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Short Communication

Spring rearing performance by feeding temperate mulberry variety on bivoltine hybrid $NB_4D_2 \times SH_6$ of silkworm, *Bombyx mori* L

Singh Amardev[1], Ahmed Farooq[2] and Bandey Shamim Ahmed[2]
[1]Deptt. of Sericulture, Govt. Degree College, Poonch, J&K, INDIA
[2]Deptt. of Zoology, Govt. Degree College, Poonch, J&K, INDIA

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Abstract

Two rearing performance of bivoltine hybrid viz., $NB_4D_2 \times SH_6$ which was reared first time during the year 2011 and second time 2012 in the months of April-May (spring season) exhibited better performance. The data revealed that single cocoon and shell weight was found to be (1.78 and 1.81, 0.377 and 0.384) in the year 2011 and 12 respectively.

Key words*:* Bivoltine, hybrid, season, spring rearing.

Introduction

Silkworm has a large role in rural life in India being an insect of economic importance. The common silkworm *Bombyx mori* Linnaeus (Lepidoptera: Bombycidae) spins valuable silk fibre, making it one of the most beneficial insects to mankind, and is becoming an attractive multifunctional material for both textile and non textile uses[1]. Almost all-commercial silk is made from cocoons spun by silkworms of the genus *Bombyx*[2]. Bivoltine silkworm rearing is a very complicated process, which requires various technical aspects, specific management skills, due understanding and experience. The practice of sericulture consist of two major activities *viz.,* cultivation of mulberry plants for producing disease free crop leaf to the silkworm larvae and the rearing of silkworm larvae to produce the cocoons, which is the raw material for the silk reeling industry. Silkworm is an economical and helpful insect and is reared by many farmers throughout world. It is an important economic insect since it is the producer of silk. Success in sericulture depends largely on major factors like, breed, seed and feed.

The silkworm breeds play an important role for high cocoon yield and silk quality. If the cocoons, which form the basic raw material for raw silk, are from bivoltine will definitely be superior with high silk content. Introduction of tropical bivoltine rearing practices in India is revolutionizing the bivoltine silk production in South India[3]. The newly evolved bivoltine hybrids at various institutes are capable of producing higher cocoon yield with 2A to 3A grade silk and are popular among the farmers. The state of Jammu and Kashmir produces high grade quality bivoltine silk from hybrids. It ranks 5th in the country cocoon production and is leader in high quality bivoltine silk[4]. Normally single rearing is conducted in Jammu during March-April in sub-tropical areas. Now-a-days efforts are being made to enhance the cocoon crop production by introducing an additional commercial crop for autumn. From time to time various bivoltine silkworm hybrids have been recommended for commercial exploitation[5-11] but the performance of these hybrids varies with varying atmospheric conditions. The state of Jammu and Kashmir with diverse climate conditions like sub-tropical in Jammu plain, warm temperate in Jammu hills and cool humid in Kashmir valley, make it ideally suitable to rear bivoltine races for production of quality bivoltine silk. In this context, present was carried to study the spring rearing performance of bivoltine hybrid $NB_4D_2 \times SH_6$ of silkworm, *Bombyx mori* L under sub-tropical climatic condition.

Material and Methods

The silkworm rearing of bivoltine hybrid $NB_4D_2 \times SH_6$ was carried out by feeding on Chakmajra a temperate variety of mulberry collected from nearby college ground during the months of April-May (spring season) for the year 2011 and 2012. Chawki silkworms (Approximately-5000 young silkworms) were obtained when they were just undergoing 1st moult from the State Sericulture Department, Poonch (J&K). Recommended silkworm rearing method was adopted as suggested by[12]. The silkwroms were fed individual picked mulberry leaves up to 4th instars, and in the last instar shoot feeding method was adopted and two feeds were given in a day *i.e.,* 10 A.M. and 6:30 P.M. preferably. The data of the economically important traits after harvesting on 7th day were recorded such as single cocoon weight, single shell weight, shell %, matured larval weight (10 larvae in gm) and total larval duration were collected and results are presented in the form of overall mean in tables (1-2) and figures (1-4).

Table-1
Total larval duration for the silkworm rearing conducted during the year 2011

Instars	Total Feeding period	Moulting durations (days)
1st	6days	1½ days
2nd	6½ days	1 days
3rd	5½ days	2days
4th	6½ days	2½ days
5th	8½ days	Spinning (2½ days)
Total duration	**34days**	**7days**

Table-2
Total larval duration for the silkworm rearing conducted during the year 2012

Instars	Total Feeding period	Moulting durations (days)
1st	5 days	1½ days
2nd	5days	1day
3rd	6days	1days
4th	7days	2days
5th	09days	Spinning (2½ days)
Total duration	**32days**	**5 days**

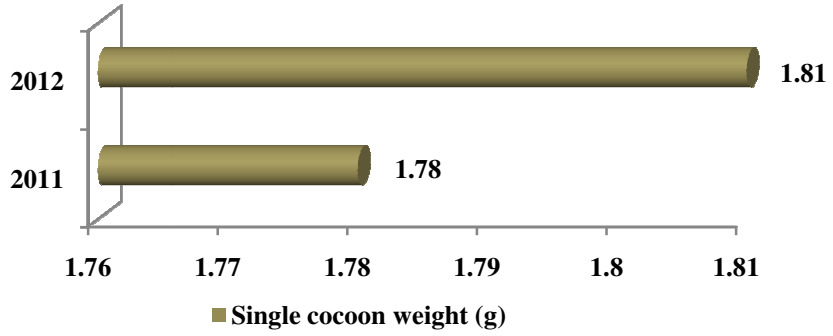

Figure-1
Rearing performnace by single cocoon weight (g)

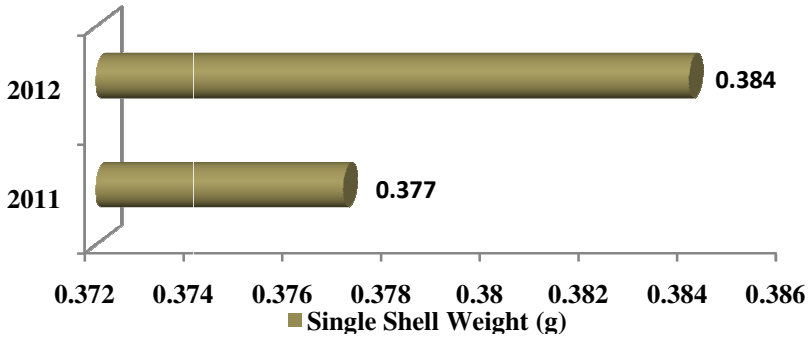

Figure-2
Rearing performance by single shell weight (g)

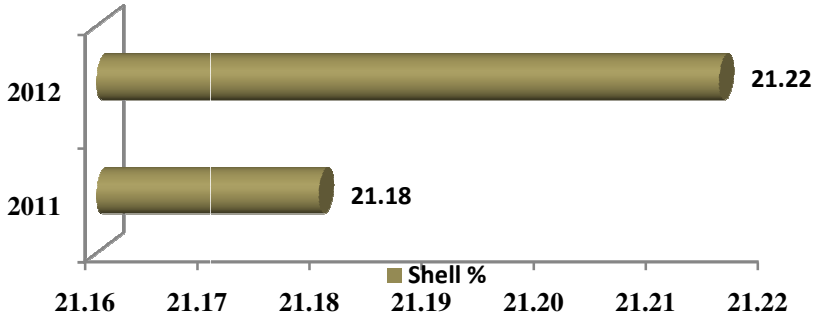

Figure-3
Rearing perfromance by shell %

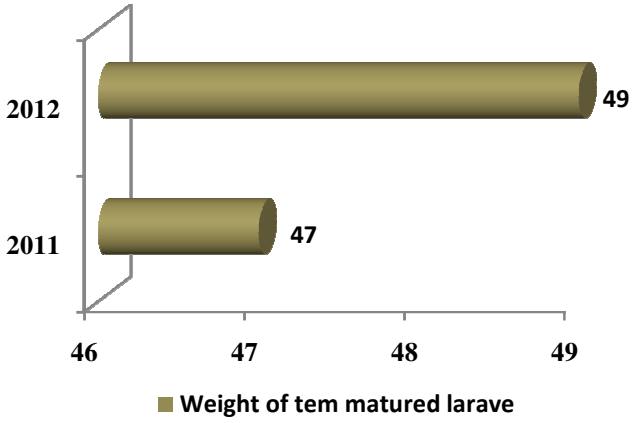

Figure-4
Rearing performance by weight of ten matured larvae

Results and Discussion

The spring rearing of silkworm is quite popular in the state of J&K in general and Poonch district in particular. The bivoltine hybrid $NB_4D_2 \times SH_6$ was first time reared in the year 2011 and same was reared in the current year 2012. Since this hybrid is also distributed to the farmers in the entire district wherever sericulture farmers is existed and it was imperative to assess the performance of the hybrid. The data regarding total larval duration for the year 2011 and 2012 showed that total feeding period was 34 and 32 days and moulting duration was recorded 7 and 5 days respectively, the slight variation is because of changing environmental conditions during the silkworm rearing as it prolonged the larval duration (table 1 and 2).

The rearing performance pertaining to single cocoon which is one vital trait for the farmers point of view as the cocoons are sold by weight only in the cocoon market and it was found to be (1.81 and, 1.78g) for the year 2011 and 2012 (figure-1). The data regarding single shell weight was (0.384 and 0.377g) (figure-2). The results of shell percentage for the year 2011 and 12 depicted a value of 21.22 and 21.18 % respectively. The good performance of this hybrid in the spring season might be due to suitability and congenial atmospheric condition prevailing while conducting the silkworm rearing. The results pertaining to weight of ten matured silkworm larvae was (49 and 47g) for the year 2011 and 12 (figure-4).

Conclusion

The bivoltine hybrid $NB_4D_2 \times SH_6$ exerted better performance when reared in the last two consecutive years and this hybrid can be exploited among farmers in the Poonch district of J&K state for enhancing the productivity of cocoons.

Acknowledgment

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