

THE RELATIONSHIP BETWEEN NEMATODE RESERVES

AND THEIR SURVIVAL TO DESICCATION

LE RÔLE DES RESERVES DES NEMATODES DANS LEUR RESISTANCE A LA
DESICCATION.

Y. DEMEURE¹, G. REVERSAT¹, S. D. VAN GUNDY² and D. W. FRECKMAN²

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¹Laboratoire de Nématologie, ORSTOM BP 1386, Dakar, Senegal.

²Department of Nematology, University of California, Riverside, CA 92521.

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The relationship between nematode reserves and their survival to desiccation

Helicotylenchus dihystra from California, U.S.A. and Scutellonema cavenessi from Senegal, Africa were extracted from field soil using wet sieving techniques. Adult females of each species were selected on the basis of transparency of the digestive tract, manually separated from the washings and placed singly in B.P.I. (Bureau of Plant Industry) watch glasses in a small film of water. Opaque nematodes were selected to represent nematodes with large quantities of stored food reserves, principally carbohydrates and lipids, while transparent nematodes were selected for their lack of food reserves. Quantitative tests of S. cavenessi showed that opaque nematodes contained an average of 44.4, 96.9 and 117 ng and that transparent nematodes contained 44.4, 0 and 24 ng of nitrogen, lipid and carbohydrate, respectively. The nematodes were dehydrated in Simon's wet chambers using glycerine solutions to maintain a relative humidity at 20 and 28° C. The relative humidity surrounding the nematode was lowered from 100 to 97.7, 96, 93, 87.9, 79.5, 66.5 and 50% at 24-hour intervals with the last treatment extending to eight days. Four replicates were used for each treatment at each relative humidity and each experiment was repeated. At the end of eight days, the dehydrated nematodes were rehydrated with a drop of water and then checked for survival as measured by nematode movement at the end of 48 hours. The survival of H. dihystra at 100, 96, 87.9, 79.5, 66.5 and 50% of relative humidity was 100, 87.5, 62.5, 50, 62.5 and 62.5% respectively for opaque females and 62.5, 12.5, 12.5, 0, 0 and 0% respectively for transparent females. The survival of S. cavenessi at 100, 96, 87.9, 79.5, 66.5 and 50% of relative humidity was 100, 87.5, 87.5, 75, 75 and 87.5 respectively for opaque females and

50, 12.5, 12.5, 0, 0, and 0% for transparent females. These results suggest that the quantity of stored food reserves in the form of carbohydrates and lipids may be important factors in the survival of nematodes during periods of desiccation.

Laboratoire de Nematologie, ORSTOM BP 1386, Dakar, Senegal and Department of Nematology, University of California, Riverside, CA 92521.