RESEARCH NOTES - NOTAS DE INVESTIGACION

REPRODUCTION OF *BELONOLAIMUS LONGICAUDATUS* IN TREATED AND UNTREATED MUCK SOIL. [REPRODUCION DE *BELONOLAIMUS LONGICAUDATUS* EN SUELOS TURBOSOS TRATADOS Y SIN TRATAR]

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Distribution of the sting nematode, *Belonolaimus longicaudatus* Rau, is limited primarily to the southeastern states of the U.S.; however, it has been found to occur in localized areas of the northeastern states of Connecticut (2) and New Jersey (6), and in the central states of Arkansas (7), Kansas (3), and Oklahoma (9). A *Belonolaimus* sp. has also been reported in Nebraska (4).

Information gathered to date has indicated that *B. longicaudatus* is limited to sandy soils. In Virginia, Miller (5) reported the sting nematode limited to the "A"-horizon of soils with a sand content of 84-94% and in Georgia it was found only in the top 30 cm of soil containing 88% sand and 5% clay (1). Thames (10) theorized that fine-textured soils inhibit movement of *B. longicaudatus* and its ability to reproduce. In a comprehensive study with North Carolina and Georgia populations of *B. longicaudatus* inoculated in methyl bromide treated soils, Robbins and Barker (8) found that increases in population occurred only in soils with a minimum of 80% sand and a maximum of 10% clay. Optimum soil particle size for reproduction was near that of 120-370 um (65-mesh) silica sand. The nematode failed to maintain the inoculum level in muck and clay soils in their experiments. The general distribution of *B. longicaudatus* in Florida is similar to that reported in other states (2). It is not a serious problem in soils containing a considerable portion of clay, and it is only rarely found and in very low numbers in muck soils. These muck soils are formed from the remains of sawgrass and other sedges, lilies, shrubs, and grasses that overlie nearly neutral to alkaline sands, sandy clays, marl or limestone.

In a preliminary greenhouse trial in the fall of 1977, 100 specimens of a central Florida population of *B. longicaudatus* were added to each of two 15-cm pots of steam sterilized and unsterilized Lauderhill muck soil (4% fiber, 67% organic material). The pots were planted one week prior to inoculation with seed of 'Grazer A'. a sorghum-sudangrass hybrid (*Sorghum bicolor* x *S. sudanense).* After three months, the pots were sampled and an extremely high population (575 sting nematodes per 100 cm^3 of soil) was present in the steamed soil, whereas only 4 per 100 cm^3 were present in the unsterilized soil.

In the spring of 1979, a more extensive experiment was conducted in which the effect of DD, methyl bromide, and steam treatment of muck on reproduction of *B. longicaudatus* was compared. Steam and methyl bromide treatments were performed by a standard procedure for treating small quantities of soil. DD was injected into 11.5 L pots of muck at the rate of 374 L/ha (surface area) three weeks prior to use of the soil. The soil was placed in 10-cm pots with five replicates of each treatment, then the pots planted with sorghum-sudangrass seed and one week later inoculated with 100 nematodes per pot. Four months later, the pots were sampled and the following populations per 100 cm^3 determined: DD, 684; methyl bromide, 236; steamed, 627; untreated

check, 14. These data demonstrate that the Florida population of *B. longicaudatus* used in these tests is capable of very rapid reproduction in muck soils as well as in fine sandy soils. Apparently, certain factors are present in the muck soils which prevent the development of significant populations of this nematode and the treatments used in these experiments removed or neutralized these factors. Additional research is needed to elucidate this phenomenon.

RESUMEN

Resultados de experimentos de invernadero con un híbrido de sorgo y hierba sudán *(Sorghum bicolor* x *S. sudanense)* indicaron que una población de *Belonolaimus longicaudatus* puede reproducirse rápidamente en un suelo turboso fumigado pero no en el mismo suelo sin fumigar. Aparentemente existen factores en los suelos turbosos de la Florida que impiden el desarrollo del nematodo bajo condiciones de campo.
Claves: dinámica de población, factores edáficos, Sorghum bicolor, Sorghum sudanense, Belonolaimus longicaudatus, combate de nematodos.

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