

Note on Foliar Nutrition of Zinc to Rice IR. 20

Introduction of high yielding varieties of rice coupled with the increased use of inorganic fertilizers in the place of bulky organic manures has led to the wide spread deficiency in micronutrient elements. Among the micronutrients zinc is the most important element that has a say on the rice yield. Beneficial effects of zinc in increasing grain yield in rice have been reported by several workers (Rajagopalan and Narayanasamy, 1973; Sarkunan, 1974; Balasundaram *et al.*, 1981). However, previous attempts were mainly aimed at studying the effect of "soil applied zinc" on rice yield. Hence an attempt was made to investigate the influence of zinc on rice applied through foliar spraying.

A field experiment was conducted with rice variety IR. 20 as test crop in a red sandy loam soil of Agricultural Research Station, Bhavanisagar. The treatments tried were 1. Control (Water spray) 2. Zinc sulphate 0.25 per cent foliar spray 3. Zinc sulphate 0.50 per cent foliar spray and 4. Zinc sulphate 0.75 per cent foliar spray. All the treatments received the normal dose of NPK (120: 60: 60 kg/ha) and the same were randomised and replicated five times, adopting a plot size of 20M². The initial available nutrient content of the soil for NPK were 139, 1.8 and 269 kg/ha respectively. The pH of the soil was 8.2 and the Ec was less than 1.0 millimhos/cm. Available zinc status (DTPA extractable zn) was below the

critical limit (1.1 ppm). Available copper, iron and manganese contents were 0.3, 2.0 and 4.0 ppm respectively. The crop was transplanted on 13-2-81 and foliar spraying of zinc sulphate was given at panicle initiation stage. Each treatment was sprayed with a uniform volume of spray fluid (500 lit/ha). Hence, 1.25, 2.50 and 3.75 kg of Zinc sulphate/ha were consumed for the treatments involving 0.25 0.50 and 0.75 percent Zn So₄ spray respectively. N, P and K were applied in the form of urea, super phosphate and muriate of potash respectively. Routine cultural practices were followed. At maturity the crop was harvested and plotwise straw and grain yields were recorded. Observations were also recorded for number of grains per ear and for thousand grain weight.

The effect of foliar application of zinc on the grain and straw yield of rice are presented in Tables 1 and 2 respectively. The number of grains per ear and thousand grain weight are presented in Tables 3 and 4.

The results revealed the favourable significant influence of foliar application of zinc in both grain as well as straw yields with an increase in the concentration of spray solution and the highest yields was recorded in those plots which received foliar application of zinc sulphate at 0.75 per cent concentration.

Eventhough the number of grains per ear was not altered significantly, the weight of thousand grains was significantly influenced by the treatments studied. A similar trend as observed in the case of straw and grain yields was recorded in the case of thousand grain weight also. As the concentration of the spray solution applied increased, the per thousand grain weight also increased and the highest mean weight of 18.6 g thousand grain weight was recorded under the treatment of zinc sulphate spray at 0.75 per cent concentration. Increased grain weight could be probably due to the enhanced filling. Beneficial effect of zinc sulphate in increasing rice yields were reported by Shanmugam and Ramanathan (1981) and Srinivasan (1981).

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TABLE 1. Effect of Zinc sulphate on the grain yield of rice (kg/ha)

Treatment	RI	RII	RIII	RIV	RV
Control (Water spray)	4000	4800	4250	4600	4500
Zinc sulphate at 0.25%	4350	4250	6750	5950	5200
Zinc sulphate at 0.50%	5450	6370	4950	6600	6200
Zinc sulphate at 0.75%	6850	6420	6320	7600	6500

SE=311.95 CD=961.16

TABLE 2. Effect of Zinc sulphate on the straw yield of rice (kg/ha)

Control (Water spray)	4650	4200	4700	4400	4350
Zinc Sulphate at 0.25%	4400	5500	5500	4700	4600
Zinc sulphate at 0.50%	6200	5200	6500	4400	5700
Zinc sulphate at 0.75%	6200	7800	6000	6700	6500

SE=284.95 CD=877.96

TABLE 3. Effect of Zinc sulphate on the number of grain per ear,

Control (Water spray)	84	96	103	113	107
Zinc sulphate at 0.25%	120	121	105	101	108
Zinc sulphate at 0.50%	98	111	122	119	112
Zinc sulphate at 0.75%	97	108	102	88	106

N. S.

TABLE 4. Effect of Zinc sulphate on the thousand grain weight of rice (g)

Control (Water spray)	17.1	17.0	17.5	17.9	17.5
Zinc sulphate at 0.25%	17.1	18.2	17.6	17.5	17.5
Zinc sulphate at 0.50%	18.0	17.5	17.9	17.5	17.8
Zinc sulphate at 0.75%	17.9	18.5	19.3	18.7	18.8

SE=0.24 CD=0.53.