

## EXTRACTION EFFICIENCY OF J2 OF *M. CHITWOODI* FROM ROOTS AND POTATO PEELS USING THE SEINHORST SPRAY MIST-CHAMBER.

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Techniques required for quantitative estimation of nematode numbers from roots and tubers need to be robust. The estimation of population densities from experiments on host status, partial resistance etc. requires, besides an estimation of the number of nematodes in the soil, also nematode extraction from roots and, in the case of *M. chitwoodi*, from tuber peels. As the variability of the nematode numbers extracted from roots is large when subsamples are taken, the use of the whole root system from pot experiments or bulk samples from fields is preferred to reduce error. The use of the whole root system poses new challenges to the equipment. The Seinhorst spray mist-chamber was used to extract second stage juveniles of *M. chitwoodi* for quantitative studies. Types, dimensions and flow rate of the nozzles used in Seinhorst spray mist chamber along with the temperature, pressure of the water sprayed are important factors influencing the recovery of the nematodes. Further, the diameter (cm) and mesh-size ( $\mu\text{m}$ ) of the sieves in which the roots or potato peels are placed and the amount of organic matter per unit surface ( $\text{g (cm}^2\text{)}^{-1}$ ) of sieves are important factors.

Heavily galled roots of tomato cv. Moneymaker were cut to pieces of 1 cm and mixed thoroughly. In a pilot experiment, amounts of 0.157, 0.398, 1.258  $\text{g (cm}^2\text{)}^{-1}$  were placed in 150  $\mu\text{m}$  mesh-size nylon sieves. Later-on, the experiment was expanded with 0.079, 0.157, 0.236, 0.315, 0.393 and 0.472 g of infected roots ( $\text{cm}^2\text{)}^{-1}$  of sieve. The material was kept in the spray mist chamber for more than 4 weeks; tapping and counting of the nematodes was done every three days. In the same way, infected potato peels from the potato cv. Asterix, up to 5 mm thick and 1 cm long, were incubated. The whole batch of peels was mixed and a series ranging from 0.052, 0.130, 0.280, 0.286, 0.364, 0.442, 0.520, 0.598  $\text{g (cm}^2\text{)}^{-1}$  weight was placed on nylon sieves of 400  $\mu\text{m}$  mesh size in the spray-mist chamber and kept for 7 weeks. The recovered nematodes were counted every week. The optimum amount of potato roots on the 150  $\mu\text{m}$  sieves proved to be 0.079 - 0.236  $\text{g (cm}^2\text{)}^{-1}$ , while for that of potato peels was 0.052  $\text{g (cm}^2\text{)}^{-1}$  in 400  $\mu\text{m}$ , when other specific conditions of the spray mist chamber were kept at optimum. A maximum cumulative hatch was obtained in a shorter period in tomato roots as compared to that of potato peels. Due to the starch content of potato peels, J2 of *M. chitwoodi* require a relatively long hatching period and a wider mesh-sized sieve. Therefore, nematode recovery from roots and peels could be optimized by adjusting the amount of organic material per surface unit of sieve.

A logistic function, fitted to the results, summarized the hatching process in both roots and tubers and showed at what time the saturation point was reached. No multiplication of the nematodes was observed in the Seinhorst spray-mist chamber.

**Key words:** Extraction technique, hatching and quantitative estimate