

I. Name of the Programme: Ph. D. (Ag.) in Genetics & Plant Breeding

6.4.1. Brief History of the Programme:

The Ph.D. program of the Department, Genetics and Plant Breeding, started its journey since the university's inception in 1974. Meanwhile, the Department bifurcated into two separate departments, Genetics and Plant Breeding, in 1998 and again unified during 2012 following the

Objectives:

- This program aims to train and ignite the innovation power of the students for bringing problem-based solutions in the area of crop improvement.
- To overall development of students fit for generating new ideas in teaching and research in the areas of Genetics and Plant Breeding.

Accomplishment:

- Forty students enrolled as Ph.D. students, and a Doctoral degree was awarded to fourteen students during the last five years.
- One student is trained in the USA under CAAST.
- Placement: National level: 6; Assistant Professor: 5; State level: 6; and MNC (As Breeder in Bayer-Crop Science):1.
- Publication with NAAS > 6.0: 65 (Sixty-five).Poster: Best -01, 2nd position:01 and Third position: 01.
- Varieties released (related to Ph D works): Rice:1; Jute:3; Lathyrus:1, Marigold-2

6.4.2. Faculty Strength

SL. No.	Type of Faculty	Sanctioned Faculty	Faculty in place	Vacant position	Faculty recommended by the ICAR
1.	Professor	3	0	3	1
2.	Associate Professor	3	1+3*	2	1
3.	Assistant Professor	3	1+6*	2	2

Note: Faculties involved from AICRPs, RRS/RRSS/ Other Research Units

6.4.3. Technical and Supporting Staff

SL No.	Category of Staff	Sanctioned Staff	Staff in place	Vacant position	No. of staff recommended by ICAR
1.	Technical Assistant	2	2	0	2 (Lab Assistant)
2.	Office Assistant	2	2	0	
3.	Laboratory Attendant	1	1	0	
4.	Field Assistant	2	2	0	1 (Assistant)
5.	Field workers (Skilled)	2	2	0	2 (Field Assistant)



6.4.4. Classrooms and Laboratories:

6.4.4.1. Number of Classroom: Four (4)

Room	Room No	Purpose (Class/Practical)	Area (Capacity of students)
1.	232	Class room (M. Sc& PhD)	5 x 5 m ² ;20 even & 20 odd semesters
2.	342	Class room (M. Sc& PhD)	13.5 x 5.5 m ² ;25 even & 25 odd semesters
3.	340	Class cum seminar room (PG & PhD)	13.5 x 5.5m ² ; 50 students
4.	346	Class room (PG & PhD)	13.5 x 3 m ² ;15 even & 15 odd semesters

6.4.4.2. Number of Functional Laboratories: Eight (8)

Sl. No.	Room No	Name of the Laboratories	Area (Capacity of students)
1.	236	PG-Lab: Marker and Genome analysis lab	13.5 x 3.5 m ² ;15 even & 15 odd semesters
2.	238	PG-Lab: Abiotic Stress Lab	13.5 x 4 m ² ;15 even & 15 odd semesters
3.	358	PG Lab (PhD)	13.5 x 3 m ² ,5 even & 5 odd semesters
4.	338	Quantitative Genetics Lab	20 even & 20 odd semesters
5.	CRU	Plant Tissue Culture laboratory	10 x5 m ² ; 15 even & 15 odd semesters
6.	AINP-Jute	Fiber Quality analysis Lab	10 x 7 m ² ; 10 even & 10 odd semesters
7.	AICRP-Floriculture	Floriculture Laboratory	10 x 5 m ² ; 10 even & 10 odd semesters
8.	AICRP-Wheat &Barley	Wheat Breeding Lab	10 x 6 m ² ; 10 even & 10 odd semesters

6.4.4.3. List of major equipments, laboratories, farm facilities, workshops and other instructional units

Sl. No.	Name of Laboratory/ Facility	List of major equipments and facilities
1.	PG-Lab: Marker and Genome analysis lab	Protein and Nucleic acid electrophoresis apparatus with power pack, Thermocycler, Gel documentation system, Real-time PCR. Microwave, -20 ⁰ C Freezer, Balance, Microcentrifuge, Cooling centrifuge, Lamina-hood
2.	PG-Lab: Abiotic Stress Lab	Spectrophotometer, PAR analyzer, Refrigerated water bath, Hot-air oven, Chlorophyll-fluorescent analyzer. EC & pH meter, Weighing machine, Refrigerator, Western Blotting apparatus, Incubator-shaker



6.4.4.3. Cont..List of major equipments, laboratories, farm facilities, workshops and other instructional units

Sl. No.	Name of Laboratory/ Facility	List of major equipments and facilities
3.	PG-Lab (Ph D)	Compound microscopes, Spectrophotometer, Camera lucida, Stage micrometer, Ocular, Pointer, Infrared Thermometer, Seed Dryer, Seed Germinator, Seed Analyzer, Grain analyzer, Weighing machine
4.	Plant Tissue Culture laboratory	Lamina-hood, Autoclave, Weighing machine, Tissue culture rack with temperature and time controlling devise, Nucleic acid electrophoresis apparatus with power pack, Thermocycler, Gel documentation system, Microwave, -20 ⁰ C Freezer, Microscope with attached camera and software, Plant growth chamber.
5.	Fiber Quality analysis Lab	Dry air oven, Flame photometer, N-analyzer, Spectrophotomter, Refregerater, Balance, pH meter, Microscope,
6.	Floriculture Laboratory	Spectrophotomter, Cold centrifuge, -20 ⁰ C Freezer, Electrophoresis aaparatus with power pack, Plant growth chamber, BOD incubator, Balance, Autoclave, pH meter
7.	Wheat Breeding Lab	Simple and compound Microscope, Spectrophotometer, Dryer, seed grinder, Geldoc system.
8	Quantitative Genetics Lab	Computers and a few analyses software
9.	Instructional Farm	Shade-net house, Rainout shelter

6.4.4.4. Justify whether these facilities are sufficient to meet the course curricula requirement:

Although there is a huge scopes of improvement but the existing facilities are sufficient to meet the course curricula requirement of 10-12 Ph D students/year. However, a little lack in computation facilities in the Advanced Quantitative Genetics and Genomics practical.

6.4.4.5. Number of theory batches for the Degree Programme: One (1)

6.4.4.6. Number of Practical Batches for the Degree Programme: One (1)

6.4.5. Conduct of Practical and Hands-on-Training:

Lab-based practical classes are organized at the department laboratories and hands-on training on Instructional Farm or the experimental fields especially for crop-specific advanced breeding practicals.

Protocols and methodologies are distributed to the students, and concerned teachers give instruction followed by a demonstration. Following the demonstration and taking help from the technical assistants, students performed the practical and kept a record or drew figures in the laboratory notebook.



Except for a few advanced Genomic analysis practicals, the Department provides sufficient hands-on training as per the ICAR-recommended curriculum requirement of Master degree (GPB) requirements in functional laboratories of the Departments.

We evaluate the practical learning abilities of the students through the end-term evaluation followed by viva, their attendance, and laboratory notebook.

6.4.6. Supervision of students in Ph. D. (GPB) Programmes:

6.4.6.1. Total Number of Students perusing the Ph D Degree at Present: 41

6.4.6.2. Total Number of faculties supervising the Students: 14

	2016-17	2017-18*	2018-19*	2019-20*	2020-21*
No of students in Ph D Program	15	22	28	35	41
No of eligible Teachers for supervision	14	14	14	14	14

Eligible Criteria to become a PhD Advisor:

(Clause 6.03 of the BCKV Regulations regarding Doctoral Degree Programme, 2019)

6.03. Recognition of chairperson / Member of Advisory Committee

- (i) A teacher of the Viswavidyalaya as defined in the Act having at least three (3) years of research and/ or teaching experience after a doctoral degree and at least seven (7) publications after the doctoral degree or joining in service as applicable in the NAAS/ UGC rated journals and /or peer reviewed journals with impact factor as approved by the Board of Studies of the concerned department and subsequently by the PG-UG Council of the respective Faculty, if required, may be recognised as chairperson / member of the Advisory Committee of a student under doctoral degree program.
- (ii) A teacher of the Viswavidyalaya without Doctorate degree but having at least 10 years research / teaching experience and at least seven (7) publications in the NAAS/ UGC rated journals and /or peer reviewed journals with impact factor as approved by the Board of Studies of the concerned department and subsequently by the PG-UG Council of the respective Faculty, if required, may be recognised as chairperson /member of Advisory committee of a student under doctoral degree program.
- (iii) The teachers of the Viswavidyalaya who have registered themselves for the doctoral degree programme shall not be eligible as the Chairman / Member of the Advisory committee of a student.

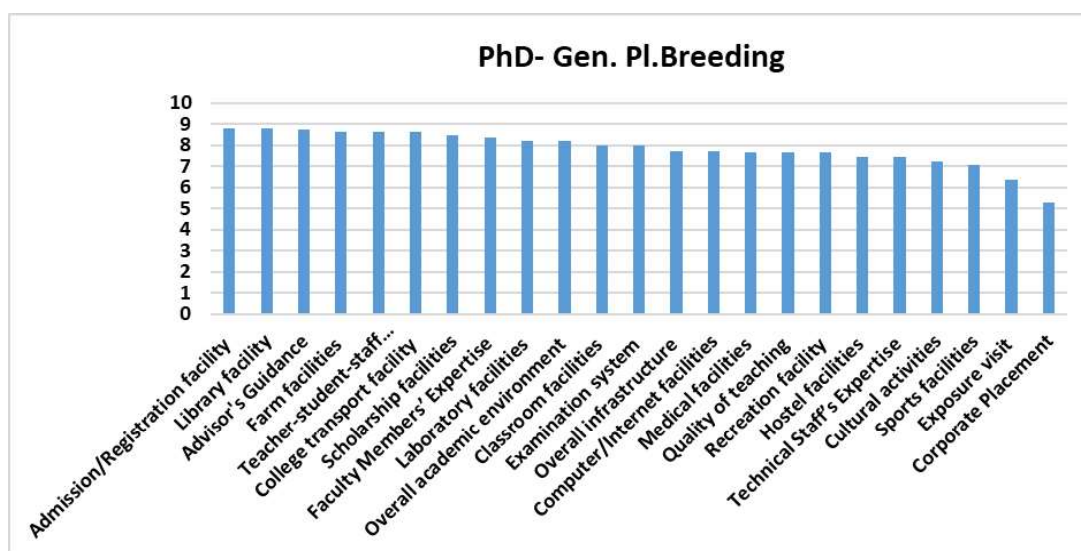
* Documentary evidence attached as annexure I



6.4.7. Feedback of stakeholders:

6.4.7.1. Mention the feedback mechanism

Feedback from the students was conducted in Google Forms using standard questionnaire (24 questions) developed on the basis of comprehensive dimension of Agricultural Education in BCKV campus. The dimension covered all the physical and academic facilities provided by the University. The responses were collected on a 10-point scale (1 denotes poorest facility and 10 denotes excellent facility) from the students of this programme. Individual responses were analyzed statistically (by computation of weighted average of every facility as perceived by the students) for the programme and the result was graphically presented in the SSR. As a documentary evidence, individual responses collected from the students' email ID through Google Forms have been stored in our computer (Google Drive). On demand, of ICAR Peer Review Team, the link for the individual responses can be shared.



Comment: Doctoral students of PhD-Genetics and Plant Breeding Programme are happy with nearly all the facilities provided by the University. Though, facilities like Corporate Placement and Exposure Visit have good scope for improvement.

6.4.7.2. What action the University has taken to address the issues raised in the feedback?

Action taken

The feedback reports were shared with concerned sections of the university. Students responded very positively with regards to majority of the facilities provided by the university. However, with respect to timely publication of results and corporate placement, there are ample



scopes of improvement. Considering this feedback, the university has taken administrative actions for publication of results within stipulated period as reflected in the circulars of the concerned authorities. As corporate placement, to a great extent, is beyond the purview of the university itself, the Placement Cell continuously in touch with the potential employers to utilize the vacancies in favour of BCKV.

Impact

We are expecting very positive impacts in near future on these issues as some steps have already been taken in recent times as mentioned above.

6.4.8. Student intake and attrition in the programme for last five years:

Academic Year	Sanctioned strength	Actual intake	Attrition (%)	Students awarded with the degree
2016-17	5	5		0
2017-18	10	10		2
2018-19	13	12		4
2019-20	11	11		1
2020-21	12	12		0

Note: Students can submit their thesis from 6th semester onwards. Hence, working out attrition cannot be possible. Therefore, the number of students awarded with the Ph D in different academic session are included in the table.

6.4.9. ICT Application in Curricula Delivery:

Generally, in the pre-pandemic period the use of ICT in our faculty was limited to classroom lecture through LCD Projectors and computers, Use of Web-based free software for Quantitative genetics Practical and bioinformatics analysis.

The use of ICT tools became more dominant as the pandemic situation started. The institute has to run the teaching and learning process completely in virtual mode. The ICT tools used for the curriculum delivery for different theory and practical classes are tabulated below:

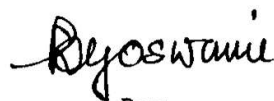
Theory	Practical
<ol style="list-style-type: none"> 1. Google meet has been used for taking regular classes 2. E-mail, Whatsapp etc. has been used for giving lecture notes. 3. Use different free web browser for lecture notes 4. Use of ICAR E Courses (https://ecourses.icar.gov.in) 5. Use of ‘Google form’ for the assessment purpose. 	<ol style="list-style-type: none"> 1. Use of YouTube and other web link for demonstrating in different practical classes. 2. Use of Google meet for practical video demonstration. 3. Use of free software for quantitative genetics practical.



I, the **Dean, Prof. Subhendu Bikash Goswami**, hereby certify that the information contained in the Section 6.4.1 to 6.4.9 are furnished as per the records available in the college, and degree awarding University.

Place: Mohanpur

Date: 02-11-2021



Dean
Faculty of Agriculture
Bidhan Chandra Krishi Viswavidyalaya
Mohanpur, Nadia, West Bengal

(Signature of Dean of the Faculty with Date & Seal)

