## Department of Genetics and Plant Breeding



# Annual Report 2016-17

Uttar Banga Krishi Viswavidyalaya Pundibari, Cooch Behar, West Bengal-736165

## Annual Report, 2016-17

## Department of Genetics and Plant Breeding at a glance

## A. Background: Opening of Department /UG/PG courses (Genesis):

The newly born University (Uttar Banga Krishi Viswavidyalaya) was initially known as the North Bengal Campus of Bidhan Chandra Krishi Viswavidyalaya at the Gram Sevok Training Centre (GSTC), Coochbehar from 1979 to 1989. During that period the department of Genetics and Plant Breeding was established as a founder department and in 2001, the campus was upgraded as the full fledged university by an act of assembly of the Government of West Bengal and the department as such was recognized as one of the nine departments under faculty of agriculture.

## B. Functions: Teaching /Research/ Extension if any



- To impart teaching in the discipline of Genetics and Plant Breeding and other allied disciplines for awarding B.Sc(Ag.), M.Sc.(Ag.) and Ph.D.(Ag.) degree in the discipline of Genetics and Plant Breeding.
- To undertake research activities in the areas of Genetics and Plant Breeding and allied areas
- To undertake interdepartmental and interinstitutional project works in areas of plant sciences relevant to the field of Genetics and Plant Breeding.
- To set programme and to participate in the process of validation of research output in the field situation.

## C. Teaching:

The faculty members of the department are engaged in teaching at undergraduate and post graduate level under the semester system. In order to equip the students with the quality information and sound knowledge of the subjects of genetics and plant breeding, the faculty members leave no stone unturned to fulfill the stated objectives.

a) Field of specialization for M.Sc. and Ph.D.:

Masters' Degree Programme

- i) Major Field : Plant Breeding and Genetics
- ii) Minor Field: Seed Science and Technology / Biochemistry

Doctoral Degree Programme

- i) Major Field : Plant Breeding and Genetics
- ii) Minor Field: Seed Science and Technology /Biochemistry

## b) Undergraduate courses:

## • As per 4<sup>th</sup> Dean's Committee Syllabus

## i) Compulsory courses:

Sl. No.	Course No.	Title	<b>Credit Hours</b>	Semester
1.	GPB-151	Principles of Genetics and	2+1	Second
		Cytogenetics		
2.	GPB- 201	Principles of Plant	2+1	Third
		Breeding		
3.	GPB- 251	Breeding of Field/	2+1	Fourth
		Horticulture Crops		
4.	GPB- 301	Principles of Plant	1+1	Fifth
		Biotechnology		

#### ii) Elective courses:

Sl. No.	Course No.	Title	<b>Credit Hours</b>	Semester
1.	GPB- 401	Molecular Breeding	1+2	Seventh
2.	GPB- 402	Plant Tissue Culture	1+3	Do
3.	GPB- 403	Recombinant DNA	1+2	Do
		Technology		
4.	GPB- 404	Bioinformatics	1+2	Do
5.	GPB- 405	Microbial and	1+3	Do
		Environmental Technology		
6.	GPB- 406	Molecular Diagnostics	1+2	Do

## • As per 5<sup>th</sup> Dean's Committee Syllabus

## i) Compulsory courses:

Sl. No.	Course No.	Title	<b>Credit Hours</b>	Semester
1.	GPB101	Fundamental of Genetics	3(2+1)	1 <sup>st</sup>
2.	GPB 151	Fundamentals of Plant	3(2+1)	2 <sup>nd</sup>
		Breeding		
3.	GPB 201	Fundamentals of Plant	3(2+1)	3 <sup>rd</sup>
		Biotechnology		
4.	GPB 301	Crop Improvement –I	2(1+1)	5 <sup>th</sup>
		(Kharif Crops)		
5.	GPB 351	Crop Improvement- II	2(1+1)	6 <sup>th</sup>

(Rabi Crops)		
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## ii) Elective courses:

Sl. No.	Course No.	Title	<b>Credit Hours</b>	Semester
1.	ELC- 303	Micro- propagation	3(2+1)	5 <sup>th</sup>
		Technologies		
2.	ELC-351	Commercial Plant	3(2+1)	6 <sup>th</sup>
		Breeding		

## d) Post graduate courses:

Sl. No.	Course No.	Title	<b>Credit Hours</b>	Semester
		Masters' Degree		
1.	GPB- 501	Principles of Genetics	2+1	1 <sup>st</sup>
2.	GPB- 502	Principles of Cytogenetics	2+`1	1 <sup>st</sup>
3.	GPB- 503	Principles of Plant	2+`1	1 <sup>st</sup>
		Breeding		
4.	GPB- 504	Principles of Quantitative	2+`1	1 <sup>st</sup>
		Genetics		
5.	GPB- 505	Mutagenesis and Mutation	2+`1	3 <sup>rd</sup>
		Breeding		
6.	GPB- 506	Population Genetics	2+`1	2 <sup>nd</sup>
7.	GPB- 507	Heterosis Breeding	2+`1	2 <sup>nd</sup>
8.	GPB- 508	Cell Biology and	2+`1	2 <sup>nd</sup>
		Molecular Genetics		
9.	GPB- 509	Biotechnology for Crop	2+`1	2 <sup>nd</sup>
		Improvement		
10.	GPB- 510	Breeding for Biotic and	2+`1 3 <sup>rd</sup>	
		Abiotic Stress Resistance		
11.	GPB- 511	Breeding Cereals, Forages	2+`1	2 <sup>nd</sup>
		and Sugarcane		
12.	GPB- 512	Breeding Legumes,	2+`1 3 <sup>rd</sup>	
		Oilseeds and Fibre Crops		
13.	GPB – 513	Breeding for Quality Traits	2+`1	4 <sup>th</sup>
14.	GPB – 514	Gene Regulation and	2+`0	3 <sup>rd</sup>
		Expression		
15.	GPB – 515	Maintenance Breeding,	1+1 4 <sup>th</sup>	
		Concepts of Variety		
		Release and Seed		
		Production		
16.	GPB - 516	Germplasm Collection,	tion, $2+1$ $3^{rd}$	
		Exchange And Quarantine		
17.	GPB – 517	Database Management,	2+`1	4 <sup>th</sup>
		Evaluation and Utilization		
		of PGR		
18.	GPB – 591	Masters' Seminar 1+0		4 <sup>th</sup>

19.	GPB – 599	Masters' Research	20	4 <sup>th</sup>
		Doctoral Degree		
1.	GPB - 601	Plant Genetic resources	2+`0	1 <sup>st</sup>
		and their Utilization		
2.	GPB - 602	Advances in Quantitative	2+`1	1 <sup>st</sup>
		Genetics		
3.	GPB - 603	Genomics in Crop	2+`1	1 <sup>st</sup>
		Improvement		
4.	GPB - 604	Cellular and Chromosomal	2+`0	2 <sup>nd</sup>
		Manipulations in Crop		
		Improvement		
5.	GPB - 605	Advances in Plant	2+`0	2 <sup>nd</sup>
		Breeding		
6.	GPB - 606	Crop Evolution	2+`0	3 <sup>rd</sup>
7.	GPB- 607	Breeding Designer Crops	2+`1	3 <sup>rd</sup>
8.	GPB - 608	Advances in Breeding of	3+`0	4 <sup>th</sup>
		Major Field Crops		
9.	GPB - 609	Microbial Genetics	2+`1	4 <sup>th</sup>
10.	GPB - 610	In situ and Ex situ	2+`1	5 <sup>th</sup>
		Conservation of		
		Germplasms		
11.	GPB - 691	Doctoral Seminar I	1+0	2 <sup>nd</sup>
12.	GPB - 692	Doctoral Seminar II	1+0	6 <sup>th</sup>
13.	GPB - 699	Doctoral Research	0+45	6 <sup>th</sup>

## e) Post graduate requirement:

- i) For M.Sc.(Ag) Degree: B.Sc (Ag.) Hons. /B.Sc.(Hort.) Hons.
- ii) For Ph.D. Degree: M.Sc.(Ag) in Genetics and/or Plant Breeding /M.Sc.(Ag.) in Seed Science and Technology
- iii) Students' Achievement:

JRF: 05 SRF: Nil ARS-NET: Nil

Others (Specify):

v) Students' Placement:

Govt: Nil Coorporate: Nil Bank: Nil NGO: Nil

## **D. Research Activity:**

#### a) Areas of research:

The faculty members are actively involved in various research programme sponsored by different funding agencies. Given the location of the university in the *Terai* region of West Bengal, the research activities are primarily directed to sort out the available problems of agriculture in this region and also based on anticipatory approaches the research programme are set out by the faculty members. The major areas of research are enumerated below.

- Collection, evaluation and screening of mungbean and cowpea genotypes against biotic and abiotic factors.
- Collection, evaluation and screening of brinjal genotypes against bacterial wilt and fruit and shoot borer in eastern India.
- Quality seed production in pulses (lentil, black gram and mungbean).
- Collection, evaluation and maintenance of germplasms of crops including aromatic rice, wheat, mustard, jute and allied fibres, pegion pea, spices(ginger and turmeric), mung bean, brinjal and urd bean
- Collection, characterization of ginger germplasm
  - i. Collection of different ginger genotypes/ accessions from different regions of West Bengal and India in order to make a broad genetic base in the field gene bank in UBKV.
  - ii. Collection of 71 genotypes/ accessions of ginger were maintained.
  - iii. 63 genotypes/ accessions were assigned IC numbers from NBPGR
- Collection, characterization of turmeric genotype/ accession.
  - i. Collection of different turmeric genotypes/ accessions from different regions of West Bengal and India in order to make a broad genetic base in the field gene bank in UBKV.
  - ii. Collection of 216 genotypes/ accessions of turmeric were maintained.
  - iii. 212 genotypes/ accession were assigned IC number from NBPGR including wild relatives of turmeric like blue turmeric and mango ginger
- CVT trail on ginger: Ginger variety GCP- 49 (IC- 0614552) (MOHINI) developed and released for national released throughout the country in 27<sup>th</sup> workshop held in NRCSS Rajasthan.

#### (http://egazette.nic.in/WriteReadData/2018/182038.pdf)

- CVT trail on turmeric
- Screening of maize genotypes under different moisture regime
- Studying Rhizobium-legume interaction in the soils of terai region
- Developing suitable in-vitro regeneration protocol in medicinal plants
- Objective oriented in-vitro studies in other crops like rice, pulses etc.
- Developing lines and characterization of endangered medicinal plants
- Quality seed production in crops like rice, maize, pulses, mustard, ginger and turmeric etc.

- Seed multiplication of released national ginger variety 'Mohini' (UBKV AADA-I)
- Seed multiplication of Uttarrupanjana (UBKV TURMERIC-2).
- Seed multiplication of local variety Suranjana.
- Development of different lines of high quality ginger and turmeric.
  - i. Development of leaf spot and leaf blotch disease resistance lines of turmeric.
  - ii. Development of high quality ginger lines with high dry matter percentage for high market value
  - iii. Development of high quality turmeric lines with high curcumin percentage for high market value.
  - iv. Development of rhizome tolerant lines in ginger.
  - v. Development of high essential oil and olerisin content ginger lines.
  - vi. Conservation of ginger and turmeric lines with registration of important traits for protection in NBPGR and PPVR&FR and creation of large germplasm base in terai region of West Bengal.
  - vii. Seed multiplication of popular and released varieties.
- Entries for varietal trial have been submitted by AICW&BIP Programme (AICW&BIP)

Year	Name of the entry	Trial name	Status		
2016	UBW 5	NIVT 1B	Yielded on an average 46.3 q/ha. at national level and ranked 47 <sup>th</sup>		
			position.		
2016	UBW 14	NIVT 3A	Yielded on an average 31.6 q/ha. at national level and ranked 36 <sup>th</sup>		
			position.		
2016	Front line demonstration activity was undertaken at Coochbehar and Malda district of West				
	Bengal com	prising of cov	vering a total 52-hectare area to demonstrate promising wheat		
	genotypes like HD 2967, DBW 39, HD 2985, K 1006 under zero tillage condition.				
2016,2017	Survey & surveillance was undertaken against the spread of wheat blast disease across the				
	Bangladesh	border areas.			

- a) Research reports submitted : Nil
- b) Awards and gold medals : Nil
- c) Scholarships, stipends and fellowships: Nil
- d) On going research projects :
  - Collection, characterization, in-situ and ex-situ conservation of rice of North-Eastern India including the areas under jurisdiction of the University - Dr. S.K. Roy, Co-Principal Investigator
  - Improvement of traditional non-basmati aromatic rice genotypes of northern part of West Bengal through induced mutation.( BRNS (BARC)/Dr. S.K Roy, Co Principle Investigator)

- "Creation of Seed Hubs for increasing indigenous production of Pulses in India" under NFSM to be implemented by ICAR-IIPR, Kanpur being the Nodal Agency (Dr. Arup Sarkar, Nodal Officer).
- "A study on exploration, characterization and conservation of brinjal (*Solanum melongena* L.) germplasm in Eastern India" (Institutional Project / Dr. Arup Sarkar, Principal Investigator).
- Development of DUS standards using morphometrics and molecular markers in local cultivars of potato collected from different districts of West Bengal (Institutional Project /Dr. A.Sarkar, Co-Principal Investigator)
- AICRP –Vegetable Crop (Volunteer Centre) (**Dr. Lakshmi Hijam**, Associated Scientist)
- "Dissecting the 'interactome' developed at sieve element due to aphid infestation for better understanding of enhanced insecticidal effect in resistant host plant" (Science and Engineering Research Board, DST, Govt. of India/ Dr. Hossian Ali Mondal, Principal Investigator)
- "Quality Parameter Testing of the Acclimatized Valeriana jatamansi in Terai Zone W.B. and Mass propagation of Valeriana jatamansi, Bergenia ciliate and Piper longum for Distribution with Awareness Programme" (Ministry of Ayurveda, Govt. of India/ Dr. Hossain Ali Mondal, Principal Investigator)
- "Development of DUS standards using morph metrics and molecular markersin local cultivars of potato collected from different district of West Bengal" (W.B., State Govt. contingency Fund/ Dr. Rupsanathan Mandal, Principal Investigator)
- "Central Germplasm Conservation Unit" (W.B., State Govt. contingency Fund/ Dr. Rupsanathan Mandal, In-Charge)
- "All India Co-ordinated Wheat & Barley Improvement Project"(ICAR/Dr. Saikat Das, In charge and Plant Breeder)
- Exploration of the soil microbial diversity of different agro-ecological zones on North Bengal for agricultural use (**Dr. Avijit Kundu**, **Co-principal Investigator, Year of commencement: 2016**)
- Development of DUS standards using morpho-metrics and molecular markers in local cultivars of potato collected from different districts of West

Bengal (Dr. Avijit Kundu, Co-principal Investigator, Year of commencement: 2016)

• AINP on Jute and Allied Fibres - Dr. Avijit Kundu (Associated Scientist/Plant Breeder

#### **E.** Extension activities:

The faculty members are engaged in Seed Village programme, Farmers' Training programme and Participatory Seed Production programme under various ongoing research and extension activities.

## Dr. Arup Sarkar

- Involved as Nodal Officer in Participatory Seed production programme in the North Bengal districts under Seed Hub Project.
- Delivered lecture in workshop –cum-farmers training on " Importance and prospects of pulses in crop diversification under northern districts of West Bengal" during July 20-21, 2017.

#### F. Infrastructural and Support Facilities available:

- Post Graduate Lecture Hall For class room teaching of elective and post graduate courses
- Post Graduate Laboratory For practical oriented training in post graduate level and for other research support activities.
- **Biochemical and Biotechnology Laboratory** For providing analytical facilities in biochemical and biotechnological studies.

#### G. Faculty and staffs:

a) Head of the Department : Dr. Suvendu Kumar Roy, Professor

## b) Faculty

SI.	Name		Designati	Specializat	Contact address
INO			ON	ION	
1.	Dr. Suvendu Kumar Roy		Professor and Head	Genetics and Plant Breeding	Department of Genetics and Plant Breeding, UBKV, Pundibari, Coochbehar, West Bengal – 736165 Email:suvendukumarroy@gm ail.com M : 9434872338
2.	Dr. Arup Sarkar		Professor	Genetics and Plant Breeding	Department of Genetics and Plant Breeding, UBKV, Pundibari, Coochbehar, West Bengal – 736165 Email: arup_skr@rediffmail.com M: 9474016823
3.	Dr. Soumendra Chakraborty		Assistant Professor	Genetics and Plant Breeding	Breeding, UBKV, Pundibari, Coochbehar, West Bengal – 736165 Email: soumendra1@gmail.com M : 9474092958
4.	Dr. Lakshmi Hijam		Assistant Professor	Genetics and Plant Breeding	Department of Genetics and Plant Breeding, UBKV, Pundibari, Coochbehar, West Bengal – 736165 Email: lakshmihij52@gmail.com M: 9163713059
5. Regi	Dr. Moumita Chakraborty onal Research	Station (Terai	Assistant Professor Zone)	Genetics and Plant Breeding	Department of Genetics and Plant Breeding, UBKV, Pundibari, Coochbehar, West Bengal – 736165 Email: moumitabckv@gmail.com M: 8900316030

6.	Dr. Hossian Ali Mondal	Assistant Professor	Genetics and Plant Breeding	Regional Research Station (Terai Zone), Directorate of Research, UBKV, Pundibari, Coochbehar, West Bengal – 736165 Email: hossainalimondal@gmail.com M: 8640098606
7.	Dr. Rupsanatan Mandal	Assistant Professor	Genetics and Plant Breeding	Regional Research Station (Terai Zone), Directorate of Research, UBKV, Pundibari, Coochbehar, West Bengal – 736165 Email: rup.bitech@gmail.com M: 8697668107
AIC	RP/ AINP			
8.	Dr. Saikat Das	Assistant Professor (Sr. Scale)	Genetics and Plant Breeding	AICW & BIP, Directorate of Research, UBKV, Pundibari, Coochbehar, West Bengal – 736165 Email: saikat.ubkv@gmail.com M: 7001766745
9.	Dr. Avijit Kundu	Assistant Professor	Genetics and Plant Breeding	AINP on Jute & Allied Fibres, Directorate of Research, UBKV, Pundibari, Coochbehar, West Bengal – 736165 Email: kundu.avijit78@gmail.com

## c) Non teaching staffs

Sl.No.	Name	Designation	Contact address
1.	Sri Subir Kr. Das	Technical Assistant , GrI	Department of Genetics and Plant Breeding, UBKV, Pundibari, Coochbehar, West Bengal – 736165

2.	Sri Supriya Chakraborty	Technical Assistant GrI	Department of Genetics and Plant Breeding, UBKV, Pundibari, Coochbehar, West Bengal – 736165
3.	Sri Gouranga Chandra Dey	Laboratory Attendant	Department of Genetics and Plant Breeding, UBKV, Pundibari, Coochbehar, West Bengal – 736165
4.	Sri Sourav Bhowmick	Junior Laboratory Attendant	Department of Genetics and Plant Breeding, UBKV, Pundibari, Coochbehar, West Bengal – 736165
5.	Mrs. Namita Das	Junior Peon	Department of Genetics and Plant Breeding, UBKV, Pundibari, Coochbehar, West Bengal – 736165

## H. Doctoral thesis completed

Sl.No.	Title	Year	Author	Chairman
1.	Priming of rice	2016	Mr. Sanjib Bhadra	Prof. Tulsi
	(Oryza sativa L.)			Saran Ghimiray
	seeds to enhance			
	tolerance ability			
	towards abiotic			
	stresses			

## I. Master Degree thesis completed

Sl.No.	Title	Year	Author	Chairman
1.	Genetic variability analysis,	2016	Mr. Bikash	Dr. Soumendra
	characterization and evaluation of different germplasm of curcuma spp. in <i>terai</i> region of West Bengal		Chandra Deb	Chakraborty

## J. Paper & Books published

Sl.No.	Title	Author	Journal	Year
Paper	r (Research and Extension)			
1.	Genetic divergence studies in roselle ( <i>Hibiscus sabdariffa</i> L.) for fibre yield over six environments	Satyanarayana N. H., Visalakshmi, V., Bhanu Priya, Mukherjee, S., <b>Roy, S. K.</b> , Rao, A. U. and Sarkar, K. K.	The Ecoscan, Special Issue, Vol IX: 291-296	2016
2.	Multivariate analysis of quantitative characters for fibre yield in Roselle ( <i>Hibiscus Sabdariffa</i> L.) over six environments	Satyanarayana N. H., Visalakshmi, V., Bhanu Priya, Mukherjee, S., <b>Roy, S. K.</b> , Rao, A. U. and Sarkar, K. K.	Vegetos, 29: 4	2016
3.	Stability of fibre yield and its component traits in tossa jute (Corchorus olitorius L.)	Roy, S. K., Chakraborty, G., Roy, A., Haque, S., Sinha, M. K., Mitra, S. and Kale, V. A.	Electronic Journal of Plant Breeding, 7(3): 714-716	2016
4.	Assessment on genotypic variability and character association in growth and nodulation of cowpea ( <i>Vigna</i> <i>unguiculata</i> L.Walp)	Sarkar, A.	Towards Climate Smart Agriculture- A Key to Livelihood Security	2017
5.	Morphological diversity and nomenclature of <i>Swertia chirayita</i> (Gentianaceae) -recovery of endangered medicinal plant population in Eastern Himalaya.	<b>Chakraborty, S.,</b> Mukherjee, D. and Baskey, S.	American Journal of Plant Science, Vol. 7,No.6.741-755	2016
6.	Survey on fungal diseases of <i>Swertia</i> <i>chirayita</i> in Darjeeling district of West Bengal, India.	S. Baskey, S. Hembrom, S. Ali, B.R. Sharma, B. Tudu and <b>S.</b> <b>Chakraborty</b>	International Journal of Sciences & Applied Research . 3(3), 86-89.	2016
7.	First Report of leaf blight ( <i>Cladosporium</i> <i>tenuissimum</i> Cooke) on <i>Swertia chirayita-</i> A critically endangered medicinal plant of sub- Himalayan zone.	Baskey, S. Hembrom, S. Ali, B.R. Sharma, B. Tudu and <b>S.</b> <b>Chakraborty</b>	International Journal of Recent Scientific Research, Vol. 7, Issue, 2, pp. 8923-8925.	2016

	8.	Stem rot, a new disease	S Baskey, S.	International	
		of Valeriana jatamansi in	Hembrom, S. Ali, B.R.	journal of	2016
		the sub-Himalayan zone of	Sharma, B. Tudu and S.	Applied and Pure	
		Darieeling district of West	Chakraborty	science and	
		Bengal India		Agriculture	
		Dengal, mula		$V_{0}$ (2) E ISSN:	
				$v_{01,2}(2)$ . E-1551N.	
				2394-3332, p-	
				155IN:	
				2394-823X.	
	9.	Varietal performance and	I. Sarkar and <b>S.</b>	Eco. Env. & Cons.	
		choice of exotic and	Chakraborty	22	2016
		indigenous gladiolus		(December Suppl.)	
		varieties in North Eastern		•	
		Himalayan region.		2016; pp. (S181-	
		, ,		S187)	
F	10.	Evaluation of turmeric	S. Chakraborty, A	International	
	101	germplams for tolerance to	Debnath S	Journal of	2016
		foliar diseases in terai	Bandonadhya S. Datta	Agricultural	2010
		region of West Bengal	S Haque and	Science	
		region of west bengan.	M K Dow	and Pasaarah	
			M.K. KOY.		
				155N(P):	
				2250-0057;	
				ISSN(E): 2321-	
				0.007  (1)  (1)  (0)	
F				0087, 0(4),01-08.	
	11.	Conservation and	S.Bandopadhya,	Ecology, 6 (4),01-08.	
	11.	Conservation and evaluation of turmeric	S.Bandopadhya, <b>S.Chakraborty</b> , S. Datta,	Ecology, Environment	2016
	11.	Conservation and evaluation of turmeric germplasms in Terai	S.Bandopadhya, <b>S.Chakraborty</b> , S. Datta, A. Devnath, M. K. Roy	Ecology, Environment and Conservation	2016
	11.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal.	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque	Ecology, Environment and Conservation 2016	2016
	11.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal.	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN	2016
	11.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal.	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971–	2016
	11.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal.	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp.	2016
	11.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal.	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp. (S299- S302)	2016
	11.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal.	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X ): 2016; pp. (S299- S302).	2016
	11.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K K Sarkar	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X ): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268	2016
	11.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality in some rise grosses	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K.K.Sarkar	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268.	2016
	11. 12.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality in some rice crosses.	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K.K.Sarkar	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268.	2016 2016
	11.   12.   13.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality in some rice crosses. Estimation of combining	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K.K.Sarkar Elizabeth B.Khaimichho,	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268. Electronic	2016 2016
	11.   12.   13.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality in some rice crosses. Estimation of combining ability and heterosis for yield	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K.K.Sarkar Elizabeth B.Khaimichho, Lakshmi Hijam,	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268. Electronic Journal of Plant	2016 2016 2016
	11.   12.   13.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality in some rice crosses. Estimation of combining ability and heterosis for yield related characters with	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K.K.Sarkar Elizabeth B.Khaimichho, Lakshmi Hijam, K.K.Sarkar and S.	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268. Electronic Journal of Plant Breeding, 7(4):	2016 2016 2016
	11.   12.   13.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality in some rice crosses. Estimation of combining ability and heterosis for yield related characters with protein content in seed of	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K.K.Sarkar Elizabeth B.Khaimichho, Lakshmi Hijam, K.K.Sarkar and S. Mukherjee	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268. Electronic Journal of Plant Breeding, 7(4): 849-856.	2016 2016 2016
	11.   12.   13.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality in some rice crosses. Estimation of combining ability and heterosis for yield related characters with protein content in seed of mungbean	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K.K.Sarkar Elizabeth B.Khaimichho, Lakshmi Hijam, K.K.Sarkar and S. Mukherjee	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268. Electronic Journal of Plant Breeding, 7(4): 849-856.	2016 2016 2016
	11. 12. 13.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality in some rice crosses. Estimation of combining ability and heterosis for yield related characters with protein content in seed of mungbean A comparison of efficiency	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K.K.Sarkar Elizabeth B.Khaimichho, Lakshmi Hijam, K.K.Sarkar and S. Mukherjee Mandal R., Nag S.,	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268. Electronic Journal of Plant Breeding, 7(4): 849-856. Brazilian	2016 2016 2016 2016
	11.   12.   13.   14.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality in some rice crosses. Estimation of combining ability and heterosis for yield related characters with protein content in seed of mungbean A comparison of efficiency parameters of SSR markers	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K.K.Sarkar Elizabeth B.Khaimichho, Lakshmi Hijam, K.K.Sarkar and S. Mukherjee Mandal R., Nag S., Tarafdar J., and Mitra S.	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X ): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268. Electronic Journal of Plant Breeding, 7(4): 849-856. Brazilian Archives of	2016 2016 2016 2016
	11.   12.   13.   14.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality in some rice crosses. Estimation of combining ability and heterosis for yield related characters with protein content in seed of mungbean A comparison of efficiency parameters of SSR markers and genetic diversity analysis	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K.K.Sarkar Elizabeth B.Khaimichho, Lakshmi Hijam, K.K.Sarkar and S. Mukherjee Mandal R., Nag S., Tarafdar J., and Mitra S.	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268. Electronic Journal of Plant Breeding, 7(4): 849-856. Brazilian Archives of Biology and	2016 2016 2016 2016
	11.   12.   13.   14.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality in some rice crosses. Estimation of combining ability and heterosis for yield related characters with protein content in seed of mungbean A comparison of efficiency parameters of SSR markers and genetic diversity analysis in Amorphophallus	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K.K.Sarkar Elizabeth B.Khaimichho, Lakshmi Hijam, K.K.Sarkar and S. Mukherjee Mandal R., Nag S., Tarafdar J., and Mitra S.	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268. Electronic Journal of Plant Breeding, 7(4): 849-856. Brazilian Archives of Biology and Technology.	2016 2016 2016 2016
	11.   12.   13.   14.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality in some rice crosses. Estimation of combining ability and heterosis for yield related characters with protein content in seed of mungbean A comparison of efficiency parameters of SSR markers and genetic diversity analysis in <i>Amorphophallus</i> <i>paeoniifolius</i> (Dennst.)	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K.K.Sarkar Elizabeth B.Khaimichho, Lakshmi Hijam, K.K.Sarkar and S. Mukherjee Mandal R., Nag S., Tarafdar J., and Mitra S.	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268. Electronic Journal of Plant Breeding, 7(4): 849-856. Brazilian Archives of Biology and Technology.	2016 2016 2016 2016
	11.   12.   13.   14.	Conservation and evaluation of turmeric germplasms in Terai region of West Bengal. Combining ability studies for grian and nutritional quality in some rice crosses. Estimation of combining ability and heterosis for yield related characters with protein content in seed of mungbean A comparison of efficiency parameters of SSR markers and genetic diversity analysis in <i>Amorphophallus</i> <i>paeoniifolius</i> (Dennst.)	S.Bandopadhya, S.Chakraborty, S. Datta, A. Devnath, M. K. Roy and S. Haque Lakshmi Hijam and K.K.Sarkar Elizabeth B.Khaimichho, Lakshmi Hijam, K.K.Sarkar and S. Mukherjee Mandal R., Nag S., Tarafdar J., and Mitra S.	Ecology, Environment and Conservation 2016 (April Suppl.) (ISSN 0971– 765 X): 2016; pp. (S299- S302). Oryza Vol. 53(3), 262-268. Electronic Journal of Plant Breeding, 7(4): 849-856. Brazilian Archives of Biology and Technology.	2016 2016 2016 2016

15.	Partial characterization of rice tungro bacilliform virus (RTBV) isolate od odisha, india and analysis of possible recombination of parts of orf iii and orf iv gene of rtvb.	Chattopadhyay N., <b>Mandal R</b> and Tarafdar J.	Indian phytopathology. 69(4s): 260-265	2016
16.	Ecofriendly biointensive pest management modules in cowpea under sub-himalayan West Bengal, India.	Satpathi K S., Pal S., <b>Mandal R</b> ., Shit N. And Sarkar A.	The journal of plant protection sciences, 8(1-2): 1-6	2016
17.	Study of genetic diversity for grain yield and other agronomic traits of bread wheat (Triticumaestivum L.) in acid soils of Terai region of West Bengal.	SouravMaity, Saikat Das and Saha B.C.	Electronic journal of Plant Breeding.7 (1): 55-60.	2016
1.	Physiology of forest seeds,	Dr. Lakshmi Hijam	Forest Seed Science and Management, pp 4156	2016
2.	Genetics and Cytogenetics	Dr. Soumendra Chakraborty	ISBN No. 978- 93- 85503-15- 3 New Delhi Publishers	2016
3.	Physiology of forest seeds	Dr. Hossain Ali Mondal	Forest Seed Science and Management	2016

## K. Seminar, Symposium, Conference, Training and Winter/Summer/Refresher course/short course attended / organised

SI. No	Seminar, Symposium, Conference, Training and Winter/Summer/Refresher course/short course	Faculty associated	Date	Venue	Attended/ Organised
1.	Sensitization Workshop on	Dr. Arup	28 <sup>th</sup>	UBKV,	Attended
	Experiential Learning,	Sarkar	February –	Pundibari	
	Entrepreneurship and Needs		1 <sup>st</sup> March,		
	of Agro-Industry		2017.		

2.	Horticultural entrepreneurship in spices	Dr. Soumendra	14 <sup>th</sup> -15 <sup>th</sup> December	RRS Majhian West	Attended
	cultivation	Chakraborty	2016	Deligar	
3.	Food security and climate	Dr.	5 <sup>th</sup>	UBKV,Pundibari	Attended
	change in India	Lakshmi	December	,	
		Hijam	2016		
4.	Enhancing nutritional	Dr.	17 <sup>th</sup> -18 <sup>th</sup>	RRS Kalimpong	Attended
	security through climate	Lakshmi	March,	(Hill Zone).	
	smart farming practices	Hıjam	2017		
5.	Molecular Breeding with	Dr.	2 <sup>nd</sup> -22 <sup>nd</sup>	ICAR –National	Attended
	Emphasis on Developing	Lakshmi	Nov, 2016	Rice Research	
	Climate Resilience Rice	Hijam		Institute, Cuttack,	
	Varieties		1	Odisha	
6.	Two days Workshop on	Dr.	$28^{\text{tn}}$ Feb,		Attended
	experimental learning,	Lakshmi	2017 and		
	entrepreneurship and needs	Hijam	1 <sup>st</sup> March,		
	of agro-industry		2017.		
		2	oth D		A.v. 1 1
7.	Food security and climate	Dr.	$5^{\text{m}}$ Dec,	Uttar Banga Krishi	Attended
	change in India	Lakshmi Hijom	2016	V ISWAVIDYAIAYA,	
8	West Bengal Science	Dr	28 <sup>th</sup> Feb-1 <sup>st</sup>	Mini Auditorium	Attended
0.	Congress	Moumita	March 2017	Science City	7 ttended
	Congross	Chakraborty			
9.	Molecular approaches for	Dr.	2016.	Dept. of	Attended
	plant disease Diagnostics	Moumita		Agricultural	
	and resistance mechanism	Chakraborty		Biotechnology,AA	
				U, Jorhat.	
10.	Improving resiliency of crop	Dr. Hossain	8 <sup>m</sup> -28 <sup>m</sup>	College of	Attended
	varieties through novel and	Ali Mondal	September,	Agriculture, Dept.	
	approaches		2010.	Breeding G B	
	approaches			Pant Univ of	
				Agric. & Tech.	
				Pantnagar	
11.	1 <sup>st</sup> Regional Science	Dr.	7 <sup>th</sup> to 8 <sup>th</sup>	AP college,	Attended
	Congress	Rupsanatan	November,	Jalpaiguri, West	
		Mandal	2016	Bengal	
12.	The Authors Workshop on	Dr.	2 <sup>nd</sup>	DST in	Attended
		Rupsanatan	December,	collaboration	
		Mandal	2016	with Elsevier at	
				I ne Sonnet' Hotel,	
1		1		San Lake, Kolkala	

13.	55 <sup>th</sup> All India Wheat & Barley Research Worker's Meet	Dr. Saikat Das	21 <sup>st</sup> -24 <sup>th</sup> August, 2016	CCS HAU, Hissar	Attended
14.	In-Season Surveillance Training on Wheat Blast	Dr. Saikat Das	5 <sup>th</sup> -14 <sup>th</sup> February, 2017	Wheat Research Centre, BARI, Bangladesh	Attended
15.	Enhancing nutritional security through climate smart farming practices	Dr. Saikat Das	17 <sup>th</sup> -18 <sup>th</sup> March, 2017	UBKV Hill campus, Kalimpong	Attended

## L. Any other (Achievement)

## (i) Reviewer of Journal

## Dr. Suvendu Kumar Roy

- 1. Oryza, NRRI, Cuttack, Orissa
- 2. Journal of Crop and Weed, BCKV, West Bengal
- 3. Journal of Agriculture and Technology, UBKV, Cooch Behar, West Bengal
- 4. Electronic Journal of Plant Breeding, TNAU, Coimbatore, Tamil Nadu

## Dr. Lakshmi Hijam

**Bioinfo Publications** 

## Dr. Moumita Chakraborty

Journal Bioinfo Publications.

## Dr. Hossain Ali Mondal

- 1. Plant Molecular Biology Reporter
- 2. 3Biotech

## Dr. Rupsanatan Mandal

- 1. International Journal of Agriculture Sciences
- 2. Biosciences Biotechnology Research Asia
- 3. African Journal of Plant Science
- 4. African Journal of Food Science
- 5. Indian Journal of Science and Technology

## Dr. Saikat Das

Journal of Wheat & Barley Research (ISSN: 2249-4065) published by SAWBR, Karnal, Haryana.

### (ii) External Examiner

## Dr. Suvendu Kumar Roy

Evaluation of M.Sc. thesis at BCKV

## Dr. Arup Sarkar

External Member of the Board of Studies of the Department of Genetics and Plant Breeding, BCKV, West Bengal.

## (iii) Registration of variety

## Dr. Soumendra Chakraborty

Registration of turmeric genotype TCP-129- (IC0615165); registration number INGR-

**16033** from **NBPGR Gene bank** for highly leaf spot and leaf blotch disease tolerant character in 2016.

## (iv) Member of editorial board

## Dr. Arup Sarkar

Editorial Board Member of Research Journal of Agriculture and Forestry Sciences.

## Dr. Soumendra Chakraborty

- 1. International Journal of Agriculture, Environment and Biotechnology-New Delhi.
- 2. Greener Journal of Agricultural Sciences, Nigeria
- 3. Journal of Advanced Biological and Biomedical Research
- 4. Journal of Maize Research and Development, Nepal.

#### Dr. Hossain Ali Mondal

- 1. International Journal of Agriculture Science
- 2. World Journal of Pharmacy and Pharmaceutical science

#### (v) Awards

### Dr. Hossain Ali Mondal

Awarded Early Career Research (ECR) Award-2016 (DST, Govt. of India)







In-vitro aphid Bioassay in the aphid diet supplemented with vascular sap





Preparation of stock solution in the SoilOperation of PCR in the Soil MicrobiologyMicrobiology Lab for DNA extraction from<br/>Vigna radiata by the GPB Department M. Sc.<br/>studentDepartment M. Sc.