

## SITE-SPECIFIC INTEGRATED NUTRIENT MANAGEMENT FOR SUSTAINABLE CROP PRODUCTION AND GROWTH: A REVIEW

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**Abstract:** Initially after green revolution the food grain production boosted up tremendously, but sign of fatigueness emerged after 1980 with sharp decline in factor productivity, stagnation in crop yields with unstable and marginal farm incomes; all of which are now posing a serious threat to food security, agricultural sustainability, soil and environmental health and rural agricultural economy in the developing world. Growing concerns about impaired soil health, declining productivity growth and decreasing factor productivity or nutrient-use efficiency (NUE) are compelling the farmers to use higher levels of fertilizers during the last two decades. Excessive use of fertilizers in imbalanced ratios leading to low nutrient use efficiency and associated environmental problems has raised serious concerns about the existing nutrient management practices. It is high time to develop site-specific nutrient management (SSNM) technologies which are able to make synergy with crop-soil nutrient dynamics. The SSNM is need-based feeding of crops with nutrients in right rate and right time while, recognizing the inherent spatial variability which enhances crop productivity, profitability, NUE and avoids nutrient wastage. This paper deals with the SSNM technologies approaches and tools which are able to enhance NUE, crop productivity and profitability.

**Keywords:** Site-specific nutrient management, Nutrient-use efficiency, Crop productivity

### REFERENCES

- Cassman, K.G., Gines, G.C., Dizon, M.A., Samson, M.I., Alcantara, J.M. (1996). Nitrogen-use efficiency in tropical lowland rice systems: contributions from indigenous and applied nitrogen. *Field Crops Res.* **47**: 1-12.
- Dass, A, Singh, D.K., Dhar, S. (2012). Precise supply of nitrogen and irrigation to hybrid maize using plant sensors In: Proceedings of the International Agronomy Congress: Agriculture, Diversification, Climate Change management and livelihoods. Nov 26–30; New Delhi, India. 534-535.
- Dobermann, A., White, P.F. (1999). Strategies for nutrient management in irrigated and rainfed lowland rice systems. *Nutr. Cycling Agroecosyst.* **53**: 1-18.
- Dobermann, A., Witt, C., Dawe, D. (2002). Increasing the productivity of intensive rice systems through site-specific nutrient management. New Delhi, India; and Makati City, Philippines: Science Publishers; and International Rice Research Institute (IRRI), Las Banos, Philippines.
- Dobermann, A., Witt, C., Dawe, D., Abdulrachman, S., Gines, H.C., Nagarajan, R., Satawathanont, S., Son, T.T., Tan, P.S., Wang, G.H., Chien, N.V., Thoa, V.T., Phung, C.V., Stalin, P., Muthukrishnan, P., Ravi, V., Babu, M., Chatuporn, S., Sookthongsa, J., Sun, Q., Fu, R., Simbahan, G.C., Adviento, M.A.A. (2002). Site specific nutrient management for intensive rice cropping systems in Asia. *Field Crops Res.* **74**: 37-66.
- Mondal, P., Basu, M. (2009). Adoption of precision agriculture technologies in India and in some developing countries: scope, present status and strategies. *Prog Nat Sci* **19**:659–666.
- Pasquin, J.M., Pampolino, M.F., Witt, C. (2014). Closing yield gaps in maize production in Southeast Asia through site-specific nutrient management. *F Crop Res.* **156**:219–230.
- Peng, S., Buresh, R.J., Huang, J. and Visperas, R.M. (2010). Improving nitrogen fertilization in rice by site-specific N management. A review. *Agron Sustain Dev.* **30**:649–656.
- Peng, S., Garcia, F.V., Laza, R.C., Sanico, A.L., Visperas, R.M., Cassman, K.G. (1996). Increased N-use efficiency using a chlorophyll meter on high-yielding irrigated rice. *Field Crops Res.* **47**: 243-252.
- Shukla, A.K., Singh, V.K., Dwivedi, B.S. (2004). Site specific nutrient management for maximum economic yield of the rice wheat cropping system. *Better crops.* **88**(4): 18-21.
- Singh, V.K., Tiwari, Gill, K.N. Sharma, M.S, Dwivedi, S.K., Shukla, B.S. and Mishra, P. (2008). Economic Viability of Site-Specific Nutrient Management in Rice-Wheat Cropping System. *Better Crops.* **92** (3):28-30.
- Smaling, E.M.A., Braun, A.R. (1996). Soil fertility research in Sub-Saharan Africa: New dimensions, new challenges, *Commun. Soil Sci. Plan.* **27**:365–386.
- Suri, V.K., Choudhary, A.K., Chander, G. (2011). Influence of vesicular arbuscularmycorrhizal fungi and applied phosphorus on root colonization in wheat and plant nutrient dynamics in a phosphorus deficient acid Alfisol of western Himalayas. *Commun. Soil Sci. Plant Anal.* **42**(10): 1177-1186.

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