

Impact of Seriboost-Treated Mulberry Leaves on Parental Silkworm Races in Two Different P1 Seed Zones

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Abstract: A field experiment was carried out at SSPC, Udhampur, during the spring season of 2025–2026 under two distinct seed zones to evaluate the effectiveness of Seriboost when sprayed on mulberry leaves 25 days after sprouting for seed crop rearing. The results revealed an average seed cocoon yield of 56.50 kg per 100 dfls in Seed Zone Thill and 56.41 kg per 100 dfls in Seed Zone Suntha. Moreover, the seed recovery per kilogram of seed cocoons surpassed the prescribed standards for both seed zones during the spring season. Based on these observations, the study suggests that mulberry gardens should be treated with Seriboost at a concentration of 2.5 mL per litre to improve leaf quality. The application of this foliar spray contributes to enhanced seed cocoon yield and overall productivity in both seed zones during the spring crop.

Keywords: Seed Cocoons, Seed Crop, Foliar Spray, Seriboost, Yield, Seed Recovery.

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I. INTRODUCTION

The nutritional quality of mulberry leaves plays a decisive role in the healthy growth and development of silkworms and significantly influences larval performance, cocoon characteristics, grainage parameters, and silk quality. These biological and commercial traits are closely associated with the nutrient composition of the leaves consumed by the silkworms (Krishnaswami et al., 1971). Superior leaf quality contributes to the production of better seed cocoons, ensuring proper pupation, uniform and healthy pupae, and ultimately a higher yield of disease-free eggs (Jayaswal et al., 2008). In India, mulberry is cultivated primarily for leaf production and accounts for nearly 38.20% of the success of cocoon crops (Miyashita, 1986). Hence, achieving optimal cocoon yield largely depends on providing silkworms with nutritionally rich and high-quality mulberry foliage (Vijaya et al., 2009). Earlier findings by Lokanath (1986) indicated that foliar

supplementation of micronutrients such as boron, iron, and manganese, along with magnesium, improved mulberry yield, branching pattern, and overall biomass production. Compared with soil application, foliar feeding is considered more precise and environmentally sustainable, as nutrients are supplied directly to plant tissues during critical growth stages, ensuring rapid absorption and efficient utilization. When nutrient solutions are sprayed onto leaves, they are first adsorbed onto the leaf surface, penetrate through the cuticle, enter metabolically active cells, and are subsequently translocated to other plant parts where they participate in physiological processes. Balanced plant nutrition is essential for promoting silkworm vitality, growth rate, feed efficiency, silk synthesis, and cocoon quality. Being a foliage crop, mulberry responds positively to timely foliar nutrient applications (Geetha et al., 2016). Previous studies have also shown that foliar application of zinc in the form of ZnSO₄ increased leaf moisture content and extended leaf freshness (Lokanath and Shivashankar,

1981). Therefore, the judicious and recommended use of fertilizers in mulberry cultivation is crucial for sustaining silkworm development and ensuring higher cocoon productivity (El-Kayat *et al.*, 2013). In this context, the present study was undertaken to evaluate the effect of Seriboost-treated mulberry leaves on parental silkworm races under two different P1 seed zones.

II. MATERIALS AND METHODS

SSPC, Udhampur procured Seriboost from Healthline Pvt. Ltd. Yelahanka New Town, Bangalore was used for the treatment of chawki mulberry plots during spring season 2025 at SSPC, Udhampur in well-established dwarf chawki mulberry garden (variety S-1635) with spacing of 9×3 feet under irrigated condition. The recommended foliar application was prepared

by dissolving one litre seriboost plus in 140 litre of water and after 25 days of sprouting single dose of foliar spray was carried out in well-established chawki mulberry garden consisting of 07 plots (dwarf plantations) in the morning hour at 7.00 A.M. till leaves are drenched fully. After 45 days of sprouting, the seriboost treated leaves were utilized for P1 chawki rearing of four different parental races *viz.*, NB₄D₂, SH₆, FC₁ and FC₂. After completion of chawki rearing of 6200 P1 dfls batches wise, chawki worms were distributed to Adopted Seed Rearers (ASRs) spread under two P1 seed zones *viz.*, Suntha and Thill. Various important parameters were studied to assess the performance of seed crop rearing *viz.*, average yield per 100 dfls, single cocoon weight (g), single shell weight (g) & Shell % & also economic grainage parameters *viz.*, pupation % & seed recovery per kg of processed cocoon and result are presented in Figures (1-3) & (Tables 1-2).



Fig 1 Foliar Spray (Single Dose) of Seriboost was Applied to S-1635 Mulberry Genotype 25 Days after Sprouting

III. RESULTS AND DISCUSSION

Mulberry, being cultivated primarily for its foliage, shows a strong and positive response to foliar nutrient application. The timely and need-based supply of essential nutrients through foliar sprays is particularly important for maintaining optimal leaf quality (Qadri, 2011). When silkworm larvae are fed with mulberry leaves treated with foliar spraying, an improvement in larval body weight is generally observed, which ultimately contributes to increased cocoon weight. Furthermore, foliar application enhances the moisture content of mulberry leaves, thereby improving their nutritional value. Such nutrient-rich and moisture-retentive leaves play a crucial role in producing superior-quality cocoons (Dandin and Kumar, 1989; Quader *et al.*, 1989). Foliar nutrition plays a significant role in maintaining leaf vitality and extending freshness for a longer duration. One of its major advantages is the rapid absorption and visible response exhibited by plants, as nutrients applied directly to the foliage are readily available for metabolic processes. In contrast, soil-applied fertilizers often require more time for

uptake where nutrient uptake is slower and applied nutrients may be oxidized and become unavailable to plants. Mulberry leaves, with their relatively broad surface area, are particularly efficient in absorbing nutrients supplied through foliar application. The use of Seriboost as a foliar spray enriched the nutritional composition of the leaves, ensuring an adequate supply of essential elements required for optimal silkworm growth and development. Consequently, both qualitative and quantitative improvements in cocoon production were observed. The results of the present investigation demonstrate a clear improvement in seed rearing performance across all the parameters studied. The mean cocoon yield per 100 dfls was higher than the prescribed procurement norms for seed cocoons for all four parental races. In addition, the number of seed cocoons per kilogram and pupation percentage remained within the prescribed norms (Fig. 1–3). Overall, these outcomes reflect the effectiveness of the treatment in enhancing both the productivity and biological efficiency of the parental silkworm races. The findings of the present study are in accordance with Singhvi *et al.* (2001), who reported a 15.17% increase in leaf

yield following the foliar application of salicylic acid in mulberry. The present observations are also in close conformity with the findings of Gowda *et al.* (2000), who reported that soil application of DAP combined with foliar application of Seriboost to mulberry increased total carbohydrate content. Furthermore, grainage performance showed marked improvement when seed cocoons from all four parental races

were processed for F1 seed production. The average seed recovery per kilogram of processed seed cocoons reached 60.79 g/Kg in traditional races, reflecting an increase of 15.5% over the prescribed norms. Similarly, in elite races, the mean seed recovery was 66.63 g/kg, which was 1.71% higher than the prescribed norms (Table1 & 2).

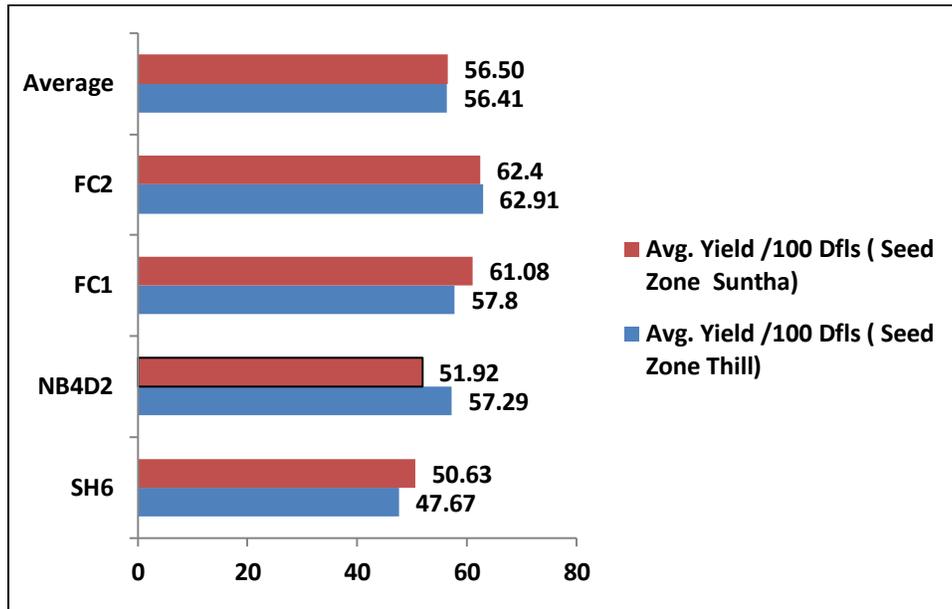


Fig 1. Impact of Seriboost Foliar Spray on Seed Cocoon Yield Performance of Four Parental Races in Seed Zones (Suntha & Thill).

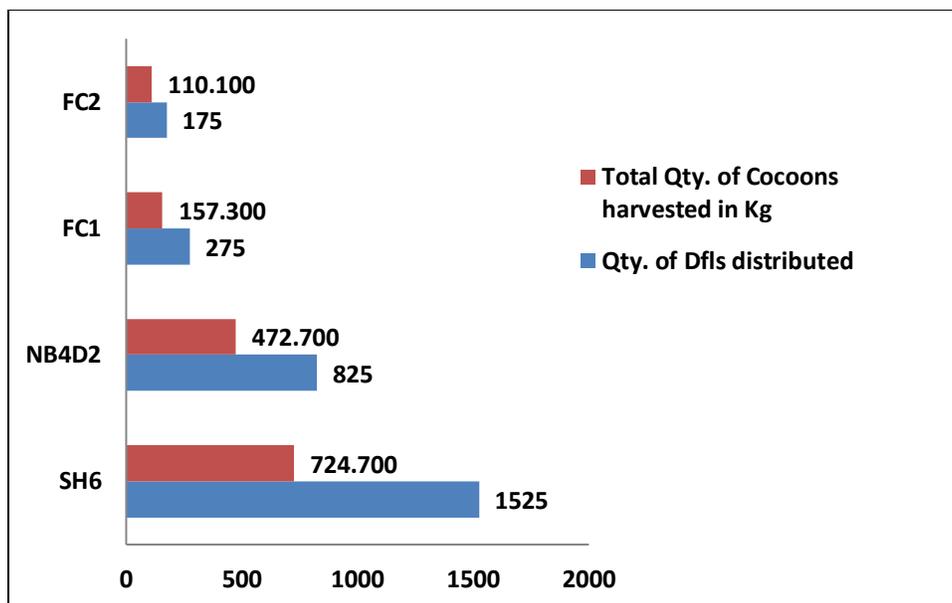


Fig 2. Impact of Seriboost Foliar Spray on Four Parental Races Performance in Seed Zone Suntha.

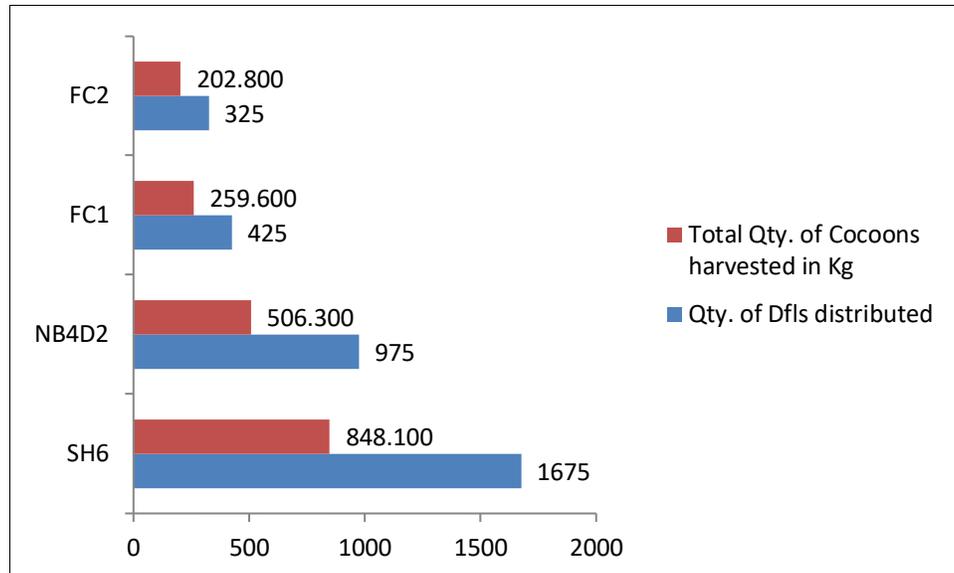


Fig 3. Impact of Seriboost Foliar Spray on Four Parental Races Performance in Seed Zone Thill.

Table 1: Effects of Foliar Spray Application (Seriboost) on Pupation Percentage, Single Cocoon Weight (g), Single Shell Weight (g), and Shell Percentage in Spring Seed Crops.

P1 Seed Zone	Pure Race	Pupation % (Fixed Norms) for Seed Cocoons Procurement	Pupation %	Single Cocoons w.t (g)	Single Shell w.t (g)	Shell %
Suntha	SH ₆	80 and above	82	1.763	0.350	19.85
	NB ₄ D ₂		87	1.769	0.353	19.95
	FC ₁		84	1.754	0.358	20.41
	FC ₂		87	1.784	0.360	20.20
Mean Value			85	1.767	0.355	20.10
Thill	SH ₆	80 and above	83	1.773	0.354	19.96
	NB ₄ D ₂		86	1.769	0.353	19.95
	FC ₁		87	1.782	0.360	20.20
	FC ₂		88	1.795	0.3764	20.27
Mean Value			86	1.77	0.357	20.00

Table 2: Effects of Foliar Spray Application (Seriboost) on Seed Recovery After Processing of Procured Seed Cocoon from Spring Seed Rearing.

Pure Race	Seed Recovery Norms (Fixed) per Kg of processed Seed Cocoons	Achieved Seed Recovery Per kg of Processed Seed Cocoon	% Increase (Seed Recovery)
SH ₆	45 g/Kg of seed cocoons	58.71	13
NB ₄ D ₂		63.46	18
Avg. seed recovery		60.79	15.5
FC ₁	65 g/Kg of seed cocoons	65.83	0.83
FC ₂		67.64	2.6
Avg. seed recovery		66.63	1.71

IV. CONCLUSION

The findings of the investigation showed that grainage and seed rearing performance under two different P1 seed zones were significantly influenced by fortifying mulberry leaves with Seriboost. In light of these positive results, the study recommends the foliar application of Seriboost in mulberry

gardens to enhance mulberry leaf productivity and quality at both the farm and farmer levels, thereby ensuring the production of high-quality seed cocoons.

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