

Note brève

OBSERVATIONS ON *SARISODERA AFRICANA* (NEMATODA : HETERODERIDAE) : REDESCRIPTION OF ANTERIOR END OF FEMALES AND OCCURRENCE OF JUVENILES WITH ABERRANT TAILS

Donald P. Taylor* and Michel Luc**

Sarisodera africana was described by Luc, Germani and Netscher (1973) as a parasite of Guinea grass (*Panicum maximum* Jacq.) from Ivory Coast. Unfortunately their specimens were deeply embedded in the fibrous roots making it practically impossible to dissect intact females. In fact, their description of the young female was based upon a single specimen which they described as "écrasé" (crushed or flattened). Thus, the anatomy of the anterior end of this nematode has never been adequately described.

During hydroponic culture of *P. maximum* seedlings which had been previously inoculated with juveniles of *S. africana*, white females were observed projecting from the seedling roots after twenty days (Fig. 1). These were easily dissected intact from the tender young roots and are the basis of the redescription of the anterior end of the female given below.

To observe the anterior end of young females, two techniques were used : 1) temporary mounts — the entire female was placed alive in glycerin jelly on a Cobb slide, the body oriented to present the anterior end most clearly, a cover slip applied, and the specimen observed and photographed with a Leitz-Orthomat.® photomicroscope ; and 2) permanent mounts — females were killed and fixed with FP 4 : 1 (Netscher & Seinhorst, 1969) and mounted in glycerin jelly on Cobb slides. Specimens were prepared for stereoscan electron microscopy (SEM) as described by Sher and Bell (1975).

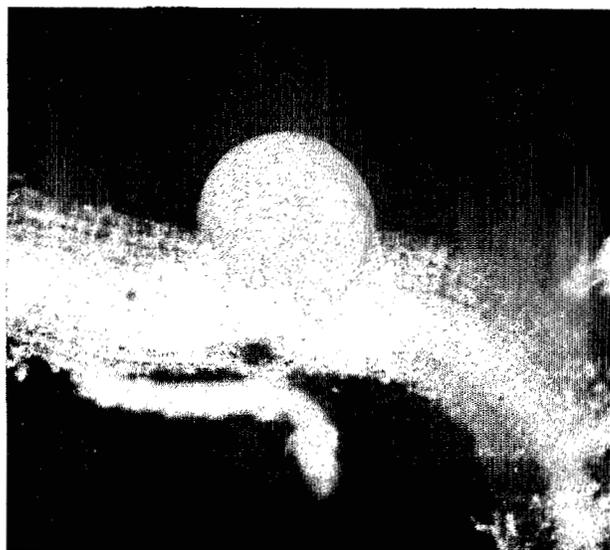


Fig. 1 : *Sarisodera africana* female protruding from root of *Panicum maximum* (from hydroponic culture).

Redescription of the anterior end of *S. africana* (Fig. 2 A & B)

Anterior part ("neck") very small compared to rest of body; usually forming a right angle (ventrad) to the long axis of the body (Fig. 3). SEM face view (Fig. 5) shows an oval buccal aperture located in the center of a roughly rectangular first annule (or labial disc ?) with smooth corners. No papillae or amphids

* Laboratoire de Nématologie, ORSTOM, B.P. 1386, Dakar, Sénégal.

** Muséum national d'Histoire naturelle, Laboratoire des Vers, 43 rue Cuvier, 75005 Paris, France.

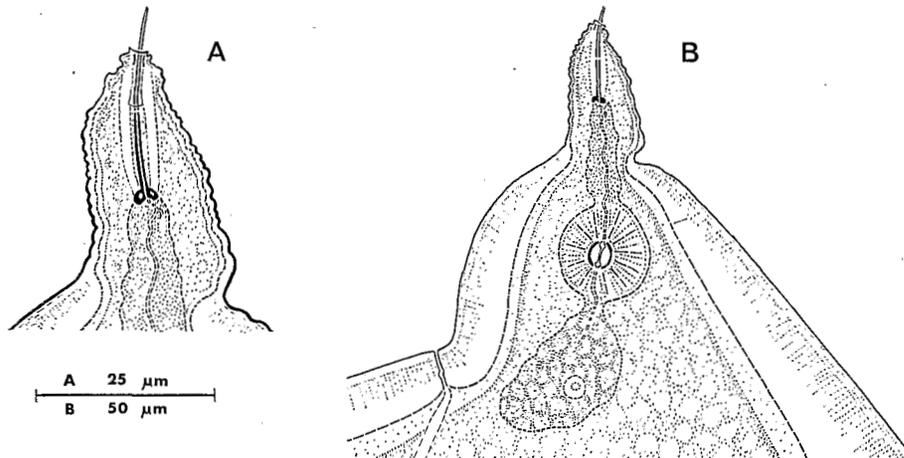


Fig. 2 : *Sarisodera africana*. Young female : A. Anterior end (= neck) ; B. Oesophageal region.

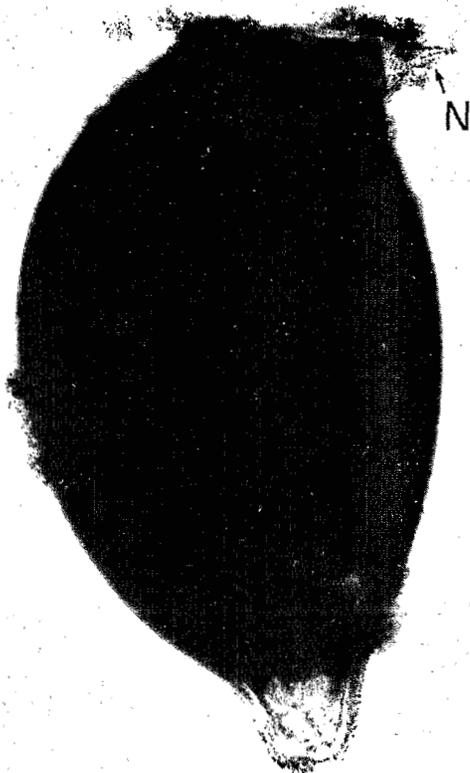


Fig. 3 : Whole mount of *Sarisodera africana* showing relative size and usual orientation of neck (N).

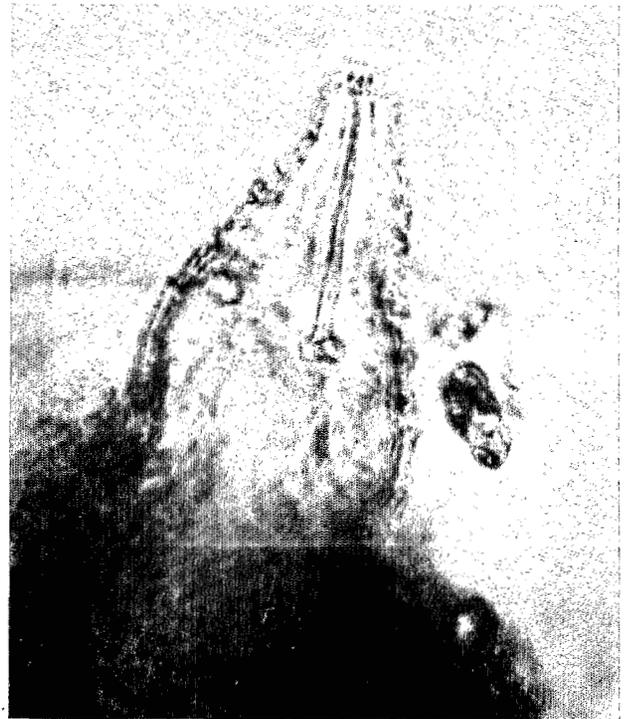


Fig. 4 : *Sarisodera africana*. Anterior end of living female dissected from root of *Panicum maximum* (mounted and photographed in glycerin jelly).

seen. This first rectangular annule is followed by approximately circular annules with smooth edges. Stylet thin, often curved, 25-27 μm long, the anterior part being slightly longer than the posterior; basal knobs rounded, sloping backwards (Fig. 4). Labial sclerotization poorly developed, seen only as a short anterior tubus. Dorsal oesophageal gland opening located about 3 μm behind stylet knobs. Oesophagus : procorpus more or less cylindrical, often compressed; median bulb well developed (25-30 \times 22-25 μm), highly muscularized with strong valve plates; isthmus very short; basal bulb ovoid; only one nucleus (dorsal ?) seen. Excretory pore located at the level of the base of oesophagus (about 90-110 μm from anterior end). Cuticle of neck region very thin (1.5-2 μm) in contrast to the cuticle of the rest of the body the change in thickness being abrupt.



Fig. 5 : *Sarisodera africana*. SEM "en face" photograph of a young female (approx. \times 10,000).

Juveniles with aberrant tails

Within the Heteroderidae, juveniles having aberrant tail morphology have been described in *Heterodera trifolii* (Mulvey, 1960). In *H. oryzae*, Cadet (1977) obtained three mutant strains by treating

juveniles with acriflavine; one of these strains was characterized by having abnormally bent tails.

Cysts of *S. africana* were extracted from stock cultures maintained on *P. maximum* in the greenhouse. These were incubated in water in order to obtain juveniles. Examination of the juveniles that emerged during the first 48 hours revealed that approximately 5% had aberrant tail shapes. These were individually selected, killed and fixed with FP 4 : 1, and mounted in glycerin according to the rapid method of Seinhorst (1959). Microscopic examination failed to detect any morphological abnormalities other than the tail shape.

Representative examples are shown in Figure 6. Many specimens varied from the normal by a simple bend of the tail tip from the main body axis (Fig. 6 A-D), reaching an extreme angle of approximately 180° (Fig. 6 E). In others, the tail extremity was S-shaped (Fig. 6 F). Several specimens possessed bent tail tips accompanied by an abrupt change in body diameter just anterior to the bend (Fig. 6 G-L). In some of these the tail tip was greatly distorted (Fig. 6 H & J); in others the tail tip was completely recurved giving these specimens the superficial appearance of having a bluntly rounded tail (Fig. 6 K & L).

While the cause of this phenomenon is as yet unknown, it has been speculated that similar aberrant forms may have been induced in *Heterodera trifolii* by the presence of sperm from closely related species (Mulvey, 1960) or in *H. oryzae* by mutagenetic compounds (Cadet, 1977).

ACKNOWLEDGEMENTS

The authors express their appreciation to B. Souchaud, ORSTOM, Dakar, for technical assistance throughout this study and to A. H. Bell, University of California, Riverside, for assistance in processing females for SEM.

REFERENCES

- CADET, P. (1977). Obtention de mutants morphologiques chez le nématode *Heterodera oryzae* parasite du riz. *Cah. ORSTOM, Sér. Biol.*, 11 (1976) : 143-150.
- LUC, M., GERMANI, G. & NETSCHER, C. (1973). Description de *Sarisodera africana* n. sp. et considérations sur les relations entre les genres *Sarisodera* Wouts & Sher, 1971 et *Heterodera* A. Schmidt, 1871 (Nematoda : Tylenchida). *Cah. ORSTOM, Sér. Biol.*, 21 : 35-43.
- MULVEY, R. H. (1960). Abnormalities in second-stage larvae of *Heterodera trifolii* Goffart, 1932 (Nematoda : Heteroderidae). *Can. J. Zool.*, 38 : 777-779.
- NETSCHER, C. & SEINHORST, J. W. (1969). Propionic

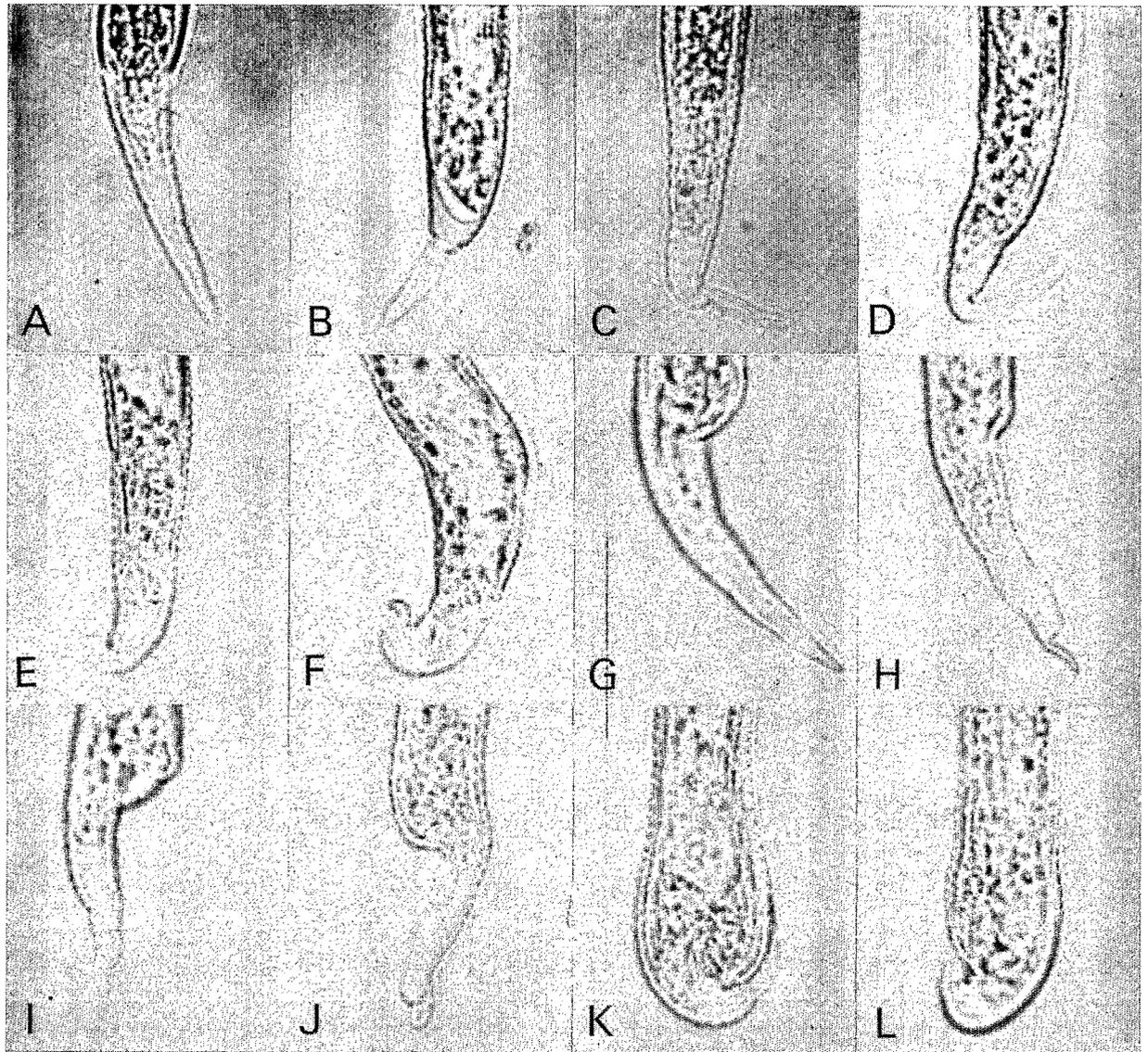


Fig. 6 : Tail tip aberrations in second-stage juveniles of *Sarisodera africana*.

acid better than acetic acid for killing nematodes. *Nematologica*, 15 : 286.

SEINHORST, J. W. (1959). A rapid method for the transfer of nematodes from fixative to anhydrous glycerin. *Nematologica*, 4 : 67-69.

SHER, S. A. & BELL, A. H. (1975). Scanning electron micrographs of the anterior region of some species of Tylenchoidea (Tylenchida : Nematoda). *J. Nematol.*, 7 : 69-83.

Accepté pour publication le 15 septembre 1978.