

Impact of Virosis on the Productivity of Mulberry Silk

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ABSTRACT

This paper provides the impact of virosis on the productivity and quality of cocoons of mulberry silk.

1. Introduction

Silk is the most beautiful gift of nature and it is said that when humanity is threatened, it can be saved by the silk worm and honeybee.^[1] Now a days at international level there is a slogan that silk is milk. The export of silk brings handsome amount of much needed foreign exchange. In the field of sericulture, India is the only country which produces all the four popular varieties of natural silk viz. Mulberry, tasar, eri and muga. In fact tasar culture which is of much commercial importance suffers a great loss of crop due to various diseases. Jolly and Sen^[5,6] have discussed four types of disease in tasar silk worm viz. Polyhedrosis (viral), Flacherio (Bacterial), Pebrin (Sporozon) and Muscardin (Fungal). Various other researchers in this field are Grigagheyete al.^[4], Jolly and Agrawal,^[7] Sharema,^[9] Bariar and Sharma,^[2] Dewangan,^[3] Sharma et al.^[10] and Roy and Sarkar,^[8]. Here we shall investigate the impact of virosis on the productivity of mulberry silk.

2. Material and method

A lot of 250 viral infected eggs divided into five replications (50 x 5) of Bombyx-mori were put under incubation and after hatching of the larvae, rearing of worms on the foliages of mulberry plants was carried out till the formation of cocoons. The cocoons were harvested and the analysis in respect of productivity and qualities of cocoons were made. The experiment was carried out for both the seed crop and commercial crop season. The results so obtained in respect of E.R.R., cocoon volume, cocoon weight, shell weight, shell ratio, filament length and Denier were recorded in the tables. (see Table I & II).

3. Observation

The impact of virosis on the productivity of mulberry silk worm as well as the quality of cocoons and silk yarn during the seed crop and commercial crop seasons have been evaluated and the results so obtained have been recorded in table I and II.

Table I shows that the percentage of E.R.R. (12.0), volume of cocoons (10.9 cc), cocoon weight (4.82 gm), shell weight (0.68gms), shell ratio (9.0%), filament length (590 mtr) and denier (20) are relatively lesser than the control during the seed crop season. The E.R.R. (26.0), volume of cocoon (11.32), cocoon weight (5.95gms), shell weight (0.18gm), shell ratio (9.95%), filament length (590mtr) and denier (3D) of control lot have been found to be superior as compared to the virosis lot. It is very clear that the E.R.R. percentage is highly significant and the volume of the cocoons, cocoon weight shell weight, shell ratio, filament lengths are also significant when it is compared with the control lot. However the denier of he treated lot and control lot are not significant.

Similarly the table II accounts for the impact of virosis on the productivity and the quality of mulberry cocoons during the commercial crop season. Table shows that the percentage of E.R.R. (13.0), cocoon volume (11.0cc), cocoon weight (4.96 gms), shell weight (0.71 gms), shell ratio (9.13%), filament length (520mtr) and denier (3D) are inferior to its control. The percentage of E.R.R (28.0), cocoon volume (11.81 cc), cocoon weight (5.92gms), shell weight (0.85gms), cell ratio (10.10%), filament length (610 mtr) and denier (4D) of the control lot are evidently superior to the virosis lot during the commercial season. When the virosis lot is compared with the control lot, the percentage of E.R.R has been found to be highly significant. Likewise the volume of cocoon, cocoon weight, shell weight and shell ratio are also significant. The filament length has been found to be highly significant. No significant variation has been obtained in denier of the virosis lot and the control lot during the commercial crop season. It is further clear that the commercial crop season has registered its supremacy over the seed crop season inspite of significant differences between the different parameters.

Table – I
Table showing impact of virosis on the productivity of mulberry silk worm during the seed crop season

Repli-cation	No. of worms mounted	E.R.R. (%)	Cocoon volume (CC)	Cocoon weight (gm)	Shell weight (gm)	Shell ratio (%)	Filament length (mtr)	Denier of fibrine
1.	50	12.0	10.93	4.82	0.68	9.0	501	2D
2.	50	12.1	10.91	4.83	0.67	9.0	499	2D
3.	50	11.99	10.95	4.84	0.69	8.98	498	2D
4.	50	11.98	10.93	4.81	0.68	9.05	503	2D
5.	50	12.10	10.92	4.81	0.68	9.99	502	2D
Av.	50	12.0	10.93	4.82	0.68	9.0	501	2D
Control	50	26.0	11.32	5.95	0.78	9.95	590	3D
C.D. at 0.5% level for characters		**	*	*	*	*	**	NS

** : Highly significant
 * : significant
 NS : Not significant

Table – II
Table showing impact of virosis on the productivity of mulberry silk worm during the commercial crop season.

Repli-cation	No. of worms mounted	E.R.R. (%)	Cocoon volume (CC)	Cocoon weight (gm)	Shell weight (gm)	Shell ratio (%)	Filament length (mtr)	Denier of fibrine
1.	50	13.0	11.0	4.96	0.71	9.13	520	3D
2.	50	12.98	11.0	4.95	0.72	9.14	519	3D
3.	50	13.0	10.98	4.97	0.70	9.12	521	3D
4.	50	13.10	11.10	4.95	0.73	9.14	520	3D
5.	50	12.95	10.95	4.96	0.71	9.11	520	3D
Av.	50	13.0	11.0	4.96	0.71	9.13	520	3D
Control	50	28.0	11.81	5.92	0.85	10.10	610	4D
C.D. at 0.5% level for characters		**	*	*	*	*	**	NS

** : Highly significant
 * : significant
 NS : Not significant

4. Discussion and conclusion

Results have shown that virosis affects the productivity as well as the filament length of mulberry silk. As a matter of fact virus infection among the sericigenous insects are reported to cause metabolic disorder and impairs the growth and development of silk insect. It is thus logical to assume that the pathogen causing virosis disease has the capacity to disturb the normal physiology of silkworm as a result the usual growth and development at different stages of life cycle get deteriorated. The deterioration has the subsequent effect on

the percentage of survival and length of the silk yarn. Thus the result obtained is very much conclusive.

5. Summary

Seasonal variations in respect of productivity and quality of cocoons have been obtained. Commercial crop season is relatively better than the seed crop season. Further it is found that virosis affects the productivity as well as the filament length of mulberry silk.

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