A note on bat, *Cynopterus sphinx* (Vahl) damage to Robusta Coffee (*Coffea canephora*) plants in Kodagu, Karnataka, India

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**ABSTRACT:** The fruit eating bat, *Cynopterus sphinx*, plays important role in pollination and seed dispersal in many plants. Yet, they are considered as pests on fruit and plantation crops due to their voracious feeding habit. The extensive feeding of bats on tender twigs of robusta coffee leads to drying of fruit bearing branches resulting in crop loss. The present study is an attempt to quantify the crop loss caused by the bats on robusta coffee. The data indicated that the crop damage ranged from 5.9 to 9.48 percent.

**Key words:** Coffee, bearing twigs, damage, Short nosed fruit bat
Cynopterus sphinx (Vahl) damage to Robusta coffee

Table 1. Crop loss due to C. sphinx damage on C. canephora

<table>
<thead>
<tr>
<th>Estate</th>
<th>Age of the plant (Years)</th>
<th>No. of plants damaged/ac</th>
<th>Average yield of the block (Clean coffee kg/ac)</th>
<th>Calculated average crop damage for the next year (Clean coffee kg/ac)</th>
<th>Percent crop loss/ac</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>18</td>
<td>16</td>
<td>840</td>
<td>50</td>
<td>5.9</td>
</tr>
<tr>
<td>II</td>
<td>12</td>
<td>30</td>
<td>840</td>
<td>63</td>
<td>7.5</td>
</tr>
<tr>
<td>III</td>
<td>20</td>
<td>20</td>
<td>980</td>
<td>93</td>
<td>9.48</td>
</tr>
</tbody>
</table>

year crop loss for some extent. Fruit damage was also observed as these bats eat pulp of the fruits and drop the seed near their roosting places. In this study an attempt was made to quantify the extent of crop loss due to bat damage to good cropping branches in robusta coffee. The study was conducted in three estates of Nellihadlu village, north Kodagu, Karnataka, India during November 2012 to January 2013, on robusta coffee (Coffea canephora) of 12 to 20 years age planted at a spacing 10 x 10' under medium shade.

Damage was recorded using quadrature method of sampling (Atwal and Balraj Singh, 1990). For sampling, one acre block was divided in to quadrants consisting of 25 plants. Five plants from each quadrant, one at the centre and four from each corner of the quadrant, were selected to record the observations. Ten such quadrants were chosen randomly for assessing average crop damage caused by the short nosed bat. The branches damaged by bats were selected and next year crop damage was assessed by considering the cropping nodes and flower buds per cropping nodes damaged and percent crop loss was calculated. The average number of secondary branches are 11/plant, 5 damaged initial twigs on each branch were observed. Based on the number of plants damaged/ac, Crop loss was calculated in clean coffee kg/ac.

The bats were observed to feed on the medulla of tender shoots from 2nd internode to 7th internodal region. Due to the feeding, the twigs hung down and dried gradually, affecting the production of next year’s cropping wood (Figure 2). The bats visit during the night and feed in patches with a minimum of 15 feet distance between two damaged plants. The crop damage ranged between 5.9 to 9.48 percent (Table 1). They transport fruits to feeding roosts where the pulp portion is consumed and the partly chewed fruits skin and coffee beans are expelled and can be observed on the floor of the roosting area (Fig. 3). It was observed that the bats consumed around 75% of the mucilage.

Removal of the fruits and transportation to the roosting sites also leads to crop loss, unless such coffee beans are retrieved. During observations fruit damage caused due to direct consumption by bats was very low compared to twig damage. This may be due to availability of other forest fruits as the Western Ghats are having wide range of biodiversity of fruiting trees. If fruits or flowers consumed by C. sphinx are limited spatially, they exploit leaves for their maintenance (Elangovan et al., 2001). Though the present study indicates direct and indirect crop damage, it may reach alarming levels in future if bats are deprived of other sources of food. Regular monitoring of bat behavior and damage to coffee is required to develop suitable interventions.

REFERENCES


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