

COLUMBIA ROOT-KNOT NEMATODE RESISTANCE

1999

Meloidogyne chitwoodi (race 2); J.L. Kugler and H. Mojtahedi

PLANT CULTURE

Greenhouse

Container Pot or Cone (4cm dia. X 21 cm long)

Media..... Steam-sterilized sandy loam soil mixture

Seed Prep..... Scarify, surface sterilize or treat with fungicide

Temp/Light..... 20 - 25° C, 16 hr photoperiod, w/ supplemental light during winter

No. of Plants 100 plants minimum. (10 plants/pot; or 2 plants/cone (5 cones per rep)

No. of Reps 10+

Other Promote good growth; use proper insect control.

NOCULUM SOURCE

Source Greenhouse cultured winter wheat; eggs obtained by NaOCl method⁽²⁾.

Storage Egg in sterile or deionized water at 0-5° C, maximum 10 days.

INOCULATION PROCEDURE

Plant Age 3-4 weeks.

Inoc. Type..... 500 eggs per plant in suspension adjusted to 100 eggs/ml.

Method..... Apply egg suspension in 3 holes 2 cm deep next to seedling; cover; water.

INCUBATION

Location Greenhouse bench.

Duration 55 days.

RATING

Rating (RF) is on a per-plant basis from root extractions by the NaOCl method (2). One ml aliquots of the sample egg suspensions are counted using a stereoscope.

Reproductive Factor where $RF = \text{final egg count } (P_f) / \text{initial inoculum } (P_i, 500) \text{ per plant}$

Non-host $RF < 0.1$

Poor host..... $0.1 < RF < 1$

Good host..... $RF > 1$

CHECK VARIETIES

	Approximate Expected Reaction (%)	Acceptable Range of Reaction (%)
Poor host		
Nev. Syn XX	RF < 1	RF = 0-1
Good host		
Lahontan	RF > 20	RF > 10

DISTRIBUTION OF MELOIDOGYNE CHITWOODI (RACE 2)



Columbia root-knot nematode, *Meloidogyne chitwoodi* (race 2) Golden et.al.
(Click on the map above for a larger version.)

SOURCE OF INOCULUM

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RACES

M. chitwoodi consists of race 1, which does *not* parasitize alfalfa, and race 2 that do. The latter is composed of two pathotypes with different RF values on *Solanum bulbocastarum* that carries a resistant R_{cm1} gene.

HELPFUL INFORMATION

M. chitwoodi race 2 may not cause galls on alfalfa, and therefore gall count may not reveal the host-parasite relationship. Also, egg mass count is less desirable, because some nematodes may reach maturity on a resistant plant, but produce a gelatinous matrix with very few eggs deposited. Thus, the Reproductive Factor (RF) value is the most reliable measure to evaluate the host status of alfalfa cultivars and breeding lines. Wheat as increase host is preferred over tomato which is a host for *M. hapla*, the Northern root-knot nematode that occasionally contaminates tomato cultures.

REFERENCES

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