

### **3.3 Innovation Ecosystem**

#### **3.3.1 Institution has created an ecosystem for innovations including Incubation centre and other initiatives for creation and transfer of knowledge**

The University has created an appropriate ecosystem for Research and Innovation by recruiting & developing desirable human resource, taking initiative for creation and dissemination of knowledge and establishing state of the art infrastructure. The details are as under:

##### **1. Research infrastructure**

Excellent research infrastructure has been created, both through extramural sources such as DST-PURSE, DST-FIST, UGC-CAS, DBT, SPARC etc., and through intramural funding. The University have a Central Instrumentation facility funded by DST-PURSE. In addition all Science Departments have Central Instrumentation Facilities. There are excellent studios and workshops to facilitate creative research. All research set-ups are accessible to all the faculties and research scholars of the University and for outsiders ensuring optimal utilization.

##### **2. Human Resource Development:**

The University recruits dynamic & vibrant young faculty along with renowned distinguished experts at senior level to mentor and channelize the young students and scientists. The faculty members regularly up-grade themselves through various conference seminar and lecture series. Faculty members are granted leave and provided financial support to attend academic activities outside the University, in India and abroad. Details can be found in the SSR2 file (section 3.1.3; and 6.3.2).

##### **3. Networking and collaborations:**

To facilitate networking and establish multi-disciplinary and interdisciplinary research collaborations, the University regularly invites renowned scholars from India and abroad for lectures and discussions. The University has accorded honorary degrees and positions to academicians and eminent personalities. The University has also signed MoUs with other academic institutions both at national and international levels. For example, the Department of Physics have a DST funded multi-crore project in collaboration with European Organization for Nuclear Research (CERN), Geneva. The department also have Indo-Japan Collaborative Research programme under SPARC, MHRD. Department of Botany and Biotechnology have a collaborative research programme with Hungary, while Department of Environmental Science have a multi-institute project with UK. Department of Graphic Art have international collaboration with institute of fine arts-Chittagong University and Charukala-Dhaka University Bangladesh. Department of Physical Education & Sport Science have research collaboration with Canada. In additional faculties are regularly having different collaborative research programmed with institutes across the country as well as abroad. Details can be found in the SSR2 file (section 3.7.1).

##### **4. Eco system for innovations:**

Sangit Bhavana is a hub of innovative and high impact venture in social, educational and other domains. It acts as an incubation Centre to enable its

students to get first-hand experience in innovation driven activities of performing arts like composing music, choreographing dances and creating performance visuals. It provides a comprehensive and an integrated range of support including space, mentoring training and performance benefits. Kala bhavana have set up of non-toxic printmaking practice, avoiding/limiting the use of acids and toxic chemicals, which is of the unique and eco-friendly.

In addition, the University have adopted/initiated several innovative teaching/research programmes in inter-disciplinary, cross-disciplinary areas having societal impact so as to bridge the gap between rigid boundaries of physical sciences, life sciences, and social sciences.

Several research outcome of the innovative ideas by the faculties of the University are patented. Details can be found in the SSR2 file (section 3.4.3).

#### **5. Transfer of knowledge:**

This promotes and facilitates development and transfer of technology for societal benefit. At Santiniketan – in a tribal hamlet of Kaligunj and Pearson-Pally a self stand alone solar-biogas-hydrogen - integrated renewable power plant was setup with the multi-institutional project funded by DST (BURD) and RCUK-UK. Power is provided by integration of 4.5kW Solar PV and 5KW biomass generation system, in order to provide sustainable development. The knowledge was transferred to the stakeholders explaining them and giving them hands-on training on the utility of renewable energy and how to run the system. MoU was signed between Mahadal (Self Help Groups) and University before handing over the charge to the group for day to day running of the project site.

Rathindra Krishi Vigyan Kendra (KVK) was opened with an aim itself to disseminate the technology developed by the University particularly related to improvement of Agricultural practices directly to the farmers. The centre has catered to farmers of atleast 270 villages in Birbhum during the last five years. Farmers were provided with soil testing and soil health cards and many innovative and indigenous low-cost technologies were transferred to them. The technologies transferred cater to different aspects of agriculture in red laterite soil, poultry practices, kantha stich and many others.

Every year Institute of Agriculture comes up with well thought of theme for disseminating farm technologies. Some of the recent themes were, Integrated Farming, Sustainable Agriculture, etc.

#### **6. Community orientation and entrepreneurship :**

Cooperation with the local people, along with regional and global industries and entrepreneurs to facilitate the faculty and students to market their innovative research work. In this direction, several departments, particularly, Palli Samgathana Vibhaga (PSV), Life Long Learning and Extension, Social work, Rural Studies, Silpa Sadan and Yogic Science taken together have adopted several villages around the University campus with an aim of community development and rural restructuring in and around the institute.

PSV has developed around 40 village development societies, 12 Mahila Samities to make the village self-reliant. Regular women empowerment and women entrepreneurship programmes are organized to upgrade the socio-economic condition of the women folks. For sensitization of Entrepreneurship,

Community orientation, programmes like rural library services, community skill development, farmers awareness, health and education are also organized. Effort to create awareness to revive the traditional folk culture is also take on mission-oriented mode.

Vinay Bhavana undertakes community orientation programme to improve the physical and mental health of villagers. Various competitions like volleyball and football tournaments are conducted among different villages. Several social awareness programmes like fit India movement, yoga meditation and camps, health camps are also organized visiting nearby schools. Interaction with children are also practiced to help them develop their sports activities. For these purpose Cultural and athletic meet are organized frequently.

**Details of technology assessed /refined / generated by  
Rathindra Krishi Vigyan Kendra, Palli Siksha Bhavana, Visva-Bharati**

Technology	Relevance	Status of transfer	
<b>(A) Agriculture</b>			
i) Transplanting of <b>one seedling</b> /hill at 2-leaf stage (15-18 days old) with spacing of <b>30 cm X 30</b> cm and organic manure 10 ton/ha produced higher paddy yield and return without use of much water in summer seasons.	In Birbhum District <i>boro</i> paddy is generally cultivated depending on underground water causing depletion of water table. Random use of water, improper plant spacing and more seedlings per hill causes poor yield and net return.	-	To Line Department
ii) Seed treatment ( <i>Tricoderma viridi</i> 6 g./kg of seed) + Mancozeb (2.5g/lit at 20 DAS) + Metalaxyl - Mancozeb (2.5g/lit at 3 5DAS) + Dimethomorph - Metera(1g+3g/lit at 45 DAS) is recommended for higher production of Potato.	Sometimes, no seed treatment in Potato is done by the farmers. But, mostly the farmers use traditional pesticides for seed treatment. They are very reluctant to use recent Third Generation pesticides for Late Blight of potato.	To FLD	To Line Department
iii) The herbicides Metsulfuron-methyl + chlorimuron-ethyl (Sathi) @ 4 g a.i. /ha at 7-12 DAT fetched the higher BC ratio in kharif paddy.	Due to scarcity of labour, hand weeding in proper time is not possible in kharif paddy. Control of algal weeds, ferns, broad leaves is more laborious. Beside this, hand weeding is expensive which ultimately increase the cost of cultivation.	To FLD	To Line Department
iv) Soil Testing Based NPK management using the source of Urea, SSP and MOP produced higher yield and net return.	Imbalanced use of NPK particularly higher dose of nitrogen causes poor yield of yellow sarsoon under irrigated lateritic soil.	To FLD	To Line Department

v) Fenoxaprop-P-ethyl @ 60 ml a.i./ ha as early post emergence (15-20 DAS) significantly reduced the weed population and increased yield of summerblack gram	The farmers sow pulse seeds by broadcasting. After a few days weeds compete with the crop. No mechanical weeding is possible in broadcasted field.	To FLD	To Line Department
vi) Oat + lentil (1:1) food fodder intercropping system produced higher productivity of green fodder and fetched higher profit	Farmers are not willing to afford land for green fodder cultivation due to low crop productivity and profitability under sole fodder cultivation	To FLD	-
vii) Soil Test Based NPK application (Basal and topdressing) and Spraying of Micronutrient Zn, B and Mo as per requirement may be recommended for Sesame cultivation in post rainy season for lower flower drop, better pod filling and yield.	Low crop productivity due to low flower set and low pod filling of sesame in post rainy season	To FLD	To Line Department
<b>(B) Horticulture</b>			
i) 75:50:25 NPK Kg/ha + Vermicompost 75 qui/ha produced higher yield of broccoli.	Broccoli a high value vegetable cultivated during rabi season for good economic return. However, improper use of fertilizer the growth and yield performance are not up to the mark.	To FLD	-
ii) Indam-902 (bacterial wilt tolerant hybrid ) produced higher yield of brinjal.	Brinjal is very popular vegetable in Birbhum District during <i>rabi</i> season. The farmers are getting heavy loss due to infestation of bacterial wilt of brinjal	-	To Line Department
iii) Snow white (powdery mildew tolerant hybrid) produced higher yield of cucumber.	Cucumber cultivation in Birbhum District is very economical. But presently the farmers now incur heavy loss due to infestation of powdery mildew	-	To Line Department
iv) Super Helmate variety of early cabbage exhibited significantly higher yield	There is a high demand of early cabbage in the local market of Birbhum. Therefore, the farmers are interested to cultivate early variety of Cabbage for better market price.	-	To Line Department
v) Suminis-4151 (Early cauliflower hybrid) variety exhibited significantly higher	There is a high demand of early cauliflower in the local market of Birbhum.	-	To Line Department

yield than those of farmer's practice	Therefore, the farmers are interested to cultivate early variety of Cabbage for better market price		
vi) Soil Test Based Lime application @ 10% of the lime requirement will produce significantly better growth, yield components, yield and B:C in Garden Pea Cultivation through management of acid soil economically.	Due to lower soil pH (higher acidity), less flower and pod formation of Garden Pea is being noticed. According to farmers' practice, application of lime is not being performed. So yield of Garden Pea is low.	-	To Line Department
<b>(C) Live Stock</b>			
i) Nano form of micro-nutrient may be used for better performance of Black Bengal Goat.	No existing practice of supplementation of mineral for goat at farmers door step	To FLD	-
ii) Homemade feed Supplement (1.5 Kg /cow/day) may be used for economical production performance of Cross Breed Milch Cattle	Poor feeding practices and the low availability of quality feeds in unorganized dairy farming by small and marginal farmer.	To FLD	-
<b>(D) Poultry</b>			
i) RIR poultry bird is better than Vanaraja and Deshi poultry bird. Vanaraja can be a suitable alternative dual-purpose poultry bird under backyard management system.	The poor body weight, poor egg production and poor egg weight of rural deshi poultry birds	To FLD	To Line Department
ii) Application of probiotic and combination of probiotic and multiple enzymes acted beneficially on productive performance of broiler	Potential of antibiotic resistant strains of bacteria and transfer of antibiotic resistance genes from animal to human	To FLD	-
iii) Chlorine di oxide may be used for better performance in broiler chicken in the district	Poor drinking water quality of commercial broiler farm negatively affected performance	To FLD	-
<b>(E) Fishery</b>			
i) Proper and scientific Management of the Ponds along with the regular feed application of Rice bran (50 %) + M. O. C. (30 %) + Azolla (20 %) is being recommended for micro level fish farming situation.	To enhance the growth of fish, it has been found that aquatic weeds such as azolla, <i>Wolffia salvinia</i> or pistia, if added to rice bran and mustard oil cake can increase the quality of feed as these aquatic weeds supply a lot of protein and mineral to the simple feed.	-	To Line Department

ii) Application of Yeast (2%) + Cobalt Chloride (0.1%) + Scientific feed in the nursery pond increased significantly the survival rate and also increased the early growth (fry stage) at 30 days.	The survival rate of fish spawn is low in the nursery ponds and as well as rearing ponds. The farmers do not apply regular scientific fish feed supplemented with growth promoters.	To FLD	-
iii) Lime (@10 kg / 0.13 ha) + Terramycin (@ 5 - 7 gm. / 100 kg. of Fish Feed) significantly reduced the spread of ulcerative disease of Fish	Rapid spread of ulcerative disease due to absence of right selection of medicine for the disease	To FLD	-
<b>(F) Intergrated Farming System</b>			
i) Composite fish culture (IMC, prawn) + Poultry farming (RIR and Black Australorp 150 nos) + Pulses (Redgram- Blackgram) exhibited higher profit	Lack of knowledge in integration of components in proper way for maximum profit	-	To Line Department
ii) Composite fish culture (IMC) + Duck farming (Khaki Campbell 21 nos) + <i>Azolla</i> + Pulses (Redgram- Blackgram) exhibited higher profit	Lack of knowledge in integration of components in proper way for maximum profit	-	To Line Department
<b>(G) Agricultural Extension</b>			
i) Experiential Learning should be used as Training Method for Skill Development trainings as far as possible.	The selection of appropriate Training Methods is important for an effective learning. The Training Methods refer to a combination of various instructional media used for conducting the Training to achieve the learning objective efficiently and effectively.	-	To Line Department
<b>(H) Women Empowerment</b>			
i) Vegetables Stored in Modified Earthen Pot Cool Chambers performed significantly better in minimum loss of weight during all the date of observation for all the vegetables	In Semi-Arid Red Lateritic Zone situation of Birbhum District, due to extreme hot climatic conditions, vegetables get spoiled very quickly especially in the absence of proper storing system. In addition to this, the villagers can avail fresh vegetables once in week from the Weekly Haat held at their villages.	-	To Line Department

## Picture of Technology assessed



**Few technologies that have created impact in sizable areas**

Sl. No .	Name of the Technology	Brief Details of Technology	Net Return to the farmer (Rs.) per ha per year due to the technology	No. of farmers adopted the technology in the district
1	Cultivation of Kharif Oilseed Crop Sesame, Var. - SWB-32-10-1 (Sabitri)	<p><b>Variety:</b> - Seeds of Improved Variety SWB-32-10-1 (Sabitri) @ 6 kg. / ha  <b>Herbicide application:</b> - Application of herbicides Pendimethalin @ 3 lit. / ha at 1 - 3 DAS.  <b>Sulphur application</b>  <b>Micro-Nutrient Spray:-</b>Foliar Spray of Micro-Nutrients: - Zn EDTA @ 1 gm. / lit. of water at 25 and 45 DAS.</p>	Rs. 33,265 .00 / ha. / Annum	216
2.	Crop Diversification through Cultivation of High Value Low Volume Vegetable viz. Broccoli	<p><b>Spacing:</b> 2.0 feet x 2.0 feet  <b>Time of Planting</b> - August – October  <b>Seed Treatment</b> – Treated with 2 - 2.5 gm Thiram / litre of water.  <b>Application of Manure per hectare</b> – Compost- 20-25 ton; 160 (100 + 60) kg Urea; 550 kg SSP; 170 kg MoP  <b>Application of Micro-nutrients</b> - 1 - 1.5 kg Molybdenum and 20 kg. Sodium borate per hectare before planting</p>	Rs. 1,52,500.00 / ha. / Annum	107
3.	Jute based Rural Handicrafts	<p><b>Improved Techniques:</b> - Decorative Use of Jute for producing Pen Stand, Decorative Horses, Statues of Lord Buddha, Flower Vases, many other customized products as per the needs and creative demands of the customers.  <b>Materials:</b> - Jute, Gums, Hard Boards, Coloured Beads, Coloured Jutes etc.  <b>Designs:</b> - As per the requisite product.  <b>Plan of Works:</b> - At first design drawing is done, then a Mould is made with Paper based on that drawing, then Jute or Jute Threads are attached on the Paper mould with adhesive and finally it is decorated with Coloured jutes and or Coloured Beads.</p>	Rs. 72,000 .00 / Annum	29



4	Modern Kantha Stitch Works	<p><b>Improved Techniques:</b> - Traditionally "Kantha Stitch" Design was used on wrappers but now its shape, size are modified with Coloured Threads so that it can be used on dress designing and accessories like Side Bags, Bags, Sharee, Shirts, Pujabees, Blouse Piece, Top, Kurti etc. giving it a further value addition.</p> <p><b>Materials:</b> - Cloth, Thread, Tracing Paper, Carbon Paper, Different Sized Frames, Different Sized Needles etc.</p> <p><b>Designs:</b> - As per the requisite product and Consumer's preference.</p> <p><b>Plan of Works:</b> - At first the design is drawn on a Plain Paper, then the impression of the Design is put on the Clothe with the help of Tracing Paper or Carbon Paper and then according to the design, the "Kantha Stitch" Work is carried out on the Clothe by different coloured Threads.</p>	Rs. 96,000 .00 / Annum	<b>1000</b>
5.	Introduction of Giant Prawn ( <i>Macrobrachium rosenbergii</i> ) as A New Component of Composite Fish Culture	<p><b>Pond Preparation:</b> - Bottom pond muck is to be removed and liming @ 10 – 15 kg. / 0.13 ha. Manuring is to be done with Cowdung @ 2 – 3 Quintals / 0.13 ha. SSP is to be given @ 10 kg. / 0.13 ha.</p> <p><b>Water Quality Management:</b> -pH. is to be maintained within a range of 7.5 to 8.0 through liming.</p> <p><b>Fish Feed Management:</b> - Rice Bran, Groundnut Oil Cake, Fish Meal and Dry Yeast Powder in the ratio of 50: 30:10:10 respectively @ 3 – 5 per cent of Total Body Weight of the stocked Fish and Prawn.</p> <p><b>Aeration Technique:</b> - Through using 0.5 HP – 1.0 HP Pump daily @ 2 hours / day.</p> <p><b>Fish Health Management:</b> - Use of Potassium Per Manganate (KMnO<sub>4</sub>) @ 150 grams / 0.13 ha / month and Aquahealth @ 100 ml. / 0.13 ha. / 3 Months Interval.</p>	Rs. 3,40,0 00.00 / ha. / Annum	<b>35</b>
6.	Proper blending of Technologies and Products for Scientific Dairy farming	<p><b>Crossbreeding and Breed up-gradation through Artificial Insemination (A. I.)</b> in cattle is the most suitable and economical technique for generating higher genetic and production potential.</p> <p><b>Conscientious heat detection,</b> detection of oestrous by fern pattern of cervical mucus and proper timing of insemination is ensured.</p> <p><b>Crossbreeding in indigenous low producing cattle with superior germplasm</b> influences the genetic potential</p>	Rs. 4,88,4 00.00 / A Dairy Unit consisti ng of 25cows (15 crossbr eed and 10 upgrad	<b>25</b>

		<p>of the crossbred so born. The age at puberty have been attended at 2 to 2.5 years of age.</p> <p><b>All the female calves have to be fed properly</b> from the beginning of the birth so that they attain desired body weight and maturity at an early age.</p> <p><b>Cultivation of green fodder and feeding the Cattles with area specific mineral mixture are ensured.</b></p> <p><b>The traditional feeding practice is to be modified</b> by providing mineral mixture, concentrate and green forages and formulation of low cost feed.</p> <p><b>After parturition animals usually always come to heat up to 2- 2 1/2 months.</b></p> <p><b>Proper vaccination and medical check-up</b> schedules and medicine regimes are to be followed.</p>	<p>ed deshi Cows) + 20 Calves / Annum</p>	
7.	<p>Production enhancement through improved backyard farming utilizing Improved Poultry Breeds viz. Vanaraja and Rhode Island Red (RIR)</p>	<p><b>Backyard poultry farming with rural improved breeds.</b></p> <p><b>Breed up gradation</b> by crossing these two breeds viz. Vanaraja and Rhode Island Red with local birds.</p> <p><b>Hatching of eggs of both Vanaraja and Rhode Island Red by using local hen.</b></p> <p><b>Supply chicks and fertile eggs</b> of improved rural poultry breed.</p> <p><b>Construction of a low-cost poultry house</b> made of locally available materials, such as bamboo and wood as night shelter and to protect the birds from predators.</p> <p><b>Birds are to be let loose as free-range scavenging for utilizing the feed base</b>, i.e., fallen grain, insect, earthworm, kitchen waste, green grass etc. with supplementary feeding of concentrate mixture prepared by the locally available feed resources.</p> <p><b>Almost one fourth of the amount of concentrate mixture may be replaced by Azolla (<i>Azolla pinnata</i>) and vegetables like Kalmi(<i>Ipomoea aquatica</i>) and Spinach (<i>Spinacia oleracea</i>) etc.</b> as per suggestion of the Scientists.</p> <p><b>De-worming and vaccination</b> of birds are to be done as per the standard protocol with technological backstopping by the Scientists. On the advice of the Animal Science Scientists administration of the F<sub>1</sub> LaSota and R<sub>2</sub>B Vaccines against Ranikhet Disease and IBDV Intermediate Strain Vaccine against Gumboro disease are to be done.</p>	<p>Rs. 63,265 .50 / Batch / Unit of 20 Numbe rs of Deshi Birds + 20 Numbe rs of Rhode Island Red Birds + 20 Numbe rs of Vanara ja Birds / Annum</p>	65

8.	Low Cost Commercial Vermin-Composting Unit	<p><b>Earth-Worms(<i>Eisenia foetidae</i>)</b> are being used.</p> <p><b>Low cost pits</b> built-up with mainly bare bricks covered Polythene Sheets are to be used.</p> <p><b>Organic farm and domestic wastes</b> along with cow dung are to be used as compost culture media.</p> <p><b>Regular optimum watering of compost media</b> is to be ensured.</p> <p><b>Sieving and packaging of usable Vermin-Compost</b> is done as and when necessary.</p>	Rs. 85,714 .00 / Annum	<b>51</b>
9.	Feeding of Quality Green Fodder both Leguminous and Non-Leguminous to Milch Cattles	<p><b>Recommended Package of Practices for Fodder Cultivation</b> such as Land Preparation, Fertilizer Application, Timely Sowing, Fertilizer Application, Irrigation Scheduling, Integrated Pest Management Practices and Harvesting Schedules.</p> <p>Short Duration Varieties of Fodder Crops viz. Maize, Cow Pea etc. between two seasonal crops.</p> <p>Cultivation of Cereal Fodder Crops like Maize, Sorghum, Oat etc. with Fodder Legumes like Cow Pea, Berseem etc.</p> <p>Cultivation of Multi-Cut Varieties of Fodder Crops at regular intervals to get optimum production.</p> <p>Legume and Non-Legume Fodders should be mixed in 1: 3 ratio.</p> <p>For lactating Crossbred Milch Cows, the production ration contains 1.25 + 1 kg concentrate per 2.5 kg Milk Production and requires 25 to 30 kgs. Green Grasses when Green Grass is plenty.</p> <p>For lactating Deshi Milch Cows, the feed schedule consists of 1 + 1 kg. Concentrate per 2.5 to 3.0 kg Milk Production with up to 20 kg. Fodder feeding.</p> <p>Every 10 kgs. Fodder feeding will reduce 1 kg. Concentrate feeding and thus reducing the cost of inputs.</p>	Rs. 54,850 .00 / Cow / Lactation	<b>169</b>

#### 10. Soil Testing and Soil Health Cards Issued

Inputs	2015-16	2016-17	2017-18	2018-19	2019-20	Total
Soil Samples tested	666	81	219	97	72	1135
Soil Health Card issued	666	81	219	97	51	1114
No. of Farmers benefitted	666	81	219	97	72	1135

**Distribution of Soil Health Card by Sri Chandra Nath Singh, Honourable Minister of Fishery, Govt of West Bengal, in presence of Honourable Vice Chancellor, Visva-Bharati**





## রথীন্দ্র কৃষি বিজ্ঞান কেন্দ্র

পল্লী শিক্ষা ভবন, বিশ্বভারতী  
শ্রীনিবেশ, বীরভূম-৭৩১২৩৬, পশ্চিমবঙ্গ



রথীন্দ্র নাথ ঙ্গ  
১৯৩৬-১৯৯৩

### সম্মেলন স্বাস্থ্য কার্ড

মাটির স্বাস্থ্য সংক্রান্ত বিবরণ পত্র





পল্লী শিক্ষা ভবন  
বিশ্বভারতী

!...তার লগ্নে স্বাধীন স্বপ্ন। সে স্বাধীনতা আন্দোলন  
আন্দোলন। এই স্বপ্নে সেই স্বপ্নের স্বাধীনতা  
আন্দোলন। অস্বাভাবিক মৃত্যু। প্রতিদিন তার  
দেশে অস্বাভাবিক হলে স্বাধীনতা স্বপ্নে। .....  
— রথীন্দ্র নাথ ঙ্গ

ঐ কৃষি অঙ্গুরণের মত, কিন্তু অক্ষয় দিল্লী যোগেন্দ্রনাথ অকস্মিক (Y. Chandra) হয়ে পাশ্চাত্য  
এইকক্ষ অক্ষিত প্রাণই দেখা যায় সে, হঠাৎ অকস্মিক অকস্মিক হোক স্বাধীনতা স্বপ্নে।  
যেইটা ছিলোই অস্বাভাবিক হোক অস্বাভাবিক হোক। .... স্বাধীনতা স্বপ্নে, স্বাধীনতা স্বপ্নে  
স্বাধীনতা স্বপ্নে অস্বাভাবিক হোক স্বাধীনতা স্বপ্নে, স্বাধীনতা স্বপ্নে স্বাধীনতা স্বপ্নে স্বাধীনতা স্বপ্নে  
স্বপ্নে স্বপ্নে স্বপ্নে।  
.... রথীন্দ্র নাথ ঙ্গ

<b>International Year of Soils</b>  2015		<b>Healthy Soils for a Healthy Life</b>
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## Enhancing Farm Income by manifold through cultivation of Ekangi (*Kaempferia galanga*) - a Medicinal Plant while Searching for Crop Diversification

It is also known as aromatic ginger, kencur etc. cultivation of Ekangi (*Kaempferia galanga* L.), a medicinal plant was initiated by the Rathindra KVK (RKVK) in the Kartikdanga village in kharif season, in mono cropped paddy area as crop diversification programme. Ekangi has several medicinal properties. Its rhizome powder is used as appetite enhancer, stomach-ache. The rhizome extract is largely used as liminant for rheumatism, repellent of mosquito and nematode against *Melidogyne* in wheat. Before cultivation of Ekangi they cultural paddy variety MTU-7029 and earned net return of Rs. 22,500.00 per ha in their rainfed mono cropped area with B:C ratio of **1.82**. After crop diversification with Ekangi cultivation initiated by RKVK the net return was Rs. 7,47,500.00 to 8,75,000.00 per ha B:C ratio of **6.03 to 6.3**. Vertically yield has been increased to 16 % for 2016-17 to 2017-18. The practice is now spread to 7 villages in another 30 farmers of surrounding 3 other blocks of the district.



Ekangi (*Kaempferia galanga*) Cultivation as crop diversification for doubling farmers income- an initiative taken by RKVK, Birbhum, W.B- a Success story



### Development of innovative Low Cost Resource Conservation Technologies

Birbhum District is in the red lateritic zone of the State of West Bengal with erratic and deficient rain-fall especially in the Rabi Season and having a soil structure with less water holding capacity. Low Water Use Efficiency of Boro Paddy subsequently gives rise to increased irrigation cost and depletion of ground water resource for the cultivation of Paddy (especially in Rabi Season) and decreases the net return.

**Description of Innovative Practice / Technology:** - SRI is an acronym for System of Rice Intensification. This is an improved method of rice cultivation. It helps in marking the plot before transplantation and ensure wider spacing among rows and allows enough sunlight to reach the leaves of each rice plant thus

reducing competition for water, space and nutrients resulting in the spread of roots and healthy growth of plants.

RKVK have developed an adjustable Plant Spacing of Paddy Seedlings (25 cm X 25 cm and 30 cm X 30 cm) using the Innovative Portable SRI Marker that can mark 4 rows of Paddy Seedlings. This Innovative SRI Marker is light weight, made of locally available GI pipes and iron rods thus making it cost effective (Rs. 2,400 only). The maintenance cost is also low. This Implement is a labour and time saving device. It is to be noted that the Cost of transplanting 1 ha area using this implement is Rs. 2,730.00 (cost of Labour and Seeds); while the cost of transplanting 1 ha area in traditional method is Rs. 6,300.00 only (cost Labour and Seeds). The savings using this Innovative Implement is Rs. 3,570.00 which is higher than the actual cost of the Implement i.e. Rs. 2,400.00 only. So this Innovative Portable SRI Marker is highly economic and viable in the field level functioning. This Innovative Portable SRI Marker is highly economic and viable in the field level functioning.



### **Transplanting after marking with Innovative Portable SRI Marker**



## Innovation in poultry production by RKVK farmer

<b>Thematic area</b>	Poultry Production
<b>Name of the Innovation</b>	Handmade Low Cost Manual Incubator
<b>Details of Innovator</b>	Sri Ershad Molla, Village + P. O. – Sattore, Pin. – 731236, Dist. – Birbhum.
<b>Back ground of innovation</b>	Sri Ershad Molla has got the idea of a Low Cost Manual Incubator for Poultry egg hatching through technical inputs and knowledge and skill acquired from the Scientist Rathindra KVK in the year 2017-18 and he proceeded to build up that incubator in the same year at a total expenditure of Rs. 35,000.00 (Rupees Thirty Five thousands) and started egg hatching in 2018-19.
<b>Technology details</b>	Hand-made incubator (operated by both Main Line Electric and Inverter current) of 700 egg hatching capacity with around 8 cycles in a year.
<b>Practical utility of innovation</b>	<p>(a) According to the needs of the villagers, he operates the Incubator and achieves up to 8 cycles per years.</p> <p>(b) The farmers get the opportunity to procure Chicks or Ducklings of RIR, Deshi Duck and Khaki Campbells as per their own needs at the door step at reasonable price.</p> <p>(c) Sri Ershad Molla earns around Rs. 10,000.00 (Rupees Ten Thousands) per month with 700 egg hatching capacity of the incubator.</p> <p>(d) Normally Sri Molla buys egg for hatching at the rate of Rs. 12 per egg from the State Govt. Poultry Farm of West Bengal and also from the Rathindra KVK trained farmers of Birbhum District and sells at the rate Rs. 30 per Chick or Duckling</p>





**Cluster Front Line Demonstration (CFLD) Programme on Pulses and Oilseeds** started during winter season of 2015 throughout the country. It was a great idea of Honorable Prime Minister of India. The objective is to increase production and productivity of Pulses and Oilseeds using recent technologies. The price of pulses and oilseeds in the Indian market will not be hiked. Thus, the import of Pulses and Oilseeds are reduced and lots of foreign money has been saved.

**Activity of Rathindra KVK on CFLD during 2015-16 to 2019-20**

Year	Area covered (ha.)	No. of farmers benefited	New Technologies Introduced
<b>2015-16</b>			<b>New varieties:</b> <u>Pulses:</u> Blackgram- WBU-109, PU-31 Green gram- IPM 02-03, Samrat Chickpea- Anuradha, JAKI-9248 Lentil- WBL-77, HUL-57 Field Pea- Rachna, Provat  <u>Oilseeds:</u> Mustard- NC-1, NRCHB-01-01, YSH-04-01 Linseed- Deepika, Sekhar Sesame- Savitri, G-2 Groundnut- Dharani  <b>Micronutrient:</b> Zn EDTA and B-20 spray <b>Herbicide:</b> Pendimethalin and Whipsuper
Pulse	80	460	
Oilseeds	103	289	
<b>Total</b>	<b>183</b>	<b>749</b>	
<b>2016-17</b>			
Pulse	100	388	
Oilseeds	100	269	
<b>Total</b>	<b>200</b>	<b>657</b>	
<b>2017-18</b>			
Pulse	90	505	
Oilseeds	130	415	
<b>Total</b>	<b>220</b>	<b>920</b>	
<b>2018-19</b>			
Pulse	100	546	
Oilseeds	55	334	
<b>Total</b>	<b>155</b>	<b>880</b>	
<b>2019-20</b>			
Pulse	40	208	
Oilseeds	130	608	
<b>Total</b>	<b>170</b>	<b>816</b>	
<b>Grant Total</b>	<b>928</b>	<b>4022</b>	





### **Transfer of Knowledge - INDO-UK BURD Project, Funded by DST, New Delhi, India**

#### **Development and Integration of Biomass and CPV System: BioCPV (2013-2017)**

At Santiniketan – in a tribal hamlet of Kaligunj and Pearson-Pally a self-stand alone solar-biogas-hydrogen - integrated renewable power plant was setup with the project funded by DST (BURD) and RCUK-UK. Power is provided by integration of 4.5kW Solar PV and 5KW biomass generation system. The demand profile of 9.5 kW includes lighting, fans (only at Primary health centre), a mobile phone charging station, in order to provide sustainable development through improving the conditions for education and healthcare for 12 families. This work is in collaboration with consortium of academicians from UK (3 universities, University of Leeds/Sheffield, UK, University of Exeter, University Nottingham) and India (Visva-Bharati, IITM and IIT-B).

- Multiple meetings conducted with all the stakeholders for transfer of knowledge on the utility of renewable energy and to run the system in the project site.
- Hands-on training was also imparted to the members of the Tech. group, which was formed involving the educated youths from the community.
- MoU was signed between Mahadal (Self Help Groups) and University before handing over the charge to the group for day to day running of the project site (Front page of MoU provided below)
- All the technical help for successful and smooth running of the project has been promised by Visva-Bharati authority from time to time.

Sl. No. 941 dt, 18/03/16

ANNEXURE - (A)

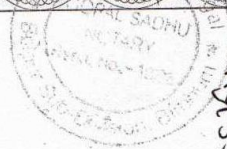


पश्चिमबङ्ग पश्चिम बंगाल WEST BENGAL

*Shandhu*

*Amrit Kumar Hazra*

*Prakash Chandra*



*Banaraj Kumar*

*Sukal Mondal* V. 191601

**Memorandum of Understanding**

**MEMORANDUM OF UNDERSTANDING BETWEEN DEPARTMENT OF ENVIRONMENTAL STUDIES (DES), VISVA-BHARATI AND ADIBASI MAHADEL, REGISTERED SOCIETY UNDER W.B.S.R.A, 1961 HAVING REGISTRATION No. S/1L/50814 FOR THE TRANSFER OF RIGHTS FOR THE OPERATION AND RUNNING OF RENEWABLE ENERGY GENERATION SYSTEM [SOLAR PHOTOVOLTAIC (PV) AND BIOGAS FROM ANAEROBIC DIGESTER (AD) UNDER INDO-UK BURD PROJECT ENTITLED "DEVELOPMENT AND INTEGRATION OF BIOMASS AND CONCENTRATING PHOTOVOLTAIC SYSTEM FOR RURAL AND URBAN ENERGY BRIDGE - BioCPV" FUNDED BY DEPARTMENT OF SCIENCE & TECHNOLOGY, GOVT. OF INDIA VIDE LETTER: DST/SEED/Indo-UK/002/2011/VBU**

Place : Santiniketan

Date: 18/03/2016

This MoU has been signed on this 18th date of March 2016, Friday between Department of Environmental Studies (DES), Visva-Bharati, Santiniketan, duly



The instrument is verified  
&  
Authenticated

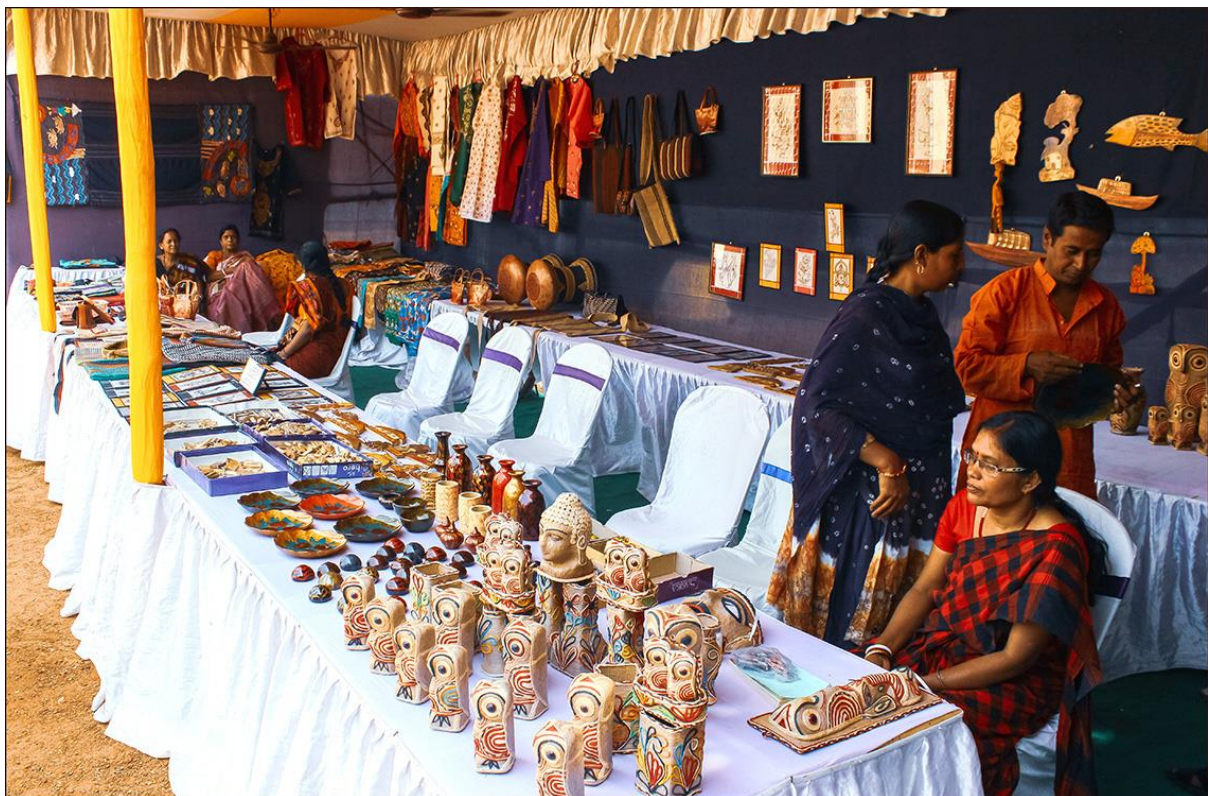
*Broja Gopal Sadhu*  
BROJA GOPAL SADHU  
NOTARY  
BOLPUR, BIRBHUM  
GOVT. OF W.B. REGN. NO. 10198  
18/03/16

## **COMMUNITY ORIENTATION AND ENTREPRENEURSHIP PROGRAMME**

### **Palli Samgathana Vibhaga (PSV)**



**Promoting and creating awareness of the traditional art forms**



**Crafts Mela for promoting entrepreneurship**



**Children's day celebrations**



**Sandipur Village development committee**



**Women's Self Help Group convention**



**Swachhta Abhiyan Awareness at nearby villages**

**Vinay Bhavana (Physical Education)  
Women Football tournament**



### Inter village football tournament



### Inter-village Volley Ball tournament



**Fit India programme:**



**Interaction with nearby school for healthy India:**





**Karate demonstration**





## Cultural and athletic meet



**Rathindra Krishi Vigyan Kendra (KVK)  
Refresher course for Grass Root level Extension functionaries**





**Training Programme on Azolla Production**



## Training on Vegetable nursery bed preparation



## Training programme on Pradhan Mantri Fasal Bima Yojana



Animal Health Camp



### Entrepreneur development program

Year	No. of Training Programmes	Total Duration (days)	Impact				
			Total	Type of units	No. of units	No of persons employed	No. of persons employed elsewhere
<b>2015-16</b>	07	126	106	Large Scale Vermi-compost Unit, Horticultural Nursery, Para-Extension Service Provider, Soil Analysis and Soil Health Card Preparation Unit, Rural Poultry Units, Private Para-Vets, Fish Hatchery	30	60	46
<b>2016-17</b>	08	177	178	Horticultural Nursery, Soil Analysis and Soil Health Card Preparation Unit, Para-Vets, Jute based Handi-Crafts, Fish Hatchery, Fish Hatchery, Mushroom Production Units, Animal Health Service Provider	52	72	74
<b>2017-18</b>	04	81	87	Mobile Soil Testing Units using Kits, Quail Farm, Piggery, Para Extension Worker	35	35	08
<b>2018-19</b>	04	101	90	Units for preparing Organic Inputs like Vermi-Compost, Azolla, Earth Worms etc.; Fish Hatcheries; Goat Farms; Para Extension Worker	46	46	34
<b>2019-20</b>	07	106	146	Yet to be established	-	-	-
<b>Total</b>	<b>30</b>	<b>591</b>	<b>607</b>		<b>163</b>	<b>213</b>	<b>162</b>

### Mela and Festivals organized with an aim towards Community interaction and Entrepreneurship

The University organizes a large number of cultural events, ethnic gathering and fairs following the principles of its founder that help the rural people around the University campus and also develops entrepreneurship capabilities among the students. Some of them are:

## Poush Mela

Pous Mela is an annual fair and festival that takes place in [Santiniketan](#), marking the harvest season and commence on the 7<sup>th</sup> day of the month of [Poush](#). The key feature includes live performances of Rabindra Sangit, [baul](#), [kirtan by artists across the country and display of handicraft and rural and government stalls](#).

The history of Poush Mela coincides with the ceremonial opening of the Upasana Griha (Prayer Hall) of Santiniketan. The opening day celebration of the Bhramha Prayer Hall in Santiniketan was held on 21 December 1891 (7th Poush 1298 of Bengali Calendar). In 1888, the Santiniketan Trust Deed was drawn; provision was made for a Mela. The Poush Mela formally started in 1892, 7th Poush in front of the ground of North side of Brhma Mandir. As the mela increased in size, it was shifted to the field in Purba Pally.

The basic intention at that time was to create a platform of interaction between the rural community and the rather well educated followers of Brahmanism who gathered at Santiniketan on this auspicious day. The villagers were allowed to showcase and sell their products and the Poush Mela authorities provided with added entertainments of elaborate firework sessions, Jatra Palas (popular open air theater) folk music renditions etc. A pure ceremonial religious meet to deliberate and perhaps propagate Brahmanism on 7th Poush charted a new course of interacting with rural people and tribal folks surrounding Santiniketan.





## **Nandan Mela**

Nandan Mela, the art fair, organized by Kala Bhavana in its campus, on 1st and 2nd December every year before the birthday of Nandalal Bose, to commemorate his birth anniversary. Nandalal Bose took charge of Kala Bhavana in 1922 and is considered to be the man who shaped the institute. The master-artist believed that a holistic structure to the practice and teaching of art was necessary for a healthy society, and he endeavored to bridge the gap between the fine arts and the living traditions. He proposed a revival of indigenous art languages for a newly independent India, and for sharing our practices with the public. Thus he aimed at rescuing art from hermeticism, and making it socially relevant. In his book *Vision and Creation* he emphasized on the importance of having an annual art fair for the community people. Way back in 1973, Nandan Mela was first conceived as an occasion to raise funds for student's welfare. The entire proceedings from the mela (fair) go to the Kala Bhavana Students' Aid Fund.





### **Rathindra Mela**

The students of Palli Samgathana Vibhaga, Sriniketan, for last few years, have been organising a fair on 27<sup>th</sup> November commemorating the birth anniversary of Rathindranath Tagore, son of Rabindranath Tagore. The students' display and sale different items that they learn and prepare during the course curriculum.



### **Ananda Mela**

A small colorful fair is organised by the students of Visva-Bharati at Gourprangan on the day of Mahalaya before the long holidays for Sarod Utsav (Puja holiday). This fair is known as Ananda Bazar. The profit earned from the sales proceeds from this fair go towards a Fund used for charity.



**Sriniketan Utsav (Magh Mela):**

In the year 1922, Rabindranath Tagore established Sriniketan – the rural center for folk culture and cultivation of rural activities, near Santiniketan. Sriniketan Utsav or Magh Mela along with an exhibition was formally started on 23rd Magh, 1328 of Bengali Calendar (6th February 1922). To mark the foundation day, a fair is organized every year on 23- 25 Magh (6-8 February) at Sriniketan. Fair is based on agricultural products grown in a scientific way, equipment as well as the rural handicrafts. Functions of folk culture are the other attractions of Sriniketan Utsav.



### **The Context**

*Magh Mela*, a Village Fair being held during 6-8 February every year since the time of Gurudev Rabindranath Tagore. The main objective of holding this Mela is to bring village dwellers, farmers, rural artisans and scientists and practitioners in a common ground to expose villagers to the latest technological aspects of farming and other rural enterprises and vocations as well as to provide the rural artisans a platform to earn income through selling of their products. What Gurudev understood to uplift the socio-economic condition of the country development of agriculture is must. He sent his son, Rathindranath Tagore, first Agricultural Graduate of the country and first Vice-Chancellor of Visva-Bharati to abroad to learn Agriculture. In Gurudev's own words, no longer agriculture is only to be undertaken by farmers; agricultural scientists and agricultural sciences need to reach plough head to transform resource based traditional agriculture to science and technology-based enterprise. Accordingly, to match with his thoughts Institute of Agriculture was established at Sriniketan. Gurudev had clear understanding of farmers' inability and traditionalism that restricts them to reach the science and scientists for improvement of farm fabric of the area. So, Gurudev even planned and structured extension system, and Magh Mela is having an element of that sort of structured extension programme for disseminating latest improved farm technological information to the farming community.

Visva-Bharati in general and Institute of Agriculture in particular is still continuing with the ideals of Gurudev Rabindranath Tagore and disseminating farm technologies among farmers during Magh Mela days.

### **The Practice**

Every year Institute of Agriculture comes up with well thought of theme for disseminating farm technologies. Some of the recent themes were, Integrated Farming, Sustainable Agriculture, (some more themes to be named) etc. After selecting the Theme, scientists and students get engaged to identify the relevant technologies and posters, models, flow charts; leaf lets,

folders, samples etc. are prepared / arranged for display in the dedicated Mela stall for display. Final year UG and PG students are entrusted to run the stall under the guidance of faculty members, to disseminate latest farm technologies and answer the farm related questions of farmers. A huge foot fall of farmers of this area is evident. Farmers are provided with leaf lets, folders etc. containing farm information free of cost.

Moreover, farmers are invited to display their best produce and a competition is organized to felicitate the farmers produce best product of different crops.

### Objectives of the Practice

Objectives, expected outcome and underlying principles of Palli Siksha Bhavana (Institute of Agriculture) with respect to *Magh Mela* are given hereunder.

Objective	Expected Outcome	Underlying Principles
To expose the farmers to the latest science & technological aspects of agriculture	To transform resource-based agriculture to science & technology-based agriculture	Not aware – not known – not known – not practiced.
To provide farmers with latest technological aspects of agriculture through provision of leaflets, folders, booklets etc.	Through discussion with scientists and students, farmers will be acquainted with latest technological aspects of agriculture and will take home the technology package through folders, leaflets etc. for future use.	Only exposure to technology may not help greatly to be translated into practice as technology involves many of the aspects which are to be remembered and followed.
To link the farmers with research institute for meeting their farm information need as well as for solving farm problems	Farmers maintaining regular and intimate relationship with the Institute in order to transform their farm practices and for real time solving of the farm problems.	Bridging the gap between farming community & farms and science & scientists can change the production and productivity fabric of agriculture.
To provide opportunities to students to get real life exposure and to develop skill for technology dissemination and farm problem solving.	Students will be able to understand the real-life agriculture as well as will be capable for disseminating need based improve farm technologies and solving farm problems.	A real-life exposure can bridge the gap between theoretical knowledge and actual farming practices.