Chawki Rearing Centers: The Backbone of a Thriving Sericulture Industry

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ABSTRACT

Rearing of silkworms for the production of silk is an old-age industry. The silkworm larvae passes through four moults and five instars-the first and second known as chawki and the final three as late-age inorder to spin cocoon. During its entire larval stage, it only feeds on mulberry leaves which provide it with all the necessary nutrients for its growth and development. However, the nutritional and environment requirement of each instar varies with its age. Since chawki rearing forms the foundation of a successful rearing, the development of specialized facilities, known as Chawki Rearing Centers (CRCs), are essential for stabilizing cocoon crop productivity in sericulture. CRCs offer controlled environments that improve silkworm health, facilitate uniform growth and higher survival rates significantly lowering the risk of crop failure. CRCs are, therefore, essential to the prosperity and long-term viability of the sector.

INTRODUCTION

Sericulture encompasses multi-faceted activities from soil to silk fabric and among many interlinked factors that decide the success of silkworm rearing, young age silkworm rearing (chawki rearing) technique is the most important one. It has the

closest bearing on the stabilization of cocoon crop as well as on productivity. Though, the leaf consumption is very less during young stage (0.33%), the increase in body weight, body size and silk gland weight is 400-500 times. Therefore, the success of chawki rearing depends on understanding of the requirements of silkworm at this stage. The concept of rearing young silkworms on a large scale separately with exclusive facilities and its distribution to the farmers in the vicinity with an objective of giving extra care to young silkworms and to ensure substantial crop at farmer's level is popular in sericulturally advanced states of India like Tamil Nadu and Karnataka. The contribution of chawki rearing technology to the remarkable increase in the cocoon productivity cannot be neglected as more than 80 per cent of silkworm rearing, especially in Southern India depends on chawki reared worms.

What Are Chawki Rearing Centers?

The role of chawki rearing centers (CRCs) is indispensable in sericulture industry where the delicate balance of nature and human intervention produces the luxurious fabric, silk-*The Queen of Textiles*. These centers are the true backbone of the industry ensuring that young silkworms receive the best possible start in life. Chawki rearing centers are specialized facilities dedicated to the young age rearing of silkworms. The term "chawki" refers to the first two instars of larval life of silkworm which are the most crucial for its growth and development. During this period, silkworms are highly sensitive to environmental conditions requiring optimal temperature, humidity and nutrition.

Requirements	Ist Instar	IInd Instar
Temperature (ºC)	27±1	26±1
Humidity (%)	85±5	80±5

At CRCs, silkworm eggs are incubated and the young larvae are carefully nurtured until they are strong enough to be distributed to farmers for further rearing. By managing the chawki stage in a controlled environment, CRCs significantly reduce the risks associated with early-stage rearing such as disease, inadequate nutrition and suboptimal growing conditions. This early care and nurturing directly influence late age worms which ultimately influence the quality and quantity of silk produced making CRCs pivotal to the success of sericulture.

First instar rearing

Second instar rearing

Since silkworm growth, development, health, quantity and quality of cocoons produced are directly influenced by the nutritional status of the leaf, maintenance of mulberry garden exclusively for chawki rearing apart from other essentialities of a viable Chawki Rearing

Centre (CRC) is significantly important. Chawki rearing conducted on a commercial scale under ideal environment, in dedicated facilities, feeding succulent, nutritious and tender mulberry leaves from the gardens exclusively maintained for the purpose makes the silkworm larva robust and more tolerant to stress during late-stage rearing, thus, contribute greatly to consistent crop success. From a general mulberry garden, hardly 20 per cent of the total quantity of leaf is suitable for chawki rearing. The concept behind the chawki mulberry garden is to develop a completely separate mulberry garden of recommended varieties such as Ichinose and KNG as a continuous source of production of quality leaf suitable for young age silkworm rearing (Rafiqui *et al.*, 2023). For an economically viable model of commercial chawki rearing centre, a minimum of 2 acres of well-maintained chawki mulberry garden is essential (Nair and Mishra, 2018). The leaf should be soft, succulent with 80 per cent moisture, 25 per cent protein and 14 per cent carbohydrates for successful chawki rearing (Vindhya *et al*., 2018).

Importance of Chawki Rearing Centers (CRC's)

1. **Enhanced silkworm health and survival rates:** The controlled environment of CRCs ensures that young silkworms are raised in ideal conditions leading to higher survival rates and healthier larvae. This early-stage care reduces the chances of disease and malnutrition which are common issues when silkworms are reared in less controlled environments. Healthier silkworms are more likely to produce higher-quality silk which is crucial for the overall success of the sericulture industry.

2. **Uniform growth and development:** One of the key advantages of CRCs is the uniformity they bring to silkworm growth. When silkworms are raised in standardized conditions, they develop more consistently leading to a more uniform crop. This uniformity is essential for ensuring that the silk produced is of consistent quality which is highly valued in the market.

3. **Reduced burden on farmers:** By taking on the most challenging stage of silkworm rearing, CRCs reduce the burden on farmers. Instead of worrying about the delicate early stages, farmers receive healthy and robust silkworms. This not only improves the likelihood of a successful harvest but also allows farmers to focus on other aspects of their work such as maintaining mulberry crops and managing the rearing sites for late-age rearing.

4. **Increased productivity and profitability:** The efficiency and expertise provided by CRCs lead to increased productivity in silk production. Healthier silkworms grow uniformly and produce more silk which directly translates into higher yields and greater profitability for farmers. This, in turn, strengthens the overall economy of farmers dependent on sericulture.

5. **Training and support for farmers:** Many CRCs also serve as training centers for farmers providing them with the knowledge and skills needed to maximize their silk production. By educating farmers on best practices, CRCs help improve the overall standards of sericulture in the region leading to more successful and sustainable silk production.

Future of Chawki Rearing Centers (CRC's)

As the sericulture industry continues to evolve, CRCs are likely to play an even more critical role. Advances in technology and other techniques can be implemented in these centers allowing for even better care of silkworms during the crucial chawki stage.

Moreover, as global demand for high-quality silk increases, the importance of CRCs in ensuring consistent, top-tier production cannot be overstated. CRCs are also essential in promoting sustainable practices within the sericulture industry. By optimizing the young age rearing process, they help reduce waste and increase the efficiency of silk production making it more environmentally friendly and economically viable.

CONCLUSION

Chawki Rearing Centers (CRCs) are essential to the sericulture industry's success since they provide the foundation upon which the whole silk producing process stands. By ensuring that silkworms receive the best possible care during the critical early stages of their development, CRCs play a pivotal role in determining the quality and quantity of silk produced. The impact of CRCs extends beyond the technical aspects of silkworm rearing contributing to the economic and social well-being of rural communities. The significance of CRCs will continue to rise as the sector changes and encounters new difficulties. These centers truly are the backbone of a thriving sericulture industry, guarantying that the age-old craft of silk manufacturing endures in the contemporary era.

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