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EVALUATION OF MOUNTING MATERIALS ON COCOON TRAITS OF ERI SILKWORM

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ABSTRACT

This study evaluates coconut green leaves, coconut dry leaves, palm dry leaves, bamboo mountages (chandrike), rotary mountage and plastic collapsible mountage (n etrike) as alternate materials for coccon spinning of eri silk worm. The results revealed that rotary mountages were superior followed by bamboo chandrike and plastic collapsible mountage, in terms of the parameters resulting in its optimum rearing.

Ericulture is mainly confined the northeast India as an integral part of the tribals who traditionally rear the eri silkworms primarily for use their pupae as food and conventionally weave silk fabric for their family use (Debaraj et al., 2002). In recent past, the advancements in eri silk processing techniques have paved the way for its rearing in non-traditional states where the food plants of eri silkworm viz., castor and tapioca are cultivated in large scale as agricultural crops for additional income to farmers (Sakthivel et al., 2016). However, farmers invariably use various kinds of locally available dry leaves as substratum for cocooning. The present study evaluates some locally available materials as well as the mountages used for mulberry silkworm as a suitable substratum for eri silkworm, for producing quality eri silk economically.

MATERIALS AND METHODS

The eri silkworm larvae were mass reared on the leaves of ruling cassava variety MVD1 cultivated under irrigated condition following recommended package of practices (Anonymous, 2004) and matured worms were mounted on different materials viz., T1- coconut green leaves, T2- coconut dry leaves, T3- palm dry leaves, T4- bamboo mountages (chandrike), T5-rotary mountage and T6- plastic collapsible mountage (netrike). Each treatment was replicated five times. After completion of spinning, the cocoons were harvested and parameters viz., cocooning%, numbers of good, flimsy urinated (stained) cocoons, single cocoon and shell weight (g), and silk ratio (%) were observed with standard procedures (Sakthivel, 2012).

RESULTS AND DISCUSSION

The results reveal that rotary card board mountage was significantly superior as a mounting medium with maximum cocooning rate (97.08%), good cocoons (95.34%) and SR (15.50%) and lowest flimsy (1.77%) and stained (2.89%) cocoons. Bamboo chandrike (96.57, 93.07, 15.10, 2.84, 4.09%) and coconut green leaves (96.26, 92.70,15.28, 2.58, 4.72%) exhibited on par results and were the next best, and were closely followed by palm dry leaves (95.13, 92.09, 14.92, 3.67, 4.24%) and the recommended substratum, plastic netrike (95.56, 91.70,15.00, 4.26, 4.04%) (Fig. 1). The performance was poor (89.54, 89.0,14.23, 6.46, 4.51%) in coconut dry leaves with regard to the respective parameters (Table 1).

The substrate on which the mature silkworm larvae are allowed to form cocoons might affect the quantitative and qualitative aspects of cocoons. The farmers normally loose about 5-8% of silk yield due to improper mountages (Chandrakanth et al., 2004). Branches and twigs called as jali of several plants were traditionally utilized as cocoon mountage. In the present study, the mountages fabricated for mulberry silkworm viz., bamboo Chandrike, plastic collapsible mountage (netrike) and rotary mountage were evaluated against locally available cheap materials like the leaves of palm and coconut which are conventionally used for spinning by eri silkworm. Among these mounting materials tested, rotary card board mountage was found significantly superior with highest rate of cocooning, formation of good cocoons and silk percentage and with lowest flimsy and stained cocoons. Bamboo Chandrike, coconut green leaves and palm dry leaves were exhibited on par results and were next best followed by plastic netrikie. Based on the cocoon quality traits the decreasing order of mountages superiority was observed as Rotary mountage > coconut green leaf

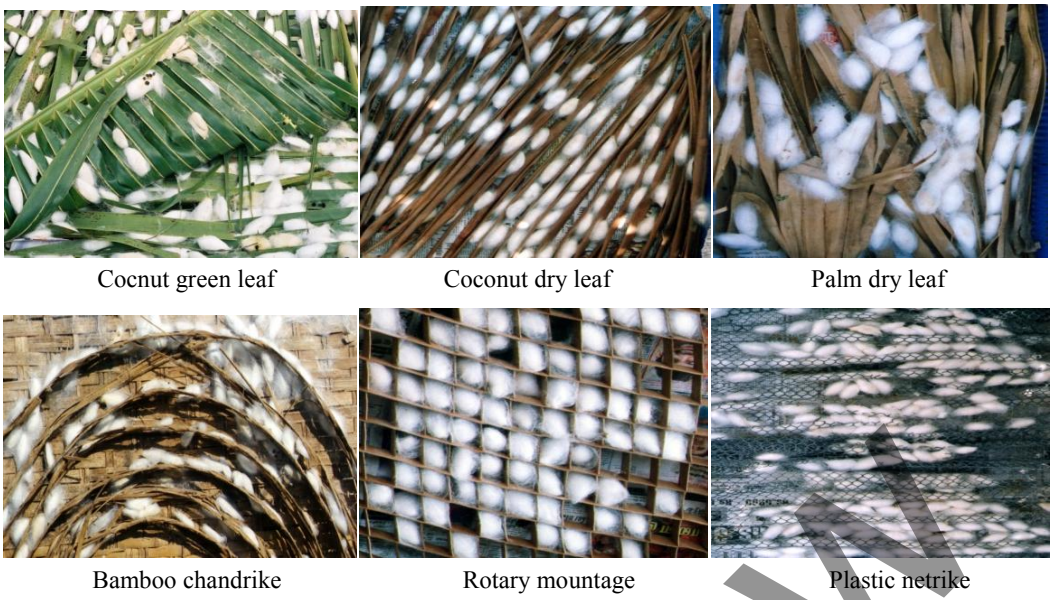

Fig. 1. Mounting materials evaluated

Table 1. Effect of different mounting materials on cocoon parameters of eri silkworm

S. No.	Treatments	Cocooning %	Good cocoons (%)	Flimsy cocoon (%)	Stained cocoons (%)	SCW (g)	SSW (g)	Silk (%)
T1	Coconut green leaves	96.26	92.70	2.58	4.72	1.930	0.295	15.28
T2	Coconut dry leaves	89.54	89.03	6.46	4.51	1.862	0.265	14.23
T3	Palm dry leaves	95.13	92.09	3.67	4.24	1.829	0.273	14.92
T4	Bamboo chandrike	96.57	93.07	2.84	4.09	1.894	0.286	15.10
T5	Rotary mountage	97.08	95.34	1.77	2.89	1.948	0.302	15.50
T6	Plastic Netrike (Control)	95.56	91.70	4.26	4.04	1.899	0.285	15.00
CD at 0.05%		3.098	2.563	0.758	0.642	0.087	0.013	0.329

>plastic netrikie > bamboo chandrike > palm dry leaf > coconut dry leaf. A good mountage is characterized by its structure facilitating optimum space for spinning cocoon by larvae with proper ventilation thereby resulting into maximum yield of quality cocoon, user friendliness with minimum labour requirement for mounting the worms as well as harvesting of cocoons. Also, it should be cheapest and easy to maintain.

Unlike mulberry cocoons, the eri cocoons are spun after removing pupae and yarn is produced on machines. Therefore, the size and shape of the cocoons, double cocoons and reelability are not concerned in quality of eri cocoons but the rate of cocooning and silk percentage are very important criteria in ericulture and hence the mountages needed only to fulfill these requirements. Present results though prove card board rotary mountage as superior, it has many drawbacks such as high cost, difficult to maintain and require more labour. Similarly, the bamboo chandrike occupies lot of space and difficult to handle. However, the coconut and palm leaves evaluated in the present study are quite cheap and available plenty in Tamil Nadu and hence could be used as mountage for eri silkworm successfully. The folds in coconut leaves and the undulations in palm leaves available naturally facilitate larval spinning to form cocoons easily.

Equal performance of plant shoots compared to the fabricated mountages has earlier been reported by Pandey et al. (2007). Naphade et al. (2010) identified mango shoots as a good alternate to plastic netrike for mulberry silkworm. Sarma and Singh (2007) suggested chandrika and banana jali to be the best cocoon mountage for eri silkworm. The present finding that use of green coconut leaves and dry palm leaves and identifying them as cheap and best alternative to the fabricated mountages for eri silkworm is quite practical as well as economical for use by eri silkworm rearers.

Thus, it could be concluded that, among different mounting materials for spinning of cocoons by eri silkworm, rotary mountages were superior followed by bamboo chandrike and plastic collapsible mountage. Performance of locally available coconut green leaves was also found equally effective.

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