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Nematicidal effect of chopped leaves of some selected plants against root-knot nematode, *Meloidogyne incognita* on tomato

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SUMMARY

The chopped leaves of six plant species *viz.*, neem/margosa, bakain/Persian lilac, marigold, castor, eucalyptus, blumea, bottle-brush and thuja at two potential doses (100 and 50g/pot) were employed under glass house conditions to access their nematicidal effect against the root-knot nematode, *Meloidogyne incognita*. The chopped neem leaves at a higher dose (100g/pot) showed the highest degree of reduction in root-knot development (0.45) as compared to untreated control (4.00). The gall indices of plants treated with 100g of bakain, marigold, castor, eucalyptus, bottlebrush, blumea and thuja leaves were 0.53, 0.64, 1.60, 1.50, 2.00, 2.00 and 2.55, respectively. The root galling was also reduced to some extent when the dose was reduced to half (50g/pot). There was a significant improvement in the plant growth due to the application of these organic additives.

Key words : Leaves, Management, Meloidogyne incognita, Tomato, Dose.

Tomato, *Lycopersicon esculentum* is one of the important vegetable crops. India stands fifth in the global production of tomato. The root-knot nematode, *Meloidogyne incognita* is one of the important and widespread nematode occurring throughout the country and infesting almost all the cultivated crop plants. The biological control as a mechanism to reduce soil borne pathogens is gaining importance in the recent years, because the chemicals that are used to control the diseases are not only expensive but also contribute to soil pollutants and adversely affect the non target species (Reddy *et al*., 2006). The most economical and one of the promising alternatives of the nematode control is the use of plant parts/products such as mulching of green leaves, leaf extracts, seed powder, oil-cakes etc. Therefore, an attempt was made to access the nematicidal/nematostatic properties of chopped leaves of six plant species against the root-knot nematode, *Meliodogyne incognita* infecting tomato.

MATERIALS AND METHODS

The experiment was conducted under glass house conditions. Clay pots (15cm diameter) filled with 1 kg. autoclaved soil, were treated with two potential doses (100g and 50g/pot) of chopped leaves of six plant species *viz.*, Neem/margosa, *Azadirachta indica*, Bakain/Persian lilac, *Melia azedarach*, Marigold, *Tagetes patula*, Castor, *Ricinus communis*, Eucalyptus, *Eucalyptus citriodora*, Blumea, *Blumea mollis*, Bottle-brush, *Callistemon lanceolatus* and Thuja, *Thuja orientalis*. Three replicates were maintained for each treatment including the untreated control. Three-week-old seedlings of tomato, *Lycopersicon esculentum* Mill. cv. K-25, were then transplanted into the pots. After a weeks time, each pot was inoculated with 2000 freshly hatched second stage juveniles of root-knot nematode, *Meloidogyne incognita* (Kofiod and White) Chitwood. The experiment was terminated after three months and different plant growth parameters (plant length in cm. and plant weight in gm.) were taken. The extent of reduction in the root galling over untreated control was determined by taking the Root-Knot Index(R/I) on 0-5 scale of Taylor and Sasser (1978). The data was statistically analyzed for Critical Difference at P=0.05 and P=0.01.

RESULTS AND DISCUSSION

The results of the current finding indicated that the chopped leaves of all the test plants when applied at a higher dose (100g/pot) were more effective in reducing the root-knot infection around the roots of tomato and enhancing the plant growth characters. The highest degree of reduction in the nematode infestation being recorded in plants treated with 100g of neem leaves (R/I=0.45) and those treated with a lower dose (50g/pot) of thuja leaves recorded the least effect (R/I=3.05) as compared to untreated control (R/I= 4.00). The reduction in the root-knot development simultaneously enhanced the plant growth characters where again the chopped neem leaves @100g/pot were most effective and thuja leaves @50g/pot least effective. The plant length and plant weight showed a varied distinction between the untreated plants and those treated with different doses of the all test plants.

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