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Research Article

CORRELATION OF SOME COMMON PLANT EXTRACT WITH DORYLOIMIDES, TYLENCHIDS AND MONOCHIDS

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ABSTRACT

Present work conducted to evaluate the correlation of different common plant extract at different concentration with the nematode population. However, these plants extract suppress the population density of nematodes. The highest mortality shows by neem leaf extract whereas sesame seed extract gives the lowest mortality rate. The research was done on agricultural soil from Ajanta (Aurangabad, Maharashtra) in laboratory conditions by taking soil samples as controlled and experimental by arranging the set for 48 hours. The common plants selected for this experiment as they are widely available. The Neem leaves (*Azadirachta indica*), mint leaves (*Mentha arvensis*), coriander leaves (*Condirum sativum*) and ginger (*Allum sativum*) were selected at the concentration of 20%, 40%, and 50%.

Keywords: Correlation, *Allum sativum, Condirum sativum, Mentha arvensis,* Plant extracts.

INTRODUCTION

The plant parasitic nematodes are slender, elongate, spindle shaped or fusion tapering towards both ends and circular in cross section invertebrate that posse's digestive system, nervous system, excretory system, reproductive system and a set of longitudinal muscles but lack respiratory system and circulatory system as well appendages Plant effected by nematode appear sick with fungal look due to nutrient deficiency. Lesion nematodes infested trees may appear stunned with very few feeder roots the problem caused by nematodes are, no doubt of varied kind and must have existed in our cultivated crops for a long time but very limited studies have been conducted so far and precise information is yet available. Basic studies especially identification of nematodes is of vital importance. To develop and suggest appropriate control measures (Nazneen, 2017). The search for new classes for nematicides that are effective and safe, as well as easy to apply, has been a long one. After more than 20 years without any major developments - in which time food production standards rose and many of the older products were withdrawn - the nematicidal market was in urgent need of innovation. Management of plant parasitic nematodes hinges on detection and population density estimation. Soil analysis for presence and quantity of plant parasitic nematodes from lab with a trained nematologist is the first step prior to selecting a field for vegetable production. Seedling diseases, root diseases, and vascular wilts caused by soil borne fungi and nematodes can be destructive problems in the field and greenhouse. Soil-applied fumigator nematicidal may help prevent serious losses to soil borne disease when used in conjunction with long-term management practices. Soil fumigants are chemicals that, when injected into the soil, emit toxic fumes that penetrate air spaces in soil insufficient concentration to kill microorganisms, hence there is important need of bio nematicidal to control this lacunae (Adomako & Kwoseh, 2013).

MATERIAL AND METHODS

Isolation of Nematode

The samples were processed by Cobb, (1918) sieving and decantation technique. About 500 gm soils was placed in a bucket and thoroughly mixed with a small amount of water. The debris and stones were removed and soil lumps, if present, were broken by hand. The bucket was then filled with water to about 3/4th of its volume and then the

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suspension was stirred to make it homogeneous. The bucket was left undisturbed for about 1 / 2 a minute to allow the heavy soil particles to settle at the bottom. The muddy suspension was then poured into another bucket through a coarse sieve (2 mm pore size) which retained debris, roots and leaves. The suspension in the second bucket was then poured through a 300 mesh sieve (pore size 53µm. The nematodes and fine soil particles were retained on this sieve. The process was repeated thrice for better recovery of nematodes. Following Cobb's sieving, following modified Baermann funnel technique and total population was calculated. Washings from 300 mesh sieve were collected in a beaker and transferred to two layers of tissue paper mounted on molded aluminum wire gauze with their edges rolled down. This was kept on funnels having rubber tube with screw for stoping water flow. After 48 hrs the water were collected in beaker left undisturbed for one hour (Shaikh *et al*., 1990).

Killing and fixing

The supernatant was decanted and equal volumes of warm F.A.A (Formaldehyde 18 ml + Glacial Acetic Acid 2 ml + Distilled water 80 ml) Fixative were added in the solution this was kept for 36 hr.

Counting of Nematode

1 ml fixative solution are kept in Neubars counting chamber for counting nematode ,approximately 5 reading were taken. This sample consider as control where as another set of experiment 500 gm soil kept in pot and the plant extract are apply for 48 hrs and continues the process this set are known as experimental. Plants leaves were picked from their branches and spread on polythene in the laboratory, plant extract made by grinding and this is diluted with distilled water and the concentration made at 20 %, 40%, 50%.

RESULT AND DISCUSSION

For each plant extract three sets were arranged according to their concentration along with the controlled ones. The highest population density observed in the sample soil is of *longidourous species* where as lowest population density observed in *Myllenchullus and scutelonemma* (Table 1). Neem extract shows (Figure 1) the highest effect in population density in Nematodes, the lowest effect shows by ginger leaves. Present work proceed in favor of (Yasmin *et al*., 2003) which is done on Tommato field crop, but in present work Authors observed only population density in selected soil. Although the population density effected by both (Table 2).

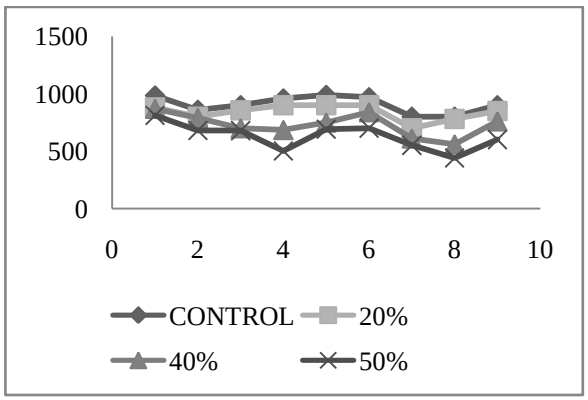
Table1. Showing Description of plant used in Experiment.

Sr. No	Scientific Name of plant	Common Name	Previous work Done by Authors
1	*Azardirachta indica*	Neem	(Yasmin *et al*., 2003)
2	*Mentha*	Mint	(Cobb, 1918)
3	*Murraya Koenigi*	Curry leaves	----------
4	*Zingiber officinata*	Ginger	(Amer *et al*., 2003)

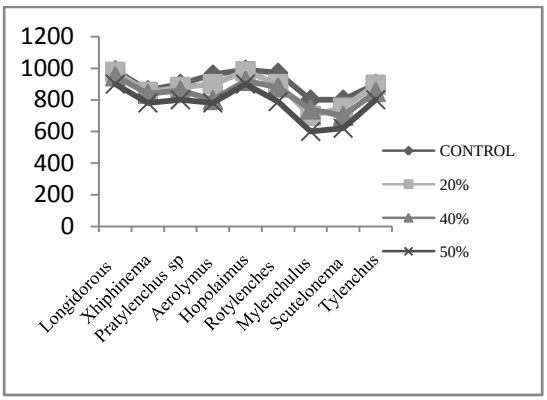
Table 2. Showing population density of control and experimental.

S. No.	Soil Nematode	Controlled [Population Density (500gm soil)]	Experiment [Population Density (500gm soil)]											
			Azardirachta indica Neem leaves extract (concentration)			*Mentha* leaves extract concentration			*Murraya Koenigi* leaves extract concentration			*Zingiber officinata* leaves extract concentration		
			20%	40%	50%	20%	40 %	50 %	20 %	40 %	50%	20 %	40 %	50 %
1	*Longidorous sp*	985	880	870	810	975	950	900	900	895	885	900	860	880
2	*Xhiphinema sp*	860	800	790	680	850	840	780	820	800	790	800	790	750
3	*Pratylenchus sp*	900	855	700	678	880	860	800	860	800	790	850	860	880
4	*Aerolymus sp*	959	900	685	500	900	800	780	900	805	795	900	890	850
5	*Hopolaimus sp*	990	900	750	690	980	920	900	900	850	800	890	800	750
6	*Rotylenches sp*	970	900	840	700	900	880	800	900	890	880	900	940	850
7	*Mylenchulus sp*	800	700	610	550	700	740	600	795	700	620	780	700	670

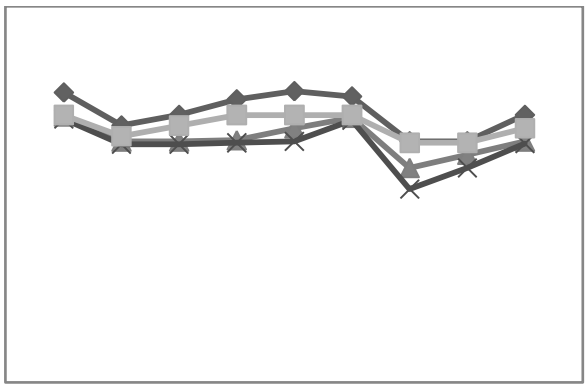
8	*Scutelonema p*	800	780	560	440	750	700	620	795	750	700	780	720	700
9	*Tylenchus sp*	900	850	760	600	895	850	800	850	800	792	899	890	850



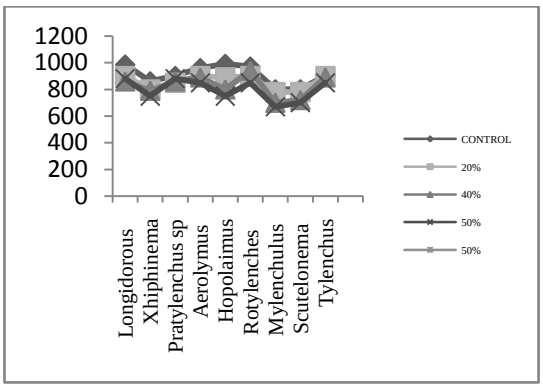
Azardirachta indica Neem leaves extract concentration.



Mentha leaves extract different concentration.



Murraya Koenig leaves extract different concentration.



Zingiber officinata leaves extract different concentration.

Figure 1. Showing population density of control and experimental.

CONCLUSION

Different concentration shows fluctuation on population density. Although this is the preliminary work done but this experiment is successful attempt to control the nematode population in soil. This work attempt to evaluate the effect of extract of four plant species namely against soil nematode population .Both the four plant give significantly worked on nematode by comparing control and experimental. It is evident that neem gave highest effect on nematode population. Although the increase in percentage will increase the result at field area.

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