University of Szeged
Faculty of Science and Informatics
Department of Microbiology
6726 Szeged, Közép fasor 52, Hungary

BioeGO – 4-component liquid soil biofertilizer

BioeGO is an environment-friendly soil inoculant developed in Hungary. The product is consisting of the mixture of four beneficial microorganisms – two bacteria and two fungi – which have favorable effects on the growth and development of crop plants. The microorganisms were selected at the Department of Microbiology, Faculty of Science and Informatics, University of Szeged after wide scale laboratory examinations. The product ensures increased nitrogen fixation, phosphorous mobilization, stem degradation and humus production on the treated field, furthermore it provides protective effects against soil-borne plant pathogenic fungi. It has been proven that the microbial components of the BioeGO soil inoculant do not have negative effects on each other, thereby all the beneficial effects of the components on plant growth and development can occur simultaneously, complementing each other.

Nitrogen-fixing ability

One of the bacterial components of the product is a strain of the beneficial species *Azotobacter vinelandii*, which has nitrogen-fixing abilities proven under laboratory conditions: it is capable of efficient growth even in a culture medium lacking nitrogen. During its application, this free living bacterium is able to fix nitrogen from the air, thereby providing excess nitrogen source for the crop plants in an available form.

Abilities of phosphorous mobilization and stem degradation

The phosphorous mobilization and stem degradation abilities of the product are ensured by a strain of the beneficial fungus *Trichoderma harzianum*, which has been selected out of 45 *Trichoderma* strains. This fungus is capable of producing cellulose-degrading enzymes even in the absence of stem residues, while this ability is increased 10-15 fold in the presence of grinded maize stem. The fungus is also producing large amounts of enzymes capable of liberating organically bound phosphorous.

Ability of humus production

The humus-producing component of the product is a strain of the beneficial bacterium *Streptomyces albus*, which was selected out of 46 strains of bacteria. The humus-producing abilities of *Streptomyces* bacteria can be primarily attributed to the production of peroxidase enzymes. The selected bacterium has been proven to possess excellent peroxidase-producing abilities.

Protective effect against plant pathogenic fungi

The protective effects against plant pathogenic fungi is ensured by another fungal component of the product, a strain of the beneficial fungus *Trichoderma asperellum* selected out of 45 *Trichoderma* strains. Laboratory examinations proved that this fungus has outstanding abilities in competing and destroying several soil-borne fungal plant pathogens (e.g. *Fusarium solani*, *Fusarium oxysporum*, *Phoma cucurbitacearum*, *Alternaria alternata*, *Botrytis cinerea*, *Rhizoctonia solani*), thereby providing protective effects for the developing crop plants.

……	……	……..
Prof. Csaba Vágvölgyi	Dr. László Manczinger	Dr. László Kredics