

the total yields and net returns proved to be comparatively higher or at par with the normal planting methods. The study thus proves that the miniset technology is feasible for homestead cultivation of tuber crops especially in light of the preference for small sized tubers among the nuclear families in the state.

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Evaluation of plant growth promotion ability of fluorescent *Pseudomonas* spp. on cacao (*Theobroma cacao* L.) seedlings

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Fluorescent pseudomonads are among the most promising plant growth promoting rhizobacteria present in plant rhizosphere. Promising isolates of fluorescent *Pseudomonas* (KDSF 23, KDSF 7, KGSF 20 and KZSF 6) from the rhizosphere of cocoa (*Theobroma cacao* L.), selected based on *in vitro* characterization for production of IAA, ACC deaminase, HCN, siderophore, chitinases and antibiotics, ability to grow on N-free medium, ammonification and solubilization of phosphate, from a collection of 160 isolates were evaluated, for plant growth promotion properties. All the four isolates produced salicylic acid ranging from 0.9 to 6.1 µg/ml while three (KDSF 7, KGSF 20 and KZSF 6) were able to solubilize tri-calcium phosphate within a range of 71.58 to 112.69 µg/ml. IAA production and α -1, 3- glucanase activities were recorded in KDSF 23, KGSF 20 and KZSF 6 where as only KDSF 23 could produce chitinase enzyme. The identification of the PGPRs was arrived at using biochemical, BIOLOG and molecular analysis. The 16S rRNA sequencing confirmed identification of KDSF 23 and KGSF 20 as *P. putida*, KDSF 7 as *P. aeruginosa* and KZSF 6 as *Pseudomonas* sp. with >99% sequence similarity. Efficiency of plant growth promotion of these isolates were demonstrated on cocoa seedlings in polybag studies. The bacterial inoculation was found to significantly increase ($P < 0.05$) growth parameters such as seedling length (4-16 %) and dry weight (2-58 %). It also stimulated beneficial bacterial counts in the rhizosphere of the cocoa seedlings. Based on the results of polybags studies on cocoa seedlings *P. putida* KDSF 23 was identified as promising isolate for bioinoculant development. A talc-based bioformulation of this isolate was prepared. The shelf- life studies indicated that the isolate could survive until 6 months at room temperature with colony count of 7.22 log cfu/g.

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Low impact high yielding farming practices for *Etroplus suratensis*

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Etroplus suratensis, the famed karimeen (pearl spot), consequent to being designated as the state fish of Kerala is increasingly being focused upon as a key cultivable species. The relatively slow growth of the species and low survival rates can be effectively addressed by adopting low impact, high yielding technologies like substrate based periphyton. The present study assesses