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Effects of Soil Chemical Environment Changes Induced by Integrated Nutrient Management Practices on Yield, Economics and Soil health under Rice-fallow Cropping System

Tiryak Kumar Samant [a*]

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ABSTRACT

Soil health is one of the key factors, which decides the yield targets. Chemical fertilizers are essential basic needs of present-day intensive Agriculture. Continuous use of these chemical fertilizers leads to the deterioration of soil fertility. The current study investigated changes in the soil chemical environment by integrated nutrient management practices and its effect on yield, and economics under the rice-fallow cropping system. The field trial was carried out in an Instructional farm, Krishi Vigyan Kendra, Angul during the *khanif* seasons of 2011 and 2012. The experimental trial was laid out in a randomized block design with three replications. The results indicated application of 50% RDF + 10 t FYM (Farm Yard Manure) + *Azotobacter*, *Azospirillum* & *PSB* @5kg ha^{-1} each recorded higher organic carbon(0.446 %), N(211 kg ha^{-1}), P(25.50 kg ha^{-1}), K(198 kg ha^{-1}), S (25.7 kg ha^{-1}), Ca(0.22%), Mg(0.09 %), grain yield (51.43 q ha^{-1}), harvest index (49.81 %), gross return (Rs.69470 ha^{-1}) and influenced greatly on changes in soil chemical environment which enhances the yield, economics of rice and soil fertility. The study concluded that integrated nutrient management coupled with organic manures, bio fertilizers and chemical fertilizers influenced greatly the variation in soil chemical properties and enhanced the yield, economics of crop and fertility status of the soil.

Keywords: Soil chemical environment; INM; yield; economics; rice.

[a] Krishi Vigyan Kendra, Orissa University of Agriculture and Technology, Angul-759132, Odisha, India.
**Corresponding author E-mail: tksamant_2003@yahoo.co.in;*