

Nematode problems in millets and their management

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Millets are important warm weather cereal crops. There is not much information available on nematodes of most of the millets crops except sorghum and pearl millet classified as minor millets. These minor millets are cultivated for grain and fodder essentially as dry land crops. In India, millets rank fourth after rice, wheat and maize.

Nematode pest of sorghum :

Sorghum (*Sorghum bicolor*) is an economically important food and useful forage crop of rain fed agriculture. A number of plant parasitic nematodes have been reported to be associated with this crop. The species of *Meloidogyne* (root-knot), *Pratylenchus* (Lesion nematode), *Tylenchorhynchus* (stunt nematode) and *Heterodera sorghi* (sorghum cyst nematode) are considered most important.

Root-knot nematode (*Meloidogyne* spp):

Root-knot is an important nematode disease and is reported to be associated with poor growth of the sorghum crop, *M. incognita* is the most commonly encountered species in India. The field observations indicated that the nematode causes chlorosis and stunting of infected plants. The infestations by *M. incognita* result in production of elongated swellings and root proliferations.

Lesion nematode (*Pratylenchus* spp):

Pratylenchus zae and *P. hexincisus* are the two most important species of lesion nematodes. *P. zae* is considered economically important to sorghum crop in tropical region of the world. The infested plants show stunting and leaf chlorosis in heavily infested fields with lesion nematodes. The infested roots exhibit brown necrotic lesions.

Stunt nematode (*Tylenchorhynchus* spp):

Several species of stunt nematode have been associated with poor and unthrifty growth of sorghum

crops. Though several species of this nematode have been recorded from various regions of the world, *T. vulgaris* occurs most frequently in sorghum fields in India.

Sorghum cyst nematode (*Heterodera sorghi*):

This nematode appears to be potentially important for cereals and millets grown in *Kharif* and *Rabi* seasons and presents a great possibility of its ability to survive and cause yield losses *Heterodera gambiensis* is the only other species of cyst nematode found associated with sorghum crop. The other nematodes found associated with sorghum are *Helicotylenchus dihystra*, *Hoplolaimus indicus*, *Longidorus africans*, *Paratrichodorus* spp. and *Paratrophurus* spp. but their role in limiting production of this crop is not known.

Nematodes of pearl millets :

A number of plant parasitic nematode species have been recorded from the rhizosphere of this crops. In North-western regions of India especially Gujarat, the root-knot nematode, *Meloidogyne incognita* has been considered to cause field problem where it occurs in a combined association with a fungus, *Sclerospora graminicola*. When both the organisms (fungus + nematode) interacted synergistically and increase the disease severity by 83 to 96% and reduced the plant growth Pearl millet is also reported to be most favourable host for multiplication of *Tylenchorhynchus vulgaris*. A report from the southern part of India also suggests that the reniform nematode, *Rotylenchus reniformis* may be a problem on pearl millets

The other nematodes associated with pearl millet crop in India as well as in other countries are *Belonolaimus longicaudatus*, *Criconemella ornate*, *Helicotylenchus* spp., *Hoplolaimus* spp., *Paratrichodorus minor* and *Trichodorus* spp. but have little importance for their role in cultivation of pearl millet.

Nematodes of Ragi (Finger millet):

The occurrence of cyst forming nematode, *Heterodera delvi* from finger or African tall millet (*Eleusine coracana*) was for the first time reported from Karnatak by Jayarajpuri *et al.* (1979). The main symptoms of the cysts are the stunting of plants and

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