

Effect of NPK on Root Rot Disease Incidence in Sunflower

The incidence of sunflower root rot disease caused by *Macrophomina phaseolina* (Tassi) Goid., is commonly observed in Tamil Nadu. The pathogen has a wide host range and has been found to cause considerable damage to sunflower. An attempt was made during 1972 — '73 to assess the influence of different levels of NPK on the occurrence of root rot disease.

The experiment was conducted on sunflower variety, K1 under field conditions at Cotton and Millet Experiment Station, Kovilpatti with two levels of N viz., 40 and 60 Kg/ha and three levels in each of P and K viz., 40, 60 and 80 of P_2O_5 and K_2O /ha respectively. A

split plot design was adopted with three replications. Nitrogen levels were kept as main plot treatments and phosphorus and potash as sub-plot treatments. The disease incidence was observed a week before harvest. The per cent root rot infection was assessed based on the total number of affected plants, to the total population in each treatment.

In general, root rot incidence was more in high N and low P and K, though the additional levels of NPK applied do not seem to have marked influence on the disease incidence (Table 1 and 2). High N generally increased susceptibility either by

TABLE 1. Effect of various levels of NPK on the incidence of root rot

Treatments			Per cent root rot incidence (Transformed values)
N	P_2O_5	K_2O	
40	40	40	54.43
40	40	60	50.08
40	40	80	49.44
40	60	40	46.05
40	60	60	55.06
40	60	80	45.71
40	80	40	49.87
40	80	60	46.48
40	80	80	46.58
60	40	40	55.67
60	40	60	57.84
60	40	80	54.15
60	60	40	54.13
60	60	60	50.06
60	60	80	48.57
60	80	40	49.88
60	80	60	53.52
60	80	80	53.02

'F' test $P=0.05$

Not significant

TABLE 2. Data on the incidence of root rot

Treatment	Level Kg/ha	Per cent root rot incidence (Transformed values)
N	40	50.16
	60	52.97
P ₂ O ₅	40	53.60
	60	51.21
	80	49.89
K ₂ O	40	52.73
	60	52.17
	80	49.75
'F' test P=0.05		Not significant

increasing the tissue succulence or providing some complex N source, whereas high K and P levels tend to decrease susceptibility (Brown *et al.*, 1948; Christensen and De Vay, 1956; Hart, 1949; Shear and Wingard, 1944 and Sivaprakasam, 1972). A host nutrition low in N may increase resistance by limiting amino acids and enzymes needed by the parasite Barnett (1959).

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