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NEMATODES IN IRRIGATION CANALS OF THE KASHMIR VALLEY, INDIA

by
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Summary. Several plant parasitic nematodes were found in the irrigation canals of the Kashmir Valley, in India. Numbers were greater in low land canals and in rainy days (March-May).

Irrigation water is one of the major ways by which nematodes pathogens are disseminated. In Kashmir Valley all of the fields are irrigated by a net-work of main and subsidiary canals. This paper presents the results of a survey of the occurrence of nematodes in the canals and their dissemination in the Valley.

Thirty sites were selected randomly on the various canals, the sites being located 15-20 Km apart. The survey was undertaken from September, 1985 to December, 1986 twice per month (except January, 1986 when the canals were frozen for about two weeks). At each site a sample of 50 litres of water were taken three times at hourly intervals and poured on to a 400 μm sieve. The nematodes on the sieve were then brought to the laboratory for processing, identification and counting.

Total nematode numbers were 20-115 per 50 litres of water in upland canals and 65-290 in lowland canals. Nematode species in the order Tylenchida, Aphelenchida, Dorylaimida, Mononchida and Rhabditida were 35-59, 1-2, 16-48, 1-3 and 8-30 percent, respectively of the total population. It was estimated from flow data that between 90×10^6 to 47×10^7 nematodes passed per 24 hr at sites in the main canals and 15×10^4 to 24×10^5 at sites in the subsidiary canals. This compared with 87×10^6 to 35×10^7 estimated in the Upper Gangetic Canal at Aligarh, North India (Waliullah, 1984). The total number of nematodes was greater on rainy days (March-May) and particularly when there had been soil erosion from the hills and run off from the adjacent fields. Thus, the number of plant-parasitic nematodes were significantly greater in lowland canals and also in their tributaries.

The following species/genera were identified (total numbers during the period): *Tylenchus andrassyi* Kaul, 6; *T. davainei* Bastian, 4; *T. kashmiriensis* Mahajan, 8; *Tylenchus* spp., 30; *Sakia typica* Khan, 7; *Basiria kashmiriensis* Jairajpuri, 15; *Tylenchorbynchus brassicae* Siddiqi, 5;

T. baki Fotedar et Mahajan, 9; *T. kashmiriensis* Mahajan, 5; *T. mashhoodi* Siddiqi et Basir, 12; *Tylenchorbynchus* spp., 60; *Quinisulcius capitatus* Siddiqi, 12; *Basirolaimus dubius* Siddiqi, 9; *B. indicus* Shamsi, 40; *B. singhi* Siddiqi, 7; *Basirolaimus* spp., 70; *Hoplolaimus* spp., 95; *Aorolaimus* sp., 3; *Scutellonema* sp., 2; *Helicotylenchus abunaamai* Siddiqi, 3; *H. crenacauda* Sher, 5; *H. dibystrera* Sher, 11; *H. indicus* Siddiqi, 20; *H. insignis* Khan et Basir, 3; *H. hazratbalensis* Fotedar et Handoo, 8; *H. kashmiriensis* Fotedar et Handoo, 12; *H. mucronatus* Siddiqi, 12; *Helicotylenchus* spp., 497; *Orientylus* sp. 3; *Pratylenchus neocapitatus* Khan et Singh, 5; *P. zaeae* Graham, 17; *P. similis* Khan et Singh, 3; *Pratylenchus* spp., 19; *Paratylenchus* spp., 35; *Hirschmanniella mucronata* Khan, Siddiqi, Khan, Husain et Saxena, 5; *H. oryzae* Luc et Goodey, 12; *H. shamimi* Ahmad, 8; *Hirschmanniella* spp., 225; *Criconemoides siddiqi* Khan, 10; *Hemicycliophora indica* Siddiqi, 6; *Nothotylenchus basiri* Khan, 11; *Ditylenchus brassicae* Husain et Khan, 3; *D. myceliophagus* Goodey, 11; *D. nanus* Siddiqi, 6; *Aphelenchoides composticola* Franklin, 9; *A. ritzemabosi* Steiner, 90; Other tylenchids and aphelenchids, 615; *Xiphinema americanum* Cobb, 15; *X. basiri* Siddiqi, 8; *X. index* Thorne et Allen, 10; *X. insigne* Loos, 35; *Xiphinema* spp., 80; *Longidorus reneyii* Raina Rupa, 6; *Paralongidorus sali* Siddiqi, Hooper et Khan, 9; *Trichodorus* sp., 3; *Dorylaimus* spp., 32; *Enchodelus* sp., 3; *Alaimus leptus* Siddiqi et Husain, 12; *A. medius* Siddiqi et Husain, 7; *Alaimus* spp., 18; Other dorylaimids, 610; *Mylonchulus* sp., 8; *Handronchus shakili* Jairajpuri, 5; *Iotonchus indicus* Jairajpuri, 10; Other mononchids, 125; Rhabditis, 659.

Tylenchorbynchus Cobb, *Basirolaimus* Shamsi, *Pratylenchus* Filipjev and *Helicotylenchus* Steiner collected from a canal at Charar-e-Sharief, Badgam survived in the sample water for 70 days. Nematodes from the Upper Gangetic Canal (Waliullah, 1984) and from an irrigation canal in

Spain (Tobar-Jimenez and Palacios-Mejia, 1976) survived for and were infective after 15 and 64 days, respectively.

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Literature cited

- TOBAR-JIMENEZ A. and PALACIOS-MEJIA F., 1976 - El agua como vehiculo de dispersion de nematodos fitoparasitos. *Rev. Ibér. Parasitol.*, 35 (1975): 223-259.
- WALIULLAH M.I.S., 1984 - Nematodes in irrigation water. *Nematol. medit.*, 12: 243-245.