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DISEASE NOTES

First Report of *Meloidogyne luci* Parasitizing *Glycine max* in Brazil

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ABSTRACT

Soybean (*Glycine max* L.) is one of the most economically important crops in Brazil and in the world. Among soilborne plant pathogens that affect soybean, the root-knot nematodes (*Meloidogyne* spp.) cause serious damage to this crop in different growing regions of Brazil (Hartman et al. 2015). In Brazil, *M. javanica*, *M. incognita*, *M. arenaria*, *M. morocciensis*, *M. paranaensis*, *M. ethiopica*, and *M. enterolobii* are reported in soybean (Almeida et al. 2008; Castro et al. 2003), but *M. luci* has not been detected before. In November 2015, soybean plants (cv. Nidera 5909) exhibiting many galls on the roots were detected and sampled in areas from Palmeira das Missões (27°49′41″S; 53°20′06″W) county, northwest Rio Grande do Sul State, Brazil. The identification of *Meloidogyne* was carried out by esterase phenotypes (n = 30) (Carneiro and Almeida 2001), perineal patterns (n = 20), morphological measurement of second-stage juveniles (J2) (n = 20), and sequencing of the ribosomal DNA region D2-D3 of 28S (primer set: forward 5′-ACAAGTACCGTGAGGGAAAGTTG-3′ and reverse 5′-TCGGAAGGAACCAGCTACTA-3′). In addition, soybean root systems were processed to determine the number of eggs and J2s of *Meloidogyne* sp. The nematode population density observed in the sample was 1,230 eggs plus J2s per gram of soybean root. The polymorphisms of esterase bands by electrophoresis revealed the phenotype L3 (Rm = 1.05, 1.10, 1.25) typical of *M. luci* (Carneiro et al. 2014). The females perineal patterns were thick, smooth, and presented undulating streaks with a slightly squared dorsal arches, similar to *M. incognita*, without the presence of lateral fields. The J2s of *M. luci* observed under the microscope (n = 20) had the following morphometric characters: L = 387.6 ± 75.1 (290 to 500) µm, a = 28.9 ± 5.9 (14.5 to 37.0), c = 9.1 ± 1.9 (5.9 to 11.4), DGO = 2.8 ± 0.5 (2.0 to 3.9) µm, stylet = 12.6 ± 0.75 (11.8 to 13.8) µm, tail length = 42.8 ± 2.8 (39 to 49) µm, and hyaline tail terminus = 12 ± 1.8 (9 to 16) µm. A DNA fragment of 750 bp was obtained, and the sequence (GenBank accession no. KX130766) was compared with those in GenBank using BLAST. The sequence was 100% identical to the sequences of *M. luci* (KF482369, KF482370, and KF482371). In greenhouse tests, soybean plantlets of cv. Nidera 5909 maintained in pots with sterilized soil were inoculated with 5,000 eggs plus J2s of the original population of *M. luci* using six replicates; a noninoculated control was included in the test. After 60 days, all inoculated plants showed symptoms of chlorosis and stunting

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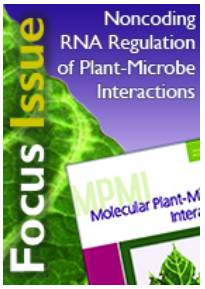
(reduced number of pods and fresh mass of shoots and roots). Galling symptoms on the roots were similar to those in the field, and the nematode reproduction factor (RF = final population/initial population) was 23.9. The noninoculated plants did not present galls in the roots and their development was not affected. These results confirmed the nematode's pathogenicity on soybean. To our knowledge, this is the first report of *M. luci* parasitizing soybean roots in Brazil.



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Citation |

Figure 1 - Soybean root system showing severe galling caused by the *Meloidogyne luci* (A). Shoots and number of pods of soybean plants (Nidera 5909) non-inoculated (B, D) and inoculated (C, E) with *M. luci*.