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Effect of different organic manures on phosphorus availability in reddish brown earth soils

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Phosphorus fixation is one of the major problems observed in fertilizer management practices in Reddish Brown Earth (RBE) soils. There is an opinion that the incorporation of organic manure with the P fertilizers may reduce the P fixation and increases the P use efficiency by plants. Therefore the objective of this study was to investigate the P availability in RBE soil during 2 months of period after incorporation of inorganic P fertilizer with different organic manures.

This study involved both incubation and uptake experiments. In the incubation experiment, five different organic manures namely compost, rice straw, gliricidia, poultry manure, and cattle manure were incorporated at the rates of 0 (control) and 15 t ha^{-1} (wt/wt) for 200g of air dried soil samples. Then Triple Super Phosphate (TSP) was uniformly mixed with each soil sample at the rate of 0.5 g kg^{-1} and incubated at room temperature. Sampling was done at one week intervals to measure the changes of Olsen P and soil pH. The uptake experiment was conducted by using same treatments for maize plants to determine P uptake and total dry matter production.

Results of the incubation experiment revealed that the available P has been decreased in all treatments during incubation period. However available P in poultry manure incorporated treatment was significantly higher than all the other treatments from second week to the end of the incubation period. It was also observed from uptake experiment that there was a significant difference in P uptake and dry matter production between poultry manure incorporated treatment and all the other treatments. Therefore the results of the study conclude that poultry manure may reduce the fixation of P in RBE soil. However to confirm the results further long term investigations are required.

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