

TITLE: INFLUENCE OF ENDOPHYTIC FUNGUS *PIRIFORMOSPORA INDICATES* IN THE PROMOTION OF GROWTH OF TRANSGENIC RICE PLANTS SUPER EXPRESSING H⁺ - PPASE

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ABSTRACT:

The microorganisms that promote plant growth are one of the innovative and indispensable technologies to promote the enhancement of agroecology. Such microorganisms provide several benefits to host plants, such as increased nutrient uptake, tolerance to abiotic stresses such as drought, and salinity, in addition to direct and indirect control of pathogens, thus favoring the development of the host plant. These beneficial symbioses provide the plant with limiting nutrients, minimizing the need for chemical fertilizers for crops. Similarly, genetically modified plants such as transgenic plants that have super-expression of the AVP1 gene encoding vacuolar H⁺ -Pyrophosphatase have greater nutrient uptake capacity, higher growth and productivity, and greater tolerance to biotic and abiotic stresses. Thus, the objective of this work is to investigate the role of the endophytic microorganism, *Piriformospora indica* in the efficiency of plant growth promotion, through the morphological, nutritional or biochemical parameters of WT and transgenic rice plants, expressing H⁺ -PPase, aiming at new strategies for increasing the productivity of crops of economic interest. Being evaluated: (i) the height, dry matter of the root and shoot; (ii) root relation: shoot; (iii) percentage of fungal colonization and mycorrhizal efficiency; (iv) evidence histomorphological changes in inoculated and non-inoculated plants, and (v) to determine macronutrient and micronutrient accumulation in shoot and roots. The results obtained are important to understand how the super-expression of the AVP1 gene and the inoculation with *P. indica*. Therefore, it is possible to conclude that AVP1 rice plants inoculated with *P. indica* present a greater promotion of growth and greater capacity of nutrient absorption, as well as photosynthetic rates, becoming a strong candidate for an ecological alternative for the reduction in the application of chemical fertilizers.

Keywords: Mycorrhizae, super-expression of H⁺ -PPase, *Piriformospora indica*

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