

DETAILS OF TECHNOLOGIES DEVELOPED BY CMER&TI, LAHDOIGARH AND THEIR IMPLEMENTATION AT FIELD LEVEL

The Central Muga Eri Research & Training Institute, Lahdoigarh, Jorhat (Assam) was established as a full-fledged Research Institute in the year 1999 to serve as the apex R&D institute for both muga and eri sector. Details of technologies developed by the institute and their implementation at field level are given below-

Details of Technologies	Name of the districts/area covered
<p>1. AUTHORIZED HOST PLANT DEVELOPED BY THE INSTITUTE</p> <p>i. High yielding variety of castor, NBR-1 was recommended to the field with 12MT/ha leaf yield potential. The high yielding castor accession, NBR-1 utilized in augmentation of eri food plantation under various development scheme like CDP, CPP etc. Further, two more castor accessions such as Acc-003 and Acc-004 were found as superior genotype showing 13.79 MT and 13.38 MT leaf yield/ha/year which is under popularization.</p>	<p>Jorhat, Sivasagar, Golaghat, Lakhimpur, Dibrugarh, Tinsukia, Karbi Anglong, Sonitpur, Darrang, Kamrup, Goalpara, Udalguri, Kokrakjar of Assam and East and West Garo Hills districts of Meghalaya; Mukokchung and Dimapur district of Nagaland; Mehboob Nagar and East Godavari district of Andhra Pradesh, Fatehpur district of MP.</p>
<p>2. AUTHORIZED SILKWORM HYBRIDS DEVELOPED BY THE INSTITUTE</p> <p>ii. A high yielding eri silkworm breed C2 with higher fecundity and shell weight has been evolved to increase productivity and is recently submitted for authorization.</p>	<p>EastGaroHillsdistrictof Meghalaya, Jorhat and Golaghat district of Assam; Mehboob Nagar district of Andhra Pradesh, Fatehpur district of MP.</p>
<p>3. TECHNOLOGIES / PRACTICES DEVELOPED</p> <p>i. Clonal propagation of som through single leaf bud cutting: It is the easiest technique for mass multiplication of desired som variety. Best Season for leaf bud cutting is June-October. Survivability of cutting is obtained upto 70-86% with 70-88% rooting in S3 variety.</p>	<p>Kaliapani of Jorhat</p>
<p>ii. Intercropping of cash crops with som plantation: Suitable intercrops like Ginger (<i>Zingiber officinale</i> Rosc), Turmeric (<i>Curcuma longa</i> L.) and Colocasia [(<i>Colocasia esculenta</i> (L.))] can be raised in the effective interspaces of existing som plantation without any adverse affect on growth and leaf yield of som plants. Intercropping of Ginger, Turmeric and colocasia in one-hectare Som (<i>Persea bombycina</i> Kost) plantation can generate additional farm income by 47%, 55% and 85% over sole cropping of Som.</p>	<p>Jorhat, Golaghat and Darrang of Assam</p>
<p>iii. Control of Stem borer: Technology has been developed to control the infestation of stem borer by mechanical means</p>	<p>Kamrup, Jorhat, Golaghat, Goalpara, Sivasagar, Dibrugarh, Lakhimpur of Assam, Coochbehar</p>

<p>(Plastic wrapping on the main trunk and mud plastering of the tree trunk) up to 68 %, biological means (5-15% plant extract of neem, dhatura, titabahak and castor) upto 80% and chemical method (Plugging of holes with 1.5% nuvan) upto 95%. The technology is being popularized.</p>	<p>of West Bengal.</p>
<p>iv. Management of leaf blight disease of soalu (Phytoblighon) The symptoms of leaf blight are brown coloured, round to oval spots. It irregularly spread to the entire leaf. The disease can be controlled by application of 10% leaf extract of bougainvillea & Blitox - 50 @ 0.03% upto 85%. The technology is being popularized.</p>	<p>Jorhat and Sivasagar (Assam)</p>
<p>v. Chawki rearing Rearing of chawki worms of muga silkworms under the nylon net reduces young stages loss of silkworm and results in to 42-60% gain in cocoon production. The technology is being popularized.</p>	<p>Jorhat, Darrang, Lakhimpur, Sivasagar, Golaghat, Kamrup, Goalpara district of Assam; West Garo hills of Meghalaya</p>
<p>vi. Box type bamboo moutage for mounting of mature worms In addition to the traditional 'Jali' (dry leaf moutage) for spinning of muga cocoons, a box type moutage has been fabricated for cocooning of muga silkworm. Box type bamboo moutage require less manpower (save 60% labour) and space (reduce 90% space), produce superior quality cocoons compared to cocoons formed in Jali. Moreover, harvesting of cocoons from the box is easy. The box can be used for several times.</p>	<p>Jorhat, Darrang, Lakhimpur, Sivasagar, Golaghat, Kamrup, Goalpara district of Assam; West Garo hills of Meghalaya; Coochbehar of West Bengal</p>
<p>vii. Biological control of uzi fly Two biological control agents (hyper-parasitoid of uzi fly), viz. E. phillipinensis and Nesolynx thymus have been identified and recommended for controlling uzi fly infestation. Continuous release of these agents in a particular area can combat fly population and thereby saving muga silkworm crops to a considerable extent through more than 80% reduction in uzi infestation.</p>	<p>Jorhat, Sivasagar, Golaghat, Kamrup, Goalpara, Dibrugarh district of Assam; West Garo hills of Meghalaya, Coochbehar of West Bengal</p>
<p>viii. Technology for detection of Pebrine disease Technology for detection of pebrine spore by mother moth examination has been developed and the technology has been trained to the farmers. The technology is being popularized.</p>	<p>Jorhat, Sivasagar, Golaghat, Dibrugarh, Kamrup, Goalpara district of Assam; West Garo hills of Meghalaya, Coochbehar of West Bengal</p>
<p>ix. Management of muscardine disease An anti-muscardine formulation has been developed for control of Muscardine disease which causes heavy loss during winter muga seed crops. Application of 0.1% "Lahdoi", a chemical formulation ensures 40-70% ERR against 93-100% mortality of worms due to the disease. The formulation is sprayed on the food plants 7 days prior to brushing and transfer of silkworm. The second spraying is done at 15 days</p>	<p>Jorhat, Darrang, Lakhimpur, Sivasagar, Golaghat, Kamrup, Goalpara, Dibrugarh, Kokrajhar district of Assam; West Garo hills of Meghalaya; Coochbehar of West Bengal</p>

after 1 st application. The technology is being popularized.	
x. Package of practices for castor cultivation A non-bloomy red variety of castor (NBR-1) is recommended for eri silkworm rearing. For sowing of seeds, pits of 20x25x25cm size were prepared maintaining 1x1m spacing. Chemical fertilizer NPK @ 60:40:20 kg/hectare has been applied as 1st dose of fertilizer as basal dose at pit and 2nd dose 30 kg nitrogen/ha had applied after attaining the age 3 of three months. FYM 10MT/ha were recommended package for annual castor plantation sites and applied locally in each plant by ring method. The technology is being popularized in the farmer's field.	Jorhat, Sivasagar, Golaghat, Lakhimpur, Dibrugarh, Tinsukia, Karbi Anglong, Sonitpur, Darrang, Kamrup, Goalpara, Udalguri, Kokrakjar of Assam and East and West Garo Hills districts of Meghalaya; Mukokchung and Dimapur district of Nagaland; Mehboob Nagar and East Godavari district of Andhra Pradesh, Fatehpur district of MP.
xi. Package of practices for kesseru cultivation 25-35 cm tall healthy kesseru seedling should be transplanted to the pits (30x30x30cm size) prepared at 2m x 2m m spacing in plains and 3mx3m in hills. Seedling should be planted during August to September. FYM @ 0.5 cft per plant and NPK @ 150:75:25 kg/ha/year should be applied for better growth and leaf yield of plants. FYM should be applied once a year before monsoon and NPK in 2 equal split doses during April and September. Plants should be pollarded at a height of 1.75 m at the age of 5 years. The technology is being popularized.	Jorhat, Sivasagar, Lakhimpur, Dibrugarh, Tinsukia, Karbi Anglong, Golaghat, Sonitpur, Darrang, Kamrup, Goalpara, Udalguri, Kokrakjar of Assam and East and West Garo Hills districts of Meghalaya; Mukokchung and Dimapur district of Nagaland.
xii. Intercropping of cash crops with kesseru plantation Intercropping of Ginger (<i>Zingiber officinale</i> Rosc), Turmeric (<i>Curcuma longa</i> L.) and Colocasia (<i>Colocasia esculenta</i> (L.) in one hectare Kesseru (<i>Heteropanax fragrans</i> Seem) plantation can enhance farm income by 58%, 74% and 204% over sole cropping of Kesseru. The technology is being popularized.	Jorhat, Golaghat, Darrang of Assam
xiii. Platform rearing technology of eri silkworm Platform rearing consists of 3 nos. platforms each of 1m x 2m size made up of bamboo strips with sieve size of 1 sq.cm. Maximum of 1200 eri silkworms at 5th instars can be reared in each platform to accommodate total 7200 silkworms by brushing 25-30 dlfs. The technology is in the farmers field.	Jorhat, Sivasagar, Lakhimpur, Karbi Anglong, Golaghat, Darrang, Goalpara, Udalguri, Kokrakjar of Assam and East and West Garo Hills districts of Meghalaya; Mukokchung and Dimapur district of Nagaland.
xiv. Bamboo strip type moutage for cocooning A simple bamboo strip type moutage has been developed for cocooning of eri silkworm. In this moutage, good cocoon formation is 98.9% against 97.43% in conventional jali system. Moreover, shell weight is 0.52g as compared to 0.40 g in jali.	East and West Garo Hills districts of Meghalaya
xv. Organic manure based farming system for muga host plant A popular organic manuring plant Dhaincha	Jorhat, Golaghat, Sivasagar of Assam; West Garo Hills districts of

<p>(<i>Sesbania rostrata</i>) with 5 MT FYM and 1 MT vermicompost has been utilized for manuring of 1 hectare Som plantation. Adoption of this system registered leaf yield (16.83 MT/ha) of Som which is at par with recommended doses of inorganic fertilizer (N:P:K 150:50:50 kg/ha) without affecting quality of leaves. This is also a cost effective technology with a cost benefit ratio of 1: 1.63. The technology is being popularized.</p>	<p>Meghalaya.</p>
<p>TECHNOLOGIES IN POST COCOON SECTOR xvi. BANI- a muga weft reeling machine A reeling machine named as “BANI” has been designed for weft Muga yarn reeling. BANI is a motor cum pedal operated, single basin, 4 end capacity machine. BANI’ machine works on cottage basin principle and produces zero twist flat muga yarn suitable for weft in weaving. It can be operated by a single person in sitting posture and productivity is more than double than Bhir (120-140 g/day) against 80-100 g by two persons. The cost of the machine is Rs.14,500/- (excluding transportation). The machine can also be used for mulberry cocoon reeling.</p>	<p>Jorhat, Sivasagar, Lakhimpur, Dhemaji, Golaghat, Goalpara, Nagaon, Kamrup, Dibrugarh, Udalguri of Assam</p>
<p>xvii. Low Cost Muga Cocoon Drying chamber This machine was fabricated for stifling and drying of Muga cocoons using locally available fuels like firewood, dry leaves etc. Muga cocoon dryer works on hot air drying principle and its capacity is 8000 number of muga cocoons at a time. Approx. 40,000 numbers of cocoons can be stifled and dried uniformly in 8-9 hours without loss of yarn quality. This is very useful in areas where electric power is not available for drying of cocoons. Silk recovery and productivity increases from the cocoons stifled and dried by this method. Cocoons dried in the dryer are suitable for longer storage and is technologically better than sun drying and smoke stifling. The cost of the dryer is around Rs. 28,000/.</p>	<p>Jorhat, Sivasagar, Lakhimpur, Dhemaji, Golaghat, Goalpara, Nagaon, Kamrup, Dibrugarh, Udalguri of Assam</p>
<p>xviii. Muga silk plus - an effective cooking chemical for muga cocoon A chemical formulation has been developed for cooking muga cocoon which can enhance the muga silk recovery up to 55%, against 40- 48% silk recovery in traditional khar and soda cooking method. This low cost chemical (Rs. 30/ per 500 gm) is soluble in water. Hence, the cooking process is simple. The quality of reeled yarn is also improved by this chemical.</p>	<p>Jorhat, Sivasagar, Lakhimpur, Dhemaji, Golaghat, Goalpara, Nagaon, Kamrup, Dibrugarh, Udalguri of Assam</p>

Besides these, all the technologies developed by the institute are being popularized through Cluster Promotion Programmes and Beneficiary Empowerment Programmes under CDP and regular extension activities of the institute.