

SHORT COMMUNICATIONS

Effect of Nitrogenous Fertilizers and Trace Elements on the Severity of *Alternaria* Blight of Bottle Gourd

A K Bhargava and R D Singh

Agricultural Research Station, Durgapura, Jaipur-302018

Definite correlations have been reported between host nutrition and its susceptibility to disease (Ojha & Mehta 1970, Balasubramanian 1973). In the present study trace elements were applied as foliar spray while N fertilizers were applied through soil to see their effect on severity of *Alternaria* blight of bottle gourd.

Three N fertilizers viz. ammonium sulphate (AS), calcium ammonium nitrate (CAN) and Urea with three levels of N (50,75 and 100 kg N ha⁻¹) were applied in two split doses, half at the time of sowing and remaining half when the plants were one and half month old. Disease intensity was recorded after 15 days of second application of fertilizers.

Trace elements (Zn, Cu, Mn, Fe and B) in the form of sulphates were sprayed in three concentrations (25, 2.5 and 0.25 ppm) of elements with equal amount of lime. First spray was given prior to inoculations of bottle gourd plants and two subsequent sprays were given at an interval of 15 days. Bottle gourd plants were inoculated at three leaf stage with the spore suspension of *Alternaria cucurberina* (E.& E.) Elliot, isolated from the host and the disease intensity was recorded after 15 days of final spray. Per cent disease intensity (PDI) was calculated by formula using 0-4 grades scale (Bhargava 1983).

Data indicated that *Alternaria* blight intensity increased with the increasing dose of nitrogenous

fertilizers (Table 1). The Maximum disease intensity (58.7%) was observed when nitrogen was applied in the form of urea at the rate of 100 kgN ha⁻¹ and it was also significant at the corresponding dose of N applied in the form of AS and CAN. At the lower doses of N, i.e. 50 and 75 kg ha⁻¹, urea also induced higher PDI, whereas it was lowest in case of fertilization with CAN.

Disease intensity was significantly reduced when Cu, B and Zn were sprayed at the rate of 25 ppm (Table 2). These elements significantly reduced the disease intensity at 2.5 ppm. However, 25 ppm of Fe and Mn proved to be somewhat phytotoxic as most of the brown spots formed did not yield the pathogen. Zinc and Cu gave very good response in reducing the disease at all the concentrations as compared to control.

References

- Bala subramanian KA 1973 Influence of nitrogen and phosphorus on the expression of downy mildew of sorghum. *Plant and Soil* 38 477-479
- Bhargava AK 1983 *Comparative Studies of Alternaria Blight of Cucurbits, their causal Organism and Control*. Ph.D. thesis Sukhadia University Udaipur
- Ojha KL & Mehta PP 1970 Effect of NPK and balanced nutrients on the incidence of leaf blight diseases of wheat caused by *Alternaria trititica*. Prasada & Prabhu *Journal of applied sciences* 2 42-43

Table 1 Effect of nitrogenous fertilizers on the severity of *Alternaria* blight of bottle gourd.

Fertilizer	Disease intensity (%) at N doses (Kg/ha ⁻¹)		
	50	75	100
Ammonium sulphate (AS)	26.00 (30.7)	27.1 (37.5)	42.4 (40.7)
Calcium ammonium nitrate (CAN)	24.8 (29.9)	31.9 (34.4)	64.6 (43.1)
Urea	29.0 (32.8)	35.5 (36.6)	58.7 (50.0)
Control no fertilizers	25.3 (30.2)		
CD 5%	Fertilizer 0.62	Dose 0.71	F × D 1.23

Table 2. Effect of trace elements on the intensity of *Alternaria* blight of bottle gourd.

Trace elements	Disease intensity (%) at dose (ppm)		
	25	2.5	0.25
Zinc	24.0 (29.3)	25.3 (30.2)	29.3 (32.8)
Copper	14.1 (22.1)	23.6 (29.1)	26.8 (31.2)
Manganese	33.0 (35.1)	21.3 (27.5)	43.2 (41.1)
Boron	17.8 (24.9)	28.0 (31.9)	30.0 (33.2)
Iron	50.4 (45.2)	22.9 (28.5)	31.0 (33.8)
Control (No trace element)	42.0 (40.4)		
CD 5%	Trace element 4.13	Dose 3.20	T × D 7.16

*Figures in parentheses indicate the value which were used for finding out CD & SEm.

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