ISBN : 978-81-970698-7-1

वस्त्र मंत्रालय
MINISTRY OF
TEXTILES
सत्यमेव जयते

COMPENDIUM OF CONCLUDED RESEARCH PROJECTS

1964-2025

के.रे.बो.-केन्द्रीय तसर अनुसंधान एवं प्रशिक्षण संस्थान
(केन्द्रीय रेशम बोर्ड, वस्त्र मंत्रालय, भारत सरकार)
पिस्का-नगड़ी, राँची-835 303, झारखण्ड

CSB-CENTRAL TASAR RESEARCH & TRAINING INSTITUTE
(Central Silk Board, Ministry of Textiles, Govt. of India)
Piska-Nagri, Ranchi – 835303, Jharkhand

Display of Tasar based Tableau during Republic Day Parade at New Delhi on 26-01-2024

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Published by

Director, CSB- Central Tasar Research and Training Institute

(Central Silk Board, Ministry of Textiles, Govt. of India) Jharkhand, India

Printer: Anapurna Press and Process, 5, Main Road, Ranchi- 834 001

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PREFACE

It is with great pride and an immense satisfaction that I present the *Compendium of Concluded Projects (1964–2025)*, a comprehensive account of the research and developmental milestones achieved by the CSB-Central Tasar Research and Training Institute (CSB-CTRTI), Ranchi, over the past 61 years. This compendium is much more than a simple record—it stands as a tribute to the unwavering dedication and tireless efforts of the Institute's scientists, technical teams, and farm workers across its network. The role of scientific societies within the tasar sector has been pivotal in sustaining research momentum and driving forward the progress of science and technology in tasar culture. Over the decades, CSB-CTRTI, Ranchi, has pioneered a range of technological advancements across key areas including host plant production, protection, and improvement; tasar silkworm production, protection, and improvement; post-cocoon technology; and the utilization of by-products. These innovations have significantly enhanced the quality and yield of host plant foliage, increased tasar cocoon production, and improved post-cocoon processes—benefitting stakeholders and raising farmer incomes in meaningful ways.

I take this opportunity to extend my heartfelt gratitude to the Member Secretary & CEO of the Central Silk Board for indispensable guidance, support, and encouragement in bringing this compendium to life. My deepest appreciation goes to Team CSB-CTRTI, Ranchi, whose meticulous work has ensured that this compilation thoroughly reflects the Institute's journey of research and innovation since its inception. I am confident that the *Compendium of Concluded Projects (1964–2025)* will serve as an invaluable resource and reference for researchers, planners, students, and all stakeholders in the tasar silk industry, inspiring continued growth and excellence in this field.

(Dr. N.B. Chowdary)
Director

The CSB-Central Tasar Research and Training Institute (CTRTI) is a premier institute dedicated to the research and development (R&D) needs of both tropical and temperate (oak) tasar sectors. Established in 1964 in Ranchi, the institute operates under the administrative control of the Central Silk Board, Ministry of Textiles, Government of India, with the objective of fostering the overall development of the Tasar Silk Industry in the country. CTRTI is actively engaged in developing innovative technologies through research and development (R&D) and ensuring their effective transfer to the field. The ultimate goal is to enhance the socio-economic well-being of stakeholders involved in tasar culture. In its initial years, the institute did not conduct coded projects, as it was in its formative stage. However, basic experiments were undertaken to generate fundamental information about tasar culture. The outcomes of concluded R&D projects were documented based on available reports published in the Annual Report of CSB-CTRTI, Ranchi.

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
1	Survey of tasar ecoraces of India	1964-65	Qualitative and reeling analysis of tasar crops raised on Sal, Arjun and Asan plants.	The nature grown cocoons on Sal were found to be significantly superior than cocoons raised on *Terminalia* (Asan)	-
2	Evolution of new Races	1964-66	To study the evaluation of different ecorace in tasar silkworm	Apart from the common green silkworm larvae, yellow, blue and almond body mutant were collected and maintained.	-
3	Hybridization studies	1965-69	Exploitation of systematic hybridization between indigenous Antheraea species to evolve suitable combination of suitable interest	Interspecific hybridization between *Antheraea pernyi* (Chinese) and Antheraea *roylei* (Indian) indicated that either these species have a common ancestor or one has originated from the other and reproductively isolated since centuries due to geographical barriers.	-
4	Studies on inbreeding	1965-70	To evolve homozygous lines for future hybridization programme	It was observed that inbreeding in *A. mylitta* was accompanied with depression in shell wt. and pupal wt. in majority of the inbred line progenies. Different inbred lines showed different degree of depression with regard to shell wt. and pupal wt.	-
5	Tasar Silkworm Diseases and their Symptomologies	1965	To study the diseases of tasar silkworm and their symptomologies.	Viral disease (Grasserie) and Bacterial disease (Flacherie) and few cases of fungal infection (Muscardine) were detected in tasar silkworm. No case of sporozoan disease (Pebrine) was observed. Data revealed that the incidence of mortality due to diseases goes on increasing with the advance of age and the maximum during the fifth instar.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
6	Pests of Tasar silkworm	1965	Studies on Pests of tasar silkworm	Canthecona bug, Reduviid bug, Mantis, Red ants, Wasps, Birds, Lizzards & Spiders were identified as pests of tasar silkworm. Life cycles of Techinid fly (*Mascicera grandis*) and Ichneumon fly (*Xanthopimpla predator*) were studied.	-
7	Studies on egg disinfectants	1965	To study the comparative efficiency of different egg disinfectants	Doses of four disinfectants viz., Dettol (2%), Formalin, (2%) Mercuric chloride (0.2%) and cresol (2%) were worked out.	-
8	Studies on the sporozoan disease of tasar silkworm *A. Mylitta* D. caused by Nosema species.	1968-70	To know the symptomology of the disease and to assess the extent of crop damage.	Surveys were conducted in Chaibasa, Rajkharsawan, hatgamaria, Tatanagar and Khuntipani to assess the extent of crop damage. Except Tatanagar, 75-100% rearings were contaminated. Initial measures were suggested to the farmers for controlling further spread of the disease.	-
9	Studies on pruning of food plants	1965-66	To find out a suitable pruning time for tasar food plants	Plants pruned during February-March produced maximum no. of new shoots which leads to increased leaf yield.	-
10	Vegetative propagation of food plants	1965-70	To assess the possibility of propagating food plants of tasar silkworm vegetatively.	*T. arjuna* showed 51% survival in propagation through cutting whereas survival through air layering was found to be 90.11%. *Shorea robusta* did not responded to either of the techniques.	-
11	Foliar constituents of food plants of tasar silkworm *Antheraea mylitta* D.	1966-69	To analyze the foliar constituents of six important food plants of *A. mylitta.*	Foliar constituents of six important food plants of *A. mylitta* viz., Sal, Arjun, Asan, Sidha, Ber and Jamun were analyzed.	-
12	Studies on Sericin content of a cocoon	1965	To study on Sericin content in tasar cocoons.	Five races of *A. mylitta* viz., Modal, Daba, Sarihan, Moonga & Raily and *A. roylei* were studied. The hydrosoluble content was estimated as 19.7%, 21.6%, 20.5%, 19.9%, 18.1% and 26.7% respectively.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
13	Designing and fabrication of prototype of improved reeling machine	1965	To design a suitable prototype for manufacture of the improved type of reeling machine.	A prototype of the improve type of reeling machine with only two spindle was designed and fabricated for reeling of tasar cocoons.	-
14	Diallel cross analysis of quantitative characters of tasar silkworm races	1968-70	To study the performance of Diallel Vs, Triallel crosses with the races of *A. mylitta.*	The performance of the races, viz., Yellow, Blue, Almond & Green under diallel cross system was tested during 1968-69. These races were further tested for their hetrosis, combining ability as also their performance under the Triallel cross system.	-
15	Free amino acids in larval & pupal haemolymph	1969-70	To study the free amino acid composition of larval & pupal haemolymph of *A. mylitta.*	Free amino acids in larval & pupal haemolymph from non-diapausing progeny of *A. mylitta.*were studied. Fifteen amino acids namely Cysteic Acid, Aspartic Acid, Lysine, Serine, Glycine, α-Alanine, Proline, Tyrosine, Histidine, Orginine, Methionine Sulphoxide, Valine, Leucine/ Isoleucine, β-Alanine and Asparagines were detected in both larval & pupal haemolymph. In addition, in the pupal haemolymph Arginine, Cystine and Glutamic acid were also found.	-
16	Studies on liquid secreted by moths	1969-70	Collection of the liquid secreted by the moths of *A. mylitta* at the time of escaping from the cocoon and its effect on softening of the cocoons	The liquid discharged by moths varied from 0.2- 0.6 ml. The collected liquid was colourless, transparent and changed into yellowish brown colour when it was exposed to air for 3-4 hours. The cocoons treated with 10% solution of the liquid were fully reelable while those treated with with 5% solution were partially reelable. Cocoons treated with 1% solution were not reelable.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
17	Isolation and characterization of proteolytic enzyme	1970	Isolation and characterization of proteolytic enzyme from tasar moth, *A. mylitta*	The pure enzyme was collected by removing the facial cuticle of the pupae, few hours prior to spontaneous adult emergence. Crystals of pure enzyme were collected from the galeae of the pupae. Disc gel acrylamide chromatography reveled that the enzyme has exactly the same electrophoretic mobility as the enzyme from *A. polyphemus.* The molecular weights of *A. mylitta* and *A. polyphemus* were also found to be nearly same.	-
18	Termination of pupal diapauses of *A.mylitta* D.	1972-75	Termination of pupal diapauses through phytohormones	Basic information of termination of pupal diapauses through phytohormones has been generated	M.S. Jolly, M.M. Ahsan and S.P. Sinha.
19	Studies on rearing techniques.	1972-75	New technique of rearing of *A.mylitta* D.	The technique was informative	M.S. Jolly, M.M. Ahsan and U.P Griyaghey.
20	Egg incubation studies.	1972-75	Effect of ascending /descending temperatures on embryonic development	Study generated basic information on the effect of temperatures on embryonic development	M.M. Ahshan and U.P. Griyaghey.
21	Effect of rearing with different food plants.	1972-75	Comparative rearing performance with seven food plants Effect of interchange of food plants Utilization of Sal for commercial rearing	Study was Informative regarding the suitability of food plants	M.M. Ahsan and U.P. Griyaghey
22	Seed cocoon preservation studies	1972-75	Seed cocoon preservation studies	The study imparted information regarding cocoon preservation strategies	M.M. Ahsan
23	Cytological studies of *Antheraea* species.	1973-76	• Interspecific hybridization in *Antheraea* with special reference to *A. roylei* and *A.pernyi* • Cytological investigation in *A.frithii.*	Cytological studies of *Antheraea* species conducted generated basic information about strategies of hybridization between two species.	M.S. Jolly, B.R.R.P.Sinha and S.S. Sinha

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
24	Silkworm breeding studies.	1973-76	• Inbreeding studies on *A.mylitta* D. • Inbreeding study of new stocks of *A.mylitta* D	Inbreeding studies gave new insights towards generation of new stocks of *A.mylitta* D	M.S Jolly, S.S. Sinha and B. Rama Rao.
					S.S. Sinha and S.C. Sudan.
				Quantitative analysis of tasar crops in Bastar district was conducted.	M.S. Jolly
				Maintenance of germplasm bank was important for genes.	S.S. Sinha and A.K. Sengupta.
25	Hybridization studies.	1973-76	Combining ability in relation to triallel crossing system in inbreeding lines of *A.mylitta* D. Line X Tester analysis for quantitative characters Performance of single Vs. Double cross of *A.mylitta* D.	Basic hybrization study was conducted	M.S. Jolly & V.N. Bardaiyar.
26	Genetical studies	1973-76	• Studies on the inheritance of larval tubercle colour. • Inheritance of lateral shining spot.	Genetic inheritance was observed in insect.	M.S. Jolly and S. Prasad.
27		1973-76	Studies on inheritance of wing colour.		S. Prasad
28	Comparative protein biochemistry.	1973-76	Free amino acid composition of pupal haemolymph of *A.mylitta* D.	Amino acid composition was evaluated	M.S. Jolly, S.C. Agrawal and A.K. Sinha.
29	Studies on the sex attractants of silk moth.	1973-76	Studies on the sex attractants potentiality of moth of *A.mylitta D*.	Informative study on Sex attractants was conducted.	S.C. Agrawal.
30	Isolation and identification of phytohormones	1973-76	Isolation and identification of sex attractants from female moths of *A.mylitta* D.	Informative study on phytohormones were generated	S.C. Agrawal and N.D. Banerjee.

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
31	Studies on the nature of pigments in food plants: larvae and cocoons.	1973-76	Studies on the nature of pigments in different races of tasar silkworm. Nature of pigments in *A.mylitta* cocoons.	Pigments were studied in detail	S.C. Agrawal and N.D. Banerjee
32	Studies on by-products of tasar industry.	1973-76	Studies on the pupae oil of *A.mylitta* D. Amino acid composition of oil free pupae of *A.mylitta*	Pupae oil were extracted and studied its amino acid composition	S.C. Agrawal and A.K. Sinha
33	Studies on the disease of *A.mylitta* and their control measures.	1973-76	• Studies of egg surface sterilant against polyhedrosis virus on *A.mylitta* D.	Egg surface sterilant against polyhedrosis virus was explored.	S.K. Sen and U.P. Griyaghey
		37	• Effect of dry heat on pebrinised eggs and pupae.	Standerdization on Effect of dry heat on pebrinised eggs and pupae was carried out.	M.S. Jolly, S.K. Sen and Pradip Kumar
		38	• Screening of tasar races against pebrine disease	Basic study conducted	S.K. Sen and Pradip Kumar.
		39	• Effect of antibiotics in controlling bacterial disease of *A.mylitta.*	Effect of different antibiotics was observed	M.S. Jolly, S.K. Sen and N.N. Saxena
		40	• Incidence of pebrine infection in tasar rearing areas of Singbhum district.	Intensity of incidence of pebrine infection in tasar rearing areas of Singbhum district was observed	S.K. Sen and Paradip Kumar.
		41	• Studies on the mode of transmissions of polyhedrosis of *A.mylitta* D. • Development Of Resistance to Polyhedrosis in *A.mylitta.*	Mode of transmissions of polyhedrosis was explored and initiative to develop polyhedrosis resistance was conducted.	S.K. Sen
34	Studies on pest of *A.mylitta* and their control measures.	1973-76	• Attempt to control the fly pests in *A.mylitta*	Basic methods were adopted as an initiative to control pest	S.K. Sen and N.N. Saxena.

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
35	Studies on the sericigenous insects of genus *Antheraea.*	1973-76	• Developmental morphology of *A.mylitta* of Assam.	Developmental morphology of *A.mylitta* of Assam was studied.	V.N. Baraiyar and P.K.Mistri.
		44	• Developmental morphology of *A.polyphemus*	Developmental morphology was studied	S.S. Sinha and V.N. Baraiyar
		45	• Pattern of follicular imprints in the egg shell of species specific characters in *Antheraea.*	Pattern of follicular imprints in the egg shell of species specific characters in *Antheraea* were studied	M.S. Jolly and S.K. Sen.
36	Studies on reeling.	1973-76	• Studies on reeling of oak fed coccons	Preliminary reeling of oak fed coccons were studied	S.K. Chowdhary and S.S. Ghosh
37	Studies on technology of tasar fibres	1973-76	• Studies on tensile properties of different layers of *A.proylei* cocoons • Studies on the scouring loss of *A.proylei* cocoons. • Effect of photoperiod, air blast and water spraying on spinning of cocoons. • Studies on the effect of leaf imprints on the thickness of fibre.	Physical characterization of cocoon was conducted. Study on photoperiod on cocoon spinning was correlated. Moreover, correlation of leave imprints on this thickness of fibre.	
38	Indoor spinning of tasar silkworm and its effect on the physical characters of cocoons	1973-76	• Indoor spinning of tasar silkworm and its effect on the physical characters of cocoons	Physical characters of Indoor spinned cocoons were found to vary from the field spinned cocoons.	S.K. Chowdhary and S.S. Gosh
39	Studies on the primary and secondary food plants of *A. mylitta*	1973-76	• Raising of different types of plantation.	Different types of plantation were raised.	K.N. Singh.
		50	• Studies on the foliage nutrition of *terminalia arjuna.*	Preliminary study on the foliage nutrition of *Terminalia arjuna* was conducted.	B.S. Parathasarathy.
		51	• Effect of NPK combined with spacing, irrigation and cowdung manure on *T. tomentosa* seedlings.	This combination was effective	K.N. Singh.

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
40	Cytological studies on ***Antheraea*** species.	1973-76	• Cytological investigation of interspecific hybrids between *A.mylitta* &*A.frithii.* • Cytological investigation of interspecific hybrids between *A.pernyi* and *A.roylei*. • Cytological investigation of *Antheraea* species. • New method of selecting the material for cytological studies.	Cytological investigation of interspecific hybrids between *A.mylitta* &*A.frithii* and *A.pernyi* & *A.roylei* was a effective approach to confirm hybrids	M.S. Jolly, S.K. Sen & A.K.Sengupta.
41	Mutation studies.	1973-76	Effect of chemical mutagens on *A.mylitta* D.	Effect of chemical mutagens on *A.mylitta* D was found.	M.S Jolly, S.K.Sen & A.K.Sengupta.
		54	• Effect of centrifugation on Tasar silkworm eggs in inducing polyploidy	Mutagen was observed to cause mutation in *A.mylitta*	M.S. Jolly, A.K Sengupta & B. R. R. PD Sinha.
42	Inheritance studies.	1973-76	• Morphology and pattern of inheritance in interspecific hybrid (*A.roylei* Mr: *A.Pernyi* Guer). • Studies on the inheritance of larval tubercle colour in *A.mylitta.*	The effect of centrifugation on Tasar silkworm eggs in inducing polyploidy was not much effective	M.S.Jolly, S.K. Sen & B.R.R.PD.Sinha.
		56	• Studies on the inheritance of lateral shining spot (L.S.S) on the larval body of *A.mylitta*	Preliminary data was generated on the pattern of inheritance of lateral shining spot (L.S.S) on the larval body of *A.mylitta* .	M.S. Jolly & S. Prasad.
		57	Studies on the inheritance of wing colour in moths of *A.mylitta* D	Study generated information that colour wing is hereditary.	S. Prasad.
43	Studies on genetics variability, correlations path co-efficient analysis and discriminant function in some races of *A.mylitta*.	1973-76	Studies on genetics variability, correlations path co-efficient analysis and discriminant function in some races of *A.mylitta*.	Study was basic to establish a correlation amoung the races of *A.mylitta*	MS Jolly, A.K.Sengupta & S.K Sen.

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
44	Inbreeding studies.	1973-76	Inbreeding studies with Daba Inbreeding studies with Raily, Barharwa and Laria.	The study suggested inbreeding echanism need to standardized	M.S. Jolly, S.K. Sen & B. Rama Rao.
45	Fixation of new races.	1973-76	• Fixation on the basis of the colour of Larvae lateral shining spot and cocoon colour • Fixation on the basis of the colour larval body, tubercle and cocoon. • Fixation on the basis of the larval body and cocoon colour. • Fixation on the basis of larval, cocoon and female moth colour.	Study on fixation of new races was informative. Study on fixation of the colour larval body , tubercle was informative . Fixation on the basis of larval, cocoon and female moth colour. Was informative.	S.C. Sudan & S.Amarnath.
46	Maintenance of germplasm bank of the races of *A.mylitta* D	1973-76	Maintenance of germplasm bank of the races of *A.mylitta* D.	Germplasm bank of the races were maintained	A.K. Sengupta & S.K. Sen.
47	Line x tester analysis for some quantitative characters in *A.mylitta* D	1973-76	Line x tester analysis for some quantitative characters in *A.mylitta* D	Basic information was generated on Line x tester analysis of *A.mylitta* D	M.S. Jolly & V.N. Bardaiyar.
48	Termination of pupal diapauses of *A.mylitta* D.	1973-76	• Effect of rearing with different larval populations. • Comparative rearing performance of tasar silkworm on different food plants.	Impact on rearing with different larval populations and Comparative rearing performance of tasar silkworm on different food plants observed	M.S. Jolly, M.M Ahsan & S.R. Vishwakarma.

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
49	Effect of rearing *A.mylitta* Larvae with different food plants.	1973-76	• Rearing performance of tasar silkworm with inheritance of food plants. • Rearing performance of tasar silkworm with inheritance of food plants. • Exploitation of Sal for large scale rearing.	Study was iormative. Basic data was collected Basic data was collected.	M.M. Ahsan, M.S. Jolly & R.P. Khanna. MS Jolly, M M Ahsan & SR Vishwakarma.
50	Rearing performance of different days of egg laying.	1973-76	Rearing performance of different days of egg laying.	Basic data was collected	M.M. Ahsan, M.S. Jolly & R.P. Khanna.
51	Comparative protein biochemistry.	1973-76	Free amino acids in the haemolymph of healthy and diseased larvae of *A.mylitta* D.	Study on Free amino acids in the haemolymph of healthy and diseased larvae of *A.mylitta* D.was informative.	S.C Agarwal, MS Jolly & A.K Sinha.
52	Isolation and identification of phytohormones	1973-76	Isolation and identification of phytohormones	Basic data was collected.	S.C. Agarwal & MS Jolly.
53	Soil analysis of different tasar belts	1973-76	Soil analysis of different tasar belts	Basic data was collected.	
54	Studies on the nature of pigments in food plants, larvae and cocoons of *A.mylitta* D.	1973-76	Studies on the nature of pigments in different races of tasar silkworm	Study was informative.	S.C. Agarwal & N.D. Banerjee.
		70	Pigments in the haemolymph of *A.mylita* D Pupae	Basic data was collected.	S.C. Agarwal & A.K.Sinha.
55	Studies on the nature of sugars in tasar food plants-	1973-76	Nature of sugars in tasar food plants-	Study was informative.	

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
56	Studies on the diseases of *Antheraea mylitta* D.	1973-76	• Effect of heat on pebrinized eggs and pupae in controlling pebrine disease of tasar silkworm,*A.mylitta* D. • Incidence of pebrine infection in the tasar rearing areas of Singhbhum District-	Basic data was collected.	M.S. Jolly, U.P. Gariyaghey & P. Kumar. U.P. Griyaghey &M.S. Jolly.
		73	• Studies on the egg surface sterilants against polyhedrosis virus of *Antheraea mylitta* D. • Effect of Antibiotics in controlling bacterial disease of tasar silkwormA. mylitta D. • Mode of transmission of polyhedrosis in tasar silkworm.	Studies on the egg surface sterilants against polyhedrosis virus of *Antheraea mylitta* D was found informative Basic data was collected. Study was informative	U.P. Griyaghey, M.S. Jolly & N.N. Saxena.
57	Breeding of disease resistant races.	1973-76	• Screeing of tasar races against pebrine disease	Basic data was collected	U.P. Griyaghey, M.S. Jolly
58	Attempts to control the fly pest (Blepharipa zebina) of *A.mylitta* by Tugon baiths.	1973-76	Attempts to control the fly pest(Blepharipa zebina) of *A.mylitta* by Tugon baiths	Study was informative.	-
59	Studies on the grainage operations in tasar silkworm (*A.mylitta*).	1973-76	• Effect of photoperiod on coupling. • Effects of light exercise of male moths on coupling. • Effect of cool air blast on coupling	Basic data was collected. Study was informative.	M.M. Ahsan, M.S. Jolly & R.P. Khanna.
		77		Study on effect of crowding of moths on coupling was informative. Basic data was collected.	M.M. Ahsan, M.S. Jolly & S.R. Vishwakarna.

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
60	Studies on the optimum conditions for egg laying	1973-76	• Effect of light and darkness on egg laying.	Basic data was collected.	M.M. Ahsan, M.S. Jolly & S.R. Vishwakarma.
		79	• Effect of coupling duration on pre-oviposition periods, fecundity, fertity and frequency of unlaid eggs. • Studies on the behaviour of eggs laid by female moths of *A.mylitta* during different days.	Study on Effect of coupling duration on pre-oviposition periods, fecundity, fertity and frequency of unlaid eggs. Was found informative. Basic data was collected	M.M. Ahan, M.S.Jolly & R.P. Khanna
		80	• Effect of photoperiod and darkness on hatching.	Basic data was collected	M.M. Ahsan, M.S. Jolly & S.R. Vishwakarma.
61	Raising of economic plantation of *Terminalia arjuna* and *T.tomentosa.*	1973-76	• Raising of economic plantation of *Terminalia arjuna* and *T.tomentosa.*	Work was initiated.	M.G. Das, M.S. Jolly & M.S. Shergill
62	Effect of manures and fertilizers on tasar food plants.	1973-76	• Studies on foliar nutrition of nitrogen on *Terminalia arjuna.*	Basic data was collected.	M.S. Das, M.S. Jolly & B.S. Parthasarthy.
63	Studies on vegetative propagation in host plants.	1973-76	• Effect of hormones and others chemicals on root imitation in *Terminalia tomentosa* and *Terminalia arjuna.* • Effect of hormones and other chemicals on *Terminalia tomentosa* air layering.	Study on Effect of hormones and others chemicals on root imitation in *Terminalia tomentosa* and *Terminalia arjuna was found informative.* Study on Effect of hormones and other chemicals on *Terminalia tomentosa* air layering.was found informative	M.G .Das ,M.S. Jolly & M.S. Shergill
64	Studies on the scope of inter cropping with tasar food plants-	1973-76	• Studies on the scope of inter cropping with tasar food plants-	Basic data was collected.	M.G. Das and M.S. Jolly.
65	Reeling studies with tasar cocoons.	1973-76	Studies on reeling of oak tasar cocoons. Studies on wet reeling of daba cocoons.	Basic data was collected. Basic data was collected.	S.K. Chowdhury & S.S. Gosh.

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
66	Studies on the technology and tasar fibre.	1973-76	• Indoor spinning of tasr silkworm (*A.mylitta* D)and its effects on the physical characters of cocoons. • Effect of photoperiod on technological properties of tasar fibres. • Studies on the effect of different methods of drying on cocoons reelability and fibre technology.	Basic data was collected. Study was informative. Study was informative.	S.K. Chowdhry & N.P. Gupta.
67	Studies Demonstration of new technique of rearing at state tasar farm, Chaibasa, Singhbhum.	1973-76	Demonstration of new technique of rearing at state tasar farm,chaibasa, singhbhum	Work was initiated.	B.C. Das & T.R. Jammy.
68	Evolution of strains through selection based on important commercial characters	1975-78	Evolution of strain with higher cocoon weight and shell ratio.	Basic data was collected.	M.S. Jolly, S.K.Sen, M.K. Jha and B.M.K.Singh
		89	Evolution of strain with uniform development	Basic data was collected.	M.S.Jolly, B.D.Singh, B. M. K. Singh and S.B. Saraswat
		90	Evolution of strain with higher fecundity and hatchability	Basic data was collected.	M.S. Jolly, B. M. K. Singh, S. K. Sen and B.D.Singh
		91	Evolution of strains with peduncle less cocoons	Basic data was collected.	M.S. Jolly, A.K. Chaudhary, B.D.Singh and S.K.Sen

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
69	Evolution of strains based on qualitative characters	1975-78	• Fixation on the basis of larval body colour, frequency of lateral shining spots and • Cocoon colour Fixation on the basis of larval body colour and cocoon colour.	Basic data was collected. Study on cocoon colour Fixation on the basis of larval body colour and cocoon colour	M.S.Jolly, A.K. Choudhary and S.K.Sen
		93	• Fixation on the basis of larval body, lateral tubercle and cocoon colour • Fixation on the basis of larval body, cocoon and female moth colours	Basic data was collected. Basic data was collected.	A.K. Choudhary, B.D. Singh and S.K.Sen
70	Inbreeding studies with *A.mylitta* D.	1975-78	• Inbreeding studies with Raily (M.P.) • Inbreeding studies with laria (Simdega, Bihar)	Basic data was collected. Basic data was collected.	M. K. Jha, R. K.Subramanium, K.K.Sharma and S.K.Sen
		95	• Inbreeding studies with Barharwa (Ranchi, Bihar)	Basic data was collected.	R.K.Subramanium and M. K.Jha
71	Acclimatisation of eco-races of A.mylitta	1975-78	• Acclimatisation of eco-races of A.mylitta	Study on acclimatisation of eco-races of A.mylitta was informative.	M.S.Jolly, S.B.Baraswat, S.K.Sen and K.K. Sharma
72	Maintenance of germplasm bank of Antheraea fauna	1975-78	• Maintenance of fixed strains of Daba • Maintenance of CTRS races • Maintenance of inbred lines of Daba	Basic data was collected.	S.B.Saraswat, A. K. Choudhary and S.K.Sen
73	Hybridisation between the acclimatised eco-races of A.mylitta	1975-78	• Hybridisation between the acclimatised eco-races of A.mylitta	Studies on hybridisation between the acclimatised eco-races of A.mylitta was found informative	M.K.Jha, R.K. Subramanium and S.K.Sen
74	Inheritance studies in A. mylitta.	1975-78	• Inheritance of larval characters in A.mylitta D. • Inheritance of cocoon colour in mylitta	Basic data was collected. Basic data was collected	M.S. Jolly, S.K.Sen, V.Sahai and G. K. Prasad

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
75	Cytological studies on Antheraea spp.	1975-78	• Cytological investigation of Antheraea spp. • Cytological survey of the eco-races of *A.mylitta* D.	Studies on Cytological investigationof Antheraea spp was found informative.	M.S.Jolly, V. Sahai, S.K.Sen and G. K. Prasad
76	Mutation and Polyploidy studies with *A.mylitta* D.	1975-78	• Dosage-sensitivity relationship of some chemical mutagens.	Basic data was collected	S.K. Jaipuriar, B.D. Singh and A.K. Choudhary
77	Termination of pupal diapause of *A.mylitta D.*	1975-78	• Termination of pupal diapause of A.mylitta D.	Basic data was collected	M.B. Jolly, M. M. Ahsan, S.C. Agarwal and R.K.Khatri
78	Studies on rearing technique	1975-78	• Studies on controlled rearing for different durations	Basic data was collected	M.B. Jolly, M.M.Ahsan and R. K.Sinha
79	Rearing on *A.mylitta* on different food plants as well as on interchange of food plants	1975-78	• Rearing on *A.mylitta* on different food plants as well as on interchange of food plants	Basic data was collected	M.S.Jolly, M.M.Ahsan and R. K. Sinha
80	Different days of egg-laying and its rearing performances	1975-78	Effect of different days of egg-laying and its rearing performances -	Firs two days egglying showed better silkworm health and rearing performace as compared to late days egg laying.	M.M.Ahsan, R.K. Khatri and O.N.Singh
81	Correlation and regression studies	1975-78	• Relationship between weight of female pupa and number of eggs laid by an adult of *A. mylitta D.* • Relationship between the number of eggs/laying and hatching percentage in *A.mylitta D.*	Basic data was collected	M.M. Ahsan, R. K. Khatri and A.N. Kaul
82	Isolation and characterisation of Phytohormones	1975-78	• Isolation and characterisation of Phytohormones	Basic data was collected	S.C. Agarwal, M.S. Jolly, A.K.Sinha and N.D. Banerjee

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
83	Effect of dietary components on the feeding behaviour of *Antheraea mylitta D.*	1975-78	• Variation in lipid, fat and sterol contents at different stages of *A.mylitta* reared on *Terminalia tomentosa, T. arjuna and Shorea robusta*	Basic data was collected	S.C. Agarwal, M.S. Jolly and A.K.Sinha
84	Studies on sericin content in the cocoons of *Antheraea* species/ eco-races	1975-78	• Studies on sericin content in the cocoons of *Antheraea* species/eco-races	Basic data was collected	S.C. Agarwal, M.S. Jolly and A. K. Sinha
85	Studies on the nature of pigments in *A.mylitta*	1975-78	Studies on the nature of pigments in cocoon shells of *A.mylitta*	• Studies on the nature of pigments in cocoon shells of *A.mylitta* were informative.	S.C. Agarwal, M.S.Jolly and N.D. Banerjee
86	Studies on microsporidiosis of *A.mylitta*	1975-78	• Effect of dry heat on pebrinised pupae in controlling microsporidiosis of *A.mylitta*. • Effect of dry heat on pebrinised eggs of *A.mylitta*. • Cumulative effect of dry heat on pebrinised pupae and eggs for controlling microsporidiosis of *A.mylitta*	Basic data was collected	M.S. Jolly, U.P. Griyaghey and G. Krishnan
		112	• Rearing performance of the layings with different intensitives of Nosema infection	Basic data was collected	U.P. Griyaghey and M. K. Singh
87	Studies on the transmission of diseases	1975-78	• Transmission of Nosema sp. in *A.mylitta* D.	Basic data was collected	M.S. Jolly, U.P. Griyaghey and A.K. Debnath
88	Chemotherapeutic control of diseases	1975-78	• Effect of Fumidil-B in controlling microsporidios of A.mylitta	Studies on Effect of Fumidil-B in controlling microsporidios of A.mylitta was informative.	M.S.Jolly, U.P. Griyaghey and M.K.Singh

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
89	Breeding of disease resistant strains	1975-78	• Development of resistance in *A.mylitta* to polyhedrosis	Basic data was collected	U.P.Griyaghey and D. Kumar
90	Studies on grainage operation in Tasar silkworm (*A.mylitta*)	1975-78	• Effect of photoperiod on coupling • Effect of flight exercise of male moth on coupling • Effect of cool air blast on coupling.	Basic data was collected. Basic data was collected Basic data was collected	• M. M. Ahsan, R.K. Khatri and R. P. Khanna • M. M. Ahsan, M.S.Jolly and R. K.Sinha • M.M.Ahsan, R.P. Khanna and C.R. Nehru
			117	Studies on effect of Refrigeration of moths on coupling were informative. Basic data was collected.	• M.M. Ahsan, M.S.Jolly and R.P. Khanna
91	Studies on the optimum conditions for egg-laying in *A. mylitta D.*	1975-78	• Effect of photoperiod on egg-laying • Effect of coupling duration on pre-oviposition period, fecundity and fertility of *A.mylitta* • Effect of temperature and relative humidity on the egg-laying behaviour of tasar silkmoth *(A.mylitta D)*	Basic data was collected. Basic data was collected. Basic data was collected	M.M. Ahsan, R.K. Khatri and. K.Sinha M.K.Ahsan, R. P. Khanna and O.N.Singh M.M. Ahsan, R.K. Khatri & C.R. Nehru
92	Studies on synchronisation in emergence and hatching	1975-78	• Studies on synchronisation in emergence in *A.mylitta* D • Studies on synchronisation of hatching in *A.mylitta*	• Studies on synchronisation in emergence in *A.mylitta* D was informative.	M.S. Jolly M.M.Ahsan and R.K. Khatri M.S. Jolly, M. M. Ahsan and R.P.Khanna
93	Raising of economic plantation with *Terminalia arjuna*	1975-78	To establish the new econominc plantation for experiments	Established 05 hectare new plantation and conducted experiments and assessed growth & leaf yield of arjuna plants	M.S.Jolly, M. G. Das and M.S. Shergill

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94	Vegetative propagation of tasar food plants	1975-78	To developed the protocol for vegetative propogation of tasar food plants	Protocol has been developed for vegetative propogation of tasar food plants and it was found that vegetative propogation was more effective in Arjuna plants as compared to Asan	M.G.Das and M.S.Shergill
95	Studies on trimming and pruning of *T.arjuna and T.tomentosa*	1975-78	To assess the effect of trimming and pruning effect on leaf yield and pest infestation	Late pruning in the month of Aril was most suitable for quality leaf production and low pest infestation.	M.G. Das and M.S.Shergill
96	Studies on chemical control of insect pests and diseases injurious to tasar food plants	1975-78	Efficacy of deferent chemical on pests and diseases management in tasar food plants	Rogar was found more effective for the control of Gall and defoliators in tasar food plants	M.G.Das and M.S. Shergill
97	Improved reeling technique for tasar, cocoons	1975-78	A new cooking/softening technique and an improved reeling on modified Trivedi reeling machine and multiend reeling machine	Basic data was collected.	T.N. Sonwalkar and M.S. Jolly
98	Studies on the influence of colour and size of Daba cocoons on reeling performance	1975-78	To assess the colour and size of daba cocoons on reeling performance	Colour and size of daba cocoons on reeling performance was recorded	T.N. Sonwalkar and M.S.Jolly
99	Mass reeling studies on very old *A. proylei* cocoons with the improved reeling technique	1975-78	Comparision of reeling performace of tasar cocoon with old and new reeling technique	New reeling technique was showed good results as compared to old machines in oak tasar.	T.N.Sonwalkar and M.S.Jolly

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
100	Evolution of strains through selection based on important commercial characters	1976-79	• Evolution of strain with uniform development	Basic data was collected.	M.S. Jolly, B.M.K. Singh, B.D. Singh & S.K. Sen
			• Evolution of strain with higher cocoon weight and shell ratio • Evolution of strain with higher fecundity and hatchability	Basic data was collected. Basic data was collected.	B.M.K. Singh, B.D. Singh & S.K. Sen
			• Fixation on the basis of larval body ,lateral tubercle and cocoon colour • Fixation on the basis of larval, cocoon and female moth colour	Basic data was collected. Basic data was collected.	M.S.jolly, A.K. Chaudhury, S.K. Sen& B.D. Singh A.K.Chaudhury,B.D.Singh& R.N.Shukla
			• Fixation on the basis of female and male moth colour	Basic data was collected.	A.K.Chaudhury, B.D.Singh& S.K.Sen
101	Inbreeding studies with A. mylitta D.	1976-79	• Inbreeding studias with raily	Basic data was collected.	M.S. Jolly, K.K.Sharma, S.K. Sen& B.D. Singh
102	Acclimatisation of the Eco- races of *A. mylitta D.*	1976-79	To study the adaption level of different ecoraces	Basic data was collected.	M.S. Jolly, S.B. Saraswat, B.D. Singh& S.K.
103	Maintenance of germplasm Bank of *Antheraea* Fauna	1976-79	Maintenance of fixed strains of Daba	Basic data was collected.	S.B. Saraswat A.K. Chaudhury, B.D. Singh& S.K.Sen
		134	Maintenance of CTRS Races	Basic data was collected.	S.B.Saraswat, Kamla kant, B.D. Singh & S.K.Sen

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
104		1976-79	Maintenance of acclimatised Eco- races Maintenance of inbred Lines of Daba	Basic data was collected. Basic data was collected.	M.S. Jolly,S.B.Saraswat, B.D. Singh S.K. Sen K.K. Sharma, B.D. Singh & S.K. Sen
105	Inheritance studies in *A. mylitta*.	1976-79	Inheritance of cocoon colour in A.mylitta Studies on the inheritance of lateral shining spots in A.mylitta D	Studies on inheritance of cocoon colour in A.mylitta was informative.	M.S. Jolly,V.Sahai, S.K. Sen,& G.K.Prasad
106	Studies on rearing technique of tasar silkworms *A.mylitta* D.	1976-79	Studies on controlled rearing for different durations	Basic data was collected.	M.M.Ahsan, M.S.Jolly,& C.R. Nehru
		138	Comparative indoor rearing on sal,asan and Arjun leaves followed by outdoor rearing on asan	Basic data was collected.	M.M. Ahsan, R.P.Khanna, & C.R. Nehru
		139	Studies on the feasibility of undertaking new technique of rearing on commercial scanew approach of tasar silkworm rearing on economic plantation Studies on the feasibility of introducing third crop of tasar silkworm *A.mylitta* D.	Studies on the feasibility of undertaking new technique of rearing on commercial scanew approach of tasar silkworm rearing on economic plantation was informative. Basic data was collected.	M.M. Ahsan, C.R. Nehru & D. Chakravorty M.Ahsan, M.S.Jolly & R.P.Khanna
107	studies on rearing tasar silkworm with different food plants as also with interchange of food plants	1976-79	Effect of rearing *A. mylitta* larvae with different food plants Utilisation of sal flora for commercial rearing of tasar silkworms *A. mylitta* D. through interchange of food plants. studies on acclimatisation of asan based tasar silkworm race (*A. mylitta* D)on sal	Basic data was collected. Basic data was collected	M.M.Ahsan, C.R.Nehru & D.Chakravorty M.M.Ahsan, M.S.Jolly & C.R.Nehru M.M.Ahsan, R.P.Khanna & B.M.K.Singh

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
108	Correlation and regression studies	1976-79	Relationship between weight of female pupae and number of eggs laid by an adult of *A.mylitta* D. Relationship between the number of eggs/ laying and hatching percentage in *A.mylitta* D.	Basic data was collected. Basic data was collected.	M.M.Ahsan, R.P.Khanna and J.L. Jain M.M.Ahsan, R.P. Khanna and J.L.Jain
109	Studies on microsporidiosis of *Antheraea mylitta* D.	1976-79	• Effect of dry heat on pebrinised pupae in controlling microsporidiosis of *A.mylitta* • Effect of dry heat on pebrinised eggs of *Antherea mylitta*	Basic data was collected. Basic data was collected.	U.P.Griyaghey, P.G. Krishnan and M.S.Jolly M.Jolly, U. P.Griyaghey and M.Gupta
		143	• Cumulative effect of dry heat on pebrinised pupae and eggs of Antheraea mylitta • Chemotherapeutic control of microsporidiosis • Life cycle studies of the microsporidian infecting *Antheraea mylitta* D.	Studies on Cumulative effect of dry heat on pebrinised pupae and eggs of Antheraea mylittawas informative. Basic data was collected Studies on Life cycle studies of the microsporidian infecting *Antheraea mylitta* D. was informative.	M.S. Jolly, .P. Griyagney and P.G. Krishnan U.P. Grayaghey and M.K. Singh B.P. Griyaghey and F.G. Krishnan
110	Studies on the transmission of diseases	1976-79	• Transmission of Nosema sp. in Antheraea mylitta D • Transmission of Nosema sp. through parasites and predators of tasar silkworm	Basic data was collected. Basic data was collected.	U.P. Griyaghey and F.G.Frishnan U .P. Oriyaghey and P.G. Krishnan
111	Breeding of disease resistant strains	1976-79	• Development of resistance in *A.mylitta* to polyhedrosis • Screening of tasar races against virosis	Basic data was collected. Basic data was collected.	U.P. Griyaghey and B. C. Prasad

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
112	Studies on incidence of diseases in relation to sex in *A. mylitta*	1976-79	• Incidence of diseases in relation to sex in *A.mylitta*	Basic data was collected	U.P. Griyaghey and M. K. Singh
113	Histopathological studies of bacterial infected larvae of *A. mylitta*	1976-79	• Histopathological studies of bacterial infected larvae of *A.mylitta*	Histopathological studies of bacterial infected larvae of *A. mylitta*	U.P. Griyaghey and M.Gupta
114	Studies on chemical control of insect pest and diseases injurious to tasar food plants	1976-79	• Gall insects	Studies on chemical control of insect pest and diseases injurious to tasar food plants were informative.	M.G. Das, M.S.Jolly and M.S. Shergill
115	Studies on grainage operation in tasar silkworm (*A.mylitta D.)*	1976-79	• Studies on methods of coupling in *A. mylitta* • Effect of refrigeration of moths on coupling	Basic data was collected. Basic data was collected.	M.M. Ahsan, M.S.Jolly and R. P. Khanna M. M. Ahsan, M.S. Jolly and R.P .Khanna
116	Studies on synchronisation in emergence and hatching in A.mylitta D.	1976-79	• Studies on synchronisation in emergence • Studies on synchronisation in hatching	Basic data was collected. Basic data was collected	M. M. Ahsan, M.S.Jolly and R. P.Khanna M.M. Ahsan, M.S.Jolly and C.R. Nehru
117	Effect of dietary component in the feeding behaviour of Antheraea mylitta D,	1976-79	• Chemical composition of diets of A.mylitta Qualitative • Determination of digestive enzyme in the alimentary canal of A.mylitta • Effect of plant stimulants on the feeding behaviour of *A.mylitta*	Basic data was collected. Basic data was collected. Basic data was collected.	S.C. Agarwal, M.S.Jolly and A.K. Sinha

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
118	Biochemical studies in the larval & pupal haemolymph of A.mylitta with special reference to physical properties and chemical constituents.	1976-79	• Changes in nitrogenous compounds in the larval & pupal haemolymph of *A.mylitta*	-	S.C.Agarwal, M.S. Jolly and A.K.Sinha
119	Studies on propagation of tasar food plants	1976-79	• Seedling propagation • Screening studies for suitable rooting media of arjun seeds in polythene bags • Vegetative propagation • Propagation of Lagerstroemia indica L.through stem cuttages	Basic data was collected. Basic data was collected. Basic data was collected.	M.G.Das M.S.Sherigiland S.K.Tiwari
120	Cytological investigations on Antheraea. Studies on chromosomal olymorphism in A. provlei .	1974-77	Cytological investigations on Antheraea. Studies on chromosomal olymorphism in A. provlei .	Studies on Cytological investigations on Antheraea. Studies on chromosomal olymorphism in A. provlei was informative.	M..S. Jolly, A. K. Sengunta, V. Sahai & S.K. Sen.
		156	• Cytological survey of the eco-races of Amvlitta D.	Basic data was collected.	M.S. Jolly, A. K. Sengupta, V. Sahai & S.k . Sen.
		157	• Studies on cyto-morphological evidences as to the evolutionary trend of Antheraea species.	Basic data was collected.	M.S. Jolly, S.K. Sen, A.K. Sengupta & K.V. Benchamin.
121	Mutation studies.	1974-77	• Effect of chemical mutagens on A. mylitta D. • Mutation breeding for higher shell weight in *A. mylitta D.*	Basic data was collected. Basic data was collected.	M.S. Jolly, K.V. Benchamin & S. Amarnath. M.S. Jolly, A. K. Sengupta & S. Amarnath.

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
122	Inheritance studies.	1974-77	• Inheritance of moth colour in hitta D. • Studies on inheritance of larval characters of *A.mylitta* D.	Basic data was collected. Basic data was collected.	K.V. Renchamin, G.K. Prasad & V. Sahai. K.V. Benchamin, G.K. Prasad, S.E., Sen & V. Sahai.
123	Fixation of new strains of *A. mylitta* D.	1974-77	• Fixation of new strains on the basis of larval colour, cocoon colour & lateral shining spot. • Fixation on the basis of the colour of larval body, lateral tubercle and cocoon.	Studies on Fixation of new strains on the basis of larval colour, cocoon colour & lateral shining spot were informative. Basic data was collected.	A.K. Chowdhury, S.K. Sen & V.N. Bardaiyar. V.N. Bardaiyar & A.K. Chowdhury.
		161	• Fixation on the basis of larval body, and cocoon colour. • Fixation on the basis of larval, cocoon & female moth colour.	Basic data was collected Basic data was collected	A.K. Chowdhury, V.N. Bardaiyar & S.K. Sen. A.K. Chowdhury and V. N. Rardaiyar.
124	Maintenance of germplasm bank. M.K. Jha, S.B. Saraswat & S. Amarnath.	1974-77	• Fixation of new strains on the basis of larval colour, cocoon colour & lateral shining spot.	Basic data was collected	A.K. Chowdhury, S.K. Sen & V.N. Bardaiyar.
125	Fixation of new strains of *A. mylitta* D.	1974-77	• Fixation on the basis of the colour of larval body, lateral tubercle and cocoon.	Basic data was collected	V.N. Bardaiyar & A.K. Chowdhury.
			164	Basic data was collected	A.K. Chowdhury, V.N. Bardaiyar & S.F. Sen.
			165	Basic data was collected	A.K. Chowdhury and V. N. Rardaiyar

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
126	Studies on rearing technique.	1974-77	• Effect of rearing with different gauges of polythene. • Effect of rearing with different hole sizes in polythene cover. • Rearing under different colours of cellophane cover.	Basic data was collected. Basic data was collected. Basic data was collected	M.S. Jolly, M.M. Ahsan and R.K. Khatri. M.S. Jolly, M.M. Ahsan and H.C. Mohapatra. M.S. Jolly, M.M. Ahsan and R.K. Khatri.
127	Rearing of A. mvlitta on different food plants.	1974-77	• Effect of larval density on rearing.	Basic data was collected	M.S. Jolly, M.M. Ahsan and S.R. Viswakarma
128	Rearing performance of different days of egg laying	1974-77	• Embryology of tasar silkworm (A. mylitta D.	Basic data was collected	M.M. Ahsan, M.S. Jolly and R. P. Khanna.
129	Comparative protein biochemistry of food plants, eggs, larvae, pupae and cocoons of *Antheraea mylitta* D.	1974-77	• Free amino acids in the healthy and diseased larvae of *A. mylitta D.* reared on Shorea robusta and scope for preventive measures through change of food plant.	Studies on Free amino acids in the healthy and diseased larvae of *A. mylitta D.* reared on Shorea robusta and scope for preventive measures through change of food plant. Was informative.	S.C. Agarwal, M.S. Jolly and A.K. Sinha
130	Project 2: Effect of dietary components on the feeding behaviour of *A. mylitta D*.	1974-77	• Estimation of sterols and fats in the diet of A. mylitta D. and their utilisation by the silkworm • Chemical composition of diets of *A. mylitta*	Basic data was collected.	S.C. Agarwal and M.S. Jolly.
131	**Project 5:** Studies on the nature of pigments in food plants, eggs and cocoons of *A. mylitta.*	1974-77	Studies on the nature of pigment in larva. Isolation and estimation of pigments in tasar food plants.	Basic data was collected. Basic data was collected	S.C. Agarwal, M.S. Jolly and N.D. Banerjee.

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
132	Studies on the pobrine disease of *A. mylitta* D.	1974-77	• Effect of dry heat on pebrinised pupae in controlling pobrine disease of tasar silk- worm. • Effect of dry heat on pebrinised eggs in controlling pebrine dinense of tasar silk- worm, *Anthernea mvlitta* D. • Cumulative effect of dry heat on pebrinised pupse and eggs for controlling pebrine disease of tasar silkworm. • Possibility of transmission of Nonema sp.spore through male moth of *A.* mylitta vis- a-vis size of the sperm head • Incidence of pebrine infection in the tasar rearing belts of Singhbhum district.	• Studies on Effect of dry heat on pebrinised pupae in controlling pobrine disease of tasar silk- worm was informative. • Basic data was collected. • Studies on Cumulative effect of dry heat on pebrinised pupse and eggs for controlling pebrine disease of tasar silkworm was informative. • Basic data was collected.	M.S. Jolly, U.P. Griyaghe and Pradip Kumar. H.S. Jolly, II. P. Griyaghey and Pradip Kumar.
133	Breading of disease resistant races.	1974-77	• Screening of tasar races against pebrine disease. • Develonment of resistance *in A. mylitta* to Polyhedrosis.	Basic data was collected. Basic data was collected	M.S. Jolly, U.P. Griyaghey and Pradip Komar. M.S. Jolly, U.P. Griyaghey and A.K. Shrivastava.
134	Breading of disease resistant races.	1974-77	• Screening of tasar races against pebrine disease. • Develonment of resistance in A. mylitta to Polyhedrosis.	Basic data was collected. Basic data was collected	M.S. Jolly, U.P. Griyaghey and Pradip Komar. M.S. Jolly, U.P. Griyaghey and A.K. Shri- vastava.

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
135	Control of diseases by Chemotherapeutic method	1974-77	• Effect of antibiotics and drugs in contro- 1ling bacterial diseases of tasar silkworm. • Effect of antibiotics on the reproductive potentials of A. mylitta. • Effect of antibiotics in controlling (Curative) bacterial diseases of tasar silkworm.	• Basic data was collected • Studies on effect of antibiotics on the reproductive potentials of A. mylitta was informative. • Studies on Effect of antibiotics on the reproductive potentials of *A. mylitta*	M.S. Jolly, U.P. Griyaghey and A. K. Shrivastava.
136	Control of parasites and predators of tasar silkworm, (*A. mylitta D.*)	1974-77	• Control of Blepharipa zebins by tugon baits through hemosterilisation.	Basic data was collected.	M.S. Jolly, U.P. Griynghey and Gopala Krishnen P.
137	Studies on grainage in tasar silkworm, (*A. mylitta D.).*	1974-77	• Effect of photoperiod on coupling. • Effect of flight exercise of male moths on coupling. • Effect of cool air-blast on coupling. • Effect of crowding of moths on coupling. • Effect of Refrigeration of moths on coupling.	Basic data was collected. Basic data was collected. Basic data was collected. Basic data was collected.	M.M. Ahsan, M.S. Jolly and R.P. Khanna. M.M. Ahsan, M.S. Jolly and R.K. Khatri M.M. Ahsan, M.S. Jolly and H.C. Mohapatra. M.M. Ahsan, M.S. Jolly and R. K. Khatri. M.M. Ahsan, M.S. Jolly and R.P. Khanna.

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
138	Studies on the optimum conditions for	1974-77	• Effect of light and darkness on egg laying • Effect of coupling duration on pre-ovipo- sition period, fecundity and fertility of (*A. mvlitta*). • Studies on the behaviour of eggs laid by female moth of A. mylitta during different days.	Basic data was collected. Basic data was collected. Basic data was collected.	M.M. Ahsan, M.S. Jolly and S.R. Vishwakarma. M.M. Ahsan, M.S. Jolly and R.P. Khanna. M.M. Ahsan, M.S. Jolly, R.P. Khanna and H.C. Mohapatra.
139	Reeling studies with tasar cocoons.	1974-77	• Studies on reeling of oak tasar cocoons. Studies on wet reeling of Daba Individual cocoon reeling study.	Basic data was collected.	M.S. Jolly, S.K. Chowdhury & S.S. Ghosh. M.S. Jolly, S.K. Chowdhury & N.P. Gupta.
140	Studies on the technology of tasar fibre.	1974-77	• Studies on the boil of loss of A. proylei cocoon • Studies on the tensile properties of A. proylei fibre	Basic data was collected. Basic data was collected.	S.S. Ghosh & S.K. Chowdhury. S.K. Chowdhury and N.P. Gupta.
141	Fabrication of reeling machines.	1974-77	• Modification of the multiend mulberry reeling machine for tasar cocoon reeling.	Studies on Modification of the multiend mulberry reeling machine for tasar cocoon reeling was informative.	S.K. Chowdhury, S.N. Pathak and N.P. Gupta.
142	Response of pruning on vegetative growth and leaf yield of *T. arjuna*	1983-84	To study the response of pruning on vegetative growth and leaf yield of *T. arjuna*	*Terminalia* species are heterozygous and perennial in nature.	D.N.Prasad, R.Khare and K. Sengupta

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
143	Comparative studies on growth and yield of *T. tomentosa* and *T. arjuna* under different spacing	1983-84	To study the pattern of pruning on vegetative growth and leaf yield of *T. arjuna*	The growth of *T.arjuna* (T1) is definitely better than that of *T.tomentosa* and among the treatment T1S3 has show the highest potentiality.	D.N.Prasad, R.Khare and K. Sengupta
144	Comparative studies on growth, yield and incidence of diseases and pests of *T. arjuna* and *T. tomentosa* and under one and two species culture	1983-84	To study growth, yield and incidence of diseases and pests of *T. arjuna* and *T. tomentosa* and under one and two species culture	*T.arjuna* along is giving better result in comparison to other treatment in respect of height of plants, number of branches per plant and number of leaves per plants.	D.N.Prasad, R.Kumar and K. Sengupta
145	Studies on the response of *T. arjuna* to different doses of NPK singly as well as in different combinations	1983-84	To study the response of *T. arjuna* to different doses of NPK singly as well as in different combinations	Application of N.P.K in combination has better effect on growth and yield of leaves of *T.arjuna* as compared to control.	K. Sengupta, D.N.Prasad, R.Kumar and A K Sinha
146	Raising and supply of tube seedlings of *T. arjuna*	1983-84	Raising and supply of tube seedlings of *T. arjuna*	Heavy demand of tube seedling of *T. arjuna* to different government and voluntary agencies under co-ordinated and social forestry.	D.N.Prasad, R.Khare and K. Sengupta

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
147	Maintenance and improvement of field plantation	1983-84	Maintenance and improvement of field plantation	After pruning *T.arjuna* and *T.tomentosa,* application of chemical fertilizers, FYM, Pesticides.	R.Khare and K. Sengupta
148	A survey of tropical tasar ecoraces	1983-84	To survey tropical tasar ecoraces	Last three years another 18 to 20 races have been added to the expected that further in depth survey.	K. Sengupta, S. N. Chatterjee, A.K.Sengupta, R.M.Shukla, Ajit Kumar, M.Z.Khan & D.P.Dasmohapatra
149	Studies on interbreeding in tropical tasar	1983-84	To study interbreeding in tropical tasar	To ascertain general combining ability and specific combing ability of the inbreed line.	K. Sengupta, S. N. Chatterjee, A.K.Sengupta, R.M.Shukla, Ajit Kumar, M.Z.Khan & D.P.Dasmohapatra
150	Studies on hybrid breeding in tropical tasar	1983-84	To study hybrid breeding in tropical tasar	Selection applied to the hybrid progeny may help in synthesising high yielding breed of tasar.	K. Sengupta, S. N. Chatterjee, A.K.Sengupta, R.M.Shukla, Ajit Kumar, M.Z.Khan & D.P.Dasmohapatra
151	Haemolymph proteins of healthy and pebrine infected larvae and pupae of tasar silkworm *A. mylitta*	1983-84	To study the haemolymph proteins of healthy and pebrine infected larvae and pupae of tasar silkworm *A. mylitta*	Larval stage, haemolymph of pebrinesed larvae and proteinogram of diseased pupa indicate.	H.S. Mishra, U.P.Griyaghey, . N. Chatterjee and K. Sengupta

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
152	Control measures against diseases of *A. mylitta*	1983-84	To study the control measures against diseases of *A. mylitta*	The four sets thw mortality in the treated lots was only 47.90%, 23.49%,26.10% and 17.83% the same was 51.21%,58.49% 66.83%, and 56.50% respectively in the controls.	U.P.Griyaghey, H.S. Mishra, P. Kumar and K. Sengupta
153	Inhibitory effect of some chemical on *Nosema* sp. spores	1983-84	To study the Inhibitory effect of some chemical on *Nosema* sp. spores	Cocktone and Benzothonium chloride repeated to confirm the effectiveness of the chemical on the microsporidian disease of *A.mylitta*	U.P.Griyaghey, H.S. Mishra, P. Kumar and K. Sengupta
154	Biology of *Nosema* sp. infecting *A. mylitta*	1983-84	To study the biology of *Nosema* sp. infecting *A. mylitta*	Paired nuclei were observed in spronts were denser associated and surrounding by diffused granular zone indicating the formation of twin binucleate sporoblasts.	U.P.Griyaghey, H.S. Mishra, P. Kumar
155	Histopathological studies in *Nosema* sp. Infected larvae of *A. mylitta*	1983-84	To study the Histopathological studies in *Nosema* sp. Infected larvae of *A. mylitta*	The pathogen in the gut and fat body was continued during the year.	U.P.Griyaghey, H.S. Mishra, P. Kumar
156	Studies on insect population visiting primary tasar food plants	1983-84	To study the insect population visiting primary tasar food plants	In month of May-June and July-August respectively.	P.K.Das, R. N. Singh & K. Sengupta
157	Studies on gall infestation of *Terminalia* foliage	1983-84	To study the gall infestation of *Terminalia* foliage	Rainly season (July-August) is the peak infesation period in *Terminalia* species.	P.K.Das and R. N. Singh
158	Assessment of the extent of damage caused by *A. blanchardi* to tasar food plant	1983-84	To study the assessment of the extent of damage caused by *A. blanchardi* to tasar food plant	The beetle consumed about 6 to 11 percent and 4 to 7 percent of total gm wt.	P.K.Das

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
159	Survey on the infestation of uzifly during IInd IIIrd crop rearing of *A. mylitta*	1983-84	To study the survey on the infestation of uzifly during IInd IIIrd crop rearing of *A. mylitta*	During 2nd crop rearing infestation of Uzifly 0.04% and Ichneumonfly 14.4%.	P.K.Das and R. N. Singh
160	Insecticidal control of pest for tasar food plants (*T. arjuna*)	1983-84	To study the insecticidal control of pest for tasar food plants (*T. arjuna*)	After third spraying attesting thereby the significance of three consequtive spraying.	P.K.Das and R. N. Singh
161	Studies on the control of stem borer with Aidrex	1983-84	To study the control of stem borer with Aidrex	Soaked in 2% Aldrex solution and lead about 85 to 90% motility.	P.K.Das and R. N. Singh
162	Studies on mechanical control of pests of tasar silkworm and its food plants through sticky traps	1983-84	To study the mechanical control of pests of tasar silkworm and its food plants through sticky traps	Sticky trap also help to reduce the population of gall fly, canthecona and other coleopteran beetles like red beetal sp.	P.K.Das and R. N. Singh
163	Trial indoor rearing beyond 72 hours	1983-84	To study the trial indoor rearing beyond 72 hours	Observation indicates that the indoor rearing can be safely extended beyond 72 hours.	J.Jayaswal, S.P.Singh,G.S.Sing-h,M.K.Singh and K.Sengupta
164	Development of artificial diet for *A.mylitta* D.	1983-84	To study the development of artificial diet for *A.mylitta* D.	Result of rearing tasar (*A.mylitta*) silkworm on S-11 artificial diet and fresh and fresh arjun leaves by the end of 72 hours rearing.	J.Jayaswal, S.P.Singh,G.S.Sing-h,M.K.Singh and K.Sengupta

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
165	Rearing of *A. yamamai* of Japan at Ranchi	1983-84	To study the rearing of *A. yamamai* of Japan at Ranchi	The cocoon formed were of yellowish green colour and were with small peduncles.	J.Jayaswal, S.P.Singh,G.S.Sing-h,M.K.Singh and K.Sengupta
166	Utilization of sal flora for silk production	1983-84	To study the utilization of sal flora for silk production	It is possible to identify any positive effect of the treatment on the survival of Daba on Sal.	J.Jayaswal, G.S.Singh, M.K.Singh, S.P.Singh and K.Sengupta
167	Supplementation of Ascorbic acid and lysine on sal leaves	1983-84	To study the supplementation of Ascorbic acid and lysine on sal leaves	It is not possible to identify any positive effect of the treatment on the survival of Daba on Sal.	J.Jayaswal, G.S.Singh, S.P.Singh and K.Sengupta
168	Maintenance of sal based ecoraces laria & railey at the field laoboratory nagri, Ranchi	1983-84	To maintain the sal based ecoraces laria & railey at the field laoboratory nagri, Ranchi	That both the ecoraces could be successfully maintained without sacrificing much of the quality characteristics of the natural grown cocoon.	J.Jayaswal, G.S.Singh, S.P.Singh and K.Sengupta
169	Maintenance of daba and sukinda ecoraces and supply of basic seed	1983-84	To maintain daba and sukinda ecoraces and supply of basic seed	The 2nd crop was again subjected to regrous selection and the selected cocoon is preserved for next year.	J.Jayaswal, G.S.Singh, S.P.Singh and K.Sengupta
170	Growth pattern of final stage larvae of *A.mylitta* D.	1983-84	To study the growth pattern of final stage larvae of *A.mylitta* D.	A gradual increase in the rate of growth for 1-3 days followed by a drop in the growth rate for 1 day was found to be repeated cylically.	J.Jayaswal, G.S.Singh, S.P.Singh and K.Sengupta

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
171	Effect of different colours light and infra-red irradiation on the coupling aptitude of *A.mylitta* moths	1983-84	To study the effect of different colours light and infra-red irradiation on the coupling aptitude of *A.mylitta* moths	Infra-red irradiation male and female moths exposed to infra-rad light for 15 minutes in the evening hours and kept in cage for coupling.	J.Jayaswal, G.S.Singh, S.P.Singh and K.Sengupta
172	Effect of aging on coupling, fecundity and hatching	1983-84	To study the effect of aging on coupling, fecundity and hatching	The parameters, one day old male and fresh female is the best match two days old female moth can not be coupled with fresh male.	J.Jayaswal, G.S.Singh, M.K.Singh, S.P.Singh and K.Sengupta
173	Rearing performance on plants of different heights	1983-84	To study the rearing performance on plants of different heights	Indicates that maximum E.R.R was found plants having 10'&15' height.	J.Jayaswal, G.S.Singh, M.K.Singh, S.P.Singh and K.Sengupta
174	Foliar analysis of tasar food plants	1983-84	To study the foliar analysis of tasar food plants	As evident for quantitative estimation, six amino acids have highest concentration in *Bombyx ceiba* one is present.	A.K.Sinha, R.K.Goel and K. Sengupta
175	Studies on the constituents of shells and peduncles of different eco-races of *A. mylitta* D.	1983-84	To study the constituents of shells and peduncles of different eco-races of *A. mylitta* D.	In case of peduncles, Raily has the highest content nitrogen content (17.8%) closely with Jadai (17.6%) and moonga (17.4%) from all other ecoraces.	A.K.Sinha, R.K.Goel, B.N.Brahmachari and K. Sengupta
176	Biochemical studies of haemolymph of *A.mylitta*	1983-84	To study the biochemical studies of haemolymph of *A.mylitta*.	The protein case of female pupae is higher in comparison to male counterpart higher requirement of protein in the female course of their metamorphosis.	A.K.Sinha and K. Sengupta

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
177	Studies on eggs of *Antheraea* species	1983-84	To study the eggs of *Antheraea* species	Fertilized eggs laid within 24 hrs by female moths of *Antheraea mylitta* D collected, pooled and washed with water. Atfer washing the eggs dried at room temperature.	A.K.Sinha and R.K.Goel
178	Sex difference in the lipid content of moths of *A.mylitta* D.	1983-84	To study the sex difference in the lipid content of moths of *A.mylitta* D.	Emerged male and female moths of *Antheraea mylitta* D taken lipid extracted.	R.K.Goel, A.K.Sinha and K. Sengupta
179	Studies on insect cuticles of *A.mylitta* D.	1983-84	To study the insect cuticles of *A.mylitta* D.	In case extaction for 36 hrs. and the same cuticles.	R.K.Goel, A.K.Sinha and K. Sengupta
180	Studies on larval and pupal cuticles of *A. proylei J.*	1983-84	To study the larval and pupal cuticles of *A. proylei J.*	The adult from the puae, last larval moulted skin and pupal cuticles collected and subjected to analysis.	A.K.Sinha and R.K.Goel
181	Studies on the effect of yarn geometry on fabric quality of tasar silk	1983-84	To study the effect of yarn geometry on fabric quality of tasar silk	The change of yarn geometry in tasar silk by twisting organizine yarn, resistance, intrinsic stiffness, bending length.	S.Roy and S.S.Ghosh
182	Studies on twisting of tasar silk on silk throwing plant	1983-84	To study the twisting of tasar silk on silk throwing plant	Tasar raw silk can be done on silk-throwing plant without any difficulty it is possible to prepare various kinds of tasar thrown silk like crape, organzine, georgette, tram etc.	S.S.Ghosh and T.K.Paul

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
183	Studies on technological characters as well as cooking and reeling of oak tasar cocoons produced in H.P.	1983-84	To study the technological characters as well as cooking and reeling of oak tasar cocoons produced in H.P.	The technological characters of these cocoons and the performance on cooking and reeling.	S. Roy and S.S. Ghosh
184	Studies on technological characters as well as cooking and reeling of munga cocoons	1983-84	To study the technological characters as well as cooking and reeling of munga cocoons	That Autumn crop cocoon are superior in all the technological characters etc to summer crop cocoons.	S.S.Ghosh
185	Studies on stifling of tasar cocoons at high temperature	1983-84	To study the stifling of tasar cocoons at high temperature	High temperature stifling of tasar cocoons upto 150.c temperature for five hours have no significant effect on reeling performances as well as the raw silk reeled cocoon.	S.S.Ghosh and S.Roy
186	Studies on technological and commercial characters of different eco-races of tasar cocoons (*A.mylitta*)	1983-84	To study the technological and commercial characters of different eco-races of tasar cocoons (*A.mylitta*)	These indicate that Bogain cocoons are having better technological characters that of Modal cocoons.	S.Roy and S.S.Ghosh
187	Studies on the assessment of commercial characters on daba cocoons in respect of shell wt.	1983-84	To study the technological and commercial characters of different eco-races of tasar cocoons (*A.mylitta*)	The possibility to predict the yield of raw silk /1000 or a kahan of cocoons after determination of shell wt.	S.S.Ghosh

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
188	Effect of pruning on the vegetative growth and yield of leaves of primary tasar food plants	1984-85	To study effect of pruning on the vegetative growth and yield of leaves of primary tasar food plants	*T.arjuna* in the experiment also, the number of leaves/ shoot is significantly higher for annual pruning series than that obtained for biennial series.	Dr. K Sengupta, Shri D.N Prasad, Shri R.Khare, & Shri Ram kumar
189	Studies on the effect of pruning on different girths of *T.arjuna* in relation to growth and yield of leaves	1994-85	To study on the effect of pruning on different girths of *T.arjuna* in relation to growth and yield of leaves	Leaves of the treatment plants were harvested once during September/October and yield of leaves .	Dr. K Sengupta, Shri D.N Prasad, Shri R.Khare, & Shri Ram kumar
190	Comparative was studies on growth and yield of *T. arjuna* and *T. tomentosa* under different spacing	1984-85	To study comparative was studies on growth and yield of *T. arjuna* and *T. tomentosa* under different spacing	Considering the data obtained for different parameter related with growth x leaf yield.	Dr. K Sengupta, Shri D.N Prasad, Shri R.Khare, & Shri Ram kumar
191	Comparative study on growth, yield & incidence of diseases and pests of *T. arjuna & T. tomentosa* undre one species and two species culture	1984-85	To study comparative study on growth, yield & incidence of diseases and pests of *T. arjuna & T. tomentosa* undre one species and two species culture	Gall infection has been more I.e. 14.66 per treatment,the attack of stem borers and attack of virus disease has been found very few but fungal disease.	Dr. K Sengupta, Shri D.N Prasad, Shri R.Khare, & Shri Ram kumar

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
192	Studies on the response of *T. arjuna* to different doses and combination of N.P.K inputs	1984-85	To study on the response of *T. arjuna* to different doses and combination of N.P.K inputs	Proper does of N.P.K. for the better growth and higher leaf yield of *T. arjuna.*	K Sengupta, D.N Prasad, R.Khare, & Ram kumar
193	Studies on the effect of different cuts in polythene tubes on the growth and development of *T. arjuna* tube seedlings	1984-85	To study on the effect of different cuts in polythene tubes on the growth and development of *T. arjuna* tube seedlings	Different types of cut polythene tube at the of their transplantation in the field en experiment was designed in R.B.D with six treatment.	K Sengupta, D.N Prasad, R.Khare, & Ram kumar
194	Rearing and supply of tube seedling of *T. arjuna*	1984-85	To study rearing and supply of tube seedling of *T. arjuna*	Demand of *T.arjuna* tube seedlings 50,000 tube seedling were raised during period under report of 33,000 seedling were supplied to different government and voluntary agencies for popularizing the tasar culture.	K Sengupta, D.N Prasad, R.Khare, & Ram kumar
195	Pathological studies in tasar silkworm, *Abtheraea mylitta* and *A. proylei*	1984-85	To study pathological studies in tasar silkworm, *Abtheraea mylitta* and *A. proylei*	The pathogen do established host-pathogen relationship with *A.mylitta* is unable to affect *A.proylei,* suggesting the species specificity of the pathogen.	K. Sengupta, U.P. Griyaghey, P.Kumar, & Ram Kumar
196	Screening of eco-races of *A. mylitta*	1984-85	To study screening of eco-races of *A. mylitta*	The rearing performance of the different eco-races that the mortality due to virosis has ranged between 42.00-66.37% five races, namely, laria, sukinda barharwa and Daba show mortality due to viroses ranging from 42-50%.	K. Sengupta, U.P. Griyaghey, P.Kumar, & Ram Kumar

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
197	Physiopathologicals studies with the pebrine infected larvae & pupae of *A. mylitta*	1984-85	To study physiopathologicals studies with the pebrine infected larvae & pupae of *A. mylitta*	The invectase was also found tube present in all three parts of healthy & pebrine infected larvae.	K. Sengupta, U.P. Griyaghey, P.Kumar, & Ram Kumar
198	Histopathology studies in *Nosema* sp. Infected larvae of *A. mylitta*	1984-85	To Study histopathology studies in *Nosema* sp. Infected larvae of *A. mylitta*	Early stage of infection the cells appeared hypertrophied and separated from one another.	K. Sengupta, U.P. Griyaghey, P.Kumar, & Ram Kumar
199	Studies on the constituents of shells and peduncles of different ecoraces of *A.mylitta* D	1984-85	To study on the constituents of shells and peduncles of different ecoraces of *A.mylitta* D	Earlier shell and peduncle differ in their moisture (%) is almost same in the two.	R.K Goel, & A.k Sinha
200	Studies on haemolymph of *A.mylitta* D	1984-85	To study on haemolymph of *A.mylitta* D	There may be some critical phase of morhogenesis during which cholesterol % decreases stepwise.	A.k Sinha, R.K Goel, U.S.P Sinha & K. Sengupta
201	Changes in phosphorus compounds in the haemolymph of healthy and pebrine infected larvae and pupal of *A. mylitta D*	1984-85	To study Changes in phosphorus compounds in the haemolymph of healthy and pebrine infected larvae and pupal of *A. mylitta D*	In pupal haemolymph concentration of inorganic phosphorus and lipid phosphorus increases gradually and total acid soluble phosphorus decreases gradually till the emergence of the moths during first rearing season.	A.k Sinha, R.K Goel, U.S.P Sinha & K. Sengupta

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
202	Free amino acid in the haemolymph of pebrine infected larvae and pupal of *A.mylitta D*	1984-85	To study free amino acid in the haemolymph of pebrine infected larvae and pupal of *A.mylitta D*	The haemolymph of pebrine infected larvae and pupa were separated by two dimensional paper partition chromatography and quantitative estimation was done at 570.n.m.	A.k Sinha, U.S.P Sinha & K. Sengupta
203	Studies on the eggs of *Antheraea* species	1984-85	To study on the eggs of variation of phosphorus compound in the developing embryo of *A.mylitta* D	That concentration of inorganic phoshorus as well as total acid fourth day of embryo genesis and there after decreases gradually upto seventh day and again increase on eighth day, during both the rearing seasons.	A.k Sinha, U.S.P Sinha & K. Sengupta
204	Estimation of proteins and total carbohydrates in the healthy and pebrine infected embryo of *A.mylitta* D.	1984-85	To study estimation of proteins and total carbohydrates in the healthy and pebrine infected embryo of A.*mylitta* D.	Fertilized eggs laid with in 24 hrs by healthy and pebrinised female moths of *A.mylitta* D and protein and carbohydrate .	A.k Sinha, U.S.P Sinha & K. Sengupta
205	Free amino acid in pebrine infected eggs of *A. mylitta* D	1984-85	To study free amino acid in pebrine infected eggs of *A. mylitta* D	That seven amino acid found in pebrine infected edds of *A.mylitta* D.	A.k Sinha, U.S.P Sinha & K. Sengupta
206	Free amino acid in healthy and pebrine infected moths of *Antheraea mylitta* D	1984-85	To study free amino acid in healthy and pebrine infected moths of *Antheraea mylitta* D	Free amino acids are in higher concentration in male moths than female moths.	U.S.P Sinha, A.K Sinha, & K.Sengupta

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
207	Estimation of phosphorus compounds in the healthy and pebrine infected moths of *A.mylitta* D	1984-85	To study estimation of phosphorus compounds in the healthy and pebrine infected moths of *A.mylitta* D	Total acid soluble phosphorus and lipid phosphorus is lower in pebrine infected moths in comparison to healty moths.	U.S.P Sinha, A.K Sinha, & K.Sengupta
208	Studies on the larval cuticles of *Antheraea assamensis*	1984-85	To study on the larval cuticles of *Antheraea assamensis*	That larval cuticle of *A.assamensis* is very rich in minerals but poor in phosphorus.	U.S.P Sinha, A.K Sinha, & K.Sengupta
209	Studies on the silk glands of *A.mylitta* D larvae	1984-85	To study on the silk glands of *A.mylitta* D larvae	It is seen that in silk glands of fifth instar larvae and seven amino acids are present in free state.	A.K Sinha, & K.Sengupta
210	Indoor rearing of young tasar silkworm	1984-85	To study indoor rearing of young tasar silkworm	It is evident that indoor mortality show some increase during prolonged indoor rearing.	K. Sengupta, J. Jayswal, S.P Singh, M.K Singh, G.S Singh
211	Utilisation of salflora for tasar silkworm rearing	1984-85	To study Utilisation of salflora for tasar silkworm rearing	21 Dfls of Railey and 15 dfls of Laria brushed on Sal plants during the 1st crop failed to survive al plants.	K. Sengupta, J. Jayswal, S.P Singh, M.K Singh, G.S Singh
212	Supplementation of ascorbic acid and lysine on sal leave for adaptation of daba on sal	1984-85	To study supplementation of ascorbic acid and lysine on sal leave for adaptation of daba on sal	The worms failed to establish them selves on Sal foliage even with supplementation of their food stuff with Ascorbic acid and Lysine	K. Sengupta, Shri J. Jayswal, S.P Singh, M.K Singh, G.S Singh

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
213	Maintenance of daba ecorace and supply of basic seed	1984-85	To study maintenance of daba ecorace and supply of basic seed	The harvest of the second crop was subjected to regorous selection and the selected cocoon are preserved for seed supply during 1985-86.	K. Sengupta, J. Jayswal, S.P Singh, M.K Singh, G.S Singh
214	Daily change in larval weight	1984-85	To study daily change in larval weight	The disturbance of larvae for of larvae for 15 minutes every day to undertake the weight is detrimental to larval growth and survival.	K. Sengupta, J. Jayswal, S.P Singh, M.K Singh, G.S Singh
215	Effect of different of photo phase and temperature during egg incubation on voltanism	1984-85	To study Effect of different of photo phase and temperature during egg incubation on voltanism	Daba Bivoltine stock exposed to 30 and 35.c temperature schedules along with combination of 12,16 and 20 hrs photo phase.	K. Sengupta, J. Jayswal, S.P Singh, M.K Singh, G.S Singh
216	Modification of new technique of rearing	1984-85	To study modification of new technique of rearing	The larvae reared in plastic boxes were comparatively poorer to that of bottles and sieves.	K. Sengupta, J. Jayswal, S.P Singh, M.K Singh, G.S Singh
217	Modification of egg laying technique for tasar silkworm	1984-85	To study modification of egg laying technique for tasar silkworm	Indicate that the pressing of the abdomen of moths to make them pass the urie manually is effective in getting increased efficient of eggs laying.	K. Sengupta, J. Jayswal, S.P Singh, M.K Singh, G.S Singh
218	Effect of light on growth and development of early stage larvae of *A. mylitta* D	1984-85	To study effect of light on growth and development of early stage larvae of *A. mylitta* D	The perusal of the data indicates that the effect of light is not strongly pronounced on growth, larvae under 14 & 16 hrs light is comparatively better.	K. Sengupta, J. Jayswal, S.P Singh, M.K Singh, G.S Singh

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
219	Studies on insects visiting primary tasar food plants	1984-85	To study studies on insects visiting primary tasar food plants	The essential components of the environment, affecting the survival of an insects species and also influencing its life cycle- pattern, are temperature, humidity and light.	C.C Choudhuri and R.N Singh
220	Seasonal incidence of diurnal insects affecting *Terminalia arjuna* & *T. tomentosa*	1984-85	To study seasonal incidence of diurnal insects affecting *Terminalia arjuna* & *T. tomentosa*	The essential components of the environment, affecting the survival of an insects species and also influencing its life cycle- pattern, are temperature, humidity and light.	C.C Choudhuri and R.N Singh
221	Seasonal incidence of natural nocturnal insects affecting on *T. arjuna* and *T. tomentosa*	1984-85	To study Seasonal incidence of natural nocturnal insects affecting on *T. arjuna* and *T. tomentosa*	The nocturnal insects of other order either prefers early winter period September October or spring or rainy season August.	C.C Choudhuri and R.N Singh
223	Studies on the incidence of gall insects infestation on the primary tasar food plants	1984-85	To study on the incidence of gall insects infestation on the primary tasar food plants	During the year under report the intensity of gall infestation has come 33% and 31% respectively down to for *T.tomentosa & T.arjuna.*	C.C Choudhuri and R.N Singh
224	Survey of soil insects	1984-85	To study survey of soil insects	The two primary food plants, *T.tomentosa & T.arjuna* may be due to the difference in the schedule of agronomical practices. May-June beetle, Red beetle and Melalonthid beetle depth of soil.	C.C Choudhuri and R.N Singh
225	Record of some new pests on the primary tasar food plants of *A. mylitta*	1984-85	To study record of some new pests on the primary tasar food plants of *A. mylitta*	*Tricliona variabilis* Jac is the insect as distroying sal.	C.C Choudhuri and R.N Singh

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
226	Chemical control of pests and predators of primary tasar food plants and tasar silkworm	1984-85	To study chemical control of pests and predators of primary tasar food plants and tasar silkworm	The treatments with 0.02% dimesron 0.05% Nuvan and 0.08% Rogor gave maximum E.R.R.% indicating the least residual taxicity on the tasar larvae.	C.C Choudhuri and R.N Singh
227	Observation of the extent of damage caused by *Anomela blanchardi* to tasar food plants	1984-85	To study observation of the extent of damage caused by *Anomela blanchardi* to tasar food plants	The data indicated that beetle consumed about 3.77% to 8.93% in *T. arjuna* and 2.83% to 9.15% in *T.tomentosa* respectively.	C.C Choudhuri and R.N Singh
228	Survey of the infestation of Uzi fly	1984-85	To study survey of the infestation of Uzi fly	In third crop 41.4% uzi fly infestation revealed with an average of 7.03 number of maggots per cocoon at B.S.M&T.C Nowrangpur.	C.C Choudhuri and R.N Singh
229	Study of the ecoraces/ biotype of tropical tasar	1984-8)	To study of the ecoraces/ biotype of tropical tasar	Analysis of variance character for cocoon weight,shell weight, fecundity and larval weight.	K.Sengupta, S.N Chtherjee, A.K Sengupta, D.P Das mohapatra, Ajit Kumar, M.Z. Khan, . A.A. Siddiqui
230	Maintenance of marker lines earlier evolved	1984-85	To study maintenance of marker lines earlier evolved	The variance analysis is the average of the performance of these inbred stock .	K.Sengupta, S.N Chtherjee, A.K Sengupta, D.P Das mohapatra, Ajit Kumar, M.Z. Khan, A.A. Siddiqui

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
231	Studies on improvement of cooking technique of tasar cocoons	1984-85	To study on improvement of cooking technique of tasar cocoons	the trial was relicated 10 time for confirmation and in every case uniform cooking efficiency and reeling performance realised.	K.Sengupta, S.S. Ghosh, P.K. Dutta, T.K. Paul, M.K. Majumdar, P.D. Gupta, A.K. Pal & G. Mitra
232	Studies on new technique of tasar cocoon	1984-85	To study on new technique of tasar cocoon	Observation on mass reeling as well as twisting obtained through this technique is under progress.	K.Sengupta, S.S. Ghosh, P.K. Dutta, T.K. Paul, M.K. Majumdar, P.D. Gupta, A.K. Pal & G. Mitra
233	Studies on the yarn characteristics of single and double twisted tasar yarn and their performances in weaving	1984-85	To study the yarn characteristics of single and double twisted tasar yarn and their performances in weaving	It may be further pointed cut that twist contraction is greatly reduced in double twisting as compared to that obtained for single twist.	K.Sengupta, S.S. Ghosh, P.K. Dutta, T.K. Paul, M.K. Majumdar, P.D. Gupta, A.K. Pal & G. Mitra
234	Studies on development of diversified tasar yarn	1984-85	To study on development of diversified tasar yarn	Techniques more than 14 numbers of diversified tasar yarn products were prepared.	K.Sengupta, S.S. Ghosh, P.K. Dutta, T.K. Paul, M.K. Majumdar, P.D. Gupta, A.K. Pal & G. Mitra

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
235	Studies on weaving of undersized tasar organ zine	1984-85	To study on weaving of undersized tasar organ zine	That fabric samples produced in combination with undersized tasar organzine as warp with dyed merino wool and mericot as weft are of good appearance and texture.	K.Sengupta, S.S. Ghosh, P.K. Dutta, T.K. Paul, M.K. Majumdar, P.D. Gupta, A.K. Pal & G. Mitra
236	Studies on diversification of tasar fabric	1984-85	To study on diversification of tasar fabric	The fabrics are having good textile value and can be used for different purposes.	K.Sengupta, S.S. Ghosh, P.K. Dutta, T.K. Paul, M.K. Majumdar, P.D. Gupta, A.K. Pal & G. Mitra
237	Studies on cooking of tasar peduncle for spinning	1984-85	To study on cooking of tasar peduncle for spinning	After cooking and drying of tasar peduncle beaten on a 'Jalli' with the help of stick and processed on a power operated carding machine.	K.Sengupta, S.S. Ghosh, P.K. Dutta, T.K. Paul, M.K. Majumdar, P.D. Gupta, A.K. Pal & G. Mitra
238	Studies on technique of mechanical processing of tasar waste on new model charka set	1984-85	To study on technique of mechanical processing of tasar waste on new model charka set	KVIC wardha with the requisite modification was utilised for processing of tasar peduncle and other tasar silk wastes.	K.Sengupta, S.S. Ghosh, P.K. Dutta, T.K. Paul, M.K. Majumdar, P.D. Gupta, A.K. Pal & G. Mitra

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
239	Studies on blending of tasar peduncle and cotton by khadi of spinning	1984-85	To study on blending of tasar peduncle and cotton by khadi of spinning	New model charkha with other textile fibers with different kinds of tasar wastes for the development of diversified tasar products, retaining all the unique properties of tasar silk	K.Sengupta, S.S. Ghosh, P.K. Dutta, T.K. Paul, M.K. Majumdar, P.D. Gupta, A.K. Pal & G. Mitra
240	Studies on degumming of tasar silk	1984-85	To study on degumming of tasar silk	The tenacity (g/denier) in case of degummed raw silk is highest at 20 gm/liter concentration of shop.	K.Sengupta, S.S. Ghosh, P.K. Dutta, T.K. Paul, M.K. Majumdar, P.D. Gupta, A.K. Pal & G. Mitra
241	Studies on technological characters of tasar silk filament	1984-85	To study on technological characters of tasar silk filament	That silk filament thrown at the being has higher cross sectional dimension gradually gets reduced.	K.Sengupta, S.S. Ghosh, P.K. Dutta, T.K. Paul, M.K. Majumdar, P.D. Gupta, A.K. Pal & G. Mitra
242	Effect of pruning on the vegetative growth and yield of foliage of primary tasar food plant.	1985-86	To study the effect of pruning and frequency of pruning on the vegetative growth of foliage of primary tasar food plant.	Under this project pruning carried out optimum height and growth of the plants suitable for pruning, should be done annually for better qualitative and quantitative foliage production.	D.N Prasad, R.Khare, R.Kumar,& K.Sengupta
243	Comparative studies on growth, yield of leaves and incidence of diseases and pests under one sps. and two sps.	1985-86	To study the comparative growth , yield of leaves and incidence of diseases and pests of under one sps. and two sps.	Growth and yield of leaves, on the incidence of diseases and pests every month	D.N Prasad, R.Khare, R.Kumar, K.Sengupta.

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
244	Comparative studies on growth and yield of *T.arjuna* & *T.tomentosa*	1985-86	To study the comparative growth and yield of *T.arjuna* & *T.tomentosa*	The growth and yield of leaves of *T.arjuna* (T1) has been found comparatively better than *T.tomentosa* (T2).	D.N Prasad, R.Khare, R.Kumar, K..Sengupta
245	Studies on the response of N.P.K. singly as well as in combination on growth &yield of leaves of *T.arjuna*	1985-86	To study the response of N.P.K.singly as well as in combination on growth &yield of leaves of *T.arjuna*	The beneficial effects of N.P.K are well known in many field, as well as in horticultural crop and tasar food plants.	D.N Prasad, R.Khare, R.Kumar, K..Sengupta
246	To study the effect of different cuts in polythene tube on growth & yield of *T.arjuna* tube seedlings.	1985-86	To study the effect of different cuts in polythene tube on growth & yield of *T.arjuna* tube seedlings.	Treatment tube seedlings cut & planted in pit of 1'x1'x1' size at a distance of 4'x4' in tree replications	D.N Prasad, R.Khare, R.Kumar, K..Sengupta
247	Studies on Ecoraces of tropical tasar & their utilisation.	1985-86	To study on ecorace of tropical tasar & their utilisation.	Variability exists in this collection and data gathered has been processed, in the from of catalog on the basis of genetic resources information.	K.Sengupta, S.N. Chatterjee, V.N. Bardaiyar, A.K. Sengupta, D.P. Das Mohaoatra, Ajit Kumar, & A.A Siddiqui

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
248	Maintenance of marker lines and inbreed lines earlier evolved.	1985-86	To study Maintenance of marker lines and inbreed lines earlier evolved.	Maintenance of 7 ecoraces and performance of these above lines for last five years.	K.Sengupta, S.N. Chatterjee, V.N. Bardaiyar, A.K. Sengupta, D.P. Das Mohaoatra, Ajit Kumar, & A.A Siddiqui
249	Studies on the blood proteinograms of tropical tasar by Gel-electrophoresis method.	1985-86	To study on the blood proteinograms of tropical tasar by Gel-electrophoresis method.	The variability in the total protein and and lipoprotein banding pattern the different eco-races as well as experimental lines using simply poly-acrylamide gel.	K.Sengupta, S.N. Chatterjee, V.N. Bardaiyar, A.K. Sengupta, D.P. Das Mohaoatra, Ajit Kumar,& A.A Siddiqui
250	Fluorescence study of blood cells.	1985-86	To study fluorescence of blood cells.	The blood cell analysed in vitro through Acridine erange fluoresence microscopy.	K.Sengupta, S.N. Chatterjee, V.N. Bardaiyar, A.K. Sengupta, D.P. Das Mohaoatra, Ajit Kumar, A.A Siddiqui
251	Pathological studies in tasar silkworm.	1985-86	To study pathological in tasar silkworm.	A separated untreated was also maintained for the comparison.	K. Sengupta U.P Griyaghey Promod Kumar Ram Murti

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
252	Screening of eco-races of A.mylitta against diseases.	1985-86	To study Screening of eco-races of A.mylitta against diseases.	On hatching the worm contracted the diseases as they eat away the contaminated egg-shells.	K. Sengupta U.P Griyaghey Promod Kumar Ram Murti
253	Control measures against diseases of A.mylitta.	1985-86	To study Control measures against diseases of A.mylitta.	Among the different concentrations used 2%, solution of chemical with only 10.15% mortality due to bacteriosis was more effective in containing the disease than other.	K. Sengupta U.P Griyaghey Promod Kumar Ram Murti
254	Amino acids analysis of leaves of secondary food plants of Antheraea mylitta D.	1985-86	To study amino acids analysis of leaves of secondary food plants of Antheraea mylitta D.	Amino acid present in leaves separated by paper chromatography and quantitative.	A. K. Sinha U.S.P Sinha, K. Sengupta
255	Estimation of proteins, carbohydrates, reducing sugars and uric acid in the tissues extract of the healthy, pebrines infected and bengard treated larvae and pupae of A.mylitta D.	1985-86	To study Estimation of proteins, carbohydrates, reducing sugars and uric acid in the tissues extract of the healthy, pebrines infected and bengard treated larvae and pupae of A.mylitta D.	In case of pupae, males pupae contained more uric acid then female pupae but reverse was found true for proteins, carbohydrates and reducing sugars.	A. K Sinha U.S.P Sinha K.Sengupta

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
256	Studies on the moths of Antheraea species.	1985-86	To study on moths of Antheraea species.	That male moths contain higher concentration of inorganic phosphorus, total acid soluble phosphorus and lipid phosphorus in comparison to female moths.	U.S.P Sinha A.K Sinha U.P Griyaghey K. Sengupta
257	Studies on the silk glands and guts of Antheraea mylitta D.	1985-86	To study on the silk glands and guts of Antheraea mylitta D.	Concentration of proteins and carbohydrates in the silkglands of fifth instar larvae of A.mylitta.	U.S.P Sinha A.K Sinha U.P Griyaghey K. Sengupta
258	Studies on the excretory materials of Antheraea mylitta	1985-86	To study Studies on the excretory materials of Antheraea mylitta.	Concentration excreta of pebrine infected larvae as compared with the excreta of healthy larvae.	U.S.P Sinha A.K Sinha U.P Griyaghey K. Sengupta
259	Indoor rearing of young tasar silkworm up to 144 hours.	1985-86	To study Indoor rearing of young tasar silkworm up to 144 hours.	To soil analysis for soil samples collected from field laboratory.	A. K Sinha S. P Singh M. K Sinha G. S Singh J. Jayaswal K. Sengupta
260	Early age tasar silkworm rearing and development of artificial diet.	1985-86	To study early age tasar silkworm rearing and development of artificial diet.	To evaluate the effect of these diets the rearing performance I.e. mortality percentage to be higher over control.	A. K Sinha S.P Singh M.K Sinha K.Sengupta
261	Modification of new technique of rearing.	1985-86	To study Modification of new technique of rearing.	Perusal of data mortality was highest in lots reared in side the plastic boxes and least in case of bottles.	A.K Sinha S.P Singh M.K Sinha K.Sengupta

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
262	Study of the response of foliar spray of urea on growth yield and rearing performance of A.mylitta.	1985-86	To study of the response of foliar spray of urea on growth yield and rearing performance of A.mylitta.	It was observed that treatment C4 D1 (spray of 2.5% urea in 2nd crop) yielded highest gain in shell weight and silk ratio.	A.K Sinha S.P Singh M.K Sinha K.Sengupt
263	Studies on spray of leaf extracts (amino acid+fatty acid of T. arjuna) during the rearing on *T.arjuna* and their effect on commercial characters of cocoons.	1985-86	To study on spray of leaf extracts (amino acid+fatty acid of T. arjuna) during the rearing on *T.arjuna* and their effect on commercial characters of cocoons.	It was observed that the survival percentage was much higher in the treatment over control during 1st crop the results was not encouraging during 2nd crop.	A.K Sinha S.P Singh M.K Sinha K.Sengupt
264	Effect of brushing in different phases on cocoon characters, rearing performance and voltinism.	1985-86	To study effect of brushing in different phases on cocoon characters, rearing performance and voltinism.	It was observed that the best performance was in 3rd phase during 1st crop and in 2nd crop.	A.K Sinha S.P Singh M.K Sinha K.Sengupt
265	Studies on the insect population visiting primary tasar food plant.	1985-86	To study on the insect population visiting primary tasar food plant.	During summer may-June is the peak period of seasonal in tasar food plants.	K.Sengupta K.C. Mondal C.C. Choudhuri R.N. Singh(1) R.N. Singh(2)

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
266	Studies on the incidence of gall insects infestation on primary tasar food plants.	1985-86	To study on the incidence of gall insects infestation on primary tasar food plants.	The population of *Trioza fletcheri* minor was observed to fluctuate over the seasons and years for the past few years in primary tasar food plants.	K.Sengupta K.C. Mondal C.C. Choudhuri R.N. Singh(1) R.N. Singh(2)
267	Survey of soil insects subterranean distribution of different coleopteran pest of tasar food plants.	1985-86	To study survey of soil insects subterranean distribution of different coleopteran pest of tasar food plants.	Organic insecticides were applied in the entire cow-dung pit below economic injury level and was least injurious during that period.	K.Sengupta K.C. Mondal C.C. Choudhuri R.N. Singh(1) R.N. Singh(2)
268	Record of some new pests on the primary tasar food plants of A.mylitta	1985-86	To study record of some new pests on the primary tasar food plants of A.mylitta	Lepidopteran pests are causing damage to the foliage of primary food plants mainly in the month of August-September.	K.Sengupta K.C. Mondal C.C. Choudhuri R.N. Singh(1) R.N. Singh(2)
269	Chemical control of pests and predators of primary tasar food plants and tasar silkworm.	1985-86	To study chemical control of pests and predators of primary tasar food plants and tasar silkworm.	it causes 85%-90% mortality within 1-2 days for application.	K.Sengupta K.C. Mondal C.C. Choudhuri R.N. Singh(1) R.N. Singh(2)

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
270	Studies on the biology and control measures of the tachinid fly B.zebina (Tachinidae: Diptera)	1985-86	To Study on the biology and control measures of the tachinid fly B.zebina (Tachinidae: Diptera)	It has been thought desirable to stop the transportation of the cocoons from infected zones to Uzifly free area without properly stifled.	K.Sengupta K.C. Mondal C.C. Choudhuri R.N. Singh(1) R.N. Singh(2)
271	Effect of some insecticides on the soil insect for their control measures.	1985-86	To study effect of some insecticides on the soil insect for their control measures.	The results revealed 81.86,83.66,75.66 and 83.66% mortality of coleopteran pests in T1,T2,T3, and T4 respectively.	K.Sengupta K.C. Mondal C.C. Choudhuri R.N. Singh(1) R.N. Singh(2)
272	Studies on improvement of cooking technique of tasar cocoon.	1985-86	To study on improvement of cooking technique of tasar cocoon.	The cocoons after soaking were semi-dried on ash bed and used for reeling after deflossing.	M.K. Mazumdar S.S .Ghosh
273	Studies on new technique of tasar cocoon reeling	1985-86	To study on new technique of tasar cocoon reeling.	The raw tasar silk reeled on new technique was used for twisting directly on silk twisting machine.	T.K. Paul S.S .Ghosh
274	Studies on tasar yarn and fabric development through throwing and weaving.	1985-86	To study on tasar yarn and fabric development through throwing and weaving.	The combination of above techniques 22 numbers diversified tasar yarn products was prepared.	S.S Ghosh T.K Paul P.K Dutta G.Mitra
275	Studies on standardisation of twist per-inch on tasar thrown silk.	1985-86	To study on standardisation of twist per-inch on tasar thrown silk.	Initiated to standardise the twist per inch on tasar thrown silk to produce organzine tasar yarn.	S.S Ghosh T.K Paul P.K Dutta G.Mitra

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
276	Studies on twist setting of tasar thrown silk .	1985-86	To study on twist setting of tasar thrown silk .	The level of twist setting, steaming was conducted in a closed vessel by generating steam at the bottom of the vessel by boiling water.	G.Mitra S.S. Ghosh
277	Studies on cooking of tasar peduncle.	1985-86	To study on cooking of tasar peduncle.	Three cooking techniques of tasar peduncle were peduncles were considered.	S.S Ghosh G.Mitra M.K Mazumdar
278	Studies on spinning and blending of tasar peduncle on new model charkha	1985-86	To study on spinning and blending of tasar peduncle on new model charkha	The final roving consisting of small twist was fed on 6- spindles spinning charkha for preparation of final spun yarn.	T.K. Paul G.Mitra S.S Ghosh
279	Studies on standardisation and marketing of tasar silk yarn.	1985-86	To study on standardisation and marketing of tasar silk yarn.	The cocoons were brought from Raw Material bank, Chaibasa and the organzine yarn was deposited to Raw material bank chaibasa again for marketing.	S.S Ghosh T.K Paul M.K Mazumdar
280	Studies on sizing of tasar silk for weaving.	1985-86	To study on sizing of tasar silk for weaving.	The better in medium sized warp used for weaving where rate of production per 8 hour per weaver on fly-shuttle frame loom is 1.7 meter.	P. D.Gupta S.S. Ghosh
281	Studies on direct winding of tasar reeled silk for twisting on silk throwing plant.	1985-86	To study direct winding of tasar reeled silk for twisting on silk throwing plant.	The winding of reeled silk from reeling bobbins to double flaneged bobbins creel arrangements.	A. K. Pal S.S. Ghosh
282	Studies on technological character on tasar silk fabrics woven with twisted yarn.	1985-86	To study on technological character on tasar silk fabrics woven with twisted yarn.	Observed that bending length of the fabric woven in combination with twisted tasar silk decreased in warp direction though it is increased a little in weft direction.	A. K.Paul S.S. Ghosh P.K Dutta

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
283	Studies on degumming and bleaching of tasar silk yarn.	1985-86	To study on degumming and bleaching of tasar silk yarn.	To remove the natural colour of tasar silk yarn and keeping the importance of tenacity recipe R2 can be commercially used for bleaching of tasar silk yarn.	P.D. Gupta S.S. Ghosh
284	Studies on the evenness of reeled yarn on C.T.R.S. reeling machine.	1985-86	To Study on the evenness of reeled yarn on C.T.R.S. reeling machine.	Conducted on C.T.R.S reeling machine with 3,4,6 and 12 cocoon per end sperately maintaining constant number cocoon during the reeling time.	A. K.Paul S.S. Ghosh
285	Studies on the response of different doses of N.P.K singly as well as in different combinations on the growth and yield of leaves of *T.arjuna*	1986-87	To Study on the response of different doses of N.P.K singly as well as in different combinations on the growth and yield of leaves of *T.arjuna*	Clear that N2P2K2 best combination and dose, in comparison to other treatment. Further increase in all treatments over control clearly show the soil is deficient of NPK.	K.Sengupta, D.N. Prasad, H.R.Bania, R.Khare,ShovaBeck, A.K. Ambasht, Priya Ranjan
286	Comparative studies on growth and yield of *T.arjuna* and *T.tomentosa* under different spacing.	1986-87	To study on growth and yield of *T.arjuna* and *T.tomentosa* under different spacing.	For systematic plantation of *T.arjuna* and *T.tomentosa* a suitable spacing was forest which causes management problem.	K.Sengupta, D.N. Prasad, H.R.Bania, R.Khare,ShovaBeck, A.K. Ambasht, Priya Ranjan
287	Comparative studies on growth, yield of leaves incidence of disease and pests under one species and two species culture.	1986-87	To study on growth, yield of leaves incidence of disease and pests under one species and two species culture.	The best result the incidence of gall insects was observed in case of single species culture of *T.arjuna.*	K.Sengupta, D.N. Prasad, H.R.Bania, R.Khare,ShovaBeck, A.K. Ambasht, Priya Ranjan

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
288	To study the effect of different cuts in polythene tube seedlings.	1986-87	To study the effect of different cuts in polythene tube seedlings.	The problem different types of cuts in polythene have been considered in order to find out its effect on growth and development of *T.arjuna.*	K.Sengupta, D.N. Prasad, H.R.Bania, R.Khare,ShovaBeck, A.K. Ambasht, Priya Ranjan
289	To study the rearing capacity of one hectare of economic plantation and yield of leaves of *T.arjuna*.	1986-87	To study the rearing capacity of one hectare of economic plantation and yield of leaves of *T.arjuna*.	Leaf per hectare could sustain upto 450 Dfls, without any extra requirement of the foliage.	K.Sengupta, D.N. Prasad, H.R.Bania, R.Khare,ShovaBeck, A.K. Ambasht, Priya Ranjan
290	Studies on the response of foliar spray of urea on growth, yield and rearing performance of *A.mylitta* on *T. arjuna.*	1986-87	To study on the response of foliar spray of urea on growth, yield and rearing performance of *A.mylitta* on *T.arjuna.*	It has found that different characters of cocoon varied in different doses of urea spray.	K.Sengupta, D.N. Prasad, H.R.Bania, R.Khare,ShovaBeck, A.K. Ambasht, Priya Ranjan
291	Comparative studies on the growth and yield of leaves of different systems of planting.	1986-87	To study on the growth and yield of leaves of different systems of planting.	Cocoon varied in different doses of urea spray, highest E.R.R/shell wt and S.R% was in U1S2, U2S2 and U3S1 respectively.	K.Sengupta, D.N. Prasad, H.R.Bania, R.Khare,ShovaBeck, A.K. Ambasht,& Priya Ranjan
292	Studies on Eco-races of tropical tasar and their utilisation.	1986-87	To study on Eco-races of tropical tasar and their utilisation.	Characters of cocoon weight, shell weight, cocoon colour and cocoon per liter etc.	A.K.Sengupta, D.P.Das Mohaopatra,& Ajit Kumar

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
293	Analysis of of genetic variability and environmental interaction.	1986-87	To study analysis of of genetic variability and environmental interaction.	The broadness habitability ranged from 77.18% for cocoon weight to 38.13% for larval span.	A.K.Sengupta, & A.A. Siddiqui
294	Maintenance of biotypes/ Markerlines/ Breeds earlier evolved maintenance of Eco-races.	1986-87	To study maintenance of biotypes/ Markerlines/ Breeds earlier evolved maintenance of Eco-races.	Eco-races maintenance ecological races and three demes of Raily have reared in both the season.	Ajit Kumar,& A.K Sengupta
295	Hybridization and heterosis breeding.	1986-87	To study hybridization heterosis breeding.	The hybrids of interracial and intra-racial crosses completed 10^{th} and 11^{th} generation.	A.K.Sengupta, L.M.Saha ,& A.A.Siddiqui
296	Quantitative analysis of healthy and gall infected of *Terminalia arjuna.*	1986-87	To study Quantitative analysis of healthy and gall infected of *Terminalia arjuna.*	Leaves of *Tectona grandis, zizyphus mauritiana and Syzygium cumini,*the secondary food plantof tropical tasar.	A.K Sinha, U.S.P. Sinha, & K.Sengupta
297	Studies on the eggs of *Antheraea* species estimation of free amino acid in developing embryos of *Antheraea proylei* J.	1986-87	To study on the eggs of *Antheraea* species estimation of free amino acid in developing embryos of *Antheraea proylei* J.	The fall in concentration of amino acid seems to have resulted on account of their consumption for the formation of tissue and organ specific proteins of larvae at the time to hatching.	A.K Sinha, U.S.P. Sinha, & K.Sengupta

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
298	Estimation of proteins in the developing embryos of *Antheraea proylei* J.	1986-87	To study estimation of proteins in the developing embryos of *Antheraea proylei* J.	Started with egg laid within 24 hours and continued up to ninth day, larvae emerged on tenth day.	A.K Sinha, U.S.P. Sinha, & K.Sengupta
299	Studies on the haemolymph of sericigenous insects.	1986-87	To study on the haemolymph of sericigenous insects.	Haemolymph (1ml) from 105-195 days old healthy, pebrine infected and bengard treated pebrinised pupae was collected separately at an interval of 15 days.	A.K Sinha, U.S.P. Sinha, & K.Sengupta
300	Amino acids in the excreta of healthy and pebrine infected fifth instar larvae.	1986-87	To study amino acids in the excreta of healthy and pebrine infected fifth instar larvae.	First and second instar /moult the larval haemolymph during each instar/ mouth and pupal haemolymph from 0 and 15 days old pupae collected.	A.K Sinha, U.S.P. Sinha, & K.Sengupta
301	Estimation of proteins,carbo-hydrates and uric acid in tissues extract of healthy, pebrine infected bengard treated pebrinised lar-vae and pupae of *A.mylitta.*	1986-87	To study Estimation of proteins, carbohydrates and uric acid in tissues extract of healthy, pebrine infected bengard treated pebrinised larvae and pupae of *A.mylitta.*	Evident that concentration of proteins, carbohydrates and uric acid in the haemolymph is the least in the third instar.	A.K Sinha, U.S.P. Sinha,U.P Griyaghey & K.Sengupta
302	Effect of the spraying of leaf extract of *Terminalia arjuna* on the rearing and cocoon characters of *A.mylitta.*	1986-87	To study effect of the spraying of leaf extract of *Terminalia arjuna* on the rearing and cocoon characters of *A.mylitta.*	These leaf extract sprayed leaves were used for feeding of the larvae of *A.mylitta* D by physiology section.	U.S.P. Sinha, A.K. Sinha & C.C.Chaudhary

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
303	Survey of insect populations visiting primary tasar food plants	1986-87	To study survey of insect populations visiting primary tasar food plants	The incidence of leaf miner was more dominant in winter months than in the summer months.	K.Sengupta, K.C. Mondal, S.L.Dhar, R.N.Singh, S.R. Bhengra
304	Survey of soil insect population	1986-87	To study Survey of soil insect population	The maximum no of beetles were observed at an average depth of 6"to 12" with fluctuations during summer and winter months.	K.Sengupta, K.C. Mondal, S.L.Dhar, R.N.Singh, S.R. Bhengra
305	Survey of gall insect infestation	1986-87	To study survey of gall insect infestation	The peak period of infestation was about 7% during August - September in *T.arjuna, and* 15% during September in *T.tomentosa* plants.	K.Sengupta, K.C. Mondal, S.L.Dhar, R.N.Singh, S.R. Bhengra
306	Effect of certain organophosphate insecticides on psyllid gall insects	1986-87	To study effect of certain organophosphate insecticides on psyllid gall insects	This was closely followed by monocrotophos 0.075% and fenitrothin @ 0.075%. the rest insecticides were mediocre in action.	K.Sengupta, K.C. Mondal, S.L.Dhar, R.N.Singh, S.R. Bhengra
307	Studies on the biology and measures of the tachinid fly, *Blepharipa zebina* (Tachinidae : Diptera)	1986-87	To study on the biology and measures of the tachinid fly, *Blepharipa zebina* (Tachinidae : Diptera)	To the infestation various slow released insecticides are being tried against pupa of uzifly.	K.Sengupta, K.C. Mondal, S.L.Dhar, R.N.Singh, S.R. Bhengra
308	Effect of certain insecticides on the major coleopteran pests of tasar food plants	1986-87	To study Effect of certain insecticides on the major coleopteran pests of tasar food plants	The performance of phorate and carbofuron which give percent control of the major coleopteran pests was significant over that of BHC where in 60-85% control was achieved.	K.Sengupta, K.C. Mondal, S.L.Dhar, R.N.Singh, S.R. Bhengra

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
309	Foliar application of insecticides to control pests and predators of tasar food plants and tasar silkworm and the effects of residual toxicity on silkworm rearing	1986-87	To study foliar application of insecticides to control pests and predators of tasar food plants and tasar silkworm and the effects of residual toxicity on silkworm rearing	Rearing of *A.mylitta* D. reveals that E.R.R has not very much affected against the control lots to the spray of the insecticides.	K.Sengupta, K.C. Mondal, S.L.Dhar, R.N.Singh, S.R. Bhengra
310	Studies on the bionomics and control measures of certain coleopteran and lepidopteran borers	1986-87	To study on the bionomics and control measures of certain coleopteran and lepidopteran borers	That treatment resulted 74-100% control of borers among different insecticides tried phosphomidon and cypermethr in gave 100% control.	K.Sengupta, K.C. Mondal, S.L.Dhar, R.N.Singh, S.R. Bhengra
311	Pathological studies on tasar silkworm	1986-87	To study transmission studies of tasar silkworm pathogens through parasites and predators.	Rearing performance of *A.mylitta* larvae fed on microsporidian spores collected from different co-inhabiting parasites and predators.	K.Sengupta , U.P Griyaghey, P. kumar & Ashish kumar
312	Screening of Eco-races against diseases	1986-87	To study screening of Eco-races against diseases	The ecorace screening Bhandra and Sukinda with 59.25% and 58.30% pebrine mortality.	K.Sengupta , U.P Griyaghey, P. kumar & Ashish kumar
313	Histopathological & histochemical studies	1986-87	To study histopathological & histochemical studies	Sections of fat bodies revealed hypertrophied nuclei and presence of some rounded structure which did not take any stain.	K.Sengupta , U.P Griyaghey, Ashish kumar & Ram murti
314	Indoor rearing of young tasar silkworm upto 144 hrs	1986-87	To study indoor rearing of young tasar silkworm upto 144 hrs	The young tasar silkworm were reared on sal cut twigs for the period of 72,84,96,120 and 144 hours following the new technique of rearing.	K.Sengupta, C.C Chaudhuri, M.K Sinha, O.P Dubey, A. Chaudhuri, G.S Singh, & S.P Singh

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
315	Early age tasar silkworm rearing and development of artificial diet	1986-87	To study early age tasar silkworm rearing and development of artificial diet	The rearing performances and the comparative economic characters.	K.Sengupta, C.C Chaudhuri, M.K Sinha, O.P Dubey, A. Chaudhuri, G.S Singh, & S.P Singh
316	Maintenance of daba ecoraces and supply of basic seed	1986-87	To study maintenance of daba ecoraces and supply of basic seed	Stock maintenance of Daba for various experiments, 134 and 150 Dfl reared during 1st and 2nd crop.	K.Sengupta, C.C Chaudhuri, M.K Sinha, O.P Dubey, A. Chaudhuri, G.S Singh, & S.P Singh
317	Modification of new technique of rearing	1986-87	To study modification of new technique of rearing	Out of 35 Dfls, 20 Dfls released in the field after 72 hours of pit rearing and rest 15 dfls continued upto 2nd crop.	K.Sengupta, C.C Chaudhuri, M.K Sinha, O.P Dubey, A. Chaudhuri, G.S Singh, & S.P Singh
318	Study on response of the foliar spray of urea on growth yield and rearing performance of tasar silkworm, *A.mylitta* D	1986-87	To study on response of the foliar spray of urea on growth yield and rearing performance of tasar silkworm, *A.mylitta* D	Treatment showed better results over control for larval weight, E.R.R%, and cocoon weight and shell ratio percentage.	K.Sengupta, C.C Chaudhuri, M.K Sinha, O.P Dubey, A. Chaudhuri, G.S Singh, & S.P Singh
319	Studies on the spray of leaf extracts (Amino acids+fatty acids of *T.arjuna*) during rearing of tasar silkworm on *T.arjuna* and their effects on commercial characters	1986-87	To study on the spray of leaf extracts (Amino acids+fatty acids of *T.arjuna*) during rearing of tasar silkworm on *T.arjuna* and their effects on commercial characters	There was as net increase of 4.79% and 35.90% in E.R.R over control with the dose of 10% and 7% of leaf extract in 1st and 2nd crops respectively.	K.Sengupta, C.C Chaudhuri, M.K Sinha, O.P Dubey, A. Chaudhuri, G.S Singh, & S.P Singh

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
320	Effects of brushing in different phases of rearing performance, cocoon characters and voltinism of *A.mylitta D*	1986-87	To study effects of brushing in different phases of rearing performance, cocoon characters and voltinism of *A.mylitta D*	The brushing in 1st week of July, I.e,3rd phase in 1st crop and last week of August to 1st week of September during commercial crop I.e. 1st and 2nd phases most ideal to yield maximum cocoon weight, shell weight, S.R.% and E.R.R.%.	K.Sengupta, C.C Chaudhuri, M.K Sinha, O.P Dubey, A. Chaudhuri, G.S Singh, & S.P Singh
321	Studies on rearing performance of young Tasar silkworm, *A. mylitta* D under nylon net	1986-87	To study on rearing performance of young Tasar silkworm, *A. mylitta* D under nylon net	The motility was found to be 7.5% in both 1st and 2nd crops inside the nylon net where as 21.4% and 19.5% mortality found in 1st and 2nd crops respectively in control.	K.Sengupta, C.C Chaudhuri, M.K Sinha, O.P Dubey, A. Chaudhuri, G.S Singh, & S.P Singh
322	Designing of improved economic over for Tasar cocoon cooking	1986-87	To study designing of improved economic over for Tasar cocoon cookin	The economic over significantly differ at 0.1% level in respect of heat utilisation parameter from the traditional.	S.K Chowdhury,& S.Das
323	Studies on the post cooking process performance of different cooking system in vogue	1986-87	To study on the post cooking process performance of different cooking system in vogue	The different parameter viz. Cooking efficiency, production during reeling re-reeling and winding, waste percentage during the same operations and dynamo-metric properties of the yarn.	S.K Chowdhury,& N.B Kar
324	Studies on silk waste blending and spinning on new model charkha	1986-87	To study n silk waste blending and spinning on new model charkha	The productivity of different blended material, wastage and the technological qualities of the yarn.	S.K Chowdhury & N.B kar

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
325	Studies on spinning of reeling waste on pedal spinning wheel	1986-87	To study on spinning of reeling waste on pedal spinning wheel	Less due to processing in fillet machine certain amount of fibers flew away in processing.	N.D Banerjee,& N.B Kar
326	Studies on bleaching of tasar silk yarn	1986-87	To study on bleaching of tasar silk yarn	Strength got reduced in Bleaching samples to the extent varying from 14.20% to 20.14% depending upon the concentration of the bleaching solution.	S.S ghose & P.Dattagupta
327	Studies of spinning of tasar silk waste	1986-87	To study of spinning of tasar silk waste	Several spinning trials of reeling waste after the same was degummed in different alkline baths and after processed with fillet machine.	S.K Majhi
238	Studies on cooking and reeling of oak Tasar cocoon	1986-87	To study on cooking and reeling of oak Tasar cocoon	That reeling oak tasar cocoons on C.T.R.S improved reeling machine 179 gm. production per 8 hrs.	S.K Majhi &Shri Mathialagan
329	Studies on the response of different doses of N.P.K.Singly as well as in different combination on the growth and yield of leaves of *T. arjuna*	1987-88	To study the response of different doses of N.P.K.Singly as well as in different combination on the growth and yield of leaves of *T. arjuna*	Observations were recorded for different characters such as plants height, no. of branches plant-1 no. Of leaves branch-1 and leaf yield per hectare.	K.Sengupta, D.N. Prasad, H.R. Bania, R. Khare, Shova Beck & Priya Ranjan
330	Studies on the response of foliar spray of urea on growth and rearing performance of *A.mylitta* on *T. arjuna*	1987-88	To study the response of different doses of N.P.K.Singly as well as in different combination on the growth and yield of leaves of *T. arjuna*	Observation recorded on different characters Viz, plants height, branches plant-1 leave branch-1, length and breath of leaf and leaf yield ha-1	K.Sengupta, D.N. Prasad, H.R. Bania, R. Khare, Shova Beck & Priya Ranjan

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
331	Comparative studies on the growth and yield of leaves of different varieties of mulberry under different systems of planting	1987-88	To study the growth and yield of leaves of different varieties of mulberry under different systems of planting	Thus evident form the data that S1 variety of mulberry performed better than the other varieties in their respective treatment.	K.Sengupta, D.N. Prasad, H.R. Bania, R. Khare, Shova Beck & Priya Ranjan
332	Determination of optimum PH required for the growth and yield of leaves of *T.arjuna*	1987-88	To study determination of optimum PH required for the growth and yield of leaves of *T.arjuna*	Change of PH had no significant effect in the growth and leaf-yield in *T.arjuna.*	K.Sengupta, D.N. Prasad, H.R. Bania, R. Khare, Shova Beck & Priya Ranjan
333	Studies on flora biology of *Terminalia tomentosa*	1987-88	To study the flora biology of *Terminalia tomentosa*	No of seed set was observed which supports existence of self incompatibility in *T. tomentosa*	P.K.Srivastave, K.N.Singh, K.Sengupta, and S.S. Sinha
334	Studies on natural hybrids of *Terminalia* species	1987-88	To study the natural hybrids of *Terminalia* species	Seedling with uniform characters exhibiting higher growth rate and better foliage qualities were selected for transplantation	P.K.Srivastave, K.N.Singh, K.Sengupta, and S.S. Sinha
335	Studies on pleiotropism in *Terminalia* species	1987-88	To study the pleiotropism in *Terminalia* species	This close association between the charater, is attributed to pleiotropy or to close linkage of grnes in *Terminalia* species.	P.K.Srivastave, K.N.Singh, K.Sengupta, and S.S. Sinha

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
336	Studies on eco-races of tropical tasar and their utilisation	1987-88	To study the eco-races of tropical tasar and their utilisation	Observed that cocoon character after rearing deteriorated as compared to original stock which may be due to change of environment and food plants.	K.Sengupta, S.S. Sinha, A.K. Sengupta, D.P.Das mahapatra, Ajit Kumar, A.A.Siddiqui, C.M.Bajpeyi, R. Vijay Kumar, & Niranjan Kumar
337	Maintenance of Biotypes/ Breed/ Varieties	1987-88	To study Maintenance of Biotypes/ Breed/ Varieties	Encouraging performances in respect of commercial characters two line viz GE1 GE2 released during commercial crop'87 for field trial.	K.Sengupta, S.S. Sinha, A.K. Sengupta, D.P.Das mahapatra, Ajit Kumar, A.A.Siddiqui, C.M.Bajpeyi, R. Vijay Kumar, & Niranjan Kumar
338	Hybridization and heterosis breeding	1987-88	To study hybridization and heterosis breeding	The data further revealed that the performance at F.L.Nagri Ranchi was better than the other two places.	K.Sengupta, S.S. Sinha, A.K. Sengupta, D.P.Das mahapatra, Ajit Kumar, A.A.Siddiqui, C.M.Bajpeyi, R. Vijay Kumar, & Niranjan Kumar
339	Quantitative analysis of *Terminalia arjuna* leaves during different rearing seasons.	1987-88	To study quantitative analysis of *Terminalia arjuna* leaves during different rearing seasons.	Observed in case of moisture, nitrogen, mineral and crude fibre contents of the leaf during the three seasons.	A.K Sinha, U.S.P. Sinha,& B.N. Brahmachari

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
340	Studies on the soil plants relationship through soil analysis of tasar producing areas for PH, available nitrogen, phosphorus, organic carbon and water holding capacity.	1987-88	To study the soil plants relationship through soil analysis of tasar producing areas for PH, available nitrogen, phosphorus, organic carbon and water holding capacity.	The effect of pH on the growth of *Terminalia arjuna* plants.	A.K Sinha, U.S.P. Sinha,& D.N. Prasad
341	Estimation of free amino acid, proteins and carbohydrates in the developing embryos of *Antheraea proylei* J.	1987-88	To study Estimation of free amino acid, proteins and carbohydrates in the developing embryos of *Antheraea proylei* J.	Carbohydrates is the highest in one day old embryos and lowest in nine day old embryos indicating there by that the carbohydrate in embryos of *A.proylei* drops to minimum before hatching of larvae.	A.K Sinha, U.S.P. Sinha and K. Sengupta
342	Phosphatase estimation of acid and alkaline phosphatase in the developing embryos in *A. mylitta*	1987-88	To study phosphatase estimation of acid and alkaline phosphatase in the developing embryos in *A. mylitta*	Concentration of acid phosphatase is higher in the embryo in comparison to alkaline phosphatase.	U.S.P. Sinha, and A.K. Sinha
343	Estimation of acid and alkaline phosphatase in the larval and pupal haemolymph of *Antheraea. Mylitta* D	1987-88	To study estimation of acid and alkaline phosphatase in the larval and pupal haemolymph of *Antheraea. Mylitta* D	Concentration of both acid and alkaline phosphatase is more in male pupae in comparison to female pupae	U.S.P. Sinha, and A.K. Sinha

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
344	Studies on the constituents of cocoon shells of *A.proylei* J reared on different food plants.	1987-88	To study the constituents of cocoon shells of *A.proylei* J reared on different food plants.	Tasar cocoon reared on *Q.Semicarpifolia* is better than both the food plants *Q.incana & Q. serrata* as the former one contains low percentage of boil-off loss and total minerals and high percentage of total nitrogen.	A.K. Sinha, U.S.P. Sinha & Brahmachari
345	Monitoring of insects population infesting tasar silkworm and its host plants	1987-88	To study monitoring of insects population infesting tasar silkworm and its host plants	Infestation in *T.tomentosa* and *T.arjuna* respectively coleoptera, some beetle viz *Anomala* sps., *tricliona* sps.,and *Melolenthid* sps., were found to increases with the out set of monsoon.	S.S. Sinha, K. Sengupta, K.C. Mandal, R.N.Singh, S.R. Bhengra
346	Studies on the biology and control measures of the Tachinid fly, *Blepharipa zebina* (Tachinidae :Diptera)	1987-88	To study he biology and control measures of the Tachinid fly, *Blepharipa zebina* (Tachinidae :Diptera)	Observe the behaviour of *B.zebina,* in regard to their mode and extent of parasitization to the larvae of *Antheraea mylitta* D.	S.S. Sinha, K. Sengupta, K.C. Mandal, R.N.Singh, S.R. Bhengra
347	Control measures against the pest of tasar food plant	1987-88	To study control measures against the pest of tasar food plant	Performance of the insecticides, including the economics and persistency of the chemical, Rogor was preferable over the other.	S.S. Sinha, K. Sengupta, K.C. Mandal, R.N.Singh, S.R. Bhengra
348	Pathological studies of tasar silkworm	1987-88	Objective to identify and establish the antigen- antibody reaction in the pathogen infecting tasar silkworm	Thus it was it was felt that the method of isolation and purification of *Nosema* sp.	U.P. Griyaghey, Ram Murti, K.Sengupta & S.S. Sinha
349	Life cycle studies of microsporidian infecting tasar silkworm	1987-88	To study life cycle studies of microsporidian infecting tasar silkworm	Frequential distribution of sporogony of *Nosema* sp. In different developmental stages of *A. mylitta*	U.P.Griyaghey, S.M.Quadir, Promod Kumar, Ram Murti & S.S Sinha

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
350	Histopathological studies of *Nosema* sp. Infected tasar silkworm	1987-88	To study histopathological studies of *Nosema* sp. Infected tasar silkworm	The encapsulation gave an appearance of response in *A.mylitta* towards infection of Nosema *sp.*	U.P.Griyaghey, S.M.Quadir, Ashish Kumar, K.Sengupta & S.S Sinha
351	Control measures against different diseases	1987-88	To study Control measures against different diseases	Spraying of formulation CPBL on leaves and feeding the same to the worm reduced pebrine mortaility to 18.21% as against 52.66% in control.	U.P.Griyaghey, S.M.Quadir, Promod Kumar, K.Sengupta & S.S Sinha
352	Control measure against virosis and bacteriosis	1987-88	To study on control measure against virosis and bacteriosis	Control of viral mortality as to minimse viral mortality of 4.65% and 4.90 in T1 &T2 lots respectively against 11.15% and bacterial mortality to 5.64% & 6.33% treatment T1 and T2 respectively 7.65 in controls.	U.P.Griyaghey, S.M.Quadir, Ashish Kumar, K.Sengupta & S.S Sinha
353	Physio-pathological studies of Tasar silkworm	1987-88	To study on phospholipid contents of healthy and infected larvae of *A.mylitta*	Quantity of phospholipids was higher in disease free lots, medium in treared lots and lowest in disease lots.	U.P.Griyaghey,Virendra Kumar, K.Sengupta & S.S Sinha
354	Rearing studies	1987-88	To study the indoor rearing of young tasar silkworm upto 144 hours.	Considerably less than the rate of mortality under outdoor conditions.	C.C. Choudhuri, O.P. Dubey, K.Sengupta and S.S. Sinha
355	Studies on the different techniques of young stage silkworm rearing	1987-88	To study the different techniques of young stage silkworm rearing under pits.	Treatment, 3'x2'x1' size of pits gave better results rate mortality.	C.C. Choudhuri, O.P. Dubey, K.Sengupta and S.S. Sinha
356	Studies on the rearing capacity in one hectare of economic plantation	1987-88	To study the rearing capacity in one hectare of economic plantation	In first crop and 400 dfls. In 2nd crop can easily be sustained in one hectare of economic plantation.	C.C. Choudhuri, O.P. Dubey, K.Sengupta and S.S. Sinha

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
357	Nutritional studies	1987-88	To study early age tasar silkworm rearing and development on artificial diet.	Marked different in the rate of motility on artificial diets in comparison to the control however, diet a give better performance.	C.C. Choudhuri, A.B. Choudhury, K.Sengupta and S.S. Sinha
358	Study on the response of the foliar spray of Urea on growth, yield and rearing performance of Tasar silkworm, *A.mylitta* D.	1987-88	To study the response of the foliar spray of Urea on growth, yield and rearing performance of Tasar silkworm, *A.mylitta* D.	Worm fed on Urea sprayed leaves had an edge over the control lots in regard to commercial characters.	C.C. Choudhuri, A.B. Choudhury, K.Sengupta, S.S. Sinha & O.P. Dubey
359	Studies on the foliar spray of leaf extract.	1987-88	To study foliar spray of leaf extract.	There is no definite trend as far E.R.R is concerned, there has been marked improvement in the commercial characters, viz. Shell wt. And silk ratio.	C.C. Choudhuri, A.B. Choudhury, K.Sengupta, & S.S. Sinha
360	Studies on the effect of pruning at different periods on leaf yield and cocoon quality.	1987-88	To study the effect of pruning at different periods on leaf yield and cocoon quality.	The treatment showed better results over control in some of economic characters.	C.C. Choudhuri, A.B. Choudhury, K.Sengupta, & S.S. Sinha
361	Grainage technique	1987-88	To study on the preservation of seed cocoon	Temperature and relative humidity was to be in minimum underground grainage house to help minimise the pupal motility and to enhance the emergence and coupling percentage.	C.C. Choudhuri, O.P Dubey, K.Sengupta, & S.S. Sinha
362	Studies on reeling of Tasar cocoons (Tropical) with adhesive to increase cohesion.	1987-88	To study on reeling of Tasar cocoons (Tropical) with adhesive to increase cohesion.	Entanglement was much less during winding and loss was found to be comparatively less (3.85% as against 7.0%) in CTRS reeled yarn.	S.K Majhi, Alok Kar and S.S Sinha

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
363	Evolution of suitable method of cooking and reeling of tasar cocoon on wet basin.	1987-88	To study Evolution of suitable method of cooking and reeling of tasar cocoon on wet basin.	Better cohesion, evenness, neatness, cleanness, tenacity, and iusture have been noticed in the wet reeled silk.	S.K Majhi, Alok Kar and S.S Sinha
364	Fabrication of a composite machine for reeling, twisting, winding, doubling and hank formation.	1987-88	To study fabrication of a composite machine for reeling, twisting, winding, doubling and hank formation.	Due to incorporation of other gadgets like winding, doubling, hanking etc, these proved to be more helpful in the industry.	S.K Majhi, Alok Kar and S.S Sinha
365	Studies on the utilisation of wild tasar cocoon (cut) received from Botswana, South Africa	1987-88	To study the utilisation of wild tasar cocoon (cut) received from Botswana, South Africa	The lap was subsequently fed to roving machine it was attenuated six times to yield sliver.	S.K Majhi, Alok Kar and S.S Sinha
366	Spinning performance of waste blended with cotton on Amber Charka.	1987-88	To study Spinning performance of waste blended with cotton on Amber Charka.	Yarn spun was disuniform and lacking strength.	S.K Majhi, Alok Kar and S.S Sinha
367	Studies on spinning of *A. proylei* silk waste (like cotton lump) on Amber Charka.	1987-88	To study spinning of *A. proylei* silk waste (like cotton lump) on Amber Charka.	The blending of silk waste with cotton at the ratio 70:30 gave encouraging results production per spindle stands at 222.34 gms/ hrs.	S.K Majhi, Alok Kar and S.S Sinha

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
368	Studies to find out a suitable substitute for Biopril-50 for the cooking of *A. proylei* cocoons.	1987-88	To study to find out a suitable substitute for Biopril-50 for the cooking of *A. proylei* cocoons.	It observed that by action of Biopril-50, cooking becomes soft and fit for reeling.	S.K Majhi, Alok Kar and S.S Sinha
369	Studies on cooking and reeling of Laria cocoon.	1987-88	To study on cooking and reeling of Laria cocoon.	Laria cocoon (having Average shell wt.1.5 gm, denier 10, filament length 900 mts.)	S.K Majhi, Alok Kar and S.S Sinha
370	Studies on wet reeling of *A. proylei* cocoon.	1987-88	To study on wet reeling of *A. proylei* cocoon.	*A.proylei* cocoon having average shell.wt of 0.45 gm, filament length 480 mtrs, denier 4.0 taken the experimental material.	S.K Majhi, Alok Kar and S.S Sinha
371	Effect of Pruning on the vegetative growth and yield of yield of leaves of primary tasar food.	1989-90	Effect of Pruning on the vegetative growth and yield of yield of leaves of primary tasar food.	Light pruning of shoots, during the month of February is ideal, showing maximum and significantly higher leaf yield.	-
372	Studies on the Response of foliar spray of urea on growth, yield and rearing performance of *A.MylittaD*.on *T.Arjuna*	1989-90	Studies on the Response of foliar spray of urea on growth, yield and rearing performance of *A. mylitta D.* on *T.arjuna*	The treatment Urea has given significant improvement in both the season.	-
373	Genetics Improvement in *T.Arjuna* and *T.Tomentosa*	1989-90	Genetics Improvement in *T.Arjuna* and *T.Tomentosa*	Initial success was achieved in *T. tomentosa X T. arjuna* only where 10 seeds were found to set but they dried after two months of crossing.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
374	Studies on Mulberry	1989-90	Studies on Mulberry	Preliminary observation reveals that pruning of Mulberry plants at 12" height is better.	-
375	Studies on the habitat of the eco-types of tropical tasar silkworm *A.Mylitta* D. & their utilization.	1989-90	Studies on the habitat of the eco-types of tropical tasar silkworm *A. Mylitta D.* & their utilization.	Blackish grey Cocoons were found to be superior over other two in commercial characters.	-
376	Rearing Studies	1989-90	To study the rearing performance between indoor and outdoor condition	Lower loss percentage was recorded when the worms were reared under indoor condition up to 72hrs.	-
377	Nutritional Studies	1989-90	-	Significant increase was noted in the yield during 1st crop when the tasar worms reared on March and April pruned plants.	-
378	Grainage Studies	1989-90	-	The preservation were started from April onwards.	-
379	Pathological Studies on tasar silkworm *Antheraea Mylitta* D.Serological studies	1989-90	-	To overcome this, freezing and thawing method has been adopted for breaking the spores and its inoculation in the test animal.	-
380	Screening of ecoraces for resistance against different disease	1989-90	-	Analysed data represented on table.	-
381	Control Measures against different diseases	1989-90	-	It was observed that at 40 degree HCL, reduced the mortality due to pebrine.	-

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382	Monitoring of insect population infesting tasar silkworm and its primary host plants.	1989-90	-	Maximum lepidopteran incidence was recorded during the month of May.	-
383	Studies on the biology and control measures of Parasites and predators of tasar silkworm.	1989-90	-	Effects of Benzoic acid in different concentration on hatchability of eggs of Uzifly.	-
384	Studies on the role of natural enemies for the control of Uzifly.	1989-90	-	Attempts to raise a culture of the hyper parasite due under laboratory conditon resulted in heavy mortality of the hyper parasite due to lack of standard diet.	-
385	Studies on the biology of Hymenopteran parasites of stink bug,Canthecona furcellata	1989-90	To studies on the biology of Hymenopteran parasites of stink bug,Canthecona furcellata	Data revealed that the average emergence percent is nearly 85%.	-
386	Studies on the biology and control measures of the pests of tasar food plants.	1989-90	To studies on the biology and control measures of the pests of tasar food plants.	Dichlorovos 0.1% was found to be highly effective.	-
387	Study on the nutritional value of leaves.	1989-90	To study on the nutritional value of leaves.	*S.robusta* had significantly higher nitrogen content.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
388	Effect of rearing on primary and secondary food plants.	1989-90	To assess the rearing on primary and secondary food plants.	*S.robusta* found better in nutritional value.	-
389	Study on nutritional status of mulberry leaves under the agro-climatic condition of Ranchi district	1989-90	To study on nutritional status of mulberry leaves under the agro-climatic condition of Ranchi district	Two varieties K2 and S1 has indicated that moisture content was higher in K2 than S1.	-
390	Studies on blending of tasar silk	1989-90	-	Blending of oak tasar fibre with Cotton and polyester is quite feasible.	-
391	Weaving of Tasar Fabrics.	1989-90	-	In case of single and sizing the large raw silk hank was fitted on to a creel and the free end was taken out and passed through the sizing solution and wound on to a standard reel followed by subsequent processes for weaving on fly shuttle/semi automatic loom.	-
392	Wet Processing of Tasar Silk	1989-90	-	The reeled silk of oak tasar produced by biopril-50 method was degummed with different degumming agents such as soap, soda, and detergents at different concentration and temperature.	-
393	Studies on stifling of tropical tasar cocoons.	1989-90	-	The reeling performance of the cocoons under treatments was almost identical which indicates that difference in drying techniques has no effect on the reel ability of the cocoons.	-
394	Studies on tropical tasar cocoon cooking and reeling.	1989-90	-	The main drawbacks in cooking raily cocoons is that the individual cocoon requires to be tied with the silk waste without which its results in opening of the cocoons during boiling.	-

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395	Fabrication of Machine	1989-90	-	A perusal of the results reveals that with the increase of delivery speed of feed roller the production/unit time increases and T.P.I decreases.	-
396	Studies on Spinning and blending of tasar waste.	1989-90	-	It was observed that the data that the waste when subjected to degumming process before spinning resulted in higher production as compared to undegummed material.	-
397	Production of Disease free layings in DabaTrivolting and DabaBivoltine	1989-90	-	During third crop 5200 cocoons of Daba TV only were produced and 1338 Dfls were produced.	-
398	Maintenance of Daba Bivoltine and Trivoltinre seed stock.	1989-90	-	In third crop 50 Dfls of Daba TV were reeled and 4874 a total of cocoons @97 cocoons/dfls was obtained.	-
399	Maintenance of Germplasm bank.	1989-90	-	In addition of this three markers line were also maintained at the station. The rearing performance of these lines revealed that the yellow and almond lines performed better during first and second crop respectively.	-
400	Training and Demonstration of new technique of cooking and reeling of tasar cocoons	1989-90	-	Training and demonstration of mulberry cocoon reeling was also arranged.	-

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401	Training and Demonstration of new techniques.	1989-90	-	Entrepreneurship development programme Govt of bihar,in order to motivate women entrepreneurs for silk industry.	-
402	Training and Demonstration of New Techniques.	1989-90	-	Training and demonstration of reeler on temporary basis who has evinced interest in taking up reeling work as per improved technique at his home.	-
403	Training and Demonstration of New Techniques	1989-90	-	In order to popularize the improved techniques in cooking and reeling this centre has provided five members of reeling machine among the reelers.	-
404	Demonstration activities in reeling & Spinning	1989-90	-	Under this work program the center has arranged regular demonstration in tasar cocoon cooking reeling spinning to the local villages.	-
405	Training in new techniques of reeling & Spinning.	1989-90	-	The local voluntary organization for effective progress of tasar reeling in the area.	-
406	Survey, Collec-tion,andChar-acterisation of nature grown rally cocoons.	1989-90	-	Revealed that the cocoons of the nangoor region were superior to others in economic characters.	-
407	Study on the behavioral pattern of rally eco-races	1989-90	-	Better performance in respect of emergence, mating and egg laying under outdoor condition in comparison to indoor condition.	-
408	Preservation of seed cocoons of rally.	1989-90	-	Observed that unseasonal emergence was lower under outdoor and cellar in comparison to indoor conditions where it was maximum.	-

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409	Studies on the rearing techniques..	1989-90	-	First and second crops indicate low rate of mortality under indoor conditions except in case of pit rearing.	-
410	Natural Regeneration of Rally.	1989-90	-	Studies in this regard are under progress.	-
411	Survey,Collection,and Characterization of sarihan eco-types.	1989-90	-	Cocoon weight and shell weight are recorded with average filament length and denier.	-
412	Studies on Behavioral Pattern of Sarihan Eco-types.	1989-90	-	Cocoon dfl ratio was higher under indoor and outdoor conditions during 2nd and 3rd crops respectively.	-
413	Studies on rearing techniques.	1989-90	-	Cocoon weight, shell weight and SR(%) etc. were studied. Studied on Pit rearing, Bamboo tray, Wooden tray, Bottle rearing	-
414	Preservation of seed cocoon of Sarihan Eco-types.	1989-90	-	Preservation loss was about 18% in outdoor and 14.4% under indoor. No remarkable difference in erratic emergence was observed either under indoor or outdoor conditions.	-
415	Survey, Collection,and Characterization of Nature Grown Modal Cocoons.	1989-90	-	Data indicate that the cocoons collected from Dhenkikot5e and Kanchinda region was better than others in respect of commercial characters.	-
416	Studies on the behavioral pattern of the eco-types modal.	1989-90	-	Grinage of different generation of Bogai race which were maintained at the station was conducted.	-

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417	Preservation of the seed cocoons of local eco-race Bogai	1989-90	-	Though no emergence in the cocoons kept in cold storage, pupal mortality in that lot was recorded to the tune of 60-70%	-
418	Studies on the rearing techniques.	1989-90		During the yield was 8.97% in IV phase brushing whereas in other lots the rearing failed.	-
419	Survey and maintenance of germ plasm bank of Antheraea and wild sericigeneous insects.	1989-90	-	A total of 34 cocoons of *A. roylei* were also collected which were to be utilized for interspecific hybridization.	-
420	Evolution of improved strains of oak tasar silkworm	1989-90	-	The project was undertaken to isolate superior lines for fecundity yield and cocoon characters.	-
421	Isolation of lines for higher fecundity and shell weight in *A.Proylei*.	1989-90	-	Disease free laying prepared out of these were reared. The average shell weight of the cocoons harvested from those lots was 0.56 gram and 0.69 gram as against 0.58 gram in the control.	-
422	Studies on Rearing Techniques.	1989-90	-	The results revealed that the cocoons recovery was more with less intensity of past infestation in nylon net rearing.	-
423	Studies on Uzifly infestation and its control.	1989-90	-	The experiment was taken up to ascertain the effectiveness of the nylon in checking the incidence of Uzi fly.	-
424	Studies on the pest and predators of oak plants.	1989-90	-	It was observed that incidence of Aphids, shoot borer, leaf roller, semi lopper and hairy caterpillar was throughout the year with different intensity.	-

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425	Studies on the Silkworm Disease.	1989-90	-	In contrast the incidence of virosis was higher in the batches where iv & v instar larvae were subjected to chilling temperature.	-
426	Pruning studies on oak tasar food plants.	1989-90	-	A persusal of the data revealed that the leave yield per plant was higher in clipped plants in all the three diameter than that of bottom and drastic pruned ones.	-
427	Testing of different mulberry varieties under agro-climatic condition of Manipur.	1989-90	-	Data recorded pertaining to leaf yield per hectare revealed that S1 has performed better with an average yield of 22,267kg/ha.	-
428	Determination of Suitable methods of cocoon cooking for dry reeling.	1989-90	-	Perusal of the data reveal that better results in recipes A and B as against the control in respect of production,reeleability,cooking effoiciency,and yield.	-
429	Oak tasar silkworm seed production and supply.	1989-90	-	Out of total of 28,321 gram of seed prepared 25,195 gram was supplied to different state sericulture departments, Extension centers and Rearers.	-
430	Silkworm reeling for the production of seed cocoons.	1989-90	-	In addition to this during spring crop a total of 2, 63,318 cocoons were obtained from the various units working under R.T.R.S. and the adopted Rearers.	-
431	Multilocational rearing performance of *A.Proylei* J.on *Q.semcarpifolia.*	1989-90	-	The data presented show that the batch which was brushed late on Q.incana showed poor performance in comparison to the batch which was brushed on Q.serrata.	-
432	Preservation of seed cocoons.	1989-90	-	The detail on preservation scheduled of 7-8 months has been modified. However the efficiency of this schedule will be available only after completion of grainage of respective batches.	-

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433	Introduction of Univoltinism in A.Proylet J.	1989-90	-	The rearing was conducted at two places, the performance of rearing was almost similar 9.66 and 8.95 cocoons per dfl.	-
434	Oak Tasar Grainage Studies.	1989-90		For 2nd crop grainage 31,000 cocoons obtained from preponed first crop were processed.	-
435	Collection and Maintenance of Oak Tasar Silk worm races.	1989-90	-	Cocoons thus produced at high altitude were preserved and processed during preponed 1st crop 90.Out of 331 cocoons 152 male and 112 female moths emerged and 76 dfls were prepared and all were reared al low altitude.	-
436	Extension, Training, Production and seed supply.	1989-90	-	Dfls supplied to the state sericulture department Uttar Pradesh and to the private Rearers during 1989.	-
437	Arboriculture Studies.	1989-90	-	The treatment was found to give 100% germination followed by 60% in the five minutes treatment.	-
438	Preservation of oak tasar seed cocoons under different altitudes.	1989-90	-	Lots which were preserved at Batote, Senabati and Nowkote the same was higher in comparison to the others.	-
439	Rearing Technology	1989-90	-	The food plants available in Jammu Kashmir at high altitudes are Q.semecarpifolia from rearing results it is evident that Q.semecarpifolia has given better yield of cocoons during II crop both quantitatively and qualitatively.	-
440	Maintenance of Germplasm bank	1989-90	-	Oak tasar Impal, Bhimtal and Batote shows that effective yield of cocoons was better in the cross between lots of Bhimtal and Impal.	-
441	Production of Disease free laying	1989-90	-	Nearly 8000 seed cocoons of first crop remain unemerged.	-

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442	Maintenance of silkworm seed stock.	1989-90	-	For summer crop rearing 8000 univoltine and 1000 bivoltine dfls were brushed and 189198 and 12792 cocoons respectively were harvested.	-
443	Extension Activities.	1989-90	-	During summer crop 320,000 chawki worms were distributed amongst 19 reares who have harvested 1, 66,621 cocoons and earned an average income of Rs.965 per hectare.	-
444	Research Activities	1989-90	-	Young and old leaves of three oak species were analyzed and found that NUTRITIVE value decline with maturity due to decline in protein and increase in fiber content.	-
445	Oak Tasar Grainage	1989-90	-	During autumn crop grainage 1,102 seed cocoons were subjected to photoperiodic treatment for emergence and 207 dfls were prepared.	-
446	Raising of basic seed stock of A.Proylet.	1989-90	-	Completion of rearing latest by 1st week of May controls the incidence of viral disease and improves the yield.	-
447	Production of Disease free laying.	1989-90	-	During autumn crop 8000 cocoons were processed and 1569 dfls were prepared.	-
448	Maintaince of basic silkworm seed stock.	1989-90	-	During autumn 1569 dfls were brushed and cocoons @8 cocoon/dfls were produced.	-
449	Hybridisation of *A.Roylei* X *A.Proylei*..	1989-90	-	The same was reared and 22 cocoons were obtained cocoon, and shell weight and silk ratio were recorded to be 5.96 gram, 0.60 gram and 10.25% respectively.	-
450	Studies on the indoor rearing techniques	1989-90	-	Keeping in view the above data rearing up to 3rd instar under indoor condition is fruitful.	-

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451	Production of disease free layings.	1989-90	-	During summer crop 6,010 cocoons were processed and 1451 dfls were prepared. In autumn crop 3000 seed cocoons were processed and 625 dfls were prepared.	-
452	Maintaince of basic seed stock *A.Proylei*.	1989-90	-	During spring crop 1525 dfls were reered and 37420 cocoons were harvested with an average yield of 24.5 cocoons per dfl. In summer crop 1120&625 dfls were reered and 1050 & 1105 cocoons were harvested.	-
453	Production of Disease free laying.	1989-90	-	During spring crop total 7850 cocoons were harvested with an average yield of 24.5 cocoons per dfl. In summer crop 3028 dfls were reered and 10000 cocoons were harvested.	-
454	Maintaince of basic seed stock	1989-90	-	During spring crop 969 dfls were reered and 30402 cocoons were harvested. In summer crop 608 dfls were reered and 7015 cocoons were harvested.	-
455	Evolution and Maintaince of Univoltine line of *A.Proylei*.	1989-90	-	During spring crop 1525 dfls were reered and 37420 cocoons were harvested with an average yield of 24.5 cocoons per dfl. In summer crop 1120&625 dfls were reered and 1050 & 1105 cocoons were harvested.	-
456	Studies on seed preservation.	1989-90	-	Highest emergence and minimum recovery was observed in the lot kept at 5 degree celcius tempreture.	
457	Survey on the incidence of disease and pests of mulberry.	1989-90	-	Powdery mildew disease observed during july august, October, and November. Tukra disease was recorded during july august, Bihar hairy caterpillar during july to November.	-
458	Rearing performance of different race/breeds of silkworm	1989-90	-	Bivoltine race period from july to October is favourable wile out of four races has shown better performance during different season	-

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459	Extension Activiies.	1989-90	-	New mulberry plantation, establishment of demonstration farm, farmer training programme.	-
460	Establishment and maintenance of mulberry plantation.	1989-90	-	In Mahespur raj 2-24 acre of plantation was raised covering 11 beneficiaries.	-
461	Silkworm rearing	1989-90	-	Total of 20,250 dfls amongst 108 rearers and harvested 3136.80 cocoons with an average yield of 15.49 kg.per 100 dfls.	-
462	Farmer training programme	1989-90	-	54 farmers are trained in mulberry sericulture.	-
463	Extension Activities	1989-90	-	A total of 27.5 acers of land was brought under mulberry plantation. Beside this, gap filling was also done in 11.5 acre of old plantation.	-
464	Training Program	1989-90	-	24 farmers are trained in mulberry sericulture.	-
465	Mulberry Cultivation	1989-90	-	The center has establishment four mulberry gardens in 0.3,0.6,5.5 and 2 acres at office campus, CRC, Lohardaga, Bhandara and Netarhat respectively.	-
466	Silkworm Rearing	1989-90		63 beneficiaries and harvested 1,112.515kg cocoons.	-
467	Mulberry Cultivation	1989-90	-	25.5 acers of land was covered under mulberry plantation with the 32 farmers.	-
468	Silkworm Rearing	1989-90	-	Commercial rearing 1246.7 kg cocoons were harvested at the rate of 15.38kg/100 dfls.	-
469	Farmers training programmed	1989-90	-	Farmers are trained in mulberry sericulture.	-
470	Mulberry Cultivation	1989-90	-	Distribution of mulberry cutting and saplings. Raising of mulberry plantation.	-

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471	Silkworm Rearing	1989-90	-	8620 dfls reared and distributed after chawki rearing amongst 210 rearers and harvested at an average yield of 22kg/100 dfls.	-
472	Mulberry Cultivation	1989-90	-	7000 saplings were raisednand utilized for gap filling.	-
473	Farmers training	1989-90	-	19 persons were coverd under stipendary farmers.	-
474	Silkworm Rearing	1989-90	-	1870 dfls were supplied to rearers and voluntary organizations.	-
475	Propagation of primary tasar food plants, Arjun and Asan.	1991-92	1. To develop suitable technology for rapid and large scale propagation of Arjun and Asan through vegetative means and for multiplication of superior genotypes. 2. Effect of socking duration and depth of sowing on the germination potential of Asan seed. 3. Effect of seed gradation on the germination potential of Asan. 4. To determine the best period of germination of seed of Asan 5. To find out suitable hight for prouning of Tasar food plants so as to obtain higher leaf yield and improve ERR.	1. Air layers treated with IBA 300 ppm and IIA 200 ppm showed better results. 2. Seed soaked in water and later process showed highest germination. 3. Leaf yeild and ERR was better in *T.tomentosa* was better than *T.arjuna.*	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
476	Genetic improvement of primary Tasar Food Plants.	1991-92	1. Exploration, Progeny testing and identification of elite genotypes on the basis of morphological and other characters viz., high protein content, faster growth rate, higher leaf yield etc. 2. Isolation of quality food plants through bruassay studies. 3. Isolation of first growing high yielding and protein rich genotypes. 4. Evaluation of first growing and high protein yielding genotypes.	1. Number of branches and leaves per plant should be cosidered as effective parameter for selectuion of higher leaf yeild. 2. Trend of superiority of various genotype were 02>S2>S3>S1>B6. 3. Out of 640 total 300 seedlings of different genotypes are still surviving.	-
477	Studies on the improvement of quality leaf yield of primary Tasar food plants.	1991-92	1. To enrich the soil with various nutrients and minerals so as to obtain better foliage and increased productivity. 2. To get better foliage yield and increased productivity per unit area. 3. To obtain optimum quality leaf yield	1. Micronutrient level was sufficient in Nagri soil however, Kharsawa samples were deficient in Zinc. 2. Photosynthogen and miraculan performed better than cytozyme in improving the leaf yield. 3. Plants pruned during March and April had high mineral contents.	
478	Studies on food plant pests and diseases.	1991-92	Study of the nature and outbreak of diseases of food plants and their control. (1) Powdery mildew – *T. arjuna and T. tomentosa* (2) Leaf spot disease of *T. tomentosa*	The loss due to disease was 8-10%, sulfex can be used to control. In latter Blitox found effective.	

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479	Studies on improvement in quality leaf yield of primary tasar food plants.	1991-92	1. To determine optimum doses of NPK for maximizing the foliage production and improving the quality of the leaves of *T.arjuna.*	Treated plant with NPK (150:50:50kg/ha) gave maximum yield.	
480	Studies on the rearing techniques of Tasar silkworm.	1991-92	1. To assess the quality and quantity of food required by the silkworms of different ages.	The ingestion and excretion was less on sal than that of Arjun and Asan.	
481	Studies on suitable cocoon cooking and reeling techniques for tropical Tasar	1991-92	1. To find out a suitable method for softening of Tasar cocoons for their easy reeling and to find out tannin contents of Tasar cocoon shells vis-a-vis that of mulberry cocoons.	Extraction of tannins from the shells of D cocoon in aquous acetone and HCL mixture was carried out.	
482	Characterization of existing ecoraces of Tasar silkworm *A. mylitta D*	1991-92	1. To identify the potentialities of genetic resources for their further exploitation. 2. To evaluate different biotypes and evolve lines. 3. For characterization of different biotypes on cytological and biochemical basis.	1. The biotypes collected during the year, 1990-91 have already completed two generations and are under the process of acclimatization. 2. Raily was observed to be the best so far as absolute silk yield is concerned. 3. In a preliminary trial 14 clear protein bands were recorded in case of pupal haemolymph.	
483	Studies on the physiology of a diapause and reproduction in *A. mylitta*D	1991-92	1. To investigate the physiological cause of pupal diapause and the effect of different exogenous Chemical on induction and termination of pupal diapauses.	1. It was indicated that exogenous ecdysonterminates diapause. 2. Age specific variation in length and breadth of male and female gonads were recorded. 3. Alteration in size of brain,corpora-allata and Corpora-cardiaca was recorded.	

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			2. To work out the basic structure of reproductive system during different developmental stages and the effect of some exogenous chemicals to observe its impact on gonad maturation, fecundity, hatching etc. 3. to work out the basic structure of endocrine system during different developmental stages and their correlation with reproductive biology and diapauses physiology.		
484	Studies on the physiology of a diapause and reproduction in *A. mylitta*D	1991-92	1. Screening of different Ecotypes against loss of seed cocoons during preservation. 2. To evolve a methods of segregation and selection of seed cocoons for preservation. 3. To find out Optimum condition for seed cocoon preservation. 4. To work out suitable methodox reservation on Commercial scale. 5. To determine suitable age of embryo for egg preservation. To determine suitable range of abiotic factors for evolving efficient egg preservation technique.	1. It was indicated that exogenous ecdyson terminates diapause. 2. Age specific variation in length and breadth of male and female gonads were recorded. 3. Alteration in size of brain, corpora-allata and Corpora-cardiaca was recorded. 4. 4.7% sucrose increases the protein and carbohydrates in haemolymph.	

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			6. To find out suitable preservation schedule for delayed and synchronized hatching.		
485	Studies on the rearing technique of Tasar Silkworm and A mylitta D.	1991-92	1. To screen out method for existing ones for indoor Mass scale rearing of Tasar silkworm up to third instar and on maturation. 2. Synthesis of basic diet for rearing of young age and late age silkworm in the laboratory. 3. To determine the effect of known feeding stimulants on the feeding behavior and reairing performance of Tasar silkworm.	1. A reduction in larval duration for 1 day was noted in case of indoor rearing. 2. The indoor rearing on artificial dieddidn'tt perform well or unsatisfactory. 3. 3. 7% sucrose increase the protein and carbohydrates in hieroglyphs	
486	A studies on the disease and pests of Tasar Silkworm.	1991-92	1. Isolation and identification of pathogens. 2. To develop easy and accurate diagnostic method. 3. Histological and biochemical changes in A. mylitta D due to various disease. 4. To contain microsporidiosisvirosis-bacteriosis and mucoridine disease of the Tasar silkworm by evolving suitable control measures.	1. Cross-infection studies revealed thattasarsporeozoan is host-specific. 2. Preservation of different organs of infected and healthy silkworms are stored for further studies. 3. Spraying of 1% and 1.5% of asiphor gave 72.75% ERR over control 52%.	

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
487	Study on food plant pests and diseases.	1991-92	1. To observe the population dynamic and process of gall formation. 2. To observe the population Dynamics to evolve suitable control measures.	1. Histological studies revealed that galls are formed on meristmatic tissues as a result ofabnormal cell multiplication. 2. Folidol 3.0 kg/ha was effective to control larval population of *T.picea* in the soil.	
488	A studies on the disease and pests of Tasar Silkworm.	1991-92	1. To evolve a suitable control measures for uzi infestation of A. mylitta. 2. To control the insect predator of Tasar silkworm. 3. To implement IPM program for minimizing the population of parasites and predator of Tasar silkworm. 4. To evolve a suitable biological control method against C. furcellata.	1. Vanillin mixed in ethyl-alchohol attracted the fly pest. 2. Reproductive and host searching behaviour of the parasitoid were studied. 3. Sticky traps were useful for control of adults of Ichneumon wasp and uzifly. 4. Maximum production of female progeny per day by the parasitoid was on 3rd day which ceased by 7th day.	
489	Studies on the suitable cooking and reeling technique in tropical Tasar	1991-92	1. To find out the substitute for 8 to 50 as cooking medium. 2. To impart artificial cohesion to the 8 to 50 reeled Yarn on dry basins. 3. To improve the technological properties of Tasar reeled yarn by wet reeling.	1. B-50 is still superior as far as overall silk yarn yeild is concerned. 2. Mass reeling trials are essential to arrive at a definite conclusion. 4. The Daba cocoons coocked with H2O2 and soap media gave better results.	

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
490	Mechanical processing of Tasar silk and its blends	1991-92	1. To achieve diversification in utilization of Tasar silk waste. 2. Production of a blended and multicolored spun yarn with minimum exploitation of machineries and labour. 3. To evolve suitable Preparatory technology for Tasar silk yarn to improve weaving. 4. To produce better quality diversified Tasar blended fabrics to overcome the inherent short coming of Tasar fabric 5. Studies on degumming, bleaching and dyeing of the silk.	1. Carding process may be eliminated in manufacture of tasar spun yarn on Ambar charkha. 2. Multi-coloured diversified katiya yarn may be produced by this process. 3. Production per 8h for *A.proyeli* reeled yarn sized with sago stands ar 6.27m with 92 PPI. 4. Daba H2O2 wet R*R yarn gave better weaving performance. 5. Difference deggumingloss% between the difference types of wet reeled fabrics was not observed.	
491	Studies on the economics of the Tasar culture.	1991-92	To find out the production cost of various inputs vis., rising the maintenance of the Tasar food plant, cost of production of seats, cocoon and yarn, and end product.	1. Cluster of reares /reelers /weavers / is to be further surveyed to complete the study.	
492	Multiplication of dababivoltine and trivoltine stock.		Multiplication of elite speed for Supply to BSN and TCs/RECs.		
493	Survey collection and characterization of natural grown model cocoons.	1991-92	To survey the natural grown modal areas in Orissa and collection of modal coupon for their characterization and possible commercial exploitation.	Modal is basically a wild ecorace found in nature on *S.robusta*in Simplipal Forest.	

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
494	Studies on behavioural pattern of local biotypes.	1991-92	To study the emergence pattern ana mating behavior of Modal and Bogai. Studies on rearing behavior of Bogai.	1. In II crop 9,428 seed cocoons of Bogai generation 2,4,5 and 9 were processed and 2,053 dfls were prepared. 2. In II crop 9,428 seed cocoons of Bogai generation 2,4,5 and 9 were processed and 2,053 dfls were prepared.	
495	Preservation of seed cocoons of Bogai.	1991-92	To record the loss during seed preservation.	1. Bogaiseed can be preserved to meet the requirement.	
496	Studies on rearing technique.	1991-92	To find out the ideal period of brushing in both seed and commercial crops for best possible performance in terms of qualitative and quantitative characters.	1. 3rd crop brushing done on 10.11.91 gave better performance.	
497	Collection and characterization of nature grown Sarihan Biotype.	1991-92	To survey the area nature grown Sarihan and collection the cocoons for their characterization and for commercial exploitation.	Data represnted on table.	
498	Studies on the behavioural pattern of Sarihan Biotype.	1991-92	1. To study the voltinism ,emergence pattern, breeding pattern and egg laying in three generation. 2. Rearing behavior of Sarihan and other biotypes.	1. It was observed that in all the three crops grainage behaviour of the Sarihan was normal. 2. Heavy mortality of tasasr silkworm of all the ecoraces was observed due to virosis.	
499	Preservation of seed cocoons.	1991-92	To study the erratic emergence pattern of Sarihan in indoor and outdoor condition for evaluation of preservation loss.	In outdoor lot, very little erratic emergence maximum in marc(1.7%).	

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
500	Studies on the inter-racial hybridization of Sarihan with Div, Dbv, Raily, Sukinda and Modal.	1991-92	To evolve a new variety through cross breeding.	Sarihan x Sukinda gave better performance.	
501	Characterization of Biotype Raily	1991-92	1. Survey and collection of Raily in its natural abode and studying the preservation loss. 2. Survey the natural eco-pockets of Raily biotype and their characterization for commercial exploitation.	1. Minimum pupal mortality was recorded in outdoor followed by indoor. 2. Cocoons collected from Nangoor and Darbha region showed superior commercial characters.	
502	Stabilisation of crop under semi domestic condition.	1991-92	1. To find out suitable period for brushing of Raily silkworms. 2. To find out best suitable food plant for rearing in jagdalpur area. 3. To explore the possibility for minimizing mortality due to the bacteriosis and virosis. 4. To stabilize the crop and to the maintain the desired commercial characters of Raily through breeding programme.	1. 3rd to 4th week of june in 1 crop and early 3rd-wewek of september,duringII crop gave better yeild. 2. *T.arjuna* and *T.tomentosa*had higher ERR than S.robusta. 3. The use of T.K.O and sodium hypochlorite shown little reduction in mortality. 4. Improvement in absolute silk yield was recorded.	
503	Selection of early sprouting varieties of quercusserrata.	1991-92	To isolate early sprouting varieties of Q. serrata and their propogation form raising early crop.	Vegetative propagationis still difficult in *Q.serrata.*	

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
504	Pruning studies and correlation of type of pruning with growth of *Q. serrata*	1991-92	To study the effect of different agronomical practices on growth of *Q. serrata.*	In older plants response of pruning on leaf yield was comparatively less.	
505	Cytological studies on Quercus SP.	1991-92	To identify the cyotype of Qurercus sp.	In metaphase and metaphase-q the mitotic and meiotic cells had 24 and 12 bivalent chromosomes, respectively.	
506	Survey and Maintenance of Genotypes of *Antheraea* Species.	1991-92	To enrich gene and genotype of Oak feeding *Antheraea* species, their conservation and utilization for various breeding programmes.	*A.proyeliand A.perni* had no significant difference in respect of commercial characters.	
507	Evolution of improved breed of Oak Tasar silkworm by hybridization.	1991-92	To combine desired character into a single breed to increase genetic variability and to exploit hybrid vigour.	Positive and highly significant correlation coefficient was recorded between female pupal weight and fecundity.	
508	Evolution of uni and bi-voltine breads in Oak Tasar silkworm.	1991-92	To evolve pure uni and bi-voltine breeds.	Fecundity, hatching, ERR, cocoon wt., shell wt. and SR were 5.81g, 0.56g, and 9.6%,respectively.This study is under progress.	
509	Cytological studies	1991-92	To study basic chromosome number and behaviour in dividing cells.	Chromosome number was 32(n) in metaphase-1.	
510	Stablization of Oak Tasar crop.	1991-92	1. To find suitable season on rearing. 2. To determine effect of pruning on rearing performance of *A. proylei.* *3. To assess the impact of fertilizer application on cocoon yield.*	1. High humidity is mainly responsible for occurrence of diseases in oak tasar silkworm. 2. During March-April rearing on cut shoots was successful. 3. The best quality cocoon could be obtained from 90% pruned plants.	

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511	Regulation of Pupal Diapause, Fecundity and Fertility in *A. proylei.*	1991-92	To improve seed cocoon, recovery, fecundity and fertility.	During January to March 1991 erratic emergence contrinued in both the lots.	
512	Studies on uzifly infestation and their control measures.	1991-92	To carry out studies on seasonal intensity of fly pest infestation on Oak tasar silkworms to evolve suitable control measures by shifting crop period.	There was no hatching of uzifly eggs when the uzicide was sprayed within 24 h of egg laying.	
513	Survey of insect pest complex of Oak plants and their control measures.	1991-92	To assess the extent of damage by major and minor insect pests.	Aphids,cterpillers and leaf rollers were observed throughout the year except during January.	
514	Studies on bacterial/viral diseases of *A.proylei.*	1991-92	To the observe the effect of tempreture fluctuations of disease incidence in *A. proylei* to evolve control measures.	Exposure of III and IV instar larvae to cold temperature for 3h increased incidence of virosis and bacteriosis.	
515	Studies on nutritional value of quercus species in relation to season.	1991-92	To determine suitability of different quercus species for Oak tasar silkworm A. proylei.	It was observed that fibrecontent of Oak leaves was minimum during March which increases in April.	
516	Evolution of improved cooking techniques for reeling.	1991-92	To find out effective, easy and economic cooking recipe for reeling.	It was observed that recipes A and B showed better results in respect of reeling performance and cooking efficiency.	
517	Development and diversification of Oak Tasar Fabrics.	1991-92	To evolve suitable preparatory technologies for improving quality of Oak tasar fabrics for popularization.	The former and the later silk cloth appear to be suitable for shirting and chadar.	

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518	Seed multiplication and supply.	1991-92		A total quantity of 30,412 g seed was supplied to different Govt. agencies.	
519	Production of seed cocoons.	1991-92	To increase quality seed cocoon production for supply.	A total of 1,01,848,140 and 100 cocoons were produced, respectively having ERR 53,2.8 and 0.75%	
520	Preservation of seed cocoons under different ecosystems.	1991-92	1. To findout ideal altitudes for preservation in order to minimize loss during preservation of seed cocoons. 2. To postpone the hatching to syncronise availability of suitable leaves and rearing.	1. The preservation loss at different locations were 17% at Chirota (7,500'ANSL) 1.20% at Sansarand 0.30% at Patnitop. 2. Data indicated that eggs can be preserved upto 15 days without any adverse effect on hatching.	
521	Rearing of Tasar Silkworm at various altitudes.	1991-92	1. To find out effect of different altitudes and food plants on rearing of *A. proylei.* 2. To reduce the mortality of silkworm due to virosis.	1. Total 25'400 cocoons were harvested @ 11.70/ dfl at mahumangit. 2. Highest coupling percentage was obtained in F7 and F8 whereas highest fecundity was recorded in F4 followed by F8.	
522	Hybridisation studies	1991-92	To improve yield of Oak Tasar.	Highest silk ratio was obtained in*A.proyeli x A.pernyi*.	
523	Raising of basic stock of Oak tasar seed cocoons.	1991-92	Production and supply of seed to state sericulture units.	1. The cocoon dfl ratio and fecdundity was much better in two preceding grainage than III grainage.	
524	Studies on grainage behavior of Oak Tasar seed cocoons.	1991-92	Grainage behavior during preponed I crop, normal crop, Univoltine and II crop grainages.	Cocoon dfl ratio was higher in *A.proyeli x A.pernyi* lot with low average fecundity than *A.pernyi x A.proyelei.*	

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525	To study and determine suitable preservation schedule for Oak Tasar Seed Cocoons.	1991-92	1. To check untimely and erratic moth emergence for more seed cocoons recovery. 2. To assess the crop feasibility at various altitudes and on different food plants. 3. To develop suitable rearing device.	1. In mass seed cocoon preservation programme at low temp. there was 80.5 % seed cocoon recovery and 44% at high altitude preservation. 2. Higher cocoon yield was obtained at high altitude. 4. Rearing done with conventional device has given better ERR in first trial.	
526	Collection, Maintenance and preparation of inter-specific crosses and induction of univoltinism in Oak tasar silkworm.	1991-92	1. To enrich the genetic resources of Oak Tasar silkworm	1. Attempts were made to isolate UV nature seed cooconsare preserved for further study.	
527	Extension and seed supply.	1991-92	To popularize Oak tasar culture.	1. Distribution of 1, 00,000 chowkiworms to 11 farmers.	
528	Multiplication of Seed cocoons.	1991-92	1. To increase production of seed cocoons to meet the seed requirement. 2. To findout suitable period of brushing of oak tasar silkworm at middle altitude. 3. To determine feasibility of raising tasar crops on alternate food plants. 4. To record the preservation loss.	1. A total of 2, 99,687 cocoons were produced. 2. Brushing of worms on 23.03.91 had highest ERR. *3. Q.serrata and Q.delbiata* found worthy. 4. A total emergence of 70.6% and pupal mortality of 23% was recorded.	
529	Maintenance of basic silkworm seed stock of oak Tasar.	1991-92	Supply of seed to state government farms and other agencies.	1. Out of 82,587 seed cocoons preserved at high altitude 8,909 were lost.	

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530	Extension activities	1991-92		2. 87,577 chawki worms of 2,914 dfls were distributed to 6 rearers at high altitude.	
531	Leaf growth and mutritional quality of Quercus species	1991-92	1. To work out suitable defolitation schedule to get quality and synchronized leaf yield for brushing of silkworms. 2. To assess nutritional status of Quercus leaves with different treatments and age. 3. Developing artificial diet for feeding of early inster worm of A. proylei J.	1. Pruning at 6' height gave better results than 5'. 2. Foliage of full defoliated plants had better composition. 3. Worms did not accept diet.	
532	Maintenance of Oak Tasar Silkworm Species	1991-92	1. To maintain various genes and genotype of various oak feeding Antheraea species. 2. To observe the suitability of rearing of A. pernyi and A. proylei in different agro – climactic condition of Himachal Pradesh.	1. A.proyeli behaved better in all aspects like fecundity, ERR etc. 2. Multiplication ratio of A.proyeli was higher than that of A.pernyi.	
533	Evolution of superior silkworm breeds.	1991-92	1. To evolve high yielding lines with respect to various commercial characters. 2. To evolve superior breeds with respect to their quantitative and qualitative characters.	1. Inbred lines reared cellularly gave ERR(29.25 to 66.00%) and SR (8.34 to 12.14%). 2. Eggs of thr cross *A.proyeli x A.yamamai* did not hatch.	

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
534	Studies on seed cocoon preserva-tion and grainage behavior.	1991-92	To get synchronized emergence with increased fecundity and hatchability.	Phytoecdyosteroids study. Study is under process.	
535	Propagation of primary tasar food plants.	1992-93	• To develop suitable technology for rapid and large scale multiplication of superior genotype of Asan and Arjun. • 2. To evolve most suitable method for raising seedlings of Asan.	1. Air layering was found the best method for vegetative multiplication of *T.arjuna*.*T.tomentosa* did not respond towards rooting by cutting and airlayers. 2. 48 hrs of seed soaking for *T.tomentosa* revealed maximum geration(52%).	-
536	Studies on the improve ment of quality leaf yield of primary Tasar food plants	1992-93	• To determine optimum doses of NPK for maximizing the foliage production and improving the quality of the leaves of *Terminalia arjuna.* • Determination of pruning schedule for *T.arjuna and T.tomentosa.* • *To* enrich the soil with micro-nutrients and minerals,so as to obtain better foliage and increased productivity. • To obtain better quality foliage to increase the yield per plant and productivity per unit area of the leaves.	1. It was found that NPK in the doses of 150:50:50 kgs./hact.increased the yeild. 2. It was found that 3'ft height of both *T.arjuna* and *T.tomentosa*yeild maximum leaf. 3. Soil samples collected from different localities and were analysed.Theatudy is under process. 4. Photosynthogen performed best among the three chemicals under study.	-

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537	Studies on food plants of pests and diseases	1992-93	• To observe the cecidogenesis of leaf galls on *T. arjuna* and *T. tomentosa.* • To observe the populatoin dynamics and to evolve suitable control measures. • To identify the symptoms and causative agents, toaasses loss and to evolve control measurses of diseases of tasar food plants.	1. During later stages of cecidogenesis,cells that contain starch and polyphenolic material became schlerids. 2. The population build up associated with weather conditions and aldrinshowed better results in control measures. 3. Powdery mildew caused by phyllactinaterminalia caused foliage loss of 8%-12.5%.	-
538	Genetic improvement of primary Tasar food plant.	1992-93	• To search and identify the elite genotypes of *Terminalia spp.*on the basis of morphological and other characters. • Isolation of fast growing, high yielding and protein rich genotypes. • Evolution of fast growing, highyeilding, protein rich and bushy genotypes.	1. Out of 61 genotypes 22 genotypes are being maintained as half sib and 39 as plus tree.The study is under process. 2. The experiments showed promising results.the further analysis is under process. 3. Out of 150 seedlings 125 servived and 24 showed mutant characters initially.	-
539	Characterization of existing ecoraces of tasar silkworm *A. mylitta D*	1992-93	• Identification of potentialities of the genetic resources and their exploitation. • To evaluate different biotypes and evolved lines. • Characterization of biotypes o cytological and biochemical basis.	1. During acclimatization, some biotypes deviated from original values of their commercial characters. 2. In absolute silk yield percentages, Daba was best followed by Sukinda and Modal. 3. The F1 generation of various crodd combinations have been subjected for Evaluation of chiasma frequency in male germ cells and frequency of diplodiakinesis cells in various biotypes.Studies are under progress.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
540	Studies on the diseases and pests of Tasar Silkworm	1992-93	• Isoloation and identification of pathogens and development of easy accurate diagnostic methods. • To study histological and bio-chemical changes in A.mylitta D. due to various diseases. • To contain microsporidiosis,virosis,bacteriosis,andmuscardine diseases of tasar silkworm by evolving suitable control measures. • To evolve suitable control of uzi-fly infection in A.mylitta D. • To control insect predatotrs of tasar silkworm. • To implement IPM programme for minimising the populatin of parasites and predators of tasar silkworm. • To evolve suitable control measures against C.fuecellata.	1. The detailed study of microsporidian infecting A.mylitta revealed that the spore nucleus is diplokaryotic and has a polar cap. 2. The protein levels in treated lots increased comparison to infected lots. 3. Sosium hypochlorite effective for virosis,Asiphorwas effective for bacteriosis. 4. A water dospersible powder, a dust preparation and an emulsificableconcentrate of Neem found effective. 5. Podagrion spp. was found as a very suitable bioagent against Hierodulabipapilla. 6. The use of pest-o-flash,sticky traps and fly flapper were recommended. 7. The preponderance of females due to solitary parasitism and a balanced sex ratio due to super parasitism.	-
541	Studies on the rearing techniques of Tasar Silkworm *A. mylitta D.*	1992-93	• To assess the quality and quantity of food required by the silkworm of different stages. • To screen out a method for indoor rearing in mass scale. • Synthesis of artificial diet of tropical tasar silkworm.	1. Leaf consumption was slightly more during 2nd crop. 2. Indoor rearing upto spinning is economically not feasible as very low ERR recorded. 3. The Larvae could not survive beyond 3rd instars. 4. GLUCON-C found superior over sucrose.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
			• To determine the effect of known feeding stimulants on the feeding behaviourand rearing performance of tasar silkworm.		
542	Studies on the physiology of diapauses and reproduction in *A. mylitta D.*	1992-93	• To evaluate the effect of ecdysteroids,Juvenile hormone and other analogous hormones on tasar silkworm growth and development during developmental stages of diapausing and non-diapausingbroods. • To determine optimum conditions for preservation of Dabaas well as Laria, Modal,Bogai and Railyseed cocoons. • To evolve norms of selection of seed based cocoons during different levels of multiplication. • To evaluate effects of temperature,relative humidity and natural ecofactors for emergence eating and egglaying. • To evolve suitable devices foregglaying. • To evolve suitable devices for eggs transportation. • To evolve different devices for minimising pupal mortality erratic emergence in commercial grainage.	1. Data on metreological were collected.Analysis of the data is under process. 2. Ovarian development is faster in non-diapausingbroods than diapausing. 3. The shape and sizes of the neuroendocrine organs changes during developmental stages. 4. The filament length and silk recovery percentage increased in treated lots. 5. 4 to 8 hrs of mating duration was found ideal for maximum egg production and fertilixation. 6. Eggs preserved in complete darkness followed by a single light on impulse showed good hatching percentage.	

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
			• To determine e suitable age for egg preservation. • To evolve technique of egg preservation for postponement of hatching. • To evolve technique for enhancement and synchroniziation of hatching.		-
543	Studies on the suitable cooking and reeling technique in Tropical Tasar	1992-93	• To find out the substitute for Biopril-50 (B-50) for dry reeling. • To impart artificial cohesion to B-50 reeled yarn on dry basins. • To improve the technological properties of tasar reeled yarn by wet reeling. • To develop a suitable reeling and spinning machine.	1. Salicylic acid, which were much inferior to B-50. 2. The problem of yarn sticking with various part of machine still persisting at the ti,e of reporting. 3. The tenacity of the yarn found good with H2O2 wet reeled yarn. 4. Suitable modification done in coarser fillet for efficient opening of degummed cocoon waste for spinning.	-
544	Mechanical processing of Tasar Silk and its Blends	1992-93	• To achieve diversification in utilization of Tasar silk waste and to study the effect of blend composition on Tasar yarn properties. • Production of blended and multicoloured spun yarn with minimum exploitation of machineries and labour. • Diversification of tasar fabrics by weaving with different levels of twist and dyed yarn.	1. The production rate for bleached and metal complex dyed sample was far lower than degummed sample. 2. Cocoon waste soften with H2O2 method can be spun for the production of finer and uniform count of katia yarn. 3. 2.5% sago+1% PVA+ 1.5% TKP yielded the best we aping performance. 4. There was no significant difference between the production for low twisted yarn and reeled yarn.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
545	Studies on the economices of tasar culture.	1992-93	• To determine the production cost of different types of tasar yarn (Reeled/spun) and fabrics. • To calculate the economics of reeling, Spinning and weaving. • To study the socio-economic condition of reelers and weavers.	1. The production cost of fabric varies from Rs.44/m to Rs.104/m. 2. Weaving charges varies from Rs.6 to Rs.12 per meter. 3. Most of the reelers /weavers families have the annual income ranging from 10k to 20k.	-
546	Collection and characterization of nature grown Sarihan Biotypes.	1992-93	• To survey the natural habitates of Sarihan and to collect the cocoons for their characterization. • To find out the behavioural pattern of Sarihan and hybrids.	1. The shell wt ranged from 0.63 to .67 gm. 2. There was no difference in cocoon/dflratio,the range was 4.29 to 5.94/dfl.	-
547	Stabilization of crop under semidomestic condition.	1992-93	• To find out the optimum period of brushing to have good yield. • To find out the better food plant for Sarihan silkworm rearing. • To evolve suitable variety for the region.	1. June and October was found suitable 2. Both the plants are equally good for rearing. 3. In first and third crop ERR was better.Study is in progress.	
548	Characterization of Biotype Raily.	1992-93	• Survey and collection of Raily in its natural eco-pockets and studying the preservation loss. • Characterization of different populations for various morphological, anatomical, and genetic characters.	1. Recorded erratic emergence in outdoor. 2. 5 segments were noted in the tibia of both the sexes.	-
549	Stablization of crop under semi domestic condition.	1992-93	• To find out the suitable rearing period and host plant for Raily Silkworm.	1. 3rd and 4th week of June and early October found suitable.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
550	Survey, collection and characterization of nature grown Modal Cocoons	1992-93	• To survey the nature grown Modal areas in Orissa for collection of Modal cocoons and their characterization and evaluation.	1. Modal is a wild univoltine eco-race found on S.robusta.	-
551	Studies on behavioural pattern of local Biotypes.	1992-93	• To study the emergence pattern and mating behavior of Modal eco-race. • To study the grainage and rearing behaviour of the different generations of the ecoraceBogai.	1. Emergence period in outdoor and indoor was almost same. 2. Desirable results were found and ERR was good.	-
552	Preservation of seed cocoons	1992-93	• To record the loss during seed preservation.	1. A total loss of 12.03% was recorded.	-
553	Studies on rearing techniques	1992-93	• To find out the ideal period of brushing for different crops for best possible performance in terms of quality and quantity performance.	1. Early June was done.	-
554	Survey and maintenance of genotype of *Antheraea spp*.	1992-93	• To enrich the genotype of oak feeding antheraea species, their conservation and utilization for various breeding programmes. • To evaluate the breed.	1. A.proyeli and A.pernyi performed better in comparison to A.frithi and A.yamamai.Study is in progress.	-
555	Evolution of superior breeds through selection.	1992-93	• To evolve high yielding varieties through sections on the basis of various characters.	1. An increase of 55 to 58% in average fecundity was noted.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
556	Evolution of uni and bivoltine strains.	1992-93	• To evolve pure uni and bivoltine strains.	1. The average hatching percentage ,average cocoon wt. and ERR were recorded.	-
557	Evolution of improved strains of Oak Tasar Silkworm through hybridization.	1992-93	• To combine desired characters into a single breed to increase genetic variability and to exploit hybrid vigour.	1. Further generation was discontinued as rearing of 1dfl in F2 yielded only 6 cocoons.	-
558	Stabilization of Oak Tasar Crop.	1992-1993	• To find out suitable season for rearing. • To find out most suitable of indoor rearing. • Effect of fertilizer of rearing. • Effect of pruning on rearing. • To find out optimum duration for preservation.	1. Maximum ERR was recorded in March-April rearing. 2. Indoor rearing of oak tasar silkworm on cut shoots supports supported with water filled in tin and on trays under polythene cover was found better method. 3. Nutritional indices of the foliage treated with urea and NPK were similar 4. Maximum ERR(75%) was recorded. 5. For better ERR the eggs should have preserved for 20 days.	-
559	Regulation of pupal diapause, fecundity and fertility in *A. proylei.*	1992-93	• Effect of photoperiod on preservation of seed cocoons.	1. It was found that the diapause can b e terminated during the month of February by raising the room temperature(20 degree).	-
560	Studies on Uzifly infestation and their control measures.	1992-93	• To find out the seasonal intensity of fly pest infestation on silkworm so as to evolve suitable control , easures by shifting crop period.	1. Maximum infestation were recorded in V instar in spring crop.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
561	Survey of insect pest complex of *Q. serrata*	1992-93	• To find out the activity pattern of insect pests.	1. Attack of aphids, shootborer, leaf roller and caterpillar remained round the year.	-
562	Selection of early sprouting varieties of Quercus.	1992-93	• To raise early crop of Oak Tasar. • Mass multiplication of true breeding type.	1. Germination period was less in seeds collected from Mekmai,Motbungand pukaho. 2. In airlayering and cutting both, callus formation was observed but no further differentiation was noted.	-
563	Pruning studies and correlation of types of pruning on the growth of *Q. serrata.*	1992-93	• To study the effect of different agronomical practices on the growth of *Q. serrata.*	1. Maximum leaf yield during spring was recorded after foliar application of fertilizers.	-
564	Studies on nutritional values of *Quercus* species in relation to season and age.	1992-93	• To determine suitability of different *Quercus species* for the rearing of *A. proylei.* • To find out suitable leaf quality for rearing.	1. The leaves of the Quercussps.were found good in nutritional values. 2. Nutritional indices of A.proyeli Larvae fed on leaves of *Q.sps*is relatively poor.	-
565	Evolution of improved cooking techniques for reeling.	1992-93	• To find effective, easy and economic cooking reciepe for reeling. • Spinning and preparation of gheecha yarn.	1. Maximum raw silk production per 1,000 cocoons was recorded when the cocoons were boiled in water for 2-3 minutes followed by 1hr of steaming at 1lbs. 2. Ghicha yarn was produced at the rate of 120 gms.	-
566	Fabrication of machines	1992-93	To prepare reeled yarn with sufficient twist.	1. The production per 8 working hrs stands at 45-50 gms. With 18.8% silk waste.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
567	Studies on different Oak species.	1992-93	• To find out the sprouting period of different food plants in nature for synchronizing with brushing periods at various altitudes. • To increase the leaf yield and to synchronise the sprouting with rearing.	1. April first and second week, of 2nd and 4th week. 2. Oct,Nov,&Dec defoliated plants sprouted early as compared to dec.	-
568	Collection and maintenance of Oak Tasar Species and Evolution of High Yielding Varieties.	1992-93	• For screening the best species for particular area or season. • To minimise the loss of seed cocoons during preservation. • To evolve high yielding variety of oak tasar silkworm for commercial crop.	1. The yeild/dfls were more for a A.pernyithan that of A.proyeli. 2. The results showed that cocoons kept at sansar recorded less as compared to other places of preservation.	-
569	Extension, seed supply and Training.	1992-93	• To popularise the Oak the tasar culture in the state. • To develop suitable rearing techniques.	1. 1kg of seed,each of Q.incana and Q.himalyana were supplied to RTRS, Imphal.	-
570	Raising of basic stock of Oak Tasar Silkworm seed cocoons.	1992-93	• Production and supply of silkworm seed to state sericulture units	A total number of 3453 dfls were supplied to the state sericulture dept. for first crop in 1993.	-
571	To study and determine suitable preservation schedule for Oak Tasar seed Cocoons.	1992-93	• To check untimely and erratic moth emergence for maximizing the seed production.	1. In mass seed cocoon preservation proghramme at bhimtal recovery of cocoons was noted when the cocoons were kept at low temp.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
572	Rearing performance of *A. proylei* and *A. pernyi*	1992-93	• To assess the crop feasibility at various altitudes.	Mass scale rearing at low altitude through developed method of indoor rearing gave superior results.	-
573	Collection & Maintenance of *Antheraea* species and inter specific crosses.	1992-93	• To enrich the genetic resources.	Rearing of*A.pernyi* was taken up at low altitude in order to maintain the stock.	-
574	Studies on the Oak species at low altitude (4500'MSL)	1992-93	• To ascertain the quality and quantity of foliage for rearing.	Sprouting was noted in 3rd week of march one week earlier to treatment 1'.	-
575	Extension seed supply & training.	1992-93	• To popularize Oak tasar culture.	700 saplings and 54kg. of seeds of *Q.serrata*were supplied to forest deptt of Nainital.	-
576	Maintenance of Basic Silkworm seed stock of Oak Tasar.	1992-93	• Multiplication of basic Silkworm seed of Oak Tasar.	A total of 99,206 seed cocoons were preserved.	-
577	Extension activities	1992-93		Ghicha yarn was produced during the course of reeling and spinning training programmes.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
578	Leaf Growth and Nutritional quality in Oak Species.	1992-93	• To work out suitable schedule and type of pruning for high leaf yield. • To workout suitable defoliation schedule to get quality and synchronised leaf yield for brushing of silkworms. • To assess nutritional status of Quercus leaves with different treatments and age.	1. Sprouting was observed in treated and control lots till writing the report. 2. Some sprouting was observed in low altitude plants during the October. 3. An increasing trend in respect of dry matter,ash, MDF, ADF, lignin and cellulose.	-
579	Maintenance of Oak Tasar Silkworm Species.	1992-93	• To maintain gene and genotype of various oak feeding Antheraeasps. • To find out suitabilities of rearing of A.proyeli in different agroclimatic conditions of Himachal Pradesh.	1. A.yamami was found to be a difficult species for maintenance because of its erratic graimage behaviour. 2. Multiplication rates were high in *A.proyeli* than *A.pernyi*.	-
580	Evolution of Superior Breeds.	1992-93	• To evolve high yield lines with respect of various commercial characters.	S14 and S9 gave maximum ERR whereas line S15 and S13 were found to be superior for fecundity.	-
581	Propagation of primary tasar food plants Arjun and Asan	1993-94	1. To develop suitable technology for rapid and large scale multiplication of superior genotypes of Asan and Arjun. 2. To evolve most suitable method for raising seedling of Asan.	1. Air layering was found the best method for vegetatitve multiplication of *T.arjuna*, *T.tomentosa* did not respond towards rooting by cutting and airlayers. 2. 48 hrs of seed soaking for *T.tomentosa* revealed maximum generation (52%).	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
582	Studies on the improvement of Quality leaf yield of Primary Tasar Food Plants	1993-94	1. To determine optimum doses of NPK for maximising the quality foliage production of *Terminalia arjuna.* a. To find out the suitable plant hight for obtaining better quality of leaves for chawki rearing. b. To observe the effect of severity of pruning on growth and laef yield.	1. It was found that NPK in the doses of 150:50:50 kgs. /ha increased the yield. 2. It was found that 3'ft height of both *T.arjuna* and *T.tomentosa* yield maximum leaf. 3. Soil samples collected from different localities and were analysed. The study is under process.	-
583	Studies on pests and diseases of Primary Tasar Food Plants	1993-94	1. To observe the cecidogenesis of leaf galls on T. arjuna and T. tomentosa. 2. To observe the population dynamics and to evolove suitable control measures.	1. During later stages of cecidogenesis, cells that contain starch and polyphenolic material became schlerids. 2. The population builds up associated with weather conditions and aldrin showed better results in control measures.	-
584	Genetic Improvements of primary Tasar food Plants	1993-94	1. Exploration, progeny testing and identification of elite genotype of terminalia spp. On the basis of morphological and biochemical characters. 2. Isoloation of fast growing, high yielding and protein rich genotypes. Evaluation of fast growing, high yielding, protein rich and bushy genotypes.	1. Out of 61 genotypes 22 genotypes are being maintained as half sib and 39 as plus tree. The study is under process. 2. The experiments showed promising results.the further analysis is under process. 3. The experiment has been dropped by RAC. 4. Thirty Seven seed sample from 27 plus trees of Madhya Pradesh. D- content was found to very significantly among genotype (range: 8.02 to 9.66 pg) cytological and other biochemical (eg., chlorophyll primary and secondary metabolites) investigation under progress	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
			3. a. cytological characterization of existing genotype at karyotypic and meiotic levels. b. Biochemical characterization at D-, Primary and secondary metabolite level.		
585	Charactarisation of Existing Ecoraces of Tasar Silkworm *A. mylitta* D.	1993-94	1. Identification of potentialities of the genetic resources and their exploitation. 2. To evaluate different biotypes and evolved line. 3. Charactrization of biotypes on cyotological and biochemical basis	1. During acclimatisation,somebiotypes deviated from original values of their commercial characters. 2. In absolute silk yeildpercentages, Daba was best followed by Sukinda and Modal. 3. The F1 generation of various crodd combinations have been subjected for Evaluation of chiasma frequency in male germ cells and frequency of diplodiakinesis cells in various biotypes.Studies are under progress.	-
586	Studies on the Diseases and pests of Tasar Silkwarm	1993-94	1. Isolation and identification of pathogen causing diseases in tasar silk-worm. 2. To study the effect of drugs on biochemical constituents in Tasar silkworm. 3. To control microsporidiosis, virosis, bacteriosis and muscardine diseases of tasar silkworm by evolving suitable control measures.	1. The detailed study of microsporidian infecting A.mylitta revealed that the spore nucleus is diplokaryotic and has a polar cap. 2. The protein levels in treated lots increased comparison to infected lots. 3. Sosium hypochlorite effective for virosis, Asiphor was effective for bacteriosis. 4. A water dospersible powder, a dust preparation and an emulsificable concentrate of Neem found effective.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
			4. To evolve suitable control measure for uzifly infection in *A. mylitta* D. 5. To control insect predators of tasar silkworm. 6. To implement IPM programme for minimizing the population of parasites of tasar silkworm. 7. To evolve suitable control measures against *C furcellata.*	5. Podagrion spp. was found as a very suitable bioagent against Hierodulabipapilla 6. The use of pest-o-flash, sticky traps and fly flapper were recommended. 7. The preponderance of females due to solitary parasitism and a balanced sex ratio due to super parasitism.	
587	Studies on the Rearing techniques of tasar silkworm *A. mylitta d.*	1993-94	1. To assess the quality and quantity of food required by the silkworm of different stages. 2. To screen out a method for indoor rearing in mass scale. 3. Synthesis of artificial diet for tropical Tasar silkworm. 4. To determine the effect of known feeding stimulatants on the behaviour and rearing performance of Tasar silkworm.	1. Leaf consumption was slightly more during 2nd crop. 2. Indoor rearing up to spinning is economically not feasible as very low ERR recorded. 3. The Larvae could not survive beyond 3rd instars. 4. GLUCON-C found superior over sucrose.	-
588	Studies on the Physiology of Diapauses and Reproduction *A. mylitta d.*	1993-94	1 To investigate the different physiological causes of pupal diapauses. 2 To find out the diapauses period (days) and the factors (environmental) as well as effect of different exogenous chemicals on induction and termination of pupal diapauses.	1. Data on metreological were collected. Analysis of the data is under process. 2. Ovarian development is faster in non-diapausingbroods than diapausing. 3. The shape and sizes of the neuroendocrine organs changes during developmental stages. 4. The filament length and silk recovery percentage increased in treated lots.	

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
			3. To workout the basic structure of reproductive system during different stages and to evaluate the effect of some exogenous chemicals on gonad maturation, fecundity, hatching etc. 4. To workout basic structure of endocrine system during different developmental stages and their co-relation with reproductive biology and diapauses physiology. 5 .a. To determine optimum conditions for preservation of Daba as well as Laria, Modal, Bogai and Raily seed cocoons. b. To evolve norms for selection of seed cocoons during different levels of multiplication. c. to evaluate effect of temreture, relative humididity and natural ecofactor for emergence, mating and egg layings. d. To evolve suitable devices for egg layings. e. to evolve suitable devices for transportation of eggs. f. to evolve different devices for minimizing pupal mortality and erratic emergence in commercial grainage.	5. 4 to 8 hrs of mating duration was found ideal for maximum egg production and fertilixation. 6. Eggs preserved in complete darkness followed by a single light on impulse showed good hatching percentage.	

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
			• To determine suitable age for egg preservation. • To evolve technique of preservation for postponement of hatching. • To evolve technique for enhancement and sinchronisation of hatching.		-
589	Studies the suitable cooking and reeling technique in tropical tasar.	1993-94	1. To find out the substitute for Biopril-50 as cooking media. 2. To impart artificial cohension to B-50 reeled yarn on dry basins. 3. To improve the technological properties of tasar reeled yarn by wet reeling. 4. To develop a suitable reeling and spinning machine.	1. Salicylic acid, which were much inferior to B-50. 2. The problem of yarn sticking with various part of machine still persisting at the ti,e of reporting. 3. The tenacity of the yarn found good with H2O2 wet reeled yarn. 4. Suitable modification done in coarser fillet for efficient opening of degummed cocoon waste for spinning.	-
590	Mechanical processing of tasar and its blends.	1993-94	1. To achieve diversification in utilization of tasar silk waste and to study the effect of blend composition on tasar yarn properties. 2. Production of blended and multicoloured spun yarn with minimum exploitation of machinaqries and labour. 3. To evolve suitable preparatory technology for tasar silk yarn to improve weavability.	1. The production rate for bleached and metal complex dyed sample was far lower than degummed sample. 2. Cocoon waste soften with H2O2 method can be spun for the production of finer and uniform count of katia yarn. 3. 2.5% sago+1% PVA+ 1.5% TKP yielded the best we aping performance. 4. There was no significant difference between the production for low twisted yarn and reeled yarn.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
			4. Diversification of Tasar fabrics by weaving with different levels of twist and dyed yarn.		
591	Studies on the economics of tasar Culture.	1993-94	1. To find out the production cost of various inputs viz., raising and maintenance of tasar food plant, seed, cocoon, yarn etc. 2. To calculate the economics of reraing, spinning and weaving. 3. To study the socio-economic condition of rearers.	1. The production cost of fabric varies from Rs.44/m to Rs.104/m. 2. Weaving charges varies from Rs.6 to Rs.12 per meter. 3. Most of the reelers /weavers families have the annual income ranging from 10k to 20k.	-
592	Collection and characterization of nature grown Sarihan Biotypes.	1993-94	1. To survey the natural habitats of sarihan and to collect the cocoons for their characterization. 2. To find out the behavioural pattern of Sarihan and hybrids.	1. The shell wt ranged from 0.63 to .67 gm. 2. There was no difference in cocoon/dflratio,the range was 4.29 to 5.94/dfl	-
593	Stabilization of crop under semidomestic condition.	1993-94	1. To find out the optimum period of brushing to have good yield. 2. To find out the suitable food plant for Sarihan silkworm rearing. 3. To find out the role of stimuantion the feding behaviour and rearing performance of silkworm. 4. To evolve a new variety after cross breeding.	1. June and October was found suitable 2. Both the plants are equally good for rearing. 3. Gave slightly better yield was better.Study is in progress.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
594	Characterization of Biotype Raily	1993-94	Survey and collection of Raily in its natural eco-pockets and studying the preservation loss.	1. Recorded erratic emergence in outdoor.	-
595	Stablisation of Crop Under Semi – Domestic Condition.	1993-94	1. To find out the suitable rearing period and host plant for Raily silkworm. 2. To find out the rearing behavior on different food plants. 3. To study the effect of chemical for controlling the disease mortality. 4. To study the behavior of hybrid of Raily.	3rd and 4th week of June and early October found suitable.	-
596	Survey, Collection and characterization of natural grown Modal cocoons.	1993-94	To survey the nature grown Modal areas in Orissa for collection of Modal cocoons and their characterization and evaluation.	1. Modal is a wild univoltine eco-race found on *S.robusta*.	-
597	Studies on Behavioural Pattern of local Biotypes.	1993-94	1. To study the emergence pattern and mating behavior of Modal eco-race. 2. To study the grainage and rearing behaviour of the different generation of the ecorace Bogai.	1. Emergence period in outdoor and indoor was almost same. 2. Desirable results were found and ERR was good.	-
598	Preservation of Seed Cocoons	1993-94	To record the loss during seed preservation.	1. A total loss of 12.03% was recorded.	-
599	Studies on Rearing Techniques.	1993-94	To find out the ideal period of brushing for different crops for best possible performance in terms of quality and quantity.	1. Early June was done.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
600	Survey and Maintenance of Genotypesbof Antheraea Species	1993-94	1. To enrich the genotypes of oak feeding *Antheraea species,* their conservation and utilization for various breeding programmes. 2. To evaluate the breeds.	1. A.proyeli and A.pernyi performed better in comparison to A.frithi and *A.yamamai.*Study is in progress.	-
601	Evoluation of Superior Breeds Through Selection.	1993-94	To evolve high yielding varieties through selection on the basis of various characters.	1. An increase of 55 to 58% in average fecundity was noted.	-
602	Evolution of Uni and Bivoltine Strains.	1993-94	To evolve pure uni and bivoltine strains.	1. The average hatching percentage ,average cocoon wt. and ERR were recorded.	-
603	Evoluation of Improved Strains of Oak Tasar Silkworm Through Hybridization.	1993-94	To combine desired characters into a single breed to increase genetic variability and to exploit hybrid vigour.	1. Further generation was discontinued as rearing of 1dfl in F2 yielded only 6 cocoons.	-
604	Stabilization of Oak Tasar Crop.	1993-94	1. To find out suitable season for rearing. 2. To find out most suitable method of indoor rearing. 3. To determine suitability of different Qurecus species for oak tasar silkworm. 4. To find out the effect of pruning on rearing.	1. Maximum ERR was recorded in March-April rearing. 2. Indoor rearing of oak tasar silkworm on cut shoots supports supported with water filled in tin and on trays under polythene cover were found better method. 3. Nutritional indices of the foliage treated with urea and NPK were similar. 4. Maximum ERR(75%) was recorded.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
			5. To find out optimum duration for preservation.	5. For better ERR the eggs should have preserved for 20 days.	
605	Regulation of pupal diapause, fecundity and fertility in *A. proylei.*	1993-94	To improve seed cocoon recovery, fecundity & fertility.	It was found that the diapause can b e terminated during the month of February by raising the room temperature (20 degree).	-
606	Studies on Uzifly Infestation and control Measures.	1993-94	To find out the seasonal intensity of fly pest infestation on silkworm so as to evolve suitable control measures by shifting crop period.	Maximum infestation was recorded in V instar in spring crop.	-
607	Servey of Insect Pest Complex of *Q.serratta.*	1993-94	To find out the activity of different types of pests like aphids, shoot borer, leaf rollers, caterpillar etc. of Quercus serratta plant were collected during all the months of the year 1993. The infestation of aphids were found maximum during the year followed by the infestation of caterpillar due to effective control measures adopted during the year 1993 the attack of all the pest remained less.	Attack of aphids,shoot borer,leaf roller and caterpillar remained round the year.	-
608	Selection of early Sprouting Varieties of *Quercus spp.*	1993-94	To raise early crop of oak tasar	Germination period was less in seeds collected from Mekmai, Motbungand pukaho.	-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
609	Studies on the disease and pest of oak Tasar silkworm A. proylei.	1993-94	To identify the causative agents of *Antheraea proylei* disease and to analyse various biotic factors responsible for disease mortality.	Maximum temperature had positive correlation with disease mortality.	-
610	Pruning studies and correlation of type of pruning on the growth of *Q. serrata*.	1993-94	To study the effect of different agronomical practices on growth of *Q.serrata*.	1.Maximum leaf yield during spring was recorded after foliar application of fertilizers	-
611	Studies on Nutritional values of Quercus species in Relation to season and age.	1993-94	To find the cumulative effect of soil NPK fertilizer, foliar spray, spray of urea and zinc sulphate mixture on growth of *Q. serrata.*	Data were statistically analysed and found significant.	-
612	Studies on Different Oak Species	1993-94	1. To find out the sprouting period of different food plants in nature for synchronizing the brushing periods at various altitudes. 2. To increase the leaf yield and to synchronise the sprouting with rearing.	1. April first and second week, of 2nd and 4th week. 2. Oct,Nov,& Dec defoliated plants sprouted early as compared to dec.	-
613	Oak tasar Species and Evolution of High Yielding Varieties.	1993-94	1. For screening the best species for particular area or season. 2. To minimize the loss of seed cocoons during preservation.	1. The yeild/dfls were more for a *A.pernyi*than that of *A.proyeli*.	-

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			3. To evolve high yielding variety of Oak Tasar silkworm for commercial crop. 4. to study the performance of Oak Tasar species and crosses for different seasons.	2. The results showed that cocoons kept at sansar recorded less as compared to other places of preservation.	
614	Studies on the Utilisation of oak Tasar silkwaste.	1993-94	To utilize oak tasar silkwaste by weaving on locallooms and by simple knitting through weavers and other backword class.	Caps, hand gloves, socks, hanky, fan cover, necks, scarfs, TV cover were prepared.	-
615	Studies on different oak species	1993	1. To ascertain the sprouting period of different oak food plants in nature for brushing periods at various altitudes. 2. To increase the leaf yield and to synchronise the sprouting with rearing.	1. Natural sprouting behaviour varied with change in location.Maturity span of leaf vegetative was shortest. 2. Defoliation did bring about appreciation in mostly vegetative character in almost all the species.	-
616	Collection & maintenance of *Antheraea* Species And Inter Specific Crosses	1993-94	1. To enrich the genetic resources. 2. For screening the best species for particular area and season.	4. live cocoons of Antheraea proylei was also collected during the but Antheraea proylei could not be maintained as all cocoons were male.	-
617	Extension, Seed Supply & Training	1993-94	To popularize Oak tasar culture.	Seed production under DWCRA/TRYSEM schemes of state.	-
618	Maintenance of Basic Silkworm seed Stock of Oak Tasar.	1993-94	Multiplication of basic Silkworm seed of Tasar.	A total of 99,206 seed cocoons were preserved.	-

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619	Extension Activities	1993-94		Ghicha yarn was produced during the course of reeling and spinning training programmes.	-
620	Leaf growth and Nutritional Qualities in Oak species.	1993-94	To work out suitable schedule and type of pruning for high leaf yield.	Sprouting was observed in treated and control lots till writing the report.	-
621	Maintenance of Oak Tasar Silkworm Species	1993-94	1. To maintain genes and genotypes of *Antheraea species.* 2. To find out suitability of Antheraea species under agro –climatic condition of Himachal Pradesh 3. To evolve line with high yield component to be commercially exploited.	1. *A.yamami* was found to be a difficult species for maintenance because of its erratic graimage behaviour. 2. Multiplication rates were high in *A.proyeli* than *A.pernyi.*	-
622	Studies on improvement in quality leaf in quality leaf yield of primary tasar food plant.	1994-97	1. To determine optimum dose (s) of NPK for maximizing the quality foliage production of *Terminalia tomentosa*	It was found that, NPK in the doses of 200:50:50 kgs/ha increased the leaf yields up to 43% over control.	D.P. Srivastava, Rajesh Khare, U.S.P. Sinha, Isa & D.N. Prasad
623	Studies on the diseases and pests of tasar silkworm	1994-97	1. Pathological studies on silkworm protozoan, bacterial and viral diseases, to develop diagnostic kits. 2. To study etiology and epidemiology of tasar silkworm diseases. 3. To study Bionomics and control of uzifly.	1. The efficacy of MCAs was of 1gG1 type and specific to the antigen. The microtritration plates were coated with 1 ml/well of different pathogens viz., *Nosema, bombycis, BmNPV*, etc and normal haemolymph protiens. None of the MCA reacted with the above. The Efficacy of MCA to react with spores was aslo confirmed by indirect immunofluorescence.	V.N Bardiyar, R.N. Singh, V.K. Verma, Dr. P. Karnan, R.M. Shukla, A.K. Bansal, N.N. Saxena, D.K.Roy & S.S.Sinha

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			4. Integrated pest management [IPM]- To minimize the population of lepidopterous pests on tasar food plants	2. A bacterial stain was found to cause sealing of anal lip in the larva around 50% of the population 3. The study revealed that, *N. thymus* completes its life cycle in 16.5±1.5 days at 28±2.0° C and 65±5% RH. 4. On an average 76±3.81 cocoons per dfl's were harvested from IPM treated batch as against 48±4.47 cocoons per dfls in control.	
624	Studies on the rearing techniques of tasar silkworm, A. mylitta.	1994-97	1. Study on Nutritional requirement of *A.mylitta*. 2. Studies on development of indoor rearing methods for tropical tasar silkworm, *A. mylitta.* 3. Synthesis of artificial diet for *A.mylitta* larvae. 4. Studies on the nutritional status of leaves and role of chemical stimulants on the feeding behavior of tasar silkworm *A. mylitta*.	1. Food consumption increased with age reaching the peak level in the 5th instar and the trend was identical for both the races and for all the food plants. 2. Mortality increased with advancement of age in indoor conditions, particularly after 2nd stage in both the races, So rearing of worms after 2nd stage in indoor conditions is economically not profitable. 3. The indoor rearing of Daba race up to 2nd stage may be done successfully on the tender leaves of any of the primary food plants of *A. mylitta*. However, Laria eco-race has shown better results on Sal leaves up to 2nd stage.	M.K. Singh, Mr. S.K. Sharan, Dr. A.B. Chaudhari, A.R. Pradeep U.S.P. Sinha, S.K. Mathur, N.D. Banerjee, V.K. Verma, S. Radhakrishnan & B.R.R.PD. Sinha
625	Studies on suitable cocoon cooking and reeling techniques for tropical tasar.	1994-97	1. To find out an alternative cooking agent to Biopril-50 for dry reeling. 2. To study Wet reeling of tasar cocoons to produce superior quality yarn.	1. For confirmation of the results for field application and standardization of the work done so far on cooking with enzyme of papaya extract, the experiment is being taken up by CSTRI, Bangalore.	D. Sengupta, M.A. Moon, M.N. Chandrashekar,

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			3. To develop a suitable reeling machine and to evolve easy and economically viable reeling technique for tasar cocoon.	2. The reveled that, 5 to 8 % gain in the recovery, 5 to 10% improvement in cooking efficiency and increase of 0.6 gm/denier in tenacity.	P.D.Gupta, Nataraja, M.G.Mahesh
626	Mechanical processing of tasar silk and its blends.	1994-97	1. Studies on spinning tasar silk waste and blending with other textile fibres on new model charkha. 2. Studies on various aspects of preparatory processes of tasar silk yarn for weaving on different handlooms and power looms. 3. Studies on weaving of composite tasar fabric and effect of blend composition and fabric set on mechanical properties of tasar union/blended fabrics.	1. The data confirmed that, count= 24.60 Nm., Production/8hrs = 480 gm , Recovery = 82% and efficiency = 78%. 2. With an aim of transferring the standardize developed technique of tasar silk waste processing on Amber Charkha for production of diversified spun yarn to the field, training to the RSDTCs officials was given for the period of fifteen days during July to September 1996. 3. With an intention of diversifying the tasar fabrics six different sorts of tasar fabrics using different combinations in wrap and weft were produced. Among which fabric produced by a combination of wet reeled yarn and twisted yarn has resulted in an improved texture.	D. Sengupta, M.A. Moon, M.N. Chandrashekar, P.D.Gupta, Nataraja, M.G.Mahesh
627	Studies on the economics of tasar culture.	1994-97	1. Studies on the cost at various levels. 2. Determination of gross of net income per unit area of food plants from rearing. 3. Socio-economic survey of tasar reelers and rearers/weavers.	1. During the year (1996-97) production cost of 3rd crop rearing of 100 dfl's was estimated as Rs.40 (excluding family wages). 2. With the meager investment of Rs.40 a rearer can earn Rs.782 and Rs.1385 during 1st & 2nd crop utilizing family labour for 45 days and 50days respectively 3. Survey conducted in Backward Caste of Hindu region and are known as KOSTA.	K.N.Singh, Surendra Prasad, M.M.Bhat, Ganga Hansda, T.Thirunavukkarasu B.N. Brahmachari and S.S.Sinha

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628	Propagation of primary tasar food plants	1994-97	1. To develop suitable technology for rapid and large scale multiplication of superior genotypes of Arjun and Asan. 2. To standardized nursery techniques for large scale plantation of *T. tomentosa.*	1. Two type of leaf node cuttings were tested during May-June, July-Aug & Nov-Dec. It is observed that, During May – June month both Leaf node & Juvenile cutting perform well with respect to Rooting % (Leaf node- 31.63% & Juvenile- 43.25%) and Survival % (Leaf node- 63.53% & Juvenile cutting 97.38%) observed. 2. In order to develop protocol for tissue culture of Terminalia, studies on standardization of media and explant have been continued. Sub-culture callus was done in different media and supplemented with auxines. It was observed that, the rate of growth of *T. arjuna* callus was faster in MS media supplemented with 1AA 5 mg/lit.	D.P. Srivastava, Rajesh Khare Isa, Priya Ranjan, D.N. Prasad & S.S. Sinha
629	Studies on food plant pests and diseases	1994-97	1. To study etiology of insect gall of *T.arjuna* and *T.tomentosa* 2. To study epidemiology and etiology and control measures of primary tasar food plant diseases.	1. The larval duration and percentage loss due to disease significantly increased ($p<0.01$) in silkworms fed on gall affected leaves of both *T.arjuna* and *T.tomentosa* with significant reduction in shell weight and silk ratio percentage. 2. It was observed that, three sprays of 0.02% concentration of Bavistine is most effective in checking the disease up to 56.6%.	V.N Bardiyar, R.N. Singh, V.K. Verma, P. Karnan Ram Kishore, Rakesh Gupta & Rajesh Khare
630	Genetic improvement of primary tasar food plants.	1994-97	1. Exploration and evaluation of existing germplasm of *Terminalia* spp. 2. Evaluation of leaf quality/bioassary of existing germplasm	1. The progeny of 33 genotypes as reported earlier has been completed during the period under report. Average value of leaf yield/plant, height, number of branches, number of leaves, indicated that genotypes 02, S1, N3, S2, PBG19 are superior to others.	

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				2. Bioassy studies of 22 progennies as reported earlier has been completed. Based on the average value of the seven crops it has been observed that genotypes D>DS1>N5>DS2,B2 are more promising, in the order of comparative superiority, with respect to ERR, Coccon weight, shell weight and silk ratio.	D.P. Srivastava, Rajesh Khare M.C.Joshi, J.Tirkey
631	Studies on the physiology of diapauses and reproduction and reproduction in *A. mylitta*	1994-97	1. Studies on the factors responsible for occurrence/termination of diapause. 2. Basic study on the reproductive physiology 3. Studies on Jhuvenile and Ecdysone and their role in diapause mechanism. 4. Studies on the methods of seed cocoon preservation during diapause and grainage techniques. 5. Studies on the methods of egg preservation.	1. The observation was taken during peak grainage period of I, II and III seasons. The emergence showed that two sall peakers (11% & 12.7%) in the late afternoon and early night hours and a large peak at 20 h (20%0 in the I grainage. 2. The laying showed maximum percentage (20%) during late evening or in early night hours. During the 1st grainage thre small peaks were observed instead of single peak during 2nd and third grainage. 3. There was no progress in this experiment due to want of required hormones/chemicals 4. The egg recovery and hatching were found to be on par with that of control 5. The preliminary experiment on use of nylon net bag for egg laying was undertaken. Two sizes of the bags (18 x 14 cm & 15x10 cm) were used for the purpose. Egg recovery percentage was found to be at par with the control (earthen cup) except in T1 where it was significantly low ($p<0.05$).	M.K. Singh, S.K. Sharan, A.B. Chaudhari, A.R. Pradeep, S.K. Sharan, A.R. Pradeep, N.G Ojha, S.S. Sinha, S.C. Ramchiari & B.R.R.PD. Sinha

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632	Characterization of existing ecoraces of *Antheraea mylitta* D.	1994-98	1. Survey and collection of biotypes of *A. mylitta* D. from different ecological 2. Maintenance of germplasm of tasar silkworms.	1. The survey was undertaken for collection of natural biotypes of tasar from Jalpa area of Palamu district (Bihar) and 'Ber' fed natural cocoons were collected. 2. Altogether 07 eco-races have been maintained in Germpalas Bank. Ecoraces under experiment 1 have completed more than six generations.	G.C.Roy, S.S. Sinha, B.M.K. Singh, P.K. Kar, B.R.R.PD. Sinha, K.K. Sharma, A.K. Srivastava, A.H. Naqvi, & S. Ramesh Kumar
633	AIN-611: Utilization of dead pupae obtained after reeling of Tasar cocoons	1998-99	Biochemical analysis of Tasar pupae	The Biochemical analysis of tasar pupae (on dry powder basis) revealed that the protein, fats, Minerals, Carbohydrates and crude fibres found at the ratio of 62-65%. 20-25%, 7-8%, and 6-7% respectively, based on the above information diet formulation for broiler starter (0-5 years) and broiler finisher (6-8 weeks) have been prepared.	N.D.Banerjee, U.P.P.Sinha, P.P.Srivastava and A.K.Sinha
634	CYR-001: Studies on commercial/ technological characters of different ecoraces of *Antheraea mylitta* D commercially available in India.	1997-99	Study on technological characteristics of different eco-races of *Antheraea mylitta* D.	The study revealed that the filament length 1a401 mtes was highest in modal eco-races with recovery of 75% and denier 10.5. It was followed by Daba (Natural) having filament length of 1181 mtrs., Bhandara 1100 mtrs and Raily 1072 mtrs.	D. Sengupta, Sreenivasa, A.K. Srivastava and B.R.R.PD.Sinha

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635	**AIP 4605:** Development of integrated package for seed cocoon preservation and seed production in tropical tasar silkworm *A.mylitta* D.	2001-02	1. Effect of seed cocoon selection on preservation and grainage efficiency and Efficiency of cooling devices on preservation of seed cocoons. 2. Use of nylon net for enhancing mating percentage. 3. Studies on large scale testing of egg laying tray.	1. Cocoon preservation loss has reduces 85.4% as compared to control. 2. Mating efficiency enhances 122.2& in nylon net as compared to control. 3. The package enhances the dfl production to 29312 dfl against 17822 dfl as compared to controlled in BV.	Raj Narain, S.S. Rath, S.Nagendra and B.C. Prasad
636	**ARE 4609:** Development of control measures for major defoliators *N.antiqua, A.blanchardi, Tricliona picea* and *Myllocerus* sp. of primary tasar food plants through neem derivatives.	2001-02	1. Studies on antifeedant effect of neem derivatives on major defoliators and pests of primary tasar food plants. 2. Studies on growth regulatory effect of neem derivatives in major defoliator pests of primary tasar food plants.	1. Mortality of the oest increases with increase in the concentration of Azadiractin. 2. Pest infestation has been reduced 80 % due application of azadiractin.	S.P. Sharma, Ram Kishore and K. Thangavelu
637	**PIP 4613:** Clonal propagation of primary tasar food plant Arjun and Asan	2001-02	Effect of type of cutting on rooting behaviour in *Terminalia arjuna* and *T.tomentosa*	1. Leaf node cutting showed overall superiarty in performance as compared with juvenile cutting	P.S.Sinha, S.Beck, M.C. Joshi, A. Gangopadhyay,

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				2. Alcohol wash induced 21.7, 13.8 and 31.9 & routin respectively in tender, semi hord and wounded semi hord cutting against 1.38, 0.0 and 9.7 & respectively rooting in water wash control. 3. Rooting in cuttings obtrained from trees pruned at 30 cm t0 60 Cm height has been found invariably higher than control.	A.K. Sinha and B.R.R.PD. Sinha
638	**ARP 4608:** Exploration of leaf surface microbes of Tasar food plants towards biological control of tasar silkworm diseases	2001-02	Screening of leaf surface microflora of tasar food plant for antagonistic activities Optimation of the cultural condition for production of antbodies leaf surface of bacteria.	1. Culture of phylloplane bacteria viz,, basilous latersphorus and B. Sphericous were maintain in the laboratory for application in field to reduces diseases. 2. The rearing performace was highly boosted with bacterial spar (ERR 61.86% and disease mortility 18.78%) over the control (ERR 40.29% CDat5%, 6.28%, disease mortility 40.22%, CDat 5%, 1.88).	D.K. Roy, D.N. Sahay, K.Thangavelu and B.R.R.PD. Sinha
639	**MST 4628:** Socio-economic studies of Tasar industry in Orissa with special references to women participation.	2001-02	Socio-economic survey of Reaeres at Mayurbhanj district in Orissa. Socio-economic survey of releers and weavers in Mayurbhanj district in Orissa.	1. The survey of reelers and weavers community was carried out in Udla and Bahida block of Mayubhanj Districs which is one of the tasar weaving zones of odisa. 2. The study revieled that 52% famiies inaged in this occupation did only weevil 37% did both reeling and weaving and rest 11% only reeling. Almost all the reelers /veeaver were traiditional and belong to backword class.	B.N.Brahmachari, Suresh Rai, Satyabrat Dey and B.R.R.PD. Sinha

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640	**Jagdalpur:** Conservation of Raily ecorace of *A.mylitta* Drury.	2001-02	Demographic studies of Raily in its natural habitat, their preservation and evaluation. Grainage behaviour and viability of Raily ecorace in in situ and ex situ conditions	1. Preservation under pagoda resulted in retaining 75.83% live cocoons against 34.67 % under ex situ condition. 2. Insitu grainage operation resulted in 4:1 and 5:1 cocoon dfls ratio in first and second crop. Wheras in capitive condition the ratio were 14:1 and 17:1. Grainage under insitu was highly effective and superior.	V.K.Pande, G.P. Mahobia and K.V.S. Rao
641	**AIE 4601:** Germplasm Mainenance of *A.mylitta* D.	1998-2003	Exploration and collection of genetic resources of *A.mylitta* D. Maintenance of ecotypes of *A.mylitta* under Ranchi condition. Maintenance of evolved lines of *A.mylitta* under Ranchi condition.	1. Under maintenance programme 09 ecotypes and 04 inbred lines and 3 mutant lines-Blue, yellow and almonds were maintained and their performance was evaluated under Ranchi condition. 2. In terms of superiority with regard to absolute silk yield [g/ dfls] Daba BV was higher followed by Daba TV and Sarihan.	A.K. Srivastava, A.H.Naqvi, N. Kumar, A.K. Sinha, S.R.Vishwakarma, G.C. Roy and B.R.R.P. Sinha
642	**AIB 4602:** Hybridization studies in *A.mylitta*	1998-2003	Trials of farmer's level.	1. Based on SCA estimates and hetrosis short listing of best hybrid was done by combined trait index selection method considering 07 yield contributing characters. 2. Three promising hybrids Sarihan x Laria , Modal x Sarihan and modal x Daba were identified.	A.H. Naqvi, A.K. Srivastava, N. Kumar, A.K. Sinha, Suresh Rai, S.R.Vishwakarma, G.C. Roy and B.R.R.P. Sinha
643	**ARP 4607:** Studies on therapeutic and chemo-control of pebrine.	1997-2002	Field trial and demonstration of drug formulation at extension level.	A drug formulation [CC] was developed against Pebrine, which resulted in reduction in larval period [2-4 days], pebrine infection [2-4%] and increase in cocoon yield in the range of 8.7 to 19.79% over control in different crops.	Alok Sahay, D.N. Sahay and D.K. Roy

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644	**PPS 4612:** Response of Tasar food plants *Terminalia arjuna* to micronutrients.	1997-2002	Formulation of micronutrients mixtures and their effect on the leaf yield and quality of *T.arjuna.*	A mixture of micronutrients [Mn: 1.5 kg, Cu:0.05 kg, B:0.05 kg, Mo:0.002 kg, Zn:0.25kg, Fe:0.05 kg per hectare per crop] was developed which increased the leaf yield in the range of 31.84-50.40% over control.	S.K. Chaudhary, A.K. Sinha and Jagdish Prasad
645	**PPS 4614:** In vitro propagation and selection of variabilities in Tasar food plants *T.arjuna and T.tomentosa.*	1998-2003	Micropopagation of tasar food plants through shoor proliferation. Studies in regeneration of callus of *T.arjuna and T.tomentosa.*	Variability was observed in different genotypes and genotype x treatment in callus culture as well as shoot proliferation from Nodal and axillary bud explants. Genotype specific media and hormones have been identified.	J.Tirkey, A.K. Sinha, A.Gangopadhyay and O.P.Dubey
646	**ARE 4627:** Management of Uzifly *Blepharipa zebina*, a serious endoparasitoid of silkworm, *A.mylitta* through chemical and biocontrol agents.	1990-2004	Development of chemical method to control uzi fly, *B. zebina.* Studies on the occurrence of natural enemies of uzi fly, *B.zebina.*	Spray of aqueous solution of bleaching powder [2%] was tested for control of uzi fly infestation on an average infection was reduced by 60.64 % in comparison to control. In the study on the occurrence of natural enemies of uzi fly, *B. zebina*. Natural parasitisation of uzi fly pupae by *N. thymus* was significantly more [54.24%] as compared to *S.endius* [27.97%] followed by *B. lasus* [17.79%] under integrated management. The average uzi fly infestation percentage to silkworm in treated lots was recorded as 12.62%, 16.32%, 17.15% and 4.88% when physical, chemical, biological and integrated control methods were adopted, while in control the uzi fly infestation percentage was 20.94%	Ram Kishore, S.P. Sharma, S.N.Sinhadeo, Suresh Rai, G.C. Roy and B.R.R.P.Sinha

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647	**MST 4628:** Socio-economic studies of tasar industry in Orissa **(Part-II)**	2002-04	Socio-economic survey of tasar silkworm rearers.	Socio – economic information was recorded from 150 Rearers in Sundergarh district [Orissa] were compiled. In brief On an average, a rearer's family rear 350 dlfs annually and earns Rs. 8455.00. Tasar contributes 19% of their total Annual income of Rs.44500.00. it was found that 72% tasasr silkworm rearers belong to ST category, 46% rearers are literate, 57% rearers have landholding of size 2.51-7.50 acres. The information recorded from 120 reelers and weavers in Nuapatna area [Orissa] revealed that a majority of weavers [96%] are traditional and belong to Hindu community. A weaver earns 58% [RS. 27144.00] of his total Annual Income of Rs 46800.00.	B.N. Brahmachari, Suresh Rai and Ram Nagina
648	**APS 4631:** Studies on bio-ecology , geographical distribution and extent of crop loss due to stink bug *Canthecona furcellata* W. a potential predator of *A.mylitta* D.	2001–03	1. Studies on the biology, damage potentiality and seasonal variability of *C. furcellata* at different regions. 2. Studies on finding an alternate host of parasitoids of *C. furcellata*	The average predator population of *Canthecona* was observed to be on higher side during second crop [36-77 numbers per 100 dfls] as compared to first crop 914-54 numbers per 100 dfls] in all the tasar producing regions. The average temperature, humidity and rainfall ranged between 20 to 32oC, 62-92% and 33.60-451.72mm respectively during the season of occurrence of *Canthecona* population. During the project period two egg parasitoids of *C. furcellata* namely *Psix striaticeps* Dodd and *Trissolcus* spp. were collected from the field and mass multiplication was carried out by utilizing eggs of target predator. The data revealed that parasitization ranged from 54 to 81.5% hence both could be utilized for its commercial exploitation against the target pest.	S.P.Sharma, Ram Kishore, S.N. Sinhadeo, G.C. Roy and B.R.R.P.Sinha

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649	**AIP 4630:** Studies on voltinism of *Antheraea mylitta* with reference to latitude and photoperiod	2001-04	To study the voltism of tasar silkworm with reference to latitude and photoperiod.	Bivoltine and trivoltine zone of Tasar silkworm was identified by study of Brushing schedule of Tasar silkworm with special reference to latitude and environmental conditions with little pre-ponement or postponement of brushings in second crop. The technology is utilized extensively in BTSSSO.	B.M.K. Singh,S.K. Sharan,P.K. Mishra, Dinesh Kumar, S.K. Tiwary, R.R. Majumdar, K.K. Sharma & G.C.Roy
650	**CFC 7019:** Studies on core spinning of Tasar silk yarn	2004	To study the core spinning of tasar silk yarn	In the study eight varieties of fabrics from four varieties of core spun yarn were made utilizing "New Model Charkha" [NMC- modified KVIC Amber Charkha] and motorized spinning wheel. Two control [C1 and C2] were made from pure tasar spun yarn . All the fabrics have been tested for their dynamometric properties at Central Silk Technological Research Institute , Bangalore .It is found that the test pieces of single twisted x mercerized cotton and single twisted x jute were found better than others in NMC group ; both got five quality test credit points and were cheaper than control C1. Single twisted x polyester under motorized spinning wheel group got six quality test credit points and was found cheaper than its control C2.	Z.M.S. Khan, S.S. Manna & Suresh Rai
651	**ARP 4647:** Characterization of the gut micro flora of *Antheraea mylitta* D. and studies on the pathogenicity	2002-06		The project was taken up to identify the disease causing pathogens causing bacteriosis and to develop effective control measures. Of the different antibiotic formulations and botanicals tried, application of Hostacyclin [150 ppm] reduced the disease from 13.6%[control] to 5.0% and increased cocoon yield by 18 per dfl [control- 41.3 cocoons/dfl]. All the three	D.K. Roy, D.N. Sahay, Alok Sahay, G.P. Singh, G.C. roy and N. Suryanarayana

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
	for developing therapeutic and biological control against bacterial diseases			botanicals [Bhumiamla, Kalmegh and Bhringraj] @4% aquous extract reduced the disease incidence from 13.6% to 8.0% with improvement in cocoon yield from 41 [Control] to 48-52/dfl.	
652	**PPA 4648:** Foliar application of nitrogenous, potassic and phosphatic fertilizers on *T.arjuna* for quality leaf and cocoon yield	2003-06		Different combinations of N,P and K fertilizers as foliar spray were studies for improvement of quantity and quality of leaf of Arjun and cocoon yield. Foliar application of 1% Urea, 1% D-Ammonium Phosphate and 1% Muriate of Potashwith half dose of NPK fertilizer as basal application increased the leaf yield by 29% over control [3.432 kg/plant]. Cocoon yield of 65/dfl with cocoon wtof 11.93 g, shell wt of 1.74 g and SR of 14.47% over control [52.94/dfl, 11.76 g, 1.60 g and 13.43%, respectively].	S.Das, Jagdish Prasad, U.S.P. Sinha and S.K. Chaudhary
653	**AIP 4649**: Studies on impact of temperature on male fertility in *A.mylitta* D.	2003-05	Impact of temperature on male fertility in *Antheraea mylitta*	Impact of different temperature treatments for varied durations on pupal mortality, sperm count in female reproductive organs and hatching was studied. Pupal mortality significantly increased when exposed to 35 °C for 4-5 h/day during I crop and 3-5 h/day during II crop and in all treatments at 37° C in both crops. Total sperm count declied significantly [20%] in the reproductive organs when pupa were exposed for 5 h/day during I crop grainage and 3-5 h/day during II crop at 35 °C. Under 37 C treatment, it declied in all durations.	S.S. Rath, Raj Narayan, M.K. Singh, S.R. Vishwakarma, G.C. Roy and N.Suryanarayana

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654	**AIB 4643:** Exploration, collection, characterization and commercialization of oak fed *Antheraea* species in north eastern Indian.	2003-06		Cocoons of *A. roylei* and *A. frithii* were collected from Oak growing areas of N_E region. During I crop, 100 dfls of *A. frithii* and 3 dfls of *A. roylei* were reared ex situ on *Lithocarpus dealbata* and 110 dfls of *A. frithii* were released *in situ* for conservation. Cocoon yield in *A. frithii* was 22/dfl as against 27/ dfl in *A. roylei*.. Average fecundity, hatching, cocoon weight, shell weight and SR in *A. frithii* was 215 eggs, 56.2%, 4.40 g, 0.45 g, 10.23% and in *A. roylei* the values were 205 eggs, 56.5%, 6.30g, 0.60 g, 9.52%.	N.Ibohal Singh, N.Ibotombi Singh, and L.Somen Sngh
655	**AIB 4644:** Selection of superior genotypes of *Quercus* species on the basis of growth and bioassay studies.	2003-06		Based upon the silkworm bioassay trials, one genotype [QS-5] of the eleven lines of *Q. serrata* and one genotype [QG-1] of the 5 lines of Q. *grifithii* were identified as superior ones for further multiplication.	A.K. gogoi and N.Ibohal Singh,
656	**ARP 4656:** On farm stock maintenance and multiplication of Andhra local an ecorace of *A.mylitta* D.	2003-06	Studies on grainage efficiency and viability of Anthra ecorace.	1. With the help of *in situ* grainage modal, Grainage efficiency of Andhra local ecorace was increased. 2. Technology adoption at farmer's level increased cocoon yield @ 8.1 cocoon / dfl over control under stabilization of Andhra local crop.	P.Jayaparakash, B.V. Sanjeeva Rao, M.Vujaya Kumar and Jaikishan Singh

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657	**PIP 4632:** Studies on organic farming and use of bio-fertilizers in tasar culture.	2001-06	1. Influence of application of FYM, vermicompost and their combinations with NPK on soil fertility and leaf yield of *Terminalia arjuna* plants.	1. Application of mixture of Azotobactor Azospirillum and Phosphobacterin in equal proportion @ 20 kg/ ha/ year yielded 7.06 kg of leaves per plant as against the control yield of 5.04 kg/ plant. 2. Sowing of sunnhemp [*Crotolaria juncea*] seeds @ 70 kg/ ha/year and incorporation of biomass after 45 days improved the soil fertility resulting in leaf yield of 7.8 kg/ plant against the control yield of 5.74 kg / plant.	Dr. Ram Kumar, P.S. Sinha, J.Tirkey, M.K. Singh and N.Suryanarayana
658	**AIP 4604:** Hormonal regulation of diapause and voltinism in *Antheraea myllita.*	2001-06		1. Identified morphological marker for initiation of adult development in diapausing pupae [brain window becoming opaque]. 2. Ecdysone titer reveals that decision on diapause programming is taken during 3rd instar and the decision sets in 4th instar. Decrease in the level of the 20-HE ecdysone titer in the 3rd instar of the DD generation is evident. 3. Pupal diapause occurs due to inhibition of PTTH stimulus required for activation of PG to release ecdysone. PTTH release occurs up to day 1 of pupation in NDD pupae. In DD pupae presence of brain is essential till the very end of pupal period to terminate diapause and further adult formation. The diapause is maintained by the low endogenous level of ecdysone during the refractory period and higher doses of exogenous ecdysone helps in termination of diapause.	Dinesh Kumar, S.K. Sharan, P.K. Mishra, B.M.K. Singh, G.C. Roy and N.Suryanarayana

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659	**ARP 4645:** Screening, characterization and identification of disease tolerant varieties in tropical tasar silkworm *Antheraea mylitta* D.	2003-06	1. Determination of LC-50. 2. Screening for disease tolerance. 3. Characterization of Virus tolerates.	1. Screening of major [07] ecoraces for their tolerance against viral disease was carried out. Age specific tolerance of larval instars was identified as V>IV>I>II>III instars. 2. Screened ecoraces were grouped as: Tolerant [Modal, Sukinda, Daba BV], Medium tolerant [Sarihan, Daba TV, Bhandara, Andhra Local] and Susceptibel [Raily].	Niranjan Kumar, S.B. Zeya, G.P. Singh, S.R. Vishwakarma and N.Suryanarayana
660	AIP-4659: Effect of temperature on diapause status and adult eclosion in tasar silkworm *A. mylitta* Drury (Lepidoptera: Saturniidae).	2005-10	• To record the difference between haemolymph biochemical parameters in relation with diapause status in BV and TV types of *A. mylitta*. • To observe the role of temperature treatments in the sensitive stages of diapause and their impact on adult eclosion in Daba BV and TV types of *A. mylitta.*	Biochemical parameters such as glycerol and trehalose were studied in diapause and non-diapause generation of silkworm. Identification of suitable temperature	Dr. P. K. Mishra Dinesh Kumar B. M. K. Singh Sri S. K. Sharan N.B. Vijay Prakash
661	AIP-4670: Formulation of semi-synthetic diet for tasar silkworm *A. mylitta* Drury (Lepidoptera: Saturniidae).	2005-09	• To develop artificial diet for tropical tasar silkworm *A. mylitta* D.	Semi-synthetic diet has been prepared and trail has been conducted in various tasar producing states.	Dinesh Kumar, P.K. Mishra, B.M.K. Singh and N.B. Vijay Prakash

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662	PRE-4663: Management of gall insect, *Trioza fletcheri* minor Crawf. (Homoptera: Psyllidae) a major pest of primary tasar food plants, through plant based pesticides.	2005-08	• To reducing the gall insect infestation in primary tasar food plants through plant based pesticide	• Azadiractin was found effective in controlling the early stages of gall insect population. • Soil application of neem @60kg/acre was found effective in controlling the gall infestation to the extent of 48.5% as compared to control. • Soil application of neem @60kg/acre, foliar application of 15ppm azadiractin and alteration in the pruning schedule were found effective in suppressing the gall infestation in tasar food plants.	S. P Sharma Ram Kishore A.K Debnath G.C Ray
663	APS-4658: Improvement of Oak Tasar seed production technology	2005-08	• To find out optimum conditions for synchronization of moth emergence in *Antheraea proylei* • To find out optimum resting and coupling duration for egg laying, hatching. • To find out convenient egg laying devices. • Egg washing and surface disinfection	• Established effective period for synchronization of male and female moth for enhanced coupling and optimum coupling periods for large scale production of Oak Tasar Seeds. • Identified appropriate, convenient egg laying devices for effective grainage. • Established effective Oak Tasar silkworm disease control methods using chemical egg disinfectants. • Established optimum temperatures and RH requirements for uniform and maximum hatching.	L. Bidyapati Devi, N. Mohindro Singh, N. Ibohal Singh and K. Chaoba Singh.
664	PRE- 4663: Management of gall insect, *Trioza fletcheri* minor Crawf. (Homoptera: Psyllidae)	2005-08	• To reducing the gall insect infestation in primary tasar food plants through plant based pesticide	• Azadiractin was found effective in controlling the early stages of gall insect population. • Soil application of neem @60kg/acre was found effective in controlling the gall infestation to the extent of 48.5% as compared to control.	S. P Sharma, Ram Kishore, A.K Debnath

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	a major pest of primary tasar food plants, through plant based pesticides.			• Soil application of neem @60kg/acre, foliar application of 15ppm azadiractin and alteration in the pruning schedule were found effective in suppressing the gall infestation in tasar food plants.	G.C Ray
665	ARP- 4660: Causes and prevention of secondary contamination of pebrine in tasar silkworm, *A. mylitta* D	2005-08	• To trace the sources of the tasar silkworm microenvironment cause secondary contamination of pebrine in *Antheraea mylitta* D. as well as to study the basic nature of *nosema* sps found in *A. mylitta* D. • To develop prevention/control device for pebrine infection in the field to increase cocoon productivity.	Presence of pebrine spores in soil, bark and leaves even after disinfection and in silkworm pest *Canthecona sp.* were found pathogenic to silkworm confirmed as secondary source of contamination.	Alok sahay, G. P. Singh D.K. Roy
666	ARP-4671 Field evaluation of screened botanical extracts against virosis of the tasar silkworm, *Antheraea mylitta* D	2006-09	• To develop a suitable combination of screened botanical extracts against virosis in the tasar silkworm and its field evaluation	Jeevan Sudha – a botanical formulation for containment of virosis in tasar silkworm	G. P. Singh D.K. Roy Alok sahay
667	ARP- 4672 Development of vaccine for effective control of virosis in tasar silkworm, *Antheraea mylitta* D	2006-09	• To study the immune behavior of tasar silkworm *Antheraea mylita* D. and development of vaccines for control of virosis	Attenuated AmCPV used as oral vaccine against virosis in tasar silkworm. Double dose of oral vaccine inhibited the mortality due to virosis to the tune of 29%	D.K. Roy G. P. Singh Alok sahay

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668	AIG-4669 Selection aided molecular marker system for improvement in tropical tasar silkworm *Antheraea mylitta* Drury [Collaborative project with IIT, Kharagpur]	2006-11	• To find out association of molecular marker (s) with yield traits of tasar silkworm • To assess DNA polymorphism and heterozygosity found at individual and population level.	• To find out markers linked to yield traits Daba and Sarihan ecoraces were used. Where RAPD primers, OPW-16 produced unique band for female with high shell weight and OPW-12 produced distinct band in low shell weight groups and BLAST search of their unique band sequence showed similarity with *Antheraea pernyi* fibroin gene (identity=88%) and vitellogenin gene respectively.This is the first report of development of SCAR marker, diagnostic to specific yield parameters of *A. mylitta*. • The SCAR marker SCOPW-16_{826} could be effectively utilized to circumvent the problem of lab-to-lab reproducibility and dominant nature of inheritance in RAPD. The discrimination between HCSW and LCSW trait group achieved by these markers would make them as very useful diagnostic markers for silk yield improvement, breeding and marker assisted selection aiming at the development of *A. mylitta* for productivity. • The differentially expressed mRNA patterns in tasar silkworm larvae are very interesting, because some of them are unique to this species. The expression pattern of mRNA in fat body and gut of high and low body weight silkworm larva (V instar) showed allelic variation. However, in silk gland mRNA, bands were identical with varied expression.Differentially expressed cDNA were showed sequence similarity with protocadherin gene and NADH dehydrogenase gene.	P. K. Kar, A. K. Srivastava, B.M.K. Singh, A.K. Ghosh and S.R. Datta

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669	PPA- 4668: Integrated farming system in tasar culture	2006-09	Sustainable utilization of land under tasar food plantation through intercropping with agricultural crops for additional income, soil conservation and its enrichment.	Outcome of the project showing that *T.arjuna* and *T. tomentosa* had performed better in terms of leaf yield when intercropped with blackgram+ pigeonpea crop. Further results indicated no adverse effect on silkworm rearing both in sole and intercropped condition of arjun and asan. Net income, additional income and B:C ratio of total system showed better when intercropped with growundnut. Whereas, tasar food plants +ginger intercropping system showing higher leaf yield of tasar food plants, ERR% and SR%	
670	PRP-4667 Screening of the germplasm of *Terminalia arjuna* & *T. tomentosa* for tolerance against three major foliar diseases.	2006-09	To identify the disease tolerant/ resistant accessions geneotypes of arjun (*Terminalia arjuna* Bedd.) and Asan (T. tomentosa W&A) for future breeding programmes and for popularization of such genotypes for commercial exploitation.	Total 33 accession of *T. arjuna* and 27 accessions of *T. tomentosa* were isolated as foliar diseases tolerant accessions.	Gargi, Rajendra Kumar, S.K. Sinha and P.S. Sinha
671	PPS- 4665: Effect of secondary nutrients on quality and leaf yield of *Terminalia arjuna* and *Terminalia tomentosa*.	2006-11	• To find out a suitable dose of secondary nutrients for both quality and quantity leaf production of *T. arjuna* and *T. tomentosa.*	A combination of secondary nutrients SM_5 has been developed and found to increase leaf yield by 27.45% with simultaneous increase in cocoon characters.	Dr. U.S.P. Sinha S. Das J. Prasad

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672	PIP- 4666 Standardization of micro propagation protocols for elite genotypes of primary tasar food Plants (*Terminalia Tomentosa* W&A and *Shorea robusta* G).	2006-11	• Development of micropropagation for elite genotypes T. tomentosa and Shorea robusta	Modified MS medium supplemented with NAA (0.5mg/l) and BAP (2.0 mg/l) where maximum number of shoots and length of roots of t. tomentosa. Whereas, multiple shoots were obtained from nodal explants of the elite genotypes of Shorea robusta on HMS and MMS media supplemented with BAP. Maximum number of shoots and length of shoots were recorded in media supplemented with BAP 2.0 mg/l+ NAA 0.5 mg/l+ AC 20%.	Jyotsna Tirkey and B.C. Prasad
673	CYS- 7019: Studies on core spinning of tasar silk yarn.	2005-08	• To develop suitable technology for production of core spun yarn suitable for cottage industry. To develop suitable accessory for core spun yarn. • To develop core spun yarn from tasar silk.	The fabric samples were assessed at CSTRI, Bangalore. It was observed that the fabric made from tasar reeled yarn as warp and tasar core spun yarn as weft with jute spun yarn as core estimated as 5 quality credit points. The maximum credit point 6 was found for fabric made from tasar reeled yarn warp and core spun yarn weft with tasar silk fibres as sheath and polyester as core.	S.S. Manna, Z.M.S Khan, Suresh Rai
674	CYR- 4000: Studies on application of Lac dye on tasar silk.	2003-08	• To utilize ecofriendly, natural and non- carciogenic dye for tasar silk. To establish the suitable package of dyeing of tsar silk with Lac dye. • Commercialization of dyeing of tasar silk with lac dye.	The dyed fabrics were assessed for colour fastness to washing, rubbing, perspiration and light at CSTRI, Bangalore. The fastness rating between 3 to 5 for washing, 2 to 4 for light, 3 to 5 for rubbing as well as perspiration. So it can be opined that Lac dye can be used commercially for tasar silk yarn/fabric which is natural and ecofriendly.	Z. M.S Khan, S.S.Manna, Suresh Rai,

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675	AIP -4680: Ecogenetic analysis of diapause and reproduction in tropical tasar silkworm *A. mylitta* Drur.	2007-10	• To identify the physical, environmental and genetic factors responsible for pupal diapause and mechanism A.mylitta. • To explore the role of bioactive molecules secreted by the male accessory gland responsible for enhancing fecundity.	Physical and environmental and genetic factors responsible for pupal diapause and mechanism in *A. mylitta* have been identified. Role of bioactive molecules secreted by the male accessory gland responsible for enhancing fecundity was worked out. Six male accessory glands specific Expressed Sequence Tags were identified and registered in the gene bank. The presence of male accessory gland specific protein genes fractions identified in tasar silkworm are reported to be responsible for sperm security, increased rate of ovulation and egg laying and female mating behaviour in other insects. These findings give an insight of the role of male accessory gland factors in the reproductive physiology of *A. mylitta* and open the new areas of study directed towards functional physiology of MAG proteins in due course.	Dr. P. K. Mishra
676	PIG- 4682 Evaluation of genepool of tropical tasar silkworm host plants with respect to yield and quality of tasar silk.	2007-10	Screen out the accessions with reference to yield and quality silk.	Morphological and biochemical characterization: Significant differences were observed for different phenotypic and biochemical traits among accessions of both *T. arjuna* and *T. tomentosa.* Molecular Characterization: About RAPD profiling of 18 accessions of *T.arjuna* using 35 random RAPD primers, on an average 16.83 polymorphic bands were generated per primer between 7-30 bands. Only 10 primers (OPM-03, OPM-04, OPM-05, OPM-07, OPM-11, OPM-16, OPW-08, OPW-12, OPW-18 and AM-773315) generated 100% polymorphic products.	R. Kumar, R. K. Mishra, V.P. Gupta and Alpana Anupam

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				Whereas, the RAPD profiling of 16 accessions of *T.tomentosa* using 37 random RAPD primers, on an average 18.73 polymorphic bands were generated per primer ranging between 11-35 bands, maximum (35) generated by primer OPW 05. Among 37 primers only 20 primers (OPM-03, OPM-07, OPM-09, OPM-11, OPM-13, OPM-14, OPM-17, OPM-18, OPM-19, OPW-01, OPW-02, OPW-10, OPW-11, OPW-12, OPW-13, OPW-15, OPW-18, OPW-19, AM-773371 and AM750045) generated 100% polymorphic products. Genetic diversity analysis: he cluster analysis in the form of UPGMA dendrogram for 18 *T.arjuna* and 16 T. tomentosa accessions was done. T. arjuna were grouped in three major clusters. In cluster one accessions were 209, 123, 135, 307, 211 and 302. In cluster two accessions were 512, 332, 333, 508, 430 and 504. In cluster three accessions were 533, 622, 703, 624, 701 and 702. Whereas, T. tomentosa were grouped in major three clusters. In cluster one were accessions of 501, 309, 128, 216, 229, 310 and 408; in cluster two were 313, 443, 409, and 438; in cluster three 522,531,535,610 and 612.. high level of heterozygosity was found in both the species. Based upon overall characterization and evaluation, four promising accessions have been isolated for further multiplication and popularization.	

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677	AIP-4676 : Distribution, survey, isolation, characterization and control of tiger band disease affecting Oak Tasar silkworm	2007-11	• To identify the causative pathogens of tiger band disease affecting the oak tasar silkworm and its prophylactic control measures.	The tiger band disease pathogens were isolated and amplified in PCR and observed that the Tiger band disease genome of *Antheraea proylei* is DNA and occluded virus, belonging to Baculoviridae. the maximum effective rate of rearing percentage (ERR) among the herbal treatments were observed in P-52(plant) (36.95% ± 10.70) and P-27(Plant) (36.75% ±10.78) as compared to control (15.00% ±7.87). The various prophylactic control measures were practiced by dusting of bleaching powder and lime powder in the rearing field, mother testing by visual and microscope, egg washing and disinfection in acids	T. James Keisa, N. Ibohal Singh and K. Chaoba Singh
678	AIB- 4677: Improvement of Oak Tasar silkworm through hybridization and selection	2007-12	• To ascertain the genetic compatibility of the oak fed *Antheraea* species viz., *Antheraea proylei* (n=49), *Antheraea pernyi* (n=49), *Antheraea frithii* (n=31) and *Antheraea roylei* (n=31). • Selections of superior recombinant inbreed lines from the progenies of superior hybrids.	One high yielding hybrids *A. roylei x A. pernyi (RP)* giving average cocoon yield of 44 cocoons per dfl and one backcross line (*A. roylei x A. pernyi*) x *A. pernyi* (RTRSI-1) showing average cocoon yield of 50 cocoons per dfl have been identified as superior lines as against 32 cocoons per dfl of *A. proylei* as per the trial rearing conducted during trial rearing of 2011	N. Ibotombi Singh, L. Somen Singh, K. Chaoba Singh,
679	PPS- 4664: Studies on the deficiency symptoms of essential plant nutrients in *Terminalia arjuna* and *Terminalia tomentosa*	2007-11	• To identify the deficiency symptoms of essential plant nutrients in *T. arjuna* & *T. tomentosa.*	Coloured booklet for identification of deficiency symptoms of essential plant nutrients at field and farmer's level has been prepared and sent for publication.	J. Prasad S. Das U.S.P. Sinha

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680	ARP- 4681 Identification and characterization of disease causing pathogens (microspordia and bacterial infections) of tropical tasar silkworm, *Antheraea mylitta* D (DBT Funded)	2007-10	• Isolation and molecular characterization of disease causing microsporidia and bacteria infecting tropical tasar silkworm, *Antheraea mylitta* D. in different geographical locations	14 micosporidia and 19 bacteria isolated and characterized morphologically and biochemically have also shown variation with molecular characterization (RAPD and 16s rRNA gene). The amplicon obtained in 16s rRNA analysis were sequenced and deposited to NCBI database with different accession numbers.	N.G. Okha Alok sahay D.K. Roy G. P. Singh
681	- Establishment of tasar technology complex for Socio-economic empowerment of tribal through skill development in tasar culture	2007-11	• To motivate & develop skill in tribal populace to adopt tasar culture for better livelihood and assess the technological requirements in gap areas.	193.8% increase in Technologies Adoption with 56% increase in Cocoon yield / Dfl has been achieved among the trained tribal practicing tasar culture.	V.P. Gupta, R.K. Mishra, M.K. Sinha, S.K. Gangwar,
682	[ARP 4695] Identification of pebrinised and cytoplasmic polyhedrosis virus	2013-14	• To identify pebrinised and CPV infected stock through enzymatic changes in haemolymph and fat body in view of affecting factors.	Pebrinised and CPV infected silkworms were studied for biochemical changes in fat body and hemolymph. Changes have been observed in the elemental composition and catalase activity in fat body in case of both pebrinised and CPV infected silkworms.	J.P. Pandey, K. Jena, A.K. Sinha, K.P. Kiran Kumar, K.N. Madhusudhan and Alok Sahay

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	infected stock through enzyme marker system in *Antheraea mylitta* Drury		• To develop enzymes-substrate colour reaction based technique to differentiate pebrine and CPV infected *A. mylitta* at different stages of development. • To extend technology on enzymes markers to the tasar silkworm industry.	The elemental composition of hemolymph of infected silkworms varied with respect to C, N, Ca and Mg. The hemolymph of infected silkworms also showed elevated phenol oxidase and acid phosphatase activity compared to the healthy silkworms.	
683	[CYR 4699] Development of new reeling machine for tropical tasar cocoons regarding enhancement of productivity and quality	2013-14	To design and fabricate a reeling machine for tasar with reference to productivity and quality.	In order to reduce drudgery, a motorized reeling charkha was developed which was user friendly and enhanced the yarn productivity and reelability of silk and at the same time, silk waste was reduced.	T.K. Paul, N.S. Gahlot, A.K. Sinha, U.C. Javali, Kiran B. Malali, A.K. Paul, D. Chattopadhyay and H. Rudrama Gowda
684	[CYR 7055] Studies on tasar cocoon cooking methods and development of cooking devices	2013-14	1. To develop user friendly cooking agents including synthesized enzymes, develop efficient cooking methods and devices for both wet and dry reeling techniques. 2. To workout technical and economic viability of the cooking devices and methods with focus on silk recovery and quality.	Studies were taken up to optimize the cooking process for wet and dry reeling of tasar cocoons for production of quality silk. Two methods based on use of EDTA+Soda and Borax were found to be better than the existing practices. Borax method proved to be better than that of EDTA + Soda.	N.S. Gahlot, P.P. Srivastava, A.K. Sinha, Soni Vijay Kumar R., Saurav Mazumdar, Sreenivasa, Naveen V. Padaki, H. Rudranna Gowda

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685	MIT 4698] Studies on the adoption level of technologies by tasar rearers, reelers and weavers in Jharkhand	2013-14	1. To measure the knowledge and adoption levels of latest technologies at rearers, reelers and weavers level 2. To identify the reasons for the technology adoption gap if any	Study was conducted to assess the level of adoption of various technologies by stakeholders associated with different tasks related to tasar culture. Varied levels of adoption in pre and post cocoon sectors were found to be due to financial constraints, dependency on free supplies of inputs, non-availability of required inputs in the market, low educational level, reliance on traditional/ local systems, etc.	Suresh Rai, R.K. Mishra, Harendra Yadav, A.K. Sinha
686	[APR-4693] Studies on Biology and ecology of Laria ecorace of *Antheraea mylitta* D. on sal flora	2014-15	1. To study the life cycle, ecology, ethology and population dynamics of Laria ecorace in natural habitat. 2. To standardize the rearing schedule of Laria ecorace for utilization of Sal flora	The life cycle and breeding behaviour of Laria ecorace silkworm under in situ conditions. The distribution phenological and leaf biochemical characters of sal were studied. In situ and Ex situ grainage technology for Laria ecorace was standardized and the recommended package of practices were formulated.	A.K. Srivastava, G. Lokesh, P.K. Kar, M.K. Sinha and P.P. Srivastava
687	[AIB-4694] Improvement of Daba ecorace of *Antheraea mylitta* Drury for higher fecundity	2014-15	To improve the semi-domestic Daba race for higher fecundity in tropical tasar silkworm *Antheraea mylitta* Drury	Breeding methods were studied to increase the fecundity of the tasar Daba ecorace. A breeding line CTR-14 was developed with improved fecundity and obtained promising results in multi locational trials.	A.K. Srivastava, G.Lokesh, P.K. Kar, M.K. Sinha, and Niranjan Kumar
688	[ARP-4691] Studies on tolerance of *Am*CPV in commercially exploited tasar ecoraces of Daba BV and TV under induced condition	2014-15	Induction and improvement of tolerance in commercially exploited ecoraces of Daba B.V and Daba T.V.	Conventional breeding was taken up to develop breeds of Antheraea mylitta tolerant to virosis. Lines tolerant to AmCPV infection were derived in case of both Daba BV and TV through selection.	K.P.Kiran Kumar, A.K. Sinha, K.N. Madhusudan, G.P.Singh

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689	[PPA-4704] Development of package for cultivation of Lagerstroemia speciosa for rearing of tasar silkworm, Antheraea mylitta D.	2015-16	Development of package for economic cultivation of *Lagerstroemia speciosa.* ii. Standardization of package for Tasar silkworm (*Antheraea mylitta* D.) rearing on *Lagerstroemia speciosa.*	The growth parameters and leaf biochemical parameters of *Lagerstroemia speciosa* and rearing performance of *A. mylitta* on *L.speciosa* were studied to assess the effect of the crop management practices. The results showed that the rearing performance was at par with that of *Terminalia* sp.	Gargi, H.Yadav, M.Deka
690	[AIP 4696] Management of abiotic factors to regulate emergence in diapausing seed cocoons	2015-16	To find a mechanism to check erratic emergence and regulate moth emergence with the help of controlled regime of temperature and humidity from the diapausing seed cocoons.	Impact of abiotic factors, especially temperature, was studied on emergence of tasar moths with an objective to explore solutions to erratic emergence. A temperature treatment of 20°C for 10-15 days was found to delay moth emergence for 10-15 days.	J.P. Pandey, K. Jena, A.K. Sinha
691	[AIT 4702] Molecular cloning and heterologous expression of *Antheraea mylitta* cocoonase	2015-16	Large scale Collection of cocoonase To express the cocoonase gene in heterologous hosts for its future utilization in softening of tasar cocoons	Cocoonase secretion in *A. mylitta* was characterized. cDNA was prepared from mRNA. The heterologous expression was achieved in *E.coli*	J.P. Pandey, A.K. Sinha
692	[ARP 3489] Isolation and molecular characterization of major pathogens associated with flacherie disease in *Antheraea mylitta* D.	2015-16	To study the molecular characterization of major pathogens associated with flacherie disease	Flacherie affected tasar silkworms were studied to find the etiology and nature of the disease. It was observed that the insects harboured CPV along with may bacterial species like *Enterobacter* sp., *Proteus* sp., and *Staphylococcus* sp. Infectious Ifla virus was also found in the flacherie affected insects.	A.K. Sinha and K.P. Kiran Kumar

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
693	[APR 4701] Studies on bioecology of *Antheraea frithi* Moore in Manipur	2015-16	Taxonomic characterization and Identification of collected silkmoths	Surveys were conducted to study the biology and ecology of *A.frithi* in different oak growing sites. The lifecycle and the favourable abiotic conditions for *A.frithi* have been identified.	L. Bidyapati Devi, K. Chaoba Singh
694	[AIT 4703] Exploration of wild silk moth diversity in Manipur and their genetic characterization using molecular markers	2015-16	Survey and collection of the wild saturniid species in Manipur, an Indo-Burma region. Taxonomic characterization and Identification of collected silkmoths	Surveys were conducted to collect the wild sericigenous insects of Manipur. A total of 17 species of sericigenous insects belonging to Bombycidae, Saturniidae and Lasiocampidae and their host range have been identified.	Reeta Luikham, T. Shantibala, K.P. Arun Kumar, K. Chaoba Singh
695	AIB 4706: Conservation of Andhra local ecorace *Antheraea mylitta* Drury, through natural regeneration methods in Andhra Pradesh	2016-19	• To find out a suitable release method and its impact on population proliferation • Releasing methods adopted in core zone. • To increase the natural pairing by reducing the unseasonal moth emergence and seed production • To create awareness among inhabitants for community development	• Andhra local ecorace was naturally found in the areas, where *Lagerstroemea parvifolora* is found in abundance and it is adapted to L.parviflora yielding high quality cocoons with higher economic parameters and high quality raw silk. • Comparative study of rearing performance of Andhra local on different host plants viz. *Lagerstroemea parviflora, Terminalia arjuna and Terminalia tomentos*a showed that the economic characters of cocoons and reeling parameters were superior in *Lagerstroemea parviflora.*	R.Jaikishan Singh K.V.Satyanarayana Rao M.Subba RaoV.V.V.S.K.Venu Babu Alok Sahay Ajith Sinha

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				• Survey and collection data also showed that the project area where there is abundance of *Lagerstroemea parviflora*, wild cocoons are being collected every year although in less numbers. During the year 2014-15, 945 cocoons collected, in 2015-16 3205 cocoons collected and in 2016-17 3587 cocoons were collected from the project area allowing some of the cocoons for natural proliferation. However, from 2017-18 onwards, very few cocoons were collected despite adopting all the insect release methods. This might be due to change in climatic conditions i.e., very poor monsoon, dry weather, very high temperatures, poor quality of leaf availability and natural predators under Insitu conditions etc.,	
696	CYF 7077: Grading of Tasar Raw Silk Yarn – Development of Methods and procedure	2016-19	1. To develop suitable test methods for quality parameters of tasar silk yarns. 2. To develop standard test procedures for assessment of tasar silk yarn quality. 3. To develop standard photographs for evaluation of Evenness, neatness and cleanness quality parameters of Tasar silk yarn. 4. To develop suitable grading / classification norms for quality assessment.	Standardized reeling technology of pierced tasar cocoons for commercialisation. • 40 % silk recovery was obtained by reeling pierced tasar cocoons • Reeling of pierced tasar cocoons is technol-economically feasible. • Application of Lac dye on tasar silk. 27 different colours and shades were developed on tasar silk fabrics using lac dye with different permitted mordants which were colour fast. Lac dyeing on tasar silk is technol-economically feasible.	Prakash N Bhat, Kiran B Malali, Naveen V Padaki, Gautam Mitra , Jayanta Ghose , Raghu K, N. S. Gahlot, Z.M.S. Khan-

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
				• Core spinning on tasar silk yarn done using grey cotton, mercerized cotton, polyester and jute in the core covered with tasar silk waste. Polyester in the core gave the best dynamometric properties of yarn and fabric. Cost of fabric per meter was reduced by 36 % using different core yarn and is technol-economically feasible. • Development and standardization of an improved process for cooking and reeling of muga cocoons. Muga silk plus which is a combination of sodium carbonate and sodium bi carbonate was developed which gave higher cooking efficiency, raw silk recovery and reduced silk waste.	
697	PRE- 4720: "Efficacy of selected insecticides in controlling the gall fly, *Trioza fletcheri* minor infesting tasar host plants".	2016-29	1. To study efficacy of selective insecticides for their effectiveness against the gall fly, *Trioza fletcheri* minor. 2. To find some natural enemies of gall fly.	Among selected insecticides Acetamiprid 20% SP showed the best effectiveness against gall fly control. However, On Farm large scale field evaluation / trials are required before concluding the study and its recommendation. Silkworm rearing is undergoing in field and after silkworm rearing completion data will be compiled, statistical analyzed and final report will be prepared and submitted. However, after successful field evaluation / validation trials among selected insecticides, Acetamiprid 20% SP may be recommended for the control of the gall fly, Trioza fletcher minor infesting tasar hosts plants.	Vishal Mittal and Jitendra Singh

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
698	APS 4721: Development of tasar silkworm egg laying and collection device.	2016-18	1. Development of suitable egg laying device. 2. Development of egg collection device	New egg laying device for tasar silkworm have been developed. The collection of eggs is very easy from this device and require much less time. The fecundity is also on par with the other egg laying devices. New egg laying device has to be further tested at field for final recommendation and manufacturing for continous supply to the users.	G.P Singh
699	AIB 4709: Assessment of conservation status of tasar ecoraces in Odisha and their characterization including genetic diversity for delineation of conservation areas	2015-18	• To survey the tasar silkworm genetic resources existing in Odisha • To ascertain the extent of variability in existing populations with respect to ecological niches through morphometric and behavioural traits. • To make inventory/ database of the tasar genetic resources.	The potential districts of Odisha have been surveyed for availability of wild cocoons and their present status. The predictive map also has been prepared based upon which adequate conservation plans can be chalked out and implemented.	Prasanta Kumar Kar
700	ARE- 4710: "Studies on the seasonal incidence, biology and management of Ichneumonid Wasp, *Xanthopimpla pedator* in tasar cultivation'	1016-19	1. To study the geographical distribution, bio - ecology, extant of crop loss, alternate host and natural enemies of Ichneumon fly, *X.pedator*. 2. To identify attractants / repellents for formulating suitable management strategies of *X.pedator.*	• Higher severity of yellow fly incidence was recorded at BSM&TC, Chennur, Telangana whereas lower at CTR&TI, Ranchi – Jharkhand • Volatile chemicals were assessed through EAG studies to find out suitable chemical compounds which attract *X. pedator* during feeding and spinning time. • Seven chemical compounds were identified viz., -Octen-3-ol, Pentadecanoic acid, 2-Methylphenol, 4-Methylphenol, L-Citrulline, Octanol and Limonin which were known to elicit the response of *X. pedator.* • Moon moth was identified as secondary host of yellow fly at BSM&TC, Chennure.	Jitendra Singh Sunita Mukherjee A. Sen Vishal Mittal KVS Rao

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
701	AIT 4724: Isolation and characterization of sericin from tasar silk waste for commercial utilization	2016-18	• Isolation & characterization of sericin from tasar silk fibre wastes. • Isolation & characterization of sericin from different ecoraces of *A. mylitta* D. • Isolation & characterization of sericin from cocoons of different tasar food plant. • Isolation & characterization of sericin from cocoon cooking Water	It is concluded that 0.2% sodium carbonate removes residual sericin from tasar silk fiber wastes. There is no significant colour variation between different tasar silk fiber wastes. The recovered sericin had a wide range of molecular weight 11–245 kDa, which is classified as both low and high-molecular weight. The higher C:N ratio and thermal stability of residual sericin had wide variation with standard sericin. This was attributed to the fact that recovered powder was residual sericin. The variation of amino acid contents might be accountable for free radical scavenging potential, anti-tyrosinase, anti-elastase and anti GST activity, and thus it can be used as a component of cosmetics as well as pharmaceutics. However, in vivo evaluations are needed for the development of natural source to formulate pharmaceutics and skin care cosmetics.	K. Jena and J.P. Pandey
702	[PIC 4705] Development of in situ soil health and nutrient management in tasar growing areas	2016-17	3. To know the effect of different treatments on the nutrient status of the soil and leaf of tasar host plants growing in different tasar producing areas. 4. To know the influence of different treatments on the quality and yield of tasar food plants.	Impact of different treatments like rain water conservation, mulching with wild legumes and application of PSB was assessed on nutrition, leaf yield and rearing efficiency of Terminalia tomentosa. The results indicated that the treatments showed significant beneficial impact on the studied parameters and thus proved to improve productivity.	Shantakar Giri, Susmita Das, OP Dubey, PC Patro, Dinesh Kumar

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
703	[AIB 4707] Bioecology of Raily- an endemic sal based ecorace of *Antheraea mylitta* Drury in Bastar (Chattisgarh)	2016-17	To study the biology, ecology and environmental interaction in ecorace Raily under *in-situ*	Studies on bioecology of Raily ecorace were conducted in eight different pockets of Bastar. The rearing parameters, favourable temperature and relative humidity, cocoon yield with respect to different crops have been determined.	G.P. Mahobia, S.K. Sinha, S.Giri
704	[AIB 4708] Survey collection, characterization and conservation of wild ecoraces Laria and Baraf of Tasar silkworm, *Antheraea mylitta* D. available in different parts of Chattisgarh	2016-17	• Survey of the ecoraces to establish the distribution, collection of different variants from their different eco-pockets • Characterize the ecoraces, population structure, Quantitative and qualitative traits, cryptic variability, clustering of variants into different regression quadrates and their multiplication. • To exploit the ecoraces for economic gain.	Studies carried out on limited available cocoons of Laria and Baraf ecoraces indicated that they are not amenable to human handling.	G.P. Mahobia, S.K. Sinha, M.D. Tiwari, S. Kamraj
705	[API 4711] Screening of fast growing drought tolerant accessions of *Terminalia arjuna* for raising block plantation	2017-18	• To select the fast growing accessions of Terminalia arjuna available in the gene bank of CTR&TI for drought tolerance at the early stage of its growth.	Selection studies were conducted to identify the fast growing and drought tolerant accessions of *T.arjuna*. An array of physiological, anatomical and biochemical parameters was assessed. Four accessions of *Terminalia* sp., were identified with drought tolerant traits and other superior leaf parameters.	T. Pandiaraj and Harendra Yadav

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706	[ARP 4712] Development of chemical based technology for easy detection of Nosema mylittensis, the causative pathogen of pebrine disease in tasar silkworm, Antheraea mylitta D. using light microscopy	2017-18	Development of chemical based technology for better and easy identification of Nosema mylittensis spores through light microscopy. Study of different life cycle stages of Nosema mylittensis	Different chemicals were studied to improve the visualization of pebrine spores by dissolving the debris. Pebrine visualizing solution was formulated and tested in multiple locations at field level which was found to be very effective in improving the visualization of spores under microscope.	G.P. Singh
707	[ARP 4713] Isolation of thermo-tolerant line(s) of tasar silkworm *Antheraea mylitta* Drury through molecular studies	2017-18	• To isolate thermo-tolerant line(s) of tropical tasar silkworm, Antheraea mylitta. • To develop molecular marker for the identification of thermo-tolerant line(s). • To unravel the underlying molecular mechanism of thermal stress tolerance in tasar silkworm.	The tasar silkworms were selected for survival under higher temperatures and bred to further generations. The progeny were shown to be more adapted to higher temperatures. Such silkworms were screened for thermotolerance markers which can be used for future breeding programs.	I.G. Prabhu, P.P. Srivastava, A.H. Naqvi, A.K. Sinha
708	[PPS 4725]: Soil Health Cards for Sericulture Farmers.	2016-19	• To make the farmers aware about the importance of soil fertility for the production of quality leaves and subsequently cocoons through soil health cards.	• A combination of secondary nutrients SM5 has been developed and found to increase leaf yield by 27.45% with simultaneous increase in cocoon characters.	P.P.Srivastava, T. Pandiyaraj and Susmita Das

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709	ARE- 4719: "Studies of population dynamics of stem borer (s) in tasar host plant and their management through IPM approaches'.	2016-19	• To study the population dynamics of stem borer and their natural enemies • Development of IPM module for stem borers	• A survey was conducted to assess the infestation of stem borer in tasar growing areas viz., Jharkhand, Odisha, Chhatishgarh, Maharashtra and Telangana, respectively. • Stem borer infestation was recorded high in Asan (*T. tomentosa*) food plants and comparisons to Arjuna (*T.arjuna*) food plants at CTR&TI, Ranchi. • Assessed the diversity of stem borer in tasar food plants at CTR&TI, Ranchi and other tasar growing areas. • Apply directional approach and assess its effectiveness for monitoring and management of stem borer in tasar food plants. • Apply cost effective and eco-friendly chemicals for avoid egg laying of stem borer in tasar food plants. • Apply cost effective and eco-friendly chemicals for management of stem borer in larval stage whereas light trap and manual collection and killing of stem borer at adult stage in tasar culture.	Jitendra Singh Sunita Mukherjee M.M Baig
710	**PIP-4716:** "Gut-symbiont associations in *Antheraea mylitta* Drury feeding on Sal flora and their physiological implications"	2016-19	• Isolation and characterization of gut symbionts of *A. mylitta* feeding on Sal flora and Arjun/Asan. • Functional characterization of the identified endophytes/bacteria and their physiological role.	• First-time next generation sequencing has been used to explore the Antheraea mylitta midgut bacteria. It is revealed from the study that the structure and functions of the Tasar silkworm associated with gut bacterial communities in different eco-races from India. Pseudomonas is the dominant genera. Several important bacterial functions in silkworm digestion, nutrition, immunity & fitness were identified.	

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				Loss of native gut bacteria through antibiotic treatment hampered the growth. The midgut associated bacteria play important role in silkworm growth and development. Hence, gut bacteria can be explored for the development of probiotics.	M.M. Baig and J.P. Pandey
711	ARP- 4718: Studies and use of selective metabolites extracted from the rhizosphere and phylloplane bacteria in control of AmCPV infecting the tropical tasar silkworm	2016-19	Extraction and screening of metabolites against *Am*CPV in tasar silkworm	• Out of 36 bacteria isolated from phylloplane and rhizosphere of tasar food plants, nine bacterial isolates have shown promising results against disease causing bacteria in vitro. These bacteria and their metabolites in bioassay study have not shown significant reduction in mortality due to AmCPV infection even at low dose of AmCPV (1 x 102) than inoculated control. Hence, the bacterial metabolites of phylloplane and soil of tasar food plant have not found effective in control of virosis in tasar silkworm. Information has been generated that the bacterial metabolites may not be used as technology/product for control of virosis in tasar silkworm.	G.P.Singh
712	**CYR-4722** Development of ecorace specific package for production of quality tasar yarns	2016-19	1) To develop ecorace specific package with standard process parameters from existing post cocoon technologies in tasar sector for enhancement of productivity and quality of reeled tasar yarns.	• Lower temperature (ambient/atmospheric) to higher temperature (90°C) for 1 hour duration and holding of cocoons at same temperature for three hours and then reducing the same to ambient/atmospheric condition during stifling are ideal for Daba, Raily and Modal tropical tasar cocoons.	Z.M.S.Khan and Debasis Chattopadhyay

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
			2) Evaluation of physical and technological characteristics of cocoons' processing (stifling method, storage period, cooking media) and yarn production parameters (reeling method & post yarn techniques) and establishing co- relation with respect to quality control. 3) To work out the techno – economic feasibility of the package for commercial production of yarn and fabrics.	• 5 g/l of sodium carbonate and sodium bi- carbonate each with 20 min boiling followed by 30 min steaming facilitates best single cocoon quality characteristics and reeling performance with cooking efficiency about 96%, reelability 35% and raw silk recovery 65% in case of Daba cocoons • Similarly, 10 g/l of sodium carbonate and sodium bi- carbonate each with 15 min boiling and 45 min steaming provides better single cocoon quality characteristics and reeling performance with cooking efficiency about 90%, reelability 25% and raw silk recovery 60% in case of Raily cocoons. • In case of modal cocoons; sodium carbonate and sodium bi- carbonate of 8 g/l each with 20 min boiling followed by 30 min steaming facilitates adequate softening with cooking efficiency about 92% as well as reelability of about 26 % and raw silk recovery of about 62 %.	
713	[ARP 4714]: Identification of early sprouting and fast growing genotypes of *Quercus serrata* for raising block plantation in North – West India.	2016-20	• Identification of early sprouting and fast growing genotypes of Q. serrata in the existing population. • Multiplication of isolated early sprouting genotypes to raise block plantation for utilization in early spring crop (March – April).	• Five plants were identified as early sprouters during four surveys conducted under the project. Out of total 5 identified plants, three were identified from Kumaon and two from Garhwal region. No rooting was observed in air layers tried on the plants. Twigs of selected genotypes were brought to RTRS Bhimtal and planted by appropriate methods. But even after repeated attempts and following different protocols, rooting was not observed. #	Mahesh Chandra Joshi

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				• The PI also consulted the Horticulture Dept. G.B. Pant University, Pantnagar and Department of Plant breeding & Tree development, FRI, Dehradun. As suggested, treatment of 4000 ppm IBA with talcum powder & ethyl Alcohol before sprouting was also tried but no positive result was found.	
714	**[AIB 4717]** : Improvement of tropical tasar silkworm for high silk yield through recurrent selection	2016-19	• Improvement of tasar silkworm breeds for high silk yield through recurrent selection breeding	• Analysis of variance in RBD revealed significant variation across crosses for male cocoon weight and pupa weight and not for remaining. This indicates the breeding material has attained genetically homogeneous. Therefore creation of genetic variation in breeding population is essential for further genetic improvement of population. • To achieve this evaluated population needs to be crossed with Wild Daba or other cultivated Daba in next generation. However, mean performance of total crosses of second season was found to be better as compared to that of First crop crosses for all the traits.	N. Kumar, I. G. Prabhu A. H. Naqvi
715	**[PPA 4715]**:Effect of plant growth promoting Rhizosphere microorganisms on leaf nutrient content of primary tasar host plants in forest and block Plantation.	2016-20	• Composition of plant growth promoting microorganisms in rhizosphere of primary tasar host plants in both forest And block plantation. • Screening of isolated plant growth promoting microorganism species for leaf nutrient content in primary tasar host plants.	• Relationship between PGPR composition with Soil and leaf nutrient was studied using soil and leaf samples collected From natural habitat. • Leaf Nitrogen content is positively correlated to Pseudomonas load & diversity followed by load of Nitrogen fixing Bacteria (NFB).	Manjappa

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
			• Relationship between plant growth promoting microorganisms and nutrient content of soil and leaf of tasar host plants.	• Leaf K content is positively associated with Pseudomonas load & NFB diversity; whereas, soil Sulphur content is positively correlated with PSB load and Pseudomonas diversity and soil K with Pseudomonas load. • Higher total bacterial load was observed in forest plantations with Asan as compared to block plantation with Arjun. • Total 258 PSB, 204 NFB and 74 anti-pathogenic plant growth promoting bacteria isolates were Isolated from 116 rhizosphere soil samples collected from Jharkhand, Odisha & Chhattisgarh. • Top 57 PSB isolates were selected. In vitro multi-functional tests revealed that, most of the selected PSB isolates are having capacity to produce Indole-3-Acetic Acid (IAA) and Ammonia. • Potential isolates were selected viz., PSB 7-2, PSB 16-2, PSB 64-7, PSB 98-1, PSB 109-1, PSB 110-2, NFB 5-2, NFB 8, NFB 18-2, NFB 51.2.	
716	[CED-4723] Studies on utilization of solar energy in Tasar post cocoon technology Operations.	2016-20	• Economizing the energy consumption in tasar post cocoon technology operations i.e. cocoon stifling, cooking, reeling, re-reeling, twisting and wet processing (degumming, bleaching, dyeing and finishing).	• Development of cooking device for tasar cocoons operated by electricity from solar power plant. • For effective utilization of solar energy the minimum radiation required is 600 W/m2. • The cost of cooking is Rs. 55/- per 1000 cocoons which is lower by 15 to 30% vis-àvis usage of firewood and LPG,	Z.M.S. Khan and Debasis Chattopadhyay

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
			• Providing support to poor and marginal reelers and enhancing their profit margin. • Reducing dependence on electricity supply and consumption in rural areas silk clusters. • Following cleaner production technology processing in tasar post cocoon technology operations. • Drudgery reduction as the reeling machines etc. will be fitted with solar energy driven motors. • Replacement of thigh reeling by introducing solar energy driven machines in reeling clusters of the country		
717	[AIT 4727] - Integrated biotechnological approach towards improvement of quality and productivity of tropical tasar silk	2017-21			
718	Sub Project-1: Sequencing of whole-genome of tasar silkworm, *Antheraea mylitta.* (in collaboration with NIAB, Hyderabad).		• To perform the shallow sequencing of a single pupae of Daba ecorace of A. mylitta. • To perform the whole genome sequencing of Daba ecorace of A. mylitta. • To study the molecular basis of different qualitative and quantitative traits of A. mylitta through whole genome sequencing.	• For the first time de novo whole genome sequencing of A. mylitta has been done and submitted to the NCBI.	J.P. Pandey, Abhay Kumar Singh, K. Jena, D.I.G. Prabhu, Ravi Ranjan and Shailesh Sharma

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
719	Sub Project-2: Genetic Characterization of Tropical Tasar Silkworm, Antheraea mylitta through Single Nucleotide Polymorphism Based Molecular Barcode. (in collaboration with University of Hyderabad).		• To survey and collect various A. mylitta ecoraces existing in India. • To construct RAD seq library for sequencing. • To assemble paired end RAD sequence for in silico SNP detection. • To genetically characterize all the ecoraces with validated SNPs.	• Total 18 ecoraces of A. mylitta and one new ecorace, "Gajapati" (not showing similarity with already reported ecoraces of Odisha) has also been collected from Odisha, along with metadata. • Total SNPs among all ecoraces with biological replicates were observed to be 156,058. Ecorace Bhandara followed by Andhra Local were observed to have more number of SNPs and ecorace Jiribam has lesser number within the same population. • Total SNPs among all ecoraces with biological replicates were observed to be 156,058. Ecorace Bhandara followed by Andhra Local were observed to have more number of SNPs and ecorace Jiribam has lesser within the same population	I. G. Prabhu, J.P. Pandey, P.K. Kar Niranjan Kumar, A. D. Gupta and B. Senthilkumaran
720	[AIE-3555] Cryopreservation of Tasar silkworm, *Antheraea mylitta* semen and its Artificial insemination	2016-21	• To develop the Technique for A. mylitta semen collection and its cryopreservation. • To develop a method for artificial insemination in tasar silkworm *A. mylitta.*	• A.mylitta semen collection and semen cryopreservation performed. • Artificial insemination done but hatching not observed in inseminated moths.	J.P. Pandey and K. Jena

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
721	[AIT-4728] Identification of most active cocoonase of sericigenous insects and its variant through molecular Characterization. (in collaboration with IISER, Pune and BIT, Mesra)	2018-21	• Purification of cocoonase from natural sources & recombinant expression in E. coli. • Enzymatic activity measurements of cocoonase variants from natural sources and recombinant expression. • Characterization of posttranslational modifications of cocoonase and comparison of their activities. • To evaluate the most suitable cocoonase/variants for its future application in silk processing through characterization of the properties of silk produced using cocoonase treatment.	• Polyclonal antibody of cocoonase specific enzyme was prepared. • Crystal structure analysis, DNA sequencing and mass spectrometry confirmed that there are no post-translational modifications in cocoonase. • Based on structural study and cocoon softening ability, the trypsin and papain were identified as cocoonase variants. • The findings are being validated under TOT project MOE 04014 MI.	J.P. Pandey, Aruna Rani, K. Jena, D.M. Pandey, N.P. Tiwari and Gayathri Pananghat
722	[AIT 04002 SI] Selection of Stable Thermo-tolerant Line(s) of Tropical Tasar Silkworm Antheraea mylitta Through SCAR Markers.	2019–22	• To select stable thermo-tolerant line(s) of tropical tasar silkworm, Antheraea mylitta. • To validate developed SCAR markers for Marker Assisted • Selection of thermo-tolerant line(s). • To conduct multilocation trial of stable thermotolerant line(s) in tasar rearing hotter zones.	• Selected thermo-tolerance could be stabilized and multiplied further at RECs & BSM&TCs and utilized at farmers' level in hot & dry conditions. • Developed SCAR markers will be utilized for the specific selection of thermo-tolerant lines. • Signaling network underlying thermo tolerance of A. mylitta had been analysed and being validated for further confirmation.	I. G. Prabhu, Niranjan Kumar and Manjappa

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
723	[PIN04001SI] Development of a package for optimum Nutritional requirement of tasar host plants for production of quality tasar cocoons	2019 –22	• To supply each plant with adequate nutrients in balanced proportion to ensure healthy vegetative growth and more nutritive leaves. • To refine and optimize the nutrient application package that is ecologically safe, technically sound and economically feasible for soil health of tasar plantations and cocoon quality.	• Field experiment has been completed for assessment of optimum nutritional requirement of tasar food plants. • Fertilizer (macro & micronutrients) recommendation chart has been developed for tasar food plants for production of quality cocoons	Jitendra Singh, Susmita Das, S. Giri and B. Patnaik
724	Improvements of tropical tasar silkworm Antheraea mylitta D for high silk yield through recurrent selection (AIB-4717)	2020-23	• Improvement of tasar silkworm breeds for high silk yield through recurrent selection breeding.	Systematic breeding approach was adapted in present study to improve silk yield in tropical tasar silkworm through recurrent selection. Owing to less variation in Semi-domestic Daba wild Daba was crossed to create genetic variation in the population. Crossed population has revealed precise information on several genetic parameters like PCV, GCV, heritability and Genetic advance of commercial characters. These information helped us in designing future breeding strategy in recurrent selection. Low heritability of shell weight suggests for precise selection strategy like family selection and gradual genetic improvement, which demands more selection cycles. On the other hand inbreeding depression evident due to small population size, which suggests to go for large population size in tasar silkworm breeding.	Niranjan Kumar, I. G. Prabhu and A. H. Naqvi

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725	**BPC 04005SI** Tasar silkworm waste to wealth by Cordyceps	2020- 23	• Standardization of protocols and media composition for culturing Cordyceps on tasar silkworm refuses, cordycepin analysis of the fruiting bodies produced in each refuse material and development of low-cost technologies for mass cordyceps production by entrepreneurs.	Standardization of protocols and media composition for culturing Cordyceps on tasar silkworm refuses cordycepin analysis of the fruiting bodies produced in each refuse material and development of low-cost technologies for mass cordyceps production by entrepreneurs.	K. Jena M.M. Baig
726	[BPS 01013 CN] Utilization and diversification of silkworm pupae products for human & animal consumption and composting	2020 - 22	• To evaluate nutrients composition in spent and fresh silkworm pupae of Tasar. • Isolation and Characterization of Chitin and Chitosan. • Identification of bioactive (antioxidant) molecules from tasar silkworm pupae.	• Nutrients and microbial composition of fresh and spent silkworm pupae has been evaluated • Chitin and chitosan has been isolated and characterized • Tocopherol as an antioxidant has been identified	K. Jena, J. Singh and S. Das
728	**AIT 08006 EF:** Development of lateral flow assay (LFA) kit for diagnosis of pebrine disease in silkworms.	2021 - 23	• To characterize early essential genes of microsporidians infecting silkworms, *Antheraea mylitta* and *Antheraea assamensis* for identifying candidate target genes for early diagnosis • To develop Lateral Flow Assay LFA and to optimise the kit for detection of microsporidiosis in silkworm *Bombyx mori* as well as vanya silkworms • To validate the optimised LFA	• Cloning and heterologous expression of the desirable spore wall proteins and the proteins were purified in bulk. • Immunization of mice with these proteins is ongoing with evaluation of titer check for the generated antibodies.	H.S.Gadad

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729	**APS04003SI,** Studies on the reproductive potential of tasar silkworm, *Antheraea mylitta* D with special reference to nutritional and mechanical indices	2020- 22	• To identify suitable nutrient package to improve nutritional status of tasar food plant. • To study the impact of host plant nutrition on egg laying potential of tasar silkworm • To study the impact of mechanical approaches on egg laying potential of tasar silkworm	• For sustainable management a nutritional package has been identified to improve nutritional status of tasar food plant Leaf nutrition has greatly affects the egg lying potential of tasar silkworm • As per objective different oviposition devices and food plant twigs has considered mechanical approaches on egg laying potential of tasar silkworm. However, no major significant variation was observed	Mala N, K Jena, I G Prabhu,
730	**[ARE04006CN]** Management of Important Pests of Tasar Silkworm *Antheraea mylitta* (D) Through Botanical Repellents	2020 – 23	• Determination of Economic Threshold Level for economically important pests • Identification of suitable botanical repellent extraction against tasar silkworm pests and predators • Evaluation of mechanical & physical approaches for their efficacy in tasar silkworm pests management	• Estimated ETLs for 4 major pests of tasar silkworms viz., Stink bug, Reduviid bug, Ichneumon fly and Uzi fly • Laboratory screening (Filter paper no-choice assay and olfactometevr bioassay) of selected botanicals against four major pests viz., Stink bug, Reduviid bug, Ichneumon fly and Uzi fly and identification of effective botanicals for their repellent/antifeedant property against target tasar silkworm pests • Characterization of identified botanicals through GC-MS analysis Field evaluation of effective botanicals against stink bug, reduviid bug and uzi fly • Evaluated sticky trap, uzi trap, fish meal trap and light trap	Hanamant Gadad, Vishal Mittal, Jitendra Singh,

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731	**[CYR 04013 MI]** Studies on storage practices of tropical tasar cocoons for better cooking efficiency, reeling parameters and yarn quality	2022- 24	• To evaluate cocoon quality, cooking efficiency, reeling performance and reeled yarn quality due to storage of Tasar cocoons of Daba, Raily and Modal eco- races. • To study the effect of storage practices of tasar cocoons on sericin characteristics.	Information has been generated about single cocoon quality characteristics, reeling performance, sericin characteristics and raw silk quality for stored cocoons of different durations followed by stifling/hot air drying and net rack storage as well as cold storage preservation.	Ashu Kumar, Debasish Chhattopadhyay, Naveen Padaki,
732	**MOE 0414 MI]** Evaluation and popularization of improved technologies developed in the field of tasar sector for central and north India (On Station/ Farm Trials of CTRTI)	2022 -24	1. Evaluation of cocoonase variant for cocoon softening/degumming and silk surface modification. 2. Evaluations of IPM for control of gall fly. 3. Evaluation of PSB for qualitative and quantitative improvement in tasar food plant leaf. 4. Validation of chemical trap for Ichneumon wasp. 5. Evaluation of IPM for control of stem borer in tasar food plants. 6. Establishment and popularization of new improved accession 102 and 123 of *Terminalia arjuna* and *Lagerstromia speciosa.*	1. Evaluation of Cocoonase: Trial conducted as per the plan. The recovery percentage was found comparable i.e., showed Silk recovery: 66.30% (67.74% - Control), Silk reelability: 38.29% (36%- Control). Retention of natural colour & luster was observed in treated group with smoothness in silk surface. 2. Evaluation of IPM for control of gall fly: Spray of Acetamaprid 20 % SP @ 0.2gm /lit of water thrice at an interval of 15 days was completed. Neem cake application was completed. Unit-wise data collected. The showed that, the mean percent reduction of gall fly over control was recorded highest at TDF,Godda (67.9) followed by RSRS, Baripada (65.4) and BSMTC, Kathikund (53.1). Whereas, lowest (11.2) recorded at REC, Seoni-Champa. The overall 40 % reduction of gall fly infestation recorded due to IPM Gall fly over the control.	Jagadajyoti Binkadakatti, J.P. Pandey, Vishal Mittal, Jitendra Singh, Harendra Yadav, M.M.Baig, Aparna Kopparapu, Shantakar Giri, Sunil Kumar Misro, Dinesh Kumar, M.V.K. Bhagavanulu,

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
			7. Evaluation of egg washing cum disinfection machine to produce quality tasar silkworm dfl's **On Farm Trial (OFT)** 8. Management of abiotic factor using light reflector paints to reduce erratic and delayed emergence. 9. Validation and popularization of cooking package developed for three eco-races.	3. PSB supplied to RSRS, Baripada, RSRS, Jagdalpur and TDF, Deogarh. Soil & leaf sample have been collected. The results showed that, significant increase in soil organic carbon (Before PSB application- 0.65% & after- 0.95%), N (Before- 282.20 kg/ha & after- 323.60kg/ha) and K (Before-18.85kg/ha & after-207.87kg/ha) mineralization due to PSB application. Increase in available P content of soil was significant in case of PSB (J) i.e., 1.13 kg/ha to 33.34kg/ha. 4. Chemical traps were supplied to BSMTC's, Ambikapur, Chinoor and Bhandara. As per initial observation, 4-6% yellow fly was recorded at BSMTC, Ambikapur and other units not observed yellow fly infestation at their centre (i.e., BSMTC, Chinoor and BSMTC, Bhandara). The trial was dis-continued due to non-encouraging results traps were unable to attract the yellow fly. 5. IPM for control of stem borer: The results revealed that, 80 % efficacy of IPM Stem borer was noticed with respect to Scrubbing the bark + Spray Neem based pesticide at 1:10 ratios (two times spry after monsoon at 20-25 days interval).	Shuddhasattwa M M, Pravin C Gedam, Tripurari Choudhary Debashish C

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
				6. Raised seedlings of Acc. 102 (250 No.), Acc. 123 (250 No.) and Jarul (300 No.) and supplied to OST locations for gap-filling and plantation purpose. New plantation of Accession 102, 123 & Jarul each of 10 plants was completed at Manjgaon (Location of Producer Institution), RSRS, Jagdalpur (CG) and REC, Champa. Further, New plantation of Accession 102, 123 & Jarul each of 04 plants were supplied to RSRS, Bhandara. 05 plants each of 102 & 123 were supplied to REC, Champa for gap filling. A total of 230 saplings were supplied to all locations against the target of 230 during the year 2022-23. The trial results indicated that, In case of Accession-102: Average plant heights (58 cm), Number of branches 6/plant and Number of leaves (142/plant) have been observed. With respect to Accession-123: Average plant heights (56 cm), Number of branches 6/plant and Number of leaves (132/plant) have been noticed. In case of Jarul- (*L. speciosa*): Average plant heights (47 cm), Number of branches 3/plant and Number of leaves (97/plant) have been documented. The accession – 102 has performed better than accession 123 with respect to plant height, number of branches/plant and number of leaves/plant.	

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
				7. Evaluation of egg washing machine- 10 numbers of egg washing machines were supplied to 10 BSMTCs. Data collection was completed. Trial data revealed that average time taken to wash 4 kg dfls was 90 minutes in control and 15 minutes in Egg washing machine. 05 BSMTC's incharge (out of 8) opined that, every time taking out the rotor after each wash is cumbersome. It is also noticed that, on an average 39 litres of water required to wash 4 kg dfls in existing method and 9.5 litres of water utilized in Egg washing machine. Further, average man days of 0.74 utilized to wash 4 kg dfls in control & only 0.29 MD utilized in Egg washing machine. Hatching % of machine-washed eggs is on par with manual washing i.e., Egg washing - 83.83% & Manual washing – 83.35 %. 8. OFT trial, Management of abiotic factor using heat reflector paints: Heat reflector paint work was carried out at BSPU, Dhorpatta, BSPU, Bajrisol, PPC, Bengabad, TRCS, Chandua & TRCS, Bisoi. Paint (Heat reflector) has been supplied to DOS, Office in Sonbhadra District. Initial observation indicated that, Light reflecting Paint able to reduce the grainage temperature 3-50C. 9. OFT trial, Validation and popularization of cooking package: Five OFT trials have been completed details are given below.	

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				10. Location 1: Bapu Tasar Reeling Centre, PRADAN, Ranabandh, Godda Dist. The average cooking efficiency was found about 96%. Reeling performance was assessed using the softened cocoons and reelability, raw silk recovery and yield/1000 cocoons were estimated as 29.20%, 58.60% and 813.00 g respectively. 11. Location-2: Khadi Training Cetre, Government of West Bengal, Tantipara, Suri, Birbhum, West Bengal during 21st to 23rd January, 2023 for Daba tasar cocoons. The results indicated that, the reelability, raw silk recovery and yield/1000 cocoons were found as 33.70%, 59.80% and 980.90 g respectively. The average cooking efficiency was estimated as 95.50%. 12. Location-03: Tasar Reeling Cluster, Seoni, Jangir- Chappa, Chhattisgarh: The OFT was conducted on 3rd and 4th February, 2023 using Daba BV cocoons. Total 20 women reelers have attended this programme. The reelability, raw silk recovery and yield/1000 cocoons were found as 34.00%, 63.10% and 896.70 g respectively. The average cooking efficiency was estimated as 95.00%. The cost of cooking was estimated as Rs. 36/- for 500 cocoons. At present sodium carbonate cooking process is followed in this tasar reeling sector.	

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				13. Location-04: Nav Jagrity Mahila Kosa Tasar Reeling Group, Parsada, Bhorni, Bilaspur, Chhattisgarh: The OFT was conducted on 4th and 5th February, 2023 using Daba TV cocoons. Total 23 women reelers have attended this programme. The reelability, raw silk recovery and yield/1000 cocoons were found as 32.00%, 57.00% and 731.00 g respectively. The average cooking efficiency was estimated as 94.00%. The cost of cooking was estimated as Rs. 38/- for 500 cocoons. At present sodium carbonate cooking process is followed in this tasar reeling unit. The reeeling performance for the two OFT conducted was found at par with existing cooking technique besides reduction of cooking cost by about 50% due to usage of sodium bi- carbonate instead of sunlight soap. In addition to cost reduction, the natural brown colour is retained in tasar yarn. 14. Total 66 women reelers have attended these programmes. At present sodium carbonate cooking process is followed in this tasar reeling unit. The reeling performance for the two OFT conducted was found at par with existing cooking technique besides reduction of cooking cost by about 50% due to usage of sodium bi- carbonate instead of sunlight soap. In addition to cost reduction, the natural brown colour is retained in tasar yarn.	

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733	**[BPC 04008EF]** Mass level extraction of sericin from tasar cocoon cooking waste water for its prospective utilization	2021-24	Designing of sericin purification unit and standardization of purification process	• Prototype unit has been developed • Purified sericin has been characterized	Karmabeer Jena Jay Prakash Pandey
734	**MOE 04007 EF:** Establishment of Biotech-KISAN Hub at Professional Assistance for Development Action (PRADAN), Deoghar, Jharkhand for three Aspirational Districts of Jharkhand (Godda, Dumka and Pakur) Collaborative Project with PRADAN(DBT Funded)	2021–24	• Building capacities of all participating families in adopting skills to effectively and profitably engage in Tasar based livelihood activities by promoting selected four activities in Tasar with its partner institutions. • Introduction of improved technologies and practices to push the productivity frontiers for accelerated growth. • Producer organization to sustain ecology regeneration, integrate value chain and leverage market through women farmer at the centre stage. • To create value proposition for the producers locally, through vertical integration of processing activities on the existing base of cocoon production.	• The quantity of seed cocoon production in the region has increased from 26 lakh seed cocoons with a rearing of 244.9 Kg of seed in the initial year of project to 34.9 lakh seed cocoons in later years with a rearing of 234 Kg which is an increase in production of around 33%. • Established 740 Hectares of plantation in the project area on barren uplands of 746 families with tasar host trees arjuna and asan. • The 8 bio-entrepreneurs were developed for preparing quality saplings and now these entrepreneurs with the support of the community institutions are producing around 5 to 6 lakh saplings every year and marketing them.	**PRADAN, Ranchi** Rajendra Kumar Khandai, **CTR&TI, Ranchi** NB Chowdary, J. P. Pandey, Ashu Kumar

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735	**[AIE 04004 CN]** Study on Existence of Tropical Tasar Silkworm Ecoraces and their Subsist Places with the Help of Geospatial Technology	2020 –25	• To survey the existence of various tropical tasar silkworm ecoraces in India. • To analyse the ecological parameters and quantitative traits of all the collected ecoraces. • To integrate and analyse surveyed data with geospatial technology. • To generate inventory/database of tropical tasar silkworm genetic resources and development of a dashboard system for visualization of tropical tasar silkworm ecoraces in India.	• Toposheets for regions including Karma, Palidevri Dam, Khisord, Manguru Hills, Rajnand, • Tindwaripara, and Chotkipani in Chhattisgarh were obtained from the Survey of India. These maps were georeferenced using Arc-GIS 10.7 to ensure accurate spatial alignment with geographic coordinates. Post-georeferencing, the individual toposheets were mosaicked to create a continuous, seamless map, facilitating more efficient spatial analysis for subsequent surveys. This step was essential to ensure that field surveys and environmental data collection were grounded in precise geographic references, thereby enabling accurate ecological and genetic mapping of the surveyed regions. • Field surveys were conducted in Chhattisgarh (Karma, Palidevri Dam, Khisord, Manguru Hills, Rajnand, Tindwaripara, and Chotkipani) and extended into Odisha in the second and third months, covering regions such as Jaldiha, Bangriposi, Keshdiha, Mohuldiha, Purnapani, Jambani, Khadambeda, Jarak, Sanmohuldiha, Badamohuldiha, Kuchaidihi, Jamposi, Kuchaidih, and Adeolbeda.	CTRTI: I.G. Prabhu, S. Giri, S.K. Mishra, D. Kumar, J. Binkaddakatti, M.M. Baig, H.S. Gadad and K. Aparna NESAC: B.K. Handique, J. Goswami, P. T. Das, C. Goswami, P. Jena.

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				• During these surveys, comprehensive ecological metadata was collected from different ecological pockets within these regions. The metadata included: Host Plant Associations, Pest and Predator Dynamic, Meteorological Data, Edaphic Factors. The collected metadata was systematically sorted and arranged to enable a detailed ecological analysis. The expansion of the survey area in the second and third months enriched the dataset, allowing for a broader understanding of the environmental factors affecting silkworm distribution and survival. • Following the data collection, an extensive analysis of the ecological metadata was undertaken to understand the influence of environmental parameters on the distribution and sustainability of the silkworm ecoraces. Key factors such as host plant availability, pest and predator dynamics, meteorological conditions, and edaphic factors were analyzed. • The survey revealed critical host plant species associated with Antheraea mylitta in both Chhattisgarh and Odisha. This information is vital for understanding the habitat preferences of different silkworm ecoraces.	

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				• The analysis of pest infestations and predator interactions provided insights into the biological pressures exerted on silkworm populations, which could impact population health and stability. Local climate data was integrated into the analysis, helping to establish the conditions under which silkworm populations thrive or decline. Soil conditions were examined for their role in supporting host plant growth, which is critical for maintaining healthy silkworm populations. This analysis helped in correlating the ecological factors with silkworm population dynamics, providing a deeper understanding of the environmental conditions required to sustain and improve silkworm habitats. • In parallel with the ecological surveys, cocoons from the Baraf and Korbi ecoraces were collected from various survey sites. The genetic work primarily focused on extracting and purifying genomic DNA from the fat body tissue of pupae. Genomic DNA was extracted from the fat body tissue of silkworm pupae, ensuring the integrity and quality of the genetic material. The extracted DNA underwent rigorous purification to remove contaminants, followed by quantification to confirm that the DNA met the necessary standards for downstream applications, such as sequencing. Once purified, the DNA was subjected to sequencing to characterize the genetic diversity and evolutionary relationships between the Baraf and Korbi ecoraces.	

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
				• This work involved analyzing the molecular data to uncover. Identifying the level of genetic variation within and between the Baraf and Korbi ecoraces. This information is crucial for understanding the adaptive potential of these silkworms to their respective environments. Sequencing data was used to infer evolutionary connections between the ecoraces. This helped to map the historical divergence of the ecoraces, offering insights into their unique adaptive traits. • The genetic characterization extended to the Modal and Jata ecoraces, aiming to compare their genetic profiles with those of Baraf and Korbi. The analysis focused on unraveling the evolutionary history and potential genetic markers linked to environmental adaptability	
736	**[PPA04010CN]:** Region and season specific selection of pruning and brushing schedule for tasar food plants and silkworm protection.	2022 - 25	• To identify the region and season specific pruning and brushing schedule for tasar food plants silkworm pest management. • To identify the thermal requirement (Degree Days) for different stages of tasar silkworm and optimum foliage from pruning date in tasar culture.	• Agroclimatic zone wise suitable pruning of tasar food plants has been identified for low pest infestation and higher leaf yield. • Agroclimatic zone wise suitable brushing date has been identified for low pest infestation and higher cocoon production. • Growing Degree Days requirement has been calculated for pruning to optimum foliar stage in tasar food plants and brushing to cocoon formation of tasar silkworm	Jitendra Singh, CSB-CTRTI, Ranchi Hasansab Nadaf, Samshad Alam

Sl. No.	Code & Title of the concluded project	Project Period	Objectives	Outcome of the project	Name of the PIs & CIs
737	**ARE 04011 MI-**Species diversity, assessment of potential loss and management of predatory wasps in tasar ecosystem	2022 - 25	• Study on species diversity of predatory wasps in tasar ecosystem • Assessment of potential loss due to predatory wasps • Evaluation of chemical lures, food baits and repellents for against predatory wasps of tasar silkworm	• Studied the species diversity of predatory wasps in tasar ecosystem across the major tasar growing regions and reported the activity of 17 species of polistine wasps in rearing fields. Out of these in the study it has been observed that 3 species were major predators of tasar silkworm • Experimentations were carried out to understand the severity of wasp's predation in different cropping periods and it has been observed that 2nd triviltine and 1st bivoltine crops were mostly supers the wasp preadation. Whereas in case of first TV and second BV Crops loss due to wasps is less common. Further yield loss experiment suggested that around 30-40% loss takes place without proper care. • In a effort to identify the suitable attractant baits various baits and chemical lures were evaluated and it has been found that all the baits were less effective except sugar based bait, liquid jaggery as it was moderately attracting the wasp. Further various repellents were tested against the wasps and it is observed that almost all the repellents found least effective barring E/z-citrall and Eugenol. • Further series of experiments were carried out to understand the nesting sites, nesting distance, alternate hosts and Natural enemies associated with wasp colonies	Hanamant Gadad, Vishal Mittal., B. T. Reddy, Selvaraj, S. M. Mazumdar,

Delhi University

BHU, Varanasi

Hindalco

Tata Steel Foundation, Jamshedpur

CIFRI

Collaborations MoUs/MoAs

BIT, Mesra

Ranchi University

BAU, Ranchi

Amity University

DBT, New Delhi

FRC&ER, Prayagraj

CSIR-CIMAP

SIDHKOFED


वस्त्र मंत्रालय
MINISTRY OF
TEXTILES
TASAR SERICIN
PURIFICATION MACHINE
Conceptualized and designed by
Central Tasar Research and Training Institute (CSB-CTRTI)
Central Silk Board, Ministry of Textiles, Government of India,
Piska-Nagri, Ranchi, Jharkhand
Funded by
Department of Biotechnology
Ministry of Science & Technology
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