

## SYMPTOMS

The general symptoms of damage by root knot nematode includes stunting, chlorosis, incipient wilting and a general unthrifty appearance. The root-knot nematode forms galls on tap as well as lateral roots. However, galls on cotton are not as big and numerous as on other susceptible crops. Infestation results in uneven, pale, stunted and sick crop giving the look of deficiency symptoms. High population density of the nematode at sowing can kill the plants at seedling stage. Mature plants exhibit temporary wilting in afternoons. Root galls produced by root knot nematode are easiest to detect on lateral roots.

## ALTERNATE HOSTS

The root knot nematode is a polyphagous and had a wide host range. It multiplies well on different hosts. More than 500 plants were recorded as hosts for root knot nematode. Some of the weeds in cotton fields serve as alternate host for root knot nematode. It also spreads through water that drains from infested areas and through farm implements.

## INTEGRATED NEMATODE MANAGEMENT

- Deep summer ploughing and fallowing.
- Crop rotation with non host crops like sorghum and maize.
- Application of Farm Yard Manure @ 12.5 t/ ac.
- Soil application of *Pochonia chlamydosporia* @ 5 Kg/ha. Mix 5 kg of formulation with organic fertilisers and incorporated in the soil.

Compiled & Edited by  
J. Gulsar Banu, A.H. Prakash, V.N. Waghmare

For the Further Details Contact:  
Head, ICAR-Central Institute for Cotton Research,  
Regional Station, Maruthamalai Road,  
Coimbatore - 641 003. Tamil Nadu, INDIA.  
Ph : 0422 2430045 Web : [www.cicr.org.in](http://www.cicr.org.in)



# NEMATODE MANAGEMENT IN COTTON



J. Gulsar Banu  
A.H. Prakash  
V.N. Waghmare

ICAR - CENTRAL INSTITUTE FOR COTTON RESEARCH  
Regional Station  
Coimbatore - 641003, Tamil Nadu

## NEMATODE MANAGEMENT IN COTTON

- Plant parasitic nematodes are tiny microscopic worms and occur abundantly in soil.
- When seen under microscope, plant parasitic nematodes are slender, unsegmented usually shorter than 2 mm in length with serpentine mode of locomotion.
- Rarely is any crop free from attack of these tiny microscopic organisms.
- It has been estimated that about 10% of world agricultural production is lost due to nematode damage.

### RENIFORM NEMATODE, *ROTYLENCHULUS RENIFORMIS* (Linford and Oliveira, 1940) MANAGEMENT IN COTTON.

The reniform nematode, *Rotylenchulus reniformis* (Linford and Oliveira, 1940) is one of the most important nematode pests of cotton in India. Among two species of reniform nematode attacking cotton, *R. reniformis* alone is reported from India.

#### DISTRIBUTION

The reniform nematode is widely distributed in all cotton growing zones of India. Reniform nematode multiplication is favored in fine textured soil with a relatively high content of silt or clay.

#### LIFE CYCLE

The reniform nematode is a semi-endo parasite takes 24-25 days for completion of one life cycle from egg to adult. Immature females are the infective stage. Reproduction of reniform nematode is mostly amphimixis but parthenogenetic reproduction also exists.

#### SYMPTOMS

- Reniform nematode infested plants exhibit general decline in growth, dwarfing, chlorosis, premature decay and loss of secondary roots.
- At third leaf stage seedling cease rapid growth and become light green to pale in colour.
- Severely infested plants die while others remain stunted giving uneven crop growth.
- Infested roots are smaller, fewer and shows browning at the point of entry.
- Stunted patches in field having pale greenish leaves are common symptom of reniform nematode infestation in cotton.

#### ALTERNATE HOSTS

The reniform nematode is a polyphagous and multiplies well on different hosts. More than 400 plants were recorded as hosts for reniform nematode. Some of the weeds in cotton fields serve as alternate host for this nematode. It also spreads through water that drains from infested areas and through farm implements.

#### SURVIVAL AND SPREAD

The reniform nematode survives in host free soil for six months. After harvest, nematode enters into anhydrobiotic stage which can survive well in host free soil.

#### REASONS FOR THE DISEASE DEVELOPMENT

All the important varieties and hybrids of cotton are susceptible to reniform nematode. In Tamil Nadu the winter season is favourable for nematode infestation and development. In addition to temperature, intermittent rains and humid condition prevailing during this season are conducive for nematode infestation and spread.

#### INTERACTION WITH OTHER MICROORGANISMS

The reniform nematode in association with *Fusarium* sp. and *Verticillium* sp. increases the severity of wilting and in turn yield loss. It also acts as a predisposing factor on cotton plants which leads to various fungal wilt diseases. It also aggravates the seedling diseases in cotton.

### ROOT KNOT NEMATODE, *MELOIDOGYNE INCOGNITA* (Kofoid and White, 1919)

The root knot nematode, *Meloidogyne incognita* (Kofoid and White, 1919) Chitwood, 1949 is one of the most important nematode pests of cotton in India.

#### DISTRIBUTION

The root knot nematode is widely distributed Haryana, Punjab and parts of Tamil Nadu. Root-knot nematode multiplication in cotton is favored in sandy soils.

#### LIFE CYCLE

The root knot nematode is a sedentary endoparasite, which completes its life cycle in 25 – 30 days. An adult female lays about 200 – 300 eggs in the gelatinous matrix inside the root cortex close to the epidermis. The second stage larvae are the infective stage which feeds on roots. Reproduction of root knot nematode is mostly parthenogenetic.