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BIOBESTicide

BIO-Based pESTicides
production for sustainable
agriculture

THE PROJECT

The BioBESTicide project aims at demonstrating and validating the efficacy, sustainability and cost-effectiveness of a novel biopesticide and its production process. The demonstration will include a novel bio-based value chain starting from the valorization of residual biomasses (e.g., beet pulp and sugar molasses) and the properties of the oomycete *Pythium oligandrum* strain I-5180 to enhance natural plant defenses, resembling an eco-friendly, sustainable and highly effective solution for vine plants protection. The BioBESTicide project will validate the efficiency of the formulated product on vineyards of different geographical areas.

OBJECTIVES

- Build a DEMO plant with an annual production capacity of 10T of high-grade oomycete biopesticide for vine plants protection
- Define the optimal final product formulations to maximize the efficiency of the *P. oligandrum* strain I-5180 and guarantee ease of use for end-users
- Assess and validate the effects and performances of the final product in both controlled and semi-controlled environments, excluding potential risks for both environment and human health
- Ensure sustainability of the established value chain, optimizing process logistic to maximize cost-effectiveness and minimize losses
- Comply with the European regulation on Plant Protection Product (PPP) and submit an approval dossier required for commercial distribution authorization
- Demonstrate and showcase to relevant stakeholders the feasibility of adopting the proposed value chain for novel *P. oligandrum*-based biopesticides production.
- Involve specific categories of interest in the project

PROGRESSES AND RESULTS

During the first 24 months of activity, the BIOBESTicide project consistently advanced towards its goal!

Grencell successfully established the production tool and is currently adjusting the process parameters to optimize the growth conditions and prevent contamination incurrence, alongside assessing different biomass sources (in collaboration with Nordzucker) as valuable alternatives to maintain constant annual production volumes (10 tons targeted). At the same time, Lamberti defined the best formulative approaches for the *P. oligandrum* strain and is cooperating with Grencell and INRAE to assess the formulated samples produced over stability tests, evaluating strain viability under controlled environment to eventually fine tune the final product formulation for its use on field. In this regard, INRAE is refining the protocols and methodologies to validate biopesticide performances and improve the viability detection on sample assessed, providing feedback to Lamberti for formulation tuning. INRAE is also assessing the reduction of the size of necrosis caused by pathogenic fungi involved in GTDs as well as evaluating the impact of the *P. oligandrum* I-5180 on microbial communities through high-throughput sequencing. Results are currently being processed and will be presented at relevant international congresses. IFV actively monitored symptoms of GTDs in 6 field plots over 3 different wine producing areas, collecting data to conduct field efficacy trials as soon as the biopesticide will be

available for field tests (planned in collaboration with Mercier). Results of preliminary efficacy assessment should be available for the first trimester of 2023. Eurion Consulting, responsible for the compliance of the commercialized BCA strain with European regulations and legislations, successfully submitted the approval dossier for the new BCA active ingredient at EU level, whose evaluation was initiated by the RMS (Rapporteur Member State, and is now preparing the registration dossier for the formulated product, which will be submitted to the concerned European Ministries over France, Italy and Spain. Tecnalia has established the methodology and started collecting data for the Life Cycle Sustainability Assessment, selecting the most relevant environmental impact categories, economic indicators and social topics to be included in collaboration with project partners. Eventually, Ciaotech has successfully finalised the exploitation strategy for the projects results expected to be produced over the project in collaboration with the whole consortium (especially with Grencell and Lamberti). Alongside, Ciaotech also identified the most relevant potential stakeholders for the BIOBESTicide value chain and led a deep analysis of the market and competitors landscape composition with the purpose of boosting and ensuring successful final product market proposition and uptake. In addition, Ciaotech is also coordinating all the Dissemination and Communication actions performed by the whole consortium and is promoting BIOBESTicide in relevant events throughout Italy and Europe.

