

**DEPARTMENT OF GENETICS AND PLANT BREEDING
COLLEGE OF AGRICULTURE,
NAVSARI AGRICULTURAL UNIVERSITY,
BHARUCH CAMPUS, BHARUCH**

Name of Professor & Head	:	Dr. S. R. Patel
Qualification	:	Ph. D.
Specialization	:	Genetics & Plant Breeding
Contact	:	(M) 72268 16899 srpatel@nau.in

INTRODUCTION:

Department of Genetics and Plant Breeding was established with the establishment of College of Agriculture. N.A.U., Bharuch in 2012 with an objective to cater the educational, research and extension activities in the subject of Genetics and Plant Breeding. Since its inception, department has significantly contributed in the university achievements in all the three spheres *viz.*, Education, Research and Extension.

Department has privilege of having fleet of most experienced and dedicated faculty members with diversified areas of specialization. Majority of faculty possessing Ph.D. and many of them acquired training and have regular participation in seminars, symposia and workshop. The discipline has major share with the evaluation and development of new crop varieties in Pigeon pea, cotton and pulse crops. The credit load at Polytechnic in Agriculture is up to 6th semester and U. G. level up to 8th semester.

OBJECTIVES:

- 1. Impart the education in Polytechnic in Agriculture and U.G. level [B.Sc. (Hons.) Agri.].**
- 2. Upgrade the knowledge, regarding different improved and hybrid varieties and practices of seed production.**
- 3. Transfer the recommended technologies to farmers through literature distribution, popular articles in news paper and training etc.**
- 4. Provide guidance to Post Graduate students in the subject of Genetics and Plant Breeding in N.A.U., Navsari.**

MAJOR ACTIVITIES & ACHIEVEMENTS:

I. TEACHING:

(A) UNDER GRADUATE COURSES (As per 6th Dean's)

Total 14 courses with 56 credit loads are being taught from first to eight semesters B.Sc. (Hons) in Agriculture.

Sr.	Semester	Course Title	Credit	Remarks
1	First	Seed Production & Testing Technology Skill Enhancement course-III (SEC-III)	2(0+2)	
2	Second	-	-	
3	Third	Principles of Genetics	3 (2+1)	
4	Fourth	Basics of Plant Breeding	3 (2+1)	
5	Fifth	Crop Improvement (Kharif crops) - I	2 (1+1)	
6	Fifth	Fundamentals of Crop Physiology	3 (2+1)	
7	Sixth	Fundamentals of Biotechnology	3 (2+1)	
8	Sixth	Crop Improvement (Rabi crops)- II	2 (1+1)	
9	Sixth	Fundamentals of Seed Science and Technology	2 (1+1)	
10	Seventh	Elective courses		
	(i)	Commercial Plant Breeding	4 (3+1)	4 Courses for GPB
	(ii)	Biotechnology for Crop Improvement	4 (3+1)	
	(iii)	Micro-propagation Techniques	4 (3+1)	
	(iv)	Commercial Seed Production	4 (3+1)	
11	Eighth	Student READY :RAWE/ Industrial Attachment /Experiential / Learning / Hands-on Training/ Project Work / Internship	20 Credits	
		Total Credits	56	

(B) POLYTECHNIC IN AGRICULTURE COURSES (As per 5th Dean's):

Total 6 courses with 13 credit loads are being taught from first to six semesters in Polytechnic in Agriculture.

Sr.	Semester	Course Title	Credit	Remarks
1	First	Introductory Biology	2 (1+1)	
2	Second	Fundamentals of Crop Physiology	3 (2+1)	
3	Third	Fundamentals of Genetics	3 (2+1)	
4	Fourth	-	-	No Subject
5	Fifth	Fundamentals of Plant Breeding	3 (2+1)	
6	Sixth	Seed Production Technology	2 (0+2)	
Total Credits			13	

(C) POST GRADUATE COURSES (As per 5th Dean's)

Total 19 courses with 56 credit loads are being taught from first to fourth semesters in M.Sc. Agriculture.

Sr.	Semester	Course Title	Credit	Remarks
		MAJOR SUBJECTS		
1	First	GPB 501: PRINCIPLES OF GENETICS	2 + 1	
2		GPB 502: PRINCIPLES OF PLANT BREEDING	2 + 1	
3		GPB 516: BREEDING FOR STRESS RESISTANCE AND CLIMATE CHANGE	2 + 1	
		MINOR SUBJECTS		
4		MBB 501: PRINCIPLES OF BIOTECHNOLOGY	3 + 0	
5		MBB 518 GENE REGULATION	2 + 0	
		NON-CREDIT COMPULSORY		
6		PGS -501: LIBRARY AND INFORMATION SERVICES	0 + 1	
7		PGS -503: INTELLECTUAL PROPERTY AND ITS MANAGEMENT IN AGRICULTURE	1 + 0	
8		PGS -505: AGRICULTURAL RESEARCH, RESEARCH ETHICS AND RURAL DEVELOPMENT PROGRAMMES	1 + 0	
		MAJOR SUBJECTS		
9	Second	GPB 503: FUNDAMENTALS OF QUANTITATIVE GENETICS	2 + 1	
10		GPB 505 PRINCIPLES OF CYTOGENETICS	2 + 1	
11		GPB 506 MOLECULAR BREEDING AND BIOINFORMATICS	2 + 1	
		MINOR SUBJECTS		
12		MBB 504 TECHNIQUES IN MOLECULAR BIOLOGY -I	0 + 3	
		SUPPORTING		
13		STAT 511 EXPERIMENTAL DESIGNS	2 + 1	
		NON-CREDIT COMPULSORY	-	
14		PGS -502 TECHNICAL WRITING AND COMMUNICATIONS SKILLS	0 + 1	
15		PGS -504 BASIC CONCEPTS IN LABORATORY TECHNIQUES	0 + 1	
		MAJOR SUBJECTS		
16	Third	GPB 504 VARIETAL DEVELOPMENT AND MAINTENANCE BREEDING	1 + 1	
17		GPB 591 MASTER'S SEMINAR	1 + 0	
		SUPPORTING		
18		BIOCHEM 507 PLANT BIOCHEMISTRY	2 + 1	
19	Fourth	RESEARCH GPB 599: MASTER'S RESEARCH (THESIS /PROJECT)	0 + 30	
		Total Credits	70	

(D) GUIDING POST GRADUATE RESEARCH:

Faculty Name	Number of Student	
	M.Sc. (Agri)	Ph.D. (Agri)
Dr. S. R. Patel, Professor	16	6
Dr. H. N. Patel, Associate Professor	1	0
Dr. K. N. Chaudhari, Associate Professor	10	5
Dr. S. S. Patil, Assistant Professor	8	0
Dr. Dinisha Abhishek, Assistant Professor	2	0

(E) ADDITIONAL ACADEMIC ACTIVITIES & DUTIES:

Faculty Name		Activities & Duties
Dr. S. R. Patel, Professor	:	<ol style="list-style-type: none"> 1. Acted as Academic In-Charge in UG faculty 2. Acted as Student's Representative Council (SRC) Chairman 3. Acted as Nodal officer (Admission), CoA, NAU, Bharuch 4. Acted as Student's Advisor 5. Member of Purchase committee, CoA, NAU, Bharuch 6. Chairman, Accreditation committee, CoA, NAU, Bharuch 7. Chairman, Anti-Ragging committee, CoA, NAU, Bharuch 8. Chairman, Student Disciplinary committee, CoA, NAU, Bharuch 9. Chairman, Gender Equality Cell, CoA, NAU, Bharuch 10. Chairman, Anti-Women Harassment Cell, CoA, NAU, Bharuch 11. Act As a Co-Investigator: 2 Projects Ongoing
Dr. H. N. Patel, Associate Professor	:	<ol style="list-style-type: none"> 1. Acted as Nodal officer (Admission), CoA, NAU, Bharuch 2. Acted as Student's Advisor 3. Acted as In-Charge of NARP, Bharuch 4. Acted as Assistant Rector (Boys) 5. Member of Purchase committee, CoA, NAU, Bharuch 6. Member of Accreditation committee, CoA, NAU, Bharuch 7. Crop Improvement Project (10 Nos.) has conducted in wheat, Dicoccum, rustica tobacco, barley, pigeon pea etc.
Dr. K. N. Chaudhari, Associate Professor		<ol style="list-style-type: none"> 1. Acted as Nodal officer (Admission), CoA, NAU, Bharuch 2. Acted as Student's Advisor 3. Acted as a Tour leader for UG Tour during 2017 & 2023 4. Acted as a Farm Head, Dept. of Veg. Science, NAU, Navsari 5. Act As a Head Rector, CoA, NAU, Bharuch 6. Acted As a Principal Investigator: 2 Projects
Dr. S. S. Patil, Assistant Professor		<p><u>Teaching & Other activities:-</u></p> <p>Acted as an Assistant rector of Boys (PIA & PG) Hostel for six year</p> <p>Acted as an Assistant academic in charge in UG faculty</p> <p>Acted as a student advisor for UG student</p> <p>Member of admission committee of CoA, Bharuch</p> <p>Member of Purchase committee</p> <p>Member of Construction committee</p> <p>Member of SRC, Anti-ragging, Gender Harassment, SDC etc.</p> <p>Taught various courses at PG, UG & PIA level</p> <p><u>Research related activities:-</u></p> <p>Handling and conducting all breeding experiments of NARP, Bharuch</p> <p>Preparation of sowing list, observation register, technical programme, cropping scheme, AGRESCO report, variety release proposal & other such reports of NARP, Bharuch</p>

	Monitoring of Breeder seed production of GNP-2 pigeon pea variety Taking Foundation/Certified/Truthful Seed production of Pigeon pea varieties Germplasm collection & maintenance Crop Improvement work of pigeon pea Farm Management & development Extension Related activities:- Organizing Khedut din & Khedutshibir Participated in Krushimahatsov, Kisan Sanman Samaroh etc. Diagnostic visit to farmers filed Attending calls of farmers related to pigeon pea
Dr. Dinisha Abhishek, Assistant Professor	1. Acted as Assistant Academic In-Charge in UG faculty 2. Acted as member of Student's Representative Council (SRC) 3. Member of Admission Committee, CoA, NAU, Bharuch 4. Act as Student's Advisor 5. Act As a Assistant Rector (Girls), CoA, NAU, Bharuch 6. Act As a Principal Investigator: 2 Projects Ongoing

2. RESEARCH:

(i) Ongoing Departmental Research Project: AGRESCO experiment, NAU, Bharuch Campus

Title: Exploitation of genetic resources to develop biofortified pigeonpea

Details of the experiment/Project

1	Date of commencement	2016-17
2	Experimental design	RBD
3	Replication	3 (Parents)
4	Cultural practices	As recommended

(ii) Ongoing Departmental Research Project: AGRESCO experiment, NAU, Bharuch Campus

Title: Assess the potential of quinoa (*Chenopodium quinoa*) as an alternative crop for South Gujarat

Details of the experiment/Project

1	Date of commencement	2023-24
2	Experimental design	RBD
3	Replication	3
4	Cultural practices	As recommended

(iii) Proposed Research Project:

Title: Development of high yielding genotypes of pigeon pea for winter season

- Dr. Sunil S. Patil, Assistant Professor is actively engaged in NARP project, College Farm, NAU, Bharuch for handling various breeding experiments.
- This department is also associated with PG research activities wherein several field experiments on various mandate crops like, Pigeon pea, Cotton, Okra, Sesamum, Maize, Pulses etc. are being conducted year round under this department.

3. EXTENSION:

- ✚ Department staff is also actively participating in Krushi mela, Khedut Din, Khedut Shibir, Seminar, Radio and television programme and programs organized by FTC for transfer of technology to the farmers time to time.
- ✚ Department is also imparting training to the students of various rural academic institutes.
- ✚ This department is also guiding farmers through publishing press notes in daily local news paper and popular articles in local language magazines on various technological aspects of major crops of this zone.

4. OTHERS:

No.	Name	Research Papers /Abstract Published (National & International)	Popular Articles	Workshops/ Meetings (AGRESCO, ZEARC & PG-RAG)	Seminars/ Conference/ Symposium	Trainings (Winter/ Summer Schools & Others)
1	Dr. S. R. Patel	92	91	42	29	9
2	Dr. H. N. Patel	32	22	32	18	14
3	Dr. K. N. Chaudhari	17	02	33	04	06
4	Dr. S. S. Patil	46	21	04	17	07
5	Dr. Dinisha Abhishek	16	02	06	04	08

No.	Name	Recommendation	Projects Handled	Books/ Booklets	Germplasm Exploration Trips	Life Membership in Journal
1	Dr. S. R. Patel	4	10	2	2	10
2	Dr. H. N. Patel	20	8	4	10	12
3	Dr. K. N. Chaudhari	16	05	02	02	06
4	Dr. S. S. Patil	02	02	01	05	05
5	Dr. Dinisha Abhishek	00	02	02	03	04

- ✚ Practical Manuals and Theory notes are prepared and published by faculties in UG, PG and Polytechnic courses.
- ✚ Extra coaching classes are organized for the students for preparation of competitive examinations.

FACILITIES IN DEPARTMENT:

In GPB department, various laboratories are created and functioning such as

- (i) Plant Biotechnology and Plant Tissue Culture laboratory
- (ii) Genetics and Plant Breeding laboratory
- (iii) Plant Physiology laboratory

LIST OF INSTRUMENTS AVAILABLE IN GPB DEPARTMENTAL LABORATORIES

SR.	NAME OF INSTRUMENTS
1.	Binocular Pathological Microscope, MIC Fine Vision
2.	Monocular Inclined Research Microscope
3.	Electronic Balance Model RA-50
4.	Oven Universal (Merrert Type) Digital Controlled Sedco Laboratory Equipments, Ahmedabad, Sr. No. 269
5.	Trinocular Research Microscope Model MUX-103 i with 5 megapixel camara & software
6.	Trinocular Research Microscope Model MUX-103 i
7.	Autoclave Vertical 250X 450 with Accessories
8.	SDS PAGE
9.	LG Freeze GLB-292 SGSL
10.	Deep Freezer (Blue Star 100 lit.)
11.	Refrigerated Micro Centrifuge with Multipurpose capability
12.	Water bath with Temperature Conrtol
13.	Hot Plate 45X60X15 cm with digital temperature
14.	Monocular Microscope, KHERA Instruments
15.	Bench Top Cooler
16.	Vortex Mixer Mini V MIX Labtech
17.	Digital pH Meter
18.	Thermal Cycler 96 HAIN Life Science
19.	Gel Documentation Unit Zenith Brand - Model GEL PROCCD 916 ,Bio Zen Laboratories
20.	CO ₂ Analyzer
21.	Digital pH Meter
22.	Mini Pro 300 Volts Major Science Electrophoresis Power Supply FUTURE BIO Pvt. Ltd.
23.	Electrophoresis Unit Horizontal
24.	Liquid nitrogen container
25.	Nano / Micro Spectrophotometer, Lassany International Model LI - 5100
26.	Vertical Autoclave, Model - PSM -550-B2 11 C D, AS System, Ghaziabad
27.	Horizontal Laminar Flow Cabinet 1200 X 600 X 600 Agrawal Scientific, Ahmedabad
28.	Laminar Air Flow Cabinet, BIO SAFETY Model No. BS - 294, Agrawal Scientific, Ahmedabad
29.	Ultraviolet sterilizer, Agrawal Scientific, Ahmedabad
30.	Hot Plate with Magnetic stirrer, Neuation Instruments, Model No. i Stir HP 550

31.	Mini centrifuge variable speed RPM 6R Non Refrigerator, Neuation Instruments, Model No. I fuge M08VT
32.	LM 100 Lux Meter (0 - 200000)
33.	Dry Bath Incubator, Equitron Scientific, Model No. 8550 I H 100
34.	UV-trans illuminator with Filter 312 mm 20X20 cm GeNei Research Laboratory Pvt. Ltd., Model No. F/136
35.	Shaking Orbital Incubator I shake IS 20, Neuation Instruments, Model No. ishak IS 7.5
36.	LG 32L All in one Microwave Convccional Oven Model No. MC 3286BFUM
37.	Doris Frysteel (Iron) Almirah 1855mm - 5 Shelves
38.	Unbranded Steel (Glass) Almirah 1855mm - 4 Shelves
39.	iGene Labserve Single Moulded Horizontal Electrophoresis system iGene IG SC 1515 HSN
40.	- 40° C Deep Freezer (Blue Star)
41.	MicroTek 5.5 KVA UPS, MicroTek International Pvt. Ltd. Model No. I-MAXX 5.5 KV A/192 V
42.	Eppendorf Refrigerated Centrifuge with LCD Display Model: 5430R TSUYOI BIOSCIENCE Technologies Pvt. Ltd., Sabarmati, Ahmedabad
43.	Blue Star 40 Kg Ice Flake Making Machine
44.	CRYOGEM Aluminium Cryozen for Liquid Nitrogen
45.	Voltriq Air Purifier
46.	PCR Machine (Semi Quantitative)
