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Growth and yield of cowpea as influenced by integrated nutrient management practices in preceding maize

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ABSTRACT : A field experiment was conducted at Tamil Nadu Agricultural University during 2011-2012 and 2012-2013 on a maize-cowpea cropping system. Split Plot Design with three replications was adopted in maize and the main plot treatments comprised of three organic sources viz., FYM @ 12.5 t ha⁻¹, biochar @ 5 t ha⁻¹, vermicompost @ 5 t ha⁻¹. The sub plot treatment comprised of seven fertilizer levels with foliar spray treatments, viz., S₁-100% recommended dosage of fertilizer (RDF) i.e. 150:75:75 kg NPK ha⁻¹, S₂-100% RDF + foliar spray of pink-pigmented facultative methylotrophic bacteria (PPFM) 10⁶ dilution, S₃-75% RDF + foliar spray of PPFM 10⁶ dilution, S₄-100% RDF +1% foliar spray of poly feed (NPK:19:19:19), S₅-75% RDF +1% foliar spray of poly feed, S₆-100% RDF +2% foliar spray of poly feed and S₇-75% RDF +2% foliar spray of poly feed. Split-Split Plot Design was adopted for the succeeding cowpea crop and two fertilizer levels were tried in cowpea viz., F₁-100 per cent RDF (25:50:25 kg NPK ha⁻¹) and F₂-No fertilizer in the sub-sub plot. The results showed application of either FYM or vermicompost to maize had significant residual effect on the succeeding cowpea crop and significantly influenced growth parameters and yield of succeeding cowpea in both the years of study. Among the residual effect of different fertilizer levels along with foliar spray in maize, irrespective of foliar spray tried, application of 100 per cent RDF to maize significantly increased the growth and yield of succeeding cowpea compared to 75 per cent RDF to maize. Between the two fertilizer levels tried in cowpea the growth parameters, grain and haulm yield of cowpea were significantly higher due to application of recommended dose of fertilizer compared to no fertilizer application. Thus, application of FYM 12.5 t ha⁻¹ or vermicompost 5 t ha⁻¹ with RDF to maize (150:75:75 kg NPK ha⁻¹) and application of RDF (25:50:25 kg NPK ha⁻¹) to succeeding cowpea crop can be recommended for enhancing the growth parameters, grain and haulm yield in the succeeding cowpea crop.

Key Words : Cowpea, FYM, Growth parameters, Grain yield, Maize, NPK levels, Polyfeed, Vermicompost

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