

The Potential Use of Cyanobacteria as Biofertilizer for Rice Variety BG-251

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A study was conducted to assess the potential use of selected cyanobacteria namely *Limnothrix* sp., *Anabaena* sp., *Chroococcidiopsis* sp. and *Calothrix* sp. on growth and yield of rice variety BG-251. A pot experiment was conducted for paddy with selected cyanobacteria strains with 12 treatments which were T₁- *Limnothrix* sp. + TSP + MOP, T₂- *Anabaena* sp. + TSP + MOP, T₃- *Chroococcidiopsis* sp. + TSP + MOP, T₄- *Calothrix* sp. + TSP + MOP, T₅- *Limnothrix* sp. + *Anabaena* sp. + TSP + MOP, T₆- *Limnothrix* sp. + *Chroococcidiopsis* sp. + TSP + MOP, T₇- *Limnothrix* sp. + *Calothrix* sp. + TSP + MOP, T₈- *Anabaena* sp. + *Chroococcidiopsis* sp. + TSP + MOP, T₉- *Anabaena* sp. + *Calothrix* sp. + TSP + MOP, T₁₀- *Chroococcidiopsis* sp. + *Calothrix* sp. + TSP + MOP, T₁₁- Department recommended fertilizers and T₁₂- Control. For treatments with cyanobacteria no any nitrogen fertilizers were applied while triple super phosphate and murrate of potash were applied. Cyanobacteria was applied as fresh biomass. Plant height, shoot dry weight, root dry weight, nitrogen, phosphorus and potassium uptake and yield were measured after 75 days of planting. Experiments were designed as completely randomized design with twelve treatments in three replicates and the data were analyzed by using SAS 9.1. Significant variations between the treatments were evaluated by Duncan's Multiple Range Test. The results showed comparable plant height in all cyanobacteria treatments with Department recommended fertilizers. The highest shoot weight (0.316 g/plant) was recorded in treatment with combination of *Anabaena* sp. and *Chroococcidiopsis* sp. on 45th day and the highest root weight (1.085 g/plant) was found in treatment with combination of *Limnothrix* sp. and *Anabaena* sp. Treatments with selected cyanobacteria showed equal or higher nitrogen, phosphorus and potassium uptake compared with recommended fertilizers. Nutrient uptake was positively correlated with plant dry biomass. The grain yield was highest (0.928 g/plant) in treatment with combination of *Limnothrix* sp. and *Calothrix* sp. However, it was not significantly different from all other treatments except treatment with *Calothrix* sp. alone or control. Results therefore indicate the potential of using the studied cyanobacteria in bio-fertilization for paddy in flooded condition.

Keywords: Bio fertilizer, Cyanobacteria, Rice field