

el tiempo de exposición a 16 y 24 hrs se puede obtener un alto grado de diferenciación a 40C (Fig. 2B-C).

En conclusión los resultados indican que el método de teñir descrito permite una coloración efectiva de los órganos reproductores de *H. galeatus* y *H. dihystra*, lo que a su vez permite una visualización más efectiva sin necesidad de microscopios costosos. Hemos ensayado esta técnica en *Pelodera chitwoodi* y otras especies de la subfamilia Tylenchinae, encontrando grandes variaciones en los periodos de exposición que son necesarios para obtener una coloración y diferenciación adecuada. Por lo general, los periodos de exposición fueron de menor duración que en los nemátodos utilizados en este estudio.

#### ABSTRACT

The use of a .05% (w/v) toluidine blue solution in 0.05M, pH 4.60 phosphate buffer for *in toto* staining of nematodes was studied with *Hoplolaimus galeatus* and *Helicotylenchus dihystra*. Treatment of fixed specimens in the solution for 7 hrs at 60C resulted in general staining. When stained specimens were immersed for 5 hrs at 50-60C in phosphate buffer (0.01M, pH - 4.6) good differentiations of the esophagous and reproductive structures was obtained.

#### REFERENCIAS

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#### RESEARCH NOTES — NOTAS DE INVESTIGACION

*HETERODERA GRAMINIS*, FIRST RECORD FOR TRINIDAD, WEST INDIES [*HETERODERA GRAMINIS*, PRIMER REGISTRO EN TRINIDAD, INDIAS OCCIDENTALES]. Kenneth M. Farrell, Nematology Department, Rothamsted Experimental Station, Harpenden, Herts., England.\*

Reports of *Heterodera species* from the West Indies are limited. *Scotto La Massése* (1) mentioned unidentified second-stage juveniles from soil around pigeon pea (*Cajanus cajan* Mill.) in Marie Galante. Singh reported an unidentified *Heterodera* in Trinidad (2), probably *H. sacchari* Luc & Merny, from soil in sugarcane museum plot at the University of the West Indies Field Station (3). It was identified from second-stage juveniles only.

Cysts containing viable eggs were recovered from bamboo grass (*Paspalum fasciculatum* Willd.) in another museum plot at the University of the West Indies Field Station. The cysts and second-stage juveniles resemble those of *H. graminis*, except in

length of second stage juveniles [449 + 23.9 um compared with 391 + 22.1 um (4)]. White mature females were also found adhering to the roots of the bamboo grass. A pot test was set up to determine whether the nematode developed on the type host of *H. graminis*, *Cynodon dactylon*. The nematodes failed to multiply whereas they did so freely in a similar test with bamboo grass, suggesting the possibility of pathotypes within this species. Cysts and second-stage juveniles resembling *H. graminis* were also found in soil around Soybean (*Glycine max* (L.) Merr.), Bodi bean (*Vigna unguiculata* Walp.) and sweet potato (*Ipomoea batatas* (L.) Lam.).

This is the first specific record of a *Heterodera* in the West Indies. The similarity of the second stage juveniles of *H. graminis* to those of *H. sacchari* (both having three incisures in the lateral field) may have led to the earlier report of *H. sacchari* but the presence of the latter species cannot be ruled out.

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#### RESUMEN

El artículo presenta datos sobre la presencia de *Heterodera graminis* Stynes en las Indias Occidentales y constituye el primer registro de su presencia en el area.

#### LITERATURE CITED

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**RADOPHOLUS SIMILIS IN TEXAS [RADOPHOLUS SIMILIS EN TEJAS].** C.G. Rogers, C.M. Heald, and A.M. Golden, Texas Department of Agriculture, 301 Navarro, De Leon, Texas 76444; ARS, U.S. Department of Agriculture, P.O. Box 267, Weslaco, Texas 78596; and Plant Nematology Laboratory, Plant Protection Institute, ARC-West, Beltsville, Maryland 20705.

According to records of the Texas Department of Agriculture and the USDA-ARS, the burrowing nematode, *Radopholus similis* (Cobb 1893) Thorne 1949, was first identified in Texas from ornamentals (*Philodendron* sp.) in Ellis County in the early spring of 1961. Identification was confirmed by A.M. Golden and specimens are in the USDA Nematode collection at the USDA-ARS Nematology Laboratory, Beltsville, Maryland. Since then, numerous surveys of ornamental nurseries in Texas have been conducted by the USDA Plant Pest Control Division and the Texas Department of Agriculture. Presently, *R. similis* infestations in Texas occur in three ornamental nurseries, one each in Cameron, Ellis, and Hidalgo Counties. In all cases new infestation was traced to incoming shipments of ornamentals from other states; consequently, the nematode is probably not indigenous to Texas.

In Florida, *R. similis* has caused a condition of citrus known as "Spreading Decline" which in turn has caused severe economic losses to the citrus industry (2). Therefore,