SUITABILITY OF DIFFERENT HOST FOODS OF *SITOPHILUS ORYZAE*

*Bhanderi, G. R., Radadia, G. G. and Patel, D. R.*

Department of Entomology, N.M. College of Agriculture, Navsari Agricultural University, Navsari-396 450

**ARTICLE INFO**

**Article History:**
Received 25th May, 2015
Received in revised form
05th June, 2015
Accepted 03rd July, 2015
Published online 31st August, 2015

**Key words:**
Sitophilus oryzae, Host, Susceptibility index, Oviposition, Emergence, Commodities, Sorghum vulgare.

**ABSTRACT**

Training Research study on the suitability of different host foods of *sitophilus oryzaerice* weevil, *Sitophilus oryzae* (Linnaeus) on stored sorghum was carried out during the year 2007-08 at the Main Sorghum Research Station, Navsari Agricultural University, Surat, Gujarat state. The results of study revealed that cereals were more suitable host among the different commodities tested. The order of host suitability of different commodities was paddy> sorghum> maize> wheat> coriander> cumin> chilli> fenugreek.

The harvested sorghum grains are attacked by pests during the storage. Major pests of storage sorghum are rice moth, Corcyra cephalonica (Stanton); rice weevil, Sitophilus oryzae L.; maize weevil, *Sitophilus zeamais* Motschulsky; angoumois grain moth, *Sitotroga cerealella* (Olivier). Among them rice weevil is economically important storage pest on sorghum and other cereals in tropical and subtropical regions of world. Rice weevil infestation alone resulted in sorghum seed loss of 61.3% over a period of five months (Venkat Rao et al., 1958). Both larval and adult stages are destructive being internal feeder. The infested seeds are unfit either for sowing or for human consumption. Rice weevil prefers sorghum although its occurrence on variety of alternate host plants has been recorded by various workers. Host preference studies would help to determine destructive potential of a pest and hence a study was carried out.

**MATERIALS AND METHODS**

For study the suitability of different host foods, fifty grams healthy grains of each host viz., maize (*Zea mays* L.), wheat (*Triticum aestivum* L.), paddy (*Oryza sativa* L.), coriander (*Coriandrum sativum* L.), cumin (*Cuminum cyminum* L.), chilli (*Capsicum annuum* L.) and fenugreek (*Trigonella foenumgraecum* L.) were taken separately in plastic jars (diameter 8 x 10 cm). Ten pairs of newly emerged male and female weevil were released in to each jar for oviposition. The jar was closed from the top by tying a piece of muslin cloth to prevent the escape of weevil. Three days later, the weevil was removed and the jars were left as such till the development of adults from the eggs laid in the jars. The experiment was replicated thrice in complete randomized block design. From the day the weevil emergence started, weevils were counted daily and removed immediately from the jars to prevent fresh oviposition. The emergence was recorded till its end. The period required from the oviposition to adult emergence was considered as developmental period. The susceptibility index was worked out by adopting the formula suggested by Dobie (1977) as under:

\[ \text{Susceptibility index} = \frac{\text{Natural log } F \times 100}{D} \]

Where,
F = Number of adults emerged
D = Mean developmental period

On the basis of the index host suitability was determined.

**RESULTS AND DISCUSSION**

Eight different commodities were studied in laboratory for their susceptibility in host of *S. oryzae*. The commodities were
Table 1. Host preference of *S. oryzae*

<table>
<thead>
<tr>
<th>S.No</th>
<th>Host</th>
<th>Percent damage</th>
<th>No. of adult emerged</th>
<th>Susceptible index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Maize</td>
<td>58.04 b(72.00)*</td>
<td>41.00</td>
<td>3.13</td>
</tr>
<tr>
<td>2</td>
<td>Wheat</td>
<td>58.26 b(72.33)</td>
<td>46.00</td>
<td>3.10</td>
</tr>
<tr>
<td>3</td>
<td>Sorghum</td>
<td>64.90 c(82.00)</td>
<td>57.33</td>
<td>3.57</td>
</tr>
<tr>
<td>4</td>
<td>Coriander</td>
<td>0.41a(0.00)</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>5</td>
<td>Cumin</td>
<td>0.41a(0.00)</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>6</td>
<td>Chilli</td>
<td>0.41a(0.00)</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>7</td>
<td>Fenugreek</td>
<td>0.41a(0.00)</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>8</td>
<td>Paddy</td>
<td>69.16d(87.33)</td>
<td>59.00</td>
<td>4.48</td>
</tr>
</tbody>
</table>

S.Em. ± 0.63 0.82 0.12
CD at 5% 1.90 2.47 0.37
CV % 0.48 5.39 8.92

*Figures in the parentheses are original values and those outside the parentheses are arcsine transformed values.

Thus, from the above results it can be concluded that the cereals were more suitable host among the different commodities tested. The order of host suitability of different commodities was paddy > sorghum > maize > wheat > coriander > cumin > chilli > fenugreek. According to Jacob (1992), under laboratory condition development period was shorter and the emergent adult’s weights were greater on wheat when tested with five hosts for host plant resistance study. The variation in results is due to difference in place, host and environmental condition.

REFERENCES


*****