

Effect of levels of post biomethanated spent wash (PBSW) on biometric observations and yield at harvest of soybean

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ABSTRACT

Present research work was conducted on Inceptisol soil at Rahuri (Maharashtra) and concluded that, the application of post biomethanated spent wash $120 \text{ m}^3 \text{ PBSW ha}^{-1} + \text{RDF}$ resulted significant increase in biometric observations such as plant height (85.66 cm), leaf area (68.01 m^2), no. of pods per plant (48.33) and no. of root nodules (61.66) and application of post biomethanated spent wash @ $60 \text{ m}^3 \text{ ha}^{-1} + \text{RDF}$ level was found to be beneficial in increase in grain and stover yield of 29.04 q ha^{-1} and 37.16 q ha^{-1} , respectively of soybean.

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Key words : PBSW, Biometric Observations, Yield, Soybean

INTRODUCTION

Soybean [*Glycine Max* (L.) Merrill] is an important pulse as well as oilseed crop. It believed to be the originated in China. Nutritionally, soybean is excellent source of protein and oil. It contains 38 to 43% protein, 18 to 20% oil, 26% carbohydrates, 4% minerals and 2% phospholipids. Among the oilseed crops, soybean has occupied third place in the edible oil scenario of India, next to groundnut, rapeseed and mustard.

In India, the area under soybean was 8.88 million ha, with production and productivity of 9.99 MT and 1124 Kg ha^{-1} , respectively. In Maharashtra area under soybean was 2.66 million ha, production and productivity of 3.97 MT and 1492 Kg ha^{-1} , respectively (Anonymous, 2008).

Alcohol is one of the major revenue earning enterprises for the government. The fermented molasses is distilled and alcohol is obtained. The liquid left after distillation of fermented molasses is known as spent wash.

In India, Alcohol is mostly produced from sugarcane molasses. The molasses are fermented with the yeast

(*Saccharomyces cerevisiae*). The fermented wash is distilled and alcohol is obtained. The liquid left after distillation of alcohol is generally known as spent wash, vinase, distillery effluent, under slopes.

The amount of spent wash produced is quite staggering causing environmental pollution and disposal problem. However, some recent studies indicate its potential for crop production as a source of nutrient. The idea of methane generation from spent wash came forward generated with a view to use huge organic load present in spent wash. The effluent left after the methane gas generation is known as post biomethanated effluent or primary treated effluent.

The post biomethanated spent wash is nearly neutral in reaction (pH 7.51), contain high concentration of soluble salts ($\text{EC } 41.6 \text{ dSm}^{-1}$) with low BOD (5400 mg L^{-1}) and COD (24680 mg L^{-1}) and good amounts of N, P and K. Therefore, post biomethanated spent wash could be utilized as a liquid manure and should not have adverse effects on availability of soil nutrients as well as on physico-chemical properties of soil.

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