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Response of Soybean Cultivars to Application of Organic and Chemical Fertilizers

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Abstract

In order to investigate the effect of different organic fertilizers amounts (municipal compost, vermicompost and sewage sludge) on yield and yield components of different soybean cultivars, an experiment was conducted in 2006 at Sari Higher Education Complex of Agricultural Sciences and Natural Resources. A split plot experiment based on randomized complete block design with three replications was used. Main plots were included 8 fertilizer treatments consisted of two rates (20 and 40 ton ha⁻¹) of municipal compost, vermicompost and sewage sludge, chemical fertilizer treatment (the 75 kg ha⁻¹ of potassium sulphate and ammonium phosphate) and control or without organic or chemical fertilizer. Sub plots consisted of three genotypes of soybean (032, 033 and JK). Maximum grain yield was recorded in levels of 20 and 40 ton ha⁻¹ sewage sludge, 40 ton ha⁻¹ municipal compost and chemical fertilizer. Different soybean cultivars had significant differences in terms of yield and yield components. Among different cultivars maximum grain yield were produced in JK and 033 cultivars. The result of mean comparisons showed that interaction effects of fertilizer and cultivar were significant for biomass, harvest index, 1000 seed weight, number of pod per plant and number of seed per pod. The highest pod number per plant was belonged to JK and 033 genotypes in 40 ton per hectare sewage sludge and vermicompost treatments, respectively. Among different mentioned traits, all of them except 1000 seed weight had a positive and significant correlation with grain yield. Over all, it seems that disposal of organic waste on agricultural lands could be considered as one of the suitable and practicable environmental option and optimization manure using in our country.

Keywords: Soybean, Yield, Municipal compost, Vermicompost, Sludge

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