



Effect of post biomethanated spentwash and SWPMC application on nutrient availability, uptake, yield and quality of maize in inceptisol

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ABSTRACT

A field experiment was conducted to study the effect of post biomethanated spentwash and SWPMC (second year application) on nutrient availability, uptake, yield and quality of maize. Four graded levels of spent wash (PBSW @ 70, 90, 110 and 130 m³ ha⁻¹) and three levels of spentwash press mud compost (SWPMC @ 2.5, 5 and 7.5 t ha⁻¹) were tried along with NPK as per soil test (150:75:20). The grain and stover yield was increased with increase in levels of PBMSW over control and at par with GRD. The highest grain yield 53.81 qha⁻¹ was obtained in SWPMC 7.5 tha⁻¹ and 52.44 qha⁻¹ in 130 m³ ha⁻¹ level of PBMSW. The available soil nutrients and uptake of the N.P K and micronutrients were increased with increasing levels of SWPMC over control. The highest test weight (283.3 g) and hectolitre weight (78.23 kg ha⁻¹) were recorded due to application of PSSW @ 130 m³ ha⁻¹. The significant increase in starch content (65.98%) was observed due to application of PSSW @ 130 m³ ha⁻¹ which was at par with GRD (66.01%). The PBMSW application (second year) was found significant for yield of maize, grain size, nutrient concentration uptake and starch content indicating the possibility of alternative non conventional technique of nutrient application through industrial wastes (PSMSW and SWPMC).

Nazirkar, R.B., Tike, MJ. and Deshpande, A.N. (2010). Effect of post biomethanated spentwash and SWPMC application on nutrient availability, uptake, yield and quality of maize in inceptisol. *Asian J. Soil Sci.*, 5(2): 338-342.

Key words : Post Biomehanated spentwash, Spentwash press mud cake, Maize, Uptake, Yield, Quality

INTRODUCTION

Spentwash is the highly coloured byproduct of distillery industry with low pH, high BOD and COD, total solids, wax and nutrients like N,P,K, Ca, Mg, S and Fe (Malliaka *et al.*, 2003). Some properties like high BOD, COD and waxes etc. in the spentwash are hazards and responsible for causing environmental pollution. It is highly toxic and acidic therefore, normal microflora and fauna can not survive in it, except few fungi (Bhalerao *et al.*, 2004). In view of these peculiarities, the disposal of spent wash has great importance in taking care to avoid detrimental effect on environment. Considering the characteristics it's safe disposal as nutrient source for plant under the controlled land application is the possible alternative. However, the PBMSW doses for the many important cereal crops has not been worked out.

Maize is important food and fodder crop in India next to rice, sorghum, wheat and pearl millet. In India, it is grown over an area of 7.7 million hectare with annual production of 13.85 million tones of grain with a average yield of 1783 kg ha⁻¹ (Anonymous, 2006).

Looking to the scope and potential of biomethanated spentwash and it's compost used in agriculture as a source of plant nutrient, it becomes apparently necessary to study the influence of biomethanated spentwash and SWPMC compost on soil available nutrients, uptake, yield and quality of maize grown in *inceptisol* soil. In such situation the biomethanated spentwash dose which can give correct picture regarding soil available nutrients, maize nutrient uptake, yield and quality of maize grain will be helpful for formulating sound manure recommendation based on the research findings.

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