



BIOBESTicide

BIO-Based pESTicides
production for sustainable agriculture



**ENJOY READING
THE FOURTH ISSUE
OF THE BIOBESTICIDE
NEWSLETTER
M24 PROJECT RESULTS**

BIOBESTicide is entering in its third year of implementation!

Let's take a look at all the technical advancements obtained so far.

In this issue, interesting updates related to the design and development of the DEMO tool for the large-scale production of the *Pythium oligandrum* strain I-5180, identification and validation of the best formulation for proper delivery of the *Pythium oligandrum* strain, and development updates of protocols and methodologies to validate the final biopesticide performances on field. In addition, insights on the actions implemented to maximize the impact of the project through dissemination and communications activities, exploitation of the project's results and transfer of the technology of the BIOBESTicide progresses to the relevant stakeholders/entrepreneurs are provided.

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Pythium oligandrum strain I-5180 growth and scale-up

Concerning the development and large-scale production of the novel biopesticide based on *Pythium oligandrum* strain I-5180, [Greencell](#) has achieved and updated the design of the DEMO tool. Planning was achieved, a specific spaced will be dedicated for production of the oospores, industrial equipment was purchased related to the specifications for the BIOBESTicide production. Multiple biomasses from different sources have been considered as substrate and the production process is under validation. Construction of the production tool was successful with some inconvenient (contamination) and adapted for production to an industrial level, the tool is in test period for adequate performance validation to achieve our goal of 10 tons of final product per year.

Formulation of the biopesticide product

[Lamberti](#) has a deep expertise in agro formulation development, and its role within the consortium is to define and validate a proper formulation useful to deliver *Pythium Oligandrum* on target soils and crop. The ideal formulation should be easy to handle, safe for people and the environment, grant a good and even application of the product and of course be compatible with *P. Oligandrum* itself. So far, after a screening work, Lamberti has identified and selected a best prototype that is under testing to validate its performance, thanks to the project partners. As next actions for the project, Lamberti will keep monitoring the formulation and will collect feedback from trials to address any potential issue and fine tune the formulation to make sure we have a strongly optimized system suitable for use in field.

Environmental, social and economic assessment

Tecnia has established the methodology to conduct the Life Cycle Sustainability Assessment in BIOBESTicide, defining the goal and scope and setting the functional unit, system boundaries, etc. taking into account previous studies done in the (bio)pesticides and wine sector. The environmental impact categories, economic indicators and social topics to be included have been selected in collaboration with project partners. Now the focus is on developing the reference system for common pesticides production and also the BIOBESTicide system, collecting data from literature and project partners to develop a representative Life Cycle Inventory.

Controlled condition trials, field application and validation of the developed biopesticide

Inrae is in charge of the development of protocols and methodologies to validate biopesticide performances. Since the start of the project, different formulations have been tested and the first results showed that an improvement in the formulation could take place. So, a last greenhouse trial was undertaken to test new formulations under controlled conditions and assess their effectiveness on the reduction of the size of necrosis caused by pathogenic fungi involved in grapevine trunk disease. Once the best biopesticide formulation chosen, the second year of field treatment will soon be done.

In parallel, the viability of *P. oligandrum* and its impact on microbial communities will be evaluated by high-throughput sequencing. A greenhouse experiment was undertaken, and samples of leaves, twigs and rhizosphere environment were harvested. The sequencing results are currently being processed and will be presented at various international congresses (such as Plant BioProTech, International Workshop on Grapevine Trunk Diseases).

Product registration at EU level

During this second year of the BIOBESTicide project, **Eurion Consulting** has successfully submitted the approval dossier for the new active substance *Pythium oligandrum* strain I-5180 at EU level. This dossier was compliant with the EU regulation and the evaluation by the RMS (Rapporteur Member State) was properly initiated. At this aim, EURION Consulting was in regular contact with the RMS to follow properly the approval dossier process. Closed exchanges with partners (especially GREENCELL and INRAE) allowed to consolidate this approval dossier with new knowledges on the *Pythium oligandrum* strain I-5180 which were included in the dossier and provided to the RMS to implement the evaluation process.

Exploitation and Dissemination of the project results

As leader of the Dissemination and Communication task, **CiaoTech** kept promoting BIOBESTicide in relevant events; in particular the project has been presented at the International Forum on Industrial Biotechnology and Bioeconomy (**IFIB**), held in Trento (Italy) from the 30th of September up to the 1st of October, 2021, and **ECOMONDO**: the benchmark event in Europe for technological and industrial innovation in the field of green and circular economy, which took place in Rimini (Italy) from the 26th up to the 29th of October, 2021. In addition, an intensive activity on social media channels and among the CTECH/PNO networks has been carried out to raise awareness on the project.



In the project exploitation framework, CTECH successfully finalized the Preliminary Exploitation plan reporting the exploitation strategy to be implemented for the project results. In addition, CTECH extended the preliminary results obtained over the Stakeholders and Market Analysis, identifying up to 254 potential stakeholders for the BIOBESTicide value chain and further gathering valuable insights on both the biopesticides market as well as project perception and acceptance among the potential stakeholders identified by interviewing relevant organizations through a dedicated Market Survey. Finally, CTECH successfully led a Workshop involving GreenCell and Lamberti as partners involved in the commercialization of the final BIOBESTicide product with the purpose of obtaining valuable information and figures over the expected impacts generated upon project completion.

A valuable contribution to boost the impact of the project through dissemination and technology transfer of the project results to the relevant stakeholders/entrepreneurs, comes from the Association of West Pomeranian Chemical Cluster Green Chemistry (**Zielona Chemia**), which has already planned its participation in the International Fancy Sommer Food Show in New York (USA) and the preparation and realization of film/photo materials for the project promotion.

Pythium oligandrum: test efficiency and growth conditions

IFV has been monitoring the symptoms of trunk diseases in 6 field plots in 3 different wine producing areas (Val de Loire, Bordeaux and Côtes du Rhône area). This data will enable to conduct field efficacy trials as soon as the biopesticide will be available for field tests.

To evaluate the efficiency of the *Pythium oligandrum* containing biopesticides on grapevine trunk pathogens in the field, **Mercier** will apply the different formulations as well as water for the non-treated control, in rows of the nursery field. The solutions will be applied by aspersion on 200m of 2 mainly used cultivars in Europe, which corresponds to approximately 200 grafted plants. The experiment will take place in July, a month after plantation, to let the plants develop their first leaves and roots. Prior to the experiment, an evaluation of the natural inoculation level of *P. chlamydospora* will be done in different lots to quantify the presence of the pathogen and be able to evaluate the efficiency of the formulations. The efficiency will be evaluated by the quantification of *P. chlamydospora* DNA in the plants using the molecular tool developed by Mercier. The grafted plants will be harvested in November and 30 plants per modality will be used for qPCR analysis. The results should be available for the first trimester of 2023.

In the meantime, **Nordzucker** has collaborated with Greencell supplying different samples range of sugar by-products, from cane molasses to beet molasses, with different invert level with the scope to define the ideal *Pythium Oligandrum* growth conditions and optimize the oomycete sporulation.



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