EFFECT OF ORGANIC AND CHEMICAL FERTILIZERS ON PHOSPHORUS AVAILABILITY IN SANDY REGOSOLS

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ABSTRACT

This paper describes a study that was conducted to evaluate the effect of organic and chemical fertilizers on the phosphorus retention of sandy regosols in Batticaloa during the yala 1999. In this respect, an experiment was laid out in a strip plot design that was replicated four times. Three different organic manures (cattle manure 10t/ha, poultry manure 10t/ha and straw 5t/ha) were tested along with the untreated control at two levels of chemical fertilizers (i.e. Department of Agriculture recommended level and half the Department of Agriculture recommended level). Results show that organic manure increased the available soil phosphorus content individually and in combination with chemical fertilizers. Furthermore, it is seen that the application of organic manure decreased phosphate leaching, but the amount of reduction was higher in straw treatment than other organic manure treatments. However, in poultry manure treatment, the reduction was significantly lower than that of straw and cattle manure treatments as amount of available phosphate in this scenario is higher than the adsorption capacity of the soil, thus, the excess will be lost from the soil. It is seen that the combination of organic manure with recommended levels of chemical fertilizer gave highest phosphorus leaching from soil when compared to the combination organic manure with chemical fertilizers at half the level of recommendation. The study suggests that the addition of poultry manure is superior in terms of increasing the available phosphorus content of soil. Furthermore, adequate amounts of organic manure should be applied to control phosphate loss from soil, but if the amount of available phosphate is higher than the adsorption capacity of the soil, the excess will be lost from the soil.

Key words: cattle manure, chemical fertilizer, phosphorus, poultry manure, sandy regosols