

Root-knot nematode (*Meloidogyne* spp.) on coriander under shade net condition from Karnataka, India

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Abstract

Surveys were conducted of coriander plantations from open and protected cultivations at Karnataka for the prevalence of nematode. Heavy infestation of root-knot nematode was observed on coriander with small to big sized galls or knots on the roots. Soil and root samples were collected for analysis of nematode infestation. Coriander plants also exhibited poor growth showing stunting and chlorosis due to severe infestation. This is the first report of root-knot nematode from Karnataka.

Keywords: Coriander, *Meloidogyne* spp., new record, Karnataka.

Coriander (*Coriandrum sativum* L.), is an erect seasonal herb belonging to the family Apiaceae. The leaves of the plant are variable in shape, broadly lobed at the base of the plant and slender and feathery higher on the flowering stems. All parts of coriander plant are edible, but fresh leaves and dried seeds are most commonly used. Among biotic stresses, bacterial leaf spot, powdery mildew and soil borne diseases inflicted due to *Pythium* spp., *Fusarium* spp., and *Rhizoctonia* are common. Besides these diseases, root-knot nematode is also reported from various parts of the world. The previous studies on the host ranges of *Meloidogyne* species on some of the medicinal plants indicated that the plants such as banana, hemp, parsley, ash, spearmint, and coriander are hosts of several species of root-knot nematodes in Esfahan province of Iran (Nasresfahani *et al.*, 2008) and incidence of root-knot nematode are reported in black pepper and turmeric from Karnataka (Ravindra *et al.*, 2014a, b).

Nowadays, horticultural area under protected cultivation namely shade net, polyhouse and green house are increasing rapidly in Karnataka. The overall average annual yield loss in major horticultural crops due to nematodes goes up to 60% under protected cultivation (Reddy, 2008). Rapid spread of nematode infestation through soil, crop residues and indiscriminate use of agro chemicals in horticultural ecosystems is a major concern for crop protection specialists and policy makers. Nematode incidence under protected cultivation became severe and led to complete crop losses because of congenial conditions of higher temperature, humidity and use of high agronomic inputs like fertilizers and plant growth promoters in protected condition. Symptoms such as chlorosis and stunting appear after sufficient damage is inflicted. The proliferation rates of nematodes in protected cultivation reached 10-30 folds more than in the open field cultivation.

Materials and Methods

In present study, coriander was evaluated under shade net condition during 2014-15 at University of Agricultural and Horticultural Sciences, Shivamogga to determine the presence of root-knot nematodes (*Meloidogyne* spp.). Observations were taken at fifteen and thirty days after sowing of coriander on raised bed under poly house condition.

Roots were separated from soil, carefully washed under tap water to remove adhering soil particles and towel dried before weighing. Nematodes were extracted from a fresh root composite sub-sample of 20 g by placing in a mist-chamber for 5 days (McKenry & Roberts, 1985).

Results and Discussion

Uprooting of these plants, showed numerous, small to very big sized galls/knots on the roots resulting in

poor root development (Fig 1.). During the first observation (15 days after sowing), coriander galling was observed on root system (RKI-1) and juvenile population were 4/5 g of root sample. At second observation (30 days after sowing), RKI was up to 2 and juvenile population was 14/5 g of root sample. It may be due to the adaptive nature of *Meloidogyne* spp., to different climatic conditions which has resulted in severe infection of coriander plants.

Prevalence of root-knot nematode on coriander for the first time reported from Jammu and Kashmir, India (Singh & Gupta, 2011). However, the literature revealed that there are no reports of prevalence of root-knot nematode of coriander from Karnataka either from open cultivation or protected cultivation. Hence, this is the first report of root-knot nematode on coriander from Karnataka.



Fig. 1. (A-F). A. Coriander cultivation under shed net condition; B. Coriander under house condition on raised bed; C-E. Root-knot infected coriander plants; F. Female nematodes RKN.

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