

TECO Mobility grant

**Enhancing seed germination on contaminated soils
using simple priming techniques**

Beneficiary of the grant- Anca Macovei

Home Institution/Company (EU)- University of Pavia, Italy

Host Institution/Company (INDIA)- Banaras Hindu University, Varanasi

Period of the stay in India- 24 days



TECO Project

*Technological ECO-innovations for the quality control
and the decontamination of polluted waters and soils*

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Objectives of the project

- Identification of the most adequate methodology for hydro-priming treatments
- Evaluation of seed germination and seedling establishment on different types of contaminated soils
- Draw correlations between seedling phenotype and key molecular players during germination and seedling development



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Activities carried out during the period of the grant

- Hydro-priming treatments were carried out for 2 hours and 4 hours
- Seeds were sown in germination trays containing uncontaminated soil (CTRL) and heavy metal contaminated soil (HM)
- Seed germination percentage and speed were determined daily and calculated at the end of the experiment
- After two weeks, seedling length and biomass were measured
- RNA was extracted from 5 seedlings/experimental conditions



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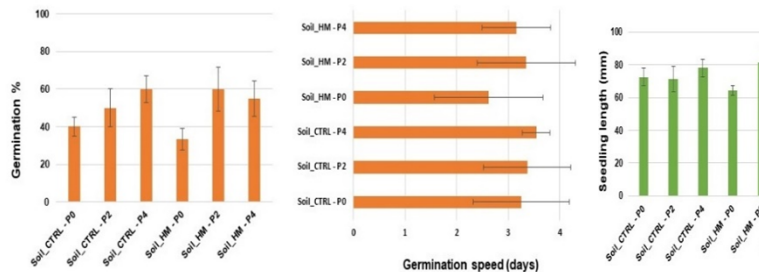
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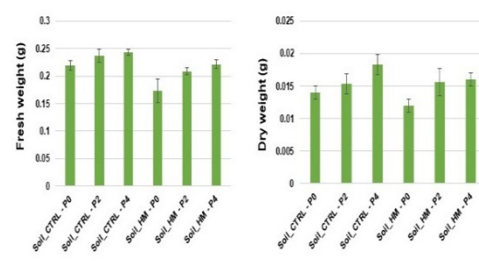
Main outcomes

- Hydro-priming treatments enhanced seed germination percentage but not the germination speed in both control (CTRL) and heavy metal (HM) contaminated soils
- Hydro-priming treatments contributed to improve seedling development both on CTRL and HM soils, and mainly, the 4 h priming treatments gave the most significant results
- Modulation of genes involved in DNA repair and antioxidant response was observed, confirming the previous results (Macovei et al., 2010, 2011) when plants were subjected to heavy-metal stress under *in vitro* conditions

GERMINATION PARAMETERS



SEEDLING DEVELOPMENT



GENE EXPRESSION PROFILES

