



Performance of Multivoltine Silkworm Races OnM-5 Variety Of Mulberry (*BombyxMori*L.)

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ABSTRACT

The studies on nine different multivoltine races viz., Pure Mysore, Hosa Mysore, Mysore Princes, Kolar Gold, C. Nichi, G Race, P₂D₁, CB₅ and Nistari on M-5 variety of mulberry larval duration, weight of ten matured larvae, diseases mortality (%), single cocoon weight, denier and fecundity were undertaken during 2012-13. The studies show that Kolar Gold race was recorded superior for weight of the ten mature larvae (22.16 g), Pure Mysore was recorded significantly superior for incidence of disease (1.50%) and fecundity (508.61 eggs). The race P₂D₁ found superior for single cocoon weight (0.980g) and cocoon yield (9.800 kg). The race C.Nichi was recorded superior for denier (1.68) and larval duration (22.96). Hosa Mysore race (16.10%) was found significantly superior over rest of the races for shell ratio.

Key words: Fecundity, Larval duration, Deneir, Cocoon yield, Shell ratio, *Bombyxmori* L.

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INTRODUCTION

A class fiber of insect origin, mulberry silk is the end product of sericulture activity and occupies a prestigious position in the world. In view of being oldest world trade commodity it has, through all days received a worldwide importance. Despite several attempts of man to create an artificial substitute for this natural thread, none could match its grace, luster, suppleness, lighter weight, durability, tenacity and many other excellent qualities. Sericulture is labour intensive, export oriented, employment creating and income generating agro-based cottage industry providing quick return in shorter duration and does not involve utilization of sophisticated machinery.

Sericulture having tremendous potential of employment generation and capacity of earning foreign exchange. It provides employment to about 60 lakh people in rural areas in the country. Out of which woman constitute about 60 per cent contribution. By producing self employment in rural areas, not only the rural migration is arrested but also the cottage and small industries get established in rural India. One hectare of land under mulberry in terms of productivity yield Rs 80,000 worth of silk, which is quite attractive as compared to the other commercial crops. In addition, it creates employment to 12-13 persons annually in mulberry cultivation, silkworm recycling, twisting and post harvest cocoon technology like weaving and fabrication of implements (Meenakshisundaram, 1983).

MATERIAL AND METHODS

The experiment was conducted in rearing house at Department of Agricultural Entomology, College of Agriculture, Latur. Before starting the experiment the rearing room was disinfected daily two times with the help of 2% Formalin solution and 0.3% Bleaching powder. All the rearing equipments were also disinfected. The rearing room temperature was maintained at 24°C to 28°C. Disease free layings (Dfl's) of nine parental lines viz., Pure Mysore, Hosa Mysore, Mysore Princes, Kolar Gold, C. Nichi, G Race, P₂D₁, CB₅ and Nistari of multivoltine silkworm germplasm were procured from the Central Sericultural Germplasm Resource Centre, Hosur, Tamil Nadu and which was used as an experimental material. The Dfl's of parental races were properly black boxed at pin head stage and incubated at 25°C and 70% relative humidity for 48 hrs. before hatching. During this period care was taken to protect the eggs from predators. Before hatching the eggs were exposed to sun light in morning hours for few

minutes to promote the uniform hatching of larvae from eggs. Krishnaswami (1978) described the improved technology of silkworm rearing and it was adopted in this investigation. The newly hatched larvae were fed with recommended size chopped pieces of fresh mulberry leaves of M-5 variety, 100 larvae of each race treated as one replication were kept in 36.6" x 36.6" wooden tray. The rearing trays were arranged at randomized manner in each replication to minimize the experimental error. The leaves were chopped into small pieces of 0.5 cm and sprinkled over the newly hatched worms for their feeding. The feeding was given four times in a day, at 8.00 hrs, 12.00 hrs, 16.00 hrs and 21.00 hrs. The rearing trays were cleaned daily as per recommendation. The maximum larval weight was recorded by taking the weight of randomly selected 10 matured larvae just before the onset of spinning. The fecundity of each race was computed by taking average number of eggs laid by three female moth of each race. Percentage incidence of diseases were worked out as below,

$$\text{Disease \%} = \frac{\text{No. of diseased larvae}}{\text{Total No. of larvae}} \times 100$$

Denier is the term used to denote the thickness of silk filament and expressed in terms of ratio of weight of filament, to the filament length multiplied by 9000. Nanvathy (1965).

$$\text{Denier} = \frac{\text{Filament weight (g)}}{\text{Filament length (m)}} \times 9000$$

RESULTS AND DISCUSSION

Significantly positive larval duration of 22.96 days was recorded by C.Nichi. The races CB₅ (23.26 days), Hosa Mysore (23.27 days) and Mysore Princess (23.37 days) were found at par with each other, whereas the highest larval duration was observed in Pure Mysore (29.53 days). Tayade (1983) reported that the larval duration was longer in race Pure Mysore (32 days).

The performance of the race Kolar Gold (22.16 g) for weight of ten mature larvae was observed significantly superior over the rest of the races, except P₂D₁ (21.30 g), Hosa Mysore (21.02 g), CB₅ (20.61g) and G Race (20.42g) which were at par with each other whereas, the lowest larval weight was recorded in Pure Mysore (15.45g).

The highest single cocoon weight was recorded in the race P₂D₁ (0.980 g) over rest of the races. The race Kolar Gold (0.970 g) and Hosa Mysore (0.935 g) were found at par with each other. Whereas, the lowest single cocoon weight was recorded by Pure Mysore (0.646 g). Swamy (1999) reported that the highest single cocoon weight was recorded in P₂D₁ (1.38 g). Chattopadhyay *et al.*, (1992) reported that the highest single cocoon weight was recorded in OS-616 (1.27 g). The single cocoon weight recorded by P₂D₁ at Central Sericultural Germplasm Resources Center, Hosur is 1.306g.

Significantly lowest disease incidence was recorded by Pure Mysore (1.50%). Followed by the races Kolar Gold (1.90%), the maximum disease incidence was recorded by Hosa Mysore (7.85%).

The denier of race C.Nichi (1.68) was observed significantly superior over the all other races tested. Whereas, the denier of G Race (1.72) and P₂D₁ (1.76) were found at par with each other. The lowest performance was recorded by Hosa Mysore (2.00). Latpate (1997) reported that the highest denier was recorded in MY₁ (2.597) whereas the lowest denier was recorded in C. Nichi (1.423). Narayanaswamy (2000) showed that highest denier was recorded in Pure Mysore (2.77) followed by P₂D₁ (2.47).

The maximum shell ratio was observed in the Hosa Mysore (16.10%) and was found significantly superior over rest of the races tested except, P₂D₁ (15.30%), G race (15.02%), CB₅ (14.77%), C. Nichi (14.75%) and Mysore Princess (14.67%) which were at par with superior race Hosa Mysore. The minimum shell ratio was recorded by Kolar Gold (13.94%).

The highest cocoon yield was recorded by the race P₂D₁ (9.800 kg), followed by Kolar Gold (9.700 kg), Hosa Mysore (9.350 kg) and C. Nichi (9.307 kg). The lowest cocoon yield was recorded by Pure Mysore (6.467 kg).

The fecundity was varied in the range 508.61 eggs to 431.63 eggs. The maximum fecundity was observed in Pure Mysore (508.61 eggs) and was significantly superior over rest of races except, Kolar gold (481.65 eggs) and CB₅ (462.96 eggs), which were at par with each other. The minimum fecundity was recorded by the C.Nichi (431.63 eggs).

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Table 1. Performance of multivoltine silkworm races for different economic traits.

Name of the race	Larval duration (days)	Wt. of 10 mature larvae (g)	Disease incidence (%)	Single cocoon weight (g)	Shell ratio (%)	Cocoon yield (kg)	Deneir	Fecundity (No. of eggs)
Pure Mysore	29.53	15.45	1.50 (0.85)	0.646	14.41 (8.28)	6.467	1.94	508.61
Hosa Mysore	23.27	21.02	7.85 (4.50)	0.935	16.10 (9.26)	9.350	2.00	456.66
Mysore Princess	23.37	19.80	2.82 (1.620)	0.792	14.67 (8.43)	7.927	1.84	458.32
Kolar Gold	23.22	22.16	1.90 (1.08)	0.970	13.94 (8.01)	9.700	1.79	481.65
C. Nichi	22.96	20.20	2.59 (1.48)	0.930	14.75 (8.48)	9.307	1.68	431.63
G Race	23.66	20.42	2.91 (1.66)	0.770	15.02 (8.63)	7.700	1.72	434.31
P ₂ D ₁	23.66	21.30	4.62 (2.64)	0.980	15.30 (8.79)	9.800	1.76	454.33
CB ₅	23.26	20.61	2.48 (1.42)	0.872	14.77 (8.49)	8.720	1.91	462.96
Nistari	24.21	18.93	5.40 (3.09)	0.905	14.53 (8.35)	9.067	1.87	436.86
S.E. ±	0.44	0.37	1.19	0.009	0.45	0.090	0.099	15.57
C.D. at 5%	1.33	1.13	3.58	0.026	1.37	0.269	0.297	46.62
C.V.	3.21	3.27	5.82	1.799	5.35	1.791	9.352	5.88

* Figure in parenthesis indicate arcsine transformed values

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