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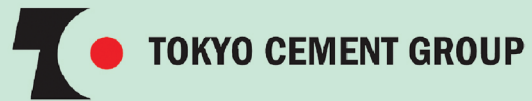


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(ID 001)

**Feasibility of Biofilm Biofertilizer in Halving Nitrogen Waste in Paddy Cultivation**

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**Abstract**

In an attempt to achieve the target of the Colombo Declaration in 2019, we, the Centre for Advanced Research on Nitrogen Management in Agriculture (CARNMA) at the National Institute of Fundamental Studies (NIFS) conducted 112 field trials in 13 districts of Sri Lanka. Here, two practices being used extensively by the farmers were compared for the Nitrogen (N) fertilizer use efficiency in paddy; (a) chemical fertilizer (CF) practice [340 kg CF/ha (Urea 225, TSP 55 and MOP 60 kg/ha) and, as recommended by the Department of Agriculture] (b) Biofilm biofertilizer (BFBF) practice [2.5 L of BFBF/ha split into two applications, at two and six weeks after sowing, together with 225 kg CF/ha (Urea 150, TSP 40 and MOP 35 kg/ha), a reduction of CF by 34% because of the ability of the BFBF in increasing fertilizer use efficacy via microbial turnover]. Results showed that the BFBF application cut down N-fertilizer use by 33%, and hence the waste is also by the same amount with a simultaneous increase in grain yield by 23% (i.e., the average of all the 112 trials: the BFBF practice 5,860 kg/ha, and the CF practice 4,748 kg/ha). Moreover, the N fertilizer use efficiency by paddy crop increased by 6% in the BFBF practice indicating a higher N uptake, and hence lower N waste compared to the CF practice. The fertilizer cut down and the increased N uptake collectively reduced N waste by over 50%. In conclusion, the BFBF practice can be considered as a promising approach to meet the target of the Colombo Declaration in 2019 i.e., halving N waste in agriculture by 2030.

**Keywords:** Biofilm biofertilizer, Colombo declaration, N-waste, Paddy