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Beneficial microorganisms: An opportunity to improve the yielding quality of crop plants

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RIH is the birthplace of Poland's first bank of symbiotic mycorrhizal fungi and beneficial bacteria isolated from the rhizosphere of fruit plants growing in different soil and climatic conditions of Poland. Studies have shown high effectiveness of the beneficial microorganisms collected in SYMBIO BANK in the stimulation of vegetative growth and yielding of plants of strawberry, apple, sour cherry, cucumber and tomato and other horticultural plant species. Some bacterial strains have a protective effect against *Botrytis cinerea*, *Fusarium oxysporum* and *Verticillium dahliae*. The most effective strains and species of microorganisms are used as components of the newly developed biological preparations: Bio-stimulators, composts and bacterial and mycorrhizal inocula. The uses of chemical means of plant production, e.g., synthetic NPK fertilizers, have been shown to have a negative effect on the occurrence and activity of beneficial soil microorganisms. The resources accumulated in SYMBIO BANK include strains of fungi belonging to 30 species of arbuscular mycorrhizal fungi (AMF). Further identifications will include 53 thousand AMF spores, 1418 strains of bacteria and filamentous fungi. The mechanisms of action of beneficial microorganisms include the formation of siderophores (500 strains), spores (125 strains), dissolution of phosphorus compounds (200 strains), decomposition of cellulose (40 strains) and atmospheric nitrogen fixation (100 strains). Knowledge of the role of symbiotic microorganisms that have the greatest influence on the availability and uptake of nutrients will contribute to the development of sustainable plant cultivation methods.

Biography

Lidia Maria Sas Paszt is the Head of the Rhizosphere Laboratory and has extensive experience in coordination and implementation of research and development projects (CEAF, CRAFT, EraNet RURAGRI, EkoTechProdukt, HortiEnergia, Huntsman and EFSA), carried out in collaboration with academic and industrial partners in Poland and abroad.

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