Proceedings of Regional SAARC Workshop
Central Soil Salinity Research Institute, Karnal

A 3-day Regional SAARC Workshop on “Nutrient Use Efficiency in Agriculture” was organized at Central Soil Salinity Research Institute, Karnal from September 9-11, 2009. The Workshop was sponsored by SAARC Directorate, Ministry of External Affairs, Govt. of India, and New Delhi. A total of about 60 delegates including SAARC representatives from India, Afghanistan, Sri Lanka, Nepal, Bangladesh, and Bhutan, other invited dignitaries, delegates and eminent experts in the field participated in the workshop to discuss the issues on emerging challenges of nutrient use efficiency in crop production and sustainable natural resources management. The participants also discussed about the future strategies for increasing nutrient use efficiency and sustainable crop production to meet the demands of food security as well as managing the natural resource sustainably in SAARC region. The workshop was inaugurated by Dr. A. K. Singh, Deputy Director General, ICAR, New Delhi and Dr. Satish Chandra, Director General, Fertiliser Association of India Presided over the function while Dr. P. D. Sharma, Assistant Director General (NRM), ICAR, New Delhi was the Special Guest in the Workshop.

While inaugurating the workshop, Dr A.K. Singh Deputy Director-General (NRM) ICAR Singh stressed that the intensification of cultivation in the SAARC countries would require improved nutrient management to sustain high yields, protecting the environment and making agriculture economically attractive to the farmers. Raising serious concern over burning rice and wheat residues, he discussed that besides the loss of nutrients, this practice also caused environmental degradation. Studies have shown declining productivity in the SAARC region.

The challenges emerging from intensive cultivation leading to depletion of nutrients in the soils needs to be researched in SAARC countries. In the region, sulphur deficiency is also an emerging threat, particularly in pulse and oilseed crop segments.

Director, CSSRI, Karnal, Dr Gurbachan Singh emphasized that rational and balanced use of nutrients in sustainable crop production is a must for meeting the food requirement of the SAARC countries. He described that the soils in SAARC countries are generally low in organic matter and had also been subjected to consistent nutrient depletion due to continuous cropping. Continuous rice – wheat cropping system for longer periods with low system diversity and often with poor crop management practices, resulted in loss of soil fertility due to emergence of multi-nutrient deficiency and a serious threat to its sustainability in the Indo-Gangetic plain regions of South Asia during last four decades. Sh Satish Chander, Director General, Fertilizer Association of India, while presiding over the function showed serious concern over the high use of fertilizers by the farmers leading to the widening of gap in favour of nitrogen amongst the three major nutrients of Nitrogen, Phosphorus and Potassium.

Field Visit of the Delegates

The major recommendations emerging out of the three day workshop are as follows:

1. Due to the intensive cultivation of crops in SAARC region, soils are getting depleted in the nutrients. Balanced fertilizers should be applied to maintain the soil fertility. Besides application of balanced fertilizers, integrated nutrient management should be followed to restore and maintain soil fertility and sustainable crop yield. Region and crop specific consortia of biofertlizers was also suggested.

2. Higher and imbalanced usage of fertilizers especially nitrogen have led to the widening of gap amongst the three major nutrients Nitrogen, Phosphorus and Potassium. The ideal ratio being 4:2:1 in favour of N,

P_2O_5,K_2O. System approach of nutrient management should be practiced based on the locally available sources of nutrients and farming systems prevalent in the region.

3. Over the years, fertilizer use is increasing but the fertilizer response ratio is declining. Almost four times more fertilizers are being added to get the same response in the crop yield. Declining soil health is a major concern for the region. Negative nutrient balance in the absence of organic manure was being rated as the potential limitation in achieving sustainable production in the region.

4. Along with the major nutrients, deficiencies of micronutrients have also been reported in SAARC region in different crops over the years. The major deficiencies of Zinc, Boron and Molybdenum are being observed. To sustain higher yields, micronutrients must be applied along with the major nutrients.

5. Micronutrient deficiencies are coming in a big way. Initially only the major nutrients were being added but now the micronutrients like Zn, B, Mb etc are showing deficiency symptoms which need to be added in the package of practices. Use of fortified fertilizers and coated fertilizers like zincated urea or boronated SSP should be applied to alleviate the deficiencies of micronutrients. Further, bio-fortification for sustained human and livestock health should also be taken up in the region.

6. Separate recommendations should be developed for the fertilizer application where poor quality waters are being used for irrigation in agriculture.

7. Fully water soluble fertilizers need to be promoted through fertigation systems especially for getting higher yields in horticultural and vegetable crops.

8. For achieving sustainable higher yield in different crops, resource conservation technologies like zero and reduced tillage, raised bed planting direct seeding of rice, stubble retention etc need to be practiced by the farmers. Besides these, development and implementation of multi enterprise agriculture model developed by CSSRI Karnal was also recommended for farmers with smaller land holding in the SAARC region.

9. Site specific nutrient management through the use of handy instruments like leaf color chart, chlorophyll mater and other optical sensors together with remote sensing and GIS need to practiced for achieving higher food production in the region. Easy to use decision support system need to be developed for taking up rational use of nutrients for higher efficiency. Varieties with higher nutrient use efficiency needs to be developed and promoted for different countries.

10. There is a considerable area of acidic soils in different countries in the region like India, Nepal, Bhutan, Sri Lanka etc which need to be reclaimed by the application of lime along with the application of organic manures to increase food production in the region.

11. Coastal saline soils also occupies considerable area in the region which should be given due importance for its reclamation through various technologies developed by India.

12. Soil fertility mapping and soil health assessment at least at the district level is recommended for all the countries of the region for developing and implementing proper land use plan to increase food production in the region. Along with this Soil-nutrient-water testing services should be developed and strengthened at least at the suitable unit (block/ district) level in different countries in the region.

13. Work plans have been finalized at the highest level in different countries with respect to implementing and sharing different technologies developed by different countries of the region like acid and sodic soil management by India, USG applicator by Bangldseh etc. These work plan needs to be activated and implemented.

14. Bottlenecks restricting the dissemination of available technologies need to be identified for the speedy adoption of different technologies with respect to sustained application of nutrients by the farmers in the region.

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