



AGRICULTURE

## DEVELOPMENT OF IMPROVED MOUNTAGE USING MANGO PLANT TWIGS DURING LACK OF SUFFICIENT NUMBER OR ABSENCE OF MOUNTAGES ON FIELD FOR SILKWORM COCOON

S.T. Naphade<sup>1\*</sup>, C.J. Hiware<sup>2</sup> and S.B. Avhad<sup>2</sup>

<sup>1</sup>Yeshwantrao Chavan College, Sillod, Aurangabad district ;( M.S), India

<sup>2</sup>Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (M.S), India

### Abstract

In the present investigation the mango tree twigs were used as mountages along with the plastic mountages to study their efficacy. After feeding on mulberry leaves for several days, silkworms of the 5th instar stop feeding and begin to spin cocoon. To spin cocoons, ripe, mature silkworms need mountages (cocoon frames) as supports. The process of moving mature larva on to the cocoons frame is called mounting. Mounting process in silkworm rearing is the most labour intensive operation to be simplified. Mounting and mountages considerably influence the quality and quantity of cocoons. This low cost readily available, emergency Mango tree twig mountages are helping farmers when there is lack of sufficient number or absence of mountages on field. Thus such kind of mountages play important role in economic yield of silkworm cocoon and to save the cocoon crop. This study shows effect on post-cocoon parameter and it is positive as compare to plastic mountages. The mango plant twigs, mountages are easily available on field and cheaper to use by saving the labour cost.

**Keywords:** Mountages, Mango plant, Silkworm cocoon, Plastic mountage

### Introduction

The main concern of this task is the search for better material that will be used to realize the frames where the silkworms mount to spin cocoons. When the fifth instar silkworms complete their growth, they stop eating and start excreting silk. At this point mountages are put for cocoon spinning. Mounting is considered to be a crucial stage in sericulture with regard to obtaining a bumper harvest and good quality cocoons. Cocooning aids or mounting frames should therefore be specified. A good mounting unit should have the following characteristics [1, 2]. Mounting operation is one of the times bound and labour intensive activities in silkworm rearing. After feeding on mulberry leaves for several days, silkworms of the 5th instar stop feeding and begin to spin cocoon. To spin cocoons, mature silkworms need mountages (cocoon frames) as supports. The process of moving mature larva on to the cocoons frame is called mounting. Mounting process in silkworm rearing is the most labour intensive operation to be simplified. Mounting should not be delayed when larvae mature as it results in loss of silk besides production of poor quality cocoons [3]. There are different methods of mounting of which the most common methods are *viz.* pick up, natural and shoot shaking (Jobrai) and self mounting method. Among three the most commonly used methods by south Indian farmers are picking of individual mature larvae and living them on bamboo mountages or using plastic

collapsible mountages on rearing bed for self mounting. Between these two methods pick up method is found to be ideal for mounting the quality of cocoons obtained is better when compared to self mounting method, since the silk worms are picked at right time. However this method needs more space and is labour intensive hence, costly [4].

The material and structure of mountages significantly affect the quality of cocoon filament and also the labour required for mounting and harvesting the cocoons. The basic concept of mountages is to provide an angular uniform space for silk worm to facilitate easy cocoon formation. The fabrication and type of mountages depends on the availability of chief materials in the respective places. If the material and structure of mountages are not proper, it will affect the shape and size of cocoons, decides increasing of double, deformed, soiled cocoons and wastages of silk in the form of floss.

The common mountages used at present in India are made out of bamboo, plastic material, wood etc. In the present study using mango plant branch as a mountages during lack of sufficient number or absence of mountages on field. Thus such kind of mountages play an important role in both economic as well as post cocoon parameter as compared to plastic mountages.

\* Corresponding Author: Email: dr.sudhirn@rediffmail.com

## Material and Methods

The present study carried out at Sillod, Aurangabad District, Maharashtra state, India. Fresh disease free eggs of *Bombyx mori* L (Race: PM × CSR2) were obtained from the State Sericulture Department, Aurangabad District; Maharashtra, India and incubated, brushing was done and reared on field up to cocoon stage at temperature range 21-25°C with humidity range 82-95% during December 2009 (Winter season). The experiments were conducted by taking randomly, matured silkworms of the 5th instar which has stopped feeding and begin to spin cocoon in two groups, each containing 150 larvae with two replicas. All the rearing operations were carried out [5] [6]. For this experiment the mountages used are of plastic mountages procured from state sericulture department and mango tree twigs were procured from near by field where study is carry out. In 5<sup>th</sup> instar when silkworm larvae were at spinning stage, the mango tree twigs and plastic mountages were kept on the worms as self mounting method. The present study was carried out according to standard metho [4].

The evaluation of mountages and comparison of Mango tree twigs and plastic mountages was based on the economic parameter such as Total mortality during spinning, Cocoon weight, Pupal weight, Shell weight, Shell ratio (%), Average filament length, Average filament weight, Denier and Number of breakages was investigated and values were compared in between plastic and Mango tree twigs mountage.

## Results and Discussion

Mounting and mountages considerably influences the quality of cocoons. The farmers are said to be loosing about 5-8 % of yield due to improper mountages [4]. It is evident from the mean data of the experiment that in general, mountages of Mango tree twigs show a marginal tendency to improve many of the economic character as compared to the plastic mountage. The results as shown in Table 1 and Figure 1 with Photo Plate 1 were interesting in all post-cocoon parameters.

PLATE 1: Showing comparison of plastic and Mango Twig Mountages



Figure 1: Cocoon quality parameter between plastic and Mango tree twig mountages

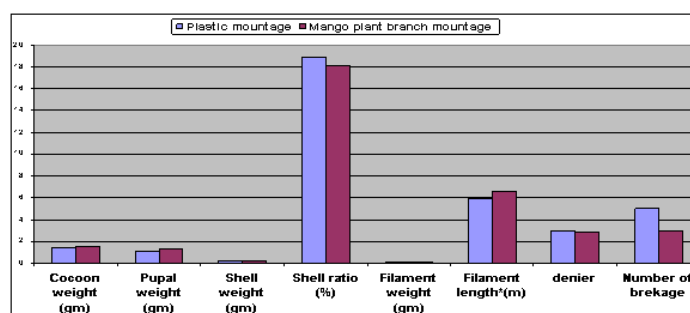


Table 1: Cocoon quality parameter between plastic and Mango tree twigs mountages

Type of mountages	Cocoon weight (gm)	Pupal weight (gm)	Shell weight (gm)	Shell ratio (%)	Filament Weight (gm)	Filament Length (m)	Denier	No. of Breakages
Plastic mountage	1.396	1.137	0.259	18.85	0.199	593.1	3.025	5
Mango tree twig mountage	1.603	1.313	0.293	18.13	0.211	657.1	2.879	3

\*The values of above parameters are of Average value of ten

The Cocoon weight, Pupal weight, shell weight, filament weight, filament length, Denier and number of breakages all these parameter shows higher values for Mango tree twigs mountage except shell ratio (%) in less amount i.e. 0.72 as compared to plastic mountage. From this it is clear that Mango tree twigs shows better result as compared to plastic mountage on silkworm cocoon.

The results of the present study correlate with Chandrakanth et al. [4] where the author used five types of mountages shoot rearing rack rotary type, plastic collapsible, fixed vertical type, bamboo mountages and rotary mountages considering cocooning (%), Double cocoon(%), Floss(%), Defective cocoon (%), Single cocoon weight (gm), Shell weight (gm), Shell ratio (%), and Reelability (%) in which the bamboo mat base easily available, cheap and can last 4-5 years but demerit using lot of space during mounting but both all of these mountages shows some merits as well as demerits during study time and also shows variations in economic parameters of cocoon production and quality in each type of mountages. Datta (Biswas) *et al.*, [7] also shows Plastic collapsible mountage, an alternate to bamboo spiral mountage in Eastern India. Chikkanna *et al.*, [8] also study qualitative improvement in terms of economic gained by using two different types of mountages for silkworm cocoon. He also quote that, types of mountages and mounting environmental condition play a paramount role in determining the quality of cocoons of silkworm, *Bombyx mori*. Pandey, R.K *et al.*[9] using plant shoot mountages in North- western India which shows better

result during study period. Datta (Biswas) *et al.* [10] also study comparative study of spinning of silkworm in two types of mountages.

Thus from the present study it is concluded that the Mango tree twigs are directly placed on rearing bed to spin cocoon helping the farmer to save labour and there will not be any problems of identifying and picking ripe larvae at newly joined sericulturist. However, this method needs more space but during emergency time when there were no sufficient mountages or no any mountages with poor, newly joined farmers at that time Mango tree twigs mountages play vital role for farmers to save crop. The Mango tree twigs mountages are playing important role in saving the cocoon crop and are easily available and easy to use for farmers but it has some major draw backs that during harvesting the dried leaves some times stickup to cocoons and the cost of twigs cannot be calculated.

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