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Silk Milk- an Eco-friendly and Innovative Method of Farming for Value Addition to Sericulture

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Abstract

Animal husbandry combined with several agricultural farming proved to be beneficial and economically viable venture. Similarly, mulberry (*Morus alba* L.) a perennial plant is cultivated as seasonal plant synchronizing 5 harvests in a year exclusively cultivated for feeding silkworm (*Bombyx mori* L.). A total of 60-70MT of leaf or more than 100MT of biomass will be harvested annually from one hectare of mulberry garden and used for silkworm rearing. Almost 50% of the harvested biomass will be leftover as waste during the process of harvesting mulberry shoots and feeding of silkworm. Further, after the harvest of mulberry garden around 25-30% of the thin branches and leftover unsuitable mulberry biomass will remain in the garden. All these waste mulberry material is most suitable for the cattle and sheep feeding. On interaction with farmers have expressed the increase of milk yield to a tune of twofold compared to the weed grazing cattle. In the present study an attempt was made to study the impact of feeding the leftover mulberry biomass to the animal husbandry among the sericulture farmers.

Introduction

Sericulture, the process of silk production through cultivation of mulberry, rearing of silkworms and reeling of cocoons is a major agro-based labour oriented cottage industry practiced by the major farming community of India. Mulberry (*Morus spp.*), a perennial plant (Figure 1) cultivated as seasonal crop by training for its foliage to feed silkworm for the production of cocoons. Cultivation of mulberry in one acre of land by accommodating 5555 plants/acre in a paired row spacing [(3x5)2] and harvesting >25-30MT of leaf by brushing >1250DFLs and generating a revenue of >2.25 lakhs/ac/yr,



Figure 1: Mulberry in perennial habit and trained mulberry garden for seasonal harvest

respectively by involving all their family members (male & female) for their lively hood is the most traditional method of sericulture in the tropical regions of South India (Dandin et al., 2003).

It is a matter of fact that, day by day cattle population is reducing due to non availability of fodder under prevailing drought conditions, increased drudgery in taking care of them leading to severe shortage of milk and meat also causing acute shortage of organic manures generated through the bovine population. Keeping the above in view in the recent past, several Non-Governmental Organizations (NGOs) like RDT (Rural Development Trust), Andhra Pradesh Drought Management Project (APDMP) and even Horticultural and Sericulture departments of State Govt. etc. too are promoting and encouraging the sericulturists to adopt cattle such as cows, sheep and goats as allied avocation with sericulture as because serifarming is recognised as the most potential foliage generating farming for silkworm rearing with enumerated fodder resources such as farm residues (leftover, rejected leaf, hoots and grass) and rearing bed residues generated as by-products of sericulture (Shankar and Shivakumar, 2000).

Further, they are also extending support by providing cattle on free of cost to grow in their mulberry farms grazing the mulberry farm waste for their benefit in addition to mulberry. However, farming community is in the impression of procuring grass and fodder and taking them for gracing to distant barren lands is not only hectic task but also not a viable avocation due to non availability of sufficient grass in the acute drought spell conditions. But slowly sericulturists are realising that serifarming is the best solution for easy maintenance of the same. Gracing of the cow and sheep has become easy as because mulberry fields provides frequent and constant mulberry leaf, leftover leaf shoots in gardens, rejected and unsuitable leaf for silkworm rearing bed too provides sufficient fodder to the farm animals. Therefore, maintaining at least two cattle selling milk to dairy farms farmers are earning more than 2.16 lakhs as an additional gain to mulberry. In addition to

that every year the multiplication of cattle is inevitable leading to increase of bovine population and milk sale not only enhances their gain over sericulture but also supports their family members with constant milk production. Further, due to these cattle maintenance the sericulturists can generate their own farmyard manure (FYM) for farm use saving >Rs. 25,000/- on compost application (Table 1).

During the field study, it was assessed that a farmer having one acre of mulberry farm by brushing 250DFLs/ac/crop @ 60kg/100 DFLs yield with Rs. 300/-per kg average

Table 1: Additional gain due to adoption of cattle rearing as allied avocation to seri-farming

S l. No.	Source of Income	Income (Rs)
1.	Through mulberry cultivation & Silk-worm rearing: [One acre mulberry brushing @250DFLs/crop harvesting average yield @ 60kg/100DFLs; with average market rate @ Rs. 300/kg = 150kg x Rs.300/kg x 5 crops/yr]	2,25,000.00
2.	Growing 2 cows feeding mulberry waste: [If a cow daily basis milk @ 10 lit/day; @ Rs. 30/lit x 30day x 12 months= 10x30x30x12 x 2 cows]	2,16,000.00
3.	FYM Compost generation @ 8MT/ yr (Each cow @6MT compost generationx2 cows x @ Rs. 1000/ ton FYM)	25,000.00
4.	Total Income due to imparting of Cattle farming along with serifarming	4,66,100.0
5.	Percentage of gain over seri-farming due to adoption of cattle rearing	107%

market rate of cocoon, sericulturists can earn Rs. 2.25 lakhs/ac/yr. By adapting at least two cattle (cows), gracing seri-farm waste by milking cows and through the sale of milk they can generate more that 2.16 lakh as an additional income over sericulture. In addition to the above annually an amount of Rs. 25,000/- can be saved on manure application to mulberry as because through bovine population farmers can generate their own required FYM (@ >12MT/yr) for farm use. Therefore, by all the above a sericulturists can raise their annual income Rs. 2.25 lakh through traditional sericulture and Rs.4.66 lakhs with an annual additional income of more that 107% due to silk-milk farming in mulberry (Table 1, Figure 2 and 3).

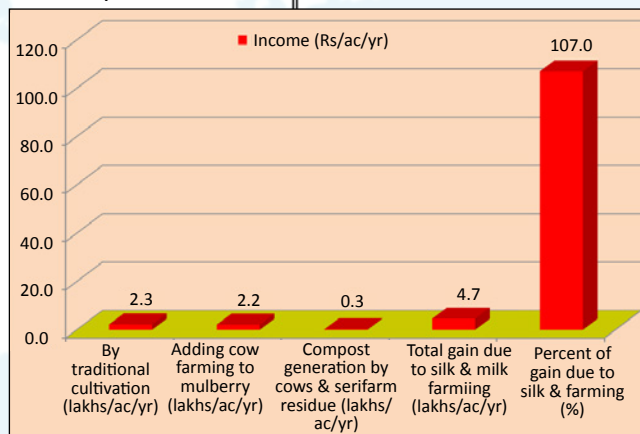


Figure 2: Additional gain to sericulturists due to adoption of silk milk method of seri-farming

1.1. Advantages of silk-milk farming in sericulture

- > In general NGOs and some of the Horticulture & Sericulture departments too offering cattle on free of cost to sericulturists for their additional livelihood.
- > No additional expenditure requires for cattle maintenance and feeding purpose.
- > Feeding or gracing of mulberry leaves along with serifarm & rearing waste and grass yielding more



Figure 3: Cattles grazing mulberry left over leaves after harvesting and rearing bed waste shoots

milk than the other resources of feeding.

> No extra man power required to take them for grazing, no theft of the cattle as because they will remain in and around the vicinity of mulberry farm.

> Due to frequent grazing of the unwanted plants in and around the farm by the cattle leads to eco-friendly method of weed management.

> Due to removal of unwanted plant growth in mulberry farms due to grazing mulberry, plant nutrients removal by the weeds prevented.

> Due to the above occurrence of pest and disease incidents reduced and use of weedicidal application and expenditure on weed removal can be averted.

> Prevents contamination of spreading disease and pest leaves in and around farm and rearing and prevents rearing contamination due to cattle feeding of rearing waste.

1.2. Disadvantages due to adoption of silk-milk farming

- Excess feeding of mulberry leaves not only causes over

heat leading to lose motions but also threat in abortion of pregnant cattle.

- Several farmers are not adopting bed disinfectants during rearing sacrificing rearing ethics, opining that bed waste will become unsuitable for cattle feed.

- Care to be taken by the sericulturists in avoiding the openly keeping naked electrical wires around rearing houses and bore wells to avert electrical shocks to cattle.

- Avoid creeping plants on electrical polls in the farm so as to cattle attempt to eat the same leads to electrical threats.

Therefore, by all the above it can be concluded that adoption of cattle in the seri-farming as a phenomenal process of silk-milk farming is not only found advantageous in sericulture but also resulting in offering additional gain to the

sericulturists. Moreover, silk-milk farming is going to open new avenues in promoting eco-friendly farming in sericulture and also enhances country's gain due to inordinate milk production witnessing a novel method of farming in sericulture for socio economic up-liftment of the sericulturists.

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