

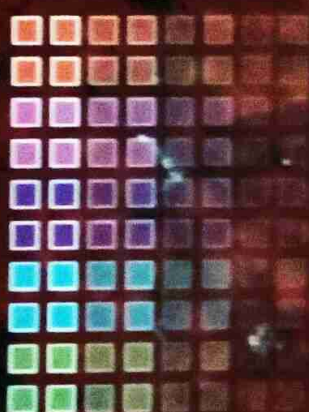


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DOES BIOFILM BIOFERTILIZER WORK IN LARGE SCALE RICE CULTIVATION UNDER FARMERS' FIELD CONDITIONS?

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Sustenance of soil fertility is adversely affected by the excessive use of chemical fertilizers (CFs) mainly in rice cultivation of Sri Lanka. Therefore, the use of organic and biofertilizers together with CFs are being promoted. Amongst, Biofilm Biofertilizer (BFBF) has shown a promising potential to cut down CFs up to 50% in small scale rice cultivation. However, there is no published research on the effect of BFBF application in farmers' fields at a larger scale. Thus, present study investigates the effect of BFBF on soil fertility, plant growth and grain yield of rice grown at large scale farmer fields. The study was carried out in Ampara district, a major rice growing area in Sri Lanka. Eighteen random farmers' fields spreading over 200,000 acres were selected from different locations in the district. Two uniform paddy fields (whole *liyaddas*) were applied CF alone and BFBF + 50% CF separately. Rhizosphere soil and plant samples were collected randomly from three hills from each paddy field at flowering, and were analyzed for soil pH, moisture, total C, N, P and plant parameters. Grain yields were recorded at harvest. Results of the two treatments were compared using two sample t-test in R software. There were significant increases in soil moisture (the increase by 27%), total C (63%), N (69%) & P (86%), plant hill circumference (46%), number of tillers per plant (29%), leaf chlorophyll content (38%), total dry weight (98%), thousand grain weight (18%) and total grain yield (26%) ($p < 0.05$) in the BFBF + 50% CF practice over the CF alone practice. Therefore, it can be concluded that the BFBF application together with a reduced dosage of CFs improves the soil quality, plant growth and grain yield under large scale rice cultivation in the dry zone of the country.

Keywords: Biofertilizer, Biofilm biofertilizer, Chemical fertilizer, Paddy, Rice