

EVALUATION OF SITE-SPECIFIC NUTRIENT MANAGEMENT APPROACH IN TRANSPLANTED RICE UNDER SUB-HUMID CONDITION OF SOUTHERN RAJASTHAN

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Abstract: Site-specific nutrient management (SSNM) in a new approach that provides the proper quantity and timely supply of nutrients to the crop plants according to its requirement in the existing soil and climate. With this background, a field experiment was conducted on a fixed site at Agriculture Research Station (MPUAT), Banswara, Rajasthan, during two consecutive *kharif* seasons of 2008 and 2009 to evaluate the plant based SSNM strategy for rice crop. The experiment consisted of seven treatments with the application of different category of nutrients, including control and State Fertilizer Recommendation (SFR). SSNM treatment (T_4) gave a maximum grain yield (74.00 q ha^{-1}) which was recorded significantly 10, 12, 30, 55 and 58% higher compared to the Improved fertilizer recommendation (T_3), State fertilizers recommendation (T_2), SSNM-P (T_6), SSNM-N (T_5), and absolute control (T_1), respectively. The grain yield increased in T_4 could be recorded the maximum tillers (352 m^{-2}), Panicles (340 m^{-2}), grains ($150.30\text{ panicle}^{-1}$). The maximum B: C ratio (3.54) was also recorded with SSNM (T_4). The yield lower in N and P omission from SSNM treatments indicated that there is large response to added N but low response to added P due to variation in indigenous soil nutrient supply. Hence, high variability to applied N, P, K suggests the necessity of SSNM to improve the productivity of rice crop.

Keywords: Rice, SSNM, Grains yield, Nutrient

REFERENCES

- Buresh, R.J, Pampolino, M.F, Witt, C. (2010) Field-specific potassium and phosphorus balances and fertilizer requirement for irrigated rice-based cropping systems. *Plant Soil* 335:35–64.
- Dobermann, A, Cassman, K.G, Sta. Cruz, PC, Adviento, M.A, Pampolino, M.F (1996) Fertilizer inputs, nutrient balance, and soil nutrient-supplying power in intensive, irrigated rice ecosystems. II. Effective soil K supplying capacity. *Nutr. Cycling Agroecosyst.* 46:11–21
- Dobermann, A, Witt, C. and Dawe, D. (2002). Performance of site-specific nutrient management in intensive rice cropping system in Asia. *Better crops Res.* 16(2):25–30.
- Gangaiah, B. and Prasad, R. (1999) Response of scented rice (*Oryza sativa*) to fertilizers. *Indian J. Agron.*, 44 (2): 294–296
- Janssen, B.H, Guiking, F.T, Van der Eijk, D, Smaling, E.M.A, Wolf, J, van Reuler, H. (1990). A system for quantitative evaluation of the fertility of tropical soils (QUEFTS). *Geoderma.* 46:299–318
- Jat, M. L, Saharawat, Y. S and Gupta, R. (2011). Conservation agriculture in cereal systems of South Asia: Nutrient management perspectives. *Karnataka J Agril Sci.* 24:100–105.
- Ladha, J.K., H. Pathak, T.J. Krupnik, J. Six, and C. van Kessel. (2005). Efficiency of fertilizer nitrogen in cereal production: retrospects and prospects. *Adv. Agronomy.* 87:85–156
- Nagegowda, N.S., Biradar, D.P. and Manjunath, B. (2011). Effect of site specific nutrient management (SSNM) on growth and yield of rice in Tungabhadra project area. *Int. J. Sci. Nat.* 2(1):144–146.
- Peng, S.B., Buresh, R.J., Huang, J.L., Yang, J.C., Zou, Y.B., Zhong, X.Y., Wang, G.H. and Zhang, F.S. (2006). Strategies for overcoming low agronomic nitrogen use efficiency in irrigated rice system in China. *Field Crop Res.* 96 (1):37–47
- Timsina, J, Buresh, R.J, Dobermann, A, Dixon, J, Tabali, J. (2010). Strategic assessment of rice-maize systems in Asia. IRRICIMMYT Alliance Project “Intensified Production Systems in Asia (IPSA)”, IRRI-CIMMYT, Joint Report, IRRI, Los Banos, Philippines.
- Witt C, Dobermann A, Abdulrachman S, Gines H.C, Wang G, Nagarajan R, Satawatananont S, Son TT, Tan P.S, Tiem L.V, Simbahan G.C, Olk D.C. (1999) Internal nutrient efficiencies of irrigated lowland rice and in tropical and sub-tropical Asia. *Field Crops Res* 63:113–138.

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