

Requirements and Benefits of Muga Silkworm Egg Production Unit (Grainage) in Private Sector

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Introduction

Grainage is an establishment, where disease free eggs of silkworm are produced by scientific methods. It involves a chain of interdependent activities; from preservation of seed cocoons, to packing and distribution of eggs. Production and supply of quality of seeds to farmers hold the key to the success of the muga silk industry. In muga sector, many a times, the silkworm seeds are produced by farmers themselves, without resorting to scientific methods, which results in production and productivity constraints. Thus, building proper infrastructure for producing high quality muga silkworm and availability of quality muga seeds are the pre-requisites for the development of the muga culture. The success of muga silkworm rearing largely depends on effective grainage operation and production of superior quality seeds. The efficiency of any grainage improves with procurement of quality seed cocoons, proper preservation, synchronization of emergence and maintenance of proper environmental conditions.

Requirements

An intensive programme is required for the production of disease free seeds of muga silkworm and improvement of quality of cocoon crop to increase the production of quality raw silk. Following components and facilities are to be installed:

- **Building a grainage hall:** This will be required to conduct various activities like sorting and preservation of seed cocoons, coupling of moths, oviposition, mother moth examination, disinfection, incubation and packing of eggs. The size of the building will be 12'x30' with 5' verandah all around to produce 5,000 dfls/operation or 10,000 dfls in a year.

- **Grainage equipment:** To carry out the grainage operations, different types of equipment and appliances are required. List of required equipment and appliances is as follows:
- i. Steel racks
 - ii. Cocoon preservation trays
 - iii. Plastic crate for cocoon transportation
 - iv. Foot sprayer
 - v. Compound microscope
 - vi. Mortar and pestle
 - vii. Thermometer wet and dry
 - viii. Moth examination table
 - ix. Centrifuge
 - x. Wooden stool
 - xi. Egg laying device
 - xii. Plastic basin and bucket
 - xiii. Plastic drum
 - xiv. Weighing balance
 - xv. Glassware, pipette, measuring cylinder etc.
- **Procurement of seed cocoons and consumables:** Healthy seed cocoons are the pre requisite for production of dfls (disease free layings). It assures a stable and successful cocoon crop. Due to favorable climatic condition all the seed cocoon rearers are concentrated around Boko area in the Kamrup district of Assam. Purchase of seed cocoons for production of dfls will be made preferably from this area only.
- **Engagement of manpower:** Seed production is a skilled activity, which requires technically skilled persons for carrying different operations. It is estimated that about 27 mandays are needed to produce 5,000 dfls (disease free layings). They will be required mainly for sorting, preservation of seed cocoon, coupling, placement of moths in egg laying devices, decoupling and examination of moths, disinfection, and washing, drying and packing of eggs.
- **Insurance of equipment and maintenance:** A large number of equipment procured for the purpose has to be insured and also to be maintained.

Estimated Cost of installation

Sr. No.	Particulars	Amount (Rs in Lakh)
1	Construction of grainage hall (12'x30') with 5' verandah all around. It will be about 90 cm above the ground, well ventilated, rat and snake proof with spacious open verandah all around, and with windows having inner door with wire mesh and outer door with wooden panes.	4.50
2	Purchase of grainage equipment	
i	Steel racks (6.5'x3.25'x6.5') 6 tier-4 nos. @ Rs 4,000 each	0.16
ii	Nylon nets (7'x4'x7') 4 nos. @ Rs 1200 each	0.048
iii	Cocoon preservation trays- 50 nos. (@ 400 each	0.20
iv	Plastic crate for cocoon transportation -10 nos. @ Rs 550 each	0.055
v	Foot sprayer 1 no. @Rs 5000 each	0.05
vi	Light microscope with high quality lenses- 2 nos. @ Rs 6000 each	0.12
vii	Mortar and pestle-5 nos. @ Rs 400 each	0.02
viii	Thermometer wet and dry-1 no. @ Rs 400	0.004
ix	Moth examination table (5'x2.5') with concrete slab-1 no. @ 2000 each	0.02
x	Centrifuge (R-8C with 16ml and 32 ml head) including accessories @ Rs 22000	0.22
xi	Wooden stool 10 nos. and bench -1 no.	0.07
xii	Egg laying device-2000 nos. @ Rs 5 each	0.10
xiii	Grainage masks, rubber gloves etc	0.025
xiv	Plastic basin/tub 20 lts-4 and plastic bucket 20 lts-4	0.025
xv	Plastic drum-100 lts-2nos. @ 1450 each	0.029
xvi	Weighing balance (1kg) -1no.	0.02
xvii	Glassware, beaker, pipette, measuring cylinder, wash bottle etc.	0.02
	Sub-total-2	5.686
3	Consumables- Formaldehyde, KOH, K ₂ CO ₃ ,bleaching powder, lime, soaps and	0.05

	detergent, glass slide, cover slip, muslin cloth, egg box, blotting paper etc	
4	Working capital for seed cocoon-20,000 nos @Rs 5 each	1.00
5	Electrical fitting Solar lamp, ceiling fan, tube light with fittings etc	0.087
6	Engagement of man power 27 man days in each cycle@ Rs 500 each	0.135
7	Insurance of equipment and maintenance	0.042
	Grand Total	7.00

(Rupees seven lakh) only

Other Technical specifications/Norms

- Building with a minimum 3 compartments for cocoon preservation, oviposition and microscopic examination with provision of egg washing and incubation.
- Equipment facilities for microscopic examination for disease free seed production.
- Working capital for purpose of seed cocoons from seed rearers.
- Provision of engagement of manpower for one cycle.
- Provision for Insurance is for one time.

Benefits

- Assured supply of disease free quality seeds in time.
- Expanded muga silk production base with better productivity and quality.
- Development of organized medium scale units in private sector for the production of disease free muga silkworm seed.
- Adoption of new technologies in seed production for productivity and quality improvement.
- Increase cocoon and raw silk production.
- Increased awareness about the scientific methods of producing disease free muga silkworm seeds.
- Increased empowerment level of farmers, seed cocoon producers and seed producers.
- Cut down the cost of production.
- Address the unemployment status of the youths, skilled and unskilled workforce.

Conclusion:



Grainage plays a key role in the timely supply of dfls based on the local demand. Grainage as an activity therefore, offers a good source of supplementary income and self-employment opportunity in the rural areas. It is estimated that about 1.5 crore commercial muga disease free layings are required per year in Assam. As muga silk industry is primarily in the hands of the rearers, it is difficult to ascertain the exact production of muga silkworm seeds in the private sector. It is also estimated that the Government sector could produce hardly 10% of the dfls only as against the current demand of dfls. As such, there is acute shortage of silkworm seed for commercial crops particularly for jethuwa and kotia muga crops. With such a huge demand supply gap there is a lot of scope for setting up of muga grainage unit in private sector. With a policy thrust more on privatization, the entrepreneurial opportunities in muga sector is likely to increase manifold in the ensuing years.

References:

- Anonymous (2020). Statistical Handbook of Assam (2019-20), Chapter-11, Sericulture, Directorate of Economics and Statistics, Govt. of Assam; pp.161-165.
- Choudhury, S. N.(1981). Muga Silk Industry. *Directorate of Sericulture & Weaving*, Government of Assam, Guwahati.
- Thangavelu, K., Chakravarty, A. K., Bhagawati, A.K., and Md, Isa.(1988). Handbook of Muga Culture. Central Silk Board, Bangalore.