SHORT NOTE

OVIPOSITIONAL PREFERENCE OF *Liriomyza trifolii* (Burgess) TO DIFFERENT HOST PLANTS

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The serpentine leaf miner, *Liriomyza trifolii* (Burgess) (Diptera : Agromyzidae) is a polyphagous pest attacking several plant species of Chenopodiaceae, Compositae, Liliaceae, Cucurbitaceae, Leguminaceae, Malvaceae, Umbelliferae and Solanaceae (Spencer, 1973). In India, *L. trifolii* an accidental introduction, was recorded on 48 species of plants in and around Saurashtra region (Kapadia, 1994), 79 species of plants in South India (Srinivasan et al., 1995) and 50 host plants in Tamil Nadu with severe infestation on six economically important plants (Natarajan et al., 1994). However, detailed studies on comparative preference for many indigenous host plants is lacking. So, a detailed study was conducted to assess the ovipositional preference of *L. trifolii* among some of the economically important crop plants.

The study was conducted at the insectary of the Department of Agricultural Entomology, Tamil Nadu Agricultural University, Coimbatore, during September 1995. Ten host plants belonging to Leguminaceae (3 species), Malvaceae (2 species), Solanaceae (2 species) and Cucurbitaceae (3 species) as listed in Table-1, were selected for the study. The seeds were sown in mud pots (15 x 12 cm) and were maintained inside walk-in cages (2 x 2 x 2 m). Care was taken, in maintaining the plants free of pests and natural enemies. Three plants of each species in individual pots were selected for the experiment.

On the 30th day after sowing, all the selected plants kept in a single walk-in-cage were infested with *L. trifolii*, by releasing 30 pairs of freshly emerged adults for oviposition. Five days after release of adults, the number of mines in all the plants were counted and recorded as ovipositional punctures. All the leaves of the plants were collected and the total leaf area of each plant was measured. Then the eggs of *L. trifolii* were stained with lactophenol acid-fuchsin (Parrella and Robb, 1982). The number of ovipositional punctures with and without egg were counted under the microscope and expressed per unit leaf area (cm²). The per cent of ovipositional punctures with egg was calculated as follows:

\[
\text{Number of ovipositional punctures with egg} = \frac{\text{Total number of ovipositional punctures}}{\text{Total number of ovipositional punctures}} \times 100
\]

The experiment was in completely randomised design and the data were subjected to analysis of variance and means were compared by the Duncan’s multiple range test (Gomez and Gomez, 1984).

The number of eggs per unit area was high in tomato (0.3213/cm²), and was on par with bittergourd, soybean, cowpea, lablab and cotton. Pumpkin recorded significantly less number of eggs (0.0767/cm²), compared with tomato and bittergourd (Table-1). The number of feeding punctures, were very less in pumpkin (0.0477/cm²). In cowpea, lablab, okra, brinjal and bittergourd the number of feeding punctures were higher than ovipositional punctures (Table-1).

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Table 1. Number of ovipositional punctures by *L. trifolii* with and without egg in different host plants

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Common name</th>
<th>Scientific name (L.)</th>
<th>Variety</th>
<th>No. of ovipositional punctures/cm²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cowpea</td>
<td><em>Vigna unguiculata</em></td>
<td>CO 6</td>
<td>0.2130&lt;sup&gt;abc&lt;/sup&gt; 0.2800&lt;sup&gt;abc&lt;/sup&gt;</td>
</tr>
<tr>
<td>2</td>
<td>Soybean</td>
<td><em>Glycine max</em> L.</td>
<td>CO 1</td>
<td>0.2153&lt;sup&gt;abc&lt;/sup&gt; 0.1517&lt;sup&gt;bed&lt;/sup&gt;</td>
</tr>
<tr>
<td>3</td>
<td>Lablab</td>
<td><em>Lablab purpureus cv. typicus</em> (L.)</td>
<td>CO 12</td>
<td>0.1530&lt;sup&gt;abc&lt;/sup&gt; 0.3280&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>4</td>
<td>Cotton</td>
<td><em>Gossypium hirsutum</em> L.</td>
<td>MCU 5</td>
<td>0.1837&lt;sup&gt;abc&lt;/sup&gt; 0.1440&lt;sup&gt;bed&lt;/sup&gt;</td>
</tr>
<tr>
<td>5</td>
<td>Bhendi</td>
<td><em>Abelmoschus eschulentus</em> (L.)</td>
<td>CO 12</td>
<td>0.0967&lt;sup&gt;c&lt;/sup&gt; 0.2530&lt;sup&gt;abcd&lt;/sup&gt;</td>
</tr>
<tr>
<td>6</td>
<td>Tomato</td>
<td><em>Lycopersicon esculentum</em> Mill.</td>
<td>CO 3</td>
<td>0.3213&lt;sup&gt;a&lt;/sup&gt; 0.1703&lt;sup&gt;bed&lt;/sup&gt;</td>
</tr>
<tr>
<td>7</td>
<td>Brinjal</td>
<td><em>Solanum melongena</em> L.</td>
<td>CO 2</td>
<td>0.0787&lt;sup&gt;c&lt;/sup&gt; 0.1510&lt;sup&gt;bed&lt;/sup&gt;</td>
</tr>
<tr>
<td>8</td>
<td>Ribbedgourd</td>
<td><em>Luffa acutangula</em> Roxb.</td>
<td>CO 1</td>
<td>0.1383&lt;sup&gt;bc&lt;/sup&gt; 0.0723&lt;sup&gt;cd&lt;/sup&gt;</td>
</tr>
<tr>
<td>9</td>
<td>Bittergourd</td>
<td><em>Momordica charantia</em> L.</td>
<td>CO 1</td>
<td>0.3030&lt;sup&gt;ab&lt;/sup&gt; 0.4090&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>10</td>
<td>Pumpkin</td>
<td><em>Cucurbita moschata</em> Poir.</td>
<td>CO 2</td>
<td>0.0767&lt;sup&gt;c&lt;/sup&gt; 0.0477&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Column means followed by the same letter are not significantly different (P ≤ 0.05; DMRT).

Apart from the direct damage, the wounds caused by *L. trifolii* adults served as sites for infection in Chrysanthemum by *Pseudomonas cichorii* (Matteoni and Broadbent, 1988). They also observed more number of leaf spots, on Chrysanthemum when exposed to the leaf miner.

The per cent of ovipositional punctures was 69.49, 85.79, 63.64 and 50.58 per cent on tomato, pumpkin, ribbedgourd and soybean respectively. In all other species it was less than 50 per cent. Hussey and Gurney (1962) suggested, the viable egg-feeding puncture ratio as an indicator of host plant suitability. So, based on the per cent of ovipositional punctures, the host plants studied here may be graded for their degree of susceptibility. However, along with the number of eggs, the egg hatchability and survival ability of larvae in each host plant add up to the severity of *L. trifolii* damage. In this study among all the species, tomato was observed to be the most preferred with 69.49 per cent of ovipositional punctures. Whereas, Parrella et al., (1983) reported tomato as less preferred than Chrysanthemum, since they reported 11.05 and 22.14 per cent of ovipositional punctures, respectively. Tomato was most susceptible to *L. trifolii* at 30-40 days old seedling stage (Srinivasan et al., 1995).

There was no significant difference in total feeding and ovipositional punctures at 21.1, 16.7 and 32 per cm² on Chrysanthemum by *L. trifolii* (Parrella, 1984). However, the distribution and density of leaf trichomes, chemical attractants and nutrient components of the host plants were found to be important in host selection by *L. trifolii* (Fagoone and Toory, 1983). Oviposition rate is influenced greatly by different host plants, all of which vary in morphological and physiological make-up. Further, the study showed that *L. trifolii* damage in economically important host plants may be managed by growing economically less important but most preferred plants viz. ribbedgourd and pumpkin in border rows as trap crops.
REFERENCES


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