RELATIVE EFFECT OF DIFFERENT FOOD PLANTS ON THE REARING PERFORMANCES OF *Philosamia ricini* Bsd. (SATURNIIDAE: LEPIDOPTERA)

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ABSTRACT

The present communication accounts for the relative impact of three different eri host plants on the relative rearing performances of eri silkworm, *Philosamia ricini* Bsd. in respect of productivity and quality of eri cocoons. Results obtained are indicative of the fact that the rearing performances of *Philosamia ricini* on Castor (*Ricinus communis* L.) as compared to Tapioca (*Manihot utilissima* Phol.) and Payam (*Evodia flaxinifolia* Hook) host plants are relatively and significantly better in respect of effective rate of rearing, cocoon weight, shell weight and shell ratio showing relatively better productivity and quality of eri cocoons. The result obtained appears to be the outcome of nutritive variation in the foliar constituents of three different eri host plants.


INTRODUCTION

The eri silkworm, *Philosamia ricini* Bsd. is a very common and popular eri silk producing non-mulberry sericigenous semi domesticated, multivoltine and polyphagous insect. It is usually reared on the foliages of eri host plants viz; Castor (*Ricinus communis* L.), Tapioca (*Manihot utilissima* Phol.) and Payam (*Evodia flaxinifolia* Hook) during the period May to December. The rich bio resources of eri silkworm and forest based host plants are the chief source of income for rural mass and the eri culture plays vital role for the invigoration of our rural economy.
Bandroo, et al. (2007) mentioned 24 species of eri host plants while Sharma, et al. (2002) reported ten promising varieties of Castor host plants for the better productivity and quality of eri cocoons. Kumar, et al. (1973) reported some secondary host plants as additional food plants to be used in shortage of primary food plants in the larger interest of eri culture. Devaiah, et al. (1982) revealed the relative impact of different eri host plants on the economic characters of *Samia cynthia ricini*. Singh, et al. (2012) highlighted the bio resources of eri silkworm and its food plants in North-East India, their utilization and also needs for conservation. Chakravorty, et al. (2006) observed better prospects of eri culture on different food plants having floral richness in North-East India. Priyadarshani (2018) found significant impact of species diversities on the biological manifestations of eri silkworm. Krishnaswami, et al. (1970) reported that the growth and development of silkworm larvae, reproductive capacity of adults and the quality of silk are produced evidently dependant on the quality of leaves fed to worms during the larval culture. Singh and Das (2006) mentioned that the growth, development and economic traits of silkworms are influenced by the host plants and their nutritive contents. In the light of the aforesaid facts the present communication has been designed to evaluate the relative rearing performances of *Philosamia ricini* particularly in respect of productivity and quality of eri cocoons.

**MATERIALS AND METHODS**

In order to evaluate the relative rearing performances of eri silkworm, *Philosamia ricini* on different food plants namely Castor, Tapioca and Payam, the larvae were reared on three different eri host plants during the rearing season as per the technique suggested by Krishnaswamy (1978). The rearing was conducted on the foliages of said plants by providing tender, semi mature and mature leaves to developing larvae in accordance with age. Four feedings were given up to 3\textsuperscript{rd} instars level and five feedings were given at 4\textsuperscript{th} and the last, 5\textsuperscript{th} instars level. The cocoons were harvested and the data in respect of larval weight, effective rate of rearing (E.R.R.%), cocoon weight, shell weight and shell ratio were analysed and presented in the table 1. Following formulae were used for the calculation of E.R.R.% and shell ratio % in relation to the relative impact of three different food plants on the productivity and quality of eri cocoons of *Philosamia ricini*.

**RESULTS AND DISCUSSION**

Results obtained clearly reveal that the rearing performances of eri silkworm, *Philosamia ricini* on three different food plants namely Castor, Tapioca and Payam present significant
variation in respect of larval weight (5.31gm., 4.20gm. and 4.46gm.), E.R.R.% (87.0%, 53.0% and 65.0%), cocoon weight (3.28gm., 2.95gm. and 3.11gm.), shell weight (0.50gm., 0.40gm. and 0.43gm.) and shell ratio (15.24%, 13.55% and 13.82%) respectively. Thus the table indicates that the relative rearing performances of *Philosamia ricini* on the foliages of Castor host plant as compared to Payam and Tapioca host plants particularly in respect of productivity and quality of eri cocoons are evidently better. The rearing performances of *Philosamia ricini* on Tapioca food plant have been found relatively inferior than two other food plants in course of larval culture of eri silkworm.

The results obtained many become very clear when we take note of the fact that the three different eri food plants on account of species diversities have different physio-genetic make-up as such the foliages of three different food plants are supposed to differ in their nutritive contents and calories value essential needed for the desired growth and development of eri silkworm. It appears that the nutritive contents in the foliages of Castor host plant as compared to Payam and Tapioca food plants are better and superior which creates better nutritive condition for desired growth of eri silkworm resulting into relatively better productivity and quality of eri cocoons of *Philosamia ricini*.

The said assumptions are supported by Krishnaswamy (1970) who investigated that the growth and development of silkworms are dependent on the quality of foliages fed to them during the larval culture. Singh and Das (2006) also reported that the growth, development and economic traits of silkworms are influenced by host plants and their nutritive contents. Priyadarshani (2018) observed bio-chemical constituents than the foliages of Payam and Tapioca food plant and an account of bio-chemical differences the Castor is consider as primary food plant and Payam and Tapioca as secondary food plants. When all the said facts are coupled together, the results obtained stand to logical and meaningful conclusion and very much inconformities with the earlier works carried out by different authors.

Table showing relative impact of different food plants on the rearing performances of *Philosamia ricini*.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Rearing Parameters (Av.)</th>
<th>Larval weight (gm.)</th>
<th>Different</th>
<th>Food</th>
<th>C.D. at 5% level for Characters</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>E.R.R. (%)</td>
<td>87.0</td>
<td>53.0</td>
<td>65.0</td>
<td>* **</td>
</tr>
<tr>
<td>3</td>
<td>Cocoon weight (gm.)</td>
<td>3.28</td>
<td>2.95</td>
<td>3.11</td>
<td>*</td>
</tr>
<tr>
<td>4</td>
<td>Shell weight (gm.)</td>
<td>0.50</td>
<td>0.40</td>
<td>0.43</td>
<td>*</td>
</tr>
<tr>
<td>5</td>
<td>Shell ratio (%)</td>
<td>15.24</td>
<td>13.55</td>
<td>13.82</td>
<td>*</td>
</tr>
</tbody>
</table>
Histogram showing relative impact of three different food plants on the E.R.R.% and shell ratio % of *Philosamia ricini*.

REFERENCES


3. Das, B.K.; Singh, B.K. and Bhatt, M.M. Effect of food plants on Augmentation of eri silkworm seed proced. of Nat. Workshop on eri food plants, Gawahati, 2006; 122-123.


