

EFFECT OF SOME GREEN LEAVES AND ORGANIC WASTES ON ROOT-KNOT NEMATODE INFESTATION ON BHINDP

T. PREM KUMAR² and M. R. G. K. NAIR

College of Agriculture, Vellayani, Kerala

Recent studies have revealed that the plant parasitic nematodes play an important role in limiting agricultural production. Soil nematodes are difficult to be controlled effectively. Eventhough nematicidal chemicals are effective in controlling nematodes their use has not become popular especially in developing countries because of the prohibitive cost.

Some studies (Desai *et al.* 1969, Singh and Sitaramiah 1966, 1967, 1969, 1969A 1971 and *others*) have shown that application of various kinds of organic materials like green manures, crop residues, oil cakes and sawdust when incorporated with soil are effective in controlling nematode infestation in soil. In the present paper is reported the effect of some organic substances not tried earlier, in controlling infestation by the root gall nematode *Meloidogyne incognita* on bhindi *Abelmoschus esculentus*.

Materials and Methods

Effect of 13 organic substances (see table 1) on root gall nematode infestation on bhindi was assessed in a field experiment undertaken in the Agricultural Collage Farm, Vellayani in 1971. The treatments with 2 controls were laid out under randomised Block Design with a plot size of 1.08 m x 1.008 m and 3 replications each. The organic substances were applied at a depth of 25 cm, mixed with soil and watered daily. After 3 weeks bhindi seeds (Pusa sawani) were dibbled in pus at a spacing of 45 cm x 45cm. Each pit had finally one plant. The plots were fertilised at the rate of 75 kg N, 100 kg P, O₅ and 50 Kg K₂ Q per hectare (Chandrasekharan 1965).

Results were assessed in terms of gall counts on roots, height of plants and weight of roots on 45th day after sowing.

Results and Discussion

Results are given in Table 1. It is seen that as against a count of 594 galls per 10 gm. roots in untreated plants the gall counts in treated plants were

1. Prom M. Sc. (Ag) thesis approved by the Keraly University in 1971.
2. Now with Central Plantation Crops Research Institute, Regional Station, Calicut.

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AVERAGE NUMBER OF ROOT GALUS PER 100 ROOT

Effect of root gallng on the hight and root weight of bhindi plants

Table 1

Effect of different organic substances applied in soil on the root gall formation in 45 days after sowing and plant growth in bhindi.

Organic substances	Dosage Kg/ha	Average No. of root galls/ 10 gms of roots	Average height of plants (cm)	Average root weight per plant (gms)
Paddy straw	2500	147.6	84.60	106.6
Funarium leaves	5000	72.6	85.33	73.0
Lemongrass leaves	„	103.3	82.43	87.0
Mango leaves	„	109.3	80.50	63.0
Cashew leaves	„	70.0	84.90	86.3
Farm yard manure	2500	119.0	80.17	68.6
Press mud	„	72.6	85.30	118.6
Coconut husk powder	„	89.6	56.00	60.0
Paddy husk	„	74.6	61.87	91.0
Coconut oil cake	„	60.3	101.80	154.6
Cashew shell powder	„	51.0	83.37	139.3
Saw dust	„	64.3	87.27	77.3
Calotropis leaves	5000	59.0	83.57	105.0
Control		594.0	42.63	42.8
C. D. for comparison between treatments		89.51	35.5	43.96
C. D. for comparison between treatment and control		77.51	30.06	38.03

significantly lower varying from 51 to 147.6. There was no significant difference in the gall counts between the various treatments indicating that all the organic substances excepting paddy straw were equally effective in controlling the gall formation on the roots. Among these however materials like cashew shell powder, calotropis leaves, coconut oil cake and sawdust were highly effective in reducing the galls (51 to 64.3).

As regards plant height the plants under the different treatments, excepting paddy husk and coconut husk powder were nearly double the size of control plants or more.

The root growth was maximum under coconut oil cake treatment followed by cashew shell powder, pressmud, paddy straw and calotropis leaves. Paddy husk, cashew leaves and lemon grass leaves also gave significantly better root growth than control.

Figure 1 gives the relationships between root gall counts and plant height and between root gall counts and root weight. Though the relation between root gall counts and height is erratic a reduction in plant height related to higher root gall incidence is in evidence. Such a relationship is strongly indicated between root gall count and root weight. This is only expected as gall formation suppresses root development.

Summary

In a field experiment it was found that the green leaves of eupatorium, lemongrass, mango, cashew and calotropis each at 5000 kg/ha and the organic wastes paddy straw, farm yard manure, press mud, coconut husk powder, paddy husk, coconut oil cake, cashew shell powder and saw dust at 2500 kg/ha. when applied in soil 21 days prior to sowing gave effective control of root knot nematode infesting bhindi.

സംഗ്രഹം

വെള്ളായണി കാർഷിക കാളേജ് ഫാമിൽ നടത്തിയ ഒരു പരീക്ഷണത്തിൽ യൂപ്പറ്റോറിയം, ലെമൺഗ്രാസ്, മാവ്, കശുക്കണ്ടി, കലോടോപ്പിസ് എന്നീ ചെടികളുടെ ഇല ഒരു ഹെക്ടറിൽ 5000 കി. എന്ന കണക്കിനോ, കച്ചി, ചാണകം, പ്രസ്മഡ്, ചകരി, തേങ്ങാപുണ്ണാക്ക്, കശുക്കണ്ടി തോട്ട പൊടിച്ചത്, ഇവ ഹെക്ടറിൽ 2500 കി. എന്ന കണക്കിനോ 21 ദിവസം കഴിഞ്ഞു വിത്തു നട്ടാൽ വെണ്ടചെടികൾക്ക് രൂട്ട് നാട്ട് നിമാറ്റാറുപകളുടെ രാജിനമോ വളരെ കുറയുമെന്നു കണ്ടു.

REFERENCES

Chandrasekharan, P. 1965. Studies on the effect of NPK in combination with Spartin on the growth, yield and quality of Bhindi (*Abelmoschus esculentus* Moench). M. Sc. (Ag.) thesis submitted to the University of Kerala.
Desai, M. V., Patel, G. J., Shah, H. M. and Naphade, S. D. 1969. Effect of some agronomic practices in the control of root-knot nematodes on tomatoes. *First all India Nematology Symposium*, 1969, New Delhi.

- Singh, R. S. and Sitaramiah, K. 1966. Incidence of root-knot of Okra and tomatoes in oil cake amended soil. *Pl. Dis. Rept.* 50, 668-672
- Singh, R. S. and Sitaramiah, K. 1967. Effect of decomposing green leaves, saw dust and urea on the incidence of root-knot of Okra and tomato. *Indian Phytopath.*, 20, 349-355.
- Singh, R. S. and Sitaramiah, K. 1969. Control of root-knot through organic and inorganic amendments of soil. I. Effect of oil cakes and saw dust. *First All India Nematology Symposium*, 1969, New Delhi.
- Singh, R. S. and Sitaramiah, K. 1969 a. Control of root-knot through organic and inorganic amendments. III. Effect of saw dust and inorganic sources and levels of nitrogen. *First All India Nematology Symposium*, 1969, New Delhi.
- Singh, R. S. and Sitaramiah, K. 1971. Control of root-knot through organic and inorganic amendments of soil. Effect of saw dust and inorganic nitrogen. *Indian J. Nematology* I, 80-84.

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