Diseases Caused by Nematodes

Brugmansia suaveolens as a New Host for Root-Knot Nematode, *Meloidogyne incognita*, in Goiás State, Brazil

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Brugmansia suaveolens (Humb. and Bonpl. ex Willd.) Bercht. and J. Presl, also called White Angel's Trumpet, is an ornamental plant known for its medicinal properties and as an invasive weed (Kwak et al. 2021; Petricevich et al. 2020). It belongs to the Solanaceae family, with a center of origin in South America, and it is currently found all over the world (Petricevich et al. 2020). In February 2020, *B. suaveolens* plants cultivated in a single garden in the Vianópolis region (16°57'00.0"S 48°29'16.0"W), Goiás State, Brazil were observed presenting yellowing symptoms, with descending branches dead. When the roots were inspected, a large number of galls were found, typical of root-knot nematodes. Samples of soil and root were sent to a Nematology Laboratory (LabNema) at São Paulo State University, Jaboticabal Campus. In all, 41,600 eggs and second-stage juveniles (J2s) were extracted from 100 cm³ of soil, and 7,600 eggs and J2s of *Meloidogyne* spp. per gram of root. Morphological, enzymatic, and molecular techniques were used to identify the species. The perineal pattern of the females ($n = 15$) had a high dorsal arch, with thick streaks and a trapezoidal shape. The male labial region ($n = 15$) had a trapezoidal shape with apparent annulations (Eisenback and Hirschmann 1981; Nascimento et al. 2021; Taylor and Netscher 1974). The morphological characteristics of adults were similar to those originally

described for *Meloidogyne incognita* (Kofoid and White 1919) Chitwood 1949. The profile of the isoenzyme esterase was studied ($n = 16$) and the phenotype I1, characteristic of *M. incognita*, was found (Esbenshade and Triantaphyllou 1985). Genomic DNA ($n = 20$) was obtained through DNA of females, extracted by Worm Lysis Buffer (WLB) (Carvalho et al. 2019). Two sets of primers were used: Finc-1, GGGATGTGTAAATGCTCCTG and Rinc-1, CCCGCTACACCTCAACTTC (Randig et al. 2002) and Finc-4, GTGAGGATTCAGCTCCCCAG and Rinc-4, ACGAGGAACATAC TTCTCCGTCC (Meng et al. 2004). The two sets were specific for *M. incognita*, which amplified fragments of 399 and 955 bp, respectively, confirming the species. A pathogenicity test was conducted under greenhouse conditions. Six newly formed seedlings were transplanted individually into 10-liter pots containing autoclaved soil and, subsequently, each plant was inoculated with 3,000 eggs and J2s from the original population of *M. incognita*. After 120 days, White Angel's Trumpet plants showed reduced development, yellow leaves, and many root galls with abundant egg masses on the roots, unlike the noninoculated plants. Nematodes were extracted from roots. The average number recovered reached 78,458 eggs and J2s per plant, corresponding to a reproductive factor (RF) of 26.15. A high RF provides an alert for *B. suaveolens* cultivation in areas with a history of root-knot nematode infestation. Moreover, this disease outbreak might serve as a source of inoculum for large-scale cultivated plants near the farm, which are generally good hosts for *M. incognita*. This is the first report presenting Angel's Trumpet as host of root-knot nematode *M. incognita* in Brazil and the world.

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