Effects of Pangola Digitgrass on *Meloidogyne arenaria, M. javanica*, and *M. hapla*[1]

SANAA HAROON and GROVER C. SMART, JR.[2]

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Pangola digitgrass (*Digitaria decumbens* Stent.) can be used as a pasture grass or it can be harvested as hay. It originated in Africa and has been introduced to other tropical and subtropical areas of the world. Winchester and Hayslip (5) reported that the grass eliminated populations of the root-knot nematode, *Meloidogyne incognita acrita* Chitwood and Oteifa, 1952. Overman (3) sampled 74 pastures of Pangola digitgrass and found *M. incognita* Kofoid and White, 1919 in only one. That pasture had been in Pangola digitgrass only one year. Haroon and Smart (1) confirmed that Pangola digitgrass is antagonistic to *M. incognita.* Other species of *Meloidogyne,* especially *M. javanica* (Treub, 1885) Chitwood, 1949 and *M. arenaria* (Neal, 1889) Chitwood, 1949, are present in regions where Pangola digitgrass may be grown. The three species of *Meloidogyne* mentioned previously plus *M. hapla* Chitwood, 1949 are the four most common species of *Meloidogyne* on a world basis (4). Since the grass is known to be antagonistic to *M. incognita,* experiments were conducted to determine whether it is antagonistic to the three other most common species of *Meloidogyne.*

Forty 15-cm-d clay pots were filled with autoclaved Arredondo fine sand. Twenty of the pots were planted with one unrooted Pangola digitgrass cutting and 20 with one tomato (*Lycopersicon esculentum* Mill. cv. Rutgers) seed to serve as controls. Five weeks later the soil in five pots of digitgrass and five of tomato was infested with 15 egg masses of either *M. arenaria, M. hapla, M. javanica,* or *M. incognita.* All pots were placed in a greenhouse at about 25 ± 3 C and watered as needed. The experiment was terminated after 90 days. The plants were removed from the soil, the tops removed and weighed, the roots washed, weighed, and the number of galls and egg masses determined. The roots were stained with acid fuchsin in lactophenol, destained in lactophenol, mounted on slides, and examined for the presence of different life stages of *Meloidogyne.* The population of second-stage larvae in the soil in each pot was determined by removing larvae from a 100-cm^3 aliquot of soil by a centrifugation-flotation technique (2).

After 90 days, soil populations of second-stage larvae of all four species of *Meloidogyne* on digitgrass were low: 3 *M. javanica,* 12 *M. hapla,* 24 *M. arenaria,* and 36 *M. incognita* per pot compared to 2,412, 4,609, 12,180, and 7,152 of the same species on tomato (Table 1). Second-stage larvae per root system were 9 *M. javanica,* 11 *M. hapla,* 12 *M. incognita,* and 48 *M. arenaria* in digitgrass roots compared to 475, 307, 429, and 4,120 of the same species in tomato roots. Thus, Pangola digitgrass should be a suitable crop to use wherever it can be grown for pasture or forage or as an antagonistic plant against the four most common species of *Meloidogyne.* It is not known if the grass is antagonistic to other species of *Meloidogyne.*

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[2]Graduate student and professor, Department of Entomology and Nematology, University of Florida, Gainesville, FL 32611.

Table 1. Effect of Pangola digitgrass on *Meloidogyne arenaria, M. hapla, M. javanica,* and *M. incognita**

Treatment	Fresh weight (g)		Number second-stage larvae	
	Roots	Tops	Tops†	In roots‡
M. arenaria				
Pangola	10.9	17.8	24	48
Tomato (control)	3.1	8.4	12,180	4,120
M. hapla				
Pangola	19.2	18.8	12	11
Tomato (control)	6.5	5.5	4,609	307
M. javanica				
Pangola	14.6	15.1	3	9
Tomato (control)	5.5	3.6	2,412	475
M. incognita				
Pangola	9.2	17.9	36	12
Tomato (control)	2.5	9.6	7,152	429

*Initial inoculum was 15 egg masses/pot of 1,200 cm^3 soil.
†Per pot, average of five replicates.
‡Per root system.

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