PROGRÉS GARBÍ, SCCL

ORGANISATION: AGRÍCOLA DE CABRERA DE MAR, SCCL

ORGANISATION: AGRÍCOLA VILASSAR DE MAR, SCCL

Other members of the Operational Group (not recipients of the grant)

ORGANISATION: SELMAR FEDERATION

ORGANISATION: BAIX MARESME PLANT DEFENCE GROUP (ADV)

Subject area(s) of application

- Agricultural production system
- Agricultural practice
- Agricultural equipment and machinery
- Livestock farming and animal welfare
- Vegetable production and horticulture
- Landscape / Territorial management
- Pest and disease control
- Fertilisation and nutrient management
- Soil management
- Genetic resources
- Forestry
- Water management
- Climate and Climate Change
- Energy management
- Waste and by-product management
- Biodiversity and environmental management
- Food quality/processing and nutrition
- Supply chain, marketing and consumption
- Competitiveness and agricultural and forestry diversification
- General

Geographical area(s) of application

PROVINCE(S)	REGION(S)
BARCELONA	MARESME

Dissemination of the project (publications, conferences, multimedia, etc.)

1. Report on the websites of all members of the operational group. The IRTA will also disseminate events open to the public on its social media.

2. Presentation of the project to the Horta.Net Technical Committee, promoted by the Ministry of Climate Action, Food and Rural Agenda during the first meeting of the body after approval of the project.
3. Presentation of the results throughout 2022 and 2023 to the market garden sector at the “Jornadas de la Huerta” (Annual Technology Transfer Plan (PATT) reference conference) organised annually by the Selmar Federation in Santa Susanna and to be held during the autumn of 2023.
4. Preparation of a results sheet to be shared on the RuralCat website Horta.Net office (2024).
5. Production of an information video on the biological control of *T. absoluta* in tomato crops. Making this video will have the support of the IRTA communication team. The video will be prepared and produced in 2024.

Project website

More information on the project

PROJECT DATES	TOTAL BUDGET
Starting date: July 2021	Total budget: €167,904.00
	DACC funding: €77,647.68
Current status: Under way	EU funding: €58,576.32
	Own funding: €31,680.00

With funding from:

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Order ARP/113/2021 of 20 May, approving the regulatory bases for grants for cooperation for innovation by promoting the creation of European Association for Innovation operational groups in the areas of agricultural productivity and sustainability and the execution of innovative pilot projects by those groups, and Resolution ACC/1660/2021, of 27 May, announcing the call for the grant.

