

Pathogenicity of Four Root-knot Nematode Species to *Polianthes tuberosa*¹

A. W. JOHNSON²

Root-knot (*Meloidogyne* spp.) nematodes have caused severe injury to container-grown tuberose *Polianthes tuberosa* L. (family Amariyllidaceae) (1, 3, 4). I have observed many cases of heavy root-knot infection on this host which causes chlorotic foliage and general stunting associated with severe root galling. *M. incognita* (Kofoid & White) Chitwood, or *M. incognita acrita* Chitwood were commonly involved.

The following are results of studies on the pathogenicity of *M. incognita*, *M. incognita acrita*, *M. javanica* (Treub) Chitwood, and *M. arenaria* (Neal) Chitwood, to tuberose.

Uniform, nematode-free tubers were potted in sterilized Tifton sandy loam in 15-cm clay pots. Four nematode species groups, each consisting of five replicate pots, received 6000 larvae/pot of one of the root-knot

species being tested. A separate non-inoculated group served as controls. Plants were maintained in a greenhouse at temperatures ranging 18–28 C, watered as needed and fertilized every two weeks with 100 ml of a solution of 1 g/liter of 20-20-20 with micro-element supplement. After 8 months, roots and tubers were carefully freed from soil, washed, blotted, and weighed. Offsets were separated, counted, weighed, sliced and examined under a stereoscopic microscope for nematode infection sites. Root-gall indices were rated as described in Table 1. Root-knot nematode larvae were extracted from a 150-ml soil sample from each pot by Jenkins' centrifugal-flotation method (2).

Plants from non-inoculated tubers grew well, but most plants from inoculated tubers were stunted and chlorotic. Top and root weights of inoculated plants, except those inoculated with *M. javanica*, were significantly less than non-inoculated plants. *M. arenaria* and *M. incognita acrita* caused the greatest reduction in top and weight, respectively (Table 1).

No invasion sites or galls were observed on offsets, an indication that these nematode

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² Nematologist, Crops Research Division, Agricultural Research Service, U. S. Department of Agriculture, Coastal Plain Experiment Station, Tifton, Georgia 31794.

TABLE 1. Pathogenicity of four *Meloidogyne* spp. to *Polianthes tuberosa*.

Species	Top wt.† (g)	Root wt. (g)	Root-gall indices‡	Offsets	
				Number	Wt. (g)
<i>Meloidogyne incognita</i>	26.2 b	41.0 bc	4.8 ab	12.4 a	53.8 b
<i>M. incognita acrita</i>	20.0 b	37.4 c	5.0 a	10.6 ab	52.8 b
<i>M. javanica</i>	51.2 a	46.6 ab	4.4 b	12.7 a	67.8 a
<i>M. arenaria</i>	10.6 c	40.0 bc	4.8 ab	7.4 b	37.6 c
Control	46.4 a	51.0 a	1.0 c	11.2 a	69.0 a

† Mean of 5 replications.

‡ Root-gall index: 1 = no galls; 2 = 1–25%; 3 = 25–50%; 4 = 50–75%; and 5 = 75–100% of roots galled. Means followed by the same letter do not differ ($P = 0.05$) according to Duncan's Multiple Range Test.

species were not parasitic on modified stem tissue of *P. tuberosa*.

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