



Czech University of Life Sciences Prague

Faculty of Agrobiography, Food and Natural Resources






Project proposal

Use of extracts from vermicomposts for ecological nutrition and protection of plants

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Background of the project

- **Biowaste (valuable raw material)** - Given the depletion of non-renewable raw materials is necessary to focus on maximum utilization of renewable resources.

- **Vermicomposting** - Vermicomposting as a completely environmentally friendly technology is a viable method of diverting biowaste avoiding the costs of disposal and converting it to a value-added vermicompost.

- **Vermicompost** - This product is nutrient rich but also contains high quality humus, plant growth hormones, enzymes, and substances which are able to protect plants against pests and diseases.

- **Extracts from vermicompost** - A primary reason for using extracts from vermicomposts is to transfer microbial biomass, fine particulate organic matter, and soluble chemical components of vermicompost into an aqueous phase.

- **Ecological nutrition and protection of plants** - extracts can be applied to plant surfaces and soils in ways not possible or economically feasible with solid vermicompost.



The objective of the project

- Critically evaluate the effect of extracts from various vermicomposts in terms of ecological nutrition and protection of plants:
- to optimize of feedstock composition for vermicomposts production due to the desired parameters of extracts
- to determine the optimal parameters for formation of extracts from vermicomposts
- to find out the effect of extracts on agrochemical properties of soil, yield and quality of plants
- to suggest proportion and find out behaviour of residual vermicompost in growing medium
- to find out the possibilities of using of extracts in plant protection (mainly fungal diseases prevention)



Main activities

vermicomposting experiments

formation of extracts

pot and field experiments

different types of analyses

engineering solutions



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Planning outputs/results

- The results of the project will contribute to the greening of crop production and sustainable land management in the use of renewable local resources.
- **Specific results:**
- -characterization of extracts from various vermicomposts on the base of agrochemical properties, antimicrobial activity, enzyme activity and microbial composition
- -equipment for production of extracts - design, implementation, testing and experimental validation in pilot plant
- -natural liquid fertilizer with fungicidal effect
- -growing medium with residual vermicompost (after extraction)
- Achieved results will be published in scientific journals.



Proposed project team

- **Czech Republic:**
 1. Czech University of Life Sciences Prague
 2. Research Institute of Agricultural Engineering
 3. Research Institute for Landscape and Ornamental Gardening
 4. Specific small enterprise
- **Norway:** Norwegian institutions are cordially invited!
- **Estimated total budget:** Approx. 700 000 EUR
- **Contact person**
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