

## BACKGROUND

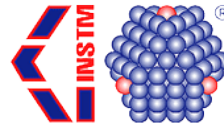
Among the most harmful phytopathogens which threaten crops, causing severe losses and including many quarantine for Europe, there are **bacteria** and **nematodes**. **Current pesticides for controlling these plant pathogens are definitely unsatisfactory and highly pollutant.**

## OBJECTIVE

Demonstrating the in vitro and in vivo efficacy and reliability of **polyphenolic-based biomolecules extracted from agricultural non-food biomasses and wastes** as disease control products against phytopathogenic bacteria and nematodes, to replace current pesticides and application of copper salts in agriculture.

## THE CONSORTIUM

- coordinator -



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ENVIRONMENTALLY  
FRIENDLY BIOMOLECULES  
FROM AGRICULTURAL WASTES  
AS SUBSTITUTES OF PESTICIDES  
FOR PLANT DISEASES CONTROL

## INFO

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## EXPECTED RESULTS

- improved soil **fertility**
- long-term **reduction** of the reservoir of environmental **antibiotic-resistant bacteria**.
- reduction of **pesticides residues** on **fruit and vegetables** for human and animal consumption.
- reduction of point-source and diffuse pollution from the disposal of **agricultural vegetable wastes** in the environment.
- short-term reduction of **pesticide- and drug-resistant bacteria** and nematodes in agricultural sites
- **reduction of costs** for **disposal** of agricultural non-food vegetable biomasses and **wastes**.
- **reduction of energy consumption** used for **remediation** processes of pesticides-**contaminated soils**
- increased soil microbial **diversity**
- long-term **reduction of pollution** in agricultural soils due to the use of conventional pesticides and of pesticides pollution in **water bodies**.
- reduction of toxicological impact of pesticides pollution on **terrestrial, aerial and aquatic fauna**.



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## ACTIONS AND MEANS

- demonstrate the **negative environmental impact** of the use of conventional chemical pesticides for the control of bacterial and nematode diseases.
- **demonstrate performances** as plant disease control products of tailored polyphenolic-based formulations from agricultural vegetable wastes, at laboratory, pilot and field scale.
- demonstrate the **reliability and the compliance with REACH document of EU legislation** of the extraction processes for these polyphenolic-based molecules, from lab-scale to kilo-lab scale.
- demonstrate the project **technical validity** for optimising the up-scaling of treatments with the polyphenolic-based molecules recovered from agricultural vegetable wastes, from laboratory to pilot scale and to semi-industrial scale.
- demonstrate the **absence of any unexpected side effect** of the bioactive polyphenolic-based molecules on common molecular targets of living organisms, at laboratory, pilot and semi-industrial scale.
- demonstrate the absence of any direct or cross-acting selection operated by the bioactive polyphenolic-based molecules towards the **emergence of unwanted resistance phenomena** in their respect or for conventional pesticides, copper or even antibiotics, at laboratory, pilot and semi-industrial scale.
- **coordinate and manage** the project and **disseminate** the results of the project in view of a **wide application** of its results within the EU Member States.