RÉPUBLIQUE FRANÇAISE
Liberté Égalité Fraternité

INRAE

Exploratory project
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INRAE unit
Agroécologie - Pôle BIOmE
Agroécologie - Pôle GESTAD
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Partner
London Research and Development Centre - Agriculture and Agri-Food (Canada)
Plant and Environmental Biotechnology - University of Thessaly (Greece)

INT-BXL

Introgression of the biodegradation capacities of xenobiotics in polluted soils and sediments

The INT-BXL project deals with the bioremediation of polluted river sediments and agricultural soils. In agroecosystems, soil contamination by xenobiotic compounds, such as pesticides used in conventional agriculture and antibiotics used in animal husbandry or added via organic fertilisation of the soil, can lead to the transfer of these compounds and/or their degradation intermediates to surface and groundwater, and thus contaminate these water sources.

In agro-ecosystems, soil contamination by xenobiotic compounds, such as pesticides used in conventional agriculture and antibiotics used in livestock farming or added via organic fertilisation of the soil, can also lead to contamination of surface and groundwater through the transfer of these compounds and/or their degradation intermediates.

These xenobiotics and their transformation products can have adverse effects on the organisms living in them and on the ecosystem functions and services to which they contribute. Therefore, the development of bio-remediation approaches, based on the use of the pesticide and antibiotic biodegradation capacities (i.e. antibiotrophy) of certain bacterial guilds to reduce the persistence of these harmful substances in agricultural soils and receiving watercourses, could improve the resilience and sustainability of agroecosystems.

Objectives

The goal of this pathfinder project is to develop an innovative protocol for the management of bacterial communities based on the concepts and methods used in genomic selection, and to evaluate their use in bio-remediation in different compartments of the agroecosystem based on laboratory tests with polluted agricultural soils and sediments.

Partners

Département INRAE	Unité INRAE	Expertises
AGROECOSYSTEMS Agronomy and Environmental Sciences for Agroecosystems	Agroécologie Pôle BIOmE	Microbial Ecology, Pesticide Biodegradation, Terrestrial Microbial Ecotoxicology
SPE Plant Health and Environment	Agroécologie Pôle GESTAD	Genomic selection
AQUA Aquatic Ecosystems, Water Resources and Risks	RiverLy EMA	Aquatic microbial ecotoxicology
Partenaire		**Expertises**
London Research and Development Centre Agriculture and Agri-Food - Canada		Antiobiotrophy
Plant and Environmental Biotechnology University of Thessaly - Greece		Bioremediation

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