

A root-knot nematode pathogenic to flowering dogwood  
Cornus florida

P. S. Lehman and E. L. Barnard<sup>1</sup>

INTRODUCTION: Flowering dogwood, Cornus florida L., is widely grown as an ornamental landscape plant in the eastern United States. In Florida, large numbers of seedlings are produced in forest tree nurseries for distribution to retail nurseries in the southeastern United States.

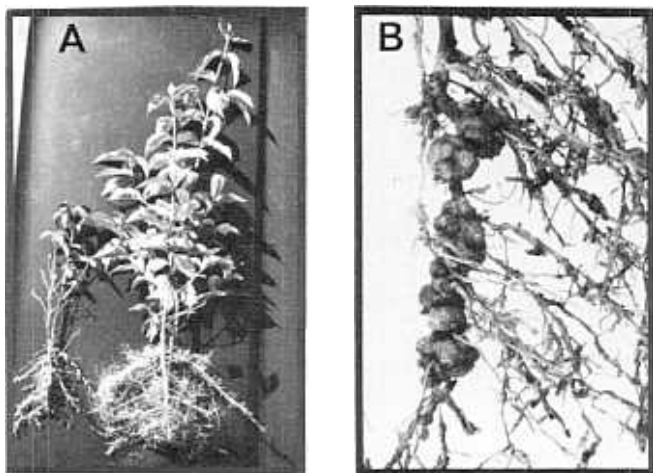


Fig. 1. A) Stunted flowering dogwood seedlings (left) with galled roots infected with Meloidogyne incognita compared to healthy plants with a normal root system (right); B) Close-up of galls on roots.

In 1976, the root-knot nematode, Meloidogyne incognita (Kofoid and White) Chitwood, was observed by Division of Plant Industry personnel for the first time on a number of flowering dogwood seedlings in a forest tree nursery in Central Florida. In 1981, this same species of root-knot nematode caused severe galling on the roots of thousands of dogwood seedlings in this same nursery. A similar problem has also been observed in a forest tree nursery in Georgia (1). Another species of root-knot nematode, M. hapla Chitwood, has been reported infecting C. florida in New Jersey (3,4). Based on a review of the literature and personal communication with other nematologists, it appears that root-knot nematodes are associated only very infrequently as a problem on dogwood outside forest tree nurseries, even though these nematodes are common and widely distributed.

SYMPTOMS: Readily observable aboveground symptoms associated with heavy nematode infection are severe stunting, marginal leaf necrosis, and premature foliar reddening and abscission. Below ground symptoms include root galls, reduction of the overall size of the root system, and sparse development of secondary roots (Fig. 1 and 2).

CONTROL: The effectiveness of chemical dip treatments in eradicating root-knot nematodes from infected flowering dogwood seedlings was studied in Georgia (1). Of nine nematicides tested, seven were effective in controlling M. incognita. Dip

<sup>1</sup>Nematologist, Division of Plant Industry, and Forest Pathologist, Division of Forestry and Plant Industry, FDACS, respectively.

treatments of 15-30 min were effective in control, based on post-treatment nematode counts and bioassay with tomato plants. This study demonstrates that nematicidal dips have potential in eradicating or controlling nematodes in infected dogwood seedlings to improve their quality and marketability.

**DISCUSSION:** M. incognita is widely distributed in Florida and throughout the world. This nematode, however, has not been frequently observed as a problem on flowering dogwood. In fact, Division of Plant Industry records indicate that this association has only been observed in Florida on young seedlings in a forest tree nursery. This raises several questions: 1) Has a race of root-knot nematode developed that is pathogenic to flowering dogwood? 2) Is dogwood more susceptible to infection when plants are young seedlings grown under intense nursery culture? Studies are currently being initiated by the authors to answer these and other questions regarding this host parasite interaction. In addition, a more complete record on the occurrence of root-knot nematode on dogwood in Florida is needed, and additional samples from affected flowering dogwood will be appreciated.

**SURVEY AND DETECTION:** Samples should be taken and submitted to the Bureau of Nematology following the procedures outlined in Nematology Circular 61 (2). Of particular interest are samples from trees that show poor growth or have galled root systems.

**LITERATURE CITED:**

1. Johnson, A. W., T. J. Ratcliffe, and G. C. Freeman. 1970. Control of Meloidogyne incognita on dogwood seedlings by chemical dips. Plant Dis. Repr. 54:952-955.
2. Lehman, P. S. 1980. Procedures for collecting and submitting samples to determine if nematodes are causing plant problems. Fla. Dept. Agric. & Consumer Serv., Div. Plant Ind., Nem. Circ. 61. 2p.
3. Ruehle, John L. 1967. Distribution of plant-parasitic nematodes associated with forest trees of the world. USDA Forest Serv. Southeast. Forest Exp. Sta. Unnumbered release, 156p.
4. Springer, J. K. 1964. Nematodes associated with plants in cultivated woody plant nurseries and uncultivated woodland areas in New Jersey. New Jersey Dept. Agric. Circ. 429. 40p.

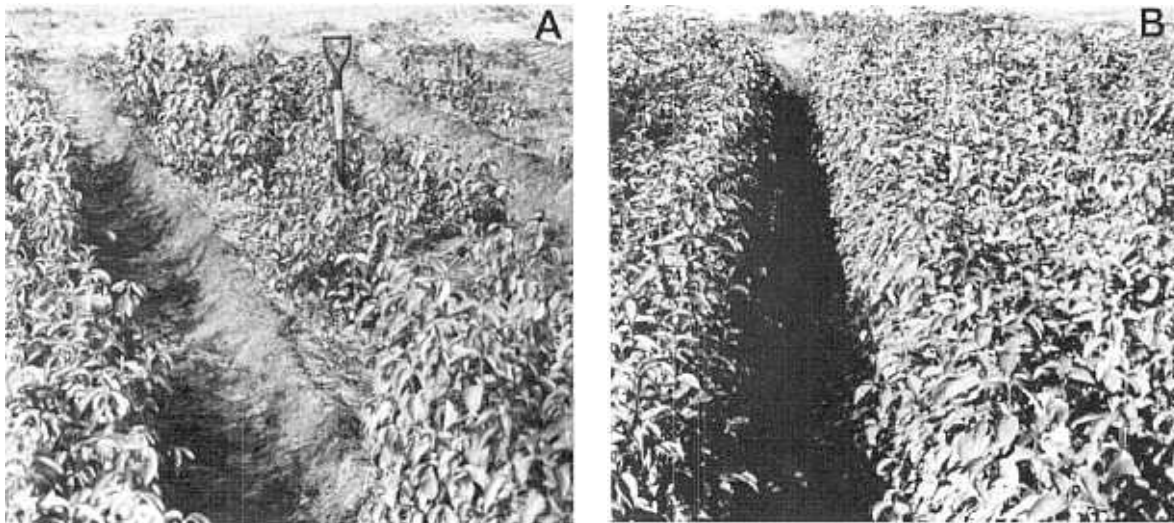


Fig. 2. A) An area in a forest tree nursery with stunted or dead seedlings of Cornus florida infected with Meloidogyne incognita; B) A nearby area in the same field where seedlings were free of galls and had normal growth and root development.