

RESPONSIVE OF MAIZE TO FYM AND ZINC

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A Field experiment was conducted to study individual and combined application of $ZnSO_4$ (0, 12, 25 and 50 kg/ha) FYM (0, 12.5 and 25 t/ha) in red sandy loam soil with Ganga 5 Maize as test crop in TNAU Farm at Agricultural Research Station, Aliyarnagar. The results showed that application of $ZnSO_4$ with and without FYM significantly increased dry matter yield, Zn content and its uptake by grain and stover of Maize. The highest grain and stover yield obtained for the application of $ZnSO_4$ at 25 kg/ha along with FYM at 25 t/ha.

In order to overcome micronutrient disorders in soils and plants, organic manures have been frequently used as these manures besides supplying micronutrients in forms readily available to plants, react with native soil nutrient in a way that enhances their availability to crops (Sakal *et al.* 1988).

With this in view, a field experiment was conducted to find out suitable management with different levels of organic manures and zinc sulphate for maximum yield of maize and better utilization of applied zinc sulphate in soil. The results obtained from the experiment are described in the present paper.

MATERIALS AND METHODS

A field experiment was conducted in a red sandy loam soils (Typic Haplustalf) at TNAU farm of Agricultural Research Station, Aliyarnagar to study effect of different levels of $ZnSO_4$ (0, 12.5, 25 and 50 kg/ha) along with different levels of FYM (0, 12.5 and 25 t/ha) on grain and stover yield and Zn nutrition of maize. Ganga-5 There were all possible combinations of Zn & FYM resulting in twelve treatments. Besides two treatments were also

included to study the effect of total nutrition of Zn at 0.5 and one percent $ZnSO_4$ concentrations.

All plots received a uniform dose of 135; 67.5; 45 kg/ha of N, P and K respectively. The experimental soil was medium in Zn (0.84) and neutral in soil reaction (PH. 6.9). Grain and stover plant samples collected after harvest were analysed for Zn content by commonly used methods and concentrations of Zn was measured by Atomic Absorption Spectrophotometer (Jackson, 1973) uptake of Zn in grain and stover was calculated and data were subjected to statistical scrutiny.

RESULTS AND DISCUSSION

The yield data, presented in Table 1 showed that application of $ZnSO_4$ at 25 and 50 kg/ha and individual and combined application of $ZnSO_4$ and FYM at all levels significantly increased grain yield. Of all the treatments, combined applications of $ZnSO_4$ at 25 kg/ha plus FYM at 25 t/ha registered significantly the highest grain yield of 3305 kg/ha while the recommended dose of NPK treated control registered 2306 kg/ha of grain. The next best treatment was either application of $ZnSO_4$ alone at

Table 1. Effect of FYM and Zn on Yield and Zn Nutrition. Crop : Ganga 5 Maize
Mean of three replication

Treatments FYM : T/ha ZnSO ₄ : Kg/ha	Yield (kg/ha)		Zn Content (p pm)		Zn uptake (g/ha)	
	Grain yield	Stover yield	Grain	Stover	Grain	Stover
Control (NPK alone)	2306	6250	18	7	42.3	41.8
12.5 ZnSO ₄	2417	7708	20	15	47.7	115.7
25 ZnSO ₄	2680	8611	24	7	65.2	57.4
50 ZnSO ₄	2958	8333	27	16	78.8	133.8
12.5 FYM	2681	9306	14	8	38.4	77.5
25 FYM	2894	10347	16	5	50.2	51.7
12.5 FYM+12.5 ZnSO ₄	2750	9097	22	20	60.1	185.1
12.5 FYM + 25 ZnSO ₄	2944	7847	16	22	48.0	170.2
12.5 FYM + 50 ZnSO ₄	2861	8611	19	8	53.3	66.0
25 FYM + 12.5 ZnSO ₄	2847	7986	16	8	45.4	66.2
25 FYM + 25 ZnSO ₄	3305	10764	21	15	69.5	155.7
25 FYM + 50 ZnSO ₄	2666	8680	20	10	53.3	83.8
0.5% ZnSO ₄ F.S.	2375	7014	27	24	64.2	168.1
1.0% ZnSO ₄ F.S.	2167	6528	22	32	48.3	208.9
C.D. at 5 per cent	250	633			20.7	22.2

50 kg/ha or 25 kg/ha along with FYM at 25 t/ha both of which resulted 28 per cent increase in grain yield. This is due to the fact that nature of organic manures which supply micronutrients in forms readily available to plants, react with native soil nutrients in a way that enhance their availability to crops. Addition of ZnSO₄ along with organic manures might have magnified yield Zn uptake of grain and stover of maize - Ganga 5. The present results are in accordance with earlier findings of Singh *et al* (1983).

Fertilization with ZnSO₄ along with FYM increased the concentration of Zn in grain and stover. Similar result was reported by Nogel *et al*. (1985).

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