

POST COCOON SECTOR

MULBERRY SEED SECTOR SCHEMES

(i) Support for upgrading existing Seed / Grainage Units under Mulberry Sector [Continuation]

It is proposed to assist Private Silkworm Seed Producers / State Governments by providing critical equipment support to start Bivoltine silkworm seed production. The quality of silkworm seed being precursor for raising successful silkworm crops, the adequate infrastructure for production of silkworm seed and meeting quality parameter is a must. Hence the Scheme.

The total cost of the scheme (only equipment cost) is Rs.10.00 lakhs per unit which is proposed to be shared at 60:20:20 by CSB, State and beneficiary respectively for general category States. In case of special Status States the sharing would be 80:10:10 by CSB, State and beneficiary.

If the State is availing the assistance the sharing would be 60:40 basis by CSB and State.

The Assistance is required to be provided to Private Silkworm Seed Producers / State Departments to upgrade their Grainage infrastructure so as to enable them to start production of Bivoltine Silkworm Seed, while enlarging Cross-breed silkworm seed production. The amount of assistance that goes into critical area of support includes testing/ loose eggs preparation equipment facility Rs.1.50 lakhs, Certification system (ISO) Rs 1.00 lakh and for up gradation of need- based infrastructure facility Rs.7.50 lakhs. LSPs in West Bengal and Non- traditional States will be, however, eligible for assistance for production of CB dfls.

The physical target, unit cost and sharing pattern are indicated below.

Physical target	Unit cost (Rs.)	Sharing pattern					
		General States			Special Status States		
		CSB	State	Benef.	CSB	State	Benef.
10 Units	1000000	600000	200000	200000	800000	100000	100000

The out come of the component is 54.00 lakhs Bivoltine and 60.00 lakhs Cross-breed dfls by the end of XI Plan.

The unit cost details are given below:

#	Particulars	Cost / unit (Rs. in lakhs)
1	Testing equipments (List of equipments attached as Appendix-1)	1.50
2	Need based infrastructure up-gradation**	7.50

	(Details are in Appendix-2)	
3	Quality Certification (ISO)	1.00
	Total	10.00

** Need based infrastructure to be assessed case by case limiting to the budgetary provision of Rs.7.50 lakhs to support for procurement of equipments as listed in [Appendix-2](#).

(ii) Support to establish large scale Bivoltine Seed Production Grainages in Public / Private Sector [New component]

The component proposed is to encourage Bivoltine Silkworm Seed Production in Private/Govt Sector to support the targeted Bivoltine raw silk production during the XI Plan period.

The requirement of silkworm seed in the country is met by 3 agencies, viz., the Department of Sericulture (DOS) of State Governments, Private Licensed Seed Producers (LSPs) and the Grainages of National Silkworm Seed Organization (NSSO), CSB. The current pattern of production by the 3 agencies is given in the following order for production of Cross-breed and Bivoltine dfls respectively:

CROSSBREED		BIVOLTINE	
Order	Agency	Order	Agency
I	LSP	I	NSSO
II	DOS	II	DOS
III	NSSO	III	LSP

In contra to the Crossbreed silkworm seed production, bivoltine seed production is concentrated in Govt grainages and LSPs have yet to venture in to bivoltine silkworm seed production due to various constraints. Private Sector units are wary of organizing additional infrastructure required for bivoltine silkworm seed production primarily due to funds constraint, for huge investment and high cost of seed. Uncertainties in seed demand, seed preservation and seed handlings etc., are other limiting factors. If they are to be motivated into the fray of bivoltine silkworm seed support, they need to be groomed systematically with all out support and by providing a level playing field for their foray into the arena of bivoltine hybrid silkworm seed production. This will help in changing the face of Indian Silk Industry from a traditional Crossbreed silk producing country to quality Bivoltine silk producing nation.

The unit cost per unit is Rs. 100.00 lakhs which covers: Rs.1.50 lakhs for Testing / loose eggs preparation equipment, Rs.16.50 lakhs for installation of 2 Moth rooms and one

incubation chamber, Rs.40.00 lakhs for installation of cold storage plant, Rs.1.00 lakhs for ISO certification and Rs.41.00 lakhs towards infrastructure up-gradation including expansion of building to accommodate the new equipment / machine. The scheme is applicable to any Private individual / Public Sector organization having sufficient space for production of 10.00-20.00 lakh dfls per annum and for installation of all machineries and equipment to foster quality seed production.

For General States, the sharing would be 60:20:20 by CSB, State and Beneficiary respectively. In respect of special status States, the sharing would be 80:10:10 .

The physical target, unit cost and sharing pattern are indicated below.

Physical target	Unit cost (Rs.)	Sharing pattern					
		General States			Special Status States		
		CSB	State	Benef.	CSB	State	Benef.
		60%	20%	20%	80%	10%	10%
10 Units	10000000	6000000	2000000	2000000	8000000	1000000	1000000

If the State is availing assistance, then the sharing would be 60:40 basis (The unit cost includes only equipment cost.)

The unit cost details are given below:

#	Particulars	Cost / unit (Rs. in lakhs)
1	Testing equipments (List of equipments attached as Appendix-1)	1.50
2	Installation of 2 moth rooms and 1 Incubation chamber	16.50
3	Infrastructure up-gradation including building (Details : Appendix-2 for equipments & Appendix-3 for building) ##	41.00
4	Installation of Cold Storage Plant (Details are in Appendix-4)	40.00
5	Quality Certification (ISO)	1.00
	Total	100.00

Need based infrastructure support to be assessed case by case limiting to the budgetary provision for Rs.41.00 lakhs to support for procurement of critical equipments and space required for bivoltine seed production as detailed in Appendix-2

(iii) Assistance for Seed Testing facilities in Public / Private Grainages (for Quality seed production) [New component]

The component is proposed to put in place a complete system for the detection of Pebrine disease in Private / Govt silkworm seed production units so that successful cocoon crops with the commercial farmers is ensured. Both existing and new units (Both for CB and Bivoltine dfls) units will be eligible for the support.

The quality of dfls can be assured only if the dfls are subjected to rigorous testing for debilitating diseases specially the “Pebrine”. The quality control is achieved by organizing proper mother moth testing for which all facilities are to be in place. Each seed production unit is required to be equipped with the state of art testing facility. The establishment of comprehensive testing facilities in each of the unit would ensure supply of silkworm seed free from disease. Since quality silkworm seed is the most critical input for rearing successful silkworm crops, the scheme will be funded by the CSB to the extent of 60% for General States, the balance 40% will be shared by State (20%) and beneficiary (20%). In case of special status States, the assistance would be 80:10:10. The unit cost per unit is Rs.1.50 lakhs towards Testing / loose eggs preparation equipment and is proposed to assist 250 units during XI Plan.

The physical target, unit cost and sharing pattern are indicated below.

Physical target	Unit cost (Rs.)	Sharing pattern					
		General States			Special Status States		
		CSB	State	Benef.	CSB	State	Benef.
250 Grainages	1,50,000	60%	20%	20%	80%	10%	10%
		90,000	30,000	30,000	120000	15000	15000

Tentative list of equipments is at Appendix-1.

(IV) Assistance for mulberry Silkworm Seed Production units [New component]
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In order to assist for production of quality P2/ P1 dfls required for the targeted production of F1 silkworm seed.

The total outlay of the Scheme works out to be Rs.3.50 crore [Rs.3.00 crore @ Rs.1.00 Crore per unit for P1 Grainage and Rs.0.50 crore for P2 Grainage respectively].

P1 Grainage: The amount of subsidy that goes into critical area of support includes testing facility (Rs.1.50 lakhs), Rs. 16.50 lakhs capital subsidy for installation of two moth preservation cold room (7degree centigrade) and one incubation room (25+or – 1 degree centigrade, RH 75-80 %), Rs. 40.00 lakhs for need based infrastructure for up-gradation, Rs.25.00 lakhs for installation of cold storage plant with generator backup for bivoltine P1 grainage (if it is for multivoltine P1 grainage, the cost will be Rs.20.00 lakhs) and Rs.17.00 lakhs for bivoltine P1 grainage for parental seed cocoon multiplication and establishment of quality monitoring system (if it is for multivoltine P1 grainage, the cost will be Rs.22.00 lakhs).

P2 Grainage: Rs. 1.50 lakhs for testing equipment, Rs. 16.50 lakhs capital subsidy for installation of two moth preservation cold room (7degree centigrade) and one incubation room (25+ or – 1 degree centigrade, RH 75-80 %) with generator back-up and Rs. 32.00 lakhs for need based infrastructure for up-gradation.

The scheme is applicable to any Private individual / Public Sector organization, having sufficient space for production of at least 20.00 lakh dfls per annum and installation

of all machineries and equipment. The sharing pattern of the outlay is in the ratio of **60:20:20** between CSB, DOS and Beneficiary respectively.

If the State is availing assistance, then the sharing would be **50:50** basis. For special Status States, the assistance would be **80:10:10**.

To produce quality P2 / P1 dfls required for the targeted production of F1 silkworm seed during XI Plan, It is contemplated to establish following number of additional basic seed production units during XI Plan to cater to the increased demand of reproductive silkworm seed.

The provision is also made either to upgrade the existing units in Public Sector or to establish new ones in Private / Public Sector.

In case of BV P1 dfls production, 1 unit will be established under Private Sector (preferably, reputed and well established LSP) and the remaining 2 units will be established under Public sector (1 each for MV and BV respectively).

In case of P2 dfls production, one unit is proposed to be established under Govt. Sector only, as the requirement of P2 dfls is very small and not commercially viable.

The physical target, unit cost and sharing pattern are indicated below.

Physical target	Unit cost (Rs.)	Sharing pattern		
		CSB	State	Benef.
		60%	20%	20%
3 P1	10000000	6000000	2000000	2000000
1 P2	5000000	3000000	1000000	1000000

The unit cost details are given below:

Assistance for Mulberry Basic Silkworm Seed Production Units

(Unit Cost:- Rs.100.00 Lakhs)

(a) Bivoltine P1 Grainage

#	Particulars	Cost / unit (Rs. in lakhs)
1	Testing equipments (List of equipments attached as Appendix-1)	1.50

2	Installation of 2 moth rooms and 1 Incubation chamber	16.50
3	Infrastructure up-gradation including building (Details : Appendix-2 for equipments and Appendix-3 for building) \$\$	40.00
4	Installation of Cold Storage Plant with Generator back-up (Details are in Appendix-4 & Appendix-5)	25.00
5	Parental Seed Cocoon multiplication and establishment of quality monitoring system establishment	17.00
	Total	100.00

\$\$ Need based infrastructure support to be assessed case by case limiting to the budgetary provision for Rs.40.00 lakhs to support for procurement of critical equipments and space required for bivoltine seed production as listed in Appendix-2 & Appendix-3

Note : For parental seed cocoon multiplication and quality monitoring system establishment, proposal is required to be submitted linking to basic seed (bivoltine) production plan.

(b) Multivoltine P1 Grainage

#	Particulars	Cost / unit (Rs. in lakhs)
1	Testing equipments (List of equipments attached as Appendix-1)	1.50
2	Installation of 2 moth rooms and 1 Incubation chamber	16.50
3	Infrastructure up-gradation including building (Details are in Appendix-6 for equipments and Appendix-7 for building) &&	40.00
4	Installation of Cold Storage Plant with Generator back-up	20.00
5	Parental Seed Cocoon multiplication and establishment of quality control measures	22.00
	Total	100.00

&& Need based infrastructure support to be assessed case by case limiting to the budgetary provision for Rs.40.00 lakhs to support for procurement of critical equipments and space required for multivoltine seed production as listed in Appendix-6 & Appendix-7

Note : For parental seed cocoon multiplication and quality control measures, proposal is required to be submitted linking to basic seed (multivoltine) production plan.

Appendix-1

List of testing equipments

Sl. No.	Particulars	Quantity	Unit cost	Amount (Rs)
1	Microscopes (binocular)	3	20000	60000
2	Moth crushing mixies with 12 medium sized jars	4	3750	15000
3	Centrifuge (R23) (8 tubes, 100 ml)	1	50000	50000
4	Cyclomixer	1	2500	2500
6	Centrifuge tubes-Plastic	150	40	6000
7	Funnels	80	25	2000
8	Test tube stands	25	50	1250
9	Moth examination table	2	3000	6000

10	Moth examination stools	5	600	3000
11	Tissue Paper	5 rolls	30	150
12	Muslin cloth	10 M	60	600
13	Glass rods	200	5	1000
14	Micro slides	20 pkts	75	1500
15	Cover slips	5 box	100	500
16	Potassium Carbonate (K ₂ CO ₃)	500 g	250	250
17	Potassium Hydroxide (KOH)	500 ml	250	250
	Total			150000

Appendix-2

Equipments for bivoltine seed production

Sl. No.	Name of the item	Quantity
I	General	
1	Cocoon / pupal preservation stands (iron)	25 Nos.
2	Oviposition stands	5 Nos.
3	Working stands	10 Nos.
4	Working tables	10 Nos.
5	Disinfection masks	2 Nos.
6	Dust masks	30 Nos.
7	Timer for acid treatment	1 No.
8	Incubation frames	1000 Nos.
II	Machinery	

1	Platform balance (100 kg)	1 No.
2	Electronic balance (1 kg)	1 No.
3	Electronic balance (100 kg)	1 No.
4	Deflossing machine	1 No.
5	Cocoon cutting machine	1 No.
6	Room heaters	6 Nos.
7	Humidifier	6 Nos.
8	Air conditioners	2 Nos.
9	Acid treatment bath	1 No.
10	Hot air oven	1 No.
III	Plasticware	
1	Big basins for egg sheet washing	10 Nos.
2	Oviposition trays (2' x 2') two colours	50 each
3	Male moth preservation trays – two colours	50 each
4	Cocoon preservation trays (2' x 3')	500 Nos.
5	Pupae preservation trays (2'x 3')	300 Nos.
6	Small hoses	10 Nos.
7	Mugs	10 Nos.
8	Buckets (big)	5 Nos.
9	Small funnels (loose egg washing)	12 Nos.
10	Nylon bags	50 Nos.
11	Nylon cloth	50 Meters
12	Hand gloves (acid proof)	5 pairs
13	Hand gloves (disposable)	50 pairs
14	Waste disposal bins	6 Nos.
IV	Consumables	
1	Loose egg boxes	13000 Nos.
2	Loose egg sheets	3000
3	Corrugated sheets (2' x 3')	4600
4	Old newspaper	300 kg

Appendix-3

Grainage facilities and space requirement for bivoltine seed production

I Building Space Requirement

- 1) **Seed cocoon receipt and handling (deflossing and sorting):** 375 sq. ft. (25' x 15').
- 2) **Seed cocoon cutting and pupal sex separation:** 1,125 sq. ft. (75' x 157 hall).
- 3) **Pupal preservation (4 rooms):** 1,200 sq. ft. (20' x 15' each).

- 4) **Working place (pairing and isolation)** : 200 sq. ft. (20' x 10').
- 5) **Oviposition room**: 300 sq. ft. (20' x 15').
- 6) **Testing room**: 300 sq. ft. (20' x 15').
- 7) **Loose egg washing/drying**: 300 sq. ft. (20' x 15').
- 8) **Acid treatment**: 150 sq. ft. (10' x 15').
- 9) **Male moth preservation**: 100 sq. ft. (10' x 10').
- 10) **Cold storage (3 chambers)**: 800 sq. ft.
- 11) **Loose egg packing**: 150 sq. ft. (10' x 15').
- 12) **Pierced cocoon storage**: 150 sq. ft. (10' x 15').
- 13) **Store room**: 150 sq. ft. (10' x 15').
- 14) **Incinerator**: 80 sq. ft. (8' x 10').
- 15) **Incubation facility**: One (15-25 °C)
- 16) **Disinfection tank**: One (10' x 10' x 5').
- 17) **Generator**: One (2~3kv).

II Other facility

- 1) **Electric Power Supply** Continuous supply of electric power effectively.
- 2) **Water Supply**: Effective supply of clean water (Open or bore well)
- 3) **Generator**: Establishment and use of generator with sufficient capacity.
- 4) **Telephone**
- 5) **Vehicle**
- 6) **Computer**

Appendix-4

Facilities required for Cold Storage Plant for large scale bivoltine grainage – Rs.40.00 lakhs.

1. There will be 6 Cold Storage Chambers with one common Ante Chamber.
2. Out of these 6 Chambers 4 Chambers will be designed for maintaining an inside temperature of 0° to 5°C.

3. The other two Chambers will be designed for 10⁰ to 15⁰C & 20⁰ to 28⁰C respectively.
4. Approximately 8.00 Lakh DFLs can be preserved for 4 months / 6 months Schedule.
5. Out of the 4 lower temperature Cold Storage Chambers, one Chamber can be utilized exclusively for preservation of Cross Breed DFLs for shorter duration.
6. All Cold Storage Chambers will be of same size, i .e., 2.50 m x 3.00 m x 2.50 m
7. The size of the Ante Chamber will be 2.50 m x 5.00 m x 2.50 m.
8. The refrigeration capacity of all the Cooling Units will be of 1.50 TR
9. The pre-fabricated Cold Storage Plant will be designed for Direct Expansion type of cooling.
10. The refrigerant used in the system will be Freon – 22 (R-22 Gas)
11. All the Cold Storage Chambers will have Micro-processor controller to display the Temperature & R.H. conditions maintained inside the chambers.
12. The Micro-processor controller will be able to switch on / off the working/stand-by Compressors alternately for any fixed time setting.
13. All the Cold Storage chamber doors will have provision for locking from out side. But at the same time, it can be opened from inside, if by mistake some body gets locked inside.
14. All the Egg Preservation Chambers will be provided with Steam Humidifiers to maintain the desired R.H. inside the chambers.

Obligatory requirements:

1. Building to accommodate cold storage
2. Generator
3. Operation and maintenance.

Appendix-5

Facilities required for Cold Storage Plant for bivoltine P1 grainage _____

Rs.25.00 lakhs

1. There will be 4 Cold Storage Chambers with one common Ante Chamber.

2. Out of these 4 Chambers 2 Chambers will be designed for maintaining an inside temperature of 0° to 5°C .
3. The other two Chambers will be designed for 10° to 15°C & 20° to 28°C respectively.
4. Approximately 4 to 6 Lakh DFLs can be preserved at its maximum load for 4 months Schedule and 3.5 to 4.5 Lakh DFLs for 6 months/10 months Schedule.
5. All Cold Storage Chambers will be of same size, i .e., 2.50 m x 3.00 m x 2.50 m
7. The size of the Ante Chamber will be 2.50 m x 5.00 m x 2.50 m.
8. The refrigeration capacity of all the Cooling Units will be of 1.50 TR
9. The pre-fabricated Cold Storage Plant will be designed for Direct Expansion type of cooling.
10. The refrigerant used in the system will be Freon – 22 (R-22 Gas)
11. All the Cold Storage Chambers will have Micro-processor controller to display the Temperature & R.H. conditions maintained inside the chambers.
12. The Micro-processor controller will be able to switch on / off the working/ stand-by Compressors alternately for any fixed time setting.
13. All the Cold Storage chamber doors will have provision for locking from out side. But at the same time, it can be opened from inside, if by mistake some body gets locked inside.
14. All the Egg Preservation Chambers will be provided with Steam Humidifiers to maintain the desired R.H. inside the chambers.
15. A generator of required capacity has to be installed separately as a stand-by back-up.

Equipments required for Multivoltine seed production

Sl. No.	Name of the item	Quantity
I	General	
1	Cocoon /pupal preservation stands (iron)	25 Nos.
2	Oviposition stands	5 Nos.
3	Working stands	10 Nos.
4	Working tables	10 Nos.
5	Disinfection masks	2 Nos.
6	Dust masks	30 Nos.
7	Incubation frames	1000 Nos.
II	Machinery	
1	Platform balance (100 kg)	1 No.
2	Electronic balance (1 kg)	1 No.
3	Electronic balance (100 kg)	1 No.
4	Deflossing machine	1 No.
5	Room heaters	6 Nos.
6	Humidifier	6 Nos.
7	Air conditioners	2 Nos.
8	Hot air oven	1 No.
III	Plasticware	
1	Big basins for egg sheet washing	10 Nos.
2	Oviposition trays (2' x 2')	50 each
3	Male moth preservation trays	50 each
4	Cocoon preservation trays (2' x 3')	500 Nos.
5	Pupae preservation trays (2'x 3')	300 Nos.
6	Small hoses	10 Nos.
7	Mugs	10 Nos.
8	Buckets (big)	5 Nos.
9	Hand gloves (disposable)	50 pairs
10	Waste disposal bins	6 Nos.

Grainage facilities and space requirement for multivoltine basic seed production

I Building Space Requirement

- 1) **Seed cocoon receipt and handling (deflossing and sorting):** 375 sq. ft.
- 2) (25' x 15').
- 3) **Cocoon preservation (4 rooms):** 1,200 sq. ft. (20' x 15' each).
- 4) **Working place (pairing and isolation) :** 200 sq. ft. (20' x 10').
- 5) **Oviposition room:** 300 sq. ft. (20' x 15').
- 6) **Testing room:** 300 sq. ft. (20' x 15').
- 7) **Loose egg washing/drying:** 300 sq. ft.
- 8) **Moth preservation:** 100 sq. ft. (10' x 10').
- 9) **Cold storage (3 chambers):** 800 sq. ft.
- 10) **Pierced cocoon storage:** 150 sq. ft. (10' x 15').
- 11) **Store room:** 150 sq. ft. (10' x 15').
- 12) **Incinerator:** 80 sq. ft. (8' x 10').
- 13) **Incubation facility:** One (15-25 °C)
- 14) **Disinfection tank:** One (10' x 10' x 5').
- 15) **Generator:** One (2~3kv).

II Other facility

- 1) **Electric Power Supply** Continuous supply of electric power effectively.
- 2) **Water Supply:** Effective supply of clean water (Open or bore well)
- 3) **Generator:** Establishment and use of generator with sufficient capacity.
- 4) **Telephone**
- 5) **Vehicle**