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## ***Rotylenchus castilloi* n. sp. (Nematoda: Hoplolaimidae), a new species with long stylet from northern Iran**

ATEFEH TALEZARI<sup>1</sup>, EBRAHIM POURJAM<sup>2,4</sup>, AHMAD KHEIRI<sup>1</sup>, GRACIA LIÉBANAS<sup>3</sup>,  
FARZAD ALIRAMAJI<sup>2</sup>, MAJID PEDRAM<sup>2</sup>, SAEED REZAEI<sup>1</sup> & MOHAMMAD REZA ATIGHI<sup>2</sup>

<sup>1</sup>Department of Agricultural Management, College of Agriculture, Tehran Science and Research Branch, Islamic Azad University, Tehran, Iran

<sup>2</sup>Department of Plant Pathology, Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran

<sup>3</sup>Departamento de Biología Animal, Biología Vegetal y Ecología; Universidad de Jaén, Campus "Las Lagunillas" s/n, Edificio B3, 23071- Jaén, Spain

<sup>4</sup>Corresponding author. E-mail: Pourjame@modares.ac.ir

### **Abstract**

*Rotylenchus castilloi* n. sp., a new bisexual species is described and illustrated based on morphological, morphometric and molecular data. The new species is characterised by having a hemispherical, continuous lip region with an irregular corn-cob-like appearance under SEM, very long stylet (62–68 µm), vulva located at 49.7–62.2% of body length from anterior end, with a protruding double epitygma, a rounded to convex-conoid (rarely bi-lobed) tail with 8–12 annuli and specific sequences of D2-D3 segments of 28S and ITS1-rRNA genes. Differences between the new species and four other species of the genus (*R. mesorobustus*, *R. cazorlaensis*, *R. magnus* and *R. jaeni*) are discussed. Morphologically, the new species can be separated from these species mostly by its body length, lip region characters, stylet length and location of phasmid. Phylogenetic analyses using 721 bp partial sequences of D2-D3 expansion segments of the 28S and 590 bp ITS1-rRNA genes revealed the new species forming a clade with two isolates of *R. eximius* and two isolates of *R. unisexus*, two morphologically unrelated species.

**Key words:** Bisexual new species, D2-D3 region, Iran, ITS1-rRNA gene, molecular, morphology, morphometrics, phylogeny, SEM, taxonomy

### **Introduction**

The genus *Rotylenchus* Filipjev, 1936 (Nematoda: Hoplolaimidae) contains some of the most destructive plant parasitic nematodes of a wide range of wild and cultivated plants worldwide. Its species are migratory ectoparasites or semi-endoparasites with a well-developed stylet. As a rule, species with long stylets (including the species described here) are capable of penetrating deeper into host roots (Decraemer & Hunt 2006) and may cause more damage. Along with insufficient knowledge regarding biology, our knowledge of the morphology of the genus is still poor. The large number of species within the genus (around 97 nominal species) complicates their identification, and the validity of some species of the genus is still unresolved. Furthermore, several species are poorly described and lack molecular or SEM data. In recent years, molecular techniques have been successfully used for species identification in the genus (Vovlas *et al.* 2008; Atighi *et al.* 2011, 2014; Cantalapiedra-Navarrete *et al.* 2013). Beginning in 2011, our ongoing surveys in the Nematology Lab of Tarbiat Modares University to recover species of *Rotylenchus* associated with cultivated and wild plants in northern Iran have resulted in the description of four species: *R. iranicus* Atighi, Pourjam, Pedram, Cantalapiedra-Navarrete, Palomares-Rius & Castillo, 2011, *R. conicaudatus* Atighi, Pourjam, Pedram, Cantalapiedra-Navarrete, Palomares-Rius & Castillo, 2011, *R. arasbaranensis* Atighi, Pourjam, Ghaemi, Pedram, Liébanas, Cantalapiedra-Navarrete, Castillo & Palomares-Rius, 2014 and *R. dalikhaniensis* Aliramaji, Pourjam, Álvarez-Ortega, Pedram & Atighi, 2015 and the acquisition of new data on some known species (see Atighi *et al.* 2015).

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