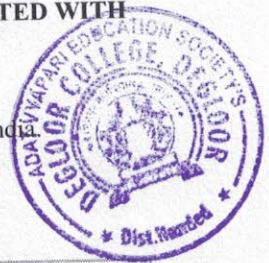


SURVEY AND IDENTIFICATION OF *MELOIDOGYNE INCOGNITA* RACE II ASSOCIATED WITH BRINJAL CROPS IN SOLAPUR REGION, (M.S.), INDIA

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ABSTRACT

Brinjal (*Solanum lycopersicum* L.) has high nutritive value, It cultivated all over the world. Brinjal production is affected by *Meloidogyne incognita* Race II which are responsible large amount of yield losses. A survey was conducted over period of year January 2019- December 2020, to estimate the occurrence of root knot nematode disease on brinjal crops in five selected areas in Solapur region, M.S., India. Survey reports that roots of brinjal crops heavily infested with *Meloidogyne incognita* Race II. Region wise variation in the incidence of disease were found. Highest frequency 90% Mangalwedha area, 80% Tamdardi, 70% Begampur and Tandor and 60% Machnur. Intensity gall index and EMI index 5/5 in Mangalwedha, 4/4 in Begampur, Tamdardi and Tandor and 3/3 in Machnur from Solapur region.

KEY WORDS: Frequency, *Meloidogyne incognita* Race II, Brinjal (*Solanum melongena* L.)

INTRODUCTION

Brinjal or eggplant (*Solanum melongena* L.) is an important solanaceous vegetable crops grown in Maharashtra. The name brinjal is popular in Indian subcontinents and is derived from Arabic and Sanskrit. In India, it is one of the most common, popular and principal vegetable crops grown throughout the country except higher altitudes. Brinjal cultivation in India is estimated to cover about 8.14% vegetable area with a contribution of 9% to total vegetable production (Sikora and Fernandez, 2005). It is a multipurpose crop adapted to different agro-climatic regions and can be cultivated throughout the year. It is a grown commercially as an annual crop. It is a good source of vitamins (A, B and C) carbohydrates, sterols and proteins. It contain a higher content of anthocyanin, phenols, free reducing sugars, glycoalkaloids, dry matter, and amide proteins (Bajaj *et al.*, 1979). Eggplant has Ayurvedic medicinal properties and is good for diabetic patients and excellent remedy for those suffering from liver complaints (Shukla and Naik, 1993).

In Solapur region it has cultivated larger areas of brinjal. Production is affected due to various diseases including fungal, viral, bacterial and nematode diseases (Sasser *et al.*, 1983). Among all the these root knot nematode *Meloidogyne* are the most harmful destructive nematodes in agriculture crops (Javed *et al.*, 2006). Plant parasitic root-knot nematodes (*Meloidogyne* spp.) occurred all over the worldwide and are causes annual yield losses to large part of area attributed to nematodes (Dropkin, 1980., Trudgill and Blok, 2001). Root knot nematodes are more challenging to control because they live in the soil and cannot be easily seen by farmers (Mai, 1977., Saxena and Singh, 1997). They are only noticed when the population is widespread and yield is very low.

A survey is necessary to assess plant parasitic nematodes associated with brinjal crops. Many environmental factors such as soil type, soil temperature, soil moisture, weed hosts and intercropping are influence nematode distribution. The survey on root-knot nematode will provide information on incidence, severity and distribution.

MATERIALS AND METHODS

Survey

For the experimental a field survey was conducted. Extensive field visit to five selected area in and around Solapur region. 500 brinjal plants soils and roots are samples were collected randomly access the damage caused by *Meloidogyne incognita* Race II. During the sample collection root structure. Samples were kept in polythene bags sealed ton avoid dehydration and properly labelled were brought to the laboratory to counting the numbers of galls.

Collection of nematode from infected soil sample

Soil sample from infected fields of brinjal of 1 kg soil collected out of 200 cc soils was washed thoroughly and processed using Cobb's sieving and Decanting method (Cobbs, 1918). Followed by modified Baermann's funnel methods and method described by Dama (1999, 2002 and 2020). It was used to study incidence, prevalence of *M. incognita* race II.

Identification of the species

Identification of the *Meloidogyne* species by perineal pattern method (Eisenback *et al.*, 1981, Dama, 2020).

Gall index and Egg index

Numbers of gall index (GI) and egg masses were determined on following scale: 0=0, 1=1-2, 2=3-10, 3=11-30, 4= 31-100 and 5=greater than 100 galls or egg masses per root system (Taylor and Sasser, 1978., Eisenback, 2010).

RESULTS AND DISCUSSIONS

The results of frequency distributions of *Meloidogyne incognita* Race II root-knot nematodes in different localities around Solapur regions were shown in table 1.

Table1: Frequency distributions of *Meloidogyne incognita* Race II root-knot nematodes in different localities around Solapur regions.

Localities	Total No. Of filed surveyed	No. of filed with infection	Frequency (%)	GI/EMI (Average)
Mangalwedha	10	9	90	5/5
Begampur	10	7	70	4/4
Tamdardi	10	8	80	4/4
Tandor	10	7	70	4/4
Machnur	10	6	60	3/3

GI = Gall index

EMI = Egg mass index on Taylor and Sesser's scale

Incidence of root- knot on tomato crops

The survey conducted to study the incidence of *Meloidogyne incognita* Race II disease on tomato in 5 localities in and around Solapur region. Table no.1 showed that 5 areas were infected with *M. incognita* Race II. Overall incidence was 100%.

Region wise variation in the incidence of disease were found. Highest frequency 90% Wadala area, 70% Nannaj, 60% Ranmasale and Mandrup and 50% Dudhani. Intensity gall index and EMI index 5/5 in Wadala,4/4 in Mandrup, Dudhani, Ranmaslae 3/3 in Nannaj.


These results were correlated with different parts of the world (Sasser, 1979). Similar type of experimental studies were conducted by Khan *et al.* (1984). Survey brinjal and tomato vegetable crops infected in Aligarh area. Taylor *et al.* (1982) also reported relationship of climate and soil characteristics of geographical distribution of *Meloidogne* species in agricultural soil (Taylor *et al.*, 1982).

CONCLUSION

The present study was revealed the prevalence of *Meloidogyne incognita* Race II most of the area surveyed and their recovery from brinjal field suggest that nematode might be one region to another region though soil, infected plants, irrigation water.

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