

C.S.G.R.C.



के.रे.ज.सं.के.

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निदेशक के मेज से

पौधों, जानवरों या सूक्ष्मजीवों की वंशानुगत आनुवंशिक संसाधन, मानवता के भविष्य की पीढ़ियों के लिए मूल्यवान संसाधन हैं। रेशम उत्पादन की कला को सेरिकल्चर कहते हैं इसमें मुख्य शहतूत की खेती, रेशमकीट पालन और कोसाओ से रेशम प्राप्त करने की गतिविधियां शामिल हैं।



जननद्रव्य संरक्षण के लिए विशेष सरकारी संस्था की स्थापना करने से पहले, संरक्षण की गतिविधियां, केन्द्रीय रेशम उत्पादन अनुसंधान एवं प्रशिक्षण संस्थान, मैसूर, बरहामपुर, पम्पोर और क्षेत्रीय रेशम उत्पादन अनुसंधान केन्द्र जैसे जम्मू, देहरादून, कलिम्पोंग और कुन्नूर में किए जा रहे थे। आई एस ओ 9001: 2008 द्वारा मान्यता प्राप्त "केन्द्रीय रेशम जननद्रव्य संसाधन केन्द्र" (के. रे. ज. सं. के.) की स्थापना 1992 में होसुर में होने के बाद से यह केन्द्र रेशम जननद्रव्य राष्ट्रीय भंडार का आधार संग्रहालय के रूप में जाना जाता है, यह केन्द्र, उपरोक्त केन्द्रों तथा विभिन्न विश्वविद्यालयों के शोध से उत्पादित, समय समय पर प्राप्त रेशमकीट जननद्रव्यों के संसाधनों का संरक्षण, रखरखाव और उपयोग के प्रति जागरूक है। यह केन्द्र शहतूत और रेशमकीट जननद्रव्य से संबंधित सभी गतिविधियों की योजना एवं समन्वय के लिए राष्ट्रीय बुनियादी केंद्र है।

के. रे. ज. सं. के. होसुर में 1269 शहतूत पेड़ के जातियां (accessions) एक्स - सीटू शहतूत जीन बैंक क्षेत्र में संरक्षित हैं, इन्हें सर्वेक्षण और अन्वेषण यात्रा में इकट्ठा कर के पौध-शाला में बड़ा कर फिर रोपण किया गया है। इन पेड़ों को बचाने के लिए समय समय पर सभी कृषि संबंधी कार्य, सिंचाई, खाद दिये जाते हैं। इन पेड़ों के लक्षणों का दस्तावेज़ रखा जाता है। यहां 81 बहुप्रज्ञ, 20 उत्परिवर्ती तथा 365 द्विप्रज्ञ रेशमकीट जातियां रेशमकीट जीन बैंक में संरक्षित हैं जिनका समय समय पर पालन कर उनके गुणों के अनुसार लक्षणों का परीक्षण कर अंडे तैयार करते हैं और उनकी वंशानुगत आनुवंशिक संसाधन का संरक्षण किया जाता है। यहां के कार्यरत वैज्ञानिक वर्ष में अनुकूल मौसम के दौरान पाँच बार बहुप्रज्ञ, 2 बार उत्परिवर्ती तथा एक बार द्विप्रज्ञ रेशमकीटों का पालन करते हैं और दस्तावेज़ रखते हैं। यहां विकसित सूचना प्रणाली तैयार की गई है जिसमें आसानी से पुनर्प्राप्ति की सुविधा एवं किसी भी नए रेशमकीट या शहतूत की जाती को जमा करने के लिए पासपोर्ट डेटा, संग्रह डेटा, लक्षण वर्णन/ विशेषीकरण डेटा, मूल्यांकन डेटा, संरक्षण, इसके रखरखाव की सूचना, प्रति फसल चक्र का रेशमकीट पालन का दस्तावेज़, उनका विश्लेषण, सूचीकरण आदि शामिल हैं यह जन साधारण की सुविधा के लिए उनके सभी प्रश्नों के उत्तर के लिए सुविधा भी प्रदान करती है। इस तरह यह केन्द्र अपने जीन बैंक में जननद्रव्य संसाधनों के संरक्षण में तथा उनके पासपोर्ट डेटा तैयार करने में राष्ट्रीय परिप्रेक्ष्य के बराबर सफल रहा है।

" आमंत्रित "

नव रेशमकीट तथा शहतूत जननद्रव्य का पंजीकरण

विभिन्न संस्थाओं के तहत विकसित नव रेशमकीट / शुद्ध

शहतूत को बौद्धिक संपदा अधिकार की रक्षा के लिए

के रे ज सं के में जननद्रव्य के पंजीकरण हेतु आमंत्रित किया है।

From Director's Desk

Hereditary genetic resources of plants, animals or microorganisms are of value as a resource for future generations of humanity. Further, the art of silk production is called sericulture that comprises mulberry cultivation, silkworm rearing and post cocoon activities leading to silk yarn production. Prior to establishment of exclusive centre for sericultural germplasm, the conservation activities were carried out at CSRTI, Mysore, Berhampore, Pampore and RSRS, Jammu, Dehradun, Kalimpong and Coonoor. After establishment of CSGRC at Hosur, silkworm germplasm resources were self-possessed periodically from these institutes and universities as base collection in the National Repository for further conservation, maintenance and utilization. CSGRC, Hosur is the National Nodal centre for planning and coordinating all activities relating to mulberry and silkworm germplasm in India.

CSGRC, Hosur has conserved in the *ex-situ* mulberry field gene bank 1269 mulberry accessions which include accessions collected through survey and exploration trip conducted and saplings rose in nursery. Silkworm GRs conserved and maintained in silkworm gene bank includes 81 multivoltine, 20 mutant and 365 bivoltine silkworm accessions. The silkworm GRs are maintained in 5 rearing cycle per year for multivoltines and 2 rearing for mutants, whereas, bivoltine accessions are multiplied once in a year during favorable season. The information system developed maintains passport data, collection data, characterization data, evaluation data and conservation information which facilitate maintenance of crop-wise data, analysis, listing and easy retrieval with facility to multiple queries. The Centre is succeeding in preserving germplasm resources in the gene bank for national perspective on par with the passport data.

"INVITED"

REGISTRATION OF NEW SILKWORM AND MULBERRY GERmplasm

New silkworm / mulberry pure breeds developed under different institutions are invited for registration of germplasm at CSGRC, Hosur to protect Intellectual Property Rights.

Silkworm GRs supply program

CSGRC, Hosur is conserving 464 silkworm genetic resources, which includes 79 Multivoltine (indigenous-69 & exotic-10) and 365 Bivoltine (indigenous-201 & exotic-160) and 20 mutants (exotic) collected from 9 states of India and 14 other countries across the world. The purpose of conservation centre is to preserve the silkworm genetic resources from extinction and to maintain as per the passport data true to its breed characters. During the process of conservation the silkworm genetic resources are thoroughly characterized by following standard morphological characters, evaluated for productive, reproductive, post cocoon characters and the data is maintained in database. To promote utilization of these genetic resources conserved at CSGRC, its Sericultural Germplasm Supply Committee has authorized 17 multivoltine and 15 bivoltine accessions for supply to the indenters. Many Universities, Research Institutes, Breeding Institutes of CSB and other State Sericultural Research Institutes are clients availing this facility. These Institutions utilized the germplasm materials for sericultural research for promoting PG research and evaluation by using as bio-chemical and molecular tools, evaluation, breeding resource materials and also for race maintenance.

Germplasm supplied

Proforma for indent of germplasm and feed back formats are uploaded in the website of CSGRC www.silkgermplasm.com for the needy units. Details of silkworm GRs indented vis-à-vis supplied are as under.

Frequently supplied Bivoltine Germplasm

#	Accession No.	Accession	No. of times
1	BBI-0044	NB4D2	91
2	BBI-0290	CSR-2	75
3	BBE-0187	CSGRC-5	44
4	BBE-0266	J2P	44
5	BBI-0084	CA-2	44
6	BBI-0095	Kalimpong-A	42
7	BBE-0197	A	40
8	BBE-0183	CSGRC-1	40
9	BBI-0081	NB-18	39
10	BBE-0222	JC2M	35

Frequently supplied Multivoltine Germplasm

#	Accession No.	Accession	No. of times
1	BMI-0001	PM	100
2	BMI-0017	Nistari	70
3	BMI-0016	G	41
4	BMI-0014	OS-616	39
5	BME-0005	C.Nichi	39
6	BMI-0008	Kolar Gold	39
7	BMI-0006	Hosa Mysore	37
8	BMI-0011	P2D1	35
9	BMI-0007	Mysore Princess	32
10	BMI-0009	Kollegal Jawan	31

Indenters of silkworm germplasm

Details of frequent indenters of silkworm germplasm resources are as detailed below.

#	Name of the Institutions	No. of indents
1	Karnataka University, Dharwad	38
2	TNAU, Coimbatore	27
3	SBRL, Bangalore	26
4	RSRS, Sahaspur	18
5	CSR & TI, Mysore	18
6	CSR & TI, Berhampore	17
7	RSRS, Jammu	16
8	Marathwada Agrl. University, Parbhani	15
9	CISR, Jorhat	13
10	RSRS, Kalimpong	12
11	North Eastern Hill University, Shillong	11
12	Sher-E-Kashmir University of Agricultural Sciences and Technology, Srinagar	11

Institutes with more accessions supplied

List of the Institutes indented for more number of accessions and supplied by CSGRC are as under.

#	Name of the Institutions	No. of Accessions supplied (with repeat supply)
1	SBRL, Bangalore	322
2	Tamil Nadu Agricultural University, Coimbatore	284
3	Marathwada Agrl. University, Parbhani	195
4	RSRS, Sahaspur	172
5	Karnataka University, Dharwad	162
6	RSRS, Jammu	155
7	CSR & TI, Berhampore	145
8	CSR & TI, Mysore	136
9	RSRS, Kalimpong	128
10	CISR Jorhat	118

Feedback on utilization

The centre initiated efforts to consolidate feedback on utilization of the silkworm germplasm supplied to different Institutions by providing format on the guidelines of NBPGR. Feedback information in the prescribed format from 29 indenters (83%) obtained. The germplasm supplied were received in good condition by indenters and used for Research purpose. 21 Research papers in mulberry and 20 in silkworm are published in national and international journals. Out of 41 published Research papers, 12 are in international and 29 in national journals. CSGRC, Hosur has been acknowledged in all the research papers. In addition to this the nineteen indenters procured the germplasm resources mainly for research (55 %) followed by 7 indenters for academic (18%) and six indenters for breeding (18%) and three indenters for conservation (9 %) purposes.

N. Balachandran, S.Sekar, P.B.V.Shankar

Registration of seri-genetic resources

In order to protect the IPR rights of the scientists and Institutes, which develops the mulberry varieties and silkworm breeds, give due credit and identity to the scientist involved. CSGRC is bestowed with the responsibility of registration of the seri-genetic resources. The Institute has registered 46 varieties of mulberry and other host plants for the breeders and Institutes which includes 06 mulberry varieties from CSRTI, Berhampore, 08 Muga host plants Som and Soalu from CMERTI, Lahdoigarh 3 mulberry varieties from KSSRDI, 23 mulberry varieties from CSRTI, Mysore and 6 mulberry accessions from CSGRC. Similarly, in case of silkworm GRs, 43 silkworm breeds from CSRTI, Berhampore (5), APSSRDI, Hindupur (5), KSSRDI, Bangalore (14), CSRTI, Mysore (16) and SSTL, Kodathi (1) have been registered.

Host plants registered with CSRGC, Hosur

Year	Name of the Institute	Host Plant
2002	CSRTI, Berhampore	<i>Mulberry Varieties (06)</i> S-1, S1635, TR-10, BC259, S799, C1730
	CMERTI, Lahdoigarh	<i>Muga Food Plants (08)</i> SOM MT 01- 08
2004	KSSRDI, Thalaghattapura	<i>Mulberry Varieties (03)</i> VISWA,Vishala,TG
2005	CSRTI, Mysore	Mulberry varieties (23) S-30, S-36, S-41, S-54, V-1, S-13, S-34, RFS-135, RFS-175, GN0-2, G-No-54, AR-11, AR-12, K2 X Kosen, RC-1, RC-2, K-2 Tetraploid, S-36Tetraploid, S-41Tetraploid, RFS-135 Tetraploid, V-1 Tetraploid, S-13 Tetraploid, S-34 Tetraploid.
2009	CSGRC, Hosur	Mulberry Accessions (06) Kanva 2 x Lamia Bay (MI-0608), Urgan 2 X Urgan -4(MI-0646), Doomarhalli x Lamia Bay (MI-0673), Baragarh-2 x Lamia Bay (MI-0828), Kajili x M.Serrata (MI-0832), Krishnaswami-2 x Lamia Bay (MI-833)

Silkworm breeds registered with CSRGC

Year	Name of the Institute	Silkworm Breeds
2002	CSRTI, Berhampore	<i>Silkworm Breeds 05</i> YB, SK-6, SK-3,SK-7,SK-4
2004	APSSRDI, Hindupur	<i>Silkworm Breeds 05</i> APM-1 (MV), APS-5, APS-4, APS-9, APS-8(BV)
	KSSRDI, Bangalore	<i>Silkworm Breeds 14</i> NP-2, NP-4, NP-5, KSO-2, KSO-3, HDO, HND, NK-1, NK-2, NK-3, DD-1, DD-2, DD-3 (BV), SLKSPM (MV)
	CSRTI, Mysore	<i>Silkworm Breeds 16</i> CSR-2, CSR-3,CSR-4,CSR-5,CSR-6,CSR-12,CSR-16,CSR-17,CSR-18,CSR-19(BV)MY1,P2D1,RD-1,BL-23,BL-24,BL-43(MV)
2009	KSSRDI, Bangalore	<i>Silkworm Breeds 02</i> MH-1 (MV), SLWu-8 (BV)
2012	SSTL, Kodathi	<i>Silkworm Breeds 01</i> PM (Mutant)

N. Balachandran

CO₂ and Climate Change

The amount of CO₂ in the atmosphere is 390 parts per million (ppm). It means that if you take a million random molecules of atmosphere, only 390 of them would be carbon dioxide, 0.04%. It is very minute amount compared to oxygen (78%) and nitrogen (21%) that make up most of the atmosphere, but important greenhouse gas that traps heat in the atmosphere. The global concentration of CO₂ in the atmosphere, the primary driver of climate change that was 314 ppm in 1958 has reached 400 ppm for the first time in recorded history, according to data from Mauna Lao Observatory in Hawaii. The rising is entirely human caused. Once CO₂ is added to the atmosphere, a large fraction of it stays there a long time, for centuries and it has very important implications for climate. The amount of CO₂ in the atmosphere does not change much from one location to another location for climate purposes. It varies with the seasons and it is high in cities, but CO₂ in atmosphere in Hosur is not very different from the amount of CO₂ in the atmosphere anywhere else for climate purpose. CO₂ enters the atmosphere through burning fossil fuels (coal, natural gas and oil), solid waste, trees and wood products, and also as a result of certain chemical reactions (e.g., manufacture of cement). CO₂ is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

Jhansilakshmi

Degumming proteinous sericin from silk

At the end of larval period, silkworm spins a shell by extruding silk bave for protection from adverse environment. The silk bave composing two protein substances viz., fibroin and sericin also contains small quantity of fatty, waxy, coloring and mineral matters (2-3%). Fibroin, axis of silk thread, represents 70-80% of its weight, whereas, sericin, enfold fibroin in a common sheet, accounts for 20-30% of the weight. The process of removal of gummy proteinous material, sericin, from the silk is commonly called degumming or boiling-off. The degumming is considered as one of the important economic traits during the course of silkworm breeding. As the loss of sericin varies with breeds / hybrids, it is essential to analyze the ratio in detail with reference to cocoon shell itself, as it is the basic raw material for the raw silk to estimate silk productivity of a breed / hybrid. Degumming of silk will enhance total raw silk production as well as qualitative merit of silk and internationally gradable silk fabric with increased foreign exchange.

Veeranna Gowda and S. Nivedita

Implementation of ISO

CSGRC, Hosur achieved implementation of ISO 9001:2008 certification on Quality Management System during 2014.



Silkworm cocoon uniformity

Besides productivity, it is an implicit that qualitative merit of silk is important to make sericulture a viable enterprise. Among the various parameters that determine the quality of silk fiber denier variation, neatness and purity are very important. Assessing qualitative superiority primarily depends on uniformity in cocoon shape and size. The cocoons shape can be roughly classified into groups according to the ancestry strains and phenotypic variations determining the spinning behavior of the larva and in most of the breeds the cocoon shape is stable showing less variability. Cocoon shape uniformity is helpful in finding out the genetic relationship among the silkworm breeds/hybrids and influences productivity in silk reeling and raw silk quality. Among various commercial characteristics of importance are shell thickness, compactness and wrinkles on cocoons, reelability, filament length and size. Generally, oval shaped cocoons have uniform shell thickness throughout the cocoon layers and are preferred as they facilitate uniform cooking and easy unwinding of the silk filaments during reeling. Whereas, dumb-bell shaped cocoons have uneven shell thickness on both the sides of the cocoon shell, whereas, middle portion of the shell will be thin which lead to uneven cooking affecting the reeling performance and raw silk.

Veeranna Gowda & M. Muthulakshmi

Women in sericulture

No wonder women are playing important role in many activities of the sericulture industry which has opened up phenomenal employment avenues and helped women to become important group of human resources. While providing sustainable income and employment opportunities to the rural poor, who are the main practitioners, silk production activity fetches annual exporting earnings of more than US\$600 million. Many studies indicated that, in many villages of South India, women are playing an important role in 60% of silkworm activities including pre-cocoon, cocoon and post-cocoon sectors. Sericulture is an important means of generating employment, income enhancement crop. In all activities, women have shown their mettle and perform their tasks most skillfully besides involving in promotion and improvement of their sericulture activity. This object will endeavor to show how sericulture, an agro-based activity, has brought about overall development of self-employment and improved economy through sericulture.

Veeranna Gowda

International Women's Day

International Women's Day - 2015 was celebrated on 9.3.2015 to create awareness on "Women's Empowerment" issues to effect positive change. Dr. Kanika Trivedy, Director inaugurated the function and women scientists of the centre highlighted various issues in their presentations. The message of the Women's Day was 'women have to be honored, respected and valued besides treating on par with men'.

Anuradha H Jingade and S. Nivedita



Hindi Workshop & Pakwada

The Centre organized 4 Hindi workshops during the year 2014-15 for effective implementation of Hindi as official language which were actively participated by Scientists and staff to facilitate for effective and simple ways to increase use of Hindi in day to day official works. Hindi Day and Hindi Fortnight was celebrated from 15.09.2014 to 29.09.2014 with co-ordination of the officers/staff as cordial day of Indian Languages.

Superannuation



CSGRC, Hosur bid farewell to **Dr. S. R. Ramesh, Scientist-D** who retired from his services on 31st December 2014.

Shri. Prakasha, Technical Assistant of this Centre also retired from his duties on 31st December 2014.



Dr. Kanika Trivedy took over charge as Director, CSGRC, Hosur from 28.02.2015

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