

REDUCING BIOPROCESS OF CADMIUM SOLUBILITY RHIZOSPHERIC

ECUADOR, ARGENTINA, SPAIN



Webstory



Technological solution

To generate a bioprocess based on a fungal consortium that will reduce the Cd content in cocoa beans



Technological description

The bioprocess will involve: (a) the isolation of a consortium of soil fungi native to cocoa plantations that have the ability to decrease aerial and root Cd bioaccumulation (CB r,a) coefficients ; (b) the assessment of the effectiveness of the bioprocess in bioreactors and (c) the elevation of cocoa FF to Technology Readiness Levels (TRL) 6 and 7.



Impacts and results

- 1- A database was obtained with 445 beneficiaries in Level 1 and 25 beneficiaries in Level 2
- 2- 8 bioreactors were built
- 3- 4 selected contaminated soils were selected
- 4- We have obtained 35 colonies of fungi and selected the fungus *Phanerochaete chrysosporium* as tolerant to very high concentrations of Cl₂Cd (5,000 ppm).
- 5- We found 1 mycorrhizal strain from the Bank of Glomeromycota in vitro (BGIV) identified as Cd hyperaccumulator
- 6- We carry out the validation in bioreactors of 1 mycorrhizal symbiosis with *Baccharis salicifolia* with very high bioextractive power of Cd
- 7- 1 doctoral thesis defended
- 8- 1 doctoral thesis in progress
- 9- 1 degree thesis defended
- 10- 2 undergraduate theses in progress
- 11- Presentations at congresses and in scientific journals
- 12- 1 video of bioreactors in action presented by the doctoral thesis student in progress
- 13- Interaction with the association of agricultural production ASOCCRISTAL in the Province of Manabí, Ecuador. made up exclusively of women as 12 legal partners and 400 business partners.



+ 3452

Direct and indirect beneficiaries



+ 8

Ongoing and defended theses



+ 1646

Women benefited



+ 20

Publications (journals/book chapters)



+ 3

Technological solutions



+ 6

Networks



+ 70 x

Cadmium bioaccumulation factor of the selected symbiosis



+ 8

Bioreactors built and validated