STUDIES ON EFFECT OF SINGLE AND MIXED INOCULUM LEVELS OF SPIRAL AND LESION NEMATODES ON BRINJAL

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The effect of *Heliocotylenchus indicus* Siddiqi, 1963 and *Pratylenchus penetrans* Cobb, 1977 Filipjev & Schuurmans Stekhoven, 1941 in single and mixed inoculum levels was studied on growth parameters of Brinjal *(Solanum melogena* Linn.). The results showed that 100 and 200 inoculum levels singly had non-significant effect on shoot and root length and weight while together they caused significant decrease in shoot and root length at 200 inoculum level.

INTRODUCTION

Brinjal or Egg plant *(Solanum melogena* Linnaeus) is commonly cultivated throughout Pakistan (Nasir and Ali, 1985). The fruit is cooked as food while the seeds are used as stimulant. A number of nematodes have been found associated with Brinjal in Pakistan (Anwar, 1977; Maqbool, 1986) but so far no study has been made on the pathogenicity of these nematodes to Brinjal.

The present studies were conducted to determine the effect of spiral nematode *(Helicotylenchus indicus* Siddiqi, 1963) and root lesion nematodes *(Pratylenchus penetrans* Cobb, 1917 Filipjev & Schuurmans Stekhoven, 1941 in single and mixed inoculum levels.

MATERIALS AND METHODS

Three seeds were sown in 11 cm diameter plastic pots containing 500 g steam-sterilized soil, sand and compost mixture (7:2:1). After germination, the seedlings were thinned to one per pot and inoculated with freshly isolated specimens of *H. indicus* and *P. penetrans* at a rate of 100 and 200 separately and mixed with the ratio 1:1. Uninoculated plants served as controls. Each treatment was replicated five times. The pots were kept at room temperature and watered every alternate day. The experiment was terminated 40 days after inoculation. The plants were removed from the pots, washed gently and plant growth parameters (length and fresh weight of root and shoot) were measured. The significance of difference in the mean values was assessed using L.S.D. at 1% level.

RESULTS AND DISCUSSION

H. indicus and *P. penetrans* populations separately had no significant effect either on shoot and root length or shoot and root weight (Table 1). However, in the presence of both of the nematode populations at 100 and 200 #/500 g soil, the root and shoot weights were significantly reduced, although root and shoot length of brinjal slightly increased at 100 inoculum level but the seedlings were weak with thin stems (Plate 1).

Single as well as mixed inoculum levels were taken as nematodes occur in polyspecific communities as a rule rather than exception. In fields different species of stylet bearing nematodes interact amongst them

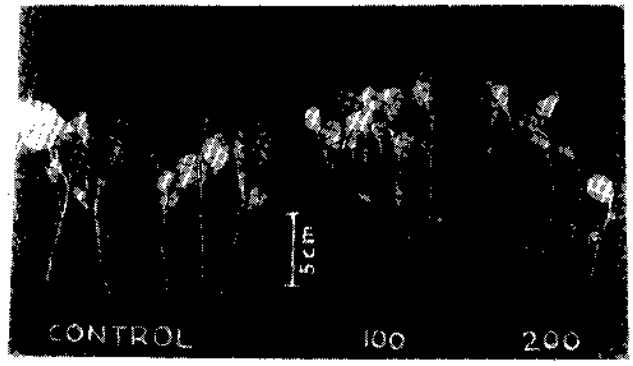

Fig. 1. Effect of mixed inoculum at 100 and 200 levels on the growth of brinjal.

Table 1. Effect of single and mixed inoculum levels of spiral and lesion nematodes on Brinjal

Nematode	Inoculum level	Shoot and root length (cm)	Shoot and root weight (g)
	0	14.72	0.68
Helicotylenchus-indicus	100	14.36	0.66
	200	14.28	0.64
L.S.D. at 5% level	20.89	1.102	
L.S.D. at 1% level	29.29	1.545	
Pratylenchus-penetrans	100	14.30	0.66
	200	14.30	0.46
L.S.D. at 5% level	14.64	0.838	
L.S.D. at 1% level	20.53	1.175	
H. indicus + *P. penetrans*	100	15.54	0.27
	200	13.30	0.19
L.S.D. at 5% level	1.37	0.665	
L.S.D. at 1% level	1.92	0.932	

*Data given represents mean of 5 replicates.

selves influencing each others population as well as in the association with crop performance.

Many workers have shown combined effect of nematodes on the host crop (Johnson and Nusbaum, 1970; Freckman and Chapman, 1972; Gaur, 1973). Our findings show combined effect of *H. indicus* on ectoparasite of roots and *P. penetrans,* capable of penetrating root tissue, can together aggravate harmful effects to the plant. In nature the two nematode species invariably occur together (personal observation) and together cause damage to crops such as brinjal.

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