



Performance of bivoltine seed crop rearing during autumn season and its influence on hybrid seed production

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Abstract

An attempt was made to evaluate the performance of autumn seed crops (August–September) at farm level by rearing two bivoltine breeds *viz.*, FC₁ and FC₂ during the year (2020). The data on seed rearing performance as well as grainage performance showed overall better performance in FC₁ breed compared to FC₂. The total cocoon yield per 100 dfls was (41.47 Kg) in FC₁ and (40.00 Kg) in FC₂ and pupation rate was also found higher (90 %) in FC₁. The present results revealed that the seed crop rearing productivity in autumn season can be improved in Udhampur district by maintaining proper environmental conditions during seed crop rearing, hygiene and feeding quality mulberry leaf.

Keywords: Autumn, performance, race. seed crop, grainage

Introduction

In Udhampur district, sericulture is one of the important sectors for rural people to earn additional income. Farmers have been practicing sericulture in the district from many years and at present more than 5000 F1 and P1 farmers are associated with this occupation. The topography of the Udhampur district is unique as it possesses three agro climatic regions *viz.*, sub-tropical, intermediate and temperate and is very much suitable for mulberry cultivation. The main reason sericulture has remained a subsidiary occupation in Udhampur district is that the bulk of the farmers are involved in rearing of only spring silkworm crop in the district. Even though autumn crop is considered as second largest crop after the spring, but the productivity per 100 dfls is very low. Although extensive work has been done and efforts have been made to popularize the autumn crop among farmers in the district, but still only 10-15% farmers are involved in autumn rearing. The silkworm rearing at farmer's level is mainly carried out during spring season and only 10-15% farmer's conduct second rearing during summer (Sahaf *et al.*, 2016)^[9] in Kashmir. Till date very few silkworm breeds/hybrids have been developed for the spring season (Trag *et al.*, 1992^[13], Kamili, 1996, Malik *et al.*, 2006)^[12, 4, 6]. The cocoon productivity has been reported as 30-40 Kg/100 dfls in spring crop and 20-25 Kg/100 dfls in autumn crop (Chauhan *et al.*, 2008)^[2]. Continuous efforts are being made to enhance the cocoon crop production by popularizing an additional commercial crop for autumn (Singh *et al.*, 2013)^[1]. But poor quality of mulberry leaf and disease incidence

during autumn season comes in the way of popularizing second commercial rearing. Moreover, the low cocoon yield and poor quality during the autumn season, together with the frequent failures, are major concerns and barriers compelling farmers not to take up autumn crop. Until the two crops are harvested, sericulture will continue to be a subsidiary. In this context, present study was carried to evaluate the performance of seed crop rearing during autumn season and its influence on hybrid seed production.

Materials and method

The present experiment was carried out to evaluate the performance of autumn seed crop at SSPC, Udhampur during the year 2020. A total of 75 dfls each of FC₁ and FC₂ procured from SSPC, K.R. Nagar, Mysore were reared by following recommended silkworm rearing method suggested by Krishnaswami *et al.*, (1978)^[5]. The initial stages silkworm larvae (chawki) were fed with quality mulberry leaves of S-1635 and later stages silkworm larvae (late age) were also fed with same mulberry variety of well-established mulberry garden. During this period silkworms were fed three times a day with fresh leaves harvested daily from the mulberry garden during the early hours of the day and stored to maintain moisture by covering wet gunny cloth. The data of the economically important traits such as Larval duration (days), single cocoon wt (g), single shell wt (g), shell %, numbers of cocoon per Kg, numbers of melted cocoons per Kg, pupation %, actual yield (Kg), dfls obtained by numbers, pairs obtained, dfls obtained, pair %, dfls % and egg recovery (g) were collected and results are presented in (*Fig 1-3*).

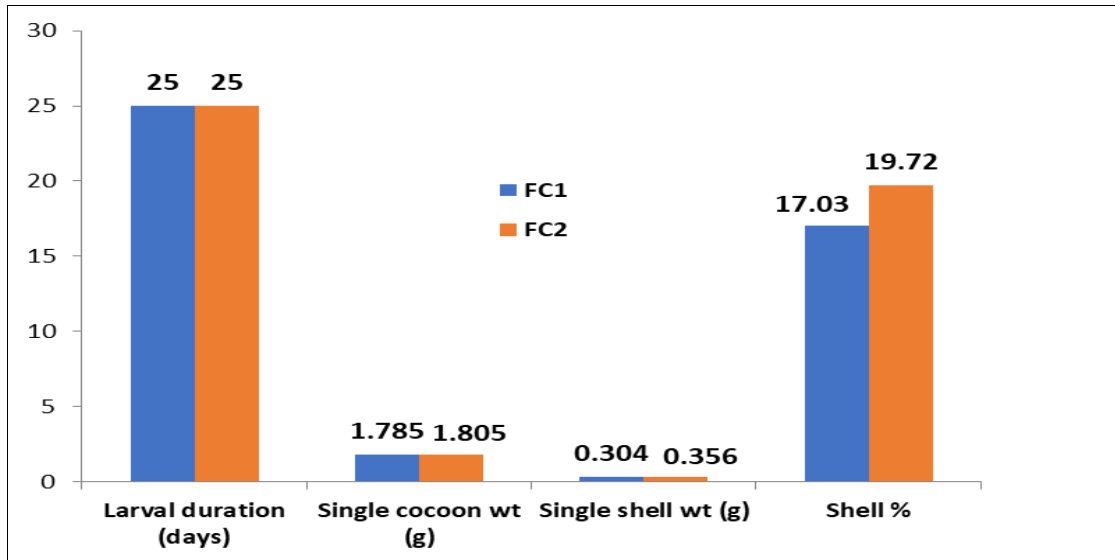


Fig 1: Rearing performance of FC₁ and FC₂ breeds during autumn season.

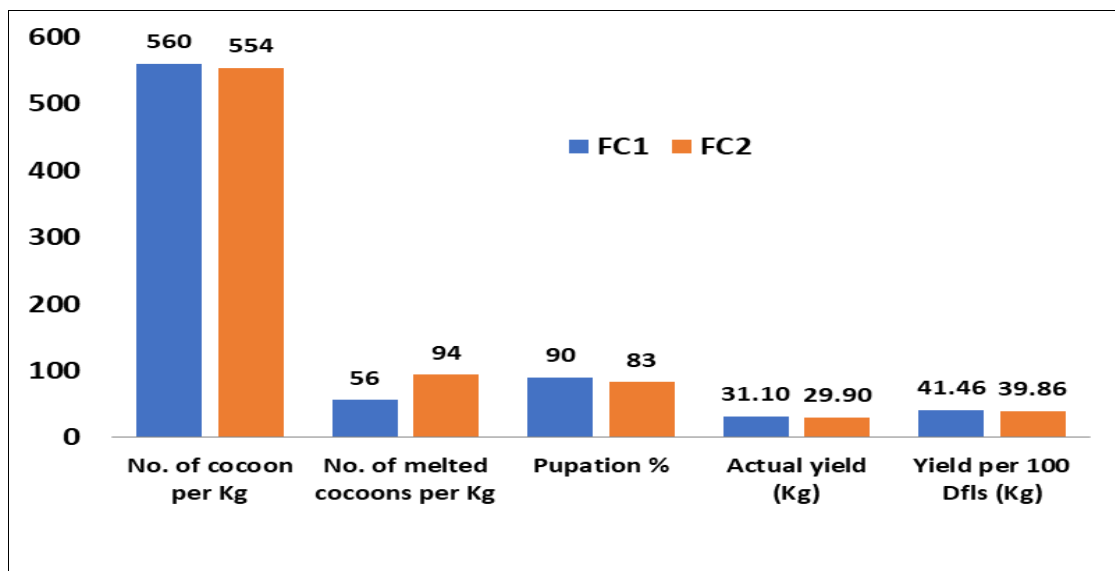


Fig 2: Rearing performance of FC₁ and FC₂ breeds during autumn season.

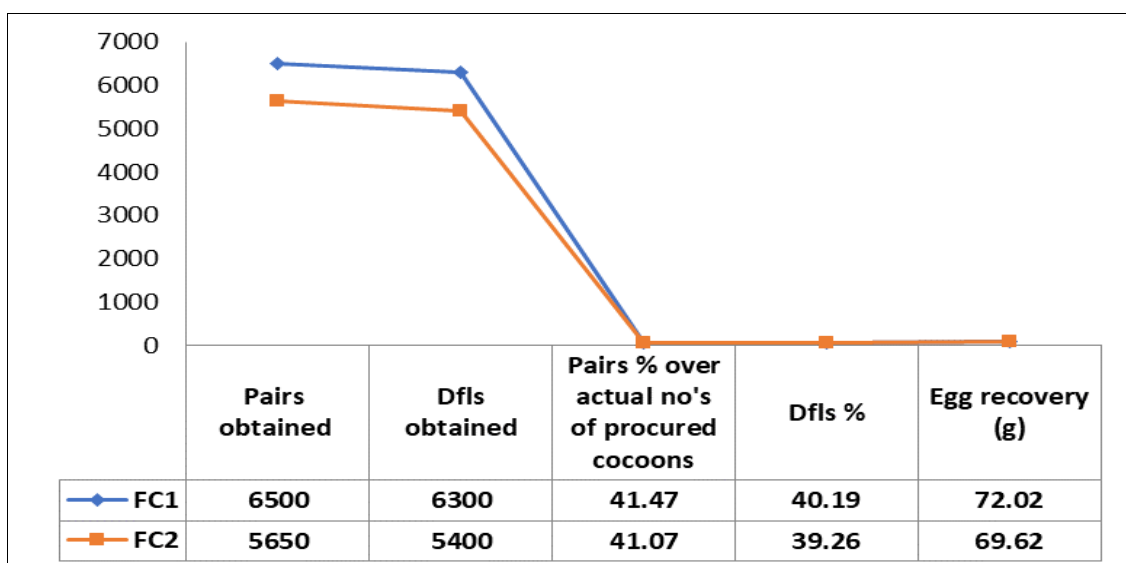


Fig 3: Grainage performance of FC₁ and FC₂ breeds during autumn season

Results and discussion

Udhampur district having remarkable potential because it possesses three agro climatic regions viz., sub-tropical, intermediate and temperate and is very much suitable for mulberry cultivation. Important economic traits of data pertaining to assessment of autumn rearing and its grainage performance of two breeds viz., larval duration (days), single cocoon wt (g), single shell wt (g), shell %, numbers of cocoon per Kg, numbers of melted cocoons per Kg, pupation %, actual yield (Kg), dfls obtained by numbers, pairs obtained, dfls obtained, pair %, dfls % and egg recovery (g) Fig (1-3). The present findings indicate that, the performance of the silkworm larvae reared during autumn season by feeding S-1635 mulberry genotype recorded that larval durations was (25 days), single cocoon weight (1.805 g), Shell weight (0.356g) and shell % were recorded (19.72 %) in FC₂ when compared to FC₁ where these parameters value was slightly lower (Fig-1). The others parameters like numbers of cocoons per Kg, pupation %, Yield per 100 dfls were found to be better in FC₁ breed (Fig-2). The date pertaining to grainage performance also showed better results in FC₁ breed the egg recovery (g) was found (72.02g) and in case of FC₂ it was (69.92g) Fig-3. The present investigation agreed with the findings of Sannappa *et al.*, (2002)^[11] and Nooruldin *et al.*, (2015)^[7, 10] who also reported that health of larva depends on quality of leaf. Sardar Singh and Singh (2012)^[12] reported successful trial of summer crop in Himachal Pradesh where 2000 dfls of PM×CSR2 was reared at farmers level and an average yield of 45 Kg/100 dfls were obtained during July 2010, where organized mulberry plantation was developed in 2006 were used for silkworm rearing. If the number of crops is increased it equally increases the chances of return from silkworm rearing. That is why it is very important that number of cocoon crops is increased in this part of the country to its possible extent. Lack of more cocoon crops in North Western India is major issue for the development of sericulture and to keep sericulture competitive with other cash crops in North Western states it is imperative to introduce another one or two crops. High temperature and humidity during autumn rearing in subtropical areas of district Doda and Ramban leads to higher incidence in diseases mainly grasserie and flacherie (Ravi Kant *et al.*, (2024)^[9]. Occurrence of diseases especially in autumn has a direct relationship with various rearing conditions prevailing in reared dwelling type of rearing houses especially irregularities in maintenance of microclimatic conditions and hygiene which leads to outbreak of these diseases. Our results are in conformity with the findings of Rao *et al.* (1995), Vijaykumari *et al.*, (2001), Illahi & Nataraju (2007)^[8, 13, 3] who reported that rearing of silkworms under unhygienic conditions without following the scientific methods of rearing deteriorates the silkworm health by outbreak of certain diseases and finally causes huge losses to farmers by decreasing the cocoon yield.

Conclusion

Thus, by closely adhering to all preventive measures prior to the spread of disease, the second commercial seed crop can be popularized at the field level in the Udhampur district of Jammu & Kashmir during the autumn. In addition, leaf quality is one of the major factors in the autumn, as pests and diseases are more common in the autumn than in the spring. The autumn crop in Udhampur district would also flourish if autumn specific breed, good hygiene and leaf quality are to be fed during autumn season.

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