



## A SURVEY OF NEMATODE INFECTED CUCURBIT SPECIES IN DIFFERENT VILLAGES OF SOLAPUR, DISTRICT. MAHARASHTRA, INDIA

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### ABSTRACT

The present investigation is based on the survey of economically important plant parasitic nematode associated with cucurbitaceous crops in Solapur District of Maharashtra. It was observed that most of the Cucurbit plant spp. were infected with nematodes. Out of the 88 samples of soil collected from roots and soil rhizosphere from different agricultural area in Solapur district showed about 39 crop plants infected with *Meloidogyne* sp of nematode and remaining 49 samples reported as free from Nematodes in the sampling area. Total 11 Tahashils of Solapur Distric were assessed for the occurrence of nematodes and all the Tahashils showed the presence of nematodes as plant parasites. Majority of the studied area was recorded as a new site for Nematodes. The result of this study may provide the first hand information for the Nematode infected cucurbit spices in Solapur district.

**KEYWORDS** : Survey, Solapur, Tahashils, Nematode, Cucurbitaceous. *Meloidogyne*.

### INTRODUCTION

Cucurbitaceous crops occupy an strong position in Indian Agriculture as vegetable crops.. Cucurbitaceous crops require warm season and moist weather for their growth and development. Most of the cucurbits are more susceptible to nematode disease. According to Mehrotra (1983), root-knot nematode (*Meloidogyne* sp.) is the most important and dominant group of plant parasitic nematodes found almost in all vegetable growing areas and enormous losses are caused due to the nematodes. Mehrotra-in his book, plant pathology has mentioned -24 genera of nematodes where majority of them are parasitic. The nematode infected root showed extensive necrosis which



gave rise to development of abnormal dark colored foliage (Cohn.1972). The most important root disease caused by *Meloidogyne* sp. of nematode is root-knot disease. A wide variety of Cucurbitaceous crops are grown in Solapur District of Maharashtra. As many of them showed symptoms of attack by plant parasitic nematodes. A survey was undertaken in the cucurbit growing villages of Solapur. The cucurbit plant species are damaged by the nematodes. The nematode infection to the crops leads to the great economic loss due to low yield and sterility of crop plants.

### Materials and methods -

#### Selection of localities for survey -

A survey was conducted throughout the year from different villages of 11 Tahashils in Solapur District for Cucurbitaceous crops infected with nematodes (Fig 1.) Solapur District has

the geographical location at 17.35° N 17.16° E-18.32° N 17.15° E. The district has 4.839.15 km<sup>2</sup> area under irrigation and 600 km<sup>2</sup> area under horticulture crops. The district has max. 44.10° C Temperature with + 2 and min 4.4° C and has the average rain fall 759.80mm per annum.

### Sampling Methodology –

The checklist of nematode diseases was prepared from the field survey of Solapur District by frequent visits to the crop fields and collecting the infected crop plants for study purposes. (Muwaffaq R.K 2015) Four cucurbit crop species such as bitter gourd, cucumber, Ridge gourd, Bottle gourd from commercial fields were observed for the presence of root knot disease from the study areas. The earlier workers have shown the nematode diversity in agricultural areas relating to the nematode diseases. (Singh S. K. et.al 2012) and *Citrus* orchards (Zalpuri. L et.al. 2013) The infected crop plants were uprooted and the roots were examined for the presence of nematode knots on the roots. The soil sample from the rhizosphere of infected crop was collected in polythin bags were brought to the laboratory. Entire roots were freed from soil washing under tap water to remove extra soil particles and preserved in formalin for further study. The presence of nematode was confirmed by taking the cross sections of infected root. The sections passing through the nematode gall on the root were taken by sharp blade and mounted in glycerin for the observation under the low power of microscope. Similarly, the nematode infection to the particular crop was confirmed by sowing the particular seeds in polythin bag containing the soil along with the soil sample collected from the rhizosphere of particular crop.



Fig 1:- Map of Solapur District (Study area) with 11 Tahashils.

### RESULTS AND DISCUSSION -

The crop plants infected with nematode showed the morphological symptoms in the form of yellowing of leaves severe galling on entire roots, decline quality and yield due to sterility (Singh R. Kumar, U 2013), poor growth, reduce stress resistance. The occurrence of *Meloidogyne* sp on the crop plants has reported in the Table-I. (Khurama U.R., et.al 2008). From the collected data, it was concluded that the

nematodes were reported from the different villages of Tahashils like as Barshi, Pandharpur, Madha, Mohol, Sangola, Mangalweda, Akkalkot, Malshiras, Karmala, North Solapur and South Solapur. The total 88 Cucurbitaceous crops were surveyed for nematode infection of which 39 crops were found infected with nematodes and 49 crops were free from the nematodes. Earlier workers have shown the vegetable crops infected by the nematodes. (Yousef D.M., Jacob J.J.S. 1994). A Nematode survey of vegetable. The seeds sown in bags with the soil infested with rhizosphere soil also showed the seedlings developed with nematode disease. The table no.1 shows the occurrence of nematode disease in every Tashil. The bitter guard (12 crops) shows maximum occurrence of nematode disease, this is decreasingly followed by Ridge gourd(9 crops) Cucumber(8 crops) and Bottle gourd(8 crops).

Occurrence of nematodes in Solapur District has been not reported previously. So the present survey was undertaken for the occurrence of nematode disease. Now this is the first report on their distribution and this will be useful for further study and the control of Nema diseases. The distribution to nematodes in different localities of 11 Tahashils has shown in table-1.

Table-I Distribution to nematodes in different localities of 11 Tahashils of Solapur District.

District	Name of Tahashil with Locality(Villages)		Cucurbitaceous member			
			Bitter gourd	Cucumber	Ridge gourd	Bottle gourd
SOLAPUR	1)	* Barshi				
		Pathri	+	+	+	+
		Kuslamb	+	-	+	-
	2)	* Madha				
		Vadshinge	-	-	-	+
		Kurduwadi	+	-	-	+
	3)	* Mohol				
		Narkhed	+	-	-	-
		Waluj	+	-	-	+
	4)	* Pandharpur				
		Ropale	-	-	+	+
		Gursale	-	-	+	-
	5)	* Sangola				
		Kadlas	+	+	-	-
		Diksal	-	-	-	-
	6)	* Mangalweda				
		Dhavlas	-	-	-	+
		Machnur	-	+	-	+
	7)	* Akkalkot				
		Dahitane	+	+	-	-
		Karjal	+	+	+	-
	8)	* Malshirus				
		Sangam	-	+	+	-
		Malinagar	+	-	+	-
	9)	* Karmala				
		Aavati	+	+	-	-
		Nerle	+	-	-	+
	10)	* North Solapur				
		Nanaj	+	+	-	-
		Wadala	+	-	+	-
	11)	* South Solapur				
		Boramani	-	-	+	-
		Kumbhari	-	+	-	-

1) += Presence of nematode sp. 2) -= Absence of nematode sp. 3) \*= Tahashil.

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