Organic Farming vis-à-vis Conventional Practices on Yield and Fertility of Soil in a Rice-Potato-Groundnut Cropping System

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Abstract—*A field experiment has been started (in 2004-05 pre-kharif) at the Central Research Farm, BCKV, Gayeshpur following Randomized Block Design on yield and fertility of soil in a rice-potato-groundnut cropping system by taking different organic nutrients sources as well as conventional practices. The results (after 11 cycles of cropping) revealed that different organic and inorganic based nutrient management has significantly influenced yields of rice, potato and groundnut. The grain yield of scented paddy (Gobindabhog) (1611.0 kg ha^{-1}) was found highest in T_4 i.e. ⅓ each of FYM, vermicompost & neem cake (equivalent to 100% N) + agronomic practices for weed control followed by T_6 (1389.0 kg ha^{-1}) i.e. ⅓ each of FYM, vermicompost & neem cake (equivalent to 100% N) + biofertilizer containing N and P carriers. However, highest tuber yield (10688.0 kg ha^{-1}) was obtained in T_6 followed by integrated nutrient management (T_1 i.e. 50% RDF + 50% N through FYM + $ZnSO_4$ to rice). Highest pod yield of ground nut (1528.0 kg ha^{-1}) was obtained in T_7 (100% RDF + $ZnSO_4$) followed by T_1 (1467.0 kg ha^{-1}). Significantly higher content of organic carbon as well as available N and K was found in organically treated plots (i.e. T_2 for OC & N and T_6 for K) as compared to the integrated sources of nutrients or 100 % RDF through inorganic sources. However, available P was found higher in treatment receiving 100 % RDF through inorganic sources as compared to organically treated plots. Therefore, it can be concluded that as compared to the chemical fertilizers long-term application of organic nutrient sources not only increases yield of rice and potato but also improves health and fertility status of soils in terms of increasing organic carbon content as well as available N and K content of the soil.*

Keywords*: FYM, Groundnut, Nitrogen, Organic farming, Potato, Rice, Vermicompost.*