Pak. j. sci. ind. res., vol. 32, no. 6, June 1989

REACTION OF TWO CULTIVARS OF MAIZE (*ZEA MAYS* L.) TO STUNT NEMATODE, *QUINISULCIUS CURVUS*

Aly Khan, M. Saeed* and A.K. Khanzada

Crop Diseases Research Institute, Pakistan Agricultural Research Council, University of Karachi

(Received February 20, 1989; revised May 27, 1989)

The effect of the stunt nematode, *Quinisulcius curvus* (Williams, 1960) Siddiqi, 1971, on growth parameters of two maize cultivars, Kashmir Gold and Pirsabak, was studied. The results showed cultivar Pirsabak growth to be adversely affected by this nematode at 100, 200 and 400 inoculum levels. With Kashmir Gold, only the 400 inoculum level had an adverse effect and this was on shoot and root length only.

Key words: Stunt nematode, *Quinisulcius curvus*, Maize, Pathogenicity.

INTRODUCTION

Maize (*Zea mays* L.) is one of the important crops of Pakistan, extensively cultivated in Punjab, North West Frontier Province and Baluchistan as a staple crop. In Sind, however, its cultivation as a staple food is limited but as fodder, it occupies a significant place since it can be cultivated almost throughout the year. This way it has become a cash crop for the farmers. However yield of this crop is seriously affected by a number of diseases including those caused by, plant parasitic nematodes.

In earlier studies, Norton and Hoffman [1], Norton and Hinz [2], Egunjobi [3], Tarte [4] and Oteifa and Taha [5] reported maize decline to be associated with nematodes.

As the stunt nematode *Quinisulcius curvus* (Williams, 1960) Siddiqi, 1971, has been reported in high frequency associated with maize in Sind (Khan *et al.* [6]) and in consideration of the importance of this crop, an attempt was made to investigate the effect of this stunt nematode on growth parameters during critical growth period of the plant of two important commercial cultivars of maize viz., Kashmir Gold and Pirsabak.

MATERIALS AND METHODS

Three seeds of each of the cultivars were sown in 11 cm diameter plastic pots containing 700 g steam sterilized soil. After germination, plants were thinned to one per pot and inoculated with freshly isolated specimens of *Quinisulcius curvus* at the rates of 100, 200 and 400 per plant res-pectively. Uninoculated plants served as control. Each treatment was replicated four times. The pots were kept at room temperature (28 ± 2°) and watered on alternate days.

The experiment was terminated 14 days after inoculation and plant growth parameters (length and fresh weight of root and shoot) were measured.

Data was subjected to statistical analysis and differences determined using L.S.D. at both 5% and 1% levels.

RESULTS AND DISCUSSION

The result presented in Table 1 show that the plant growth (length and weight of shoot and root) of the cultivar Pirsabak was adversely affected by the infection of this nematode. Significant damage was observed at 100, 200 and 400 inoculum levels. The plants at 400 inoculum levels seemed to be stunted in growth.

Table 1. Effect of different inoculum levels of *Quinisulcius curvus* (Williams, 1960) Siddiqi, 1971 on two cultivars of maize*.

Maize cultivars	Inoculum level	Shoot and root length (cm)	Reduction over control (%)	Shoot and root weight (g)	Reduction over control (%)
Kashmir Gold	0	40.22	–	2.32	–
	100	41.12	–	2.12	8.63
	200	40.10	0.30	2.12	8.63
	400	26.35	34.48	1.97	15.08
L.S.D. at 5% level	–	4.95	–	0.65	–
L.S.D. at 1% level	–	5.86	–	0.77	–
Pirsabak	0	57.20	–	3.97	–
	100	40.75	26.84	2.62	34.01
	200	41.14	27.93	2.64	33.51
	400	30.25	45.69	1.89	52.39
L.S.D. at 5% level	–	8.96	–	0.63	–
L.S.D. at 1% level	–	10.62	–	0.75	–

* Data given represent the mean of 4 replicates.

* PCSIR Laboratories Complex, Karachi.

On the contrary, the cultivar Kashmir Gold was less adversely affected as no statistically significant damage was observed on shoot and root weight at inoculum levels 100 and 200. However, significant reduction was noted in shoot and root lengths at higher inoculum levels of 400 nematodes per plant. Because of the importance of this crop and the widespread distribution of *Q. curvus*, more trials on other cultivars are planned.

Acknowledgement. The authors are thankful to Dr. M.R. Siddiqi, Commonwealth Institute of Parasitology, St. Albans, England for confirmation of identification of this species.

REFERENCES

1. D.C. Norton and J.K. Hoffman, J. Nematol., **7**, 168 (1975).
2. D.C. Norton and P. Hinz, Plant Dist. Rep., **60**, 197 (1976).
3. O.A. Egunjobi, Nematologica, **20**, 181 (1974).
4. R. Tarte, Nematropica, **1**, 16 (1971).
5. B.A. Oteifa and A. Taha, Egypt Agric. Organ. Tech. Bull. No. **73**, 1 (1964).
6. A. Khan, T. Rajput and H. Fatima, Pakistan J. Zool., **17**, 101 (1985).