

## Susceptibility of Different Cultivated Composit-Plants to Root Knot Nematode and Morphometrics of Females of *Meloidogyne incognita*.

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The effect of different members of Compositae to morphometrics of the females of *Meloidogyne incognita* was studied. Not only the root-knot development was highest in *Calendula officinalis*, but there was more increase in the size of females of this plant. In the less susceptible plants, the size of females decreased.

**Key Words** Infection Inhibition. Morphometric Nematode Reduction

Crop rotation studies have revealed that the females of root knot nematode exhibit variation in size when collected from different hosts (Fisher, 1965 Bird, 1966). Hence, an attempt was made to study the susceptibility of certain composit to single egg mass population of *Meloidogyne incognita* and the morphometric of females so reared.

**MATERIALS & METHODS** Seedlings of different cultivated composit, i.e. *Chrysanthemum carinatum*, *Calendula officinalis*, *Helianthus annuus*, *Zinnia elegans*, *Dahlia variabilis*, *Cosmos sulphureus* and *Cineraria* sp. were raised in clay pots containing a mixture of sterilized soil, sand and compost (70:20:10). Second stage larvae for inoculation purpose were obtained from stock culture of *M. incognita* raised in glass house from a single egg mass isolated from tomato. Each seedling was inoculated with 1,000 freshly hatched larvae. Each treatment was replicated thrice. The experiments were performed in glass house at 22-25 C. After 50 days the roots were washed and growth of plant and root knot indices were rated in the scale : 0 = no evidence of infection; 1 = infection, without females; 2 = few females; 3 = roots moderately galled; 4 = roots moderately to severely galled; 5 = roots severely galled.

The females were dissected out and measurements were made for various morphometric characters. The data were analysed statistically.

**RESULTS & DISCUSSION** There was no root knot development on *Ch. carinatum* and *Z. elegans* (Table 1). The inoculated population of the larvae must have either been starved out or killed. The root knot development was very poor in *Cos. sulphureus* (R.K.I.=1.0) and the larvae did not metamorphose in to mature females. *H. annuus* was less susceptible (R.K.I = 2.0), *D. variabilis* and *Cineraria*

sp. were moderately susceptible (R.K.I.=3.0) and *Cal. officinalis* was more susceptible (R.K.I. = 4.0). The multiplication of nematode as represented by final population was highest in *Cal. officinalis*.

Rearing of females on different hosts resulted in changes in morphometric characters (Table 2). In *H. annuus* where R.K.I. was 2, the size of females was 490 x 300  $\mu$ m; in *Cineraria* sp. and *D. variabilis* where R.K.I. was 3, the size of females ranged from 502 - 518/298-320  $\mu$ m. In *Cal. officinalis* where the R.K.I. was 4, the size of females was 659 x 371  $\mu$ m. It shows that with increase in the root knot index, the size of female increased. Therefore, host suitability plays an important role on the size of females. Admittedly plants more susceptible to root knot nematode support large and robust females whereas on less susceptible ones, the size of females was reduced.

The results are in agreement with those of Trudgill & Parrot (1970); Davide (1979) and Pant *et al.* (1983).

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**Table 1 Susceptibility of Different Composit Plants to Single Egg Mass Population of *M. incognita* and Effect on Growth of Plants and Root Knot Development.**

Hosts	Length of plant (mm)	Dry weight of plant (g)	No. of Galls/ Plant	Root-knot Index	Population of Nematode Root Population	Soil population
<i>Chrysanthemum carinatum</i>						
Control	400	1.5	-	-	-	-
Inoculated	392	1.5	-	-	-	-
<i>Calendula officinalis</i>						
Control	515	2.1	-	-	-	-
Inoculated	437	1.7	78	4	395	589
<i>Helianthus annuus</i>						
Control	575	2.1	-	-	-	-
Inoculated	572	2.0	37	2	147	289
<i>Zinnia elegans</i>						
Control	507	1.9	-	-	-	-
Inoculated	500	1.9	-	0	-	-
<i>Dahlia variabilis</i>						
Control	375	2.8	-	-	-	-
Inoculated	340	2.5	49	3	140	375
<i>Cosmos sulphureus</i>						
Control	600	1.4	-	-	-	-
Inoculated	600	1.3	2	1	6	-
<i>Cineraria sp</i>						
Control	287	2.0	-	-	-	-
Inoculated	251	1.7	44	3	167	310
S.D. at 5% level	3.0	.27	17.26	79	126.21	168.19

Each figure is the mean of three replicates.

**Table 2 Morphometric Variation in the Females of *M. incognita* from Different Composit Plants**

Hosts	Body Length $\mu\text{m}$	Body width $\mu\text{m}$	Neck Length $\mu\text{m}$	Neck width $\mu\text{m}$	Median bulb length $\mu\text{m}$	Median bulb length $\mu\text{m}$
<i>Helianthus annuus</i>	490 $\pm$ 27	300 $\pm$ 21	176 $\pm$ 21	79 $\pm$ 8	33 $\pm$ 2	33 $\pm$ 22
<i>Cineraria sp</i>	502 $\pm$ 43	298 $\pm$ 37	200 $\pm$ 15	75 $\pm$ 5	36 $\pm$ 2	35 $\pm$ 1
<i>Dahlia variabilis</i>	518 $\pm$ 41	320 $\pm$ 26	209 $\pm$ 17	78 $\pm$ 7	38 $\pm$ 2	35 $\pm$ 2
<i>Calendula officinalis</i>	659 $\pm$ 37	370 $\pm$ 37	278 $\pm$ 30	90 $\pm$ 10	40 $\pm$ 2	38 $\pm$ 2

Each figure is mean of 20 females.

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