AGRIBLOSSOM
www.agriblossom.net
A monthly peer reviewed e-magazine for Agriculture & allied Sciences

Site Specific Nutrient Management: Principles and Importances

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Introduction

Site specific nutrient management (SSNM) utilizes the principles of application along with analysis of organic and inorganic sources of nutrients, soil and plant variability assessments, cropping systems, soil nutrient supplying capacities to plants, enhanced nutrient use efficiencies, productive capacities of varieties to achieve the desired goals (Shankar and Umesh, 2008). Agriculture sector accounts for more than 60 % of population and covers a lot of area and principles of crop production. Nutrients are the basic needs for not only soil ecosystems sustainability as well as crop growth. SSNM applies certain principles that holds the concept of optimum utilization of nutrients and minimizes the losses that only to certain specific area of cultivation (Umesh *et al.*, 2014). The Principles are as follows:

Important Features of SSNM

1. Optimum use of indigenous sources of nutrients like crop residues and other wastes.
2. Timely and season specific application of N, P and K fertilizers for efficient utilization.
3. Leaf color chart use ensures the right time with dose of Nitrogen application.
4. Adoption of omission plot techniques for Nitrogen plot to access the P and K application.
5. Local randomization techniques are applied for micronutrients and Sulphur application.
6. Screening and adoption of most economic combination of available fertilizer sources.
7. Integration of crop managements practices, optimum plant density, quality seeds, integrated pest and disease management, quality water management.

Approaches of SSNM

1. Plant Analysis-Based SSNM

Nutrient status of the crop is the best quality indicator of soil nutrient status along with its supplies to the plants. Whole plant analysis gives one clear data about the nutrient status in plant.

2. Soil-cum-Plant Analysis Based SSNM

This approach covers nutrient availability in soil, plant nutrient demands for higher yield target, improving recovery efficiencies and developing fertilizer use schedules for greater yield achievement.

Management of Macro nutrients

1. Nitrogen

a. Plant analysis for Nitrogen content so that timely application of split doses can be calculated.

b. Analysis of crop demand, indigenous sources of application, recovery of N from inorganic and organic sources for calculation of total fertilizer N requirement of crop.

c. Adoption of improved crop variety and crop establishment methods for optimal use of nitrogen sources.

d. Use of LCC (Leaf Color Chart) and SPAD (Chlorophyll meter) for on field Nitrogen estimation so that excess application of nitrogen can be minimized.

2. Phosphorus and Potassium

a. Timely application of nutrients based on soil and plant analysis so that excess use of fertilizers can be controlled. Phosphorus should be applied near root zone as banding method for enhancing its efficiency.

b. Potassium application depend on buffering capacities of potassium nutrients in soil system, proper use , place of application should be scheduled.

c. Residual fertilizer contents should be checked for P and K.

Management of Micro nutrients

a. Various micronutrients can be applied in adequate amount based on soil cum plant analysis.

b. Various fertilizer management tools can be adopted for optimal fertilizer use and increasing its efficiency and correction of nutritional disorders.

c. Crop management, water management and fertilizer management should be integrated for a better productivity and excellent nutrient use efficiency.

Conclusion

Site Specific Nutrient Management (SSNM) is essential in modern crop production for improving long term sustainability, fertilizer recovery, and efficiency and to achieve a greater target yield. Judicious use of fertilizers at right time, place and quantity not only improve yield potential but also improve socio-economic condition of farmers along with ensuring environmental safety. SSNM approaches are holistic in nature so it can be a solution to maintain and improve overall soil health factors.

References

Shankar, M. A. and Umesh, M. R. (2008). Site specific nutrient management (SSNM) and methodology for achieving sustainable crop productivity in dry land alfisols of Karnataka. *Technical Bulletin*, UAS, Bangalore (India).

Umesh, M. R., Manjunatha, N., Shankar, M. A. and Jagadeesha, N. (2014). Influence of nutrient supply levels on yield, nutrient uptake, grain quality and economics of corn (Zea mays L.) in Alfisols of Karnataka. *Indian Journal of Dryland Agricultural Research and Dev*