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Study of *Piriformospora indica* as bioinoculant for nutrient management in Calcareous soil

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Abstract: Calcareous soil with high pH and nutrient deficiency has always been a threat to agricultural productivity. Adequate crop productivity and its supply is a need of the hour to meet increasing demand of food for growing population worldwide. Another major concern is loss of soil fertility due to over use of chemicals and other environmental factors which lead to serious nutrient deficiency. These nutrient deficiencies eventually limit the scope of agriculture in those areas and causing loss of productivity. Organic agriculture can be an alternative source for restoring soil nutrients content and their physicochemical properties. Microbial reclamation of nutrient deficient calcareous soil is a novel approach towards sustainable agriculture without causing any environmental disturbances. *Piriformospora indica* a root endophytic fungus already proved to be a beneficial influence on plant growth and were studied for its role in creating a channel for nutrient supply to plants at the same time reducing the burden of chemicals usage. In-vitro study reveals that the fungus can tolerate an alkaline pH up to 11.0 and remain metabolically active. The study also revealed that fungus has high affinity towards insoluble Calcium Carbonates and Phosphates which enhances the Cell Dry Biomass upto 30 to 40 percent. Further studies revealed that the fungus was tolerant and physiologically active at increasing concentration of Calcium Carbonate. *P. indica* in present study proves to be a potent source of bio-inoculants for nutrient management in Calcareous soil.
Key Words: Calcareous Soil, Nutrient Deficiency, *Piriformospora indica*, Alkali tolerant, Nutrient Management.

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