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## SURVIVAL OF *MELOIDOGYNE GRAMINICOLA* EGGS UNDER DIFFERENT MOISTURE CONDITIONS IN VITRO

by  
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*Meloidogyne graminicola* Golden and Birchfield has become a well-established pest on upland rice in some areas of India. It has been claimed that it does not readily survive in badly drained or waterlogged soils (Rao, 1970). This claim has been examined experimentally by subjecting egg masses of the nematode to different moisture levels in soil.

Small pieces of rice roots with copious egg masses were mixed with 40 g air dried field soil in petri dishes. Each petri dish was watered uniformly with 10 ml water and when the soil had become drier to hold ca. 5% water, different moisture regimes were established by (a) applying 2.5 ml water every 2 months (dry soil), (b) applying 5 ml every month (moist soil), and (c) adding water as necessary to maintain a waterlogged condition.

Viability of the nematode eggs was ascertained at 2 monthly intervals for 14 months. On each occasion a few pieces of galled roots were removed from each petri dish, mixed with 15 g sterilized soil and placed in 5 cm diameter earthen pot in which a rice plant cv. Pusa 2-21 was grown for 30 days. Percentage of galled root pieces (Roy, 1972) and reproduction of the nematode (number of egg masses and eggs per egg mass under stereoscopic microscope) were recorded.

In dry soil less than 1% galling was recorded after 2 months. This corroborates with the observation of Miller (1971) who recorded that eggs of *M. arenaria* from peanut plant parts as well as adhering soil dried in the field or at 37.7°C respectively lost viability after one month and one week. In moist soil and in waterlogged soils the egg masses remained viable for 12 months, but galling decreased from

40% and 49% respectively at 2 months to 11% and 6% respectively at 4 months with further gradual decrease in galling at each successive 2 monthly observation. At 14 months there was no galling in the moist soil and less than 1% in the waterlogged soil. A lone gall with an egg mass was found on a root in waterlogged soil after 16 months.

This study, therefore, indicates that although *M. graminicola* is a pest of upland rice, egg masses can remain viable under waterlogged and moist condition almost equally, but declines rapidly after 4 months. Potentiality of inoculum of *M. graminicola* in fallow soil to cause infestation to rice plants, although to a reduced rate, was found to last up to 11 months (Roy, 1978). De Guiran (1979) attributed survival of eggs and larvae of *M. incognita* in dry and water saturated soils to quiescence - in dry soil larvae could survive dessication more than six weeks, and in waterlogged soil larvae showed quiescence due to anoxia which was again dependent on competitors for oxygen.

#### L I T E R A T U R E   C I T E D

- DE GUIRAN G., 1979 - Survie des nematodes dans les sols secs et saturés d'eau: oeufs et larves de *Meloidogyne incognita*. *Revue Nématol.*, 2: 65-77.
- MILLER L. I., 1971 - Survival of *Meloidogyne arenaria* in roots, stems, and fruits of *Arachis hypogea* after harvest. *Va. J. Sci.*, 22: 84 (Helminth. Abstr. 44: 169, 1975).
- RAO Y. S., 1970 - Rice nematodes and their control. *PANS Manual 3 - Pest control in rice*, Chapter 5, pp. 99-107.
- ROY A. K., 1972 - Reaction of some plants to the attack of *Meloidogyne incognita* in Assam. *Indian J. Nematol.*, 2: 86-89.
- ROY A. K., 1978 - Effectiveness of rotation with non-host or fallow on reducing infestation of *Meloidogyne graminicola*. *Indian J. Nematol.*, 8: 156-158.