

## Effect of Selected Bacteria Isolates on the Yield of Improved Rice Variety Bg300 under Field Condition

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Use of inorganic fertilizers, exceeding the recommendation by Department Agriculture is common practice among most farmers, which is accused of environmental, health and social issues in Sri Lanka. The necessity of introducing alternative fertilizers for synthetic fertilizer has emerged as an important topic in Sri Lankan agriculture. Plant growth-promoting bacteria are recognized as an eco-friendly approach to replace inorganic fertilizer. The objective of this study was to determine the effect of two selected bacteria isolates (I-1 and I-2), on the yield of improved rice variety Bg300 under field condition in the low country wet zone of Sri Lanka. The experiment was carried out with treatments of I-1 inoculation, I-2 inoculation, recommended dose of inorganic fertilizer (F), and recommended dose of inorganic fertilizer with each isolate (I-1+F and I-2+F respectively) in Horana, which is located in the agro-ecological zone of WL1 during *Maha* season in 2018 and 2019. The experiment was laid as a Randomized Complete Block design (RCBD) with two replicates for each treatment. Each replicate was a 30 m<sup>2</sup> plot of 5 m x 6 m. The germinated seeds were inoculated with respective bacteria isolate at mid-log phase of growth, prior to seed sowing. Regular agronomic practices were followed for the cultivation of rice. The total yield of each plot was measured at harvest. Data were analyzed using SAS software for ANOVA and Duncan's Multiple Range Test (DMRT) for mean separation. Inoculation of bacteria had significantly affected the yield as average values of 12.75±0.25 kg and 12.5±0.3 kg were recorded for I-1 and I-2 treatments in contrast to that of the control (8.9±0.3 kg). The average yields of the recommended dose of inorganic fertilizer (11.9±0.1 kg) and the combination of I-2 and inorganic fertilizer (12.3±0.3 kg) were not significantly different over bacteria inoculation alone. The isolate I-1 and inorganic fertilizer combination could not be tested due to a wild boar attack on one of the plots. Further experiments on the efficacy of the above bacteria isolates under different agro-ecological regions of the country will be useful for their utilization as bio fertilizers in the future.

**Keywords:** Plant Growth Promoting Bacteria, Rice, Yield