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Sericulture: A viable option for farmers of Kargil

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Abstract
The rearing performance has indicated slightly poor results in all the commercial traits of silkworms at Kargil which can also be due to the outcome of poor quality mulberry leaf availability being nutritionally weak. The growth and behaviour of mulberry and performance of silkworm rearing in the areas Kargil sufficiently indicate that mulberry sericulture has a greater potential in these areas, however, the same has not picked up perhaps due to less acquaintance of crop with people of these areas, coupled with lack of scientific knowledge about sericulture. The soils at Kargil area are chemically and nutritionally not much better yet with the application of minor quantity of fertilizers and manures their conditions can be reclaimed and made better mulberry plantations. The leaf nutrient status has also revealed the same trend. The same can be done through cultivation of promising mulberry genotypes. Similarly promising silkworm hybrids could be reared for increased production.

Keywords: Commercial traits, mulberry, nutritionally weak, rearing and silkworm hybrids

1. Introduction
Silk is the most elegant textile in the world with unparalleled grandeur, natural sheen, and inherent affinity for dyes, high absorbance, light weight, soft touch and high durability and known as the "Queen of Textiles". Sericulture is an agro-based rural industry that has the highest potential for improving the rural economy besides being an eco-friendly, sustainable and employment generating activity. India is the second largest producer of raw silk in the world after China with annual production of about 23,679 MT during 2012-13 (Anonymous, 2013a) [1] and is credited with the production of all the four varieties of silk namely, Mulberry, Tassar, Eri and Muga besides being the largest consumer of silk, therefore, importing huge quantities of mulberry raw silk and silk products from China. Mulberry silk accounts for 95 per cent of the total world silk production and accounts for about 87 per cent of Indian silk production (Misra, 2000) [7].

The State of Jammu and Kashmir is well known for the production of quality mulberry silk because of its salubrious temperate climate which is favourable for the bi-voltine silk production. Cocoon production in the State during 2013-14 has been 921 MT and raw silk production as 122 MT (Anonymous, 2013b) [2]. Out of various factors responsible for successful cocoon crop, the contribution of mulberry leaf alone is 38.3 per cent (Miyashita, 1986) [8]. As such production of quality mulberry foliage is of great importance for sustainability of Sericulture. Leaf quality influences not only the growth and development of silkworm but also the quality and quantity of silk produced. The quality of leaf is also influenced by several factors, such as variety, agronomical practices, method of harvesting and preservation of leaf, biotic and abiotic factors (Bongale *et al*., 1991) [9]. The silkworm (*Bombyx mori* L.) being monophagous insect derives complete nutrient supply including water required for its growth from mulberry leaves. The quality of mulberry leaves plays a predominant role on health and growth of silkworm. The leaf quality depends on various factors viz., mulberry variety, season, irrigation fertilizer/manure application, temperature, photoperiod, nature and type of soil profile, water table, pruning, maturity of leaf and method leaf harvesting (Rachotaiah *et al*., 2002) [6]. The hilly topography, coupled with agro-climatic conditions in the State and also the availability of mulberry wealth favours the development of sericulture in all the three division of the State viz., Jammu, Kashmir and Ladakh. In Kashmir division, the altitude of subtropical and temperate areas range from 500-1500feet amsl. The temperature ranges from -1 ºC to 35 ºC in plains and from 32 ºC to -20 ºC in cold arid zone (Ladakh) during winter. Kargil occupies unique position because of its high altitude area in country which ranges from 8000-23000ft. ASL. The temperature ranges from -48 ºC in Drass area of Kargil during winter and +35 ºC in summer.

Jammu and Kashmir has a wide variety of soils and soil texture varies from place to place and type of vegetation it supports also varies. Soil texture varies from rich deep alluvial soils to the thin and bare soils of high mountains. Introduction of mulberry sericulture in new and unexplored areas especially towards high mountain areas has assumed great importance in view of rapid urbanization of traditional areas where due to high labour costs and global warming sericulture activities are declining. Among new areas high altitude belts where scope of agricultural crops is limited sericulture activities have the possibility to thrive well and has the potential to improve the economic status of the people of higher altitudes like Gurez and Kargil where agriculture related avocation and for less and food and livelihood security of the people is at thrive. The horticulture in these areas also has no footing thus people of these areas have either negligible or no source of income through agriculture or allied activities. Mulberry being hardy is not only suitable to agro-climatic conditions of these areas but has the scope to improve the socio-economic status of people through silk cocoon raising for income augmentation. Although mulberry is available in Kargil and is locally called as *Osay-doraks*, yet due to ignorance of people, silkworm rearing is not practiced in these areas.

Kargil local

Goshoerami

Availability of mulberry in Kargil

At Kargil

Local Leaf

Soil Sample collection

While surveying feasibility of having sericulture in Kargil Mir *et al.* (2010) [5] have reported that Kargil is ideal for starting sericulture activities there. They also reported luxurious growth and survival of mulberry trees in Kargil. The feasibility of sericulture at different altitudes was in conformity with studies conducted by Mubina (2010) [3] and Nanda *et al.* (2003) [4] while studying the effect of different altitudes on growth and productivity of mulberry found that mulberry can grow up to altitudes of 7000m amsl. These studies also reflect that sericulture could be introduced in Kargil with a success.

Conclusion

The study conducted for introduction of sericulture revealed that although soils at Kargil area are chemically and nutritionally not much better yet with the application of minor quantity of fertilizers and manures their conditions can be reclaimed and made better mulberry plantations. The leaf nutrient status has also revealed the same trend. This is attributed to the fact of better fertility levels of soils required for luxurious growth of mulberry. However; the same can also be improved through application of required quantities of fertilizers in the areas where leaf quality has indicated lower nutrient status. The rearing performance has indicated slightly poor results in all the commercial traits of silkworms at Kargil which can also be due to the outcome of poor quality mulberry leaf availability being nutritionally weak. The growth and behaviour of mulberry and performance of silkworm rearing in the areas Kargil sufficiently indicate that mulberry sericulture has a greater potential in these areas, however, the same has not picked up perhaps due to less acquaintance of crop with people of these areas, coupled with lack of scientific knowledge about sericulture. The same can be done through cultivation of promising mulberry genotypes which are not only specific to these agro-climatic zones but have good nutritive potential as well. Similarly promising silkworm hybrids could be reared for increased production. Awareness in these areas could result in larger mulberry plantation and silkworm rearing. In view of the global change which of late has become the subject matter of debate. Mulberry because of its hardy nature could prove to be the best crop for improving the mountain agriculture system where other agriculture crops do not sustain and as such mulberry could prove the best venture for sustenance of hilly people improving their socio-economic status through increased employment generation and women empowerment as well.

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