

Impact of bio-fertilizer and urea as sole and in combination on paddy grown in Kilinochchi

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Abstract

The experiment was carried out to evaluate the performance of urea and bio-fertilizers in clay loam soil on the paddy crop (Bg-251) grown by using different fertilizer sources including two types of bio-fertilizer; azolla (symbiotic relationship with Anabaena), and azotobacter, and urea as a chemical fertilizer. Fertilizers were added to treatments based no recommended level of fertilizer for paddy crop by the Department of Agriculture. The treatments including recommended dose nitrogen applied in T₁ - 100% of bio-fertilizer (azolla), T₂ - 100% of bio-fertilizer (azotobacter), T₃ - 100% of urea, T₄ - 50% of bio-fertilizer (azolla) + 50% of bio-fertilizer (azotobacter), T₅ - 50% of bio-fertilizer (azolla) + 50% of urea, T₆ - 50% of bio-fertilizer (azotobacter) + 50% of urea and T₇ - control (No fertilizer). The experiment was devised in a randomized complete block design with three replicates. The results revealed the soil electrical conductivity (EC) and soil organic matter content were significantly different among treatment at 30 and 45 days after sowing ($p < 0.05$). The highest soil EC was recorded in azolla + azotobacter treatment at 30 days after sowing and sole azotobacter treatment at 45 days after sowing. The highest organic matter content was recorded in both sole azolla and sole azotobacter treatment at 45 days after sowing. According to the results, it can be concluded that application of bio-fertilizer increased soil organic matter content and soil EC. Therefore, bio-fertilizer could be used as alternative source for chemical fertilizer in paddy cultivation.

Keywords: Azolla, Azotobacter, Electrical conductivity, Paddy, Soil organic matter

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