



# BIOCOMES

New biological control products  
for sustainable farming and forestry

## CONTACT

LUCIUS TAMM / GUENDALINA BARLOGGIO  
RESEARCH INSTITUTE FOR ORGANIC AGRICULTURE  
LUCIUS.TAMM@FIBL.ORG / GUENDALINA.BARLOGGIO@FIBL.ORG  
WWW.FIBL.ORG

## Control of *Mamestra brassicae* in brassica crops

### Introduction

**The brassica family comprises several crop species, like cabbage, cauliflowers or oilseed rape. This family is attacked by different insect species and insecticides can be applied to reduce damages due to these pests. The cabbage moth *Mamestra brassicae* is one of the major pests causing severe damages by feeding on the crop head and contaminating it with faeces, making the crop no longer marketable. Natural occurring *Telenomus laeviceps* has been found to be more efficient as the released *Trichogramma brassicae* in parasitizing eggs of the cabbage moth under field conditions. Based on this finding, *T. laeviceps* represents a good candidate to develop a new biocontrol agent to control the cabbage moth,**

**potentially enabling the reduction of insecticide applications.**

### Approach

The first step in the development of a new biocontrol agent is the identification of the right species to control the pest of interest. Once a candidate has been identified a small scale rearing should be built for the conduction of basic studies, ultimately resulting in a mass rearing. We conducted laboratory trials to determine the influence on the parasitism performance of *T. laeviceps* of different temperature regimes, egg deprivation periods and parental female densities. Since the life cycle of *T. laeviceps* is comparable to the one of the already commercialized *Trichogramma evanescens*, the production system of this parasitoid was used and adapted to the requirements of *T. laeviceps*. *T. laeviceps* is reared on eggs of the cabbage moth *M. brassicae*, beforehand harvested and washed. The parasitoids are released in the field using a field delivery system, consisting of parasitized host eggs glued on a cardboard card, folded to protect the parasitized eggs from negative environmental influences, like UV-light or rain. Using this delivery system, parasitoids were released and their field performance tested in field efficacy trials. A further key step is to prove that the candidate biocontrol agent is native in the country of interest, otherwise, due to a very strict regulation at the European level, a release is very unlikely to be allowed. At this end, we exposed in Italy, Spain and Sweden cabbage moth eggs in and near brassica fields to be parasitized by natural occurring egg parasitoids.

Furthermore, it is important to determine the shelf life of the product and how the product can be shipped to end users without impairing its quality.



## Results

Based on the results of these experiments we were able to build a self-sustaining and efficient rearing of *T. laeviceps*. The end product is distributed to the customer right before the release in the field and can be stored by the end user in a fridge at 3°C up to one week, enabling to adjust the expositions to the weather conditions.

During the first year we released a high density of parasitoids, reaching a maximum parasitisation rate of 70%. In the last field trials performed, *T. laeviceps* was released at an economically feasible density. The parasitisation rate measured was lower as expected and adjustments in the quantity of released biocontrol agents per ha or in the release method should be implemented.

Data about the geographic distribution of *T. laeviceps* are under evaluation and at the moment, no results can be presented.

## Next steps

Before the introduction into the market of the *T. laeviceps* based product, further field trials should be conducted to ensure the highest standard as possible. The most important factor is to prove a reliable quality of product and field performance of the biocontrol agent. Furthermore, the production should be further optimized to guarantee a competitive market price.



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement n° 612713