

## RESIDUAL EFFECT OF CHITOSAN-RAW-MATERIALS ON SOIL TOTAL NITROGEN CONTENT, SOIL PH, AND SOIL ORGANIC CARBON CONTENT UNDER RICE-RICE CROPPING SYSTEM

Dr. Mohammad Issak\*

### Executive Summary

Chitosan improves the properties of soil. Two consecutive experiments were conducted in the same plot at the research field of Sher-e-Bangla Agricultural University, Dhaka-1207, during Transplanted Aman and Boro seasons of 2017-2018, to investigate residual effect of raw material of chitosan (CHT) powder on chemical properties of rice growing soils. The field experiment was done using BRRI dhan29. The experiment was laid out in randomized complete block design with four replications. The first experiment was done using four different doses of the raw material of CHT powder with one control. The doses of the powder were as follows:  $T_1 = 0.5$  t/ha,  $T_2 = 1.0$  t/ha,  $T_3 = 2.0$  t/ha,  $T_4 = 4.0$  t/ha and  $T_5 = 0$  t/ha. The second experiment was conducted in the same plot using the following treatments were  $T_1 =$  Residual effect of the powder @ 0.5 t/ha (applied in the previous experiment) +  $2/3^{\text{rd}}$  of recommended N fertilizer,  $T_2 =$  Residual effect of the powder @ 1.0 t/ha (applied in the previous experiment) +  $2/3^{\text{rd}}$  of recommended N fertilizer,  $T_3 =$  Residual effect of the powder @ 2.0 t/ha (applied in the previous experiment) +  $2/3^{\text{rd}}$  of recommended N fertilizer,  $T_4 =$  Residual effect of the powder @ 4.0 t/ha (applied in the previous experiment) +  $2/3^{\text{rd}}$  of recommended N fertilizer and  $T_5 =$  Residual effect of the powder @ 0 t/ha + recommended N (control). The total nitrogen content, soil  $p^H$ , organic carbon and organic matter status in the post-harvest-soils were increased due to the residual effect of the powder in rice growing soils. The maximum value of the  $P^H$  (7.01), organic carbon content (0.72%), and organic matter content (1.24%) in the post-harvest soils were found in the treatment  $T_4$  and the lowest values were observed in the control treatment ( $T_5$ ). From the results, it could be concluded that some of the chemical properties of rice growing soils were improved due to the residual effect of the raw material of CHT powder. Residual nitrogen value indicates that the powder has a slow releasing effect of organic nitrogen supplementation in soil. These results suggest that the residual effect of the raw material of CHT powder could play a significant role to improve the sustainable soil health.

---

\* Professor, Dept. of Soil Science, Sher-e-Bangla Agricultural University, Dhaka-1207