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Impact of Selection on the Economic Characters of Indegenous Tasar Silk Worm Antheraea Militta D. (Saturniidae , Lepidoptera)

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ABSTRACT
Silk is the most beautiful gift of nature usually produced by various insects. India has the distinction of being the only country in the world, which produces all the five important verities of natural Silk Viz mulberry, tropical tasar, eri and muga. Among the Four The Tassar silk which is of great commercial interest is produced by different species of Antheraea belonging to the family Saturniidae of order Lepidoptera. (In the present paper the Indian tropical tasar silk insect was carried out during rainy, autumn and winter seasons at lower altitude in the rearing fields.) this paper provides useful information in relation to the relative impacts of individual selection of seed concerns of Antheraea mylitta 'D'. with different concoon weight and peduncle length and bright colour on its economic characters. Results are indicative of the fact that the seed cocoons selected with heavy weight and long peduncle length have better impact on the economic characters such as volume of the cocoons weight of the cocoon shell weight, shell ratio, filament length and denier in their succeeding generation, than the seed cocoons having average or low cocoon weight and peduncle length. Therefore the weight of cocoons and length of the peduncle may be considered as an index for desired economic characters during selection programme of tasar seed cocoons. The results so obtained are probably due to different genetic endowments of seed coconns selected in course of breeding manifestation for tasar culture.
KEYWORD- Antheraea ,inbreeding, Hybridization, Selection

I. INTRODUCTION

Anterea mylitta Drury is a polyphagous semidomisticated sericigineous insect which produces the world famous Indian tropical tasar silk. It is widely distributed in the natural forests located at different altitudes over central India between the range of 12-31^{o} N latitude and 72-96^{o} E longitude in the form of about 44 ecoraces. These insects are usually reared on different tasar food plants eg. Terminalia Arjuna, Terminialia tomentosa, and shorea robusta in the forest areas for inhanse of our rural economy. According to M.S. Jolly (1970) Silk is the constant source of much needed foreign exchange. It consititutes the main row material of India's chief cottage industry and provide fruitful source of income to millions. Tussar silk is valued for its rich texture and natural deep gold colour, and varieties are produced in many countries, including China, India, Japan and Srilanka and Brazil. India ranks second among global producers. Under A mylitta is truly wild species, because of this habit, large production of tasar silk is very difficult, However, it this species is reared in outdoor conditions with scientific and technological interventions then we can achieve better cocoon production.

However in order to complete in international market the production and best quality cocoons for better tasar yarn becomes important task to be carried out. In recent days the breeding techniques employed for the improvement of tasar silk worm include selection inbreeding, hybridization and mutation etc. Some notable investigations in this field have been carried out by M.S. Jolly (1966 and 83) Krishnaswami etal (1973) Pandey (1989), Sharma (1990) and Ranjan (2003).

The present work Individual selection and based fully in accordance with phenotypic value of the individual followed by controlled mating and selection of seed cocoons based on different cocoon weight and peduncle length on their economic characters in next generation. Selection refers to a process whereby individuals with certain genetic endowments are chosen from a population apparently because they are more desired than the others. This is perhaps very popular method for the betterment of live stock.

II. MATERIAL AND METHOD

Four lots of Seed cocoons of **Antheraea mylitta D.** based on cocoon weight and peduncle length were collected from the rearing sites during the seed crop season and divided into group A, B, C and D. A lot of 100 healthy and disease free seed cocoons divided into five replications having heavy weight and long peduncle length (Cocoon weight 13gms. and peduncle length 2.5 Cm.) were labelled as group A. Like wise second lot of seed cocoons having 12.5gms cocoon weight and peduncle length 2cm were labelled as group B and third lot of

Seed cocoon having average cocoons weight and short peduncle length (11.90gm cocoon weight and 1.5cm) peduncle length labelled as group C and fourth lot of seed cocoon having low cocoons weight and short peduncle length were labeled as group D. All the four groups of selected seed cocoons were put under grainage operations separately as per the method suggested by Jolly (1971) and Krishnaswamy et.al. (1973). The rearings of the larvae were carried out under outdoor conditions on the foliages of **Termanalia arjuna** during the commercial crop season separately for each of rearing, The date so obtained in relation to four groups of breeding competence and economic characters and presented in the tables 1 and 2.

III. OBSERVATIONS AND DISCUSSION

Results obtained in relation to the impacts of seed cocoons selected under individual selection based on cocoon weight and peduncle length clearly reveal their profound relative effects on the breeding competence and economic characters of **Antheraea mylitta** in subsequent generation as evidenced by Table 1 and2. Table I indicates that the seed cocoons selected having heavy weight and long peduncle length (group A) have better breeding performances in respect of percentage of moths emergence (70.0%), coupling percentage (60.0%) Egg laying percentage (62.0%) and hatching percentage (75.0%) in the next subsequent generation than the seed cocoons having average cocoon weight and peduncle length (Group B) and also the seed cocoon having low cocoon weight and short peduncle length (Group C). The percentage of moth emergence (60.0 and 55.0%), coupling percentage (55.0 and 44.0%), Egg laying percentage (58.0 and 50.0%) and hatching percentage (70.0 and 58.0%) recorded for the group B and group C seed cocoons on their breeding competence in their next generation are significantly inferior to group A cocoons selected under individual selection programme as it has registered its supremacy over group B and group C in respect of breeding performances.

Likewise the relative impacts of three different groups (Gr. A, Gr. B and Gr. C) of seed cocoons on the economic characters of ***Antheraea mylitla*** in next generation have been presented in the table 2. It is indicative of the fact that the percentage of E.R.R. (50.5%), volume of the cocoons (32.27 CC.), cocoon weight (12.50 gm.), shell weight (1.53 gm) shell ratio (12.20%), filament length (690 mtr.) and denier (8.80 D) of group A are evidently superior than group B and Group C seed cocoons selected on their relative weight for the evaluation of economic characters in succeeding generation. It is evident that the percentage of E.R.R (43.5 and 38.0%) ,volume of the cocoons (30.69 and 28.54 cc) cocoon weight (11.90 and 10.98 gm.), shell weight (1.42 and 1.36 gm.) shell ratio (11.93 and 7.93%) recorded for group C and group D are oviously interior to group A and B

TABLE 1 : Showing relative impacts of individual selection of seed cocoons having different weight and Peduncle length on their breeding performances in succeeding generation

S.N	Group of seed cocoon	Percentage of Emergence moth	Coupling %	Egg laying %	Hatching %
1.	Gr.A.	70.0	60	62	75
2.	Gr.B.	60.0	55	58	70
3.	Gr.C.	55.0	50	52	64
4.	Gr.D.	48.0	44	50	58
C.D. at 0% level of characters		**	*	*	*

TABLE 2 : Showing relative impacts of three groups of seed cocoons having different weight and Peduncle length on their economic characters in succeeding generation

S.N.	Group of Seed cocoon	E.R.R. (%)	Volume of cocoon C.C.	Cocoon weight (gm.)	Shell weight (gm.)	Shell ratio (%)	Filament lenght (mtr.)	Denior D
1.	Gr.A	52.5	33.1	13.00	13.00	12.60	700	8.94
2.	Gr.B	50.5	32.27	12.50	1.53	12.20	690	8.80
3.	Gr.C	43.5	30.49	11.90	1.42	11.93	593	8.12
4.	Gr.D	38.0	28.54	10.98	1.39	10.98	535	7.93
C.D. at 05.% level for characters			**		*		*	*

are obviously inferior to Group A.

It is thus very clear that with the gradual increase in the weight and peduncle length of seed tasar cocoons the gradual improvement in the breeding competence and economic characters occur in the succeeding generation. The results so obtained become conclusive when one takes note of the fact that the individual selection provides opportunity for the selection of desired characters and are mated according to the choice of

breeder and the rest are rejected. The process continues for number of generations till uniformity for desired characters is achieved in the population. Through this method desired characters of **Antheraea mylitta** having better cocoon quality at seed level are selected to multiply in a process of genetic inheritance. It appears that the seed cocoons under individual selection with heavy cocoon weight and peduncle length have desired genetic endowments, which have been favoured by the forces of natural selection for their better breeding performances and genetically improved economic characters of **Antheraea mylitta** in the process of inheritance. Therefore the desired cocoon weight and peduncle length of tasar cocoons at seed level become the index for better manifestations of economic characters in the field of tasar culture. The present findings in the light of aforesaid facts appear to be fully justified and very much in conformities with the earlier work carried out by Chowdhary (1965), Jolly, et.al. (1964), Sharma (1990) and Ranjan (2003).

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