Integrated nutrient management in sugarcane : A success Story

Sugarcane being a long duration, exhaustive crop removes considerably higher amount of plant nutrients from the soil. On an average, sugarcane crop, yielding 100 tonnes, removes 208, 53 and 280 kg per hectare of N, P_2O_5 and K_2O, respectively from the soil. Hence it is essential to replenish the depleted soil with plant nutrients at desired levels to resotre and sustain the fertility/productivity of soils through integrated nutrient management system.

Farmers generally apply inorganic fertilizers due to their easy availability and scarcity of organic manures. The physical, chemical and biological propertieis of soil get aversely affected due to continuous use of chemical fertilizers resulting into low yield of sugarcane. Hence, combined application of organic and inorganic source of plant nutrients may be done in such a way that the soil fertility is maintained without deteriorating cane yield. This system is called integrated nutrient management. While discussing under Institution-Village Linkage Programme, it was found that the farmers of selected villages were applying inorganic fertilizers in imbalance amounts. Some of them were applying one-third to two-third amount of recommended doses of nitrogen and phosphatic fertilizers and no potash. Therefore, the farmers were advised to apply recommended doses of fertilizers, time and method of application to sugarcane crop. For developing confidence among the farmers, three doses of fertilizers were tried in the demonstrations and its effect on cane yield were recorded. First-Farmers' practice (120 kg N/ha – chemical fertilizer), second-recommended dose (150 : 60 : 60 kg/ha N, P_2O_5 and K_2O, - chemical fertilizers) and third – integrated nutrient management 150 : 60 : 60 kg/ha N, P_2O_5 and K_2O, - chemical fertilizers + 10 t/ha FYM/ Press-mud). FYM/Press-mud was applied in the soil just before last ploughing of field. Full dose of phosphorus and potash and one-third of nitrogen were given as basal dressing in furrows during cane planting and remaining nitrogen as top-dressing in equal amounts at two doses, along the sugarcane rows, during tillering phase. Existing practice in the area was to apply the fertilizer in two or three splits i.e., at planting, tillering and just after first shower of monsoon season through boradcosting in the fields.

Comparative performance of sugarcane grown through INM system

Sugarcane crop under INM system

Yield of sugarcane was 63 t/ha with existing farmers' practice while it was 82 t/ha in recommended dosesof chemical fertilizers leading 30.0 per cent higher yield than the farmers' practice. Integrated nutrient management system gave 84 t/ha which was 33.0 per cent higher than that of the farmers' practice. In economic evaluation, net profits were recorded by Rs.49,800/- and Rs.48968/- in the recommended dose of chemical fertilizers with and without FYM/press-mud, respectively. These were 42.0 and 40.0 per cent higher than the farmers' practice (Rs.34,835/ha.).

Thus, farmers got convinced to harvest sustainable sugarcane yield by maintaining soil fertility through integrated nutrient management system. Farmers felt happy and impressed by receiving the higher sugarcane yield and consequently they themselves started motivating other farmers of the area for wider adoption of integrated nutrient management practices.