

Management of *Macrophomina phaseolina* causing dry root rot by PGPR strains and indigenous composts

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Biological control of soil borne plant pathogens has been described as a safe strategy to reduce crop damage. In recent years, considerable attention has been paid to plant growth promoting rhizobacteria (PGPR), many of which are aggressive root colonizers and play an important role in management of plant diseases caused by soil borne plant pathogens. Besides, the compost is also considered as a natural pesticide for soil as it is an excellent source of nutrition and moisture which favour native antagonist to proliferate and suppress the soil borne diseases. *Macrophomina phaseolina* is a common soil pathogen which causes charcoal rot in various economically important plant species. The present paper deals with *in vitro* and *in vivo* characterization of PGPR strains isolated from rhizosphere soil of agriculture crops and four different composts for their potential as biocontrol agent. The antagonistic activities were found in solid and dual liquid culture media which were further confirmed by light and scanning electron microscopic studies. Strains were also found positive for siderophore, HCN, NH₃ and chitinase activities, traits responsible for conferring the antifungal activity. *In vivo* studies not only showed the reduction in disease incidence but also the improvement in growth and yield of plants. Four indigenous composts prepared from readily available organic wastes viz. vermicompost, banana, nadep and *Calotropis* were used for growth and disease suppression in mungbean. It can be concluded from the studies that PGPR strains and composts have potential to inhibit *Macrophomina phaseolina* when supplied in agricultural field, thereby, supporting the sustainable agriculture.

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