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Effect of Zinc on Sugarcane— A preliminary study

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In recent years, the importance of micronutrient in increasing agricultural production and correcting deficiencies in crops has been realised all over the world. In the past much attention was given to determine the requirement of N, P & K for sugarcane, but recently interest has been developed in other elements. Reports of Zinc deficiencies in different crops are becoming more frequent in Bangladesh and addition of zinc resulted in significant increase in yield of crops (BARC Annual Report 1981–1982). Bedsol and Bregger (1953) reported that application of 33 kg zinc sulphate per hectare increased yield of cane in Florida. Talukder (1982) obtained higher yield of rice by applying 6 kg Zn/ha in Bangladesh. Information regarding mircornutrient requirement for sugarcane is very inadequate. As such, the present investigation was undertaken to findout the response of zinc on sugarcane.

Field experiment on zinc requirement on sugarcane were conducted at the Sugarcane Research & Training Institute farm during 1983–84 season. Major properties of soils are shown in Table 1. The treatments of the experiment were 0, 5, 10, 15, 20 & 25 kg Zn/ha from zinc oxide. Treatments were fitted in RCB design replicated four times. All plots received NPK at the rate of 125 kg N, 125 kg P_2O_5 and 110 kg K_2O per hectare. Three eyed assorted sets were planted in all plots and cane variety Isd-2/54 was used in the experiment. The canes were planted in November 1983 and harvested in January, 1985. All normal cultural practices appropriate for the crop was applied. Data on cane height yield of cane and sugar were recorded.

Table 1. Major properties of soils.

Texture	pH	Org.-C (%)	Total-N (%)	Available-P (ppm)	Exch.-K (m.e.%)	Available- Zn (ppm)
Clay loam	7.8	0.68	0.066	5	0.20	2.4

The data on plant height, yield of cane and sugar as affected by different rates of Zn fertilization have been presented in Table 2. The application of zinc increased plant height over control. Tallest cane was found with 15 kg Zn/ha application. The application of Zn 10–15 kg/ha also increased the yield of cane. The highest (73.40

MT/ha) yield of cane was obtained at 15 kg Zn/ha, as against 65.00 MT/ha in the control plot. Juang *et al.* (1977) reported that application of zinc at the rate of 25 kg Zn/ha resulted in significant increase in cane and sugar production. The highest yield of sugar (7.66 MT/ha) was recorded due to 15 kg Zn/ha application but in control plot yield of sugar was recorded 6.57 MT/ha. Higher rates of zinc beyond 15 kg/ha decreased the plant height, cane and sugar yield. The results showed that application of Zn upto 15 kg/ha had a positive effect on cane and sugar porudction in Gangetic Flood Plain soils of Ishurdi. The results, however, did not show any remarkable improvement of sugarcane productivity due to additional Zn application. Further stuides are being conducted for confirmatory results.

Table 2. Effect of zinc on plant height, cane and sugar yield.

Treatments (kg/ha)	Plant height (m)	Yield of cane (TCH)	Yield of sugar (TSH)
Control	2.73	65.00 (±4.27)	6.57
Zn_5	2.76	64.93 (±3.39)	6.85
Zn_{10}	2.80	68.80 (±2.27)	6.97
Zn_{15}	2.84	73.40 (±3.01)	7.66
Zn_{20}	2.72	59.58 (±0.32)	7.03
Zn_{25}	2.82	61.07 (±4.10)	6.91

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