

PROPORTIONAL STUDY OF MICROSCOPIC NEMATODES IN BRINJAL AND TOMATO FARMING IN SANGANER TEHSIL, JAIPUR (RAJASTHAN)

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ABSTRACT:

*Plant parasitic nematodes continue to be a major mission to crop manufacturing that has hitherto acquired minimum studies interest in Sanganer Jaipur. The area under horticulture plants has extended to about 25% million hectares in India. The production of veggies in India became about 177 million tons. They continue living in soil in zones with hot atmospheres or brief winters. Their hatchlings pervade plant roots, causing advancement of root-tie bothers that channel the plant's supplements. During present day years, the root-hitch nematodes have come to be a complex bug of budgetary harvest blossoms. During gift investigation, an area survey of vegetable vegetation has become made in particular localities of Sanganer to determine the proportion of infestation in special vegetable plants. It will become determined that tomato, and Brinjal, have been highly prone to the assault of root-knot nematodes. Two essential vegetable plants tomato and brinjal are extra ordinarily vulnerable to the foundation-knot nematode, *Meloidogyne incognita*. These flora are frequently planted crop after crop without any soil remedy, crop rotation or biofertilizer etc. to govern nematode population. This has result in high increase of nematodes within the soil and consequent decrease in the crop size, fruiting and nice of fruits. Hence these researches were undertaken to see if the nematode population may be reduced by using treated distillery effluent.*

Key words: *M. Incognita, Brinjal, Tomato, Sanganer, Root knot nematode.*

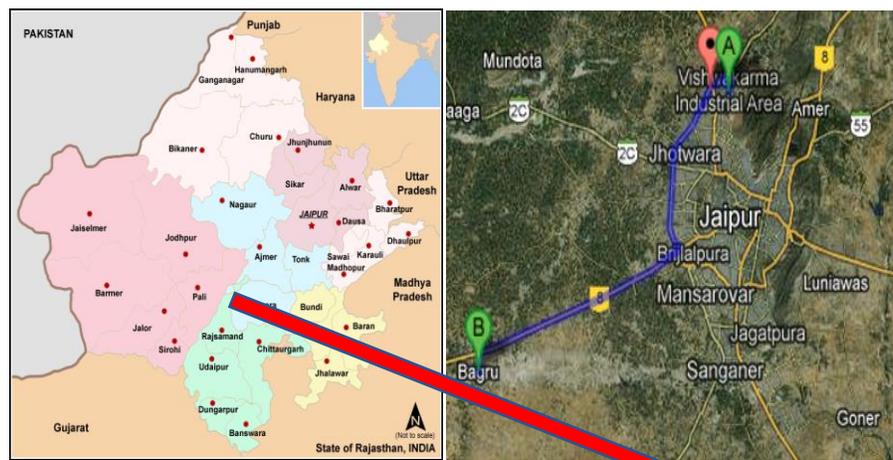
INTRODUCTION:

Root-tie nematodes (*Meloidogyne* species) are little and sponging nematodes which may be create in the hidden establishments of tainted plants. Beneath *Meloidogyne* people, there are around 98 species and regular species qualified from side to side ranchers be *M. Incognita*, *M. Javanica*, *M. Hapla*, and *M. Arenaria* (Jones et al., 2013). They are able to survive together in burning pride or rapid winters in excess of the pasture. Inside a detail by technique for Gill and McSorley (2011), root-tie nematode be single inside all of the best hurting associations of plant-parasitic nematodes and people's nematodes are vermin of basically all Fundamental harvests. Karajeh et al., (2008), supposed to with reverence to 5% of the pasture harvest creating is devastated through *Meloidogyne* variety consistently. According to Sasser (1980), additional than 2,000 deposit type have been specific as hosts to root-tie nematodes, and the majority extraordinary created flora are assaulted with the valuable asset of at any rate one root-tie nematode animal varieties. In 2003, the host run as of now envelops more noteworthy than 3000

deposit type (Abad et al., 2003). This show an ever-expanding digit of hosts which have been energized through root-tie nematode. The host assortment of root-hitch nematodes is grand to the point that it is difficult to find run of the mill gathers that are not has (Olsen, 2000). The hosts may be bedding flora, hedges, and foliage. Tomato (*Solanum Lycopersicum L.*) is a basic harvest inside the world because of the various utilizes and radical dietary charge of the organic product. In Fe, different sorts of root-hitch nematode (RKN) contain be supposed as exceptional harvests comprising of tomato; however the greatest basic single be *M. javanica*. Tomato, *Lycopersicum esculentum L.* being a rich wellspring of nutrients and minerals is a basic vegetable yield. Andhra Pradesh stands 2d to Orissa underway of tomato in India. Andhra Pradesh is the most significant cultivator of tomato and the chief tomato developing belts are Ranariddh, Mahbubnagar, Prakasam, Vishakhapatnam and Chittoor (SNX, 2006). The tomato is developed throughout a year and is inclined to various biotic and abiotic stresses. Brinjal (*Solanum melongena L.*) is a fundamental and aboriginal assemble in India. Root-hitch nematode hurt is more noteworthy unsafe to seedlings than to more seasoned vegetation. The influenced blossoms show the improvement of nerves on the roots. The vegetation becomes hindered and the leaves show chlorotic manifestations. Fruiting is antagonistically influenced. Among the nematodes be equipped for repeating on more than 2,000 types of vegetation and are chargeable for around Sora of normal nematode harm. Different bacteria attack *Meloidogyne* spp. inside loam and reduction their kin of which the bedbugs, tiny creatures, and nematodes be the mainly remarkable solitary (Stirling 1991). An association of bacteria to have been measured to redesign deposit improvement and scheming RKNs be the deposit expansion advertising rhizogerm (PGPR) (Weller et al. 2002 and Lucy et al. 2004).

DESCRIPTION OF THE AREAS OF STUDY:

An orderly overview was finished to find solid gauge of tomato plants pervaded with root tie nematode in unreasonable vegetable developing region of 2 classes in Sanganer tehsils Jaipur (Rajasthan).



Map displaying the Sampling Location of Sanganer Tehsil of Jaipur–District, Rajasthan (India)

High Agriculture Area-Watika, Muhana, Goner, Dahmi Kalan, Shri Ram Ki Nangal, Beelwa Kalan, Neota, Jai singhpura, Mahapura, Kalwara.

Low Agriculture Area-Girdharipura, Jai chandpura, Chak Sherwali, Chak Basri, Bhao singhpura, Hariharpura, Chaksaligrampura, Seesyawas, Barh Awaniya, Chak Watika.

Sanganer is a town arranged in Jaipur region, Rajasthan, 16 km south of state capital Jaipur now a suburb of Jaipur. Sanganer is a reasonably rural and small detail is urban. The areas decided on for the have a have a look at is agricultural areas of this region. Rajasthan is crafted from arid and semi-arid conditions. Jaipur has loads of agricultural lands and the farmers use to cultivate each Rabi and Kharif. It is famous as the "Pink City". Jaipur is placed on 26°55'N latitude and 75°49'E longitude. A huge piece of the economy of Rajasthan is agrarian. The agricultural area of the country money owed for 22. Five percent. As a main piece of the state is dry and fruitless, agribusiness will turn out to be troublesome. It falls inside the accompanying topographical directions: Latitude - 26° 49' 0" North Longitude is 75° 47' 0" East. Rajasthan economic system is particularly agricultural and rural in nature. Rajasthan, the biggest country of India, has a big part of its populace dependent on agriculture. There are fluctuations and agricultural production and productivity stages in Rajasthan because of herbal calamities like famines, droughts and scarcity. A massive range of districts in kingdom get affected because of those famines with various intensity.

Temperatures continue to be relatively excessive throughout summer season from April to early July having average everyday temperatures of around 27.6° C (82° F). The wintry climate months of November to February are moderate and pleasant, with not unusual temperatures beginning from 18° C (64° F) and with excessive humidity, but with occasional bloodless waves.

MATERIALS AND METHOD:

Source of Plant Sample

Tomato, (*Lycopersicon esculentum L.*) and brinjal, (*Solanum melongena L.*) had been decided on as host plant for the triumphing study. This flower being highly pathogenic to root-knot nematode *Meloidogyne incognita*. A commonplace area method was accompanied for the sterilization of soil blend to be used in all the experiments, protection of inventory tradition of nematodes and for the extraction of nematodes from, oil and roots. The nematode infested flora has been isolated thru external symptoms in form of yellowing, dwarfing and wilting of foliage as advised thru Walker (4) and Franklin (15). The selected flowers have been uprooted carefully with the resource of the "spade" and "Khurpi". The infested roots were washed thoroughly, reduce and stored in a Jar containing five percentage formaldehyde answers and labeled in the course of survey. The root samples have been added to the laboratory for identification and similarly studies. For differentiating special species of the premise-knot nematodes, the infested roots have been consistent in five percentage formaldehyde answers for twenty-four hrs. A piece of root containing mature girl have become then transferred in the identical solution in an eye glass with the beneficial resource of dissecting microscope.

Individual female was removed cautiously from the premise tissue with a first-rate knife. The posterior portion of the female changed into then reduces off by the usage of a sharp blade. The

posterior portion of the woman frame containing perineal area modified into located on a dry slide. A circular cover slip changed into then located lightly at the specimen and a small drop of lactophenol, mounting media modified into applied. The mounts had been inspected under the compound magnifying instrument and the types of root hitch nematodes have been perceived with the assistance of keys proposed with the guide of Chitwood (3), Sasser (11). Percentage of infestation in fantastic vegetable plant life became also estimated.

Table 1: The types of *M. incognita* and *M. Javanica* assaulting flora in Sanganer tehsils Jaipur (Rajasthan).

High Agriculture Areas

S.No.	Area of Survey	Host Plant	Species of <i>Meloidogyne</i> involved	Average infestation in percentage
1.	Vatika	Brinjal	<i>M.incognita</i>	69.5
		Tomato	<i>M. Javanica</i>	57.5
2.	Muhana	Brinjal	<i>M.incognita</i>	75.2
		Tomato	<i>M. Javanica</i>	63.4
3.	Goner	Brinjal	<i>M.incognita</i>	80.2
		Tomato	<i>M. Javanica</i>	72.1
4.	Dahmi Kalan	Brinjal	<i>M.incognita</i>	70.0
		Tomato	<i>M. Javanica</i>	62.8
5.	Shriram Ki Nangal	Brinjal	<i>M.incognita</i>	65.3
		Tomato	<i>M. Javanica</i>	55.4
6.	Beelwa Kalan	Brinjal	<i>M.incognita</i>	78.6
		Tomato	<i>M. Javanica</i>	61.5
7.	Neota	Brinjal	<i>M.incognita</i>	73.5
		Tomato	<i>M. Javanica</i>	59.2
8.	Jai Singhpura	Brinjal	<i>M.incognita</i>	60.1
		Tomato	<i>M. Javanica</i>	53.4
9.	Mahapura	Brinjal	<i>M.incognita</i>	67.4
		Tomato	<i>M. Javanica</i>	49.2
10.	Kalwara	Brinjal	<i>M.incognita</i>	76.2
		Tomato	<i>M. Javanica</i>	66.3

High Agriculture Areas Graph Represent of *M. Incognita* and *M. Javanica* assaulting vegetable vegetation in Sanganer tehsils Jaipur (Rajasthan).

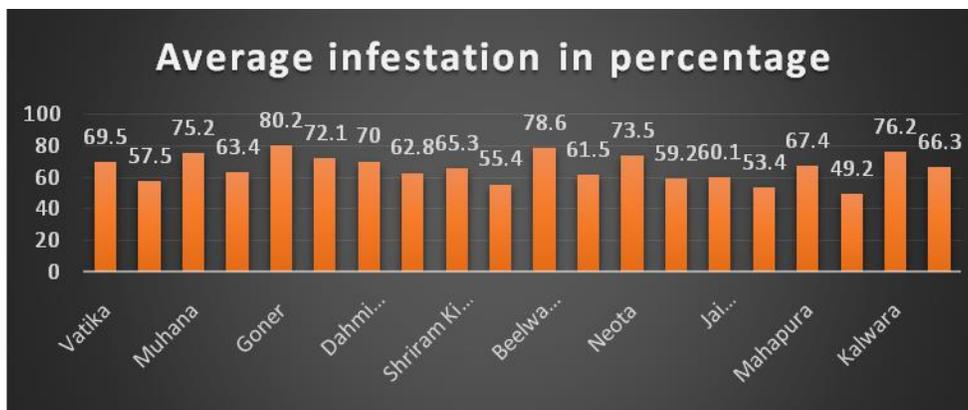
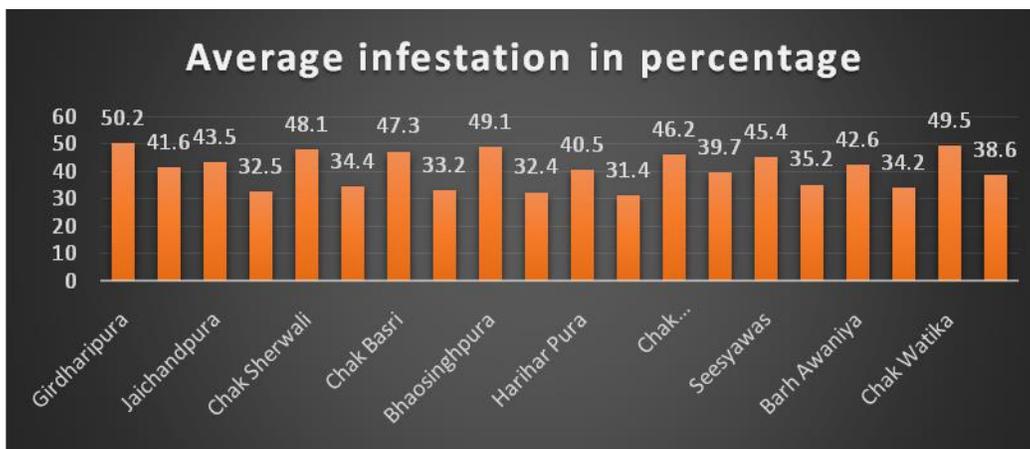


Table 2: The types of *M. Incognita* and *M. Javanica* assaulting flora in Sanganer tehsils Jaipur (Rajasthan).

Low Agriculture Areas

S. No.	Area of Survey	Host Plant	Species of <i>Meloidogyne</i> involved	Average infestation in percentage
1.	Girdharipura	Brinjal	<i>M.incognita</i>	50.2
		Tomato	<i>M. Javanica</i>	41.6
2.	Jai Chandpura	Brinjal	<i>M.incognita</i>	43.5
		Tomato	<i>M. Javanica</i>	32.5
3.	ChakSherwali	Brinjal	<i>M.incognita</i>	48.1
		Tomato	<i>M. Javanica</i>	34.4
4.	ChakBasri	Brinjal	<i>M.incognita</i>	47.3
		Tomato	<i>M. Javanica</i>	33.2
5.	Bhao Singhpura	Brinjal	<i>M.incognita</i>	49.1
		Tomato	<i>M. Javanica</i>	32.4
6.	Harihar Pura	Brinjal	<i>M.incognita</i>	40.5
		Tomato	<i>M. Javanica</i>	31.4
7.	Chaksaligrampura	Brinjal	<i>M.incognita</i>	46.2
		Tomato	<i>M. Javanica</i>	39.7
8.	Seesyawas	Brinjal	<i>M.incognita</i>	45.4
		Tomato	<i>M. Javanica</i>	35.2
9.	Barh Awaniya	Brinjal	<i>M.incognita</i>	42.6
		Tomato	<i>M. Javanica</i>	34.2
10.	Chak Watika	Brinjal	<i>M.incognita</i>	49.5
		Tomato	<i>M. Javanica</i>	38.6

Low Agriculture Areas Graph Represent of *M. Incognita* and *M. Javanica* assaulting vegetable vegetation in Sanganer tehsils Jaipur (Rajasthan).



RESULTS AND DISCUSSION

For filed survey, Sanganer tehsils Jaipur turn out to be divide into two regions – High and Low agriculture Area. A survey become made in certainly one of type vegetables of numerous villages of diverse regions as defined below substances and percentage of infestation thru root knot nematodes turned into predicted in certainly one of type vegetables crops. The seemingly infested flowers, primarily based at the external symptoms were collected. The roots of the vegetation had been washed very well in water and preserved in 5% formaldehyde with proper labeling.

The amount of wholesome and reputedly infested flowers turned into recorded. The samples of the infested roots were brought to the laboratory for exam. The mounts of the perineal sample end up made thru reducing the posterior portion of the adult female as describe in material and techniques. By test of the mount's underneath compound magnifying lens, one in everything about sort types of root-hitch nematodes had been perceived with the help of key supported by means of Chitwood and Sasser. The effects of the survey are summarized in the Table-1. From the statistics of the table, this is obtrusive that three species of *Meloidogyne* have been located to be worried in infestation- *M. Javanica* and *M. Incognita*. Out of these, *M. Javanica* will become observed to be most common determined by manner of *M. Incognita*. The vegetable vegetation which had been seen as helpless against the assault of root-hitch nematodes have been: tomato and brinjal. Out of these, tomato and brinjal were found phenomenally inclined in elite districts of Sanganer. As steady with nematological realities from Sanganer, (Lall and Das, Sen and Siddiqui, Prasad and Ansari) suggested type's nematodes (*M. Incognita*

and *M. Javanica*) from various territories. (Jensen) announced that everybody vegetable had been hosts of root-tie nematodes. Kumar et al. announced that *Meloidogyne* spp. prompted root-nerve infections and ordinarily known as root nerve nematodes.

They stated that amongst vegetable vegetation sampled, brinjal gave the highest (78.6 %) frequency of infestation accompanied by way of brinjal (72.1%).

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