

HOSTS OF THE RICE ROOT-KNOT NEMATODE
MELOIDOGYNE GRAMINICOLA.

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INTRODUCTION:

Meloidogyne graminicola Golden & Birchfield 1965, the rice root-knot nematode, is a pest of international importance to rice crops around the world. In India and Vietnam, yields of rice crops infected with this nematode have been reduced 17-65% (3). The United States produces 20% of the rice traded on the world market, and it has been estimated that approximately 13,500 acres are under production in the Everglades area of Florida (3).

The rice root-knot nematode was first detected in 1963 on the Louisiana State University Farm at Baton Rouge. In the United States, this nematode had been known to occur only in Louisiana and Texas until, in 1984, it was found on the grounds of the Southeast Georgia Experiment Station in Midville, Georgia (4). Although M. graminicola is not, at this time, known to occur in Florida, it could threaten Florida's rice industry if it ever becomes established in the state. This host list is published as a survey tool to assist with detection and delimiting activities in the event that M. graminicola is ever found on a Florida rice farm.

SURVEY AND DETECTION:

Roots of suspect host plants should be inspected for abnormal lumps and swellings and, along with a pint (if possible) of adherent soil, be submitted to a nematology laboratory for diagnosis. A statement, asking that the sample be checked for M. graminicola, should be included.

HOST PLANTS OF MELOIDOGYNE GRAMINICOLA:

<u>Abelmoschus esculentus</u> (L.) Moench. (= <u>Hibiscus esculentus</u> L.)	okra
<u>Ageratum conyzoides</u> L.	ageratum
<u>Alopecurus carolinianus</u> Walt.	foxtail grass
<u>Amaranthus viridis</u> L.	amaranth
<u>Ammannia pentandra</u> Roxb.	no common name
<u>Andropogon</u> sp.	beard grass
<u>Avena sativa</u> L.	oats
<u>Blumea</u> sp.	no common name
<u>Borreria hispida</u> (L.) K. Schum.	no common name
<u>Brachiaria mutica</u> (Forsk.) Stapf	para grass
<u>Brachiaria ramosa</u> (L.) Stapf	brown top millet
<u>Brassica juncea</u> (L.) Czerniak	mustard
<u>Brassica oleracea</u> L. Botrytis group	cauliflower
<u>Brassica oleracea</u> , Capitata group	cabbage
<u>Catharanthus roseus</u> (L.) G. Don (<u>Vinca rosea</u> L.)	Madagascar periwinkle
<u>Centella asiatica</u> (L.) Urban	coinwort

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Colocasia esculenta (L.) Schotttaro
Commelina benghalensis L.day flower
Corchorus capsularis L.jute
Courtosia cyperoides Nees.no common name
Cucumis sativus L.cucumber
Cymbopogon citratus (DC.) Stapflemon grass
Cynodon dactylon (L.) Pers.Bermuda grass
Cyperus brevifolius (Rottb.) Hassk.sedge
Cyperus compressus L.sedge
Cyperus iria L.sedge
Cyperus pilosus Vahlsedge
Cyperus procerus Rottb.sedge
Cyperus pulcherimus Willd. ex Kunthsedge
Cyperus rotundus L.nutgrass, purple nutsedge
Desmodium triflorum (L.) DC.beggarweed
Digitaria longiflora (Retz.) Pers.crab grass
Digitaria sanguinalis (L.) Scop.crab grass
 (published as Paspalum sanguinala)
Echinochloa colonum (L.) Link (published as barnyard grass)jungle-rice
Echinochloa crusgalli (L.) Beauv.barnyard grass
Eclipta prostrata (L.) L. (= Eclipta alba (L.) Hassk.)no common name
Eleusine coracana (L.) Gaertn.finger millet
Eleusine indica (L.) Gaertn.goose grass
Eragrostis gangetica (Roxb.) Steud.slimflower love grass
Eragrostis plumosa Linklove grass
Euphorbia hirta L.hairy spurge
Fimbristylis miliacea (L.) Vahlno common name
Fimbristylis podocarpa Neesno common name
Fuirena glomerata Lam.umbrella grass
Glycine max (L.) Merrillsoybean
Gnaphalium purpureum L.cudweed
Grangea maderaspatana Poir.no common name
 (published as Grangea madraspatensis Poir.)
Hedyotis diffusa Willd.no common name
 (published as Gldenlandia diffusa)
Herminium sp. (published as Monorchis vaginalis)orchid
Impatiens balsamina L.balsam
Imperata cylindrica (L.) Beauv.cogon grass
Lactuca sativa L.lettuce
Leersia hexandra Sw.cut grass
Leucas lavendulaefolia J. E. Smithno common name
 (published as Leucas linifolia Spreng)
Ludwigia repens J. R. Forst.water primrose
 (published as Jussiaea repens L.)
Lycopersicon esculentum Mill.tomato
Murdannia nudiflora (L.) Brenanno common name
 (published as Murdannia malabarica (L.) Bruek.)
Musa sp.banana
Oplismenus compositus (L.) Beauv.wood grass
Oryza sativa L.rice
Oxalis corniculata L.wood sorrel
Panicum miliare Lam.witch grass
Panicum miliaceum L.broom-corn millet
Panicum repens L. (published as Panicum paludosum)torpedo grass
Paspalum scrobiculatum L.no common name

<u>Pennisetum americanum</u> (L.) K. Schum.	pearl millet
<u>Pennisetum pedicillatum</u> L.	no common name
<u>Petunia</u> sp.	petunia
<u>Phaseolus vulgaris</u> L.	common bean
<u>Phlox drummondii</u> Hook.	annual phlox
<u>Phyllanthus urinaria</u> L.	leaf-flower
<u>Pisum sativum</u> L.	garden pea
<u>Poa annua</u> L.	annual bluegrass
<u>Portulaca oleracea</u> L.	purslane
<u>Ranunculus pusillus</u> Poir.	lesser spearwort
<u>Rungia parviflora</u> Nees	no common name
<u>Saccharum officianale</u> L.	sugarcane
<u>Sacciolepis indica</u> (L.) Chase	India cupscale
<u>Scirpus articulatus</u> L.	bulrush
<u>Scoparia dulcis</u> L.	goat weed
<u>Setaria italica</u> (L.) Beauv.	common millet
<u>Solanum melongena</u> L.	egg plant
<u>Solanum nigrum</u> L.	black nightshade
<u>Solanum sisymbriifolium</u>	sticky nightshade
<u>Solanum tuberosum</u> L.	Irish potato
<u>Sorghum</u> sp.	sorghum
<u>Sorghum bicolor</u> (L.) Moench (= <u>Sorghum vulgare</u> Pers.)	sorghum
<u>Sphaeranthus africanus</u> L.	no common name
(published as <u>Sphaeranthus senegalensis</u>)	
<u>Sphenoclea zeylandica</u> Gaertn.	no common name
<u>Spinacea oleracea</u> L.	spinach
<u>Stellaria media</u> (L.) Cyrillo	common chickweed
<u>Triticum aestivum</u> L.	wheat
<u>Urena lobata</u> L.	Caesar weed
<u>Vandellia</u> sp.	no common name
<u>Vernonia cinerea</u> (L.) Less	ironweed
<u>Vicia faba</u> L.	broad bean
<u>Vigna mungo</u> (L.) Heppner (= <u>Phaseolus mungo</u> L.)	black gram
<u>Vigna radiata</u> (L.) Wilcz. (= <u>Phaseolus aureus</u> Roxb.)	mung bean
<u>Vigna unguiculata</u> (L.) Walp.	cowpea
<u>Zea mays</u> L.	corn

REFERENCES

1. Birchfield, W. 1965. Host-parasite relations and host range studies of a new Meloidogyne species in southern U.S.A. Phytopathology 55(12):1359-1361.
2. Golden, A. M., and W. Birchfield. 1968. Rice root-knot nematode (Meloidogyne graminicola) as a new pest of rice. Plant Dis. Reptr. 52(6):423.
3. MacGowan, J. B. 1989. The rice root-knot nematode Meloidogyne graminicola Golden & Birchfield 1965. Fla. Dept. of Agric. & Consumer Serv., Div. Plant Ind., Nematology Circular No. 166, June 1989.
4. Minton, N. A., E. T. Tucker, and A. M. Golden. 1987. First report of Meloidogyne graminicola in Georgia. Plant Dis. Reptr. 71(4):376.
5. Mulk, M. M. 1976. Meloidogyne graminicola. C.I.H. Descriptions of Plant-parasitic Nematodes. Commonwealth Inst. Helminth. (1976) Set 6, No. 87. 4 pp.

6. Rao, Y. S., P. Israel, and H. Biswas. 1970. Weed and rotation crop plants as hosts for the rice root-knot nematode, Meloidogyne graminicola (Golden and Birchfield). Oryza 7(2):137-142.
7. Roy, A. K. 1977. Host suitability of some crops of Meloidogyne graminicola. Indian Phytopathology (1977, publ. 1978) 30(4):483-485.
8. _____. 1979. Weed hosts of Meloidogyne graminicola. Indian J. Nematol. 7(2):160-163.
9. Tiwari, S. P., and P. S. Dave. 1985. Burrowing nematode Radopholus similis (Cobb) Thorne, 1949 on banana in Madhya Pradesh. Current Science, India 54(24):1286
10. Yik, C. P., and W. Birchfield. 1977. Additional knowledge on the biology and hosts of Meloidogyne graminicola. Division Meetings, 1977. Abstract No. S-46. Proceedings of the American Phytopathological Society 4:231.
11. _____, and _____. 1979. Host studies and reactions of rice cultivars to Meloidogyne graminicola. Phytopathology 69(5):497-499.



Fig. 1. Amaranthus viridis

Fig. 2. Portulacca oleracea

Figs. 1 and 2. Common weed hosts of Meloidogyne graminicola.

Contribution No. 397, Bureau of Nematology

This publication was issued at a cost of \$725.32 or \$0.21 per copy to provide information on proper recognition of plant pests.

PI90T-01