Project Code : PPS 3600

Soil health card preparation for mulberry growing soils in Eastern and North Eastern India

November, 2016 to October, 2019

Investigators:

Dr. Kanika Trivedy, Dr. Monica Chaudhuri & Others

Central Sericultural Research &Training Institute
Central Silk Board, Ministry of Textiles: Govt. of India
Berhampore - 742 101, Murshidabad District
West Bengal

PART I: GENERAL INFORMATION

1	Name of the Institute / University/ Organization submitting the Project Proposal	:	1. Central Sericultural Research & Training Institute, Berhampore (W.B.) Pin-742 101
2	Status of the institutes	:	R&D
3	Name and Designation of the Executive Authority of the Institute /University forwarding the application	:	Dr. Kanika Trivedy, Director Central Sericultural Research & Training Institute, Berhampore (W.B.) Pin-742101
4	Project Title	:	**Soil health card preparation for mulberry growing soils in Eastern and North Eastern India**
5	Category of the Project	:	ToT
6	Specific Area		Soil fertility
7	Duration	:	03 Years
8	Total cost	:	**Rs. 79,30,880 /-**
9	Is the Project single institutional or multi-institutional	:	Single institutional (Multi locational)
10	If the Project is multi-institutional, please furnish the following Name, Designation and Address of the Project Co-ordinator:	:	NA

11. Project Summary

Soil analysis is an effective array in the cache of the farmers and planners to detect the nutrient deficiency in the soils to deliver the exact doses of nutrients through Soil-Test-Based-Dose (STBD) approach for getting the desired quality mulberry leaf yield by maintaining or improving the existing soil health. Appropriate nutrient management through STBD refers to the maintenance of soil fertility and of plant nutrient supply at an optimum level for sustaining the desired productivity through optimization of the benefits from all possible sources of fertilizer inputs.

Application of earlier recommended dose of inorganic fertilizers is not fulfilling the present requirement of high yielding varieties. Considering the importance of maintaining soil health for longer time to get the targeted yield, Government of India has launched a scheme in "International Year of Soils 2015" to analyse the soils of farmer's field and to distribute the soil health card subsequently along with recommendation of STBD of nutrients to be applied. In pursuance of the soil health card scheme launched by GoI, the present study has been proposed to implement the same for the benefit of the sericulture stake holders. Under the present study, mulberry growing farmers of Eastern and North Eastern states of India will be considered for analysis of soil samples at individual level followed by preparation and distribution of soil health card along with STBD of nutrient-inputs.

PART II: PARTICULARS OF INVESTIGATORS

12.

S. No.	Name	Date of birth	Sex	Indicate whether Principal Investigator / Co-investigator	Designation	Department / Discipline / Institute
1	Dr. Kanika Trivedy,	15.07.1958	Female	Principal Investigator	Director	CSR&TI, Berhampore
i.	Dr. Monica Chaudhuri	05.12.1957	Female	Co Investigator	Scientist-D	Moriculture=I
ii.	Dr. V. Vijay	10.04.1983	Male	Co Investigator	Scientist-B	Moriculture=I
iii.	Dr. R. Mahesh	25.05.1985	Male	Co Investigator	Scientist-B	Moriculture=I
iv.	Mr. Anil Pappachan	02.01.1989	Male	Co Investigator	Scientist-B	Moriculture=I&II
v.	Dr. R. Kar	01.09.1961	Male	Co Investigator	Scientist-D	RSRS,Kalimpong (W.B.)
vi.	Mr. Sunil Kumar Mishra	23.07.1965	Male	Co Investigator	Scientist-C	RSRS, Koraput
vii.	Dr. S. N. Gogoi	01.11.1958	Male	Co Investigator	Scientist-D	RSRS, Jorhat (Assam)
viii.	Dr. Reeta Luikham		Female	Co Investigator	Scientist-D	RSRS, Jorhat
ix.	Mr. Uttam Chandra Boruah	28.07.1958	Male	Co Investigator	Scientist-D	RSRS, Jorhat
x.	Ms. Mina Pamehgam	08.03.1961	Female	Co Investigator	Scientist-C	RSRS, Jorhat
xi.	Dr. L Somen Singh	01.02.1965	Male	Co Investigator	Scientist-D	REC, Imphal (Manipur)
xii.	Mr. Simon Tshering Lepcha	13.08.1959	Male	Co Investigator	Scientist-D	REC, Rangpo (Sikkim)
xiii.	Mr. Satyabrata Dey	01.01.1959	Male	Co Investigator	Scientist-C	REC, Dhenkikote
xiv.	Dr. Ghanshyam Singh	01.04.1962	Male	Co Investigator	Scientist-D	REC, Bhandra (Jarkhand)
xv.	Mr. Benedict Kumar Basumatary	06.11.1962	Male	Co Investigator	Scientist-C	REC, Mongoldoi, Assam
xvi.	Dr. Collins Z Renthlei	01.03.1975	Male	Co Investigator	Scientist-C	REC, Shillong, Meghalaya
xvii.	Mr. Bidyut Nath Choudhury	17.02.1967	Male	Co Investigator	Scientist-D	REC, Aizwal, Mizoram
xviii.	Dr. Lalthlamuana Pachuau	29.07.1978	Male	Co Investigator	Scientist-C	REC, Aizwal, Mizoram
xix.	Dr. Gangesh Bahadur Singh	01.09.1958	Male	Co Investigator	Scientist-D	REC, Agartala, Tripura
xx.	Dr. Anukul Borah		Male	Co Investigator	Scientist-D	REC, Dimapur, Nagaland

13.	No. of Projects being handled by each investigator at present	
1	Dr. Kanika Trivedy,	-
i.	Dr. Monica Chaudhuri	03
ii.	Dr. V. Vijay	04
iii.	Dr. R. Mahesh	06
iv.	Mr. Anil Pappachan	05
v.	Dr. R. Kar	04
vi.	Mr. Sunil Kumar Mishra	08
vii.	Dr. S. N. Gogoi	04
viii.	Dr. Reeta Luikham	
ix.	Mr. Uttam Chandra Boruah	01
x.	Ms. Mina Pamehgam	05
xi.	Dr. L Somen Singh	-
xii.	Mr. Simon Tshering Lepcha	03
xiii.	Mr. Satyabrata Dey	01
xiv.	Dr. Ghanshyam Singh	06
xv.	Mr. Benedict Kumar Basumatary	01
xvi.	Dr. Collins Z Renthlei	05
xvii.	Mr. Bidyut Nath Choudhury	03
xviii.	Dr. Lalthlamuana Pachuau	-
xix.	Dr. Gangesh Bahadur Singh	03
xx.	Dr. Anukul Borah	

14.	Proposed Junior Research Fellow	4

PART III: TECHNICAL DETAILS OF PROJECT

15. INTRODUCTION

Mulberry foliage serves as the sole food material for silkworm, *Bombyx mori* L.,which is practically acts as a bio reactor for converting mulberry leaf protein into silk protein. Generally seri-farmers rear 4 to 5 times a year. As a result, mulberry plants undergo frequent heavy stresses because of removal of assimilatory appendages 4-5 times in a year. Consequently, mulberry plants draw heavy amount of nutrients from soil essential for its growth.

There is overwhelming evidence that the soils of India are being depleted of their nutrient reserves and due to low use efficiency of applied nutrients, particularly of N, P and K, even the massive tonnage of nutrients fertilizers applied is not able to halt this process. One of the major causes for the depletion of plant nutrients is the unbalanced use of fertilizers, still loaded heavily in favour of nitrogen application in many areas. In India, in general, blanket fertilizer recommendations are followed for N, P & K that rarely matches soil fertility need and often ignoring secondary and micronutrients. All these factors result in deterioration in soil quality/soil health with adverse consequences for sustaining high levels of productivity, which will be required year after year. Therefore, there is a need for preparation of soil health card for Mulberry growing areas for monitoring, planning and management of soils for Mulberry cultivation.

15.1 DEFINITION OF THE PROBLEM

The production and productivity of quality mulberry leaves is dependent on soil health, environmental condition and management practices where soil is the mother of entire network and its management cannot be ignored or postponed for the survival of life. The application of inorganic fertilizers is one of the important inputs for increasing the yield and quality of mulberry leaves but the excessive use of chemical fertilizers has been found deleterious to the silkworm growth and development may cause soil degradation. Hence, it is the need of the hour to diagnose nutrient deficiency and its remedial measures in soil for production and productivity of quality mulberry leaves leading to quality cocoon production.

Keeping these under consideration, soil health card scheme is implemented to promote the soil testing services, issue of Soil Health Cards (SHC) and development of nutrient management practices. No uniform norms are followed in the country for soil analysis and distribution of soil health cards. There is a need to devise a mechanism to issue SHCs every 3 years in respect of all landholdings in order to promote site-specific nutrient management involving soil test-based application of fertilizers. Therefore, soil health card scheme of Mulberry growing areas for monitoring, planning and management of soils for Mulberry cultivation is proposed for periodic testing of soil and to recommend nutrient management.

15.2 ORIGIN OF THE PROPOSAL /RATIONALE OF THE STUDY

Due to high population pressure, shrinkage of land holding and multiple cropping systems, nutrient mining in most of the agricultural crops is very common. Like agricultural crops, high nutrient mining under mulberry field is also very common for its perennial nature, which requires balanced nutrients throughout the year for quality leaf production. To apply the balanced nutrients in appropriate manner, timely soil analysis is essential, because, soil analysis

is an effective array in the arsenal of the farmers and planners to detect the nutrient deficiency in the soils to deliver the exact doses of nutrients through STBD approach for getting the desired quality mulberry leaf yield by maintaining or improving the existing soil health.

Application of earlier recommended dose of inorganic fertilizers is not fulfilling the present requirement of HYVs of mulberry. Considering the importance of maintaining soil health for longer time and to get the targeted yield, Government of India has launched a scheme in "International Year of Soils 2015" to analyse the soils of farmer's field to distribute the soil health card with recommendation of STBD of nutrients to be applied. Hence, to implement the GoI scheme for the benefit of the sericultural stake holders, the present investigation has been proposed.

15.3 RELEVANCE TO THE CURRENT ISSUES AND EXPECTED OUTCOME

Soil analysis will help farmers and planners to detect the nutrient deficiency in soils based on which the exact doses of nutrients may be applied through STBD approach for getting the desired quality and quantity of mulberry leaf. Besides, the approach promises to maintain or improve the existing soil health.

15.4 OBJECTIVES

- To analyse the soil parameters (pH, EC, OC, Available N,P,K,S, Zn, Fe, Cu, Mn & B) of Mulberry growing soils for preparation and distribution of soil health card to the sericulture farmers in Eastern and North Eastern India.

16. REVIEW OF STATUS OF RESEARCH AND DEVELOPMENT ON THE SUBJECT

Soil testing programme started in India in the year 1955-56 with the setting up of 16 Soil Testing Laboratories (STLs) under "Determination of Soil Fertility and Fertilizer Use" programme. In 2012-13, the soil analyzing capacity in the country was 128.31 lakh soil samples per annum. The soil testing facility is provided by state governments to the farmers free of cost or with some nominal fee. Government of India has been promoting integrated nutrient management (INM) *i.e.*, balanced and judicious use of chemical fertilizers, along with bio fertilizers and locally available organic manures based on soil testing to maintain soil health and crop productivity. Soil Testing Programmes are also being implemented through National Mission for Sustainable Agriculture (NMSA) and Rashtriya Krishi Vikas Yojana (RKVY).

Quite a few states, including Tamil Nadu, Gujarat, Andhra Pradesh, and Haryana have been successfully distributing such cards. Essentially, the soil health card scheme is modelled on a successful programme launched by Hon'ble Prime Minister,Sri Narendra Modi during his tenure as Chief Minister of Gujarat. In fact from 2003-04 itself, Gujarat has been the first state to introduce soil health cards, according to government sources, to initiate the scientific measures for soil health care. In Gujarat, over 100 soil laboratories were set up and the result of scheme was found quite satisfactory [1]. Tamil Nadu has started issuing soil health cards from the year 2006 onwards. There are 30 Soil Testing Laboratories (STLs) and 18 Mobile Soil Testing Laboratories functioning in the state [2].

According to a Press release dated 18 August 2014, up to March 2012, over 48 crore-soil health cards have been issued to agricultural farmers. However, no uniform norms were followed in the country for soil analysis and distribution of such information before the issue of soil health cards. Further, these initiatives were sporadic and random and therefore did not cover all the

farmers within a particular time cycle. Through soil health card scheme, centre plans to make this a pan India effort. The target for 2015-16 is to collect 100 lakh soil samples and test these for issue of soil health cards [3]. The government plans to distribute 14 crore soil health cards by 2017 [4].

At present soil health card is not issued to the sericulture farmers. Keeping the importance of soil health card Central Silk Board targeted to issue 53,000 soil health cards to sericulture farmers in three years and out of these CSR&TI, Berhampore, West Bengal target is to issue 18,000 soil health cards in three year to sericulture farmers.

16.1. IMPORTANCE OF THE PROPOSED PROJECT IN THE CONTEXT OF CURRENT STATUS:

Considering the importance of maintaining soil health for longer time and to get the targeted yield, Government of India has launched a scheme in "International Year of Soils 2015" to analyze the soils of farmer's field to distribute the soil health card along with recommendation of STBD of nutrients to be applied. Hence, to implement the GoI scheme for the benefit of the sericulture stake holders, the present investigation has been proposed.

16.2. ANTICIPATED PRODUCTS, PROCESSES/ TECHNOLOGY PACKAGES, INFORMATION OR OTHER OUTCOME FROM THE PROJECT AND THEIR EXPECTED UTILITY

- This study will help to recommend the STBD for application of nutrients for getting the desired quality and quantity of mulberry leaf by maintaining and improving the existing soil health.
- The outcome of the project will lead to preparation and distribution of soil health card to the seri-farmers.

16.3. EXPERTISE AVAILABLE WITH PROPOSED INVESTIGATION GROUP/ INSTITUTION ON THE SUBJECT OF THE PROJECT

The investigating group is having necessary expertise to implement the project.

17. WORK PLAN:

17.1 METHODOLOGY

a. Sates to be covered

West Bengal, Bihar, Odisha, Jharkhand, Chattishgarh, Assam, Arunachal Pradesh, Meghalaya, Manipur, Nagaland, Mizoram, Tripura and Sikkim.

b. Soil sampling

Composite surface (0-30 cm) soil samples will be collected from the field of sericulture farmers of Eastern and North Eastern states covering West Bengal, Bihar, Odisha, Jharkhand, Chattishgarh, Assam, Arunachal Pradesh, Meghalaya, Manipur, Nagaland, Mizoram, Tripura and Sikkim using GPS. The list of selected states and number of samples to be collected in each state is given in table 17.4a. Diagnostic soil health assessment of farmer fields will be taken up periodically so as to issue health cards at least once in 3 years. A total of 18000 samples will be collected and analyzed in three years i.e. 6000, 7000 & 5000 samples in 1st, 2nd and 3rd Year respectively (Table 17.4 a and b). Weight of the soil sample should be around 500 grams by quartering method. The soil sample should be properly labelled.

c. Soil Analysis

Analysis of 12 soil parameters *viz.*, pH, Electrical Conductivity, Organic carbon, available N, P, K, S, Zn, Fe, Cu, Mn and B will be done using "*Mridaparikshak*", a quantitative soil test minilab kit.

d. Entry of data in soil health card portal and preparation of "Soil Health Card".

e. Finalisation of report.

17.2 RESPONSIBILITY OF IMPLEMENTING ORGANIZATION

1. Organization of Trainers' training programme on collection and analysis of soil samples.
2. Collection of GPS based 18,000 composite surface soil samples from different Eastern and North Eastern States of India.
3. Analysis of soil samples for 12 parameters (soil pH, Electrical Conductivity, Organic Carbon, available N, P, K, S, Zn, Fe, Cu, Mn and B).
4. Entry of data in soil health card portal.
5. Preparation and printing of Soil Health Card.
6. Issue of Soil Health Card to Sericulture Farmers.
7. Demonstration and awareness/mission management programme.
8. Finalization of report.

CENTRAL SILK BOARD
Ministry of Textiles- Govt. Of India

SOIL HEALTH CARD

Soil Health Card No.:
Name of farmer :
Validity : From --------to---------

SOIL HEALTH CARD	
Farmer's Details	
Name	
Address	
Village	
SubDivision/Block	
District	
PIN	
Aadhaar Number	
Mobile Number	
Soil Sample Details	
Soil Sample Number	
Sample Collected on	
Survey No.	
Khasra No. / Dag No	
Farm Size	
Geo Position (GPS)	Latitude: Longitude :
Irrigated / Rainfed	

Name of Laboratory	Central Sericultural Research and Training Institute, Berhampore (WB)

SOIL TEST RESULTS

S. No.	Parameter	Test Value	Unit	Rating
1	pH			
2	EC			
3	Organic Carbon (OC)			
4	Available Nitrogen (N)			
5	Available Phosphorus (P)			
6	Available Potassium (K)			
7	Available Sulphur (S)			
8	Available Zinc (Zn)			
9	Available Boron (B			
10	Available Iron (Fe)			
11	Available Manganese (Mn)			
12	Available Copper (Cu)			

Secondary & Micro Nutrients Recommendations		
Sl. No.	Parameter	**Recommendations for Soil Applications**
1	Sulphur (S)	
2	Zinc (Zn)	
3	Boron (B)	
4	Iron (Fe)	
5	Manganese (Mn)	
6	Copper (Cu)	
General Recommendations		
1	FYM	
2	Biofertiliser	
3	Lime / Gypsum	

Fertilizer Recommendations for Reference Yield (with Organic Manure)			
Sl. No. Crop & Variety	**Reference Yield**	**Fertilizer Combination-1 for N P K (Straight fertilizers)**	**Fertilizer Combination-2 for N P K (Complex/mixed fertilizers)**
Mulberry & _____			

International year of soils 2015

Healthy Soils for a Healthy Life

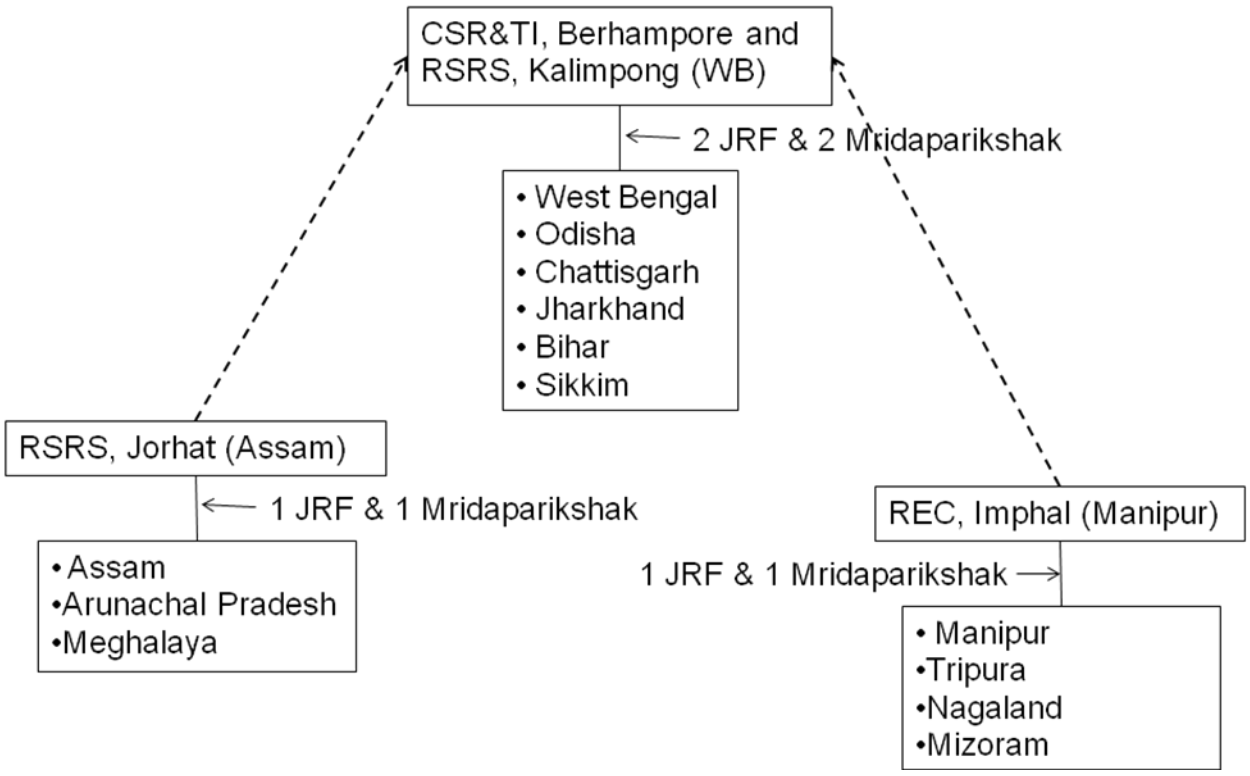
17.3 ACTIVITY TABLE SHOWING MILESTONES

Activity	Time requirement
• Preparation of base map of the study area with village boundary. • Training to Scientist Investigators, Technical Assistants, Field Assistants, and Project Assistants for soil sampling and analysis of soil samples using Mridaparishak. • Collection of 6000 composite surface soil samples using GPS. • Processing of soil samples. • Analysis of 6000 soil samples for 12 parameters • Entry of data in soil health card portal. • Preparation and printing of soil health card • Issue of soil health card to sericulture farmers. • Demonstration and awareness/mission management programme.	1st Year (12 months)
• Collection of 7000 composite surface soil samples using GPS. • Processing of soil samples. • Analysis of 7000 soil samples for 12 parameters • Entry of data in soil health card portal. • Preparation and printing of soil health card • Issue of soil health card to sericulture farmers. • Demonstration and awareness/mission management programme	2nd Year (12 months)
• Collection of 5000 composite surface soil samples using GPS. • Processing of soil samples. • Analysis of 5000 soil samples for 12 parameters • Entry of data in soil health card portal. • Preparation and printing of soil health card • Issue of soil health card to sericulture farmers. • Demonstration and awareness/mission management programme • Finalisation of Report	3rd Year (12 months)

17.4 ORGANISATIONS OF WORK ELEMENTS

Execution of works pertaining to sampling of soil followed by analysis of the same and preparation as well as distribution of soil health cards among sericultural farmers of Eastern and North Eastern India.

Organisation of production of 18000 soil health cards covering 13 states under CSR&TI, Berhampore



a. Soil sample collection will be done by, CSR&TI, Berhampore and its nested unites, as per the following work distribution:

S. No	Institute/Station	State's covered	No. of SHC's to be issued		
			2016-17	2017-18	2018-19
1	CSR&TI, Berhampore (WB)	West Bengal	3104	4000	3000
2	RSRS, Kalimpong (W.B.)	West Bengal	70		
3	RSRS, Koraput, (Odisha)	Orissa	506		
		Chattisgarh	20		
4	RSRS, Ranchi (Jarkhand)	Jharkhand	70		
		Bihar (Kisanganj)	230		
5	RSRS, Jorhat	Assam; Arunachal Pradesh; Meghalaya	1000	1500	1000
6	REC, Imphal, Manipur	Manipur; Tripura; Nagaland; Mizoram	1000	1500	1000
		TOTAL	6000	7000	5000

b. Soil sample analysis will be done by both, CSR&TI, Berhampore and nested units as per the following work distribution:

S. No	Institute/Station	States covered	No. of SHC's to be issued		
			2016-17	2017-18	2018-19
1	CSR&TI, Berhampore and RSRS, Kalimpong (WB)	West Bengal; Odisha; Chattisgarh; Jharkhand; Bihar; Sikkim	4000	4000	3000
2	RSRS, Jorhat	Assam; Arunachal Pradesh; Meghalaya	1000	1500	1000
3	REC, Imphal, Manipur	Manipur; Tripura; Nagaland; Mizoram	1000	1500	1000
		TOTAL	6000	7000	5000

c. SHC will be prepared and distributed by CSR&TI, Berhmapore and its nested units.

17.5 PROPRIETARY / PATENTED ITEMS, IF ANY, EXPECTED TO BE USED FOR THIS PROJECT : No

17.6 SUGGESTED PLAN OF ACTION FOR UTILIZATION OF THE EXPECTED OUTCOME FROM THE PROJECT : Based on the soil health card, site specific nutrient management will be done at farmers' fields under mulberry cultivation through STBD approach

17.7. TIME SCHEDULE OF ACTIVITIES GIVING MILESTONES:

S. No.	Milestone/Activity	Expected date of		Expected Outcome/ visible/ measurable indicators
		Starting	Completion	
1.	Preparation and issue of 6000 soil health card	2016	2017	Distribution of 18000 soil health cards along with recommendation to the farmers.
2.	Preparation and issue of 7000 soil health card	2017	2018	
3.	Preparation and issue of 5000 soil health card Preparation and submission of final report.	2018	2019	

PART IV: BUDGET PARTICULARS

PART IV: BUDGET PARTICULARS

18. BUDGET (In Rupees): 79,30,880 /- (Rupees seventy nine lakhs thirty thousand eight hundred eighty only)

Items and Year wise Total Budget

Sl. No.	Items	Year 1	Year 2	Year 3	Total
A	**Non-Recurring*** (e.g. equipments, accessories, etc.)				
	i. GPS – 6 nos. @ Rs.7,500/-	45,000	-	-	45,000
	ii..Sample storing stands - 4 nos.@ Rs.15,000/-	60,000	-	-	60,000
	iii. Mridaparikshak kit - 4 nos @ Rs. 90,730/-	3,62,920	-	-	3,62,920
	iv. Computer & accessories –3 nos. @ Rs.50,000/-	1,50,000	-	-	1,50,000
	v. Split Airconditioner – 2 nos. @ Rs.50,000/-	1,00,000	-	-	1,00,000
	Sub Total A	7,17,920			7,17,920
B.	**Recurring**				
B1	Manpower (Junior Research Fellow -04) (i) Junior Research Fellow - 04 (Consolidated emoluments): • For 1st and 2nd Year, Rs. 12,000 + HRA @ 10% per month • For 3rd Year, Rs. 14,000 + HRA @ 10% per month	6,33,600	6,33,600	7,39,200	20,06,400
B2	Consumables • Cloth bags & Polythene packets for collection of soil samples (18,000 cloths bags & polythene packets @ Rs.15/-) • Refills of Mridaparikshak (1 Refill @ 100 samples – 176 Refills @ Rs.17,935/-	90,000 10,04,360	1,05,000 12,55,450	75,000 8,96,750	2,70,000 31,56,560
B3	Travel (including fetching soil samples etc.)	1,30,000	1,00,000	1,00,000	3,10,000
B4	Contingency* (Preparation & distribution of Soil Health Card, Training, Demonstration and Awareness/ mission management etc.)	6,00,000	4,50,000	4,00,000	14,50,000
	Sub Total B	24,57,960	25,44,050	22,10,950	72,12,960
	Grand Total	**31,75,880**	**25,44,050**	**22,10,950**	**79,30,880**

*****As per GoI norms

(Rupees seventy nine lakhs thirty thousand eight hundred eighty only)

PART V: EXISTING FACILITIES

19. Available equipment and accessories to be utilized for the project:

[Should be provided separately for each of the Institution]

i. Available at CSR&TI, Berhampore

S. No.	Name of the Equipment/ Accessory	Make	Model	Funding Agency	Year of Procurement
1.	Auto Kjeldahl Apparatus	Pelican Equipments	KELPLUS	Central Silk Board, Bangalore	2003
2.	Atomic Absorption Spectrophotometer	Perkin-Elmer	AAnalyst 200	Central Silk Board, Bangalore	2009
3.	Conductivity meter	Systronics	Type 306	Central Silk Board, Bangalore	2007
4.	Flame photometer	Systronics	Type 128	Central Silk Board, Bangalore	2008
5.	Nephelo-Turbidity Meter	Systronics	Type 132	Central Silk Board, Bangalore	2007
6.	pH meter	Systronics	Type 361	Central Silk Board, Bangalore	2007
7.	UV-Vis Spectrophotometer	Systronics	Type 2201	Central Silk Board, Bangalore	2014

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PART V : DECLARATION / CERTIFICATION

It is certified that

- The research work proposed in the project does not in any way duplicate the work already done or being carried out elsewhere on the subject.
- The same project has not been submitted to any other agencies for financial support.
- 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).
- Necessary provision for the project will be made in the Institute in anticipation of the sanction of the scheme.
- If the project involves the utilization of genetically engineered organism, it is agreed that we will ensure that an application will be submitted through our institutional bio-safety committee and we will declare that while conducting experiments, the bio-safety committee we will declare that while conducting experiments, the bio-safety guidelines of the Department of Biotechnology would be followed in to.
- If the project involves field trials / experiments / exchange of specimens etc. we will ensure that ethical clearances would be taken from the concerned ethical committees / competent authorities and the same would be conveyed to the Department of Biotechnology before implementing the project.
- It is agreed by us 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 annex. - V.
- We agree to accept the terms and conditions as enclosed in Annexure - IV. The same is signed and enclosed.
- The Institute agrees that the equipment, the basic facilities and such other administrative facilities as per terms and conditions of the grant will be extended to investigators throughout the duration of the project.
- The Institute assumes to undertake the financial and other management responsibilities of the project.

1	Signature of Executive Authority of Institute with Seal Date :	
2	Signature of Principal Investigator Date :	Dr. Kanika Trivedy,
3	Signatures of Co- Investigators	
i.	Dr. Monica Chaudhuri	
ii.	Dr. V. Vijay	
iii.	Dr. R. Mahesh	
P.T.O		

PPS3600 Declaration/Certification Continue		
iv.	Mr. Anil Pappachan	
v.	Dr. R. Kar	
vi.	Mr. Sunil Kumar Mishra	
vii.	Dr. S. N. Gogoi	
viii.	Dr. Reeta Luikham	
ix.	Mr. Uttam Chandra Boruah	
x.	Ms. Mina Pamehgam	
xi.	Dr. L Somen Singh	
xii.	Mr. Simon Tshering Lepcha	
xiii.	Mr. Satyabrata Dey	
xiv.	Dr. Ghanshyam Singh	
xv.	Mr. Benedict Kumar Basumatary	
xvi.	Dr. Collins Z Renthlei	
xvii.	Mr. Bidyut Nath Choudhury	
xviii.	Dr. Lalthlamuana Pachuau	
xix.	Dr. Gangesh Bahadur Singh	
xx.	Dr. Anukul Borah	