

STUDY ON RELATIVE IMPACTS OF SPECIES DIVERSITIES ON THE HATCHING BEHAVIOUR OF FOUR DIFFERENT TYPES OF TASAR PRODUCING INSECTS UNDER DIFFERENT CONDITIONS

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The different species of *Antheraea* belonging to the family Saturniidae of order Lepidoptera are famous for the production of silk yarn. In the present investigation the egg hatching performance of four different species of *Antheraea* under different natural and artificial condition were observed. The variations reported clearly reveal that the four species of tasar insects have different frequency and pattern of hatching which are influenced by seasonal variations.

INTRODUCTION

The silk is the most beautiful gift of the nature produced by sericigenous insects. The Tasar silk which is very much popular these days, is derived from different species of *Antheraea*. The common species of the genus *Antheraea* are *A. mylitta*, *A. proylei*, *A. pernyi* and *A. roylei*. These species belong to the family saturniidae of order Lepidoptera. All the four species show diversities in their behaviour. The workers related to Tasar culture include Akai (1998), Basker (2006), Das *et al.* (1988), Chaudhury (2003), Goel *et al.* (1993) and kumar (2016). These workers, though carried out work on Tasar culture, but investigations related to species diversities were not carried out in detail. Therefore, in the present investigation, relative impact of species diversities on their egg hatching under different conditions have been carried out in detail.

MATERIALS AND METHODS

Materials for the present investigation include the four species of *Antheraea*. For experiment, the cocoons of four different species namely *A. mylitta*, *A. proylei*, *A. pernyi* and *A. roylei* were collected from Ranchi Seed Supply Station and carefully transported to the place of research centre. The selected cocoons after assortment were put in ventilated cages separately in hanging position in the form of garlands to provide natural disposition. After the emergence of male and female moths from the stored stock, the four species of *Antheraea* were assorted carefully for the purpose of coupling. The male and female moths were put in bigger bamboo baskets for pairing. For experimental purpose, when specific crosses were required, the desired moths were kept in monias of 6" x 6" x 4" size for 1-2 hour. The male moths after coupling were rejected and female moths were allowed for egg hatching. The female moths of different species of *Antheraea* were kept in paper box separately having muslin cloth base for egg hatching at a temperature range of 26-28°C and 70-80% RH. The first and second batches of eggs were collected during the total period of 48 hours.

The disinfected eggs were kept in specially designed egg boxes separately having transparent top to permit light and perforated sides for aeration. The filled up egg boxes were kept in incubation room usually at 28°C to 30°C and as per the suitability of hatching for four different species of *Antheraea*. The selected eggs were put for incubation usually for a week or less till hatching. The hatched first stage larvae were immediately brushed on the foliage of selected tasar host plants till cocoon formation.

RESULT AND DISCUSSION

The hatching performances of four different species of *Antheraea* have been recorded and compiled in the Tables-1 and 2.

The variations in the hatching behaviour in relation to four different species of tasar insects have also been recorded (Tables 1 and 2). The data of Tables-1 and 2 indicate significant variations in relation to percentage of hatching of egg at normal incubation temperature which is greater in *Antheraea mylitta* (70.0 and 75.0) and *Antheraea proylei* (65.0 and 70.0) during seed

crop and commercial crop seasons. However, relatively a low percentage of hatching has been recorded in *Antheraea pernyi* (50.0 and 60.0) and *Antheraea roylei* (45.0 and 50.0). The relative increase in the percentage of hatching has been recorded in all the four tasar insects during commercial crop season than the seed crop season. The observations thus clearly reveal that the four species of tasar insects have different frequency and pattern of hatching which is influenced by seasonal variations.

TABLE-1
Relative hatching behaviour of four different species of tasar insects during the seed crop season.

S. N	Different species of <i>Antheraea</i>	Number of egg kept	Nu,ber of egg hatched	Percentage of coupling
1	<i>Antheraea mylitta</i>	200	150	75
2	<i>Antheraea proylei</i>	200	140	70
3	<i>Antheraea pernyi</i>	200	120	60
4	<i>Antheraea roylei</i>	200	110	50
C.D. at 0.5% level for cahraction				**

*	:	Significant
**	:	Highly Significant
NS	:	Not Significant

TABLE-2
Relative hatching behaviour of four different species of tasar insects during the commercial crop season.

S. N	Different species of <i>Antheraea</i>	Number of egg kept	Nu,ber of egg hatched	Percentage of coupling
1	<i>Antheraea mylitta</i>	200	150	75
2	<i>Antheraea proylei</i>	200	140	70
3	<i>Antheraea pernyi</i>	200	120	60
4	<i>Antheraea roylei</i>	200	110	50
C.D. at 0.5% level for cahraction				**

*	:	Significant
**	:	Highly Significant
NS	:	Not Significant

The overall observations in relation to relative hatching performances of four different species of tasar silkworm during seed crop season and commercial crop season and also relative impacts of three different sterilants account for the following facts.

1. The four different species of tasar silkworm namely *Antheraea mylitta*, *Antheraea proylei*, *Antheraea pernyi* and *Antheraea roylei* show relative variations in their rate of hatching during both the seasons (Fig. 1).
2. Among the four species of *Antheraea*, the hatching performances of *Antheraea mylitta* followed by *Antheraea proylei* are relatively better than *Antheraea pernyi* and *Antheraea roylei*.
3. The batches of eggs laid for three subsequent days have been found to influence the rate of fertilities among all the four different types of tasar insects. The hatching percentage of 1st day laid eggs have been relatively found better than 2nd and 3rd days eggs laid by four different species,

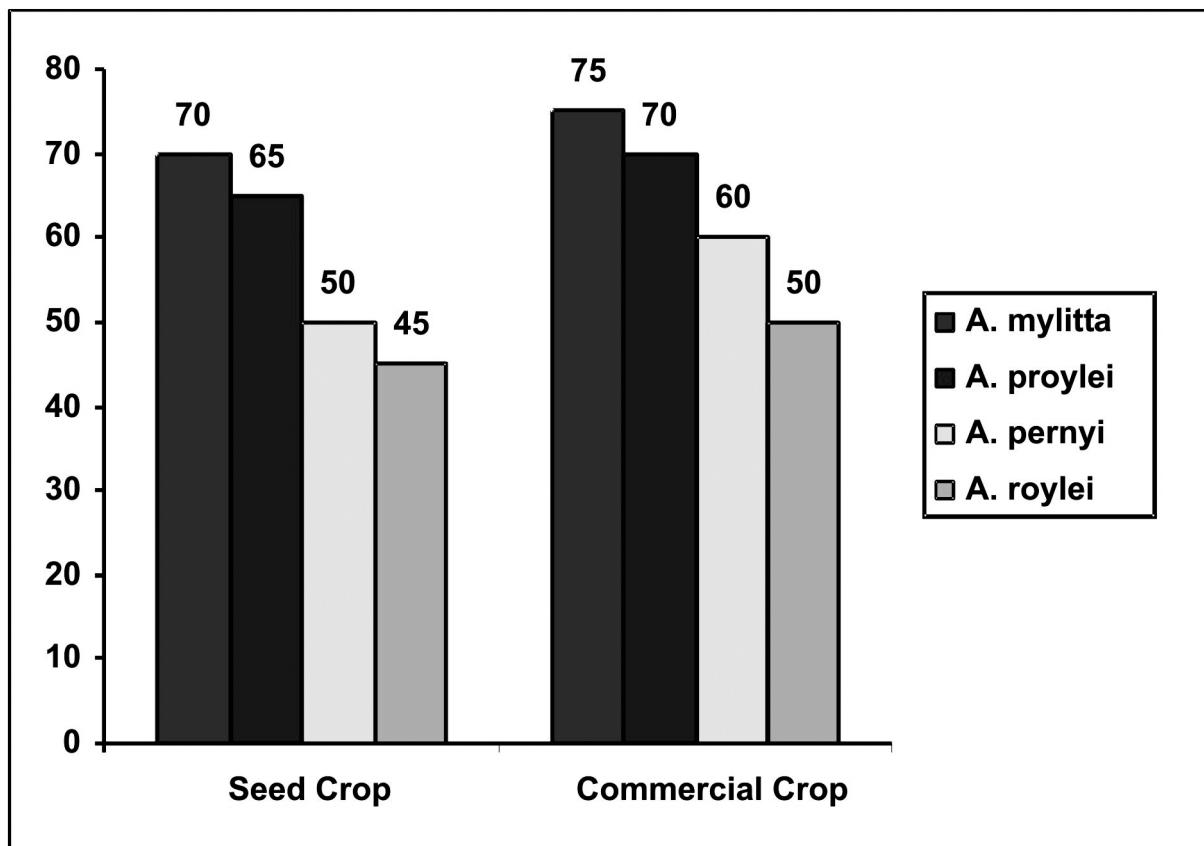


Fig. 1 : Showing relative percentage of hatching among four different species of *Antheraea* during seed crop and commercial crops seasons.

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