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ORIGINAL ARTICLE

Foliar Application of Seriboost On Chawki Mulberry Garden and Its Effect on Bivoltine Seed Crops Rearing

Amardev Singh
Silkworm Seed Production Centre National Silkworm Seed Organization Central Silk Board –GOI, Power House Road Laddan, Udhampur-182 101 (J & K UT).
Correspondence Author: Email: amardevsilk@gmail.com

ABSTRACT
A field experiment was conducted in a well-established chawki mulberry garden S-1635 variety during 2022-23 at SSPC, Udhampur to study the effect of seriboost sprayed mulberry leaves after 25 days of sprouting on seed crop rearing under three different seed zone in spring season. After application of foliar spray on chawki mulberry garden had a very positive impact on the seed crop rearing an average yield of 64.01 Kg/100 dfls was achieved in seed zone Suntha, 63.34 Kg/100 dfls in seed zone thill and highest average yield of 66.36 kg/100 dfls was achieved under seed zone Hartrayan. The seed recovery per kg of seed cocoons was attained above norms of all the four parental races.
Keywords: Seed cocoons, seed crop, foliar spray, Seriboost, yield, seed recovery.

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INTRODUCTION

Improving productivity and increasing seed farmer income through p1 seed rearing by providing extension support to adopted seed rearers is the responsibility of SSPC, Udhampur. To attain this target the first and foremost step is to provide quality mulberry leaves during P1 chawki rearing. The quality of mulberry, has a direct bearing on quality of seed cocoons produced in terms of better pupation, healthy and uniform pupae which helps in producing eggs which are free from disease and also the silkworm egg laid are relatively more [1]. Mulberry is mostly grown in India for its leaves and contributes to an extent of 38.20% for successful cocoon crop production [2]. Therefore, for the optimal production of cocoon crops, silkworms should have fed with high-quality mulberry leaves [3-4]. Lokanath, [5] showed the positive effect like improved yield and increased number of branches and herbage in mulberry due to Foliar application of micronutrients (Boron, Iron and Manganese) along with magnesium. Foliar fertilization theoretically more environmentally friendly, immediate and target oriented than soil fertilization since nutrients can be directly delivered to plant tissues during critical stages of plant growth. The process by which a nutrient solution applied to the foliage is ultimately utilized by the plant includes foliar adsorption, cuticular penetration, uptake and absorption into the metabolically active cellular compartments in the leaf, then translocation and utilization of the absorbed nutrient by the plant. Proper nutrition is important for enhancing silkworm health, growth, development, feed intake, silk production, and cocoon quality. Therefore, it is essential to apply the recommended amount of fertilizer to mulberry plants to support the growth and development of silkworms and ensure successful cocoon production [6]. The present investigation was carried out to study the effect of seriboost sprayed mulberry leaves after 25 days of sprouting on performance of seed crop rearing in spring season.

MATERIAL AND METHODS

Seriboost procured from Healthline Pvt. Ltd. Yelahanka New Town, Bangalore was used for the study conducted during spring season 2023 at SSPC, Udhampur in well-established dwarf chawki mulberry garden (variety S-1635) with spacing of 9×3 feet under irrigated condition. The seriboost spray was

prepared by dissolving one litre seriboost plus in 140 litre of water and after 25 days of sprouting single spray was done 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.,* NB_4D_2, SH_6, FC_1 and FC_2. After completion of chawki rearing of 8900 P1 dfls batch wise, chawki worms were distributed to Adopted Seed Rearers (ASRs) under three different seed zones *viz.,* Suntha, Thill and Hartaryan. The data collected on performance of seed crop rearing viz., average yield per 100 dfls, number of cocoons per kg, single cocoon weight (g), single shell weight (g) & Shell % & important grainage parameters *viz.,* pupation %, pairs obtained, dlfs obtained, pairs % over actual numbers of procured cocoons (No's), dfls %, cocoons dfls ratio over actual no. of cocoons, seed recovery per kg of processed cocoon and result are presented in Tables (1-4).

Table 1: Seriboost spraying to S_{-1635} mulberry variety (25 days-single dose) after sprouting at chawki garden (Dwarf plantations)

RESULTS AND DISCUSSION

Nutritional value of mulberry leaves is essential for the formation of high-quality cocoons as well as the growth of silkworm, *Bombyx mori* [1]. Fortification of mulberry leaves with supplementary nutrient and feeding silkworms is a very useful method to increase economic value of cocoon and the main purpose of foliar spray to mulberry plants is to increase essential nutrients and biochemical content in a readily available form. As a foliage crop, mulberry reacts favorably to foliar sprays. Further, timely and immediate application of specific nutrient is of utmost importance [7]. Feeding of foliar sprayed mulberry leaves to the silkworm larvae increases their weight and finally the cocoon weight. The foliar sprays also increase the moisture content of mulberry leaves and such type of leaves determines the nutritive quality of leaves and plays a vital role in the production of quality cocoons [8, 10]. Foliar sprays help in retaining the leaf freshness for longer periods. The most important application of foliar sprays is that plants show quick response and is advantageous compared to the soil application which is slow and further the applied nutrient are oxidized and becomes unavailable to the plants. Mulberry has the capacity to absorb nutrients much more effectively and quicker through leaf, owing to comparatively larger area when supplied through foliar spray. Seriboost foliar spray to mulberry leaves has helped in improving the nutrient contents of mulberry in turn to provide the required nutrients for better growth of the silkworm leading to improve qualitative and quantitative cocoon production. Under the present investigation, seed rearing performance showed positive impact on the parameters studied such as average yield per 100 dfls was attained above norms of all the four parental races, numbers of seed cocoons per kg was also found under norms, pupation percentage was also above norms (Table 1& 2) . The present study report was in accordance with Singhvi *et al*. [9] who have reported that 15.17% leaf yield was increased by the foliar application of salicylic acid in mulberry. The present observations are in close conformity with findings of Gowda *et al*. [3] who reported soil application of DAP to mulberry, with foliar application of seriboost to mulberry which increased the total carbohydrates. Additionally, the grainage performance was found to be superior when all the four parental races seed cocoons were procured the important grainage parameters like seed recovery per kg of processed seed cocoon on an average in case of

traditional races it was found 61.58 g/kg with a percentage increase of 16.58% over norms and for elite races it was 68.84g/kg with a percentage increase of 3.84 % over norms (Table 3 & 4).

Table 1: Effect of foliar spray (Seriboost) on some economic parameters of seed crop rearing under three different seed zones.

Name of the Seed zone	Pure race	No. of ASRs	Qty. of Dfls distributed	Total Qty. of Cocoons harvested in Kg	Purchase norms for P1 bivoltine seed cocoons (Fixed)	Avg. Yield /100 Dfls (Kg)	No. of seed cocoons/Kg (Fixed norms)	No. of Cocoons per (Kg)
	SH_6	20	1000	597.800		59.78		568
	NB_4D_2	20	750	617.200		82.29	550-700	565
	FC_1	15	700	384.300	45 Kg per 100	54.90	seed	564
Suntha	FC_2	9	375	209.100	Dfls	55.76	cocoons	554
Mean value			2825	1808.400		64.01		562
	SH_6	22	1225	871.400		71.13		568
	NB_4D_2	17	850	527.400		62.04	550-700	567
	FC_1	15	800	447.900	45 Kg per 100	55.98	seed	565
Thill	FC_2	9	525	307.100	Dfls	58.49	cocoons	557
Mean value			3400	2153.800		63.34		564
	SH_6	18	975	686.000		70.35		569
	NB_4D_2	15	700	529.800		75.68	550-700	572
	FC_1	9	600	301.100	45 Kg per 100	50.18	seed	571
Hartaryan	FC_2	8	400	258.400	Dfls	64.60	cocoons	558
Mean value			2675	1775.300		66.36		568

Table 2: Effect of foliar spray (Seriboost) on pupation %, Single cocoon weight (g), single shell weight (g) and Shell % during spring seed crop.

Name of the Seed zone	Pure race	Pupation % (Fixed norms) for seed cocoons procurement	Pupation %	Single cocoons w.t (g)	Single Shell w.t (g)	Shell %
	SH_6		88	88	1.767	0.343
	NB_4D_2		86	86	1.782	0.341
	FC_1		86	1.752	0.346	19.24
Suntha	FC_2	80 and above	84	1.785	0.359	20.11
Mean value			86	1.771	0.347	19.59
	SH_6		88	1.776	0.342	19.25
	NB_4D_2		87	1.752	0.346	19.74
	FC_1		86	1.769	0.347	19.61
Thill	FC_2	80 and above	85	1.789	0.36	20.12
Mean value			87	1.771	0.348	19.64
	SH_6		88	1.769	0.345	19.5
	NB_4D_2		86	1.779	0.342	19.22
	FC_1		**86**	**1.769**	**0.345**	**19.5**
Hartaryan	**FC_2**	80 and above	**84**	**1.765**	**0.357**	**20.22**
Mean value			**86**	**1.77**	**0.347**	**19.6**

Table 3: Effect of foliar spray (Seriboost) on some economic grainage parameters after processing of procured seed cocoon from spring seed rearing (2022-23).

Pure race SH_6	Pairs obtained 342,100	Dfls obtained 305,800	Pairs % over actual number of procured cocoon (No.) 36.00	Dfls % 36.57	Qty. of seed produced (Kg) 91.740	Cocoon DfLs ratio over actual no. of cocoons 2.73:1	Total seed weight (g) 91740
NB_4D_2	281600	250700	35.60	36.01	75.210	2.77:1	75210
Total/Mean value	623700	556500	35.08	36.29	166.950	2.75:1	166950
FC_1	150040	141700	37.96	40.21	45.344	2.42:1	45344
FC_2	113960	92200	36.46	35.54	29.504	2.81:1	29504
Total/Mean value	264000	233900	37.21	37.87	74.848	2.61:1	74848

Table 4: Effect of foliar spray (Seriboost) on seed recovery after processing of procured seed cocoon from spring seed rearing (2022-23).

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	62.32	17.32
NB_4D_2		60.83	15.83
Avg. seed recovery		61.58	16.58
FC_1	65 g/Kg of seed cocoons	74.65	9.65
FC_2		63.02	--
Avg. seed recovery		68.84	3.84

CONCLUSION

In J&K state, the quality of the mulberry leaves is always a major concern and it has been observed that the leaves quality does not meet the required standards particularly at farmer's level.

Seriboost is a multi-nutrient formulation used as foliar spray containing all necessary nutrients in a balanced proportion and spraying mulberry leaves with seriboost has a considerable effect on grainage and seed rearing performance under the investigation. The study found that fortifying mulberry leaves with seriboost enhances the economic parameters of grainage and seed crop rearing. Further, the present study recommended that seriboost foliar application to be applied in mulberry garden to improve the yield, and quality of leaves, will boost up mulberry productivity for attaining the quality seed cocoons both at farm and field level.

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