RESEARCH NOTES

Vertical Distribution of Hoplolaimus galeatus and Oligochaetes in Greenhouse Colonies

F. H. CHOW and G. C. SMART, JR.

Greenhouse pots containing stock colonies of *Hoplolaimus galeatus* (Cobb) Thorne on bermudagrass (*Cynodon dactylon* (L.) Pers. *X C. transvaalensis* Burtt-Davy) become infested with high numbers of a small oligochaete. These organisms are especially troublesome when nematodes are extracted by centrifugal-flotation since the oligochaetes are extracted also.

We observed repeatedly that the oligochaetes were most numerous near the soil surface. To determine the validity of our observations, we conducted an experiment with 15-cm diam clay pots and 42 x 28 x 18-cm redwood flats filled with Arredondo fine sand previously fumigated with 3 kg/m~3~ of methyl bromide and aerated. The soil was sprigged with bermudagrass. Two-hundred-fifty cm~3~ of soil heavily infested with *H. galeatus* and oligochaetes (actual numbers not determined) were mixed with the soil in each experimental container. Soil in the pots was 15 cm deep, and 9 cm deep in the flats. Each treatment was replicated 4 times. Pots and flats were arranged randomly on a greenhouse bench.

After six months, the soil in the pots was removed and cut into layers of 0-3, 3-6, 6-9, 9-12, and 12-15 cm. From each flat, four cores of soil 6.4 cm in diam were taken and each core cut into 0-3, 3-6, and 6-9 cm layers. The layers at a given depth were composited. Then *H. galeatus* and oligochaetes were removed from 300 cm~3~ of soil from each layer by a centrifugal-flotation method (1). The roots from each layer were removed and weighed fresh, but nematodes were not extracted from them.

Most oligochaetes were in the top 3 cm of soil in pots and flats (Table 1). Most *H. galeatus* occurred below 3 cm in pots, but about 1/3 of the total occurred in the top 3 cm in flats where soil was only 9 cm deep. Pots contained a greater number of *H. galeatus/cm~3~ of soil* (7.9/cm~3~) than did flats (4.6/cm~3~), but the flats contained 6 times more soil and hence more nematodes (48,700 avg.) than did pots (13,100 avg.).

When isolating nematodes from stock colonies, we now eliminate most of the oligochaetes by discarding the top 3-4 cm of soil; however, we use containers greater than 9 cm in soil depth to avoid discarding a high percentage of the *H. galeatus*. We

<table>
<thead>
<tr>
<th>Soil depth (cm)</th>
<th>Pot</th>
<th>Flat</th>
<th>Root wt. (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oligochaetes</td>
<td><em>Hoplolaimus galeatus</em></td>
<td>Oligochaetes</td>
</tr>
<tr>
<td>0-3</td>
<td>178</td>
<td>232</td>
<td>202</td>
</tr>
<tr>
<td>3-6</td>
<td>37</td>
<td>852</td>
<td>8</td>
</tr>
<tr>
<td>6-9</td>
<td>13</td>
<td>972</td>
<td>17</td>
</tr>
<tr>
<td>9-12</td>
<td>18</td>
<td>1,078</td>
<td>6.8</td>
</tr>
<tr>
<td>12-15</td>
<td>30</td>
<td>1,247</td>
<td></td>
</tr>
<tr>
<td>LSD (P=0.05)</td>
<td>38</td>
<td>210</td>
<td>NS</td>
</tr>
</tbody>
</table>

*Six months after inoculation (flats contained only 9 cm of soil).*

TABLE 1. Vertical distribution of oligochaetes and *Hoplolaimus galeatus* in greenhouse soil planted with bermudagrass.

Received for publication 2 January 1976.
1 Journal Series Paper No. 8057 of the Florida Agricultural Experiment Stations.
2 Graduate Student and Professor, respectively, Department of Entomology and Nematology, Institute of Food and Agricultural Sciences, University of Florida, Gainesville 32611.
suspect, on the basis of our observations, that a similar vertical distribution is true for oligochaetes and Belonolaimus longicaudatus Rau.

LITERATURE CITED


Chamber for Critical-Point Drying of Nematodes and Other Biological Specimens

C. H. HÖGGER and R. H. ESTEY

Processing nematodes for scanning electron microscopy requires transfer of specimens through a series of fixatives and dehydration fluids (1, 2). Preferably, all steps of fixation, dehydration, and drying are performed in the same vessel to avoid repeated handling of specimens. De Grisse (2) described small chambers made of nylon mesh and glass tubing for this purpose, and Marchant (3) constructed a similar device from small polypropylene vials and Millipore filters. In our experience, the joints between chamber walls and screens in the first design (2) were not always tight enough.

Rostgaard and Christensen (4) stated stringent requirements for such a chamber and made one from brass and aluminum stock. Its construction, however, involved extensive precision machine work. This paper describes a simpler, larger variant of the same basic design which is fabricated by modification of commonly available hardware. Threaded components allow a tight fit between screens and chamber walls, and minimize the chances of losing small specimens.

The basic material used to construct this unit was a standard brass compression union for 9.5-mm (3/8 inch) flexible copper tubing (Coronet Part Manufacturing Co., 883 Elton St., Brooklyn, N.Y. 11208). Half of the threaded portions on each end of the middle piece of the fitting were cut off. The thickness of both clamping nuts was also reduced (by half) by cutting a portion from the threaded end. On the threadless end of one clamping nut, additional material was removed so that only a short collar was left. A copper washer of 12.7-mm diam was placed between each nut and the middle piece. The various inner diameters of all parts were uniformly reamed to 10 mm. A nylon screen with 18-μm openings (Tobler, Ernst and Traber, Inc., 420 Saw Mill River Rd., Elmsford, N.Y. 10523) was attached to the copper washers with cyanoacrylate adhesive (Eastman 910). All parts were cleaned with metal polish and then washed in ethanol in an ultrasonic cleaner. For dimensions of the finished chamber, see Fig. 1.

Received for publication 17 May 1976.

1 Post-doctoral Fellow and Professor, respectively, Department of Plant Pathology, Macdonald College of McGill University, Ste. Anne de Bellevue, Quebec, Canada H9A 10O. Thanks are due to R. Cassidy, Department of Agronomy, Macdonald College, for advice and use of machine shop facilities and to S. Hogger for preparation of Fig. 1.

FIG. 1. Diagram of side view and longitudinal section of all parts of the universal chamber.