

Sl.No.1 : Information on all technologies of Muga and Eri

A) TECHNOLOGIES IN THE FIELD UNDER MUGA SECTOR

1. Superior morphotype of muga food plant Som.

Title of the Technology: Improved S-3 morphotype of som, *Persea bombycina*

Year of recommendation: 1994

Salient feature:

- Leaf shape-Lancelate with entire margin.
- Leaf size: Length-7.3 cm (av) Width: 2 cm (av)
- Potential leaf yield: 18 kg /plant.
- Moderately resistant blight and less susceptible to leaf spot disease.
- Palatability by muga silkworm: 98.8%

Recommended for all locations.



S-3 Morphotype of som

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2. Propagation of muga host plant

Title of the Technology: Raising of seedling from seeds

Year of recommendation: 1994

Salient feature:

- 80% survival.
- Easy to adopt.
- Seeds with 3.0 g. in weight and 7.0 mm in diameter are to be selected for sowing
- Germination will take place within 40-60 days in case of Som seeds.
- Reduce the period of establishment and save wastage of precious seed materials.
- Germination : 90 %
- Post transplantation survivability: 90%
- Time of seed sowing : April-May
- Time of transplanting : 10-12 months old seedling (June-July)

Recommended for all locations.



Som Nursery

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3. Intercropping in between muga host plantation for better economic dividend

Title of the Technology: Intercropping in between Som plantation

Year of recommendation: 2010

Salient feature:

- Intercropping with shade loving crops like Ginger (*Zingiber officinale* Rosc), Turmeric (*Curcuma longa* L.) and Colocasia (*Colocasia esculenta* L.) is advisable for all stages of som plants.
- It may generate additional income by 47-85 % over sole cropping of som.
- It checks weed growth.
- For gestation period of som, any vegetable crops can effectively be grown as intercrops.
- For maintaining soil fertility and soil health, intercropping with legume crops like Blackgram, greengram etc. is advisable.

Recommended for all locations



Intercropping with Ginger



Intercropping with Colocasia

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4. Pruning/ pollarding schedule of som and soalu plantation for quality leaf

Title of the Technology: Pruning technology

Year of recommendation: 1996

Salient feature:

- Maintain the manageable height of the host plant for muga silkworm rearing
- Newly sprouted leaves are nutritious and succulent.
- It also help in controlling some diseases and pests.
- Pruning schedule is prepared for all the crops.
- Pollarding is recommended for every 5 years interval at the height of 6 ft from ground level.

Recommended for all locations



Pruned muga host plant

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5. Organic manure based farming system

Title of the Technology: Organic manure based muga farming system

Year of recommendation: 2010.

- Organic farming system with incorporation of green manure (Dhaincha), FYM (5 t /ha), vermicompost (1t /ha)
- Cost effective technology.
- Ensures 16.83 t leaf yield /ha som plantation which is at par with recommended inorganic fertilizer (100 : 50 : 50 kg NPK/ha and 10 t FYM/ha)
- Easily accessible
- Improves soil fertility & sustainability



Vermicompost production



Green manuring with Dhaincha

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6. Muga Rearing Technology

Name of the technology: Chawki rearing of muga silkworm.

Year of Recommendation: 2004

Salient features:

- It provides succulent and nutritious leaves.
- Worms feed on chawki plots are healthy.
- Minimises the loss and mortality at young age worms.
- 15-20 % increase in cocoon yield as compared to traditional.

Usage:

- For brushing, prune 20-30 % of the plants at 5'-6' above ground before 4 months in summer and 5 months in winter.
- Within 7 days of pruning, apply FYM @0.5cft followed by NPK @44:62:17g/ plant.
- Irrigate chawki garden before brushing in 'chatua' seed crop.
- Pluck old leaves and spray 5% bleaching powder solution on the tree and dust slaked lime powder in the soil @800 kg/acre.
- Conduct the brushing inside nylon net cover.

Recommended for all locations



Chawki plot and Brushing inside net

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7. Pest management of muga host plant

Title of the Technology: Control of stem borer (*Zeuzera indica*), the pest of muga host plant

Year of recommendation: 2007.

Salient feature:

- Eco-friendly procedure.
- Easily available botanicals are considered for the technology.
- Control the infestation up to 80%.

Usages:

Plugging of holes with 5-15% plant extract of neem(*Azadirachta indica*) , dotura (*Datura metel*) , titabahak (*Adhatoda vasica*), castor *Ricinus communis*) and Positia (*Budelia adciatica*) followed by mud plastering control the infestation.

Recommended for all locations



Stem borer infested plant



Larvae of stem borer

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8. Disease management of muga host plant

Title of the Technology: Use of "Phytoblighon to control of leaf blight (*Colletotrichum gloeosporioides*) disease of soalu.

Year of recommendation: 2009.

Salient feature:

- Eco-friendly bio-formulation.
- Control up to 84%.
- Peak season: Sept-Oct.

Usages:

- Doses: 50 ml /liter of water before the peak season of infection.
- Spraying intervals : Low infection :7 days
High infection 3 days.

Safe period: 1 day

Cost benefit ratio: 1: 1.24

Recommended for all locations



Blight Infected twig



Phytoblighon

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9. Disease management of muga silkworm

Title of the Technology: Use of “Lahdoi” to control muscardine disease of muga silkworm

Year of recommendation: 2009.

Salient feature:

- Prevent the muscardine disease upto 70% .
- Non-corrosive formulation to muga silkworm
- Spraying of “Lahdoi” also improve the leaf quality.

Usages:

- Doses : 1 g / L of water.
- Spraying should be in the food plant and soil before 7 days of brushing of the worm.
- Spraying interval: After 15 days (spraying can be done on the larvae) till maturation.

Do's

- Use clean sprayer.
- Spraying o f the chemical should be done within 6 month from date of packing

Cost benefit ratio: 1: 3.5 in compared to 1:0.86 of control



Infected larvae



Lahdoi

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10. Muga silkworm spinning device

Title of the Technology: Use of “Bamboo moutage” to control muscardine disease of muga silkworm

Year of recommendation: 2004.

Salient feature:

- A box type moutage fabricated from bamboo.
- Save 60% labour
- Shell percentage is improved.
- Save 90 % space.
- Increased silk yield by 10%.
- After every use disinfection is required.



Traditional Jali



Bamboo moutage

For any query details Contact D. Goswami Mob.: +91 9435514976

11. Name of the Technology: Integrated control of Uzi fly in muga culture

Year of recommendation: 2009.

Salient features:

- Release of the hyperparasitoid, *Nesolynx thymus* and *E. phillipinensis* during rearing and grainage and rearing period reduces the uzifly infestation of the muga worms to the tune of 15-20%.
- Complete rearing under nylon net cover can save from uzifly infestation.
- It is eco friendly procedure.
- Can achieve a gain of 30 % cocoon yield during *Jarua* and *Chatua* crops.



Uzi infested lartvae



N.thymus in farmers field



Rearing inside nylon net cover

For any query details Contact Dr. R. Kumar: Mob. +91 8011066646

12. Muga silkworm Grainage Technology

Title of the Technology: Mother Moth Examination for Detection of Pebebrine in Muga Silkworm.

Year of recommendation: 2008.

Salient feature:

- Followed for preparation of Disease-free-laying.
- For detection and prevention of pebrine.

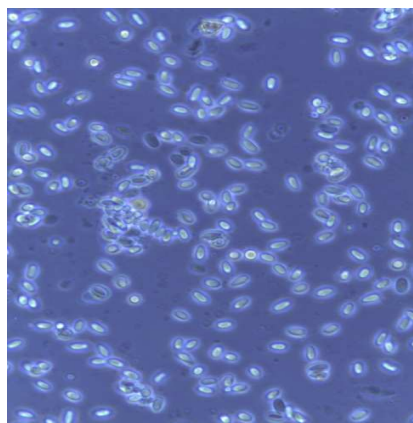
Usages:

- Crush the moth with 0.8% K_2CO_3 .
- Centrifuge the filtrate @3000 rpm.
- Examine the pellet under the microscope.

Recommended for all seed production centres/seed producers.



Moth Crushing with K_2CO_3



Pebrine spores

For any query details Contact G. Rajkhowa : Mob.: +91 9435524334

13. REELING TECHNOLOGY

Name of Technology: BANI- a muga weft reeling machine.

Year of Recommendation: 2008

Salient features:

- A weft Muga yarn reeling machine.
- Motor cum pedal operated, single basin, 4 end capacity machine.
- Produces zero twist flat muga yarn.
- Operated by a single person in sitting posture.
- Productivity is 120-140 g/day against 80-100 g by two persons in Bhir.



Bani Reeling Machine



Muga yarn

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14. MUGA COCOON COOKING TECHNOLOGY

Name of Technology: Muga silk plus - an effective cooking chemical for muga cocoon.

Year of Recommendation: 2009.

Salient features:

- Chemical formulation for cooking muga cocoon.
- Enhance the muga silk recovery up to 55%, against 40-48% silk recovery in traditional khar and soda.
- Soluble in water.
- The quality of reeled yarn is improved.
- No side effect.

Usages:

- 2.5 g in 1 litre water.
- Quantity: 50 cocoons can be boiled per litre of solution.
- Boiling time: 5-8 cocoons for fresh cocoons and 8-10 minutes for old cocoons



Silk Pus



Cocoon cooking



Muga Yarn

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B) TECHNOLOGIES IN THE FIELD UNDER ERI SECTOR

1. Superior variety of Eri food plant Castor

Title of the Technology: High yielding Castor Variety.

Year of recommendation: 2001 (NBR-1), 2011 (NBR-2 & NBR-3)

Salient feature:

- Non-bloomy red variety of Castor.
- NBR1 gives leave yield of 12MT/ hectare/year which is 20% more than the traditional variety.
- High nutritive value.
- NBR2 and NBR3 give leave yield of >13MT/ hectare/year which is 11-14% more than NBR-1.
- The ideal planting seasons are March- April and September-October.

Recommended for all Eri rearing seasons.



NBR-1



NBR-2



NBR-3

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2. Nursery technique of eri host plant.

Title of the technology: Raising of Kesseru nursery.

Year of recommendation: 1998

- Season: February-March.
- Plough the land 2 -3 times and level it.
- Make 6 x 2 m beds and lift up to 15 cm above ground level.
- Apply 6 cft FYM and sand to each bed, mix thoroughly with the soil and level it.
- Cover the kesseru fruits on the plant with nylon net to prevent consumption by birds.
- Collect the ripe fruit during February-March and store the fruits in shade for 1- 2 days and soak the fruits overnight in water.
- Rub the fruits with a gunny cloth and put the fruits in water and select only the sunken ones.
- Treat the seeds with Bavistin @ 2-3 g/kg seed.
- Sow seeds thinly and mulch the seed bed with a thin layer of straw.
- For supply programme raising of poly-tube nursery is convenient.
- Use agro-net shed for better germination.
- Irrigate regularly during dry season.
- Remove the mulch after 90 % germination.



Different steps of raising of kesseru nursery

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3. Agronomical practices in Kesseru

Title of the technology: Pollarding and manuring of kesseru.

Year of recommendation: 2000

Salient feature:

- Pollard the plants at a height of 1.75 m after attaining age of 5 years age.
- Practice at 5 years interval following step up down method.
- Proliferation of foliage up to two times of non pollarded plants.
- Leaf plucking is easier.
- Provides quality foliage for rearing.



Pollarded kesseru



Leaf proliferation after pollarding

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4. Package of practices for perennial castor cultivation

Title of the Technology: Cultivation of perennial castor.

Year of recommendation: 2006

Salient feature:

- Application of NPK @ 120:40: 40 kg/ha along with 10 MT FYM/ha/year.
- Spacing: 1 x 1.5 m.
- Pruning : at the height of 1 m during March.
- Reduce recurring cost of annual castor cultivation with a BCR of 1:1.22.



Pruning of castor



Perennial castor cultivation

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5. Intercropping with Kesseru plantation for better economic dividend

Title of the Technology: Intercropping in kesseru plantation

Year of recommendation: 2010

Salient feature:

- Intercropping with shade loving crops like Ginger (*Zingiber officinale* Rosc), Turmeric (*Curcuma longa* L.) and Colocasia (*Colocasia esculenta* L.) is advisable for all stages of Kesseru plants.
- It may generate additional income by 40-50% over sole cropping of Kesseru
- Recommended for all stages of Kesseru plants.
- Intercropping checks weed growth.
- For gestation period of som, any vegetable crops can effectively be grown as intercrops.
- For maintaining soil fertility and soil health, intercropping with legume crops like Blackgram, greengram etc. is advisable.

Recommended for all locations



Intercropping with Kesseru

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6. High yielding Eri Silkworm breed

Title of the Technology: Eri silkworm breed C2

Year of recommendation: 2014

Salient feature:

- Fecundity: more than 350 eggs
- Shell weight: Above 0.54g.
- ERR: Above 85%
- Cocoon shell yield per 100 dfls: 12 to 13.3 Kg against 7.71 Kg of traditional race.
- Suitable for rearing with Castor, Kesseru, Borpat and Tapioca
- Temperature 25-32 °C and RH 75-80% suitable for rearing.
- More than 1200 g leaf required to rear per dfl of the breed.



Egg laying moth

C2 Breed cocoon Local race Cocoon

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7. Low cost rearing technology of castor

Title of the technology: Platform rearing technique of eri silkworm.

Year of recommendation: 2005

Salient features:

- Platforms are placed in 3 tier in bamboo rack of size L 2.2 m x B 0.75 m x H 1.60 m.
- Two nos. of such racks can be placed in a room floor area 5.4 sq m. (1.2m x 4.5m).
- Maximum of 1200 eri silkworms at 5th instar can be reared in each platform to accommodate total 7200 silkworms by brushing 25- 30 dlfs of eri.
- Almost double quantity of silkworms per unit against the traditional round bamboo try (1m dia. with capacity of 300 nos. 5th instar worms) rearing system.
- It is labour and space saving technology.



Rearing on platform



Platform rearing device

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8. Improved mountage for eri silkworm

Title of the technology: Improved collapsible split type mountage

Year of recommendation: 2014

Salient features:

- 400 worms can be accommodate in 90 cm X 60 cm (length X breadth) size montage
- By pulling out the strips the cocoons can be harvested easily & labour can be saved.
- 99.75% good cocoon can be harvested.
- Space requirement is negligible in comparison to traditional jail.
- It can be utilized for brushing tray by removing the strips.
- In a 90 X 60 cm size montage 25 dfls of eri silkworm can be brushed and can be reared up to 2nd instar.
- The cocoons are stain free against 10-25% stained cocoons in traditional jail.



Front view of mountage



Mountage with cocoons



Harvesting of cocoons

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