EFFECT OF OPTIMAL, SUB OPTIMAL AND INTEGRATED NUTRIENT MANAGEMENT ON GROWTH AND YIELD ATTRIBUTES OF RICE (ORYZA SATIVA) IN RICE-WHEAT CROPPING SYSTEM

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Abstract: The present investigation entitled “Effect of optimal, sub optimal and integrated nutrient management growth and yield attributes of rice (Oryza sativa) in rice-wheat cropping system” was carried out at the Research Cum Instructional Farm IGKV, Raipur (C.G.) during kharif season of 2010. The soil of experimental field was ‘Inceptisols’ locally known as Matasi. It was neutral in reaction, low in nitrogen, medium in available phosphorus and potassium. The experiment was laid out in randomized block design with 12 treatments and 3 replications.

The treatments consisted of T1 (No fertilizer, no organic manure, control), T2 (50% recommended NPK dose through fertilizers, 40:30:20), T3 (50% recommended NPK dose through fertilizers), T4 (75% recommended NPK dose through fertilizers), T5 (100% recommended NPK dose through fertilizers, 80:60:40), T6 (50% recommended NPK dose through fertilizers +50%N through farmyard manure) and T7 (75% recommended NPK dose through fertilizers +25% N through farmyard manure). T8 (50% recommended NPK dose through fertilizers +50% N through composted rice residue). T9 (75% recommended NPK dose through fertilizers +50% N through green manure). T10 (75% recommended NPK dose through fertilizers +25% N through green manure). T11 (Conventional farmer’s practice (50:30:20) Table (i). The results revealed that amongst the different optimal, sub-optimal and integrated nutrient management practices using green manure, farmyard manure and chemical fertilizers, T10 consisting of 50% RDF + 50% N through green manuring recorded the highest growth and yield attributing characters, grain yield of rice (56.19 q ha\(^{-1}\)) and maximum net return (Rs. 46,117 ha\(^{-1}\)). Application of 100% RDF (80:60:40 kg NPK ha\(^{-1}\)) also proved superior over other integrated nutrient management systems consisting farmyard manure and rice residues for yield (55.19 q ha\(^{-1}\)), net return (Rs. 44,962 ha\(^{-1}\)) and B:C ratio (2.52). Sub-optimal doses of nutrients failed to provide considerable yield advantage and build-up of nutrients in soil as compared to optimal level or integrated nutrient management options.

Keywords: Rice, optimal, sub optimal and integrated nutrient management and yield attributes

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