

## Endophytic Fungi For pEst ConTrol (EFFECT)



### Resumen:

Phytosanitary products are major component of modern agriculture contributing to the substantial increase in yields and crop protection. Their accumulation in the environment presents risks to humans and living beings in front of a spectacular development of resistance to pesticides among target pests and diseases. Thereby, increasing global ecological and economic requirements tend to shift agriculture towards healthier production systems that take into account crop sustainability, environment and human health. Entomopathogenic fungi (EPF) are considered as an ecological alternative to pesticides thanks to several privileges notably their specificity of action, absence of toxic residues and spectacular genetic elasticity. Additional interesting features were recently attributed to entomopathogenic endophytes for plant protection and production. However, data published so far are variable and fail to Predict their bioecological roles accurately.

Consequently, through a novel integrated research program, EFFECT will use cutting-edge experiments and analyses to disentangle and valorize the additional ecological roles of EPF in plant structure relating to systematic endophytic development and aggressor's survival that underpin feedback mechanisms between plant and its ecosystem. The ultimate objective to be achieved is to boost the effectiveness of these micro biocontrol agents in order to make an innovative and feasible substitute to chemical insecticides. In addition to the scientific audience it may interest, the project might offer potential solutions for industrials and farmers to combat many pests and diseases whilst benefiting from ecological aspects to reduce chemical input into the environment. Accordingly, EFFECT combines multidisciplinary approaches to innovatively achieve objectives that are timely and in line with the current European and global research trends of which positive spin-offs will be achievable and measurable on different levels.

### Objetivos:

- Objective 1. To understand the establishment mechanisms of three fungal species (*Beauveria bassiana* (Bals.), *Metarhizium brunneum* Petch. and *Lecanicillium muscarium* Zare & W.) and the appropriate inoculation techniques in tomato (*Solanum lycopersicum*) and potato (*Solanum tuberosum*) (WP3).
- Objective 2. To disentangle the pathogenicity, virulence, and mode of action of *B. bassiana*, *M. brunneum* and *L. muscarium* towards green peach aphid *Myzus persicae* (Sulzer) (Hemiptera: Aphididae) (WP4).
- Objective 3. To identify the ecological roles of *B. bassiana*, *M. brunneum* and *L. muscarium* as antagonists of potato and tomato pathogen *Phytophthora infestans* and as plant growth promoters for appropriate valorization (WP5).

**Presupuesto:** 181,152.96

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