

Columbia Root-Knot Nematode Resistance

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.

INOCULUM 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 = final egg count (P_f) / initial inoculum (P_i , 500) 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.

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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