надійність технічних систем на багатокритеріальній основі з залученням спеціаліста в якості особи що приймає рішення щодо визначення екологічного ризику.

SITE SPECIFIC NUTRIENTS MANAGEMENT IN WHEAT - MUSTARD CROPPING

B.S. Panwar, Reetika Panwar, Mantavya Bishnoi, CCS,
Haryana Agricultural University, Hisar, India,
O.A. Khliestova, I.A. Lentsov, SHEI «PSTU»

Site specific nutrient management (SSNM) is a successful approach towards bridging the yield gap to a large extent. The practice is a concept which aims at the maintenance of soil fertility and plant nutrition supply to an optimum level for sustaining the desired soil fertility and crop productivity. The system envisages conjunctive use of chemical fertilizers, including secondary and micronutrients. In addition to N and P2O5 crops also remove higher amounts of secondary and micronutrients from soils resulting in wide spread deficiency of sulphur, zinc and boron. Intensive fertilizer oriented cropping has resulted in decrease in soil organic carbon, deterioration in soil physical properties and adverse effect on soil micro and macro fauna. Balanced nutrient sufficiency and soil health can be achieved by use of macro and secondary fertilizers along with soil amendments (Joshi and Kumar, 2013).

Micronutrients are essential plant minerals nutrients taken up and utilized by crops in very small quantities. Traditionally, it has relied on what was present naturally in the soil together with amounts added as impurities in fertilizers as the source of micronutrients for crop growth. The zinc deficiencies are more likely to occur in sandy soils that are low in organic matter. High pH, as in high-lime soils, the solubility of zinc decreases and it becomes less available. Zinc and Phosphorus have antagonistic effects in soil. Therefore, zinc also becomes available in soils that are high in phosphorus. The deficiency can be overcome or by soil application depending on the soil and crops. In boron deficiency the earliest symptoms is a mild chlorosis in mature leaves, which become brittle and tend to curl downwards. The deficiency can be remedied by application of 0.5-1 kg B ha-1 (Dinesha, et al, 2014). It is clear that apart from the deficiencies of N, P, K and those of S and Zn are widespread while boron (B) deficiency is becoming increasing important.

Recent results from SSNM-based field experiments with the rice-wheat system and briefly described here .Similar data are also available for the rice-rice system. The SSNM experiments with rice-wheat system were conducted at 10 locations. From 4 to 8 nutrients were applied as a part of

SSNM with the provision to evaluate responses to each of these nutrients, (except N), at one more levels. Both crops received N, P and K. only rice received S and micronutrients while the following wheat benefited from their residual effects (Tiwari, 2007).

The technologies available for optimizing plant nutrition must not only be adopted at the farm level but researchers must fine tune these to match local condition and resources (SSNM). The present field trials thus conducted at farmers' fields of Hisar, Yamunanagar and Bawal districts on wheat and Mustard crops to validate the SSNM approach in Haryana State.

Field trials were conducted at six farmers' fields in one village of each of Hisar, Yamunanagar and Riwari districts to test the validity of site specific nutrient management practices in wheat and mustard at farmers' fields. Collection and analysis of soil samples of different farmers' fields for initial fertility status, and recording of grain yields of wheat and raya (mustard) were observed.

Mustard (Brassica Juncea):

The mean raya seed yield increased from 22.65 q/ha in NP treatment to 24.59 q/ha in NPKSZn treatment at village Bharia (Hisar) (Table 3). The application of S @30 kg/ha resulted in an increase in the mean raya seed yield by 1.38 q/ha over NP treatment as soil was low in available S. Similarly, the application of 25 kg ZnSO4/ha (NPKSZn treatment) resulted in 1.66 q/ha increase in seed yield over NPKS treatment in one of the fields where the Zn status was low. Yield target of 25q/ha in different fields was achieved within deviation of -7.4 to + 3.4 %.

On the farmers' fields at Bawal, the mean raya seed yield varied from 23.9 q/ha in NP treatment to 25.29 q/ha in NPKSZnB treatment (Table 4). The application of 20 kg K2O/ha (NPK treatment) enhanced the mean seed yield by 0.90 q/ha in two fields, where available K status was medium. The target of 25q/ha raya seed yield was achieved within deviations of -10.8 to +18.8 per cent in different fields.

Our results subordinated that the site specific nutrient management with conventional method of sowing exhibited to increase grain yield and its attributing characters in maize under maize-mustard relay cropping in rain fed conditions. Thus relay cropping system which is environmental friendly, socially acceptable and economically feasible offers an alternative production system over the conventional production system (Paradkar, et al, 2016). Therefore, present study supported the test of hypothesis that rice and wheat yields, farmer profit, plant nutrient uptake, and fertilizer efficiencies can be increased significantly through field-specific nutrient management. In this article, we evaluate the performance of SSNM compared to prevailing farmer fertilizer practices (FFP).