PROFORMA FOR SUBMISSION OF PROJECT PROPOSALS ON RESEARCH AND DEVELOPMENT, PROGRAMME SUPPORT

(To be filled by the applicant)

PART I: GENERAL INFORMATION

1.	Name of the Institute/University/ Organization submitting the Project Proposal	:	Central Sericultural Research and Training Institute, Central Silk Board, Ministry of Textiles, Govt. of India, Berhampore 742 101, West Bengal
2.	State	:	West Bengal
3.	Status of the Institute	:	Research and Development
4.	Name and designation of the Executive Authority of the Institute /University forwarding the application	:	Dr. Kanika Trivedi, Director, Central Sericultural Research and Institute, Berhampore 742 101, West Bengal.
5.	Project Title	:	***Skill Gap Analysis and Capacity Building of Sericulture Extension Workers and Farmers in Traditional and Non-Traditional States***
6.	Category of the Project (Please tick)	:	R&D
7.	Specific Area	:	Human Resource Development Extension- Capacity Development
8.	Duration Total Cost	:	1.5 Years
9.	Total Cost	:	Rs. 2,40,000/-
10.	Is the project Single Institutional or Multiple-Institutional (S/M)?	:	Single institutional (S)
11.	If the project is multi-institutional, please furnish the following :	:	NA
	Name of Project Coordinator	:	Dr. Kanika Trivedi
	Affiliation	:	Central Sericultural Research and Training Institute, Central Silk Board, Ministry of Textiles, Govt. of India. This institute was recognized as Center of Excellence in Sericultural Research by University of Kalyani, Kalyani, West Bengal
	Address	:	Central Sericultural Research and Training Institute, Central Silk Board, Ministry of Textiles, Govt. of India, Berhampore 742 101, West Bengal

12. Project Summary (Not to exceed one page. Please use separate sheet)

Skill development is a crucial element in improving the effectiveness with which organizations operate in the current global arena. The skills of farmers and extension workers are compulsory to improve in order to ensure effective adaptation to changes in the sericulture sector as well as the high demand of silk in the global market. The key question is whether the skills development strategies and initiatives of farmers and extension workers are conducive to successful human resource development, in light of advancement of sericulture sector in the contemporary state of affairs. This should be studied in the current context. Hence there is need of skill gap analysis to know the existing skills of the farmers and extension workers and the expected skill requirements.

In the present study, traditional and non-traditional states, viz. West Bengal, Bihar and Jharkhand have been selected for the skill gap analysis. Both the farmers and extension workers will involve for data collection. The study will analyse the skills available with the stakeholders in compare to standard skills. With this attempt, it will discover the difference between the existing and expected skills of farmers and extension workers. This can be assessed through competency assessment, which will be developed by the use of Likert scale. Thereafter capacity development programme will be design based on the outcome of competency assessment which will based on the requirement of the target group. Finally a competency model will be developed, which will outline the roles or responsibilities of the extension workers which are crucial for the expansion of sericulture.

Skill India campaign had been launched in last year by our honorable Prime Minister of India. Therefore study on the skill of the extension workers and farmers is essential so that strategies can be formulated to improve the skills of all the extension workers and farmers in the present condition of sericulture. It is also necessary to change the pattern of training from top-down approach to bottom-up approach. In other words, it will offer need based training through capacity development programme rather than subject oriented training.

PART II: PARTICULARS OF INVESTIGATORS

(*One or more co-investigators are preferred in every project. Inclusion of co-investigator(s) is mandatory for investigators retiring before completion of the project*)

13.	Name: Date of Birth Sex Indicate whether PI/Co-PI Designation Department Institute/University: Address		Shafi Afroz 20-12-1986 Male Principal Investigator Scientist-B Extension REC, Gumla (Jharkhand)
	Name: Date of birth Sex Indicate whether PI/Co-PI Designation Department Institute/University: Address		Dr. Subhra Chanda 16.12.1958 Female Co-Investigator Scientist-D Extension & Publicity Section CSR&TI, Berhampore (WB)
	Name: Date of birth Sex Indicate whether PI/Co-PI Designation Department Institute/University: Address		Dr. Dipesh Pandit 16-12-1963 Male Co-Investigator Scientist-D PMCE CSR&TI, Berhampore (WB)
	Name: Date of birth Sex Indicate whether PI/Co-PI Designation Department Institute/University: Address		Shri Bimal Chandra Ray 07.01.1959 Male Co-Investigator Scientist-D - MESDP, Kishanganj
	Name: Date of birth Sex Indicate whether PI/Co-PI Designation Department Institute/University: Address		Manjunath G. R. 11-05-1988 Male Co-Investigator Scientist-B Bivoltine Section CSR&TI, Berhampore (WB)
14.	No. of Projects being handled by each investigator at present: 1. Shafi Afroz 2. Dr. Subhra Chanda 2. Dr. Dipesh Pandit 3. Shri Bimal Chandra Ray 4. Dr. Manjunath G. R.		 - - - - -
15	Proposed Research fellows		0

PART III: TECHNICAL DETAILS OF PROJECT
(Under the following heads on separate sheets)

16. Introduction (not to exceed 2 pages or 1000 words)

With the changing times, the face of the sericulture is also changing, wherein the need-of-the-hour is to have state-of-the-art extension workers who are agile enough to meet the growing demands of the sericulture. At the same time farmers should also equipped with improved skills to make them efficient in sericultural practices. The skill based capacity development of the extension workers and farmers is utmost important to improve the performance in sericulture activities.

Skills or competencies according to Vreyens and Shaker (2005) are observable abilities that manifest from an individual indicating how to do something. Skills are an important means to increasing incomes and sustainable livelihoods for the poor (World Bank, 2004). According to Eskola and Gasperini (2010) skills development "is central to improving rural productivity, employability and income-earning opportunities, enhancing food security and promoting environmentally sustainable rural development and livelihoods''. Therefore there is need of particular skill to achieve the goal or aim. If one is not succeed in achieving the goal then there is gap between the expected and existing skill of an individual, which is called as Skill Gap. In other words, it is the perceived mismatch between the needs of individuals for skilled talent and the skills possessed by the available workforce. This skill gap can be identified by a method called as Skill Gap Analysis. In other words, skill gap analysis can be defined as an evaluation method for determining the training needs of an individual, group or organization. Hence this analysis reveals the difference between the required and the existing skill levels and then strategies can be recommended for closing the gap.

Sericultural institutes and State Governments engaged a large number of technical assistants and extension agents respectively, to improve the cocoon production. They are mainly involved in dissemination of latest package of practice, advisory services, etc. Now-a-days the demand of silk is sky-scraping so there is need to pick up the production pace of silk from the current level. Hence it is very crucial to identify the gap in skills of extension workers and farmers. And the outcome of this must be used to design the capacity development programme for the extension workers and farmers to fulfill the high silk demand of the country.

Hence in an attempt to design capacity development programme for sericulture, it is important to determine the current level of the technical skills of farmers and skills of the extension workers to ascertain their strengths and weaknesses. This will lead to the identification of skills gaps and where resources and energy need to be channeled for capacity development. Therefore this research project has been aimed at identifying the skills of extension workers and farmers in sericulture so that need-based capacity development programme can be formulated.

16.1 Origin of the proposal

Sericulture is a skilled-based enterprise from mulberry leaf production to the cocoon production. Each activity requires a good skill, hence all the sericultural institutes are regularly undertaking large number of skill enhancing training programme such as Skill Updating Programme (SUP), Integrated Skill Development Scheme (ISDS) etc. The training modules which are designed to impart training need to be assessed over a period of time.

Moreover, our honorable Prime Minister has launched Skill India campaign for all the sectors of India. On this line it is necessary to improve the skills of all the extension workers and farmers involved in sericulture in the present situation. Therefore there is need of development of capacity development programme to improve the skills. But it should develop based on the need and requirements the extension workers and farmers. Hence this project has formulated for skill gap analysis and based on which capacity development programme can be designed.

16.2 Rationale of the study

Regular and large number of skill augmenting training programme such as Skill Updating Programme (SUP), Integrated Skill Development Scheme (ISDS) etc. are conducted at the institute level. The course curriculums for foundation training are designed to provide the knowledge and skill, which are prerequisite for the beneficiary of sericulture. In other terms, such course curriculum is of top-down approach nature. Such type of training is indispensable for the initiation of sericulture. But once such type training has been given, and then there is need of refresher training for the update of skills in due course of time. During such refresher training like SUP, ISDS, etc. the course curriculum should not be of top-down approach. In such case the curriculum should be designed through bottom-up approach.

Such bottom-up approach curriculum can be designed through skill gap analysis. This analysis will provide statistics of the skill gap of the extension workers and farmers. Based on this gap, capacity development programme can be developed so that it will meet the skill requirement for the extension workers and farmers. Course curriculum of the capacity development programme will be of bottom up approach nature. Hence such study is needed in sericulture to improve the training programme and also for up scaling the skills of the extension workers and farmers.

16.3 Relevance to the current issues and expected outcome:

Skill India campaign has been launched last year to upscale skills for the workforce in every sector. To meet the objective of Skill India campaign, it is very necessary to go for such research project. Hence the present study is proposed envisaging the skill gap analysis in the mulberry based sericulture belt of Bihar and Jharkhand which is under CSR&TI, Berhampore jurisdiction. It will identify technical skill gap of the extension workers and farmers. It will provide the information about the requirement of the skills by the extension workers and farmers. All these information are useful in formulating capacity development programme which will be of bottom-up approach nature. Based on the analysis of the whole research project, one competency model will also be developed which will define the roles/responsibilities of the extension workers. Finally, it will provide objective data to understand and address the needs of the institution for up scaling of sericulture.

16.4 OBJECTIVES

1) To document job profile of the extension workers involved in sericulture activities and their engagement for each of the activity.
2) To identify the skill requirements for the extension workers and farmers for each activity.
3) To determine the skill gap of the extension workers and farmers involved in different sericulture activities.
4) To design capacity development programme to target the skill requirements of the extension workers and farmers.

16.5 Current status of research and development in the subject (both international and national status):

International Status:

From the mid-1970s, unacceptably high levels of continuing unemployment and the transformation of production processes by ICT have pushed the concept of skill and its acquisition to the center of debates on appropriate employment policies. All such discussions of the concept of skill have tended to focus on its technical/professional dimensions, manipulation skills and the knowledge associated with the techniques of the work process, developed via training and experience. A concern by employers that the skills needed for their workforce today are running in short supply has been voiced and heard (Natriello, 1989; Cappelli & Rogovsky, 1995; Bridging the skill gap by ASTD, 2010). Further, the recent research in this area, as in the early 1970's and into the 1980's, continues to demonstrate the concern for productivity and quality levels (Cappelli & Iannozzi, 1995) for the purpose of economic competitiveness through a skilled workforce (Prowse, 1992; Natriello, 1989, ASTD Skill Survey Report, 2010). Under girding the workplace/workforce research is the assumption that a skills gap exists. Recent attention given to the skills gap in the research indicates that there is telling evidence of deficits in the skills from all workers (Cappelli & Rogovsky, 1995; Cappelli & Iannozzi, 1995; Hanser, 1995), just as there is evidence of "inequalities in a job skill". However, there is only a little research investigating what the skills gap is, there is no investigation as to where it actually exists.

Skill Gap Analysis of the Farmers and Agricultural Development Technicians on Indigenous Poultry Production in Nkonkobe Municipality Eastern Cape Province, South Africa

Yusuf S.F.G et al. (2014) had stated skills are ingredients of productivity. Acquiring technical skills within the framework of farming activities trigger development and innovation. They acknowledged the skill gaps and training needs of indigenous poultry farmers (IPFs) and Agricultural Development Technicians (ADTs) in indigenous poultry production in the Nkonkobe Municipality, Eastern Cape Province, South Africa. Their findings revealed that, IPFs showed competencies in nine skill items out of totally mentioned 32 skills. However, the ADTs did not show any competency in any of the 32 skills items. It is recommended that intensive

training is needed for both the IPFs and the ADTs for up scaling in the indigenous poultry production.

Effects of Training on Skill Development of Agricultural Extension Workers in Bangladesh: A Case Study in Four Upazilas (Sub-district) under Kishoreganj District

Hoque M. J. et al. (2008) conducted a study to identify the contributing Off-the-Job Trainings (Off-JT) and determinant On-the-Job Training (OJT) for developing Agricultural Extension Workers' (AEWs) extension skills. Data on AEWs' skill levels on selected four extension skill areas (namely, working with group, organizing and running a demonstration, assessing farmers' problems, and work planning), attendance of Off-JT, and OJT practices were collected. The findings of the study indicate that some Off-JTs are less effective for developing AEWs' extension skills. On the other hand, lack of OJT practices is one of the major obstacles for developing AEWs' extension skills on providing need-based agricultural extension services. Thus, it was concluded that the results of the study could have some implications in developing AEWs' training program in Bangladesh. Besides, the findings may also be used as a basis and guide for providing effective training to the Agricultural Extension Personnel in other developing nations.

Sustainable Cotton Production through Skill Development among Farmers: Evidence from Khairpur District of Sindh, Pakistan

Khan M. A. et al. (2005) stated that Farmer Field School (FFS)-type farmer education implemented in Pakistan has provided farming communities with opportunities to learn improved cotton management in a participatory way. As a result of the season-long training, farmers' skills for making rational and informed decisions were significantly enhanced. The field observation, situation analysis, and decision-making capacities have improved to a greater extent among FFS farmers. This has contributed to more cost effective and environmental friendly crop management decisions. The results show that technical efficiency at FFS graduate farms has enhanced as a result of skill development among them.

Training needs assessment of Agricultural Extension Officers in Animal Husbandry Department of Malang Regency, East Java-Indonesia

Azizah S. (2011) had identified the training needs of Agricultural Extension Officers in the Animal Husbandry Department of Malang Regency. A training needs assessment was

developed identify the needs of Agricultural Extension Officers. Four main suggestions had been outlined. Firstly, farming management and content delivery are two issues that should be included in the training manual; secondly, training programs development should be based on Agricultural Extension Officers' needs, wants, aspirations, communication and media mastery, which are the important areas that are believed could bring out their capability. Finally, training program have to meet the espoused high training needs found in the training needs assessment.

Job Content and Training Needs of Agricultural Extension Agents in South-Central Botswana

Tladi F. M. (2004) revealed that the job of extension agents comprised eight operations, the most important being that of teaching farmers and the least being the implementation of drought relief programs. The job had tasks that were performed to achieve the operations. The job also had skill requirements that the agents had to master to enable them to perform their job well. However, results revealed that extension agents were deficient in the skills that were important to their job. The agents therefore, needed training in job skill areas. Findings of the study further stress the need by the Ministry of Agriculture and related training institutions to conduct thorough extension training needs assessment involving all stakeholders before developing in-service training programs for extension agents. Job structures and demands on the incumbents change over time; therefore, it is expected that as the needs of farmers change, extension work also should adjust its approach and programs. This needs assessment begins with the analysis of the job to ensure relevant training for extension agents whose role is to implement the programs and regular follow-ups of trainees to ensure coping once on-the-job.

Analysis of the Training Needs of Multi-Functional Extension Agents Associated with Sustainability

Chizari M. et al. (2006) reported that achieving sustainability in agricultural operations requires in-service training programs and encouraging multifunctional extension workers to collaborate for planning and implementing these programs. Based on their findings, the implication clearly exists that a high priority should be given to planning, developing, and implementing in-service training programs for multi-functional extension workers regarding sustainability issues. The planning and development for this in-service training should take in to consideration the agents' level of education and their life and work experience with rural people.

Since the urgency to address sustainability issues in agriculture is not only a regional challenge, the implications of the study for sustainable extension agriculture programs among agricultural communities extends beyond a Province.

In-Service Needs for Educational Processes Skill Training of U.S. Food Safety Extension Educators

Koundinya et al. (2013) identified that the in-service needs for educational processes skill training of food safety extension educators in the CES of the North Central Region. They also indicated a need for skill development in five food safety educational process topic areas: needs assessment, program planning, learning systems, delivery systems, and evaluation systems. They recommend that CES's food safety in-service programs should include training in these areas. Their study has implications for designing in-service workshops for food safety extension educators.

Training needs of Iranian extension agents about sustainability: The use of Borich's need assessment model

Alibaygi A. et al. (2008) reported that a high priority should be given to planning, developing, and implementing in-service training programs for agricultural extension agents regarding sustainability issues. Since the urgency to address sustainability issues in agriculture is not only a regional challenge, the implications of this study for sustainable extension agriculture programs among agricultural communities extends beyond West Iran. Higher agricultural education institutes can cooperate with the agricultural organization in developing these in-service training programs.

NATIONAL STATUS:

The study on Skill Gap Analysis at the institute level of CSB as well as the other institutes of India has no or very little. A similar concept of Skill Gap analysis is Training Need Analysis (TNA). There are large number of studies which has been taken place in agriculture and allied sectors.

Technology Transfer and Skill Development towards Improved Livelihood in Rural India

Hegde M. R. et al. (2015) stated that migration of farmers and youth, and leaving agriculture to urban areas for seeking job happens in an alarming magnitude. Bringing

profitability in agriculture through appropriate livelihood options is one among the better propositions to attract and retain farmers and youth in agriculture. Keeping skill development as a major strategy of the re-oriented agricultural extension system is a best strategy for engaging the farmers, youth and farm women in profitable livelihood ventures and thereby enhancing the rural standard of living. They focused on the Indian agriculture and policy interventions which need to promote entrepreneurship in agriculture through skill development as a major strategy.

Utility of Farm Women Training Programmes in Livelihood Security

Kaur H. et al. (2007) stated that addition to knowledge or improvement in existing knowledge and skill base of farmers is another tool for empowering the farmers. Experiences show that the knowledge and skill acquisition programmes and mechanisms have largely been tilted against the male farmers. They reported that among numbers of utility dimensions, it was found that the trainees perceived the trainings to be very much useful for technical knowledge gain, technical skill development, performing day-to-day activities with the help of knowledge gain and skill developed during the training, fulfilling their needs and benefiting from group interactions among the trainees during trainings. The study also revealed out that the reality of specifically designed farm women training programmes in empowerment and thereby contributing to the livelihood security.

Review on Training Need Analysis of Agricultural Officers and Agricultural Extension Officers

Priya N. K. et al. (2013) described that the training institutes and government should take into consideration of the training needs of the AOs and AEOs so that they may acquire the relevant knowledge and skill in the new techniques and the same may be imparted to the farmers and they can also upgrade the existing knowledge in better manner. Moreover farmers are not fully aware of appropriate farming techniques, management skills, and relevant programmes available by services. Extension officer needs to guide the farmers to acquire new problem solving techniques and knowledge. So training needs plays a very important role in the lives of agricultural personnel as well as farmers.

Identification and Prioritization of Competencies of Kinnow Growers in District Muktsar, Punjab

Sharma K. (2013) reported that the most crucial competencies where farmers needed immediate training are time and method of irrigation, drip irrigation and its operation, management of Phytophthora, identification of insect pest and disease symptoms and their control measures, control of fruit drop, management of alternate bearing and fruit thinning. The competencies of kinnow growers may be increased through implementation of skill improvement programmes like conducting of kinnow demonstrations, kinnow orchard visits, organization of farmer's tours and farmers– scientist's interaction groups, training about post-harvest technology and value addition to kinnow. All these will be helpful for extension personnel and KVK staff in planning their training programmes for Kinnow growers in the studied area.

Training Needs of Kisan Mitras in Agriculture and Allied areas

Landge S. et al. (2006) stated that Kisan mitras were the village level extension functionaries for the dissemination of improved technologies to the farmers. The capacity building of the kisan mitras for the rural transformation calls for the need based trainings so that they can perform their duties. The study revealed that the kisan mitras perceived, crop production and vermicomposting, public health and sanitation, seed production technology, medicinal plant growing, and farm equipment management, as the top five most-needed training areas in the agriculture and allied areas. Further in livestock, the kisan mitras gave preference to feeding, processing of milk and milk products, breeding of cattle and buffaloes, health care of animals and financial management, and feed conservation techniques. While in agriculture particularly the most needed training areas were seed treatment, land preparation, irrigation management and training in sowing techniques. Along with this majority of the kisan mitras gave their choice regarding training duration, time of training and place of training as 1-3 days, in the kharif season and at IVRI respectively.

Impact of Refresher Training on Skill Development: Participants' Perception and Assessment of Knowledge Gain

Singh D. et al. (2012) carried out the study to assess the worth of the training programme as perceived by the participants and appraise the knowledge acquired by them. The result revealed that factors like expectations of developing knowledge and skills to promote farm

mechanization motivated the participants to join the programme. Participants were satisfied with the structure and content of the training programme as well as facilities provided to them. They were also happy with the training method followed, training schedule and level of the curriculum. There was substantial improvement in the knowledge level of the trainees on improved agricultural tool and implements as an outcome of the training programme.

Training Needs of Farmers and Rural Youth: An Analysis of Manipur State, India

Sajeev M. V. (2012) had reported that KVK training programme starts with identification of training needs, the most important step in organization of any training programme. He studied the training need analysis of different thematic areas. The results revealed that even in the most popular areas of training, there was an inadequacy. Farmers sought maximum trainings on integrated farming systems, integrated pest and disease management and technologies for soil and water conservation. Nursery management topped the list under horticulture while training with respect to rearing of piggery was the most important one under animal sciences. Income generating activities for empowerment of rural women, formation and maintenance of SHGs and training on small scale processing and value addition were also in high demand. The KVKs have to re-orient their trainings based on these findings to reduce the existing technological and adoption gap among the farmers in Manipur.

16.3 Importance of the proposed project in the context of current status

Skill India campaign has been launched last year to upscale skills for the workforce in every sector. To meet the objective of *Skill India campaign,* it is very necessary to go for such research project. Hence the present study is proposed envisaging the skill gap analysis in the mulberry based sericulture belt of Bihar and Jharkhand which is under CSR&TI, Berhampore jurisdiction. It can pinpoint technical skill gaps of the extension workers and farmers. It is necessary to know the exact information about the requirement of the skills by the extension workers and farmers. All this information is very indispensable in formulating capacity development programme which will be of bottom-up approach nature. Based on the research findings, one competency model will also be developed which will define the roles/responsibilities of the extension workers so that work can be taken for improvement of sericulture.

16.4. Anticipated products, processes/technology packages, information or other outcome from the project and their expected utility:

There is practically little/no information on existing and expected skills of the extension workers and farmers for sericulture. Hence the present study is proposed envisaging the skill gap analysis of the extension workers and farmers in traditional and non-traditional states, viz. West Bengal, Bihar and Jharkhand, who are undertaking mulberry based sericulture. It will present an overall view of the time devoted by the extension workers in different sericultural activities. It will identify technical skill gaps of the extension workers and farmers. It will also equip higher authorities to understand and address the requirements of the skill by the extension workers and farmers. It will provide strategies to reduce the skill gap for the extension workers and farmers in the form of practical training manual for capacity development programme. It will also come up with a competency model which will define the skills and knowledge of extension workers needed for sericulture. It will also provide objective data to understand and address the needs of the institution for up scaling of sericulture.

16.5. Expertise available with proposed investigation group/ institution on the subject of the project:

Adequate expertise is available with proposed investigation group for carrying out the proposed project.

Name of the Scientists	Designation	Experience
Shri. Shafi Afroz	Scientist-B	Good research experience from the evaluation study during the Master degree programme. Two research papers published for evaluation studies.
Dr. Subhra Chanda	Scientist-D	Experience of 30 years of working in the CSB and presently working in Extension division of CSR&TI, Berhampore
Dr. Dipesh Pandit	Scientist-D	Good exposure of the farmers in the mulberry sericulture area in Jharkhand under CSB
Shri Bimal Chandra Ray	Scientist-D	Good exposure of the farmers in the mulberry sericulture area in Bihar under CSB
Dr. Manjunath G.R	Scientist-B	Good knowledge of statistics used for survey study and capable for interpret the result

Name and address of 5 experts in the field:

Sl. No.	Name	Designation	Address
1.	Dr. Rashmi Singh	Principal Scientist	Department of Agricultural Extension Indian Agricultural Research Institute (IARI), New Delhi
2.	Dr. R. N. Padaria	Professor and Principal Scientist	Department of Agricultural Extension Indian Agricultural Research Institute (IARI), New Delhi
3.	Dr. R. R. Burman	Senior Scientist	Department of Agricultural Extension Indian Agricultural Research Institute (IARI), New Delhi
4.	Dr. Shantanu Kumar Dubey	Senior Scientist	Agricultural Extension, Zonal Project Directorate, Zone-IV, Near Vikas Bhavan, GT Road, Rawatpur, Kanpur-208002 (UP)
5.	Dr. Sujit Sarkar	Scientist	IARI, Regional Station, Kalimpong, West Bengal- 734301

17. Work Plan:

17.1 Work plan (methodology/experimental design to accomplish the stated aim)

Methodology:

The research project has a direct approach to measure the skill gap of extension workers and farmers, which can be used to up-scale the sericulture by designing Capacity Development Programme. The project will be undertaken with the extension workers and farmers who are under the Central Sericultural Research and Training Institute (CSR&TI), Berhampore (WB) jurisdiction in West Bengal, Bihar and Jharkhand. Three districts from traditional state and three from non-traditional states will be selected purposefully where mulberry based sericulture is under practice. The extension workers will comprise of Technical Assistants and State Governments Agents. They will be selected randomly (simple random sampling) from all the districts and the total number will be 100. Besides it, 150 farmers from traditional state and 150 farmers from non-traditional states will be selected through snowball technique (non-probability sampling technique). Hence, total respondents will consist of 100 extension workers and 300 farmers in the project area.

The research design selected for this study will be descriptive and analytical. Fundamentally, descriptive studies are concerned with the "what is" of the topic of interest.

These types of studies will guide and allow the researcher not only to describe but also to link the variables to achieve the objectives of the research project. The objective-wise work plan has been detailed below:

E01. To document job profile of the extension workers involved in sericulture activities and their engagement for each of the activity.

Job profile is the description of a particular work function that includes the elements deemed necessary to perform the post effectively. In order to develop, all the section head/experts of the CSR&TI, Berhampore (WB) will be consulted with an open-ended schedule. All of them will be asked to list all the roles/responsibilities of the extension workers required for the improvement of sericulture. Later they will be asked them to rank the roles/responsibilities which have mentioned by them. In order to find out major roles/responsibilities of the extension workers, Garrett ranking technique will be used. Garrett ranking technique will be used since all the items will not ranked by all the experts. Therefore, the method of combining of incomplete order of merit ranking as suggested by Garrett (1979) will be followed. By using this technique, the order of the merits given by the respondents will be changed into ranks by using the following formula:

$$\text{Percent Position} = [(R_{ij} - 0.5)] / N_j \times 100,$$

where R_{ij}- rank given for i^{th} factor by j^{th} respondent; and N_j- number of factors ranked by j^{th} respondent.

After obtaining the list of the roles/responsibilities of the extension workers, a schedule/questionnaire will be developed to assess the employee engagement for the sericultural activities.

E02. To identify the skill requirements for the extension workers and farmers for each activity

Sericulture is mainly a skilled-based enterprise. The skills are required from the cultivation of mulberry plantation to finally reeling of the silk. Hence, there is need to identify the different essential skills from all the sections involved in sericulture. To achieve this, experts

from all the sections will be consulted to list the skills required by the extension workers as well as the farmers. It will provide the skill chart for the extension workers as well as the farmers.

The skill chart will be used as a questionnaire and it will be circulated to each of the scientist to give a rank. Again Garrett ranking technique will be used to identify the critical skills. Those three skills which will have high mean score will be treated as critical skills for the particular section. These critical skills should be taken care while giving training programmes to the extension workers and the farmers.

E03. To determine the skill gap of the extension workers and farmers involved in different sericulture activities.

Skill Gap Analysis is an evaluation tool for determining the training needs of an individual, group or organizations. In other words, such analysis reveals the differences between the required and the existing skill levels and then strategies can be recommended for closing the gap.

The skill gap of the extension workers and farmers will be identified by the skill competency assessment. The list of jobs which will be earlier obtained by the consultation of the experts will form the basis of competency assessment. The competency assessment focuses on how well the employees are performing the required job skills in relation to specified performance standards.

The skills competency measurement for both the extension workers and farmers will be a Likert scale questionnaire developed from the skill chart and review of the relevant literature on skills essential to sericulture. Skill items will be identified within the production activities. The questionnaires consisted of questions eliciting information on the basis of the skill assessment competency level from poor (1), fair (2), good (3), very good (4) and to excellent (5). Total and mean perception scores will be computed for each skill item, after which a cut-off means score of 3.5 [(1+2+3+4+5) /5+0.5)] will be used to differentiate between the skills gap for both the extension workers and farmers at $x > 3.5$ rated competent and $x < 3.5$ rated skill deficient. Content and face validity of the questionnaire will be established by the expert on sericulture of CSR&TI, Berhampore.

E04. To design capacity development programme to target the skill requirements of the extension workers and farmers

UNDP defines capacity development as 'the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time'. Capacity is about growth: growth of the individual in knowledge, skills and experience. It can be achieved suitably when it will be based on their actual need.

A practical curriculum will be design for the capacity development programme. This curriculum will be an outline of the content of capacity development. It provides an overall view of what to be taught and how it should be taught to ensure that the training covers all the necessary needs of the trainees based. This need-based curriculum will be developed through task analysis and skill gap analysis. Hence such training will be of bottom-up approach which can be suitably used for the refresher training like Skill Updating Programme (SUP), Integrated Skill Development Scheme (ISDS) etc.

Based on the above findings a competency model will be suggested for the extension workers. The competency model will be a framework for defining the skills and knowledge requirement for the extension workers. This will consists of both the hard skills and soft skills for improvement of sericulture.

17.2: Organization of work elements:

Name	Designation	Time	Work to be done
Dr. S. Kanika Trivedi (Executive Authority)	Director	5%	Over all coordination, guidance & periodical review of progress made.
Dr. Subhra Chanda (Coordinator)	Scientist-D	5%	Coordination and guidance
Shafi Afroz (Principal Investigator)	Scientist -B	60%	Data collection and directly associated with objective 1, 2, 3 and 4. Compilation and interpretation of data, submission of report time to time and final report preparation.

Dr. Subhra Chanda (Co-Investigator)	Scientist -D	5%	Compilation and interpretation of the collected data.
Dr. Dipesh Pandit (Co-Investigator)	Scientist-D	5%	Assist in data collection for the objective 3.
Shri Bimal Chandra Ray (Co-Investigator)	Scientist-D	5%	Assist in data collection for the objective 3.
Dr. Manjunath G.R (Co-Investigator)	Scientist-B	15%	Statistical Analysis of the collected data.

17.3: Proprietary / patented items, if any, expected to be used for this project -

NA

17.4: Suggested plan of action for utilization of the expected outcome from the project:

The results of the project will come up with objective data, which will be very useful for the higher authorities to understand the current situation of sericulture in Bihar and Jharkhand. It will also help to comprehend the exact skill requirements by the extension workers as well as farmers. The skill chart for each section will be developed and based on which practical training manual will be developed. This training manual can be used to modify the course curriculum for the training. Hence it will provide need based training (bottom up approach) to the extension workers and farmers. This research project will also come up with a competency model, which will define the skills and knowledge requirements. Hence it will be helpful for hiring the extension workers for the advancement of sericulture.

17.5. Time schedule of activities giving milestones

Sl. No.	Activity	Symbol	Preceding Activity	Estimated time
1.	Documentation of Job profile of the extension workers and assessing their engagement	A	-	2 months
2.	Documentation of the essential skills with the consultation of experts for both extension workers as well as farmers	B	A	2 months
3.	Development of skill competency assessment using Likert Scale	C	B	1 months
4.	Identifying the skill gap of the extension workers and farmers	D	C	5 months
5.	Designing of capacity development programme and Competency model	E	D	5 months
6.	Data analysis, Compilation of results and outcome of the project work and submission of report	F	ABCDE	3 months

Timeliness:

Time scale	Year 1				Year 2	
Quarter	**1**	**2**	**3**	**4**	**1**	**2**
Documentation of Job profile for extension workers and assessing their engagement						
Documentation of the essential skills						
Development of skill competency assessment using Likert Scale						
Identifying the skill gap of the extension workers and farmers						
Designing of capacity development programme and Competency Model						
Data analysis, Compilation of results and submission of report						

Activity Table providing quantifiable outputs:

Period of Study	Achievable targets
1st Year	Initiation of the project at CSR&TI, Berhampore, documentation of job profile in consultation with the expert of all sections, assessment of the employee engagement for the job, documentation of the essential skills for all sections, development of skill competency assessment using Likert scale, preparation of schedule/questionnaire for the data collection
2nd Year	Identifying the skill gap of the extension workers and farmers through data collection, Data analysis, Compilation of results, Designing of capacity development programme based on the findings and development of Competency Model, and finally submission of report.

17.6. Project Implementing Agency/ Agencies

Name of the Agency	Address of the Agency	Proposed Research Aspects	Proposed Amount	Cost Sharing %
Central Silk Board	BTM Layout, Madivala, Bangalore	Basic plus applied	2,40,000.00	100%

18. **PART IV: BUDGET PARTICULARS (in Lakhs):** [In case of multi-institutional projects, the budget details should be provided separately for each of the Institute]

A) Non-Recurring (e.g. equipment, accessories, etc.)- NA

Sl No.	Item	1st year	2nd year	Total
A]	Land	-	-	-
B]	Building	-	-	-
C]	Vehicle	-	-	-
D]	Equipments 1.Green House	-	-	-
		-	-	-
		-	-	-
E]	Furniture	-	-	-
F]	Fan & fixtures	-	-	-
G]	Tools, plant & machineries	-	-	-
Total		-	-	-

Sub-Total (A) = 0.00

B. Recurring

B.1 Consumables

SI. No.	Item	1st Year	2nd Year	Total
1.	Chemical	-	-	-
2.	Clip cages	-	-	-
3.	Speciman jars	-	-	-
4.	Specimen tubes	-	-	-
5.	Test tubes, plastic containers	-	-	-
6	Forceps, Needles, Brushes muslin cloth, Entomological pins, absolute alcohol and miscellaneous items	-	-	-
	Sub-Total	-	-	-

Sub-Total (B.2) = 0.00

Other Items:

SI. No.	Item	1st Year	2nd Year	Total
B2	Travel	50000	50000	100000
B3	Paper & Xerox	5000	5000	10000
B4	Printer, Software & Computer	100000	-	100000
B5	Contingency	20000	10000	30000
	Total	175000	65000	2,40,000
Subtotal (B1+B2+B3+B4+B5)				
Grand Total (A + B)		**Rs. 2,40,000.00**		

Note: Please give justification for each head and sub-head separately mentioned in the above table.

Financial Year: April - March

In case of multi-institutional project, the budget estimate to be given separately for each institution.

PART V: EXISTING FACILITIES

Resources and additional information

1. Laboratory:
    a. Manpower: 1 Technical Assistant of the CSB units in Bihar and Jharkhand will be involved for the data collection.

Equipment: NA

Part VII: Biodata of Project Coordinator/ Principal Investigators/Co-investigators

1.	Name	:	Shafi Afroz
2.	Employee No.	:	5801
3.	Official Designation	:	Scientist-B
4.	Expertise Area	:	Agricultural Extension
5.	Institute Name	:	REC, Gumla (Jharkhand) CSR&TI, Berhampore
6.	Institute Address	:	Dist: Murshidabad, West Bengal
7.	Date of Birth	:	20.12.1986
8.	Sex	:	Male
9.	Mobile and mail ID	:	7827692063, shafiafroz31@gmail.com
9.	Educational Qualification		

Particulars	Year	University	Country	Percentage of Marks	Subject and Specialization
B. Sc (Agri.)	2011	University of Agricultural Sciences, Bangalore	India	86.0	Agriculture
M. Sc (Agri.)	2013	Indian Agricultural Research Institute, New Delhi	India	87.5	Agricultural Extension

M. Sc (Agri.) Thesis: *Effectiveness of Participatory Video in dissemination of Farm Technology: A case of Digital Green*

Specialization: Evaluation of developmental programmes, Agricultural Extension

10. Training Undergone:

Course name/subject	Address of Institute	Duration	Sponsoring Agency
Foundation Training for Young Scientists of Central Silk Board	Silk Board, Bangalore CSR&TI, Mysore CMER&TI, Lahdiogarh	29th February to 15th March, 2016	Central Silk Board

11. Post M.Sc Research Experience: NA

12. Total Publications:

a) Research papers : 02

b) Book chapter : 02 [Handbook of Extension (ISBN:978-93-83168-12-5)]

List of Research Publication:

1. **Shafi Afroz**, Rashmi Singh, R.R. Burman, Sangeetha V. and Prasad R. (2014) An Innovative Participatory Video for Agricultural Information Dissemination: A case of Digital Green. *Journal of Community Mobilization and Sustainable Development*, Vol. 9(1): 75-79
2. **Shafi Afroz**, Rashmi Singh, R.R. Burman, Sangeetha V. and Prasad R. (2015) Impact Assessment of Video-based Information Dissemination in Agriculture: A Case of Digital Green Initiative. *Indian Journal of Extension Education* Vol. 51 (3&4): 25-28

Award/Honour Received:

1. Awarded National Talent Scholarship (NTS) in UG(2007-11), ICAR-JRF (2011-13) in PG, IARI PhD Fellowship
2. Awarded Maulana Azad national Fellowship (MANF) for PhD in 2014-15
3. Qualified UGC NET Exam, Qualified ASRB-NET Exam
4. Awarded ICAR's AICE-SRF(PGS)-2014 in Agricultural Extension

Biodata of Project Coordinator/ Principal Investigator/ Co-investigators

1.	Name and Designation	Dr. Subhra Chanda
2.	Date of Birth	16.12.1958
3.	Mobile No. and e-mail ID	9593880159, chanda.subhra@rediffnail.com
4.	Date of Entry in the Board's service	28.04.1987
5.	Academic Qualification	PhD
6.	Specialization	Entomology
7.	PhD Thesis title	***Qualitative and quantitative studies of the digestive enzymes of two insects of Burdwan***

8. **Publications:**

List:

Chanda, S., Saha, L. M., Ronibala Devi, Khwairakpam and Mandal, K. (2014) Effect of cold storage of female pupae of Silkworm *Bombyx mori* L. on survivability and reproductive behaviour. *Eco. Env. & Cons.*, 20(14): 1699-1704

Chanda S., Saha, L. M., Das, N. K., Kar, N. B. and Bindroo, B. B. (2011) Identification of promising bivoltine breeds based on multiple trait analysis for future breeding program in West Bengal. *International Journal Industrial Entomology*, 23(2): 239-243.

Saha, L. M., **Chanda, S**., Kar, N. B., Das, N. K. and Mondal, K. (2011) Identification of potential multivoltine breeds based on multiple trait analysis for future breeding program in West Bengal. Bull. Ind. Acad. Seri, 15(2):1-10

Saha, L.M., **Chanda, S**., Kar, N. B., Mondal, K. and Bajpai, A. K. (2011) Effect of seasonal variation on multivoltine cocoon yield and grainage performance in popular multivoltine hybrids of *Bombyx mori* L. under tropical condition of West Bengal. *Uttar Pradesh J. Zool.*, 31(3):287-292.

Saha, L.M., **Chanda, S.**, Kar, N. B., Das, N. K. and Mondal, K. (2012) Effect of seasonal variation on cocoon yield and egg recovery in Multi x Bivoltine seed production in *Bombyx mori* L. under tropical condition of West Bengal. **Bull. Ind. Acad. Seri.,** 16(1):79-84.

Chanda, S. Saha, L. M., Kar, N. B., Das, N. K. Saha, A. K. and Bindroo, B. B. (2012) Effect of multiple mating of (SK6 x SK7) – A newly evolved bivoltine hybrid on grainage performance for sustainable Multi x Bi DFL production in West Bengal. *Uttar Pradesh J. Zool.*, 32 (2):165-169.

Chanda, S., Saha, L. M. and Bindroo, B. B. (2012) Multiple mating of bivoltine male moths – an approach for silkworm seed production in economical way **Uttar Pradesh J. Zool.,** 32(3):281-288.

Saha, L. M., **Chanda, S.** Mondal, K. and Bindroo, B. B. (2012) Potency of bivoltine male moths of pure silkworm breed and hybrid in laying preparation. **Uttar Pradesh J.Zool.,** 32(3):303-309.

Saha, L. M., **Chanda, S**., Dutta, R. N. and Bindroo, B. B. (2012) Studies on economic performance of private grainages at Kaliachak of Malda district, West Bengal. Proceedings of the State Level Seminar on Advancement of Biological Science towards sustainable development, sponsored by University Grants Commission,Berhampore. Published by Berhampore Girls' College, Murshidabad in collaboration with West Bengal Bio-Diversity Board, Kolkata held on 29-30.03.12, pp. 119-128

Chanda, S., Saha, L. M., Das, N.K., Ray, B. C. and Bindroo, B. B. (2012) Rearing of eri silk worm – an additional source of income for rural populace. Proceedings of the State Level Seminar on Advancement of Biological Science towards sustainable development, sponsored by University Grants Commission, Berhampore, Published by Berhampore Girls' College, Murshidabad in collaboration with West Bengal Bio-Diversity Board, Kolkata held on 29-30.03.12, pp. 83-97.

Chanda, S., Saha, L. M., Das, N. K. and Bindroo, B. B. (2013) Impact of pupal weight on realized fecundity and rearing performance of M.Con.4 (Bombyx mori L.). *Sericologia,* 53(2):111-116.

Chanda, S., Saha, L. M. and Bindroo, B. B. (2013) Pupal Weight - an approach for productivity improvement in multivoltine silkworm, *Bombyx mori* L. *J.Exp.Zool.* India, 16(1):265-269.

Saha, L.M., **Chanda, S**, Ngalangam, J. S. and Bindroo, B. B. (2013) Studies of preservation of bivoltine male moths at low temperature on survivability and reproductive parameters in silkworm, *Bombyx Mori* L. *Eco.Env. & Cons*.19 (4):101-106

Chanda, S., Saha, L. M., Kar, N. B and Bindroo, B. B. (2013) Bivoltine foundation crosses - the only resource of bivoltine seed cocoons under the tropical climatic conditions of West Bengal. *Uttar Pradesh J.Zool*., 33(3): 269-276

II. **Popular Articles**

1. Saha, L.M., **Chanda, S**., Kar, N. B., Saha, A. K., Mondal, K., Bajpai, A. K. and Raje Urs, S. (2010) SSPC, Raiganj – Setting seed quality trends. *Indian Silk*, 1(4): 10 – 12.
2. Chanda, S.; Saha, L. M., Shibnath; Kar, Niharendu Bikash; Saha, Atul and Ghosh, Asis (2011) Reshamkeet me yugman bal (Heterosis in silkworm). *Indian Silk*, 1(11): 38 – 40.
3. Saha, L. M., **Chanda, S.**, Kar, N. B.; Pandit, D., Mitra, P., Mondal, K. and Bindroo, B. B.(2012) Re-utilization of non-oviposited moths to enhance egg recovery – a technique to reduce production cost in commercial grainage. *Indian Silk*, 2(11): 4-7.
4. Chanda S. (2012) Patti badi yak ire. *Resham Bharti*, 25(50): 5.

Biodata of Project Coordinator/ Principal Investigator/ Co-investigators

1.	Name and Designation	Dr. Dipesh Pandit, Scientist- D
2.	Date of Birth	16-12-1963
3.	Mobile No. and e-mail ID	9679797522 & d.pandit@rediffmail.com
4.	Date of Entry in the Board's service	-
5.	Academic Qualification	PhD
6.	Specialization	Agricultural Extension
7.	PhD Thesis title	-

8. Awards: [Not required for house personnel]: NIL

9. Position Held / Research Experience in various institutions:

[Not required for in –house personnel]

10. Memberships/Fellowships: [Not required for in-house personnel]:

11. Patents: [Not required for in-house personnel]:

12. Publications (Number only):

Research Papers: 20; Repots: 49; Seminar/Symposium: 14 & General articles: 08

13. Project(s) submitted / being pursued / carried out by Investigator:

Sl.No.	**Title of the Project**	**Funding agency**	**Duration From and To**	**No of Scientists /Associates working under the project**	**Total approved cost of the project (Rs. in lakh)**
1	**MOE-3195**	CSB	2001-03	3	-
2	**MOE-3244**	CSB	2002-04	3	-
3	**MOE-3363**	CSB	2006-07	3	-
4	**MOE-3361**	CSB	2006-08	3	-
5	**MOE-3396**	CSB	2007-10	5 + REC (15) + RSRS in charges(4)	-

14. Highlights of outcome / progress of the project (s) handled during the past 10 years their outcome and utilization (in 200 words).

- Determined Socio-economic and psychological characteristics of sericultural farmers and also determined adoption level of few sericultural technologies at farmers' level cause of high/low adoption and probable remedial measure etc.
- Determined yield gap at farmers' level w.r.t. research institute and demonstration plots and factors responsible for such gap along with percentage contribution of different factors.
- Determined Knowledge and perception level of sericulture farmers of WB w.r.t four different aspects like 'Mulberry garden management', 'Silkworm rearing management', 'Marketing management' and 'Miscellaneous aspects of mulberry sericulture management'.
- Determined constraints of client system in adopting and change agent system in disseminating sericultural technologies / practices.

Biodata of Project Coordinator/ Principal Investigator/ Co-investigators

1.	Name and Designation	Shri Bimal Chandra Ray, Scientist-D
2.	Date of Birth	07.01.1959
3.	Mobile No. and e-mail ID	09434056089; bimalmitali@rediffmail.com
4.	Date of Entry in the Board's service	10.09.1984
5.	Academic Qualification	MSc. (Zoology)
6.	Specialization	Fishery
7.	PhD Thesis title	**NA**

8. **Publications:**

List:

I. Research Papers: 07 Nos.

II. Popular Articles: 01

Biodata of Project Coordinator/ Principal Investigator/ Co-investigators

1.	Name and Designation	Dr. G. R. Manjunatha
2.	Date of Birth	11-05-1988
3.	Mobile No. and e-mail ID	9831878341, mgr.dvg@gmail.com
4.	Date of Entry in the Board's service	13th November, 2015
5.	Academic Qualification	PhD
6.	Specialization	Agricultural Statistics
7.	PhD Thesis title	***Combinatorial aspects & optimality properties of generalized Neighbor designs in Circular Block***

8. **Publications:**

I. Theoretical Aspects:

1) Majumder, A., **Manjunatha, G. R**. and Patil, S. G. 2015. Efficient Circular Neighbour Balanced BIB Designs with minimum number of blocks for Correlated observations. ***International Journal of Agril. and Statistical Science***, 11(2). **[Accepted]**
2) Majumder, A., Patil, S. G. and **Manjunatha, G. R**. 2013. General efficiency balanced (GEB) block designs with correlated observations for even number of treatments. ***Calcutta Statistical Association Bulletin***, *65,257-260.*

II. Applied Aspects:

1) Manoj, K., Majumder, A., **Manjunatha, G. R.** and Sanjeev, K. 2015. Flower production index using principal component analysis. *Journal of Crop and Weed*, 11 (1), 54-57. [NAAS Rating (NR) -**3.59**]
2) Patil, K. K. R., **Manjunatha, G. R.** and Vishwajith, K. P. 2015. Growth dimensions of Karnataka economy in post liberalization period. *Journal of Crop and Weed*, 11 (SI), 19-27. [NR-**3.59**]
3) **Manjunatha**, **G.R.,** Ashalatha, K.V., Kiran Kumar, R. P. and Bhat, A.R.S. 2014. Application of Correspondence Analysis for organic farming practices in Northern Zones of Karnataka. ***International Journal of Agricultural and Statistical Science***, 10(1), 115-119. [NR-**6.00**]
4) Kiran Kumar, R. P., Patil1, B.L., **Manjunatha, G.R.** and Aditya, K. S. 2014. Remunerativeness led acreage response of arecanut in Karnataka state. *Journal of*

Plantation Crops, 42(1), 54-61. [NR-**3.06**]

5) **Manjunatha**, **G. R.,** Kiran Kumar, R. P. and Chandrakanth, M. G. 2014. Optimal Stocking Pattern of Chemical Fertilizers: An Application of Waiting Time Model. ***Indian Journal of Marketing***, *44(10),* 34-40. [NR-**3.89**]
6) **Manjunatha**, **G. R**., Asha Latha, K. V., Patil, K. R. and Shripad, K. 2014. Effect of Organic farming practices on crop productivity in Northern Zones of Karnataka. *Bioinfolet, 11(1), 94-96.* [NR-**3.75**]
7) **Manjunatha**, **G. R**., Ashalatha, K. V., Bhat, A. R. S. and Patil, K. R. 2013. Organic Farming a Way to Sustainable Agriculture Development: A Case Study of Karnataka, India. *Environment & Ecology*, 31(2), 1043—1046. [NAAS Rating (NR) -**4.09**]
8) Kiran Kumar, R. P., **Manjunatha**, **G.R.** and Chandrakanth, M.G. 2013. Economic Impact of Institutions on the Consumption of Forest Products in India. ***Indian Journal of Agricultural Economics***, 68(2), 155-168. [NAAS Rating (NR) -**5.04**]
9) **Manjunatha**, **G. R**., Ashalatha, K.V., Patil, K. R. and Vishwajith, K. P. 2013. Effect of organic farming on organic carbon and NPK status of soil in Northern Karnataka, India. *Journal of Crop and Weed*, 9 (1), 79-82. [NR -**3.59**]
10) Kiran Kumar, R. P., Aditya, K.S., **Manjunatha, G. R.** and Chinnappa, B. 2013. Market integration of arecanut in Karnataka state: an error correction model approach. *Journal of Plantation Crops, 41(3), 404-410.* [NR-**3.06**]
11) Patil, K. R., **Manjunatha, G. R.** and Aditya, K. S. 2013. Structural transition in Karnataka Agriculture during post liberalization era. *Journal of Crop and Weed*, 9 (2), 65-71. [NR-**3.59**]

References:

Alibaygi A. and Zarafshani K. (2008) Training needs of Iranian extension agents about sustainability: The use of Borich's need assessment model. *African Journal of Agricultural Research*, Vol. 3(10): 681-687

American Society for Training & Development (2012) Bridging the Skill gap by ASTD 2010. www.astd.org

Azizah S. (2011) Training needs assessment of Agricultural Extension Officers in Animal Husbandry Department of Malang Regency, East Java-Indonesia. *Journal of Agricultural Extension and Rural Development*, Vol. 3(8): 147-152

Chizari M., Baygi A. H. A. and Breazeale D. (2006) Analysis of the Training Needs of Multi-Functional Extension Agents Associated with Sustainability. *Journal of International Agricultural and Extension Education*, Vol. 3(1): 51-58

Cappelli, P. and Iannozzi, M. (1995) Rethinking the skills gap: Is it craft or character? Philadelphia, PA: National Center on the Educational Quality of the Workforce.

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Eskola and Gasperini (2010) http://www.fao.org/fileadmin/templates/ERP/docs2010/04PBEducationandSkills.pdf

Hanser L. M. (1995) Traditional and cognitive job analyses as tools for understanding the skills gap. (ERIC Document Reproduction Service No. ED 38 3 842)

Hegde M.R. and Venkattakumar R. (2015) Technology Transfer and Skill Development towards Improved Livelihood in Rural India. *Indian Research Journal of Extension Education*, Vol. 15(4): 227-233

Hoque M. J. and Usami K. (2008) Effects of Training on Skill Development of Agricultural Extension Workers in Bangladesh: A Case Study in Four Upazilas (Sub-district) Under Kishoreganj District. *Journal of Social Sciences*, Vol. 4(1): 21-28

Kaur H. and Talukdar R.K. (2007) Utility of Farm Women Training Programmes in Livelihood Security. *Indian Research Journal of Extension Education*, Vol. 7(2&3): 15-17

Khan M. A. and Iqbal M. (2005) Sustainable Cotton Production through Skill Development among Farmers: Evidence from Khairpur District of Sindh, Pakistan. *The Pakistan Development Review*, Vol. 44(4-II): 695–716

Koundinya V. and Martini R. (2013) In-Service Needs for Educational Processes Skill Training of U.S. Food Safety Extension Educators. *International Journal of Scientific Research in Education*, Vol. 6(2): 117-127

Landge S. and Tripathi H. (2006) Training Needs of Kisan Mitras in Agriculture and Allied areas. *Indian Research Journal of Extension Education*, Vol. 6(3): 1-5

Natriello G. (1989). What do employers want in entry-level workers? An assessment of the evidence. [Occasional Paper No. 7], National Center on Education and Employment, Teachers College, Columbia University

Priya N. K. and Sivanaryana G. (2013) Review on Training Need Analysis of Agricultural Officers and Agricultural Extension Officers. *Global Research Analysis*, Vol. 2(9): 1-2

Prowse M. (1992). Is America in decline? *Harvard Business Review*, Vol. 70(4): 34-45

Sajeev M. V., Singha A.K. and Venkatasubramanian V. (2012) Training Needs of Farmers and Rural Youth: An Analysis of Manipur State, India. Journal of Agricultural Sciences, Vol. 3(2): 103-112

Sharma K., Dhaliwal N. S., Goyal P. and Singh G. (2013) Identification and Prioritization of Competencies of Kinnow Growers in District Muktsar, Punjab. *Journal of Community Mobilization and Sustainable Development*, Vol. 8(2): 288-290

Singh D., Saha, K.P., Bargale P.C, and Kumar S. (2012) Impact of Refresher Training on Skill Development: Participants' Perception and Assessment of Knowledge Gain. *Indian Research Journal of Extension Education*, Vol. 12(2): 125-129

Tladi F. M. (2004) Job Content and Training Needs of Agricultural Extension Agents in South-Central Botswana. *Journal of International Agricultural and Extension Education*, Vol. 11(3): 33-39

Vreyens J. R. and Shaker M. H. (2005) Preparing Market-Ready Graduates: Adapting curriculum to meet the agriculture employment market in Egypt. AIAEE Proceedings of the 21st Annual Conference San Antonio, TX

World Bank (2004) Skills Development in sub-Saharan Africa. World Bank, Washington.

Yusuf S. F. G., Lategan F. S. and Masika P. J. (2014) Skill Gap Analyses of the Farmers and Agricultural Development Technicians on Indigenous Poultry Production in Nkonkobe Municipality Eastern Cape Province, South Africa. *Journal of Agricultural Sciences*, Vol. 5(1-2): 19-29

PART VI: DECLARATION/CERTIFICATION

It is certified that:

a) The research work proposed in the scheme/project does not in any way duplicate the work already done or being carried out elsewhere on the subject.
b) The same project proposal has not been submitted to any other agency for financial support.
c) The emoluments for the manpower proposed are those admissible to persons of corresponding status employed in the institute/university or as per the Ministry of Science & Technology guidelines (Annexure-III)
d) Necessary provision for the scheme/project will be made in the Institute/University/State budget in anticipation of the sanction of the scheme/project.
e) If the project involves the utilization of genetically engineered organisms, we agree to submit an application through our Institutional Biosafety Committee. We also declare that while conducting experiments, the Biosafety Guidelines of the Department of Biotechnology would be followed in toto.
f) If the project involves field trials/experiments/exchange of specimens, etc. we will ensure that ethical clearances would be taken from concerned ethical Committees/Competent authorities and the same would be conveyed to the Department of Biotechnology before implementing the project.
g) It is agreed that any research outcome or intellectual property right(s) on the invention(s) arising out of the project shall be taken in accordance with the instructions issued with the approval of the Ministry of Finance, Department of Expenditure, as contained in Annexure-V.
h) We agree to accept the terms and conditions as enclosed in Annexure-IV. The same is signed and enclosed.
i) The institute/university agrees that the equipment, other basic facilities and such other administrative facilities as per terms and conditions of the grant will be extended to investigator(s) throughout the duration of the project.
j) The Institute assumes to undertake the financial and other management responsibilities of the project.

Signature of Executive Authority of Institute/University with seal
Date:

Signature of Project Coordinator
Date:

Signature of Principal Investigator:
Date:

Signature of Co-Investigator I
Date:

Signature of Co-Investigator II
Date:

Signature of Co-Investigator III
Date:

New Project Proposal

Skill Gap Analysis and Capacity Development of Sericulture Extension Workers and Farmers in Traditional and Non-Traditional States

SUBMITTED
BY
SHAFI AFROZ, SCIENTIST-B
PRINCIPAL INVISTIGATOR
RESEARCH EXTENSION CENTRE, GUMLA
JHARKHAND

(Extension & Publicity Section, CSR&TI, Berhampore)

Central Sericultural Research & Training Institute,
Central Silk Board,
Ministry of Textiles, Government of India
Berhampore – 742 101, West Bengal

To,

The Director,
Central Sericultural Research &
Training Institute, Berhampore,
West Bengal – 742 101

Subject: Submission of new project for Central office –reg

Reference: CSB/CSR&TI/PMCE/R-29/469 dated 19.05.2016

Madam,

With reference to above subject, please find enclosed herewith six copies of new project proposal approved CO, Bangalore entitled **"Skill Gap Analysis and Capacity Development of Sericulture Extension Workers and Farmers in Traditional and Non-Traditional States"**

Sl. No.	**Suggestion**	**Follow up Action taken**
1.	"To restrict the project period to 18 months"	The project has been restricted within 18 months.

for sending to the referees. The suggestion and action taken is as follows.

This is for your kind perusal and needful action.

Date: 14.06.2016
Place: Gumla

Your's faithfully,

(Shafi Afroz)
Scientist-B
Research Extension Centre,
Gumla, Jharkhand
CSR&TI, Berhampore