

# Effect of Temperature on Reproduction and Motility of *Pratylenchus vulnus*

A. J. TOWSON AND BERT LEAR<sup>1</sup>

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Reproduction of *Pratylenchus vulnus* Allen and Jensen on rose was reported faster at 32.2 C than at 23.9 and 15.6 C (6). Reproduction on alfalfa tissue was faster at 25 C than at 20 and 30 C (3), while on 'Lovell' peach and bush bean, reproduction was faster at 28.3 C than at 24.4, 20.6, 16.7, and 12.8 C (1). Populations of *P. vulnus* and other species of root-lesion nematodes are often raised on carrot disks (4,5), but the optimum temperature for reproduction on carrot disks has not been determined. Therefore, the following tests were performed to determine the optimum temperature for reproduction on carrot disks and to examine the effect of temperature on the nematodes' motility.

Specimens of *P. vulnus* were collected,

under intermittent mist, from carrot disk cultures that had been stored at room temperature. The nematodes were surface-sterilized with organic mercury and streptomycin solutions (2). Inocula of 1,000 treated nematodes were pipetted into 120-ml glass bottles each containing three or four carrot root disks with the epidermis removed. Five-bottle replicates were placed in nonlighted incubators maintained at constant temperatures of 18, 21, 24, 27, 30, and 33 C. Mean carrot weights ranged from 9.22 to 9.42 g per bottle. After 7 wk the disks were chopped and placed under intermittent mist for 2 days; the nematodes were then recovered and counted. Data were fitted with a quadratic equation from which an optimum was determined.

To test the effect of temperature on motility, about 400 specimens of *P. vulnus* in 5 ml water were pipetted into 12-ml vials. Sufficient quartz sand, washed to remove

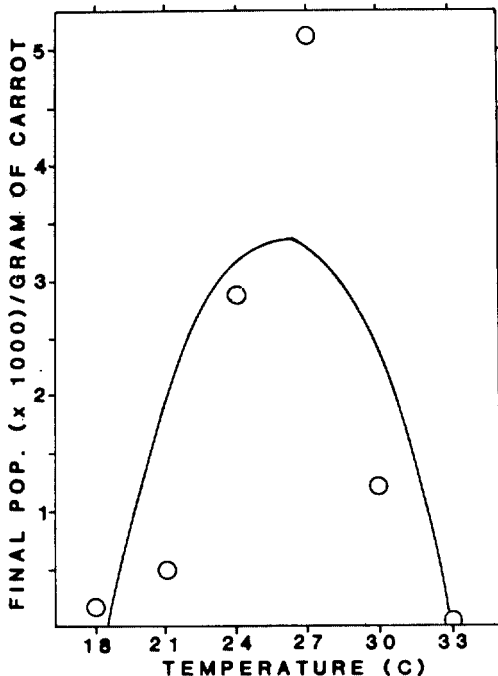


Fig. 1. Reproduction of *Pratylenchus vulnus* on carrot disks maintained at various constant temperatures. Data are the averages of five replications.

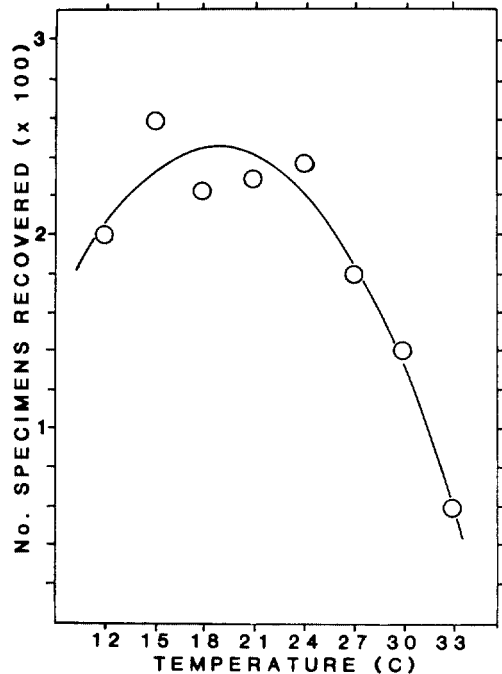


Fig. 2. Motility of *Pratylenchus vulnus* through sand columns maintained at various constant temperatures. Data are the average of five replications.

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<sup>1</sup>Respectively, Graduate Research Assistant and Professor, Department of Plant Pathology, University of California, Davis, CA 95616.

clay particles and screened to a size range of 147–246  $\mu\text{m}$ , was added to fill the vials. The vials were capped with stainless-steel screens (246- $\mu\text{m}$  openings) and inverted inside 59-ml jars each containing 10 ml water. Five-jar replicates were placed in nonlighted incubators at constant temperatures of 12, 15, 18, 21, 24, 27, 30, and 33 C. After 16 h, counts were made of nematodes in the jars. Data were fitted with a quadratic equation from which an optimum was determined.

Optimum temperature for reproduction of *P. vulnus* on carrot was 26 C, with reproduction decreasing sharply at higher and lower temperatures (Fig. 1). The optimum temperature for motility was 19 C, although motility was not significantly reduced over a temperature range of 12–27 C (Fig. 2).

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