REPORT ON

RAWE PROGRAMME

(2018-2019)



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PALLI SIKSHA BHAVANA (Institute of Agriculture)

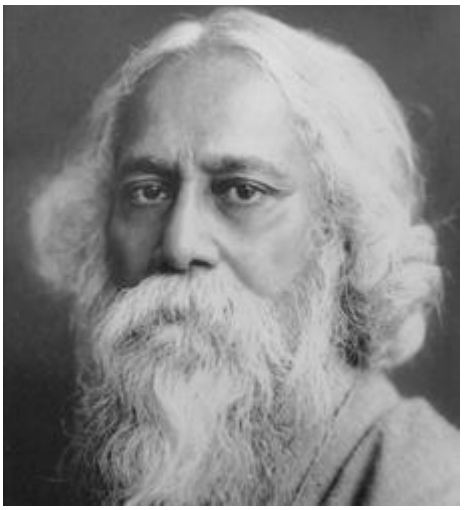
VISVA-BHARATI

SRINIKETAN

2019

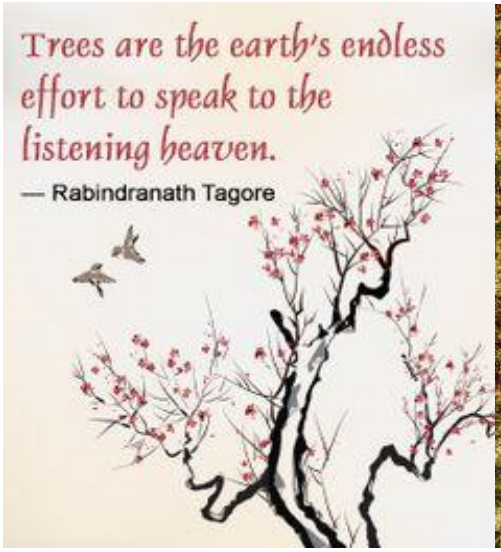
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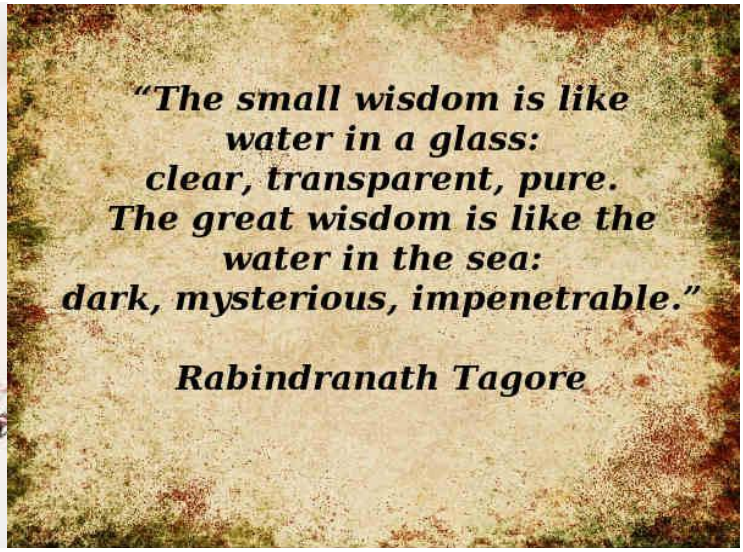
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Mother Earth has enough for
the real needs of all her
children --- but she has not
nearly enough for a whole
generation of greedy children
who know no limit to their
desires.

Rabindranath Tagore.
"City and Village"
1928





“Everything else can wait, but not Agriculture.”

-Jawaharlal Nehru

Introduction

The pioneer effort of rural reconstruction known as Sriniketan Experiment has been started by the Nobel laureate Rabindranath Tagore in the year1921 at Sriniketan. Agriculture was at the core area of Sriniketan Experiment as testified by the fact of association of Leonard Elmhirst, Rathindranath Tagore, Santosh Chandra Mazumdar and Nagendranath Ganguly. Palli Siksha Bhavana, the present Institute of Agriculture still carries the legacy of the rural reconstruction effort of Rabindranath Tagore, the founder of Visva-Bharati.

Agricultural education needs to be evolved in a very rapid manner to meet the expectation of the society. Though the students of agriculture are learning substantial basic and applied issues of science and technology, they do not possess adequate confidence in starting own commercial venture. Under this situation, Rural Awareness Work Experience Programme (RAWE) is an important competence and confidence building programme introduced in the Institutes of Agriculture and the SAUs in India. With a view to giving the real-life exposure to the students Palli Siksha Bhavana (Institute of Agriculture) has also introduced this programme for the students of VIIIth Semester B.Sc (Ag.) Hons. This Programme is a sequel of the recommendation made by the ‘Randhawa Committee’ constituted by ICAR. The Rural Agricultural Work Experience (RAWE) programme is a flagship activity for the final year B.Sc. (Ag.) students during the last semester. Building self-confidence in the agricultural graduates by honing their professional skills is the key objective of introducing RAWE at the under graduate level by ICAR. Accordingly, this semester-long programme has been evolved. The most important area in which the development needs to be continuously accelerated is agriculture, which is the backbone of country’s economy. In order to bring about changes in the knowledge, skill and attitude of the people engaged in farming, a sustained effort is necessary and thus could be achieved only through purposeful education. Rural Agricultural Work Experience (RAWE) Programme is a key component in the B.Sc. (Ag.) degree programme. The students are given rigorous orientation and familiarization on various issues and problems they can expect in the farmers’ field.

As per the recommendation of ICAR one full semester has been earmarked with the following

OBJECTIVES

- To make them understand the rural community life and the prevailing situation
- To familiarize with the rural socio-economic conditions
- To provide an opportunity to have practical training in crop production
- To improve communication skills among the students using extension teaching methods in transfer of technology
- To sensitize them regarding agricultural technologies, used by farmers and to prepare alternate farm plans according to the local situation in consultation with the farmers
- To develop confidence and competence in students for handling professional problems
- To acquaint the students with on- going thrust on rural development programmes
- To make the students understand the changed role of men and women in agricultural and allied fields.
- To explore the high-tech agricultural technology and the factors affecting the adoption of modern methods of agriculture.
- To initiate awareness, understanding and skills among the students with special reference to the scientific model of "Integrated Development of Agriculture" i.e. crop husbandry, horticulture, agro forestry, animal husbandry, fisheries, poultry, dairying, agro-based industries, processing, marketing etc.
- To know the techniques / know how to prepare and develop the package through collection of data from grass root level
- To expose them to the research methodologies e.g. experimental techniques, management, collection and processing of experimental data.

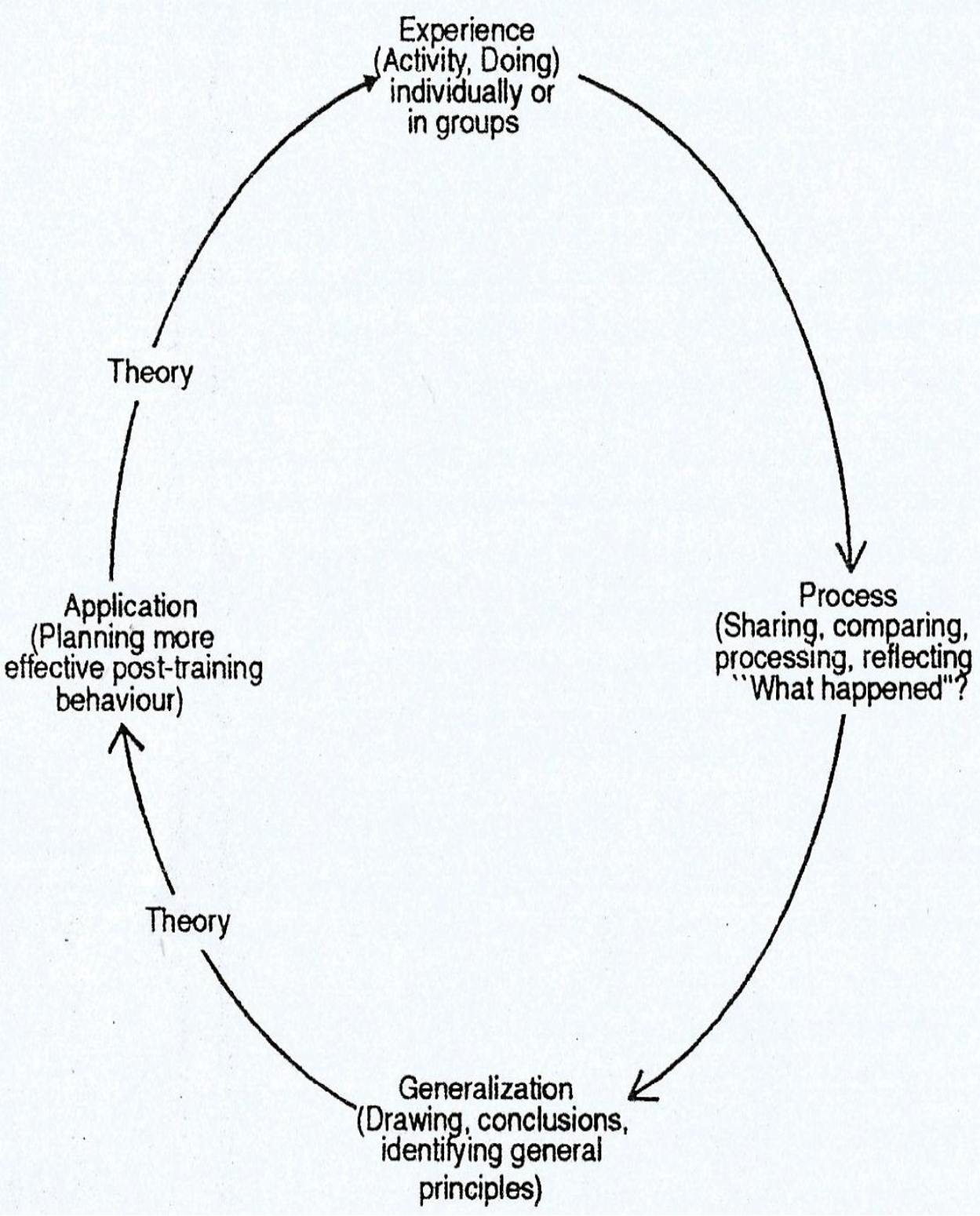
APPROACH OF RAWE PROGRAMME

Experiential learning approaches towards problem solving and improving interaction with the world outside. The learning process essentially provides a direction to the students to think and act and eventually creates self-confidence. It helps the students develop their competence, capability, capacity building, skills, expertise, in short a holistic development. However, it requires an individual's total commitment, involvement, participation, reception, active interest, dedication, skill, curiosity, vision and mission.

Under the changing dynamics of economical and industrial growth agriculture has undergone a sea change with new approaches. Therefore, this experiential system in agricultural academia has become imperative for better training to the agricultural technocrats with high level of skill in combination with the modern out-look and management capacity.

The experiential approach is a learner-centred approach and allows an individual student to be responsible for his own learning minimizing the role of his teachers and hosts. Effective work experience training strategies incorporating rural agricultural experiential learning approach provide opportunities to a student to experience the fieldwork activity and to review and analyze critically his own work experience so that they prove to be useful in their real-life situation.





Experiential Learning Cycle

OUTLINES OF RAWE PROGRAMME

The RAWE Programme has been implemented for a period of six months in the VIIIth Semester. The programme encompasses five core areas (Table 1):

Table 1: Course Structure of RAWE Programme

Course No.	Course	Credits	Course Leader	Course Facilitators
RAWE - 01	Crop Production [Village Attachment]	05	Dr. P.K. Biswas	Prof. A.K. Barik Prof. P.C. Kole Prof. G.K. Ghosh Prof. B.K. Saren Dr. S. Chakraborty Dr. A. Paul Dr. G.C. Malik Dr. G. Mondal Dr. D. Panda Dr. S. K. Maity Dr. P. Kandaswamy Dr. J. Mondal Dr. K. Pramanik Dr. (Mrs.) M. Banerjee Dr. N. Chakraborty Dr. K. C. Swain Dr. (Mrs.) Sananda Mondal Dr. (Mrs.) Suchhanda Mondal Dr. P. Deb Dr. N. C. Sarkar Dr. M. C. Kundu Dr. S. Debnath Dr. P. Ghosh Dr. G. Mondal
RAWE - 02	Crop Protection [Village Attachment]	04	Dr.(Mrs.) S. Bhattacharya	Prof. H. Chatterjee Dr. R. Nath Dr. P. Mondal Dr. M. Biswas Dr. B. Mondal
RAWE - 03	Rural Economics [Village Attachment]	03	Dr. D. Sarkar	Prof. B. C. Roy Dr. B. Mondal
RAWE - 04	Extension Programme [Village Attachment]	04	Dr. S.D. Mukhopadhyay	Prof. S. Chowdury Prof. S. Ghosh
RAWE - 05	Research Station / KVK / DAATT Center Activities and Attachment to the Agro-based Industries	04	Dr. (Mrs.) A. Saha	Dr. S. Mondal, RKVK Dr. P. Roy, RKVK
Total		20 Credits		

The programme has been managed by the Principal/ Dean, Institute of Agriculture, RAWE Coordinator, Course Leaders, Course facilitators and supporting staff like *Gram Karmis* (village level worker for extension activities). The complete guideline has been given to the students before commencement of the programme. Students have completed the above mentioned courses under the guidance of different course leaders and course facilitators. Course details of RAWE Programme are given below:

RAWE-01: Crop Production [Village Attachment]:-

- Cultivation of *rabi* crops and their management at the village.
- Studies on constraints of field crop production in the village.
- Studies on farming system and land use pattern and constraints in adopting diversified and multiple cropping at the village.
- Studies on irrigation practices in farmers' field.
- Studies on weed management in field crops.
- Study on horticulture based farming System.
- Study on cultivation of horticulture crops and production constraints.
- Study on horticulture based commercial farms and its component analysis.
- Post harvest studies on horticulture crops.
- Farmers' package of practices for production of quality seeds
- Farmers' knowledge on crop varieties and participatory plant breeding
- Determination of soil texture by field method.
- Use of soil testing kit.
- Status of manuring processes followed in villages.
- Studies on soil profile and soil erosion status.
- Study of farm mechanization status in a village.
- Study of post harvest technology of agricultural products in village level.

RAWE-02: Crop Protection [Village Attachment]:-

- Survey for prevalence of diseases of *rabi* crops in a village having biodiversity
- Survey of insect pests of *rabi* crops in a village
- Surveillance and scouting to potato late blight and early , frost damage of *boro* rice seedlings in the selected village
- Study of plant protection status and programmes in the allotted block
- Field diagnostics of different insects-pests and non-insect pests through damage pattern and insect remnants etc.
- Surveillance and scouting to wheat rusts, phytopathometry and crop loss assessment of field and horticultural crops
- Study of insect – pests and bio-control agents of *boro* rice in a selected village
- Retrospective survey of crop pests and diseases in a village
- Study of nature of dispersion and distribution of various insect-pests
- Study of pesticides consumption and marketing of pesticides
- Study of rural farm storage structures and / or cold storage structures
- Farmer's perception, practice of plant protection with particular reference to ITK

RAWE-03: Rural Economics [Village Attachment]:-

- Socio-economic survey including preparation of survey schedule and sampling technique: demography and cropping pattern
- Field Survey: Identification of marketing channel, Price spread analysis, Market survey
- Study on cost of cultivation
- Study on financial institutions
- Study on marketing institutions

RAWE-04: Extension Programme [Village Attachment]:-

- Agro-ecosystem analyses for formulating suitable extension approach in the selected village
- Study of the village level institutions related with rural and agricultural development
- Study of the mobility pattern and migration pattern in the villages
- Study of different community based organisation in the village engaged agricultural and rural development activities
- Study of communication pattern of villagers and participatory message development
- Identification of field level constraints in participatory mode
- Strength, Weakness, opportunity and Threat (SWOT) analyses

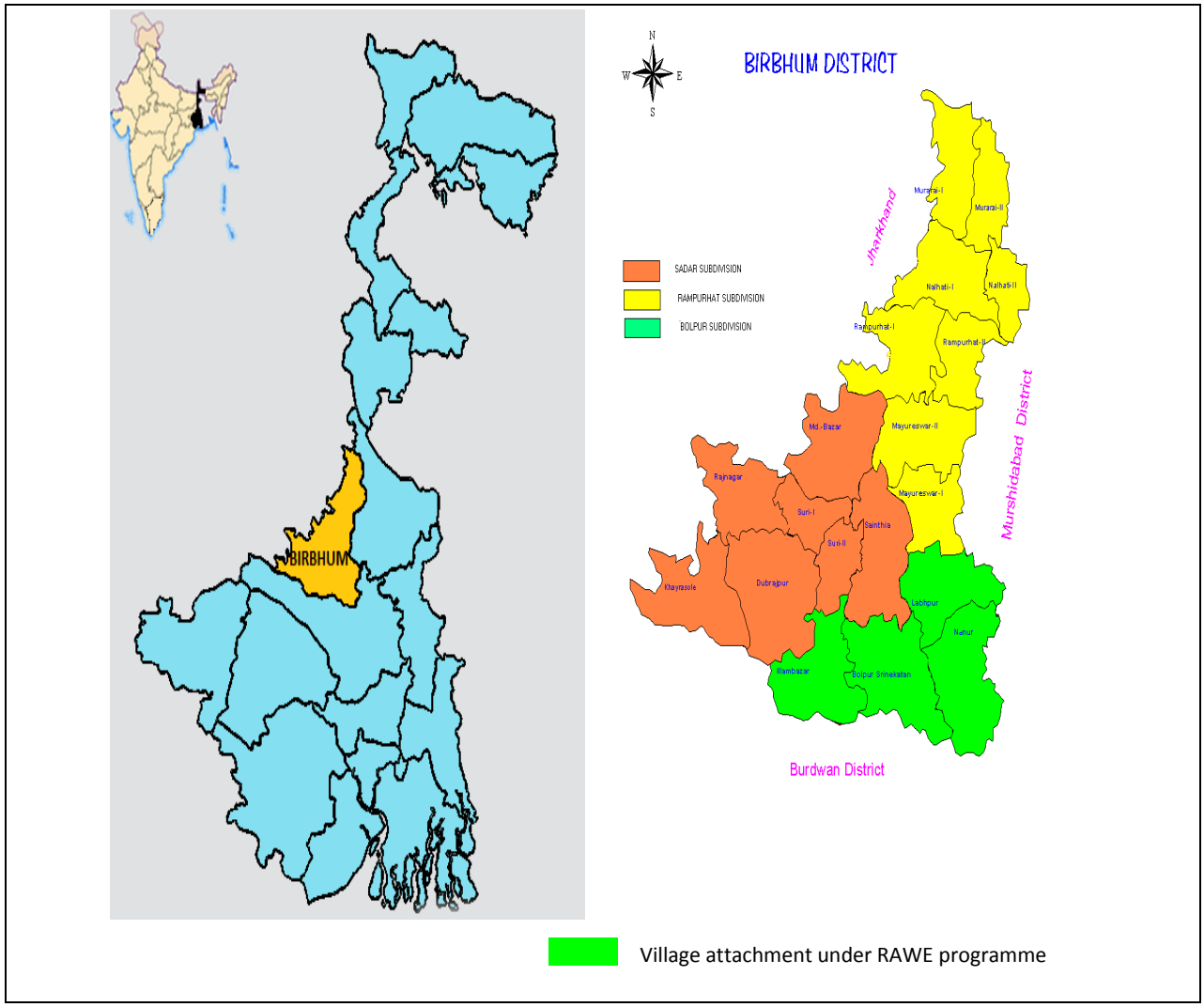
RAWE-05: Research Station / KVK / DAATT Center Activities and Attachment to the Agro-based Industries:-

- Activities of research station - mandate, organisational structure, research projects: ongoing and completed, research achievements, varieties developed, technology transfer, training, linkage, extension activities, financial performance, constraints.
- Activities of Krishi Vigyan Kendra (KVK) - mandate, details of district, organisational structure, technical achievements- i) target and achievement of mandatory activities ii) abstract of intervention undertaken based on thrust area, on farm tests- i) number of technologies assessed ii) achievement on technologies assessed and refined iii) results of technologies assessed, front line demonstration- i) FLDs implemented during current year ii) results of front line demonstrations, demonstration on crop hybrids, training, extension activities, production of seeds, plants and livestock, success stories, impact, linkages, financial performance, constraints.
- Study of Community Development Block - demographic analysis, institutional analysis, livelihood analysis, critical analysis of various development programmes, constraint analysis.
- Attachment to the Agro-based Industries - profile of agro-processing unit, economics of agro-processing unit, marketing behaviour of agro -processing unit, risk management of agro-processing unit, constraints of agro -processing unit.



Locale of RAWE Programme

The RAWE Programme has mainly covered various villages under Bolpur- Sriniketan, Illambazar and Nanur blocks of Birbhum district of West Bengal as the students have undergone most of the RAWE courses as village attachment programmes. Student have worked and experienced about rural and agricultural scenario in about 15 different villages under seven *Gram Panchayats* (GPs) *viz.* Raipur-Supur, Ruppur, Sian-Muluk, Sattour, Bilati Sultanpur, Illambazar and Charkal. Students were also placed in different blocks of West Bengal as well as financial institutions in different places of West Bengal for the placement works under the RAWE courses. Students have interacted with the farmers, farm women, rural youth, scientists of research stations, subject matter specialists of KVK, officials of line departments, financial institutions and agro-based industries in order to blend their theoretical knowledge with practical life to have realistic experiences in the concerned field.







Schedule of the RAWE Programme (2018-19) for Semester VIII of B.Sc. (Ag.) Hons.

Date and Day	Course	Course Content	Course Facilitator	Course Leader
21.12.18 (Friday)	Orientation on RAWE Programme and RAWE Courses at 11.00am (Venue: Deptt. of Agricultural Extension)		Principal, Vice-Principals, Course Coordinator and Course Leaders	
22.12.18 (Thursday)	RAWE 01	Determination of soil texture by field method	Dr. M.C. Kundu	Dr. P.K. Biswas
04.01.19 (Friday)	RAWE 01	Study on irrigation practices in farmers' fields	Prof. B.K. Saren Dr. K. Pramanik Dr. P. Ghosh	
05.01.19 (Saturday) 06.01.19 (Sunday) 07.01.19 (Monday) 08.01.19 (Tuesday)	RAWE 05	Activities of Krishi Vigyan Kendra (KVK) and Research Station	Dr. (Mrs.) A. Saha	Dr. (Mrs.) A. Saha
11.01.19 (Friday) 12.01.19 (Saturday)	RAWE 03	Socio-economic survey including preparation of survey schedule and sampling technique: i) Demography ii) Cropping pattern	Prof. B.C. Roy Dr. B. Mondal	Dr. D. Sarkar
13.01.19 (Sunday)	RAWE 01	Studies on farming system and land use pattern and constraints in adopting diversified and multiple cropping at the village	Dr. S.K. Maity Dr. (Mrs.) M. Banerjee	Dr. P.K. Biswas
14.01.19 (Monday)	RAWE 02	Survey of insect pests of *rabi* crops in a village	Prof. H. Chatterjee	Dr. (Mrs.) S. Bhattacharya
15.01.19 (Tuesday) to 25.01.19 (Friday)	RAWE 05	Study of Community Development Block	Dr. (Mrs.) A. Saha	Dr. (Mrs.) A. Saha
	RAWE 02	Study of plant protection status and programmes in the allotted Block	Dr. (Mrs.) S. Bhattacharya	Dr. (Mrs.) S. Bhattacharya
	RAWE 03	Study on Financial Institutions	Dr. D. Sarkar	Dr. D. Sarkar
27.01.19 (Sunday)	RAWE 02	Survey for prevalence of diseases of *rabi* crops in a village having wide crop diversity	Dr. M.K.Biswas	Dr. (Mrs.) S. Bhattacharya

Date and Day	Course	Course Content	Course Facilitator	Course Leader
28.01.19 (Monday)	RAWE 01	Cultivation of *rabi* crops and their management at the village	Prof. A.K. Barik Dr. N.C. Sarkar	Dr. P.K. Biswas
29.01.19 (Tuesday)	RAWE 01	Studies on weed management in field crops	Dr. B. Duary Dr. G.C. Malik	
01.02.19 (Friday)	RAWE 04	Agro-ecosystem analyses for formulating suitable extension approach in the selected village	Dr. S.D. Mukhopadhyay Prof. S. Ghosh	Dr. S.D. Mukhopadhyay
02.02.19 (Saturday)	RAWE 01	Farmers' package of practices for production of quality seeds	Prof. P.C. Kole Dr. N. Chakraborty	Dr. P.K. Biswas
03.02.19 (Sunday)	RAWE 02	Surveillance and scouting to wheat rusts, potato late blight and early frost damage of *boro* rice seedlings	Dr. R. Nath	Dr. (Mrs.) S. Bhattacharya
04.02.19 (Monday)	RAWE 01	Studies on soil profile and soil erosion status	Dr. (Mrs.) S. Mandal	Dr. P.K. Biswas
05.02.19 (Tuesday)	RAWE 01	Layout, landscaping, horticulture based farming	Dr. S. Chakraborty	
08.02.19 (Friday)	RAWE 03	Study on marketing institutions	Dr. D. Sarkar Dr. B. Mondal	Dr. D. Sarkar
09.02.19 (Saturday)	RAWE 03	Study on cost of cultivation		
10.02.19 (Sunday)	RAWE 04	Study of communication pattern of villagers and participatory message development	Prof. S. Chowdhury	Dr. S.D. Mukhopadhyay
11.02.19 (Monday)	RAWE 04			
12.02.19 (Tuesday)	RAWE 01	Study on cultivation of horticulture crops and production constraints	Dr. P. Deb	Dr. P.K. Biswas
15.02.19 (Friday)	RAWE 02	Study of insect – pests and bio-control agents of *boro* rice in a selected village	Dr. P. Mandal	Dr. (Mrs.) S. Bhattacharya
16.02.19 (Saturday)	RAWE 03	Field Survey: - Identification of marketing channel - Price spread analysis - Market survey	Dr. D. Sarkar Dr. B. Mandal	Dr. D. Sarkar
17.02.19 (Sunday)	RAWE 03			
18.02.19 (Monday)	RAWE 03			
19.02.19 (Tuesday)	RAWE 04	Study of the mobility pattern and migration pattern in the villages	Dr. S.D. Mukhopadhyay Prof. S. Ghosh	Dr. S.D. Mukhopadhyay

Date and Day	Course	Course Content	Course Facilitator	Course Leader
22.02.19 (Friday)	RAWE 01	Farmers' knowledge on crop varieties and participatory plant breeding	Dr. A. Paul Dr. S. Debnath	Dr. P.K. Biswas
23.02.19 (Saturday)	RAWE 01	Use of soil testing Kit	Prof. G.K. Ghosh	
24.02.19 (Sunday)	RAWE 01	Status of manuring processes followed in villages	Dr. P.K. Biswas	
25.02.19 (Monday)	RAWE 02	Surveillance and scouting to wheat rusts, Phytopathometry and crop loss assessment of field and horticultural crops	Dr. M.K. Biswas	Dr. (Mrs.) S. Bhattacharya
26.02.19 (Tuesday)	RAWE 01	Study on farm mechanization and agro-processing	Dr. P. Kandaswamy Dr. K.C. Swain	Dr. P.K. Biswas
01.03.19 (Friday) to 05.03.19 (Tuesday)	RAWE 05	Attachment to the Agro-based Industries	Dr. (Mrs.) A. Saha	Dr. (Mrs.) A. Saha
08.03.19 (Friday)	RAWE 04	Study of different Community based Organisation in the villages engaged in agricultural and rural development activities	Dr. S.D. Mukhopadhyay Prof. S. Ghosh	Dr. S.D. Mukhopadhyay
09.03.19 (Saturday)	RAWE 04			
10.03.19 (Sunday)	RAWE 01	Post-harvest studies on horticulture crops	Dr. G. Mondal	Dr. P.K. Biswas
11.03.19 (Monday)	RAWE 01	Study on horticulture based commercial farms and its component analysis	Dr. J. Mondal	
12.03.19 (Tuesday)	RAWE 02	Retrospective survey of crop pests and diseases in a village	Dr. R. Nath Dr. B. Mandal	Dr. (Mrs.) S. Bhattacharya
15.03.19 (Friday)	RAWE 02	Study of nature of dispersion and distribution of various insect-pests attacking different field crops	Prof. H. Chatterjee	
16.03.19 (Saturday)	RAWE 01	Studies on crop maturity stage and post-harvest processing	Dr. D. Panda Dr. (Mrs.) S. Mandal	Dr. P.K. Biswas
17.03.19 (Sunday)	RAWE 04	Identification of field level constraints in participatory mode	Dr. S.D. Mukhopadhyay	Dr. S.D. Mukhopadhyay
18.03.19 (Monday)	RAWE 04			

Date and Day	Course	Course Content	Course Facilitator	Course Leader
19.03.19 (Tuesday)	RAWE 02	Study of rural farm storage structures and / or cold storage structures	Dr. (Mrs.) S. Bhattacharya	Dr. (Mrs.) S. Bhattacharya
22.03.19 (Friday)	RAWE 02	Study of pesticides consumption and marketing of pesticides	Dr. B. Mandal	
23.03.19 (Saturday)	RAWE 02	Farmer's perception, practice and problems of Plant Protection with particular reference to ITK	Dr. (Mrs.) S. Bhattacharya	
24.03.19 (Sunday)	RAWE 01	Study of post-harvest technology of agricultural products in village level	Dr. P. Kandaswamy Dr. K.C. Swain	Dr. P.K. Biswas
25.03.19 (Monday)	RAWE 04	Study of the village level institutions related with agricultural development	Dr. S.D. Mukhopadhyay Prof. S. Ghosh	Dr. S.D. Mukhopadhyay
26.03.19 (Tuesday)	RAWE 04	SWOT analyses of agriculture of the selected village		
29.03.19 (Friday) to 31.03.19(Sunday)	Follow-up Visits / Extra Visits (if require) with respect to all the RAWE Courses		Concerned Course Facilitators and Course Leaders	
1-30 April 2019 (barring holidays)	Any class not conducted due to holidays and/or unforeseen situation was arranged. Final Practical Record/ Report Submission of all the RAWE Courses by 19.04.2019. Internal Examinations of all the RAWE Courses will held on following dates: 20.04.2019: RAWE 01; 21.04.2019: RAWE 02; 22.04.2019: RAWE 03; 23.04.2019: RAWE 04; 26.04.2019: RAWE 05 (Time and Date may be mutually adjusted by Course Leaders)		Concerned Course Leaders and Course Facilitators	
May 2019	Final Examination			

The following students have been enrolled for the RAWE Programme for the year 2018-19

	Name of Students:-		Name of Students:-
1	Abhishek Ranjan	27	Rupam Roy
2	Amit Sahu	28	Saikat Chatterjee
3	Anindita Patwari	29	Sambita Bhattacharyya
4	Anjan Ghosh	30	Sampriti Guha
5	Ankush Sarkar	31	Sandip Kumar De
6	Anshuman Patel	32	Sanjoy Kumar Das
7	Arnab Mukherjee	33	Santanu Kar
8	Arunima Chakraborty	34	Sayan Chatterjee
9	Ashutosh Dalal	35	Sayanton Mondal
10	Ayushman Malakar	36	Shivani Bharti
11	Babita Hantal	37	Shreyosi Basak
12	Biswapriya Mallik	38	Soumen Roy
13	Chandana Biswas	39	Soumyadeep Thakur
14	Dawjam Bhutia	40	Soumyakanti Mandal
15	Esha Mitra	41	Soumyayan Roy
16	Hemanta Marandi	42	Sourav Biswas
17	Kajori Saha	43	Sourav Mondal
18	Kherwal Hembram	44	Subhajit Barat
19	Krishna Das	45	Subhasish Sarkar
20	Mahammad Rejak	46	Subrata Ghosh
21	Md. Aniruzzaman	47	Sudeshna Roy
22	Meghna Mandal	48	Sumit Sow
23	Moumita Modak	49	Susmita Pati
24	Prabarita Karjee	50	Sweety Mukherjee
25	Puranjoy Sar	51	Vivekananda Behera
26	Ritraj Nanadi		



Activities Performed

RAWE 01: Crop Production

Under this module of RAWE, practical aspects of crop production were experienced by the students during their attachments to different villages in Illambazar and Bolpur-Sriniketan block of Birbhum district in West Bengal that included study on different practices of field crops (agronomy) and horticultural crops, plant breeding, plant physiology, soil health management, and farm mechanization. A total of 16 different aspects of crop production were experienced by the students under this module.

Study on irrigation practices in farmers' fields was undertaken in village Chandanpur. Irrigation practices for various *rabi* season crops like rice, potato, mustard, lentil, cabbage, brinjal and sugarcane studied on the basis of method, source, timing, frequency, etc. Cropping system adopted by the farmer and limitations in adopting diversified cropping system was studied in village Mirzapur. Cropping system adopted by the farmers and scope in diversified cropping system were studied including cropping intensity, comparison of different cropping system based on rice equivalent yield, cost of cultivation, gross return and diversity index. Integrated farming system adopted by the farmers and constraints in diversified farming was experienced by the farmers during their village attachment. An Integrated Farming System (IFS) model was worked out. It helped the students to understand different facets of farming system development approach including integration of various enterprises, use of by-products of enterprises through recycling within the same farm, interrelationships and cost estimates. Cultivation of different *rabi* season crops (boro rice, rapeseed, potato, onion, lentil) and their management practices were studied by the students at village Bhimpur. Studies on weed management practices of field crops were undertaken by the students at Binuria, Bahadurpur and Lohagarh villages. The weeds of various crops like rice, brinjal, wheat, mustard, potato, etc. and yield loss due to weeds and their management practices followed by the farmers were witnessed by the students during their village attachment.













Study on farmers' package of practices for production of quality seeds was undertaken at village Nurpur. The physical quality, genetic purity, physiological purity, etc. were discussed. The crops cultivated, varieties, sources of seeds, seed treatment, etc. were documented by the farmers through discussion with the farmers.



Students have studied maturity symptoms of different crops including time of harvesting at Bahadurpur village. Maturity and harvesting of crops were learnt by the students from the farmers' experiences. Time of harvesting of different crops viz. rice, wheat, maize, sorghum, red gram, black/green gram, rapeseed/ mustard, sunflower, groundnut, etc., losses due to late harvesting, physiological symptom of maturity, assessing the maturity, external symptoms, harvest maturity symptoms, etc. were studied by the students.



Students experienced the importance of manurial process, compost pit, vermicompost, etc. in village Daronda. Organic waste management and organic manuring was studied. Type and method of composting were discussed. The vermicompost units of the farmers were visited and during interaction it was realized that farmers earn on an average Rupees 35000/- per month from a unit of 24ft. by 16 ft. Use of soil testing kits at field level was experienced by the students. The methods of estimation of soil pH, nitrogen, available phosphate, available potassium and organic carbon were discussed with the students. Determination of soil texture by feel method and soil testing (pH, available nitrogen, phosphate, potassium and organic carbon) with the help of soil testing kit oriented the students about soil health management. Steps in determining soil texture by feel method was discussed with respect to the soil samples at PSB Agricultural Farm. It was observed that soil was gritty, formed ball that rolled into a cylinder but broke easily on binding and stained the finger slightly interpreting the soil as sandy loam. Students gathered knowledge on soil profile and soil erosion by visiting the different sites (Khoai) and also oriented about various types of erosion and preventing measures. Student had practical experience of different types of erosions and control mechanisms. Soil profile was also studied in those areas.



Study on rice processing industry was undertaken by the students through visiting Bahadurpur and Mirzapur. Students learnt the steps of unit operation, thus developed a flow chart from collection of raw paddy to packaging of rice that included cleaning, dehusking, paddy separation, bran removal, grading, whitening & polishing. Student could learn

commercial milling system of paddy. Farm mechanization was studied by the students through preparation of inventories of equipments, implements, and machines used in farming by interviewing the farmers. Students have interacted with the farmers and learnt different dimensions of farm mechanization in different crops. Most of the farmers were having disc plough and thresher besides other required equipments like different types of sprayers (foot sprayer, knapsack sprayer), spade, sickle, khurpi submersible pump, etc. Tractor and power tiller were mostly hired by the farmers. The extent of mechanization was influenced by the fragmented holdings. Students also studied various energy resources of farm.



Students studied horticulture based commercial farm and analyzed its components by visiting the farm at village Samaidaha. It included general information, farm components, layout, marketing aspects, processing unit, package of practices and strength, weakness, opportunity and threat (SWOT) analyses. Post harvest studies on hortcultural crops were accomplished at Srichandapur village.The processing of products like jam, pickle, squash, tomato sauce, jelly, etc. was witnessed by the students. During the village attachment (village Bahadurpur), students have studied horticultural crops and production constraints. Different aspects of production, processing, marketing and export of major horticultural crops viz. mango, papaya, guava, vegetables, and plantation crops like coconut, etc. were discussed with the farmers. Farmers used most of the products from their horticultural crops as their household consumptions.



RAWE 02: Crop Protection

Under second module of RAWE, nine different aspects of crop protection were experienced by the students during their attachments to different villages.

Students witnessed prevalence of diseases of *rabi* crops at villages viz. Binuria and Bahadurpur. Early blight of tomato, tomato leaf curl, wilt of potato, leaf roll of potato, chilli leaf curl, wilt of lentil, black rot of cabbage, mosaic of cucurbits, powdery mildew, blight of french bean, *Alternaria* leaf spot, etc. were identified and management options were discussed. The control measures were discussed with the farmers as well as course facilitator and suggested the same. Surveillance and scouting to wheat rust, potato late blight, early frost damage of boro rice seedling were undertaken at Bahadurpur village. Retrospective survey of crop disease in Supur village trained the students on data collection and analyses with respect to particular diseases for a period of past five years. During the interaction with the farmers students realized significance of crop rotation in controlling attack of particular diseases. Surveillance and scouting to potato mosaic and measurement of disease incidence, disease severity and disease index under field condition was studied by the students in Raipur village. Measurement of disease severity, disease incidence and determination of area under disease progress curve (AUDPC) was done by the students. Retrospective survey on plant protection measures adopted by the farmers against different crops of the season was also undertaken.

Survey of insect pest of *rabi* crops was undertaken by the students in Dangapara village. Infestation of different insect pests observed were fruit borer of tomato, brinjal fruit and shoot borer, cabbage caterpillar, mustard aphid, pea pod borer, stem borer of *boro* rice, sugarcane

top shoot borer, potato tuber moth, etc. The extent of infestation of fruit borer of tomato was recorded sampling the plant in one square meter of area at five places of the field (four corners and middle of field). The management practices were discussed with the farmers. Field diagnosis of different crop pests and their management was studied. Symptoms and control measures were discussed for the pests of various crops viz. rice, wheat, onion, potato, beans, sugarcane, gram, pumpkin, okra, tomato, chilli, cabbage, etc. which were namely, stem borer, shoot borer, leaf minor, pod-capsule borer, leaf webber, leaf folder, leaf borer, root feeder, termite, rice case worm, hispa, flea beetle, plant hopper, mites, thrips, etc. Studies on distribution pattern of insect-pest in crop eco-system were carried out at Dangapara village with objectives to validate the population estimation method, to study the behaviour of insect pest and to formulate suitable management strategy. It has made the students to understand degree of population of a particular species which is of three types - regular distribution, random distribution, and aggregate distribution. Bio-control agent/ natural enemy in crop field were also studied. Students observed the frequency and presence of bio-control agents, which were Coccinella beetle, dragon fly, spider, etc. Different indigenous technical knowledge with respect to use at field level and storage structures was explored through interaction with the farmers in Dangapara village that included spray of neem water to control insect pest, burning of tyre in the field to control insect pest, use of manures in spraying, use of vegetable compost, storage structure for rice '*morai*', using *'bon pata' / 'nishindi leaves'* storing oilseeds, neem leaves, chilli leaves in storage structures, etc. Each student conducted a study of plant protection status and programmes in the allotted Block. The plant protection status and programmes of different blocks under different districts of West Bengal , Bihar and Odisha were studied by the students.



RAWE 03: Rural Economics

Under third module of RAWE, students have studied different aspects of rural economy during their attachments to different villages and financial institutions, which included household and socio-economic survey (demography, cropping scenario, estimation of cost of cultivation, etc), market survey to identifying marketing channel, price spread analysis, etc., study on producers surplus, market survey of agricultural products, survey of marketing and financial institutions.

Household survey was conducted for estimation of cost of cultivation at Surul village. It was based on operational costs (labour costs), material costs, other costs, returns/yields, prices, owned fixed resources, etc. Cost A1, Cost A2 Cost B and Cost C were calculated. Gross returns (yield x cost), farm business income (gross income - Cost A1), family labour income (gross income - Cost B), net income (gross income - Cost C), farm investment income (farm business income - imputed value of family labour). Lack of farm mechanization was found one of the causes of less return.

Study on marketing institution was conducted by the students in Bolpur Kisan Bazar. Marketing channels of various agricultural products as well as inputs, market activities, economic condition of producers, consumers and middleman/ traders and market structure were studied. Data collected with respect to vegetable market that comprises local farmer, *aratdar*, retailer and consumer. Per day transaction of the market was recorded. Thus, marketing behaviour of different products viz. vegetables, fish, and chicken was studied. Market survey of agricultural products was also undertaken by the students. They observed that majority of the consumers mainly purchase vegetables and fish from Kisan Bazar. The amount of potato purchased was highest among the vegetables.

Study on marketing channel, marketable surplus, marketed surplus and price spread was undertaken in Bahadurpur village. The marketable surplus is that quantity of produce which can be made available to the non-farm population (marketable surplus = total production - total requirements of producer that includes family consumption, farm needs, payment of labour, landlord and other payments in kind, etc). Marketed surplus is that quantity of the produce which the producer farmer actually sells in the market, irrespective of the requirements for family consumption, farm needs and other payments. The marketed plus may be more, less or equal to the marketable surplus, depending upon the condition of the farmer and type of the crop. The general information on price spread and marketing channel associated with paddy was obtained from village merchant (*Aratdar*). Marketing channel of paddy was farmer-wholesaler-rice mill. Price spread (the difference between the price paid by the consumer and

price received by the farmer) was determined with respect to paddy, potato, mustard, vegetables, etc. Marketing channel followed in case of inputs and farm produces as well as price spread analysis was also conducted by the students.



Students were placed in different financial institutions including Commercial Bank, Regional Rural Bank and Cooperative Bank situated in at different places of West Bengal , Bihar and Odisha in India. The specific objectives of this placement were to know the status of financial institutions in terms of infrastructure including connectivity and engagement of personnel, to study the trend in deposit and disbursement of credit along with status of repayment of the financial institutions and to explore the availability of credit for agriculture and allied section. Students have collected information in the respective bank located near their native blocks and districts. A well structured schedule was prepared to collect the information about different aspects of banking over the last five years. The schedule included general information on the selected bank, number of staff, number of different accounts, amount deposited in different accounts, details of loan accounts, disbursement of amount and time period of credit in different purposes, repayment status, procedure of sanctioning credit, etc. Most of the financial institutions have cooperated to provide the information to students and also acquainted the students with the day to day banking process. The collected data was analysed by employing suitable techniques to fulfil the various objectives of the study. It has been observed that most of the financial institutions were well structured in terms of infrastructure and other connectivity except RRBs and Cooperatives. Growth was characterised also by greater inequality in the distribution of benefits. It is found that the distribution of bank branches and agricultural credit had six major features. Even though the number of bank branches in rural areas rose in recent years, this growth did not keep pace with the growth of rural population. The reduction of total

population per branch was faster than the reduction of rural population per branch, suggesting a greater penetration of branches in urban areas than in rural. Secondly, indirect agricultural credit constituted a bigger share than previously to the growth of overall agricultural credit. Thirdly, there was a sharp increase in the share of large-size loans in agricultural credit. Fourthly, there was a substantial increase in the share of agricultural credit outstanding from urban and metropolitan branches of banks in the recent years. Agricultural credit was increasingly diverted away from rural areas, particularly from the marginal and small farmers, and towards large business interests based in urban areas. Fifthly, there was a concentration of disbursal of agricultural credit from January to March, which is generally not the normal periods of borrowing by farmers. Sixthly, there was a sharp fall in the share of long-term credit in total agricultural credit. Consequently, the portion of agricultural credit used for fixed capital formation in agriculture became smaller. Students have submitted individual report after their placement programme.

RAWE 04: Extension Programme

Under this module of RAWE, different aspects of agricultural extension, especially field extension programmes, were studied by the students during their attachments to different villages, which included study on effectiveness of Krishi Mela in dissemination of information, agro-ecosystem analysis through participatory rural appraisal (PRA) techniques, constraints analysis, study of communication/ information sources use pattern, role and importance of village level institutions, documentation during rural agricultural fair (Magh Mela) through photo features, strength-weakness-opportunity-threat (SWOT) analysis of farming in selected village, etc.

Effectiveness of Krishi Mela in dissemination of information was studied by the students. Different aspects of agriculture viz. soil heath management, crop farming, horticultural crop production, livestock production, fish farming, financial and developmental schemes were studied by the students through interaction with the personnel of respective organizations participated in the fair and farmers visiting the fair.

Agro-ecosystem analysis was done by the students during their village attachment at Bahadurpur village, which included analyses of space (transact walk, mapping), time (time line, time trend, seasonality diagram, etc), flow (mobility map, venn diagram, etc) and decision (wealth ranking, constraints analysis). Different methods followed were transect/ biodiversity walk, resource profile of the village, time line, seasonality diagram of crops, farming activity scheduling of crops, mobility diagram, venn diagram, etc. This exercise has helped the students to understand the rural agro-ecosystem for formulating suitable extension approach to improve the farming.




Communication and information sources use pattern of the farmers were studied by the students in village Bahadurpur. The pattern of communication was studied based on the frequency and purpose of use of different sources viz. personal localite, personal cosmopolite and impersonal cosmopolite/ mass media.

Perception of farmers regarding field level constraints was studied by the students during the village attachment (Bahadurpur village). Agro-climatic, infrastructural, technological, socio-economic, and other constraints were recorded based on the perceptions of the farmers. Fragmented land holding, erratic rainfall, poor irrigation facility, insufficient technical advice, etc. Strength-weakness-opportunity-threat (SWOT) analysis of farming was carried out by the students in Bahadurpur village. A developmental plan based on the SWOT analysis as well as constraints analysis was framed that included rain water harvesting to alleviate irrigation related problems, mixed farming, cultivation of water efficient crops, paira cropping, pressurized irrigation system, farm mechanization, crop insurance, etc.

Students have interacted with the farmers, rural artisans and experts during *Sriniketan Utsav* (6-8 February). To celebrate the anniversary of Sriniketan, a fair along with an exhibition is organized in every year (since formally started on 6th February 1922), which is based on the agricultural products, equipments as well as the handicrafts. The students were involved in orgainsing an exhibition on the theme 'Agricultural livelihood and its diversification: technologies and information' under the guidance of faculties of Department of Agricultural Extension, Agricultural Economics and Agricultural Statistics, Palli Siksha Bhavana (Institute of Agriculture), Visva-Bharati. Students have made the documentation in form of photo-features on this event. They have also learnt the art of writing economic news, production news and rural life news.

A study on village level organization ('Aamar Kutir") helped the students to understand the function, nature of activities, infrastructure, funding, constraints, etc through discussion with the members of selected organization. The students could know the organizational issues related to teamwork, leadership, problem solving skills, conflict management, etc. Students have understood the potential of entrepreneurship based on traditional craft in rural areas during their visit to '*Amar Kutir Society for Rural Development*' at Ballavpur. The discussion with the officials as well as members of society on different issues like production, processing, marketing, management, etc of different units provided the students an exposure on successful implementation of rural entrepreneurship. It has also given an orientation to the students with respect to self-help group approach, empowerment of rural women, diversified rural livelihood.

RAWE 05: Research Station / KVK / DAATT Center Activities and Attachment to the Agro-based Industries

Under this module of RAWE, students were placed to research station, *Krishi Vigyan Kendra (KVK)*, and block level agricultural development institutions to orient them with agricultural research, extension, and developmental activities, respectively. An attachment to the agro-based industries has enabled the students to understand the different aspects of agri-business.

Students have studied various activities of Sub-divisional Adaptive Research Farm (SARF) under the Department of Agriculture, Govt of West Bengal, managed by Assistant Director of Agriculture located at Sriniketan, Dist. Birbum. This research farm having 25 acre farm (16.63 acre cultivated area) caters the need of agricultural research and transfer of technology in Red and Lateritic Zone of West Bengal. Students have discussed with the officials and scientists as well as visited the research farm to understand and witness the on-going research activities including cropping pattern, organic farming, soil health management, aromatic rice production, system of assured rice production (SUDHA method or SARP) , etc. The on-going research projects are mainly based on agronomy, entomology, pathology and soil health aspects. The cropping intensity is 151.9%. Improving economy of neighbouring villages, information exchange and imparting training, technology transfer, etc are found to be the priority areas. Lack of efficient irrigation facilities, coordination and participation, labour shortage, finance, etc are few problems faced by this research farm; however, the station has been performing well and contributed immensely in the field of aromatic rice production. The farm is having well developed agro-meteorological observatory facilities.



During the placement of students at *Rathindra Krishi Vigyan Kendra* (RKVK), *Palli Siksha Bhavana*, Sriniketan, the entire facet of KVK was understood. Students got an orientation of this KVK since its inception in 1994 and studied the detail activities of it during recent past. Discussion with the subject matter specialist (SMS) has helped the students to know the multi-disciplinary and participatory approach of agricultural extension. During the visit to farm, students have seen mango orchard, guava orchard, Azolla unit, poultry unit, portable fish breeding unit, vermin-compost unit, soil and water testing laboratory, plant diagnostic laboratory, medicinal plants unit, on-farm trial plots, etc. The organizational structure, mandate, thrust areas, salient achievements including conduction of on-farm trial, frontline demonstration, training and extension activities have given the opportunities to the students to understand the significance of KVK in national agricultural education, research and extension system. Some of the success stories of RKVK enlightened the student's *viz.* fresh water giant prawn in composite fish culture, glass jar hatchery for carp eggs in rural areas, cultivation of crops like broccoli, capsicum, etc. The concept of market development through '*Kisan Bazar*' was another unique aspect learnt by the students under gambit of market-led extension approach.




Students were placed in a Block for the study of rural and agricultural development activities in the allotted Block. Accordingly, the rural and agricultural development scenario of different blocks under under tem districts of West Bengal and one district in Jharkhand – 23 students in Birbhum dist., 15 students in Burdwan dist., 2 students each in Nadia dist., Purulia dist. and Howrah dist, 1 student each in Paschim Medinipur, Purba Medinipur, Bankura, North 24 Parganas, and Murshidabad dists. of West Bengal and Sahibganj district of Jharkhand. Students have collected primary as well as secondary data on different aspects like demography, institutions, agriculture, horticulture, animal husbandry, fisheries, on-going rural development programmes, NGOs, self-help groups and cooperative societies. Students have also collected detailed information regarding various activities, working pattern, administrative structure, constraints, target and achievement of different line departments of State Government. Students have learnt about the institutional issues and linkage mechanisms among various line departments. After the placement work in different community development blocks, students have submitted explorative reports on their respective blocks, which have provided valuable suggestions to overcome the various constraints and to frame future policies.

The students have made a detail study on the agro-based industry, which has helped them to gather practical knowledge on key performances of an agro-industry and agri-business. They have studied the organisational structure (staffing), functioning (production, processing, marketing), managerial aspects, etc. Students have visited different units of the industry and witnessed their functioning in association with the concerned persons and managers. The agro-industries covered by the students at different places included rice mill, oil mill, food processing industries, etc. Students have submitted reports on each of four organisations, where they were attached under this fifth module of RAWE programme.



Overall Outcomes of RAWE Programme

The overall outcomes of RAWE Programme from the perspectives of the students are summarized below:

- Rural awareness
- Field experience
- Team work
- Experiential and experimental learning
- Knowledge on field based research and extension methodologies
- Exposure to administration and management issues in context of rural and agricultural development
- Capacity building
- Acquainted with recent advancement in research and extension
- Updating and collecting information through different methods
- Understanding rural life
- Learning of bottom-up approach in planning
- Learning the techniques of stakeholders' participation in developmental programmes
- Understanding local institutions and their need
- Conflict management and negotiation skill
- Management of different components of farming system
- Working with people organization
- Problem-solving attitude
- Awareness about rural economy
- Impact of rural and agricultural development on rural livelihood
- Knowledge on gender mainstreaming in agriculture

Evaluation of RAWE Programme

The evaluations of students' performance had been concurrent, formative and summative in nature. The students have maintained their daily diary countersigned by the concerned course leaders and facilitators and these diaries were evaluated at the time of final examination. All the courses had been conducted with close supervision and monitoring of concerned course leaders and facilitators. The field level performance of the students was assessed by the concerned course leader and facilitators. The students have appeared for internal assessments. The students have presented their reports followed by interactions with a team of evaluators including external examiner(s) and concerned course leader and facilitators.

Limitations of RAWE Programme

The visits to distant places for giving the exposures to the students on many other aspects *viz.* warehouse, multi-purpose cold storages, precision farming systems, polyhouse, commercial horticulture, cultivation of medicinal and aromatic plants, etc remained untouched due to lack of vehicle (mini bus) in the Institute. The students could only get the experience of rural and agricultural scenario of one season and selected region. The funding support has been restricted to only stipend of the student and their contingency. However, funding is also essential for organizing field visits and field days to further strengthen the students learning on many emerging issues of agriculture.

Conclusion

RAWE is an exposure to the principles of "learning by doing" and "seeing is believing", which provides a direction to the students to think and act on their own. It offers a direction to the students to develop their knowledge, attitude and skill to graduate out as an expert and contribute in holistic development of agriculture. This experiential system in agricultural education has a strong potential to prepare a better agricultural technocrats with high level of skill in combination with the modern out-look and management capacity. A learner-centered approach like RAWE is proved to be a significant in building the competence and confidence of agriculture graduates and developing human resources in the field of agricultural education, research and extension in the country.

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