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Microbial properties of soil as influenced by sludge and fly ash manuring under rice-wheat cropping system

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ABSTRACT : An experiment on microbial properties of soil was carried out to study the effect of sludge and fly ash manuring under rice-wheat cropping system during the Kharif and Rabi season. The experiment included T_0 -Control, T_1 -100% recommended fertilizer dose (RDF) through sludge, T_2 -75% RDF through sludge + 25% RDF through chemical fertilizer, T_3 -50% RDF through sludge + 50% RDF through chemical fertilizer, T_4 -25% RDF through sludge + 25% RDF through chemical fertilizer, T_5 -100% RDF through chemical fertilizer , T_6 -50% RDF through sludge + 50% RDF through chemical fertilizer + fly ash @ 10 ton/ha, T_7 -100% RDF through sludge + fly ash @ 10 ton/ha, T_8 -100% RDF through chemical fertilizer + fl\y ash @ 10 ton/ha and T_9 -fly ash @ 10 ton/ha. The experiment was laid out in Randomized Block Design with three replications. Necessary field operations were made during experimentation. The result indicated that the maximum total bacterial counts per gm dry soil 24.35×10^5 was recorded in T_6 (50% RDF through sludge) and it was minimum 14.78×10^5 in T_5 (100% RDF through chemical fertilizer). Average number of azotobactor was also recorded maximum 8.4×10^6 in T_6 and minimum 4.4×10^6 in T_5 treatments. Maximum number of rhizobium count 9.6×10^5 was recorded in T_3 and was recorded minimum 5.2×10^6 in T_5. With regards to average number of fungi count, the maximum number of fungi 7.53×10^3 was recorded in T_5 treatment and was recorded minimum 2.3×10^3 in treatment T_1.

Key Words : Fly ash, sludge, microbial property, rice-wheat cropping system, sustainable agricultural production, rhizobium.