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ASA, CSSA, & SSSA International Annual Meeting
Nov. 2-5, 2014 | Long Beach, CA

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304-5 Effect of Lime and Cattle Manure in Soil Fertility and Soybean Grain Yield Cultivated in Tropical Soil.

Poster Number **844**

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Tuesday, November 4, 2014
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Most tropical soils have high acidity and low natural fertility. The appropriate application of lime and cattle manure corrects acidity, improves physical and biological properties, increases soil fertility and reduces the use of chemical and/or synthetic fertilizers by crops, such as soybean, the main agricultural export product of Brazil. This study aimed to assess the effects of the combination of the application of dolomite lime (0, 5 and 10 Mg ha⁻¹) and cattle manure (0, 40 and 80 Mg ha⁻¹) on grain yield and the chemical properties of Oxisol (Red Latosol) cultivated with soybean for two consecutive years. The maximum grain yield was obtained with the application of 10 Mg ha⁻¹ of lime and 80 Mg ha⁻¹ of cattle manure. Liming significantly increased pH index, the concentrations of calcium (Ca²⁺) and exchangeable magnesium (Mg²⁺) and cation exchange capacity (CEC) of soil and reduced potential acidity (H⁺+Al³⁺), while the application of cattle manure increased pH level, the concentrations of potassium (K⁺), Ca²⁺, exchangeable Mg²⁺ and CEC of the soil. During the two years of assessment, the highest grain yields were obtained with saturation of K⁺, Ca²⁺ and Mg²⁺ in CEC at the 4.4, 40.4 and 17.5 levels, respectively. The results indicated that the ratios of soil exchangeable Ca/Mg, Ca/K, K/Mg and K/(Ca+Mg) can be modified to increase the yield of soybean grains.

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