



RESEARCH ARTICLE

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## Effect of organic farming practices on soil properties and beneficial soil micro-organism

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**ABSTRACT :** The field experiment was carried out at MARS, Dharwad during *Kharif* 2010-11 and 2011-12 to study the effect of organic farming practices on soil properties and beneficial soil micro-organism among the organic manurial treatments, application of EC (1/3) + VC (1/3) + gliricidia GLM (1/3) equivalent to RDF recorded significantly higher uptake of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O (72.53, 14.26 and 77.3 kg ha<sup>-1</sup>, respectively) over EC (1/3) + VC (1/3) + GLM (1/3) equivalent to RDN. Among the organic treatment combinations, application of EC (1/3) + VC (1/3) + gliricidia GLM (1/3) equivalent to RDF with foliar spray of Panchagavya @ 5 per cent recorded significantly higher uptake of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O (73.80, 15.16 and 78.4 kg ha<sup>-1</sup>, respectively) over other organic combinations and was at par with (1/3) + VC (1/3) + GLM (1/3) equivalent to RDF with borax @ 0.2 per cent + MgSO<sub>4</sub> @ 1 per cent and RDF + FYM. Among the nutrient management practices, integrated application of EC (1/3) + VC (1/3) + gliricidia GLM (1/3) equivalent to RDF recorded significantly higher available soil N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O (282.5, 28.8, 328.3 kg ha<sup>-1</sup>, respectively) over FYM @ 5 t ha<sup>-1</sup> + RDF. Combined application of EC (1/3) + VC (1/3) + GLM (1/3) equivalent to RDF and EC (1/3) + VC (1/3) + GLM (1/3) equivalent to RDN recorded significantly higher organic carbon (5.6 and 5.5 g kg<sup>-1</sup>, respectively) over FYM @ 5 t ha<sup>-1</sup> + RDF (5.2 g kg<sup>-1</sup>). Integrated application of EC (1/3) + VC (1/3) + gliricidia GLM (1/3) equivalent to RDF recorded significantly higher bacteria, fungal, actinomycetes, phosphorus solubilising bacteria, N<sub>2</sub>-fixers, enzymes mainly phosphatase and dehydrogenase activity and soil respiration rate (73.19 cfu × 10<sup>6</sup>/g of soil, 26.84 cfu × 10<sup>3</sup>/g of soil, 39.65 cfu × 10<sup>2</sup>/g of soil, 26.15 cfu × 10<sup>3</sup>/g of soil, 29.52 cfu × 10<sup>3</sup>/g of soil, 25.01 μ pnp/g of soil/hr, 11.99 μ TPF/g of soil/day and 9.51 mg of C or CO<sub>2</sub>/hr/100 g of soil, respectively) at 60 DAS as compared to application of FYM @ 5 t ha<sup>-1</sup> + RDF. Among the different treatment combinations, application of EC (1/3) + VC (1/3) + gliricidia GLM (1/3) equivalent to RDF with foliar spray of Panchagavya @ 5 per cent recorded significantly higher bacteria, fungi, actinomycetes, N<sub>2</sub>-fixers and P-solubilizer, phosphatase and dehydrogenase enzyme activity and soil respiration rate over RDF + FYM.

**KEY WORDS :** Uptake, Soil availability, N, P, K, Microbial population

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