Table 2. Carbohydrate and protein content of eri silkworm pupa

<table>
<thead>
<tr>
<th>Host plants</th>
<th>Carbohydrate (%)</th>
<th>Protein (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kesseru</td>
<td>17.80</td>
<td>55.35</td>
</tr>
<tr>
<td>Castor</td>
<td>16.65</td>
<td>51.55</td>
</tr>
<tr>
<td>Gulancha</td>
<td>14.55</td>
<td>44.40</td>
</tr>
<tr>
<td>Gamari</td>
<td>13.60</td>
<td>39.00</td>
</tr>
<tr>
<td>Tapioca</td>
<td>12.65</td>
<td>35.40</td>
</tr>
</tbody>
</table>

*Values are mean of three replications

The carbohydrate and protein contents were the highest in larvae reared on Kesseru (17.80 and 55.35%) followed by castor (16.65 and 51.55%), Gulancha (14.55 and 44.40%) and Gamari (13.60 and 39.00%), while the lowest on tapioca (12.65 and 35.40%) (Table 2). Thus, Kesseru is the most suitable host from nutritional point of view. However, due to faster growth rate of larvae feeding on castor makes it preferred choice. Sarmah (2011) also reported the highest content of protein in eri silkworm pupa reared on Kesseru plant. Since, eri pupae were consumed as food items by the tribal people of Nagaland, the larvae reared on Kesseru, Castor, Gulancha and Gamari can be utilized.

REFERENCES


NEW RECORD OF LAWANA CONSPERSA (WALKER) (HOMOPTERA; FLATIDAE) AS A PEST OF LAC HOST PLANTS

Lac, the only natural resin of animal origin is secreted by the soft bodied lac insect (Homoptera; Coccoidea; Tachardiidae) throughout of its lifecycle. Two genera and 19 species of lac insects have been reported from India and the most common Indian lac insect of commercial importance is *Kerria lacca* (Kerr.), which thrives on the tender twigs of specific host plants. (Sharma *et al.*, 2006). Although a large variety of plants respond as lac hosts, the number of hosts in actual use is relatively small. Thus of the 400 plant species it is commercially cultivated on *Schleichera oleosa* (kusum), *Butea monosperma* (palas), *Ziziphus mauritiana* (ber) and *Flemingia semialata*. Since the productivity of lac depends on availability of healthy shoots on host plants, damage done other by plant pests has direct bearing on it. (Naqvi and Sen, 2008).
Thus 19 major and 61 sporadic/minor pests of important lac hosts are known (Bhattacharya, 2002). Major sucking pests of the lac host plants reported are Aonidiella orientalis Newst, Tessaratoma javanica Thunb., Serinetha augur F. and Coptosoma ostensum Dist.

In this study Lawana conspersa (Walker) is reported as a new sucking insect pest. It was found infesting various lac host plants viz., Flemingia spp., B. monosperma (palas), Cajanus cajan, (red gram), Z. mauritiana (ber), and Dalbergia assamica (Figs. 1-4). L. conspersa, nymph was observed in November-December and adult collected during February-March at the Institute Research Farm, Indian Institute of Natural Resins and Gums, Namkum, Ranchi. The presence of this planthopper was revealed by the long, curled filaments of waxy exudates on the undersides of succulent leaves or on the terminals of branches (Fig. 5). This woolly material often obscured the nymph producing it. Eggs are laid into young twigs

![Fig. 1. L. conspersa nymph on Flemingia spp](image1)

![Fig. 2. L. conspersa nymph on palas](image2)

![Fig. 3. L. conspersa adult on red gram](image3)

![Fig. 4. L. conspersa nymph and adult on ber](image4)

![Fig. 5. Damage symptoms caused by L. conspersa](image5)
into midribs of leaves. Nymph of the plant hopper jumped like a leafhopper. Nymphs were varying in size depending upon their growth.

* L. conspersa* has been reported on cocoa and *Bauhinia* spp. (Pena et al., 2002). It was found as a pest of citrus growing areas in Assam (Phukan et al., 1987). *L. conspersa* was recorded as a minor pest of cocoa and completed its life cycle with 104.7 days (Ibrahim and Ibrahim, 1989). David and Ananthakrishnan (2010) mentioned *L. conspersa* as a pest on the ornamental plants, viz., *Zephyranthes* vestita, *Dahlia* sp., *Jasminum auriculatum*, *Eupatorium* sp, *Notonia grandiflora* and mango inflorescence.

A mature nymph is approximately four mm long and covered with waxy filaments. Wing pads are well developed with black colour transverse line and black spot is present on dorsal side of anal segment. Usually, adults of *L. conspersa* are whitish 10-12 mm in length and 4-5 mm in width at the widest point. Flatids have broadly triangular fore-wings with two orange stripes on the basal portion that are held close to the body in a vertical position and give the insects a wedge-shaped, laterally compressed appearance from above. The forewings have a well developed, transversely veined costal cell and a granulate clavus; the hind wings are hyaline; the hind tibiae normally have two lateral spines in addition to those at the apex.

The hopper feeds on young shoot tips, young leaves and flowers by sucking plant saps and draws energy from the plant, causing dehydration of plant parts; highly infested plants are sticky with honeydew and support thick crusts of sooty moulds caused by excretions of the insect. Besides damaging the host-plant, the waxy exudates of the nymph cover the tender twigs hindering the settlement of lac larvae at the time of inoculation. Thus, it results indirectly in decrease in lac yield. The above species recorded for the first time needs to be investigated for its distribution on different lac-hosts and the extent of damage for devising proper management strategies.

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A. MOHANASUNDARAM*

K. K. SHARMA

S. C. MEENA

*Corresponding author: E-mail: mohaniinrg@gmail.com

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