Plant-parasitic nematodes associated with groundnut in parts of Benin, Burkina Faso, and Nigeria

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Plant-parasitic nematodes are one of the important biotic factors in causing variability in growth and yield of groundnut in the Sahel. *Scutellonema* species in Niger and Senegal, and *Aphasmatylenchus straturatus* Germani in Burkina Faso are considered important limiting factors for groundnut production (Dhery *et al.*, 1975 ; Germani and Gautreau, 1976 ; Sharma, 1988). A recent survey of some groundnut producing regions of Niger revealed the presence of crop damaging species of *Xiphinema, Telotylenchus* and *Paralongidorus* (Sharma, 1988). The objective of this exploratory study was to generate information on the presence or absence of the important plant-parasitic nematode species associated with groundnut in parts of Benin, Burkina Faso and Nigeria.

Survey trips were undertaken to six groundnut producing areas in Benin, five in Burkina Faso and three in Nigeria in August and September 1989. In each area samples were collected from rhizosphere using a 20 cm long steel shovel. Samples from different fields in a locality were collected in one polyethylene bag. Around 1 000 cm^3 soil samples was collected from each location. A thoroughly mixed 250 cm^3 soil sample was processed using decanting and sieving method. Approximately 750-1 000 ml water was added to the soil sample in a plastic bowl and the slurry was stirred and passed through 20 mesh and 400 mesh (pore size 38 µm) sieves. The residue collected on 400 mesh sieve was placed on a nematode filter supported on a steel mesh immersed in water in a collecting tray. Water in the collecting tray was

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TABLE I

List of some important nematode species found associated with groundnut in different regions of Benin, Burkina Faso and Niger

Country/ Region	Nematode spp.
Benin	
Niaouli	*Criconemoides* sp., *Ditylenchus* spp., *P. brachyurus, Scutellonema* sp., *Xiphinema* spp.
Dadeh	*S. clathricaudatum, Scutellonema* spp.
Ina	*Aphelenchoides* spp., *Ditylenchus* spp., *Helicotylenchus* sp., *Hoplolaimus pararobustus, Scutellonema* spp., *Pratylenchus brachyurus, Pratylenchus* spp., *X. parasetariae*
Bambereke	*Helicotylenchus* spp., *Scutellonema clathricaudatum, Scutellonema* spp., *Xiphinema parasetariae*
Bagou	*Ditylenchus* spp., *Helicotylenchus dihystera*
Kandi	*Aphelenchoides, Helicotylenchus* sp., *H. pararobustus, S. clathricaudatum, Scutellonema* sp., *Pratylenchus brachyurus, Pratylenchus* sp., *X. parasetariae*
Malanville	*H. dihystera, X. parasetariae, Pratylenchus* spp.
Burkina Faso	
Banfora	*H. dihystera, H. pararobustus, S. clathricaudatum, Scutellenema* sp., *Pratylenchus* spp.
Dengouindongou	*Ditylenchus* spp., *Hemicaloosia paradoxa, Hemicycliophora* sp., *Rotylenchulus parvus, S. clathricaudatum, Scutellonema* sp., *Triversus annulatus*
Fada	*Aphelenchoides* spp., *S. clathricaudatum, Scutellonema* sp., *Pratylenchus* spp., *Triversus annulatus*
Hounde	*Aphelenchoides* spp., *Helicotylenchus* spp., *Pratylenchus* spp.
Linoghin	*Ditylenchus* spp., *Helicotylenchus* sp., *Hoplolaimus* sp., *Pratylenchus* spp.
Nigeria	
Kaduna	*Aphelenchoides* spp., *Helicotylenchus* sp., *Criconemoides* sp., *Scutellonema* spp., *Tylenchorhynchus* spp., and *Pratylenchus* spp., *Xiphinema* spp.
Katsina	*Aphelenchoides* spp., *Helicotylenchus* sp., *Criconemoides* spp., *P. delattrei, P. brachyurus, Scutellonema* spp.
Zaria	*Aphelenchoides arachidis, Helicotylenchus* sp., *Criconemoides* sp., *Hoplolaimus* sp., *P. delattrei, P. brachyurus, Tylenchorhynchus* sp., *Rotylenchulus* sp., *Scutellonema* spp.

examined for plant-parasitic nematodes under a stereoscopic microscope. Root pieces collected along with the soil were examined under the microscope for endoparasitic nematodes.

Plant parasitic nematodes recorded in different areas of Benin, Burkina Faso and Nigeria are mentioned in Table I. *Scutellonema* spp. (mainly *S. clathricaudatum*) and *Pratylenchus* spp. (including *Pratylenchus brachyurus*) in Benin, *Helicotylenchus* spp. (including *Helicotylenchus dihystera*) and *Pratylenchus* spp. in Burkina Faso, and *Aphelenchoides* spp. (including *Aphelenchoides arachidis*) and *Pratylenchus* spp. (*P. brachyurus* and *P. delattrei*) in Nigeria were the most frequent nematodes. *Ditylenchus* spp. and *Aphelenchoides* spp. were found in many regions. These nematodes can attack groundnut seeds and pods. *Aphelenchoides arachidis* has so far been reported in the seed of groundnut in Nigeria and *Ditylenchus destructor* in pods and seeds from the Transvaal Province of South Africa. Presence of the polyphagic pathogenic nematode species indicates that there is a need to map their distribution in these countries in order to estimate the extent of crop losses being caused by them on groundnut and other important crops such as pearl millet, cowpea and sorghum. The rootknot nematode (*Meloidogyne* spp.) was not observed in any of the root samples crop damaging nematode species in association with groundnut and does not essentially represent the major nematode problems in these countries. However, it strengthens the need for more extensive nematode-caused crop loss surveys.

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