

TRIALS ON MULTIPLE SILK WORM REARING IN SPRING-POST SPRING SEASONS IN PAKISTAN

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Summary:

Three overlapping silk worm rearings of Japanese F-1 hybrid race (SHUNRE X SHOGETSU) were conducted under local conditions during the months of February–April, 1984. The cocooning ratio 94.67% and 94.89% and cocoon shell ratio 23% and 22.21% in respect of the first rearing during February 18 to March 19 and second rearing during March 3 to March 30 respectively were considered quite satisfactory. The same being 75% and 19.64% in respect of third rearing during March 20 to April 17 were considered on low side.

Introduction:

Silk worm rearing is a forest based cottage industry in Pakistan and at present only a single crop is obtained in the spring season. In countries like Japan, Thailand, Korea, China, Brazil and U.S.S.R. the rearing has been developed to obtain several annual crops during one growing season of mulberry. Conditions in Pakistan are also considered suitable for conducting rearing during different parts of the year as mulberry thrives well during February to October. Trials on autumn silk worm rearing have already been conducted successfully (Pakistan Journal of Forestry April 1977).

This study was undertaken to investigate the possibilities of multiple overlapping silk worm rearing during Spring/Post Spring under local conditions so as to have an understanding about the feasibility of this practice in Pakistan.

Review of Literature

Silk worm rearing is conducted as an industry in Japan during April to October, During this period mulberry thrives well, so rearing is usually conducted three times. (Agricultural Technique Manual 1,1972) In Korea, the two major crops from the spring and autumn rearing are about same (Year Book of Raw Silk Statistics, 1972). In China, Thailand and Brazil several cocoon crops are harvested annually in different parts of the country (Personal Communication).

Method and Material:

F-1 hybrid eggs (SHUNREI X SHOGETSU) were procured from Japan in January, 1984 and were preserved at a temperature ranging from 2°C to 5°C. The characteristics of this variety as prescribed by the experimental station of the Ministry of Agriculture Forestry

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and Fishery in spring rearing 1976 were used as reference for this experiment.

Three overlapping silk worm rearings were conducted during February to April, 1984 as per schedule given below:—

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|------------------|-------------------------------|
| — First rearing | February 19 to March 19, 1984 |
| — Second rearing | March 3 to March 31. |
| — Third rearing | March 21 to April 16. |

The eggs were incubated and allowed to hatch at the temperature of 25^o–26^oC and at relative humidity ranging from 65% to 75%. During first rearing, the temperature was maintained at 24^o–25^oC during young silk worm stages. The room temperature and relative humidity during the rearing of grown up larvae ranged from 24^o C to 30^oC and 55% to 65% respectively during different rearings. During each rearing, nine hundred larvae were taken at random out of the larval population immediately after third moulting and grouped in three hatches of three batches of three hundred each and reared under the same conditions. The mature larvae were mounted on the brush shoots of Eucalyptus. The cocoons were harvested after seven days and the following characteristics were studied:—

(a) *Cocooning Ratio*: The cocooning ratio expressed in percentage was worked out by the following formula:

$$\text{Cocooning Ratio} = \frac{\text{Number of cocoons spun}}{\text{Number of sampled larvae}} \times 100$$

(b) *Grades of Cocoon*: The cocoons were sorted out to assess their quality and were graded as; (1) normal cocoon; (2) low cocoon and (3) double cocoon and their respective percentage was determined.

(c) *Single cocoon weight*: 10 female and 10 male cocoons were taken at random from normal cocoons from each group on the harvest day and their weight determined and averaged.

(d) *Cocoon Shell Ratio*: The shell weight of the cocoons described above under (c) after removing the pupae from the cocoons, was determined and averaged. Cocoon shell ratio expressed in percentage was calculated by the following formula:

$$\text{Cocoon shell Ratio} = \frac{\text{Cocoon shell weight}}{\text{Cocoon Weight}} \times 100$$

Results: The results obtained are given below:—

Table 1

Comparative Characteristics of Different Rearing

Rearing	Cocoons	Cocoon types %				Average cocoon weight (gm)	Average cocoon shell wt, (gm)	Cocoon shell ratio %
		Normal	Low	Defec- tive	Double			
I.	94.67	90.49	3.93	1.06	3.52	1.786	0.410	23.00
II.	94.89	70.64	4.92	1.05	2.11	1.581	0.351	22.21
III.	75.00	70.64	23.53	3.13	2.68	1.406	0.227	19.84

Discussion :

The results of this experiment are compared with the specified data regarding this variety in table 2.

Table 2

Comparison of the results of trial rearings of
Japanese F-1 hybrid race (SHUNREI X SHOGETSU)
with the prescribed data for this race.

Characters Rearing data of F-1 hybrid (Shunrei x Shogetsu)

	Prescribed Japanese results	Results achieved in Pakistan		
		First rearing	Second rearing	Third rearing
— Cocooning ration (%)	95.1	94.67	94.89	75.00
— Double cocoon (%)	3.0	3.52	2.11	2.68
— Single cocoon weight (g)	2.21	1.786	1.581	1.406
— Cocoon shell weight (g)	0.540	0.410	0.351	0.227
— Cocoon shell ratio (%)	24.5	23.0	22.21	19.64

It is evident from the above comparison that the results of First and Second Rearings of this experiment go almost well in agreement with those of the prescribed one whereas those of third rearing are on low side when reared under local conditions. It would thus conclude that two overlapping rearings of silk worm in this season are quite possible under the local conditions.

REFERENCES

1. Agricultural Technique Manual 1—Hand Book of Silk Worm Rearing, Tokyo, Japan, 1972.
2. Daiya Silk No. 5219, Ministry of Agriculture, Forestry and Fishery 1976.
3. Year Book of Raw Silk Statistics (1972) Ministry of Agriculture and Forestry, Published by Korea Raw Silk Exporter's Association, Republic of Korea.

Character	Rearing data of F-1 hybrid (Shinrei x Shogetsu)			Prescribed Japanese results
	First rearing	Second rearing	Third rearing	
Cocoon shell ratio (%)	24.2	22.21	19.84	
Cocoon shell weight (g)	0.240	0.410	0.327	
Single cocoon weight (g)	1.21	1.281	1.406	
Double cocoon (g)	3.0	3.22	3.68	
Cocooning ratio (%)	92.1	94.67	94.89	