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Evaluation of Effect of Bacterial Consortia on Growth and Yield of Selected Rice Varieties under Greenhouse Condition

HMASB Jayasinghe[1], S Geekiyange[2#] and DMJB Senanayake[3]

[1] *Board of Studies in Agriculture, Faculty of Graduate Studies, University of Ruhuna*
[2] *Faculty of Agriculture, University of Ruhuna*
[3]*Rice Research and Development Institute, Bathalagoda*

[#] sudarshanee@agbio.ruh.ac.lk

Overuse of inorganic fertilizer (IF) for high yield of new improved rice (NIR) is a threat to the Sri Lankan economy, human health, and the environment. The objective of the study was to determine the effect of selected bacterial consortia (C) on 2 common NIR. A greenhouse experiment was conducted at the Faculty of Agriculture, the University of Ruhuna during *Maha* season 2021/2022. There were 22 treatment combinations for 2 NIR (Bg 366 and Bg 379/2) and 11 methods with eight C (C1,2,3,4,5,6,7 and 8), one isolate (B1), IF, and negative control (NC) following a complete randomized design with five replicates in pots. Days to flowering (DF), height at flowering in cm (HF), and grains per the first panicle (GPP) were evaluated. ANOVA followed by mean separation was performed by SPSS. In Bg 366, HF of C3 (81.8 ±2.3) and C5 (80.8 ± 3.7) were higher than NC (64 ±4.1). In contrast to the lowest GPP (55.2 ±8.9) of NC, C1(87.2 ±8.5), C8(81.7 ±6.9), and B1(89.75±8.8) produced the highest GPP. In Bg 379/2, DF of C3 (100.2 ±2.7) was significantly early than IF (111 ±2.3). C1 (69.6 ±4.9), C8 (72.4 ±3.2) and 41(68.2 ±3.6) were significantly shorter in HF in contrast to IF (84.4 ±3.8). In comparison to GPP of IF (124 ±3.8), those of C2 (141 ±20.3), C3(137 ±11.4), C4(120.2 ±7.8), and C5(139.5 ±20.6) were not significantly different, while NC produced the lowest GPP (96.4± 8.3). The above results indicate the need for field trials of potential consortia to replace IF.

Keywords: *bacterial consortia, agronomic and yield characters, new improved rice*