ROLE OF RHIZOBACTERIA IN PLANT ABIOTIC STRESS MANAGEMENT

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The major challenges in the agriculture are to cope with the continuously increasing demand for agricultural products and the losses caused by the changing environmental conditions. Biotic and abiotic stress factors limit the plant growth, causing lower yields in crop production. In order to increase the crop productivity, two biotechnological approaches are available: the development of stress tolerant crops using genetic engineering and the utilization of plant colonizing microorganisms to provide stress tolerance. The role of rhizobacteria in diminishing the effect of abiotic stress was studied in recent years. Rhizobacterial strains can influence the survival and adoptability of plants using different mechanisms such as the production of plant growth promoting substances, phytohormones and reactive oxygen species (ROS) management. The aim of our research was to evaluate the effect of taxonomically different plant growth promoting bacteria from Sapientia University's bacterial strain collection under abiotic stress conditions (salt and heavy metal) on *Zea mays* early growth and development. Bacterial strains were tested for their plant growth promoting (PGP) properties, heavy metal and salt tolerance. The stress tolerant PGP strains were selected and used in plant experiments under controlled conditions. Plant growth (length and weight) and physiological parameters (chlorophyll content, ROS production) were measured and evaluated. Several bacterial strains proved to alleviate abiotic stress in case of *Zea mays*, deserving more attention in future research due to their potential in sustainable agriculture practice.