



Research Paper

**RELATIVE REARING PERFORMANCES OF MUTANT STRAINS OF
Antheraea mylitta D. (SATURNIIDAE : LEPIDOPTERA)**

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Abstract

The present communication accounts for the relative rearing performances of three distinct mutant strains of Daba ecotype of tropical tasar silkworm, *Antheraea mylitta* D. in respect of productivity and quality of tasar cocoons during the seed crop and commercial crop seasons. Results obtained are indicative of the fact that the three mutant strains viz. ; Daba-yellow, Daba-blue and Daba-almond present significant variations in respect of effective rate of rearing (E.R.R.%), cocoon weight, shell weight and shell ratio during two different seasons of larval rearing. The variations in the rearing performances of mutant strains appear to be on account of different physio-genetic makeup of three mutant strains. However, the rearing performances of mutant strains are relatively better during the commercial crop (Sep.-Oct.) season than the seed crop (Jul.-Aug.) season showing evident impact of seasonal changes on the behavioural manifestations of mutant strains of *Antheraea mylitta* D.

Key words: *Antheraea mylitta* D, Daba ecotype, mutant strains, (E.R.R.%).

INTRODUCTION

Among the non-mulberry sericigenous insects, the Daba ecotype of *Antheraea mylitta* D. is the main indigenous tasar silk producing insect existing in the tropical tasar producing belts in the states of Jharkhand, Orissa, Madhya Pradesh and Maharashtra in India. Jolly(1967) reported three mutant strains of Daba ecotype of *Antheraea mylitta* D. namely Daba-yellow; Daba-blue and Daba-almond based on three different larval body colours existing in the tropical tasar silk producing belts in India. Pandey (1969) mentioned that the three mutant strains of *Antheraea mylitta* D. in spite of having the same chromosomal number (n=31) differ among themselves in their behavioural and biochemical manifestations. A comprehensive picture in relation to behavioural

manifestations of non-mulberry silk insects has been presented by Jolly et.al. (1979). Pandey (2012) mentioned the significant impacts of seasonal changes and subtropical environment on the productivity and quality of tasar cocoons. Renuka et.al. (2015) mentioned that the rich biological diversity of *Antheraea mylitta* D. is mainly due to its wide range of distribution, climatic factors and food plants etc., which lead to variations in their ethology, physiology and commercial traits. It is further known that the area occupied by the tasar silkworm, *Antheraea mylitta* D. is highly diversified geographically as such the population from the diverse sources has not evolved uniformly. It is an admitted fact that the genetic diversity is inversely proportional to isolation and that it is directly correlated with population size thus the genetic diversity of population responds to environmental heterogeneity. Arora et.al. (1979) carried out taxonomic studies of non-mulberry silk moths with essential details. Kumar et.al. (2017) reported evident variation in the coupling behavior of tasar moths under different conditions.

MATERIALS AND METHODS

Healthy and diseased free uniform tasar cocoons of three mutant strains of Daba ecotype of *Antheraea mylitta* D. were collected from the rearing sites and brought to laboratory conditions. The entire grainage operations were carried out as per the methods suggested by Krishnaswamy et.al. (1973). A lot of 100 freshly emerged larvae divided in to five replications (20x5) for each mutant strain were mounted separately on the foliages of *Terminalia arjuna*(Arjun) host plants. The larval rearings were carried out till the cocoon formation during both the seed crop (Jul.-Aug.) and commercial crop (Sep.-Oct.) seasons. The average data obtained in respect of E.R.R.%, cocoon weight, shell weight and shell ratio were carefully analysed and presented in the Table1.

RESULTS AND DISCUSSION

Results obtained as per the table clearly indicate that the three mutant strains of *Antheraea mylitta* D. differ among themselves in their relative rearing performances in respect of productivity and quality of tasar cocoons. Table reveals that the mutant strains such as Daba-yellow, Daba-blue and Daba-almond evidently present variations in respect of E.R.R. (28.70%, 25.53% and 21.12%), cocoon weight (12.10gm, 11.32gm and 10.26gm), shell weight (1.43gm, 1.30gm and 1.21gm) and shell ratio (11.20%, 10.82% and 10.35%) during the seed crop season and also the E.R.R. (30.80%, 28.10% and 24.30%), cocoon weight (12.42gm, 11.93gm and 10.83gm), shell weight (1.53gm, 1.40gm and 1.32gm) and shell ratio (12.10%, 11.95% and 11.80%) during the commercial crop season. It is further evident that the rearing performances of all the three mutant strains of Daba ecotype of *Antheraea mylitta* D. in spite of relative differences are by and large relatively better during the commercial crop season than the seed crop season.

The results obtained become very clear when one takes note of the fact that the genetic diversities and different physio-genetic makeup of three mutant strains are the potent factors for relative variations among the mutant strains in respect of productivity and quality of tasar cocoons. The relatively better rearing performances of Daba-yellow mutant strain as compared to Daba-blue and Daba-almond mutant strains are probably on account of the fact that Daba-yellow is more robust and physio-genetically better fit than the two others mutant strains for desired behavioural manifestations in course of evolution of mutant strains.

TABLE-1: Table showing relative variations in relation to the rearing performances of three mutant strains of *Antheraea mylitta* D. during the seed crop and commercial crop

S.N	Different mutant strains of Daba ecotype of <i>A.mylitta</i>	Seed crop season (July-Aug.)				Commercial crop season (Sep.-Oct.)				C.D. at 0.5% for seasons
		Av. E.R.R (%)	Av. Cocoon wt. (gm.)	Av. Shell wt. (gm.)	Av. Shell ratio (%)	Av. E.R.R (%)	Av. Cocoon wt. (gm.)	Av. Shell wt. (gm.)	Av. Shell ratio (%)	
1	Daba-yellow	28.70	12.10	1.43	11.20	30.80	12.42	1.53	12.10	* *
2	Daba-blue	25.53	11.32	1.30	10.82	28.10	11.93	1.40	11.95	
3	Daba-almond	21.12	10.26	1.21	10.35	24.30	10.83	1.32	11.80	
C.D. at 0.5% level for characters		**	**	*	*	**	**	*	*	-

* = Significant
** = Highly Significant
- = Not Significant

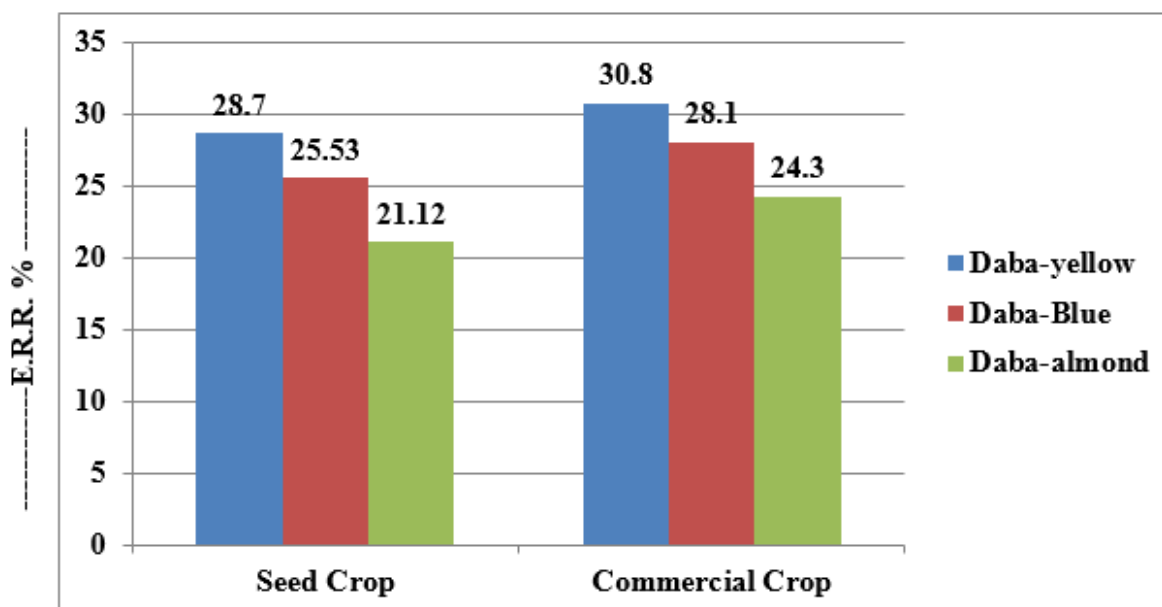


Fig. :- Showing relative variation in the effective rate or rearing (E.R.R%) among three mutant strains of *Antheraea mylitta* D. during the seed crop and commercial crop seasons.

As far as the better rearing performances of all the three mutant strains during the commercial crop season than the seed crop season are concerned it appears that the commercial crop season relatively provide more suitable and conducive environment for better biological manifestation of tasar silkworms as such the productivity and quality of tasar cocoons of mutant strains are better during the commercial crop season. Thus the results obtained are very much in conformities with the earlier investigations carried out by Jolly et.al. (1979) and Renuka et.al. (2015).

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