

Direct and residual effects of industrial sludges and soil conditioners on growth, yield attributes and yield of wheat-pearl millet- green gram sequence

N.H. DESAI*, N.J. JADHAV AND D.M. PATEL

Department of Agricultural Chemistry and Soil Science, C.P. College of Agriculture, S.D. Agricultural University, Sardarkrushinagar, BANASKANTHA (GUJARAT) INDIA

ABSTRACT

A field experiment was conducted during 2002-03 at Sardarkrushinagar, to study the direct and residual effects of industrial sludges and soil conditioners on growth and yield attributes as well as yield of wheat-pearl millet-green gram cropping sequence. Initial plant population, plant height, number of total and effective tillers per plant of wheat varied significantly with the application of ETP sludge @ 20 t/ha over control with ACS10, ACS20, GS10 and GS 20 treatments. Yield attributes (length of spike, no. of grain per spike, test weight) in wheat were not influenced by industrial sludges and soil conditioners. Though ETP20, FYM10, VC20, ETP10, FA10, VC10, FA20 being at par, resulted in significantly higher grain yield of wheat than the control and the rest of the treatments tried. However, the residual effect of sludges and soil conditioners on growth and yield attributes of pearl millet and green gram crops were not significantly influenced except plant height in pearl millet crop. Maximum residual effect was recorded by ETP20 treatment followed by VC20, FYM20, CP20, PFM20 and FYM10, which proved its superiority over control and rest of the treatments with respect to grain yield of pearl millet and green gram crops.

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Key words : Industrial sludge, Soil conditioner, Growth attributes, Yields attributes, Yield

INTRODUCTION

Rapid expansion of industrialization colossal amount of solid wastes are given out everyday and disposed off safely to save the environment. Industrial wastes are relatively more hazardous to the environment. However, it is not always true that all industrial wastes are pollutants. There are some industrial wastes containing manurial as well as ameliorative elements in appreciable quantities. This would solve the twin problem of disposal and also substitute some quantities of fertilizers.

Recycling of organic waste through vermicompost and ordinary composting (FYM) helps to minimize environment pollution and also improve their manurial value for agriculture. These soil conditioners supply both macro and micronutrients and improve physical, chemical and biological properties of the soils. These manures very often leave substantial residual fertility effect on succeeding crop.

Thus, there is a great potential and large scope for eco-friendly management of industrial wastes and soil conditioners. Keeping this in view, present investigation pertaining to use of some industrial solid wastes and soil conditioners on productivity under wheat-pearl millet-green gram cropping system was under taken.

MATERIALS AND 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 consisted of seventeen treatments *viz.*, con: Absolute control, 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 sludge @ 10 t ha⁻¹, ETP20: ETP sludge @ 20 t ha⁻¹, FA10: Fly ash @ 10 t ha⁻¹, FA20: Fly ash @ 20 t ha⁻¹, ACS10: Ammonium chloride sludge @ 10 t ha⁻¹, ACS20: Ammonium chloride sludge @ 20 t ha⁻¹ and GS10: Glycerin sludge @ 10 t ha⁻¹ and GS20: Glycerin sludge @ 20 t ha⁻¹. The treatments were applied to wheat crop during *Rabi* season. After randomization of treatments

* Author for correspondence. (Present Address)

Centre for Agroforestry, Forage Crops and Green Belt, S.D. Agricultural University, Sardarkrushinagar, BANASKANTHA (GUJARAT) INDIA