

NEMATODES ASSOCIATED WITH NURSERIES IN KARACHI Part I. Rose

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One hundred nurseries situated in Karachi were surveyed for nematode infestation in rose (*Rosa damascena*). *Pratylenchus brachyurus*, *P. coffeae*, *P. zaeae*, *Helicotylenchus indicus*, *H. multicintus*, *H. pseudorobustus*, *Basirolaimus indicus*, *Hoplolaimus pararobustus*, *Tylenchorhynchus annulatus*, *Rotylenchulus reniformis* and *Xiphinema americanum* were found associated with rose in the nurseries surveyed. Spiral nematodes (*Helicotylenchus indicus*, *H. multicintus*, *H. pseudorobustus*, *H. exallus*) and lesion nematodes (*Tylenchorhynchus annulatus*, *T. martini*, *T. mashhoodi*) were found in greater numbers.

Key words: Rose, spiral nematodes, lesion nematodes, lance nematodes, nurseries.

INTRODUCTION

Plant parasitic nematodes are important agricultural pests but they have received less emphasis as pests of horticultural crops. Generally, horticultural environments are conducive to the build-up of nematode populations due to optimal growth conditions created by man i.e. – shade, undisturbed soil, sand amendment, fertilizers and regular watering etc. These regimes also favour the development of parasitic nematodes. It is for this reason that horticultural plants receive serious injury by parasitic nematodes. Rose (*Rosa damascena*) is an important ornamental plant of this area but very little information is available about the nematodes associated with this plant. Kafi [1] wrote a monograph on plant parasitic nematodes reported till then from Pakistan but he did not mention any nematode from rose. Khan [2] reported *Mylonchulus rosensis* from rose soil but it is not a parasitic nematode. This study details the plant parasitic nematodes associated with roses collected from 100 nurseries in Karachi. The concomitant non-parasitic nematodes were also taken into account as they interact with parasitic species.

MATERIALS AND METHODS

One hundred nurseries from different areas of Karachi were surveyed. Samples of pots of only those plants were collected which exhibited symptoms of injury – unthrifty growth, Chlorosis, stunting etc and were free from weeds. Nematodes extracted through improved Baermann method were observed in a petri dish under stereoscopic binocular microscope. Hand-picked nematodes were transferred to a glass slide for temporary mount. To relax the nematode, a

drop of Logul's iodine was added and a cover slip was placed which was supported by three glass wool pieces of corresponding diameter arranged in a radial fashion. The temporary slide was seen in a light microscope.

Tylenchid nematodes were identified following the system of Siddiqi, either with help of loose reprints or the book when the latter became available [3]. Dorylaimid and the free-living nematodes were identified after different sources [4-7] Nematode quantification was achieved by standard method using a counting dish bearing 5 mm squares.

RESULTS AND DISCUSSION

Helicotylenchus indicus, *H. multicintus* and *Eudorylaimus* sp. were found in comparatively large number of nurseries i.e., 32, 30 and 28 respectively. *Tylenchorhynchus annulatus*, *Helicotylenchus exallus*, *H. pseudorobustus*, *Pratylenchus brachyurus*, *T. martini*, *T. mashhoodi*, *Tylenchus butteus*, *Pratylenchus coffeae*, *P. zaeae*, *Mesodorylaimus mehraniensis*, *Xiphinema americanum*, *Rotylenchulus reniformis* and *Aporcelaimellus obscurus* were recovered from 20, 19, 18, 17, 16, 16, 15, 15, 14, 13, 7, 5, and 4 nurseries respectively. Table 1 indicates the population level of plant parasitic nematodes., *H. indicus*, *H. multicintus*, *H. pseudorobustus*, *H. exallus*, *Pratylenchus coffeae*, *P. zaeae*, *Tylenchorhynchus annulatus*, *T. martini* and *T. mashhoodi*, were found in high numbers. Presence of such a large number of nematodes may be hazardous to the plant. Spiral nematodes i.e., *Helicotylenchus indicus*, *H. multicintus*, *H. pseudorobustus* and *H. exallus* are ectoparasitic. That these nematodes feed on rose is evident from the fact that there were no weeds in the pots collected during

Table 1. Nematodes recovered from rhizospheric soil of rose (*Rosa damascena*) from nurseries in Karachi and adjoining area.

S. No. Nematode	Population range nematode/ 50 cc soil	Number of detections (localities)
1. <i>Helicotylenchus indicus</i> Siddiqi 1963	38-69	30
2. <i>H. multincinctus</i> (Cobb, 1893) Golden 1956	47-76	27
3. <i>H. pseudorobustus</i> (Steiner, 1914) Golden, 1956	31-57	17
4. <i>H. exallus</i> Sher, 1966	42-63	19
5. <i>Basirolaimus indicus</i> (Sher, 1966) Shamsi, 1979	19-13	6
6. <i>Hoplolaimus pararobustus</i> (Schuurmans Stekhoven & Teuuissen, 1938) Sher, 1963	26-37	5
7. <i>Pratylenchus brachyurus</i> (Godfrey, 1929) Flipjey & Schuurmans Stekhoven, 1941	27-39	16
8. <i>P. coffeae</i> (Zimmerman 1898) Flipjev & Schuurmans Stekhoven, 1941	29-30	15
9. <i>P. zaeae</i> Graham, 1951	33-52	14
10. <i>Tylenchorhynchus annulatus</i> (Cassidy, 1930) Golden, 1971	37-70	20
11. <i>T. martini</i> Fielding, 1956	28-49	16
12. <i>T. mashhoodi</i> Siddiqi & Basir, 1959	26-61	15
13. <i>Tylenchus butteus</i> Thorne & Malek, 1968	19-37	15
14. <i>Rotylenchulus reniformis</i> Linford & Oliveira, 1940	9-16	5
15. <i>Xiphinema americanum</i> Cobb, 1913	15-21	7
16. <i>Mesodorylaimus mehraniensis</i> Khan & Saeed, 1986	17-30	13
17. <i>Eudorylaimus</i> sp. Andrassy, 1959	47-68	28
18. <i>Aporceliamellus obscurus</i> (Thorne and Swanger, 1936) Heyns, 1965	7-11	4
19. <i>Cephalobus litoralis</i> (Akhter, 1962) Andrassy, 1984	24-39	6

the survey. They attack the roots of the plants and suck the cell sap. Lesion nematodes i.e., *Pratylenchus brachyurus*, *P. coffeae*, *P. zaeae* are more harmful as they enter inside the roots. They also release toxic compounds inhibiting the normal function of roots. High number of nematodes associated is an obvious risk to the plants but in case of potted plants as in nurseries, even small number of them may cause significant injury. The plants during their Critical Growth Period (CGP) cannot afford even small injury. Thus it is evident that nursery stock and ornamental plants especially those in pots should receive more care. It is therefore imperative that steps should be taken to protect them. A preventive method would be to raise nematode-free plants in nematode-free soil because once the nematodes have established infestation in soil or root it would not be possible to kill them without affecting the plants or the environment. This would check their dissemination within the local areas and across the national frontiers.

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