RESEARCH NOTES

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Effects of Cowpea and Maize Root Leachates on *Meloidogyne incognita* Egg Hatch[1]

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Nematode egg hatch is an important phase in the life cycle (1). Factors that influence this process may have a highly significant effect upon the survival of the nematode, its generation time, and its ability to incite disease. Root diffusates and seasonal changes in environmental, physical, and chemical factors that are related to diapause in unhatched larvae affect the hatching of plant-parasitic nematode eggs (1,7,8).

The effects of root diffusates on egg hatch are difficult to assess under multiple cropping systems common in the tropics (6). If plant-parasitic nematode eggs are induced to hatch by root diffusates of component crops, then this aspect of the cropping system could be incorporated into a management strategy. Cowpea (*Vigna unguiculata* (L.) Walp) and maize (*Zea mays* L.), are common components of cropping systems in southwestern Nigeria. Cowpea is a good host of *M. incognita*, whereas maize is a poor host (5,9). This study was carried out to compare, singly and in combination, the in vitro effects of root leachates collected from cowpea and maize on egg hatch of *Meloidogyne incognita* (Kofoid and White, 1919) Chitwood, 1949.

A population of *M. incognita* race 2 was reared in a screenhouse on cowpea 'Ife Brown.' Seedlings of Ife Brown and maize cultivars 'Farz 32' and 'Tzsr' were potted singly in 1.5-liter plastic pots, two pots per host. One pot was inoculated with 5,000 eggs of *M. incognita* race 2 and the other was left uninfested. Inoculum was collected by the method of Hussey and Barker (2). Another set of pots was left unplanted. The seedlings were grown in a screenhouse for 1 month at 21–24 C. Leachate was obtained by placing each pot over a 600-ml beaker and drenching with 250 ml sterile distilled water. Leachates were collected for 2 hours. Leachates were left undisturbed for 1 hour to allow particulate matters to settle to the bottom of the beaker.

Hatching tests were conducted by adding either 1 ml distilled water, 1 ml potting soil leachate, or 1 ml root leachate from infested and uninfested seedlings to a 1 ml egg suspension (80 ± 5 eggs/ml) in 30-cm-d square watch glasses, which were then covered with glass slips. The same procedure was used in a second experiment except that cowpea and maize root leachates were also mixed in a 1:1 ratio. The treatments in each experiment were replicated four times.

The watch glasses were maintained and randomized on a laboratory bench at an ambient temperature of 21–23 C. Egg hatch was monitored daily for 7 days, and numbers that hatched daily were subjected to analysis of variance. Cumulative egg hatch was plotted against days.

Egg hatch continued in all the treatments throughout the experimental period with rapid increases between day 3 and day 7 (Figs. 1, 2). By day 7, 29–44% of the initial number of eggs had hatched. Egg hatch on any day did not differ among treatments. In the graphs, therefore, only the observations made on treatments with

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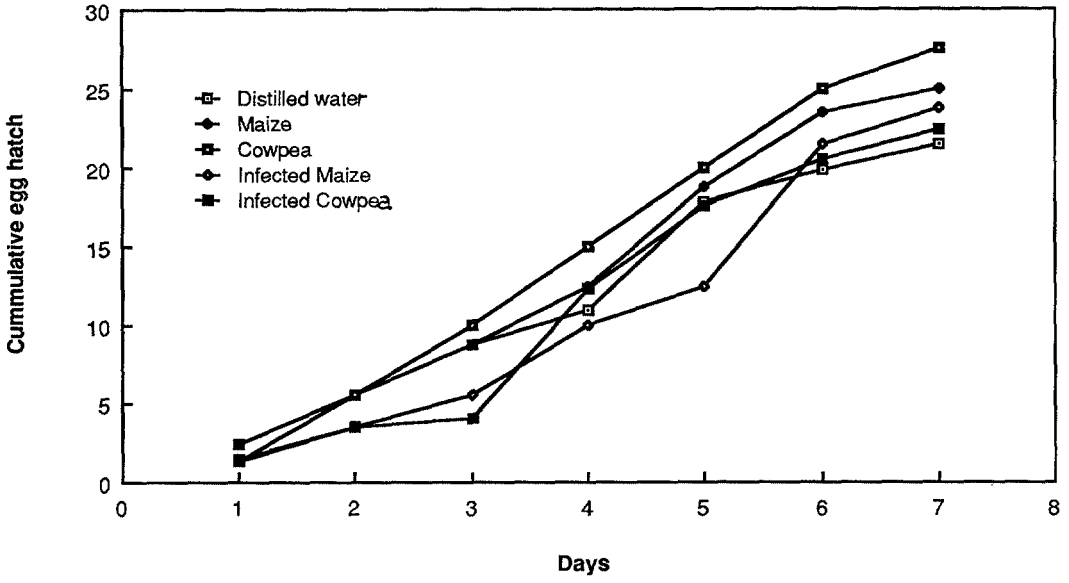

FIG. 1. Cumulative egg hatch of *Meloidogyne incognita* race 2 as influenced by root leachates from infested and uninfested plants.

maize, cowpea, and distilled water are presented to facilitate data interpretations.

The status of cowpea and maize as good or poor hosts of the root-knot nematode is not reflected in the ability of their root leachates to elicit nematode egg hatch. Similar results were reported for *M. hapla* and *M. chitwoodi* (4). Root diffusates may not be important for egg hatch in the genus *Meloidogyne* (7). The difference in host status of cowpea and maize may therefore be due to their influences on other aspects of the root-knot nematode life cycle.

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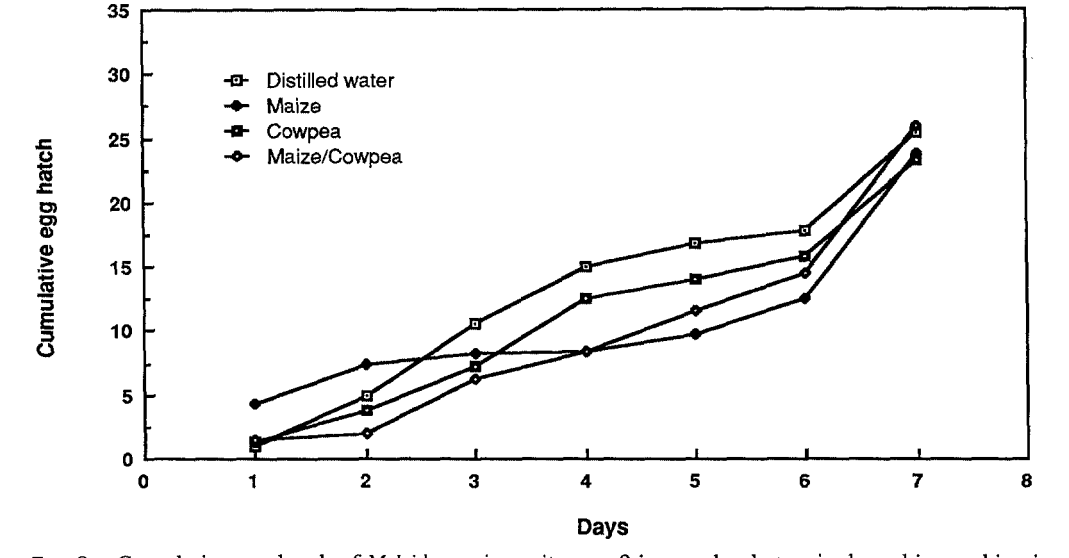

FIG. 2. Cumulative egg hatch of *Meloidogyne incognita* race 2 in root leachates singly and in combination.

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