

ISOLATION AND IDENTIFICATION OF EPIPHYTIC AND ENDOPHYTIC FUNGAL AND BACTERIAL STRAINS FROM SWEET POTATO PLANTS FOR THE DEVELOPMENT OF FOLIAR FERTILIZER

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One of the main problems we face today is the increasing global chemical pollution and its harmful consequences. In addition to industry, agricultural activities also release significant amounts of chemicals (e.g., pesticides, fertilisers) into the environment. Therefore it is important to find ecological and sustainable solutions for both industrial and agricultural production. One of these potential options in agriculture is the use of biological crop protection, including biocontrol agents (BCA). In plant biology, those microorganisms are called biocontrol agents which are able to suppress plant pathogens in some way and, in favourable cases, can even stimulate plant growth. There are many examples of biocontrol agents among bacteria and fungi. The aim of our research is the characterization of new fungal and bacterial strains with good biocontrol capabilities.

In the frame of this, we isolated more than 150 fungal and bacterial strains from the surface (epiphytes), plant tissues (endophytes) and rhizosphere of sweet potato (*Ipomoea batatas*) plants from different plantations. Among them, about 50 isolates have been identified by sequencing and subjected to various ecophysiological tests (temperature and pH optimum, water activity test, enzyme activity measurements). We are currently working on detailed studies of some *Bacillus licheniformis* strains (selected after, e.g., siderophore production, *in vitro* confrontation tests, depsipeptide production capacity) and also isolation work is ongoing from further sweet potato samples.

Our long-term objective is to create a high depsipeptide content foliar fertilizer formulation stabilised with chitosan nanoparticles using fungal and bacterial strains with biocontrol capabilities, which we would like to test extensively in greenhouse and field conditions.