

Field Performance of Two Bivoltine Double Hybrids $FC_1 \times FC_2$ & Its Reciprocal Supplied by Silkworm Seed Production Centre, Udhampur

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Abstract

The field rearing performance of two bivoltine double hybrids of silkworms, *Bombyx mori* L. viz., $FC_1 \times FC_2$ & $FC_2 \times FC_1$ were assessed by collecting the feedback data from the fifteen cocoon growers (farmers) from different villages of Udhampur district. The data showed that silkworm seed supplied by the SSPC, Udhampur through DOS, J&K performed better among the cocoon growers as they have harvested good cocoon crops and also fetches better cocoons price in the cocoon market.

Keywords: Rearing, Double Hybrids, Performance, Cocoon Crop.

Introduction

J&K (UT) is famous for producing quality bivoltine silk due to the suitability of the prevailing environmental conditions, but for last many years it has been observed that bivoltine silkworm hybrids reared by the cocoon growers in different belt of the J&K did not give the desired results in attaining the cocoon productivity per ounce as it was expected despite best possible efforts made at the scientific level.

Review of Literature

In J&K (UT), majority of the cocoon growers (farmers) reared double hybrids silkworm seed because double hybrids have apparent merits like easy rearing, better growth and vigour, and yield on par or better than single hybrids (Nirmal Kumar and Sreerama Reddy, 1994). Further, it is quite clear that silkworm is one of the most important domesticated insects where the growth and development is greatly influenced by environmental conditions and the success of silkworm breeds/hybrids largely depends on their adaptability to the environment in which it is destined to be reared (Vijaya Lakshmi, 2014). The biological as well as cocoon-related characters are influenced by ambient temperature, rearing seasons, quality mulberry leaf, and genetic constitution of silkworm strains. It is a well-established fact that under tropical conditions, unlike polyvoltines, bivoltines are more vulnerable to various stress like hot climatic conditions of tropics, poor leaf quality, and improper management of silkworm crop during summer that is not conducive for bivoltine rearing for technologically and economically poor farmers of India (Suresh Kumar, 2001; Lakshmi and Chandrashekharaiyah, 2007; Begum *et al.*, 2008). Though the nature of silkworm healthiness is unclear, healthy silkworm varieties are important for the stabilization of silkworm crops. The use of commercial silkworm hybrids resistant to important silkworm diseases is economical and better option particularly in tropical areas. Due to fluctuating climatic conditions, inadequate silkworm disease management practices and poor quality mulberry leaf, frequent crop losses are witnessed especially due to grasserie disease with the farmers in tropical area.

Objective of the Study

The objective of the present was to assess the performance of the double hybrids seed supplied by SSPC, Udhampur to DOS, J&K (UT) by collecting the feedback date from the cocoon growers of Udhampur district.

Materials and Methods

The data pertaining to field rearing performance of two bivoltine double hybrids combinations viz., $FC_1 \times FC_2$ & $FC_2 \times FC_1$ were assessed by



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collecting the random feedback data from the fifteen cocoon growers from three different villages namely Barveen, Hartayan and Chanunta of Udhampur district. These double hybrids silkworm seed were prepared at SSPC, Udhampur and preserved at Cold Storage Plant (CSP), Dehradun under 10 month preservation schedule and supplied to the DOS, J&K during the year, 2019-20 in spring season. Farmers utilized mixed mulberry leaf of Local, S-1635 & S-146 mulberry variety planted in scattered form during the rearing period. All the farmers have harvested their cocoon crops after completion of 7th day of spinning. For collecting the feedback data from the cocoon growers a questionnaire was used for collecting the feedback data. The data pertaining to quantity of seed supplied to individual cocoon growers, cocoon yield obtained, rate per kg of dry cocoons, total amount attained in the cocoon market and total larval duration were collected. The date regarding single cocoon weight (g), single shell weight (g), shell (%) were taken after collecting 20 numbers of cocoons for assessment from each cocoon growers and the results are presented in the form of graphs (1-2).

Results and Discussion

As far as silkworm breeds are concerned multi x bi silkworms hybrids are mostly reared by the farmers which yields low quality silk, it necessitated the bivoltine sericulture in India. But in the UT of J&K almost all the farmers reared bivoltine breeds during spring and autumn season and many attempts were made to improve bivoltine rearing in the field did not yield sustainable results as it was expected especially in respect of yield per ounce. From the results of the present study depicted in Fig-1 it can be seen that

maximum yield 20.35 & 20.00 Kg were attained in per 100 Dfls (01 ounce) for both the double hybrids *i.e.*, FC₁ × FC₂ & FC₂ × FC₁ and highest rate per kg of dry cocoons Rs. 850 were fetched in FC₁ × FC₂ & FC₂ × FC₁ in the cocoon market. The data pertaining to highest amount received by the farmer revealed that an amount of Rs. 15365.5 was obtained by selling the cocoons of FC₂ × FC₁ in the cocoon market and lowest was also recorded in the same double hybrid by the cocoon growers. Even though bivoltine breeds are famous for their productive advantage, absence of genetic plasticity to buffer against adverse conditions prevailed in the field acts as a constraint to exploit the full economic potential of these new hybrids as studied by (Suresh Kumar *et al.*, 2001). (Dayananda, 2010) reported that proper evaluation and identification of bivoltine hybrids under simulated farmer's conditions at in-house is very important and plays major role to derive suitable hybrids for commercial exploitation. The data in respect of single cocoon weight (g) remain at par with both double hybrids reared by the farmers, but the highest single shell weight (0.422 g) and shell (22.81%) was recorded in the FC₁ × FC₂. The total larval duration was remained in between 31.-36 days for both the double hybrids reared by the farmers' depicted in the Fig-2. (Vijayaprakash and Dandin, 2005a,b) and (Dayananda, 2010) have reported that, though these bivoltine hybrids have the potentiality to produce more than 60 kg cocoons/100 dfls with 6-7 renditta and capable to produce 2-3A grade silk of international standard their full potential has not been exploited with the farmers due to various reasons.

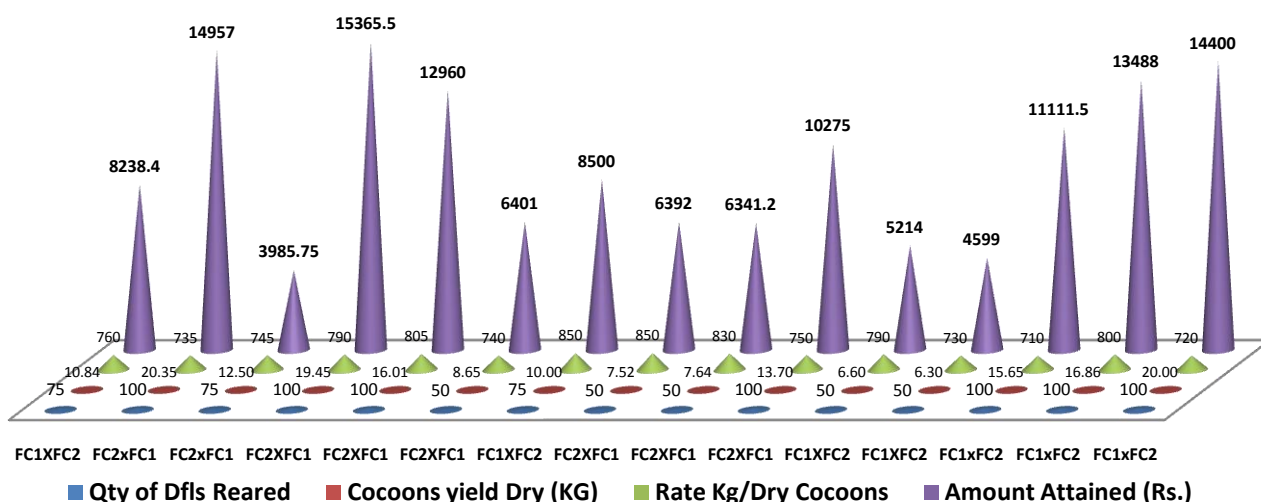
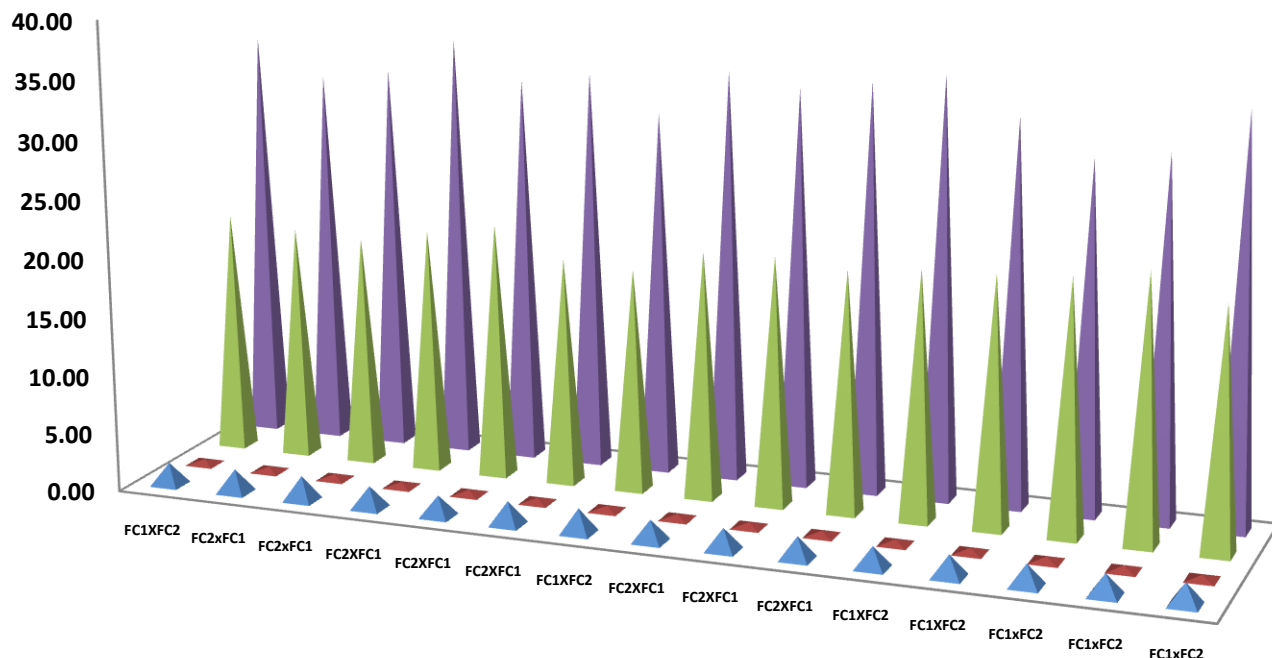


Fig 1. Performance of Double Hybrids In Respect of Quantity of Dfls Reared, Cocoon Yield Dry (Kg), rate Per Kg and Total Amount Attained in The Cocoon Market



	FC1XFC2	FC2xFC1	FC2xFC1	FC2XFC1	FC2XFC1	FC2XFC1	FC1XFC2	FC2XFC1	FC2XFC1	FC2XFC1	FC1XFC2	FC1XFC2	FC1xFC2	FC1xFC2	FC1xFC2
■ Single Cocoon Wt (g)	1.90	2.00	2.10	1.90	1.80	2.00	2.10	1.86	1.88	1.90	1.82	1.87	1.89	1.85	1.87
■ Single Shell Wt (g)	0.390	0.397	0.410	0.394	0.392	0.387	0.399	0.392	0.399	0.393	0.387	0.401	0.412	0.422	0.388
■ Shell %	20.53	19.85	19.52	20.74	21.78	19.35	19.00	21.08	21.22	20.68	21.26	21.44	21.80	22.81	20.75
■ Larval Duation	35	32	33	36	33	34	31	35	34	35	36	33	30	31	35

Fig 2. Performance of Double Hybrids in Respect of Single Cocoon Weight (g), Single Shell Weight (g), shell (%) and Total Larval Duration

Conclusion

J&K UT is usually characterized by producing the fine quality of bivoltine silk in the country due to the salubrious climate conditions especially during the spring season where majority of the cocoon growers reared the bivoltine breeds. But rearing of these silkworm breeds and hybrids did not give the desired results in the field as it was expected. The present study showed that the silkworms seeds of double hybrids supplied by SSPC to the DOS, Udhampur performed better under the field conditions during the spring season falling between April and May

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