THE INFLUENCE OF HOST NUTRITION ON THE MORPHOMETRICS OF THREE *APHELENCHOIDES* SPECIES (NEMATODA: APHELENCHOIDEA)

BY

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The effects of nutrients on the dimensions and the sex of *Aphelenchoides sacchari* Hooper, *A. rutgersi* Hooper & Myers, and *A. dactylocercus* Hooper, were studied. Each species was reared on the fungus, *Pyrenochaeta terrestris*. Minor variations in body length, tail length, tail area and the length/width ratio were observed but the basic morphological characters of none of the species were significantly changed. The ratio of body length to tail length was consistently significantly different in the three *Aphelenchoides* species studied. *A. rutgersi* Hooper & Myers, 1971 appears to be a valid species: its tail length and the ratio of its length to tail length are intermediate between those of *A. sacchari* and *A. dactylocercus*. *A. dactylocercus* has the greatest tail length and the smallest ratio of body length to tail length. Males and intersexes were observed in *Aphelenchoides sacchari* and *Aphelenchoides rutgersi*, but there was no evidence of either in *A. dactylocercus*.

In 1964 a population of *Aphelenchoides* sp. was collected from roots of grapefruit near Orlando, Florida, U.S.A. by Dr. W. Feder and reared on *Penicillium* sp. Subcultures were transferred to *Pyrenochaeta terrestris* de Note at Rutgers University. Hooper & Myers (1971) described the nematode as *A. rutgersi* which was previously cited as either *A. sacchari* (Myers, 1965, 1967a, 1967b; Nickle & McIntosh, 1968) or *A. dactylocercus* (McClure, 1969; Rowse, 1969) or *A. sp.* (Myers, 1967c; 1969; Balasubramanian & Myers, 1969, 1971a, b; Buecher, Hansen & Myers, 1970; Myers et al. 1971; Petriello & Myers, 1971). In attempts to find differences in the measurements of these three closely related species, the ratio of body length to tail length (de Man, 1880) appeared to be a useful character. To study this and other characters further, female nematodes reared in cultures where the nutrition of the host fungus was controlled, were measured. The sex ratio, females to males, was also noted.

MATERIALS AND METHODS

*Aphelenchoides sacchari* Hooper, 1958, *A. rutgersi* Hooper & Myers, 1971 and *A. dactylocercus* Hooper, 1958 from the original type cultures, were reared separately on the fungus *Pyrenochaeta terrestris*. Nutrient media were prepared as reported by McClure & Viglierchio (1966) and their method of indicating concentration of nutrients used. *Aphelenchoides rutgersi* and *A. dactylocercus* were subjected to four nutritional treatments (Sucrose, Macronutrient Salts, Iron and Vitamins), and *A. sacchari* to one (Sucrose). There were seven replicates of each nutrient each at five different concentrations making 315 Petri dishes in all. For each treatment 20 ml. of the appropriate nutrient medium was

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poured aseptically into 9 cm Petri dishes and each dish inoculated at its centre by transferring a 3 mm disc of established fungal mycelium and kept at room temperature. Cultures were harvested 5 weeks after inoculation. Nematodes were

Fig. 1. Body length, tail area, tail length and ratio of body length to tail length in *A. sacchari*, *A. rutgersi* and *A. dactylocercus*. Measurements of 50 females in cultures with fungus and sucrose. Columns with the same letters not significantly different, otherwise, \( P = 5\% \).

Fig. 2. Body length, tail area, tail length and ratio of body length to tail length in *A. rutgersi* and *A. dactylocercus*. Measurements of 50 females in cultures with fungus and vitamins, salts 1 and iron. Columns with the same letters not significantly different, otherwise \( P = 5\% \) for columns with letters ab whereas \( P = 1\% \) for those with letters de.