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COMPARATIVE PERFORMANCE OF TWO DIFFERENT MULBERRY VARIETIES ON SILKWORM REARING IN SPRING SEASON

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ABSTRACT
An investigation was carried out to assess the comparative silkworm rearing performance by feeding two different genotypes in spring season of Poonch district, Jammu & Kashmir. The results exhibited that Chakmajra variety was found to be superior over local mulberry variety as assessed by the rearing performance such as larval weight of 5th instar, shell weight, cocoon weight, shell % and larval duration.

KEY WORDS: *Bombyx mori L.*, mulberry varieties, spring season, rearing performance.

INTRODUCTION

Mulberry is a woody perennial and heterozygous plant. The foliage is the sole diet for the mulberry silkworm (*Bombyx mori L.*) and plant draws substantial amount of nutrient elements from soil (Kar *et al.,* 1997) for nourishment of the insect. The quality of mulberry leaves have a predominant influence on the growth and development of silkworm larvae, and subsequent cocoon production are greatly influenced by nutritional quality of mulberry leaves (Krishnaswami, 1978; Liaw, 1991; Gowade and Medhe, 2009).The component of leaf varies according to the variety of mulberry and different significantly with factors such as soil fertility, agronomical practices, planting system and environmental conditions (Bongale *et al.,* 1991; Datta, 1992). Despite, productivity and quality of silk are mostly governed by the mulberry feed and vary with age and components of leaf on the shoot (Patil, 2004). The nutrients content in mulberry leaves remain higher in tender leaves as compared to middle and matured leaves or bottom leaves. Feeding of over matured leaves is not suitable for silkworm rearing as it deteriorates the quality as well as quantity of cocoon crop (Bheemanna, 1989). Keeping in view, the present investigation was aimed to compare the feeding effect of two different genotypes in spring silkworm rearing performance.

MATERIALS & METHODS

The present study was undertaken in rearing house of Govt. Degree College, Poonch, J&K. Two different genotypes *viz.,* Chakmajra and local mulberry varieties were used for the experiment with three treatments. Each treatments comprised of 3 replications each of 100 larvae of chawki or young age silkworm larvae of NB_4D_2 x SH_6 race supplied by the State Sericulture Department of Poonch, J&K. Rajan and Himantharaj (2005) described the improved technology of silkworm rearing was adopted to assess the comparative rearing performance which includes larval weight of 5th instar, shell weight, cocoon weight, shell% and larval duration. Worms were fed three times in a day in equal quality of mulberry leaves of two different varieties from 3rd instar onward till spinning. On the 7th day of 5th instar larval weight was recorded of 10 larvae each. On the 7th day after completion of spinning cocoons were harvested and cocoon characters were studied as mentioned above. The results were presented in the form of overall mean performance in Figures (1-5).

RESULTS AND DISCUSSION

The data depicted in Fig-1, relevant to a differential trend on feeding two different mulberry varieties showed maximum average weight of 10 matured larvae in Chakmajra (50.53g) over the local (46.2g). Pillai *et al.,* 1981; Gawade and Medhe, 2010 also carried out work to assess the effect of different mulberry varieties on economic traits of silkworm (Gabriel, 1976; Radhe, 1978; Anonymous, 1981; Tayade, 1984; Badade, 1985).

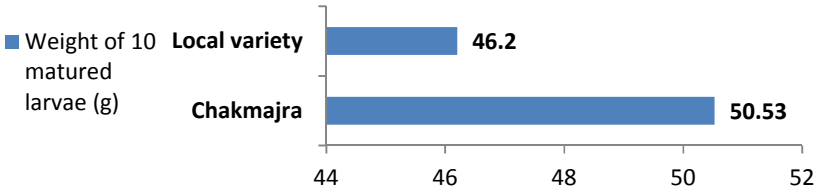

FIGURE 1. Effect of two mulberry varieties on larval weight (g)

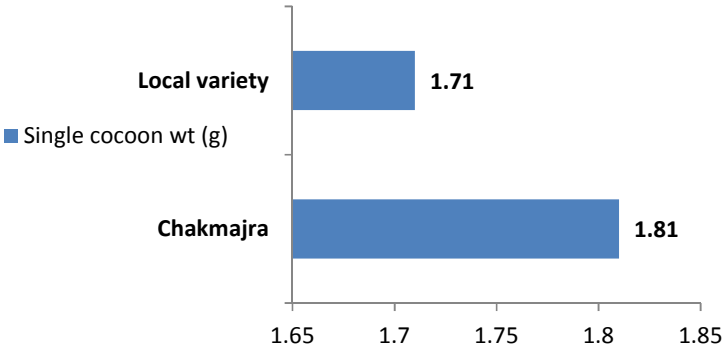

FIGURE 2. Effect of two different mulberry varieties on single cocoon wt (g)

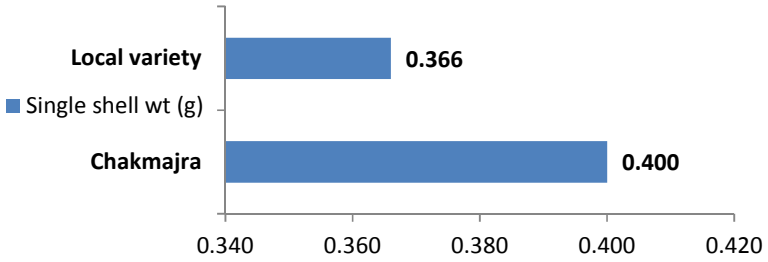

FIGURE 3. Effect of two different mulberry varieties on single shell wt (g).

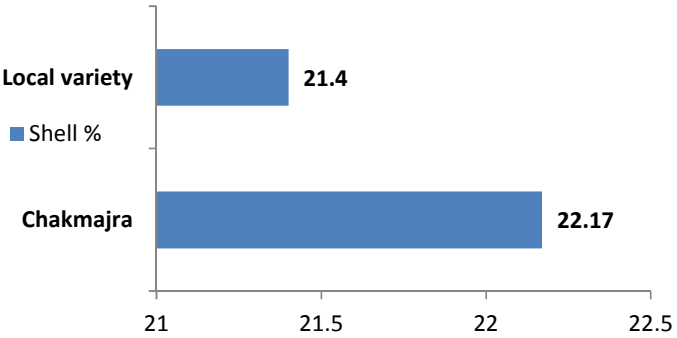

FIGURE 4. Effect of two mulberry varieties on shell %

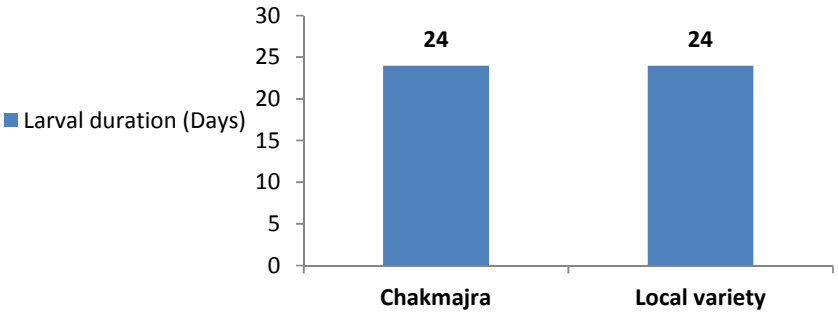

FIGURE 5. Effect of two mulberry varieties on larval duration (Days)

The data with regard to single cocoon weight, single shell weight and shell % also exerted highest values in Chakmajra feeding mulberry leaves (1.81g, 0.400g and 22.33%) respectively over the local fed batches (1.71g, 0.366g and 21.40%) respectively (Fig-1, 2 &3). The present findings are more less in conformity with the findings of Anonymous, 1983; Bheemanna *et al.,* 1997; Sanjay and Srivasta, 2002, where it was found that larval weight, single cocoon weight, cocoon yields were superior when improved varieties of mulberry were used for silkworm rearing. The trait relating to larval duration was at par when leaves were fed of both the varieties (Fig-5).

CONCLUSION

The present investigation concludes that the comparative rearing performance was found to be superior by feeding the mulberry variety Chakmajra over local in all the parameters studied in spring rearing under sub-tropical region of Poonch district. Further, the current study substantiates that the rearing performance of silkworm also depends upon quality of mulberry varieties to which it was fed.

REFERENCES

Anonymous (1983)Varietal effect on the development and economic characters of silkworm, *Bombyx mori* L., Agriculture Research Sub-committee Report of Sericulture Research Unit, Department of Entomology, Mau, Parbhani.

Anonymous (2001) Evaluation of mulberry varieties for rearing performance and economic traits of silkworm *Bombyx mori* L. Annual Report, Sericulture Research Unit, MAU, Parbhani.pp.8-10.

Badade, S.D. (1995) Studies on the effect of feeding leaves of different mulberry cultivars on the developmental stages of silkworm, *(B.mori*). Unpublished M.Sc. (Agri), Thesis, MAU, Parbhani.

Bheemanna, C., Govindan, R. and Narayanswamy, Y.K. (1997) Influence of mulberry varieties on quantitative traits of bivoltine breeds of *Bombyx mori* L. *Mysore J. Agric.Sci.,* 31(1): 81-86.

Bheemanna, C., Govindan, R., Ashoka, J. and Narayanswamy, T.K. (1989) Larval traits of bivoltine silkworm breeds as influenced by mulberry varieties. *Mysore J. Agric. Sci.,* 23(4):520-525.

Bongale, V.D., Chaluvachari and Rao, N.B.V. (1991) Mulberry leaf quality evolution and its importance. *Indian Silk,* 29(11):51-53.

Datta, R.K. (1992) *Guidelines for Bivoltine Rearing.* Central Silk Board, Bangalore, India, p.18.

Gabriel, B.P. and Rapusas, H.R. (1976) The growth and development of *Bombyx mori* L. at different leaf maturity and variety of mulberry. J.*Phillippine Agric.,* 60 (3 & 4):139-146.

Gawade, B.V. and Medhe, N.K. (2010) Feeding effect of some mulberry varieties on larval weight of silkworm, *Bombyx mori* L. *Green Farming. An Intl.J. Applied Agri. & Horticulture Sciences,* 1(5): 545-546.

Kar, R., Datta, R.N. and Majumdar, S.K. (1997) Effect of different levels of N P and K on leaf yield and nutrient uptake pattern of mulberry (*Morus alba*). *Indian Agric,* 41(1): 9-14.

Krishnaswami, S. (1978) *New Technology of Silkworm Rearing.* Bulletin Sericulture No.2, CSRTI, Mysore.

Liaw, G.J. (1991) Effectiveness of artificial diets prepared from different varieties and maturity of mulberry leaves on development of silkworm *Bombyx mori* L. *China J.Entomol.,* 11(3): 260-263.

Patil, S.N. (2004) *Evaluation of Mulberry Varieties for Rearing.* Agri. Thesis, MAU, Parbhani.

Pillai, V.S., Krishnaswami, S., Bhat, D.V. and Ranganath, B.K. (1981)Varietal effect on the development and economic characters of *Bombyx mori* L. Proceeding of Sericulture Symposium and seminar, TNAU, Coimbatore. pp.137-140.

Radha, N.V., Latchoumanana, S., Rajeshwari, S.B. and Oblisswami, G. (1978) Effect of feeding with the leaves of different varieties on the races of silkworm. *All India Symposium on Seri.Sc.,* UAS, Bangalore.p.52.

Rajan, R.K. and Himantharaj, M.T. (2005) *Silkworm Rearing Technology.* Published by Central Silk Board, Bangalore.

Sanjay Kumar and Srivastava, R.P. (2002) Growth and development of silkworm *Bombyx mori* L. on some varieties of mulberry. *Indian J.Seric.,* 41(1): 59-61.

Tayade, D.S. and Jawala, M.D. (1984) Studies on the comparative performance of silkworm races against different varieties of mulberry under Marathwada conditions. *Sericologia,* 24(3):361-364.