

Plant Parasitic nematodes associated with
Vegetable crops in the Republic of the Gambia.

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Table 2 - shows the genera found inside the roots of the different plants collected.

Table 3 - indicates the frequency (percentage of samples in which a genus was observed) of the different genera.

Figures 2 - 9 - provide the distribution and the size of the populations observed for the main genera detected.

The genera observed :

Meloidogyne : was observed in all areas prospected and was present in 90 % of the samples analyzed. It is recognized worldwide as a major pest of vegetables and is one of the principal factors limiting the development and profitability of vegetable crops, particularly in the tropics (Sasser, 1979). In tropical Africa it is the most widely distributed and the most damaging nematode genus (Luc, 1968).

In tropical African countries Meloidogyne populations belong to parthenogenic species : Meloidogyne incognita, Meloidogyne javanica and Meloidogyne arenaria. It is easy to identify a Meloidogyne infestation because they cause characteristic galls on roots and tubers.

In the areas surveyed, Meloidogyne spp. were found associated with all vegetable crops but they were not detected within the roots of cucumber, water-melon and mint. In Sénégal mint is considered to be resistant to Meloidogyne infestation and water-melon is resistant to some populations of Meloidogyne. Contrary to Bridge et al. (1978), we found that bitter tomato was heavily galled which is also often the case in Sénégal where bitter tomato is considered as a very susceptible crop. It should be observed that Amaranthus sp. appears to be a poor host for Meloidogyne sp.

Helicotylenchus : this genus is represented by at least Helicotylenchus dihystrera. A part from root-knot nematodes Helicotylenchus is the genus the most frequently encountered in Gambia. Some species, Helicotylenchus multicinctus and H. dihystrera are known to cause damage to banana but little is known of the damage they cause to vegetable crops in tropical Africa (Taylor, 1976).

Scutellonema : the genus Scutellonema is represented by Scutellonema cavenessi ; this nematode is frequently encountered in Gambia in the vicinity of the roots of numerous plants. In Sénégal S. cavenessi cause important damages on groundnut (Germani, 1979).

Pratylenchus : at least two species of Pratylenchus were found associated with vegetable crops in Gambia and were present in 48 % of the samples collected. The root-lesion nematodes are known to cause extensive damage to a wide range of crops (Taylor, 1976).

Rotylenchulus : is represented by Rotylenchulus reniformis ; this nematode was detected in 10 % of the samples and is known to cause damage on many crops.

Paratrichodorus : is represented by Paratrichodorus minor which was detected in one sampling site. It is a strict ectoparasite, it causes damage by destroying the root apices.

Hirschmanniella : Hirschmanniella spinicaudata and Hirschmanniella oryzae were detected in one field at Mandinari. These species have been reported to be widely distributed in rice fields in Gambia (Fortuner & Merny, 1973). However since both nematodes are endoparasites of rice and since none were extracted from the roots of vegetable root systems it is probable that they were encountered as parasites of another plant, probably a wild graminea.

Species of the genera Aphelenchoides, Aphelenchus and Ditylenchus detected could be species feeding on fungal colonies.

The other plant-parasitic genera reported in this report are : Criconemella, Dolichorhynchus, Heterodera, Hoplolaimus, Longidorus, Paratylenchus, Telotylenchus, Trichotylenchus, Tylenchorhynchus, Tylenchus and Xiphinema. Although species of these genera have been demonstrated to damage various crops in many other parts of the world, their economic importance on vegetable crops in West Africa is completely unknown.

Conclusions

This survey has permitted compilation of a list of the plant-parasitic nematodes most frequently associated with vegetable crops in the Republic of the Gambia. The nematofauna observed was not greatly different from those reported by Merny et al. (1974) and Bridge et al. (1978) and the species observed are generally the same as those observed in Sénégal associated with the same plants (Netscher, 1970).

The Meloidogyne (root-knot nematode) problem is without doubt the most important nematode problem on vegetable crops in Gambia and affect almost all vegetable crops grown. Method which can be applied to control these parasites have been reviewed by Netscher (1970) and Prot (1984) with regard to nematode parasites of vegetable crops in Sénégal.

Although soil fumigation with nematocides can be applied, these treatments are very expensive. They are necessary primarily for desinfection of nurseries.

Soil flooding is an effective control method since Meloidogyne can not survive several months' submersion. It would be a sound practice, where possible, to grow vegetable during the dry season on low lands where paddy has been grown during the rainy season, provided that seedlings come from chemically denematized nurseries.

Soil dessication during the dry season is also effective.

Crop rotations using resistant plant or cultivars and trap crops such as groundnut (Netscher, 1974) is often the best way of limiting Meloidogyne populations.

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Table 3 : Percentage of soil and root samples in which the different genera were observed.

Genus	%
Meloidogyne	90
Helicotylenchus	52
Pratylenchus	48
Scutellonema	38
Aphelenchus Aphelenchoides	34
Xiphinema	24
Dolichorhynchus Tylenchorhynchus	22
Ditylenchus	21
Criconemella	17
Tylenchus	15
Rotylenchulus	10
Trichotylenchus	4
Telotylenchus	4
Hoplolaimus	2
Hirschmanniella	2
Paratrichodorus	1
Paratylenchus	0,5
Longidorus	0,5
Heterodera	0,25

Figures 2-9.

Size of the population observed (nematodes/liter of soil)



