AN AJSS

An Asian Journal of Soil Science

Volume **10** | Issue 1 | June, 2015 | 47-54 | e ISSN–0976–7231 ■ Visit us : www.researchjournal.co.in

Research Article

DOI : 10.15740/HAS/AJSS/10.1/47-54

Forms of soil phosphorus and depth wise distribution under organic and inorganic nutrient management in a *Vertisol* planted rice

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Received : 17.10.2014; **Revised :** 13.04.2015; **Accepted :** 21.04.2015

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Summary

To study the effect of organic and inorganic fertilization on depth wise distribution of different forms of phosphorus in *Vertisol* was performed on *Vertisol* under rice crop on soil samples obtained from the ongoing long term fertilizer experiment (LTFE) project. The P status of the different soil P fractions (salod-P, Al-P, Fe-P, Red-P and Ca-P) were analyzed from 0-15 cm, 15-30 cm and 30-60 cm in soil depths. All P fractions were higher in surface layer than that subsurface layer. The sequential order of dominance of different forms of P were Ca-P > Red-P > Fe-P > Al-P > saloid-P in *Vertisol*. The highest value of P fractions were recorded in the treatments 150 per cent NPK and 100 per cent NPK+FYM. Fertilizer was added rate of 0, 50, 100 and 150 per cent of recommended dose (100:60:40) in rice integrated with FYM at 100 per cent level and with green manure and BGA at 50 per cent level in rice. The integration with FYM showed pronounced effect on P fractions. Continuous monitoring of physical and chemical properties should be carried out for maintaining soil health and enhancing the crop production. Maximum portion of applied P was transformed in Ca-P followed by Red-P, Fe-P and Al-P. Percentage distribution of different forms of P at 0-15 cm, 15-30 cm and 30-60 cm soil depths was also studied the higher amount of all P fractions (%) were recorded in surface layer (0-15 cm) than at sub surface (15-30 cm) and low in deep layer (30-60 cm). However, higher P availability was observed at surface layer than that at sub surface layer.

Key words : P fraction, Soil depth, Percentage distribution, *Vertisol*

How to cite this article : Nayak, Tripti, Bajpai, R.K. and Sharma, Priyanka (2015). Forms of soil phosphorus and depth wise distribution under organic and inorganic nutrient management in a *Vertisol* planted rice. *Asian J. Soil Sci.*, **10**(1) : 47-54.