

First Report of the Carolina Spiral Nematode, *Scutellonema brachyurus*, from Soil of a Garden in Crete, Greece

EMMANUEL A. TZORTZAKAKIS,¹ CAROLINA CANTALAPIEDRA-NAVARRETE,² ANTONIO ARCHIDONA-YUSTE,²
JUAN E. PALOMARES-RIUS,² AND PABLO CASTILLO²

Abstract: Members of the genus *Scutellonema* can cause substantial crop losses to ornamental and cultivated plants directly by feeding ectoparasitically on plant roots (Bridge et al., 2005; Coyne et al., 2006). In May 2015, a soil sample from a house garden from Heraklion city in Crete, Greece, was sent for diagnosis of plant-parasitic nematodes. In this place, there had been cactus (*Opuntia* sp.) plants (probably imported), which were uprooted 3 to 4 years earlier. After that, the area was cropped with cucumber (*Cucumis sativus* L.) in spring–summer and leaf vegetables such as spinach (*Spinacia oleracea* L.) and chicory (*Cichorium intybus* L.) in autumn–winter. The soil was collected 1 mon after the end of chicory crop. A population density (ca. 30 individuals/100 cm³ of soil) of spiral nematodes (*Scutellonema* sp.) was found by extracting soil with the wet sieving and decanting method (Cobb, 1918). Morphological and molecular analyses of females identified the species as *Scutellonema brachyurus* (Steiner, 1938) Andrassy, 1958. The morphology of females was characterized by a hemispherical lip region with four to six annuli, morphometric data for 12 females were L, 640 to 760 µm; a, 24.6 to 30.6; b, 5.8 to 7.4; c, 69.1 to 99.3; c' 0.5 to 0.6; stylet, 24.5 to 27.5 µm with anterior part shorter than posterior; and spermatheca nonfunctional and male absent. The morphology agreed with the description of *S. brachyurus* (van den Berg et al., 2013). Alignment indicated that the D2-D3 and ITS sequences (KU059494 and KU059495, respectively) showed 99% and 100% to 99% similarity, respectively, to other sequences of *S. brachyurus* (type A) deposited in GenBank from the United States, Italy, and Korea (JX472037-JX472046, DQ328753, FJ485643; and JX472069, JX472070, JX472071, respectively), differing from one to six nucleotides. Phylogenetic analyses using Bayesian inference of these sequences placed the *Scutellonema* sp. in a highly supported (100%) clade that included all *S. brachyurus* (type A) sequences deposited in GenBank (van den Berg et al., 2013). All identification methods were consistent with *S. brachyurus*. To our knowledge, this is the first report of *S. brachyurus* for Greece. As the cucumbers and the leaf vegetables cultivated in the area were seed planted, we consider that the nematode originated most probably from the cactus plants which had been previously root ball planted. *Scutellonema brachyurus* may represent a threat for ornamental and cultivated plants production in Crete, Greece. The nematode has been already reported, mainly in greenhouses of six European countries (CABI and EPPO, 2006). In most of these cases, it is hypothesized that the nematode was introduced by imported plant material.

Key words: Crete, detection, *Scutellonema brachyurum*, spiral nematodes.

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¹Department of Viticulture, Vegetable Crops, Floriculture and Plant Protection, Institute of Olive Tree, Subtropical Crops and Viticulture, National Agricultural Research Foundation, Hellenic Agricultural Organization-DEMETER, PO Box 2228, 71003 Heraklion, Crete, Greece.

²Institute for Sustainable Agriculture, CSIC, Avenida Menéndez Pidal s/n, 14004 Córdoba, Spain.

E-mail: pcastillo@ias.csic.es; p.castillo@csic.es.

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