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Survey and Identification of Root-Knot Nematodes Meloidogyne Incognita Race Ii Associated with Okra Crops in Akkalkot Region, (M.S.), India

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Abstract:
Okra high nutritive value so it cultivated all over the world. Okra contains source of antioxidants, high fiber, Vitamin K, etc. Okra production is affected by plant parasitic root knot nematode Meloidogyne incognita Race II which are responsible large amount of yield losses. A survey was conducted over period of year 2021-2022 to estimate the occurrence of root knot nematode disease on okra crops in five selected areas in around Akkalkot region. Survey reports that roots of Okra crops heavily infested with Meloidogyne incognita Race II. Region wise variation in the incidence of disease were found. Highest frequency 90% Maindargi area, 80%Waghadari, 70% Hannur, 60% Salgar. Intensity gall index and EMI index 5/5 Maindargi, 4/4 in Salgar, Waghadari, Hannur, 3/3 in Badola.

Keywords: Frequency, Meloidogyne incognita Race II, Okra (Abelmoschus esculentus L.)

INTRODUCTION:

Okra (Abelmoschus esculentus L.) is value a vegetable crop grown in countries [1]. It is extremely polyphagous and attacks both monocotyledons and dicotyledons and thereby affecting quality and quantity of the crop production. Infected plants shows typical symptoms including root galling, stunning and nutrient deficiency [2]. Okra high nutritive value so it cultivated all over the world. According to the American Heart Association (AHA) eating foods that are high fiber can reduce harmful cholesterol levels in blood. Also these compounds help in lower the risk of cancer and act as antimicrobial and anti-inflammatory properties. It was rich source of vitamins A, B AND C and minerals potassium, iron, and phosphorus. In Akkalkot region it has cultivated larger areas. Production is affected due to various diseases including fungal, viral, bacterial and nematode diseases [3]. Root knot nemtodes are more challenging to control because they live in the soil and cannot be easily seen by farmers. They are only noticed when the population is widespread and yield is very low. Root knot nematodes are one of the major pathogens of okra worldwise and limit fruit production. They reduce the quality and quantity of market value. Okra is most favourable host for root-knot nemtodes infection. Root knot nemtodes interacts with fusarium so more damage the crops [4].

Materials and Methods:

For the experimental a field survey was conducted. Extensive field visit to five selected area in and around Akkalkot region. 500 Okra 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 Okra, of 1 kg soil collected out of 200 cc soils was washed thoroughly and processed using Cobb's sieving and Decanting method [5]. Followed by modified Baermann's funnel methods. It used to study incidence, prevalence of M. incognita race II.

Identification of the species

Identification of root-knot nematode species Meloidogyne incognita race II Species was identified on the basis of perennial pattern method [6]. The nematode M. incognita race II was identified by Dr. Pallavi Pallande madam and Vinod Pawar sir Plant Nematologist Nematology section Department of Agricultural Entomology, Mahatma Phule Krishi Vidypeeth Rahuri, Dist. Ahmednagar, (M.S.) India.

Gall index and Egg index Numbers of gall index (GI) and egg masses were determined on following sacle:0=0,1=1-2, 2=3-10, 3=11-30, 4=31-100and 5=greater than 100galls or egg masses per root system [7-8].

Results and Discussions

GI =Gall index

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

Table1: Frequency distribution of Meloidogyne incognita Race II nematodes in different localities in and around Akkalkot. '

Localities	Total No. Of field surveyed	No. of field with infection	Frequency (%)	GI/EMI(Average)
Maindargi	10	9	90	5/5
Salgar	10	6	60	4/4
Waghadari	10	8	80	4/4
Hannur	10	7	70	4/4
Badola	10	6	60	3/3

Incidence of root-knot on Okra crops

The survey conducted to study the incidence of Meloidogyne incognita Race II disease on Okra in 5 localities in and around Akkalkot region. Table no. 1 showed that 5 areas were 100%. Region wise variation in the incidence of disease were found. Highest frequency 90% Maindargi area, 80%Waghadari, 70% Hannur, 60% Salgar. Intensity gall index and EMI index 5/5 Maindargi, 4/4 in Salgar, Waghadari, Hannur, 3/3 in Badola. These results were correlated with different parts of the world [10]. Similar type of experimental studies were conducted Okra vegetable crops infected in Solapur region.

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