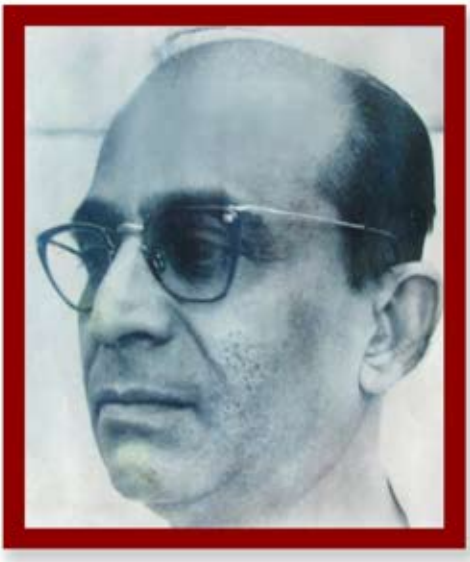
THE UNIVERSITY OF BURDWAN

INFORMATION BOOKLET

ON ACTIVITIES OF
CROP RESEARCH AND SEED MULTIPLICATION FARM (CRSMF)
TARABAG, BURDWAN



Professor Param Nath Bhaduri
Founder of CRSMF

The CRSMF of Burdwan University is sprawling Crop Research Farm covering 10 hectares of cultivated land situated in Tarabag Campus of the University established by famous geneticist and plant breeder Professor Param Nath Bhaduri FNA in the year 1965.

Since inception, lots of research activities funded by different authorities have been carried out with the help of researchers of different departments of this University. There is a farm laboratory to carry out and expedite the research activities. Moreover, from 2002, in collaboration with Department of Agriculture, Govt. of West Bengal, 'Foundation & Certified' seed programmes for Paddy, Mustard, Gram, Lentil and Moong were undertaken and still being run successfully. The programme was initiated with the support of Deputy Director of Agriculture, Govt. of West Bengal, Seed Certification Department, Govt. of West Bengal, Seed Corporation and Seed Testing Department, Govt. of West Bengal. The seeds produced by CRSMF are sold with trade name "Kishan Bandhu".These are in high demand and very popular among the growers and farmers all over the state including neighbouring states like Jharkhand and Bihar for its consistent quality and performance. We are extremely fortunate that all the officials from state department of agriculture, Government of West Bengal have extended their extreme support in this venture

The officials of CRSMF regularly visit –Central Rice Research Institute (Cuttack), Acharya N.G. Rang University (Andhra Pradesh), Rice Research Station (Chisurah), Central Potato Research Station (Jalandhar, Punjab) and Pulse & Oils seed Research Station, (Behrampur, West Bengal) to collect Breeders' seeds for multiplication program.

Mission & Vision:

1. To conserve the germplasm of traditional rice-varieties and Mango.
2. To promote the research activities related to cereals, oils seeds, pulses and horticultural plants.
3. To produce high quality seeds of cereals, oil seeds, pulses and vegetables.
4. To provide technical assistance, guidance and advice to the local farmers regarding package and practices, proper harvest and post-harvest technology of cereal, pulse, oils and vegetables seed multiplication in light of current development in agricultural scenario. For this purpose CRSMF organizes periodic seminars and workshops.
5. To develop cost-effective alternate farming system as well as crop nutrient management package through holistic approach.
6. Adoption of crop diversification technology.
7. To promote the use of Biofertlizers such as vermicompost, biocompost, Azolla, Blue Green Algae and ecofriendly fertilizers.
8. To promote the use of bio-pesticides and eco-friendly pesticides.
9. To provide quality potato seeds to rural Bengal.
10. To provide organic vegetables and sweet corn to different communities.
11. To publish quality literature, training manuals and videos in all above concern.
12. To maintain the biodiversity resources of University.
13. To motivate students in plantation and provide technical assistance and guidance.
14. Plantation of rare tree varieties, fruit plants and rare plants to rejuvenate the biodiversity of campus to support the fauna and microbial resources.

Seed Certification Programme

The process of seed certification includes the following steps:

i) Collection of Breeders' and Foundation seeds from authentic sources,

ii) Verification of source by the Department of Seed Certification,

iii) Registration of each variety for multiplication,

iv) Inspection by the Govt. Officers (thrice) during the growing season to verify whether specified control measures are followed.

v)Proper harvesting, threshing, sunning and processing of crops variety wise and bagging (temporary).

vi) Testing of seeds of each variety by the concerned department of Govt. and certification.

vii) Finally bagging and sealing with producer cards and as per Govt. regulations cards in presence of Seed Certification officer variety wise if recommended as "Certified" as per yard stick of certification norms.

Breeders and Foundation seeds are collected as per availability in each year since 2003 and also as per allotment made by the Government.

PADDY GERMPLASM CONSERVATION

Besides promoting high yielding varieties of paddy to cater the economic need of the farmers we have started conservation, multiplication and promotion programme for traditional and aromatic varieties in view of the soil quality, soil health and eco-friendly farming system. Awareness programmes and research activities have been raised by CRSMF in collaboration of different Government agencies, research institutes and researchers in our university. The main objective of the germplasm conservation of traditional varieties is to restore the valuable gene pool of paddy to develop future eco-friendly and sustainable varieties.

The aim is to meet the following:

1. To exploit the gene pool gathered from land races.
2. To minimize damage by major diseases and pests.
3. To tolerate adverse environmental, drought, adverse soil factors and excess water.
4. To increase yield in sustainable manner.
5. To increase the nutritive quality.
6. To promote the ecofriendly sustainable paddy cultivation system.
7. To provide scientific and technical assistance to the research communities, cooperatives and farmers through exposure visit, seminars and workshops.
8. To maintain the germplasm of land races in scientific manner, its proper documentation and proper DNA sequencing for users of all relevant disciplines.

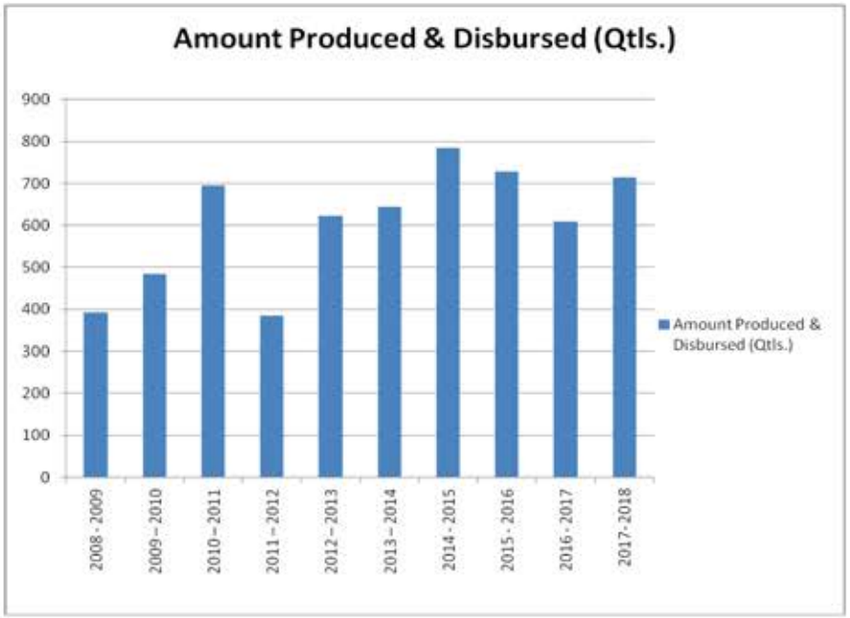
In view of the dissemination of traditional knowledge and motivating farmers a one day "**Awareness programme on cultivation practices of traditional and aromatic Rice**" at CRSMF, THE UNIVERSITY OF BURDWAN was arranged on 2nd January 2017 in collaboration with the Binoy Krishna Choudhury Rural Technology Centre. Over 10 experts from different universities & State Department of Agriculture guided 150 farmers in this programme.

We strongly acknowledge Dr. Madhab Chandra Dhara & Dr. Bijan Adhikary both the Joint Directors of Agriculture, Rice research station,
Chisurah for providing several traditional and aromatic rice varieties to us in this venture. Professor Adin Punya Mitra, IIT Karagpur has also provided several such rare varieties. Several personal collectors like Dr. Anjan Sinha & Sri Tapan Adhikary have also extended their help in this regards. Dr. Sitesh Chatterjee of Rice research station, Chisurah has also given his kind assistance to the users in this concern. We are now growing over 103 such varieties of paddy for quality seeds and conservation of germplasm as well.

Source of seeds and varieties under cultivation:

Sl.	Source	Varieties from different sources*
1.	Central Rice Research Station, Chisurah (Govt. of W.B.)	Traditional Rice varieties: Adansilpa, Asinlaya, Badsha, Bahurupi, Banskati, Bharati, Bhimsal, Bhudeb, Black-rice, Champakhusi,Chandrakanta, Chandrakanti,Chatuimukhi,-Dadkhani, Dadsal,Danaguri,Dangaptani,Dharansal, Dudhkalam, Dudheswar, Fulpagri, Gandheswari,Gangajali,Gokulsal,Jaladhi, Jhulur,Kabirajsal,Kartiksal,Kalma, Kalamkati, Kalobhat, Kalobora,Kalo Gandheswari,Kalobyar,Kalonunia,Kalma, Kanakchur, Katiksal, Kataribhog, Lal Dudheswar, Langalmuthi, Lal kauka, Lokdisal, Lakhindar, Mashuri, Medhi, Mugisal, Murkimala, Nikunja, Nugem, Nugenbaro, Nc-kalma, Pankh iraj, Panati, Patnai-23, Purnendu, Raghusal, Rupsal, Sabitri, Sankarsal, Satia, Sindurmukhi, Sitasal, Sonalu, Sorunagra, Sukhsal, Talmugur, Tusli mukul, Valki, and Vadisal etc. (71 varieties). Traditional Aromatic Rice Varieties: Badsabhog, Gandheswari, Gopalbhog, Gobindobhog, Jamainadu, Krishnabhog, Maliaphulo, Radhtilak, Randhunipagol, Sitabhog, Tulaipanji and Tulsibhog etc. (12 varieties). IR-36, IR-64
2.	Professor Adin Punya Mitra, Indian Institute of Technology, Kharagpur	
3.	Amarkanan Rural Socio environmen -tal Welfare Society(ARSW Society) Ranbahal, Amarkanan, Bankura W.B. 722133	
4.	Sri Tapan Adhikary	
5.	Central Rice Research Staion (Cuttack, Behrampur), Odisa	High Yielding Rice varieties: GB-1,GB-3, IET 4094 (Khitish) , IET 4786 (Satabdi), IET-9947 (Lalat), IET-22066 (Ajit),IR-36, MTU 1001(Vijeta),MTU 1010(Kottondora Sannulu), MTU 1121 (Sri Dhruti), MTU- 1153 (Chandra), MTU-1194, MTU-1210, MTU-1229, MTU 7029
6.	Acharya N G Rang Agriculture University, Rajendra Nagar, Andhra Pradesh	
7.	Orissa University of Agriculture & Technology, Odisha	
8.	Rajendranagar Agriculture university, Pusa, Bihar	Lal Swarna), Pratiksha, Rajendra Masuri, Rani, Sahabagi, and Swarna Sub-1, etc. (20varieties).
9.	Bidhan Chandra Krishi Viswabidyalaya, Nadia, West Bengal	
10.	Pulses and oilseeds Research Institute, Behrampur, West Bengal	Mustard : B-9 (Binoy), B-54 (Agrani) Lentil-Asha, Maitree Moong- Bireswar
11.	Central Potato Research Institute, Shimla	Kufri Jyoti, Kufri Chandramukhi, Kufri Himalini

Amount of Paddy seeds produced and disbursed in past 10 years:



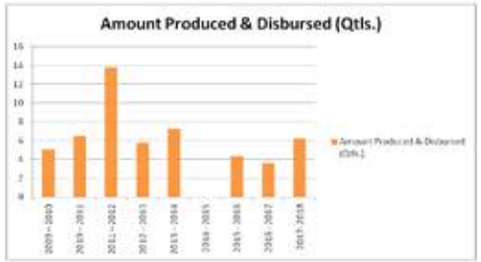
Over 1200 farmers are the regular users of our seeds. Following dealers and growers are our regular buyers:

i) A. B. Enterprise, Khanakul
ii) Akabpur Sammilani, Nadanghat
iii) Baradighi Seed Farm, Burdwan

iv) Bardhaman Seed Farm
v) Belari SKUS Limited, Bhatar
vi) Bisal Krishi Products (P) Limited
vii) Diamond Seeds, Bankura.
viii) Ganesh Seed Processing, Mirputa, Keshabpur, Madhabdihi
ix) Giriraj Seeds, Birbhum
x) Govt. Seed Farm, SAO Office, Burdwan
xi) Jamtara SKUS Limited (Ausgram)
xii) Jt. D.A. District Seed Farm, Burdwan.
xiii) Kalna II CADC, Kalna.
xiv) Katwa Block II Agriculture cooperative Marketing society
xv) Kishan Bandhu Seed Farm, Bankura
xvi) Kishan Green Field Agritech, Gotan
xvii) Kishan Sakti Seeds, Bankura.
xviii) Kuchut Union Cooperative Agriculture credit Society, Memari-2
xix) Krishi Bandhu Seed Farm, Kotulpur, Bankura.
xx) Krishi Rasayan, Kolkata.
xxi) Memari Vivekananda Krishik Sangha
xxii) Mukta Seeds, Bankura.
xxiii) M/S Bharat Seeds, Bankura.
xxiv) Nabanna Seeds, Raina, Bardhaman
xxv) New Rajlakshmi Seed Farm, Birbhum
xxvi) Pragati Seed Farm, Seharabazar
xxvii) Rajlakshmi Seed Farm, Sainthia, Birbhum
xxviii) Ruma Agrotech Private Limited,
xxix) Saktigarh Sahebganj Ancalik II SKUS Limited

The seeds are sold in the brand name “KISHAN BANDHU” duly approved by the Executive Council, University of Burdwan.

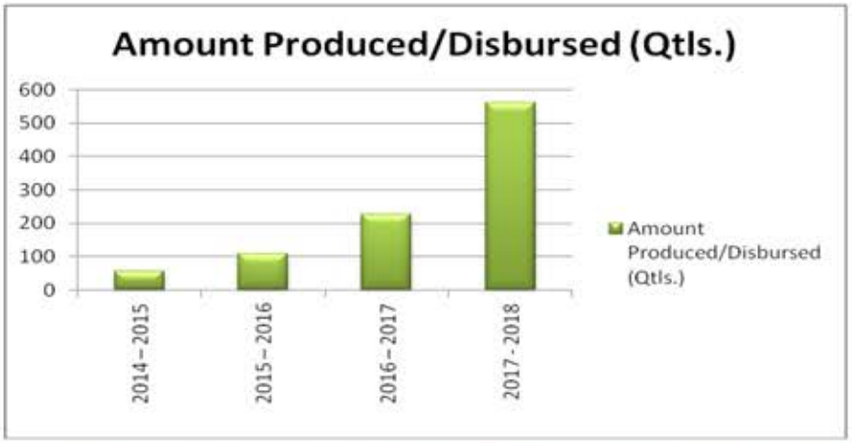
Mustard seed multiplication



Potato seed multiplication

We have started producing foundation seeds of Kufri Jyoti since 2014 under MoU with CPRI, Shimla. Presently two more varieties are being produce due to huge demand of the potato growing communities of West Bengal and neighboring states. These are Kufri Chandramukhi & Kufri Himalini. We have been able to produce Foundation and Certified seeds of potato under kind supervision of state agriculture authorities. Fortunately results are extremely promising. The tubers are now kept in cold storage and will be disbursed in October as per the guidelines of State Agriculture Authorities who will issue the foundation seed cards. We have the motto to ensure the right and scientific cultivation practices among the potato growing community of the region. Keeping this fact in mind several interactive programmes are arranged. Fortunately one such programme was arranged in presence of Dr. Asish Banerjee, Minister in Charge, Department of Agriculture, Government of West Bengal on 16th January 2018 at CRSMF, The University of Burdwan in our collaboration with CPRI, Shimla. In this occasion four scientists namely Dr. N. K. Pandey, Head Social Sciences, Dr. R. K. Singh, Head, Seed Technology, Dr. Binay Sagar & Binod Kumar from CPRI interacted with the potato seed producers of West Bengal in presence of dignitaries of State Department of Agriculture.

Potato Tubers Produced and disbursed since 2014:V



MANGO GERMPLASM CONSERVATION

We have established a germplasm conservatory of "Mango". In the mango conservatory (Amra Kanan) we already have introduced following 60 varieties of Mango: Albina, Alfanso, Alfanso (Ratnagiri variety), Aman Dasehri, Amrapali, Anaras, Banana Mango, Blue mango, Bhastara, Bira, Baisakhi, Bimli, Biswanath, Black Mango, Bombai, Champa, Chandan Khosa, Chatterjee, Chausa, Dasehri, Dhubani, Fazli, Golapkhas, Hapus, Himsagar, Jambo, Jardalu, Jharjhari, Kalapahar, Katamisti, Kesar, Kg Mango, Kishenbhog, Kohitoor, Kuija, Langra, Madhugulguli, Maharaj, Mallika, Megh Lonthon, Michirdana, Mohanbhog, Molamjam, Motichur, Neelam, Palmar, Piyarafuli, Pusa-Surya, Pusa-Arunima, Rajbhog, Rani, Ratna, Red Mango, Sadulla, Safeda, Sarenga, Sarikhas, Sweet Mango, Thai-Dwarf, Thai-Long, and Subarnarehka, etc.

Photograph showing "Amrakanan" (Conservatory and orchard)

1. Ripe Fruit of Palmar (a Thai variety of Mango over 500 gms in weight),	2. "Amrapali" in bunch

Use of Waste and Weed affected lands for cultivation of diversified and Multiple crops and their improved varieties.

We have huge waste land and weed affected land mass in our campus. To manage this we have adopted several strategies for welfare of the university fraternity and make effective examples to the society to combat this problem.

1. Introduction of new crops and improved varieties of crops.
2. Vegetable and fruit production.
3. Biocomposting.

Impact:

1. Crop productivity increased due to improved varieties
2. Enhancement of cropping intensity
3. Risk factor for failure of mono-crop reduced on diversification of crops.
4. Effective weed management.
5. Since the crops grown have different root levels effective nutrient management in soil occurs due to this.
5. Effective improvement in soil fertility due to the arrival of various microbial lives.
5. More income.
6. Employment generation.

Crop Nutrient Management

To promote the eco-friendly crop practices we have adopted several contemporary modern improved practices. Such as biocomposting, vermicomposting, Blue green Algae, microbial fertilizers, Azolla, green manures and alternate cropping pattern that includes always a leguminous crop etc.

Horticulture and Floriculture

We have a very good collection of ornamental, exotic and garden plants that includes Palms, Roses, Tuberose, Chrysanthemum, Lilium and Gladiolus etc. The orchard contains huge collection of fruit plants that are well maintained for the academic purpose and disbursement to different departments including local academic institutions. The objective is beautification, research, delight, educate and to inspire students towards plants.

Recently we have introduced Santa Cruz water lily (Victoria cruziana A. D. Orb.) to CRSMF. It is a water lily native to subtropical South America, where it is found in Argentina, Paraguay and Bolivia. The genus Victoria was named in honour of the UK's Queen Victoria (1819–1901). The specific epithet cruziana was given in honour of Andrés de Santa Cruz (1792–1865), President of Peru and Bolivia, who sponsored an expedition to Bolivia in which the first specimens of this species were collected.

It was planted on 19th May 2016 at CRSMF with the efforts of the authorities of Botanical Survey of India & The University of Burdwan under MoU. The leaves of the plant attain over 2 metres in diameter. The leaves may hold up to 75 kg of weight. Flowers are creamy white at anthesis and become pink in the evening.

Plant Nursery

We have developed a very good nursery for fruits, vegetables, flowering & forest trees and plantation crops. The plants are planted to different parts of the university, donated to esteemed organizations, schools, colleges and are sold to the public for revenue generation. The main motto is to create interest to the students for plants.

Amenities at CRSMF:

Our Farm is equipped with following amenities to support the genuine seed production, seedling, saplings and disbursement of knowledge to the interactive communities and academicians.

1. Paddy Processing Machine
2. Paddy Blower Machine
3. Seed Grader Machine
4. Potato Seed Grader
5. Air condition Godown
6. Green house
7. Laboratory and Seminar room for extension activities.

Air-Conditioned Seed Storage Godown

Potato Seed Grader

Paddy seed Grader

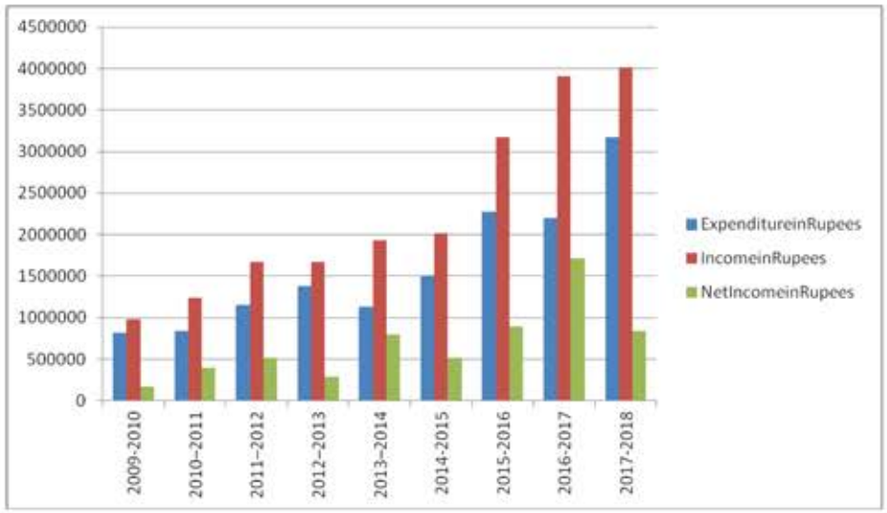
Paddy seed processing Machine

Paddy seed Processing Machine

Zero Tillage Machine

Statement of Income and Expenditure of CRSMF

CRSMF is also a source of fund generation of the University. It involves employment to the SC/ST/OBC communities and their training also. Following is the data for seven years.



Stakeholder engagement and experience sharing (arrangements, progress, effectiveness etc.)

1. **Line departments:** Department of Agriculture, different agriculture Universities and Agricultural Institutes.
2. **NGOs:** Linkage with local NGOs viz., local farmers etc. for technical support and extension of modern agricultural practice in old alluvial zone.
3. **Market:** Linkage with input market of growers, farmers for quality of input supply such as foundation seed, certified seed, good quality

Research Activities:

1)Facilities for research are always provided to the students of Botany, Zoology and environmental science departments as and when asked for.

2)Facilities (land and other inputs) are provided to the teachers of Botany, Zoology, Environmental Science and B.Ed. (Sc.) Department as and when necessary as per their proposal.

3)Facilities are also provided to the students (M.Phil.) of the University as per their request.

4)The unit separately undertook some adaptive trials with cultivars (new brought from OUAT (Orissa).

5)Adaptive trials on Jute undertaken by a teacher of the Department of Botany, Burdwan University during 2005-2006.

6)Ongoing trials of various crop species in research plots by research scholars from Botany and Environmental Science Departments.

7)Paddy Cum Fish cultivation practices and research.

FUTURE PROGRAMMES:

i) The Farm is interested in “Hybrid Seed” production for cereals, pulses and oilseeds.
ii) The Farm is interested to produce high quality potato and onion seeds.
iii) The Farm is plans to set up one state-of-art seed and soil testing laboratory.
iv) To maintain the germplasm of traditional rice-varieties and promote their cultivation to the farmers.
v) To set up a germplasm bank and conservatory in collaboration with ICAR and State Department of Agriculture, Govt. of West Bengal.
vi) Soil testing facilities for the farmers.

vii) Workshop for the farmers & growers in collaboration with the agriculture department of West Bengal.

viii) The farm is interested to make such demonstration plots those are included in land shaping technology e.g Farm pond technology, Ridge and furrow technology for integrated farming system.

ix) We have submitted proposal for research and training centre, establishment of shade net nursery and eco-friendly fertilizer production.

Workshop for farmers on aromatic rice, 2nd Jan'17:

Our Team

We have staff strength of six persons namely:

Anisul Ambia
Farm Assistant

Sarswati Singh
Helper Gr. II

Susanta Dutta
Sr. Darwan

Sk.Sarif Hossain
Sr. Darwan

Bhatu Hembrum
-Mali

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Photo Gallery

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