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**SOIL: OUR COMMON FUTURE**

**ABSTRACTS**

Editors:

**Nicolae HAR, Horea BEDELEAN**

Babeş – Bolyai University, Department of Geology, Cluj Napoca

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## A NEW OPPORTUNITY IN BIOREMEDIATION OF COPPER POLLUTED SOILS

Di Bella, V.\*, Poma, I.

Dipartimento SAF Università di Palermo, Palermo, Italia [vittorio.dibella@unipa.it](mailto:vittorio.dibella@unipa.it), [ignazio.poma@unipa.it](mailto:ignazio.poma@unipa.it)

Genus *Trichoderma* is a very common soil fungus, often called Green Mold, that it is a saprophytic and an opportunistic symbiont of plant roots. Its enzymes and its ability to degrade lignin and cellulose, breaking the link ring of aromatic hydrocarbons, make it able to degrade chemicals and plastics, but also to interact with a lot of metals, (like iron, lead, aluminum, nickel, cadmium, copper and others). These features make the fungus useful as a tool of bioremediation. *Trichoderma harzianum* is one of the most common species of *Trichoderma*, well known also for its antagonistic activity on plant pathogens. It is not a symbiont, but colonizes the plant's roots. *Trichoderma harzianum* forms a sleeve around the roots, taking control of the rhizosphere and preventing pathogens and harmful organisms. It also provides water and nutrients to the plant, as a symbiotic fungus. Like others fungi in this genus, it also absorb metals, using them to form enzymes or in chemical reactions.

Copper is one of the most common metals in agricultural soils because of its use as pesticide, especially in vineyards. Grapevines tolerate high levels of copper in soils, but for others crops this could be a serious problem. *Trichoderma harzianum* is able to absorb copper and with a very high tolerance of it. In this work, we used a fragment of *Trichoderma harzianum* on PDA amended with high concentrations of copper sulphate, and measure the growth of the colony in presence of very high concentrations of this pesticide. The results are very interesting. *Trichoderma harzianum* slows its growth, but it do not stop or die, and absorbs copper, accumulating in cell walls. Probably it uses copper as a defense from bacteria and others fungi. This feature can be used to protect plants with a double target: a biological defense from pathogens and harmful organisms, and using it as a filter to remove copper from soils.

**Key words:** polluted soils *Trichoderma harzianum*, bioremediation, copper, heavy metals.