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BIOEFFECTIVE SOIL-PLANT-INOCULATION TECHNIQUES FOR IMPROVED SOIL QUALITY AND FUNCTIONING

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Biofertilizers are generally used for improving soil quality and functioning. Regarding of the foreseen effect of soil-inoculation, several microbes can be used in agri, horti- and the viti-cultural practices. Bioeffector (BE) strains, as *Trichoderma* sp., *Pseudomonas* sp., *Bacillus* sp. and/or of their combinations were tested for improving plant growth and reduction of soil-born plant pathogens. Beside soil inoculation, abiotic treatments of using natural minerals and/or industrial products (alginite, biochar) were used to improve soil quality and microbial survival. Pot and field experiments were designed with tomato (*Lycopersicum esculentum*), potato (*Solanum tuberosum*) and maize (*Zea mays*) for 3 consecutive years. Growth parameters of plants: yield and soil physical-chemical-biological parameters (humus quantity/quality, pH, N-P-K nutrients, total number of bacteria/fungi and enzymatic activities of fluorescent diacetate/dehydrogenase) were estimated. Functioning of microbes was key-issue at all tested soil-plant-microbe systems. Plant growth and yield can be improved, in strong dependency with the BE-treatments. A more tasty fruit quality was found with the inoculation of P-solubilizing *Bacillus* strains. *Trichoderma* fungi on the other hand could reduce the severity of the soil-borne plant pathogen fungal diseases. Abiotic additives, especially with the combination of beneficial microbial inoculums, can improve the soil-physical-chemical- and the biological parameters. The bioeffectors, tested are useful elements in soil/environmental protection. Role and functioning of such microbial inoculums are improved by abiotic/inorganic bioeffective treatments.

Keywords: biofertilizers, soil quality, soil-functioning, minerals, inoculation

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