



Effect of industrial sludges and soil conditioners on yield and micro nutrient uptake by wheat-pearl millet-green gram cropping system

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SUMMARY

A field experiment was conducted during 2002-03 at agronomy Instructional Farm, Sardarkrushinagar to study the effect of industrial sludges and soil conditioners on yield and micronutrient uptake by wheat-pearl millet-green gram cropping system. Application of ETP sludge @ 20 t ha⁻¹ to wheat crop resulted in significantly higher grain yield of wheat, pearl millet and green gram than control, GS20, ACS20. GS10, ACS10, FA10, FA20, VC10 and FYM10. Maximum uptake of Fe, Mn, Zn and Cu were recorded under application of ETP sludge @ 20 t ha⁻¹ by grain as well as straw of wheat, pearl millet and green gram crop. However, the lowest uptake of all these micronutrients were noticed under application of glycerin @ 20 t ha⁻¹ in wheat crop on the contrary, the lowest uptake was noticed with control treatment in pearl millet and green gram crops.

Desai, N.H., Jadhav, N.J. and Patel, D.M. (2011). Effect of industrial sludges and soil conditioners on yield and micro nutrient uptake by wheat-pearl millet-green gram cropping system. *Asian J. Soil Sci.*, 6(2): 164-167.

KEY WORDS : Micronutrient, Industrial sludge, Soil conditioners, Yield, Cropping system

With the adoption of high yielding varieties in cereal based intensive cropping system has substituted the less productive system. But continuity of profit motivated cultivation of intensive cropping with application of imbalanced fertilization is the matter of great concern for sustained production of the system. In spite of heavy inputs the crop yields are decline because of deficiency one or more micro-nutrients (Swarup *et al.*, 1998). The recycling of organic wastes through vermicompost, FYM, coir pith helps to minimize their manurial value for sustainable agriculture. These organic manures supply both macro and micronutrients and improve the physical, chemical and biological properties of soil and very often leave sustainable residual fertility effect on succeeding crop (Hangar *et al.*, 2004).

Rapid expansion of industrialization colossal amount of solid wastes (sludges) are given out every day. Land application of sludge provides an effective method of wastes disposal, which also recycles valuable nutrients into soil-plant system (Maiti *et al.*, 1992), sludge contains considerable amounts of major as well as minor plant nutrients.

Thus, to bridge a gap between existing knowledge present experiment was planned to study the effect of different levels of sludges and soil conditioners to explore possibilities of improving yield of wheat-pearl millet-green gram cropping system and uptake of micronutrients.

EXPERIMENTAL METHODS

The field experiments were conducted at the Agronomy Instructional Farm, C.P. College of Agriculture, S.D. Agricultural University, Sardarkrushinagar during winter (*Rabi*), hot weather (*summer*) and rainy (*Kharif*) seasons during 2002-03. The soil was loamy sand with 7.52 pH, low in organic carbon (0.23 %) and available nitrogen (167 kg ha⁻¹), medium in available P₂O₅ (46 kg ha⁻¹) and available K₂O (180 kg ha⁻¹). Each industrial sludge and soil conditioner comprised of two levels (10 and 20 t ha⁻¹). The experiment consists of seventeen treatments viz., FYM10: FYM 10 t ha⁻¹, FYM20: FYM 20 t ha⁻¹, PFM10: private firm manure 10 t ha⁻¹, PFM20: private firm manure 20 t ha⁻¹, CP10: coir pith @ 10 t ha⁻¹, CP20: coir pith @ 20 t ha⁻¹, VC10: vermicompost @ 10 t ha⁻¹, VC20: vermicompost @ 20 t ha⁻¹, ETP10: ETP

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