

Workshop

INNOVATIVE BIOCHAR-BASED MATERIALS – SUSTAINABLE SOLUTIONS FOR POLLUTION AND DROUGHT MANAGEMENT



National Institute for Research and Development of
Isotopic and Molecular Technologies
INCDTIM Cluj-Napoca



DEVELOPING
INNOVATIVE SOLUTION FOR
MITIGATION OF DROUGHT
EFFECTS
COFUND-WATER4ALL-DIME



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and Innovation UEFISCDI

Partners

- Zuckerberg Institute for Water Research ZIWR of the Ben Gurion University of Negev BGU, Israel / Principal investigator: Zeev RONEN
- Technical University of Moldova TUM, Republic of Moldova / Principal investigator: Rodica STURZA
- Cukurova University CU, Republic of Türkiye / Principal investigator: Yildiz DASGAN HAYRIYE
- RAIT88 SRL, Italy / Principal investigator: Alessio CALABRO, Stefano BELLUCCI

Sub-contractor: International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), India / Principal investigator: Ephrem HABYARIMANA

Objectives

The aim of this project consists of the development of novel and low-cost multi-functional material based on MO-biochar functionalized nanocomposite hydrogel (Fe_3O_4) for a wide range of applications: treatment of marginal water for mitigation of hydro-climatic extreme events, especially droughts in the catchment of different sources of irrigation water, water saving, and soil fertilization.

The specific objectives of the research are listed below:

1. Preparation and characterization of cost-effective new superabsorbent materials based on biocompatible polymers and biochar functionalized with MO
2. Evaluation of the removal efficiency of organic pollutants from polluted water using the superabsorbent material. Assessment of the recycling efficiency of and reusing the superabsorbent material
3. Testing the attenuation of ARGs and ARB by the new adsorbent from greywater effluents using established molecular methods (qPCR and sequencing)
4. Assessment of the impact of the superabsorbent material on the physical, chemical, and biological properties of soil and its effects on bean crops (growth development, yield, and crop) under current and predicted climate change scenarios



Project director



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JOINT TRANSNATIONAL CALL Water4All 2022:

Management of water resources: resilience, adaptation and mitigation to hydroclimatic extreme events and management tools

Coordinator



Partners

