

A study on Various Types of Locally Available Materials Use For Spinning of Silkworms and Its Impact on Some Economic Parameters In Silkworm, *Bombyx mori* L.

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Abstract

Mountage is a tool for providing the platform for fully matured silkworms to spin cocoons. Different types of mountages are available at the field, some of which are more popular. Farmers use different locally available materials for providing the platform to matured silkworms to spin the cocoons. In the present study conducted in three different villages, it was found that maximum single cocoon weight (1.80 g) and shell weight (0.385g) recorded in pine shootlets. Defective cocoons percentage was also found reduced in pine shootlets use branches as mounting material in the studied areas.

Keywords: Mountages, Mounting, Silkworm, Cocoon, Pine Shoots Lets.

Introduction

Rajouri district occupied top position in sericulture in cocoon production where more than 6000 cocoon growers are earning their livelihood by practising sericulture. The climate of Rajouri is somewhat cooler than the other surrounding plains. Summers are short and pleasant. The summer temperature generally does not exceed 41 degrees. Winters are cool and chilly characterized with rainfall due to western disturbances. Snowfall is scanty but may occur in cool. Average rainfall is 769 millimetres (26.3 in) in the wettest months. The average temperature of summer is 29°C and average temperature of winter is 16°C. The mulberry plant, being deep rooted can sustain in these conditions well therefore make the economies of sericulture has an edge over other agriculture related activities. But at the same time farmers of this district still practise traditional methods in different sericulture activities. Till harvesting of cocoons, various activities are involved starting from hatching of silkworm larvae among them mounting of silkworms at a right time is vital.

Review of Literature

Formation of cocoon for the silkworm is a necessity and indispensable process to get transformed into healthy pupa and their moth, as the silkworm spins the silken armour around its body for protecting during its metamorphosis, which form the most economical part of human beings (Shillin *et al.*, 2010). Spinning process is crucial for satisfying silkworm's physiological requirement by excreting amino acids from the body (Henry, 1984). To make use of commercial nature of the silk the mature worms are domesticated and made to spin on appropriate devices called mountage, which provides support for the silkworm to spin its cocoon. The process of transferring of fully matured silkworms from the rearing bed to the cocooning frame is called as mounting (Chandrakanth *et al.*, 2005). It is well known fact that the materials and structure of the mountages do influence the reelability of the silkworm cocoons and also decrease and increase in the number of defective depends on the types of cocooning frame used (Ahsan *et al.*, 1995). Despite, a healthy rearing, wrong mounting method, spinning conditions, mounting density and mounting of pre or over matured silkworms and using bad type of mountage can result in spinning of inferior quality cocoons (Chikkanna *et al.*, 2009). Different types of mountages are used in different countries. The rotary mountages are very much popular in Japan (Katsumata, 1975). In

Brazil plastic bottlebrush mountages are very common. Bamboo frames with bamboo inter-acting ribbons as fixation point for cocooning are used in China. In India, sericulturists are using traditional mountages viz., bamboo chandrike, bottle brush, paddy straw etc., because of which most of the cocoon and silk produced in the country is not of international quality (Rajan *et al.*, 2000; Dandin, 2004). Besides, other types of mountages have also been fabricated and evaluated by scientists time to time. Bottle brush mountage made of bamboo and plastic, etc., have been tried to improve the quality of cocoons and silk produced (Singh *et al.*, 1999). In J&K (UT) it has been seen that majority of the cocoon growers use locally available materials such as paddy grass, dry coriander branches, mango leaves etc., to supports the silkworm larvae for comfortable spinning of cocoons. Many studies have confirmed that if the silkworm rearing is conducted successfully till spinning thereafter if wrong mounting methods, spinning conditions and bad type of mounting material can result in inferior or poor quality cocoons and silk yarn leading to lower income to farmers. Even there is chances farmers may lose about 20% of their cocoon crop during mounting due to use of unsuitable or faulty mounting materials and the reelibility of cocoons also gets badly affected .Keeping in view, an attempt was made to study use of traditional mountages by the silkworm cocoon growers of three different villages of district Rajouri viz., Tichka, Kangir and Kuldabbi during the year 2016.

Objective of the study

The objective of the present study is to assess the impact of locally available mounting materials on spinning and its deleterious impact on economic parameters in silk cocoons.

Material and Methods

A field study was carried out during the year 2016 in spring season only at three different villages of district Rajouri viz., Tichka, Kangir and Kuldabbi. A random sample of ten silkworm cocoon growers in each village were studied regarding types of locally available material use as mountages when the matured silkworms about to spin. During the process of cocooning all the selected cocoon growers were advice to provide adequate care and ensure proper ventilation, temperature and spacing throughout the period of seriposition. All the rearers were also advice to harvest the cocoons after proper drying on 7th day of mounting. To assess the result of these local available material used by the silkworm cocoon growers as mounatges around 100 cocoons were collected from each farmers to study the following economic parameters such as, single cocoon weight, single shell weight, shell %, defective cocoon %, and good cocoon %.The collected data were computed and results are presented in the form of overall mean performance for presenting the results Figures 1 & 2. Formulae applied for calculation of parameters studied are as under:-

Shell % $\frac{\text{Shell weight}}{\text{Cocoon weight}} \times 100$

Defective cocoon % $\frac{\text{Total no. of defective cocoon}}{\text{Total no. of cocoon}} \times 100$

Good cocoon % $\frac{\text{Total no. of good cocoon}}{\text{Total no. of cocoon}} \times 100$

Plate.1 Cocoon Spun on Pine Shootlets



Plate.2 Cocoon Spun on Dry Mustard Branches



Plate.3 Cocoon Spun on Quercus Leaves



Plate.4 Cocoon Spun on Dry Coriander Branches



Plate.5 Cocoon Spun on Paddy Grass



Results and Discussion

The data recorded for different characters were presented in (Figures 1 & 2). It is obvious from the data pertaining to single

cocoon weight the maximum cocoon weight was recorded in pine shootlets (1.80g) and lowest was observed in quercus leaves (1.69g). Similar trend was noticed with regard to single shell weight (0.385g) was recorded in pine shootlets. Highest shell percentage was observed in coriander leaves (21.66%) and lowest was found in pine shootlets (21.38%). However, least defective cocoon percentage (10.1%) was observed in Pine shootlets and highest was recorded in quercus leaves (16.5 %). The data relating to good cocoon percentage showed that maximum percentage was found in plastic collapsible moutage (89.3%) and lowest was observed in quercus leaves (83.1%).According to Chandrakanth *et al.*, (2004) shows that the moutages considerably influences the quality of cocoons. The cocoon growers are said to be losing about 5-8 % of yield due to usage of bad type of mountgaes according to Mathur and Qadri, (2010) also estimated that farmers loss about 12-15 % of cocoon crop owing to use of improper mounting materials during spinning.

Conclusion

It is evident from the results that even though the famers use locally available mounting materials as an alternative mechanism for mounting the matured worms, but it is indispensible to popularize the plastic collapsible moutage among the cocoon growers so that quality of cocoons can be attained and also farmers get better price in the cocoon market.

Fig. 1

Impact of Traditional Mounatges on Single Cocoon Weight, Shell Weight and Shell Percentage (FC₁ × FC₂ Breed)

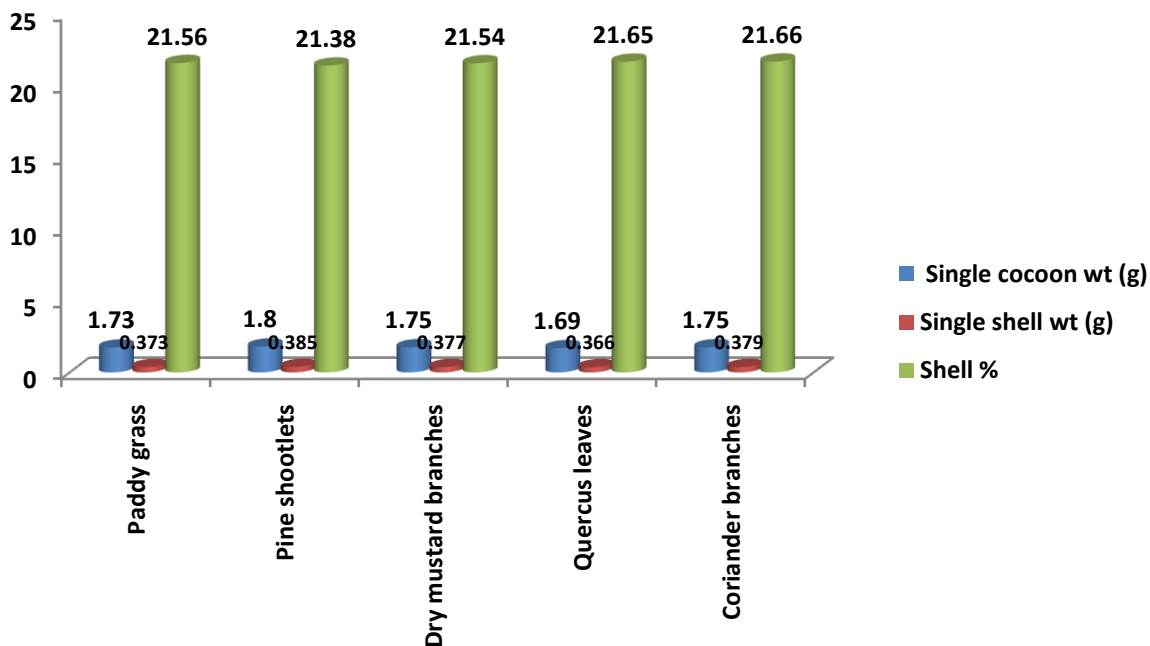
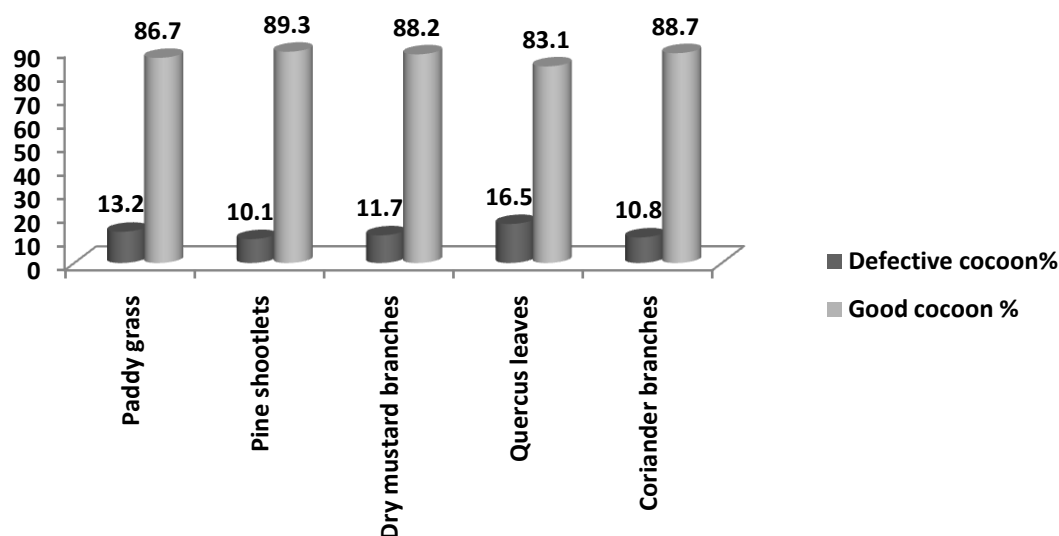


Fig .2- Impact of Traditional Mounatges on Defective and Good Cocoon % (FC₁ × FC₂ breed).

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