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INFLUENCE OF THE CHEMICAL AND BIOTIC ENVIRONMENT OF DIFFERENT SOIL TYPES OF KERALA ON ITS NEMATODE FAUNA

Plant parasitic nematodes constitutes an important limiting factor in agricultural production. Kerala soils also abound in nematode fauna as seen from earlier reports (Nadakal, 1963, Sathyarajan *et al* 1966 Nair *et al* 1966, Mammen, 1973). The effect of chemical and biotic properties of the soils of Kerala on its nematode population has been investigated and the results are reported here.

Soil samples were collected from cultivated lands in the different soil tracts of Kerala. Each sample consisted of 1000 cc of soil taken from a depth of 4 to 6 inches. The soil samples were processed by the method of Christee and Perry (1951) and the nematodes were preserved in 5% formalin and counted. The fungus and bacterial counts in samples were made using soil dilution and plating technique. The pH of each sample was measured *potentiometrically* in a 1:2 water suspension directly using a glass electrode. This suspension was kept for one hour and the conductivity of the supernatant liquid was measured by a conductivity bridge.

The data are presented in Table 1. It is seen that there is a positive correlation between the total population of the nematodes in the soil and the pH of the soil (Correlation coefficient 0.414). But the population of the parasitic nematode is not significantly affected by the changes in the pH of the soil (Peters 1926; Godfrey and Hagen 1933, Alberg, 1951, Lownsbery, 1961). There exist no correlation between the soil nematode population on the one hand and organic matter content total soluble salts fungus and bacterial population of the soil on the other.

സംഗ്രഹം

കേരളത്തിലെ വിവിധ വിളകളോടു ബന്ധമുള്ള വിവിധതരത്തിലുള്ള മണ്ണുസാമ്പിളികൾ ശേഖരിച്ച് അതിലെ നെമറ്റോഡുകളുടെ എണ്ണവും, അതിലെ രാസികവും, ജൈവികവുമായ ചുറ്റുപാടുകളെയുംപറ്റി പഠനം നടത്തുകയുണ്ടായി. ആകെയുള്ള നെമറ്റോഡുകളുടെ എണ്ണം മണ്ണിലെ അമ്ലവീര്യവുമായി ബന്ധപ്പെട്ടിരിക്കുന്നതായി കാണുകയുണ്ടായി. പഠനം നടത്തിയ മണ്ണിന്റെ pH 4.5 മുതൽ 7-4 വരെയായിരുന്നു. എന്നാൽ പരജീവികളായ നെമറ്റോഡുകളുടെ എണ്ണവും pH-ം തമ്മിൽ യാതൊരു ബന്ധവുമുണ്ടില്ല. *ffigp* W E J ജൈവപദാത്മത്തിന്റെ അളവും, മണ്ണിൽ ലയിച്ചുചേർന്നിരിക്കുന്ന ലവണത്തിന്റെ തോത്, ഫംക്സ്, ബാക്ടീരിയ തുടങ്ങിയവയുടെ എണ്ണം, എന്നിവയും നെമറ്റോഡുകളുടെ എണ്ണവും തമ്മിൽ ബന്ധമുള്ളതായി കണ്ടില്ല.

Table 1
Population of soil nematodes in relation to various soil factors

Crop	Number of parasites	Non-parasites	Total	pH	Organic matter %	T. S. S.	Bacteria in million/gram of dry soil	Fungus in million/gram of dry soil
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SANDY SOIL								
Vegetables	760	1166	1926	5.6	0.68	0.0	6.0	2.3
Coconut	80	113	193	5.5	2.18	0.0	5.0	8.3
Coconut	20	120	140	6.9	0.54	0.0	27.0	3.3
Vegetables	316	889	1205	7.2	0.87	0.0	16.0	5.3
Coconut	373	393	766	6.7	1.28	0.1	5.5	4.5
SANDY LOAM								
Banana	653	300	953	5.9	2.61	0.0	5.0	1.3
Banana	93	406	499	5.6	2.78	0.3	10.0	3.0
Mango	480	193	673	6.1	3.01	0.0	12.0	1.0
Coconut	180	646	826	7.4	0.90	0.3	24.0	14.3
Vegetable	73	940	1013	7.2	2.06	0.9	25.0	9.3
Vegetable	2787	4153	6940	7.4	0.90	0.0	18.0	6.6
Coconut	120	493	613	7.0	0.28	0.0	10.5	4.3
Paddy	67	220	287	5.5	0.38	0.4	10.5	5.5
Paddy	0	253	253	5.4	1.28	0.4	6.5	2.5
Tea	240	507	747	4.7	4.55	0.1	12.0	1.5
RED SOIL								
Papaya	346	313	659	5.6	1.66	0.1	5.0	4.7
Banana	180	313	493	5.2	0.69	0.0	7.0	7.5
Coleus	140	106	246	6.3	0.93	0.0	5.0	3.3
Tomato	213	180	393	5.5	1.44	0.0	5.0	4.3
Vegetable	2353	1153	3506	5.1	0.76	0.3	11.0	3.5
Vegetable	246	60	306	6.2	0.26	0.0	4.0	2.0
LATERITE SOIL								
Tapioca	2280	1853	4133	6.9	4.18	0.1	18.0	6.3
Rubber	767	393	1160	6.1	2.68	0.0	12.5	2.3
Arecanut	253	186	439	6.1	10.44	0.0	31.0	6.0
Yams	413	900	1313	5.5	2.14	0.1	22.0	5.5
Arecanut	160	280	440	5.5	4.65	0.6	13.0	2.5
Arecanut	0	240	240	4.5	1.29	0.1	10.0	3.5

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
FOREST SOIL								
Tea	173	1253	1426	6.9	14.78	0.0	7.5	8.0
Cabbage	80	113	193	5.2	7.21	0.0	19.0	2.6
Tomato	806	280	1086	6.6	3.98	0.0	19.0	8.3
Vegetables	246	60	306	5.2	17.61	0.6	25.0	1.0
Ornamentals	106	220	326	6.1	7.70	0.1	9.0	2.0
Cholam	426	346	772	5.2	11.86	0.1	22.0	4.0
Banana	413	266	679	5.3	10.44	0.0	11.5	1.0
Grass	40	433	473	5.4	3.59	0.0	18.5	4.5
BLACK SOIL								
Paddy	47	427	474	7.0	2.34	1.4	2.3.0	30.0
Coconut	140	600	740	6.0	1.60	0.7	6.5	3.0
Vegetable	1320	1360	2680	7.8	4.37	0.1	18.0	1.0
Sugarcane	973	2040	3013	7.2	4.20	0.6	14.0	2.0
Cotton	80	453	533	4.7	4.64	0.5	9.0	1.5

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