

EVALUATIVE REPORT OF THE DEPARTMENT

DEPARTMENT OF BOTANY

1. Name of the Department : University Department of Botany
2. Year of establishment : 1966
3. Is the Department part of a School/Faculty of the university: The Department is the part of Faculty of Science.
4. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.): PG and Ph.D.
5. Interdisciplinary programmes and departments involved : M.Sc. (Biochemistry) and M.Sc. (Environmental Science)
6. Courses in collaboration with other universities, industries, foreign institutions, etc. : Nil
7. Details of programmes discontinued, if any, with reasons : None
8. Examination System: Annual/Semester/Trimester/Choice Based Credit System: Semester System up to 2018-2020, Choice Based Credit System w.e.f. 2019-2021.
9. Participation of the department in the courses offered by other departments : Faculty members of this department engages classes of

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M.Sc. and Ph.D. course work in Biochemistry and Environmental Science, and supervise research leading to the award of Ph.D. degree.

10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others):

Designation	Sanctioned	Filled	Actual Including (CAS & MPS)
Professor	01	00	
Associate Professor	03	01	
Assistant Professor	05	03	
Other			

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance:

Name	Qualification	Designation	Area of specialization	No. of Years of Experience	No. of Ph.D. / M.Phil students guided in last 4 yrs
Dr. Praveen Kumar Singh	M.Sc., Ph.D.	Associate Professor	Cytogenetics		
Dr. Ravi Kumar Singh	M.Sc., M.Tech., Ph.D.	Assistant Professor	Genomics and Cytogenetics	1.5	NIL
Dr. Amit	M.Sc.,	Assistant	Cytogenetics	1.5	NIL

Kumar Singh	Ph.D.	Professor			
Dr. Ekta Verma	M.Sc., Ph.D.	Assistant Professor	Microbial Pathology	1.5	NIL

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors :
None
13. Percentage of taken by temporary faculty — programme-wise information:
14. Programme-wise Student Teacher Ratio: M.Sc. 30:1; Ph.D.
15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual :

Name of Post	No. of sanctioned post	No. of filled post	No. of vacant post
Assistant	01	01	00
Store- keeper	01	01	00
Librarian	01	01	00
Artist-cum-photographer	01	01	00
Electrician-cum-Mechanic	01	00	01
Lab Bearer	05	00	05
Specimen Collector	01	00	01
Peon	05	02	03
Mali	02	02	00

Sweeper	01	00	01
Darban	03	03	00
Plumber	01	00	01

16. Research thrust areas as recognized by major funding agencies :
- (a) Aeroallergens and Human Health
 - (b) Ex-situ Conservation of Plants
 - (c) Mutagenic Studies in Crucifers and Impact of Chemical Pesticides and Biopesticides on Genotoxicity
17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise. : NIL
18. Inter-institutional collaborative projects and associated grants received a) National collaboration b) International collaboration:
19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received. :
20. Research facility/Centre with :
- State recognition : NIL
 - National Recognition : NIL
 - International recognition : NIL
21. Special research laboratories sponsored by / created by industry or corporate bodies : NIL

22. Publications: (Details are in Enclosure No. E22A, E22B and E22C)
- Number of papers published in Peer revised Journals (national/international) :
 - Monograph :
 - Chapter in Book :
 - Edited Books :
 - Books with ISBN with details of publishers :
 - Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database International Social Sciences Directory, EBSCO host, etc.) :
 - Citation Index — range / average :
 - SNIP :
 - SJR :
 - Impact Factor — range / average :
 - h-index :
23. Details of patents and income generated : NA
24. Areas of consultancy and income generated : NA
25. Faculty selected nationally/internationally to visit other laboratories I institutions / industries in India and abroad : NIL
26. Faculty serving in a) National committees b) International committees c) Editorial Boards d) any other (please specify) : NIL

27. Faculties are members of different state level committees and editorial board. Faculty recharging strategies (UGC, ASC, Refresher I orientation programs, workshops, training programs and similar programs):
28. Student projects :
- Percentage of students who have done in-house projects including inter- departmental projects: Project, based on elective paper, of 100 marks (one paper) is a compulsory part of IVth Semester of M.Sc. Curriculum.
 - Percentage of students doing projects in collaboration with universities /industry / institute :
29. Awards / recognitions received at the national and international level by:
- Faculty :

Awards / recognitions received by Dr. Ravi Kumar Singh

1. Selected as mentor (ID: CSIR/SRTP/2020/NEIST/M/215) for CSIR-SUMMER RESEARCH TRAINING PROGRAM (CSIR-SRTP) 2020 ONLINE
2. Post-doctoral Fellowship from Carl Tryggers Foundation, Sweden
3. Research Fellowship and Associateship from 'Max Planck Germany – DST India Partner Group'
4. Max Planck Society Visiting Fellowship from 'Max Planck Germany – DST India Partner Group'

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- Doctoral/post-doctoral fellows :
- Students :

30. Seminars/ Conferences/Workshops organized and the source of funding (national /international) with details of outstanding participants, if any. :

NIL

31. Code of ethics for research followed by the departments: The department follows the guidelines for research formulated by the University.

32. Student profile programme-wise:

Name of the Programme (refer to question no. 4)		Applications received	Selected		Pass percentage	
			Male	Female	Male	Female
PG (Botany)	2014-16	176	16	32	22.91	39.58
	2015-17	251	28	26	35.18	37.03
	2016-18	182	20	37	21.05	40.35
	2017-19	87	15	21	-	-
	2018-20	60	21	39	-	-
PhD	2014-15	70	09	16	28.00	52.00
	2015-16	35	18	17	42.85	48.57
	2016-17	39	17	22	38.46	48.71
	2020-21					

33. Diversity of students:

Name of the Programme (refer to question no. 4)	No. of students from the same university	No. of students from other universities within the State	No. of students from other universities outside the State	No. of students from other countries

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise. :

35. Student progression:

Student progression	Percentage against enrolled	
U.G. to P.G.		
P.G. to M.Phil		
P.G. to Ph. D.	2014-15	4.00%
	2015-16	8.57%
	2016-17	5.12%
	2020-21	
Ph. D. to Post-Doctoral		
Employed <ul style="list-style-type: none"> • Campus Selection • Other than campus requirement 		
Entrepreneurs		

36. Diversity of staff:

Percentage of faculty who are graduates	
of the same university	50%
from other universities within the State	
from universities from other states from	50%
from universities outside the country	

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period : 01
38. Present details of departmental infrastructural facilities with regard to
- a) Library : The departmental library has been stocked with nearly 5000 books and back volumes of national and international journals like “Cytologia”, “Nucleus”, “Mycologia”, “Phytopathology”, “Annals of Botany”, “Plants and Soil”, “JIBS”, and “Tropical Ecology”.
 - b) Internet facilities for staff and students. : Wifi available for teaching staff
 - c) Total number of class rooms : 01 (Lecture Theatre)
 - d) Class rooms with ICT facility : NIL
 - e) Students' laboratories : 02 General Laboratories, 04 Laboratories for Elective Papers (Unfurnished), 01 Biochemistry Laboratory
 - f) Research laboratories : 01

39. List of doctoral, post-doctoral students and Research Associates: Listed in Enclosure No. ---
40. Number of post graduate students getting financial university. : NIL
41. Was any need assessment exercise undertaken before the programme(s)?
If so, highlight the methodology.
42. Does the department obtain feedback from :
- a. Faculty on curriculum, as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback.?
 - b. Students on staff curriculum and teaching learning-evaluation and. how does the department utilize the feedback. ?
 - c. Alumni and employers on the programmes offered and how does the department utilize the feedback. ?

The Departmental Council consisting of Head of the Department, all teachers of the Department from time to time review the overall activities of the Department and suggest ways of its improvement which is implemented in a phased manner.

The Board of Courses and Studies consisting of the Head of the Department as ex-officio Chairman, two external experts and faculty members of the Department meet from time to time and recommends the syllabi of studies of UG, PG and Pre-Ph.D. test in order to meet the contemporary requirements of students and to meet the National Standards in view of NTA, SET, UGC and UPSC guidelines.

43. List the distinguished alumni of the department (maximum 10):
- 1) Dr. Munindra Kumar: Vice-Chancellor, Nalanda Open University, Patna.
 - 2) Dr. R. P. Upadhyay: Head of the University Department of Botany and Dean, Faculty of Science, TMBU, Bhagalpur.
 - 3) Sri Sanjay Kumar: Chief Conservator of Forests.
44. Give details of student enrichment programmes (special lectures/ workshops / seminar) involving external experts. : Special Lectures have been organized for Pre-Ph.D. students.
45. List the teaching methods adopted by the faculty for different programmes.

For class room teaching besides the conventional method chalk-duster, the teachers of the Department use contemporary educational technologies i.e., OHPs and LCD projectors while transferring their knowledge to the students. In practical classes standard modern techniques are employed for studies. Periodical field visit and botanical excursion of diverse ecogeographical areas are arranged to acquaint the students with the biodiversity of plants.

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?: By periodically arranging internal assessment (both oral and written), quiz and seminar.

47. Highlight the participation of students and faculty in extension activities:

Dr. Ravi Kumar Singh was selected as mentor (ID: CSIR/SRTP/2020/NEIST/M/215) for CSIR-SUMMER RESEARCH TRAINING PROGRAM (CSIR-SRTP) 2020 ONLINE.

In this program, Dr. Ravi Kumar Singh supervised the research projects of ten master's students from different Universities / Institutes of India during June to August, 2020 coordinated by CSIR-NEIST, Jorhat in the subject area "Interdisciplinary approach for sustainable use of resources".

Dr. Ravi Kumar Singh supervised the part of B.Tech. dissertation work of a student from SRM University, Haryana in the subject area of genomics.

Dr. Ravi Kumar Singh supervised the part of M.Tech. (Marine Biotechnology) dissertation work of student from National Centre for Aquatic Animal Health, Cochin University of Science and Technology, Kerala in the subject area of genomics.

48. Give details of "beyond syllabus scholarly activities" of the department:
- (a) Updating the curriculum from time to time in order to meet contemporary requirements of students and to meet National standards in view of NET, SET, UPSC and UGC guidelines.
 - (b) Research guidance at Doctoral level.
 - (c) Screening and monitoring the research proposals and thesis submitted by the students at Doctoral / Post Doctoral level.
49. State whether the programme/ department is accredited/ --graded by other agencies? If yes, give details. : NO
50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.
51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:

Strength:

- (a) The physical infrastructure of Department of Botany occupies 12782.5 sqft carpet areas where an exclusive space of 4938.5 sqft has been dedicated over two general laboratories, four specialized labs for teaching papers, one research laboratory, and one modern biochemistry lab. There is one air conditioned Lecture theatre (50' x 26') fitted with gallery benches of good quality teak wood.

- (b) There is a good spacious seminar hall well equipped with audio system, ceiling mount LCD projector with temperature and sound control systems.
- (c) The Department of Botany acquired a number of modern instruments (Listed in Enclosure No. --) required for teaching and research in the area of basic plant molecular biology, microbiology, plant pathology, environmental biology and related areas.
- (d) The Departmental library has been stocked with nearly 5000 books and back volumes of several national and international journals like “Cytologia”, “Nucleus”, “Mycologia”, “Phytopathology”, “Annals of Botany”, “Plants and Soil”, “JIBS”, and “Tropical Ecology”.
- (e) The Botanical Garden of Magadh University spread over an area of 13.3 acres of land protected with cemented boundary wall, has the credit to get its name in the list of **National Botanic Gardens of India** as published by Botanical Survey of India in 1983.
- (f) Besides annexed to the building of the department, there is an experimental garden with a wide variety of plants which offer an excellent scope for study. Of great interest and value to students are gymnosperms plants like *Agathis* sp., *Cycas* sp., *Zamia* sp., *Podocarpus* sp., and *Araucaria* sp., and medicinal plants like *Abrus precatorious*, *Rauvolfia serpentine*, *Psoralea coryfolia* etc have also been conserved in the said garden.

- (g) The Departmental museum has enormous exhibits depicting plant specimens from diverse habitats.

Weaknesses:

Shortage of Faculties: While the intake capacity of students in M.Sc. course has been increased, the acute shortage of faculty members is in offing due to superannuation of most teachers of the department by 2020. Shortage of supporting staff like technical staff, electrician, plumber for handling and maintenance of sophisticated equipments being used for research.

Lack of facilities like insufficient lecture theatre, proper sewerage lines, lack of major repairs/ renovation of existing building, lack of recent volumes of journals and automation in the library, lack of good internet connectivity in the Department.

Opportunities:

In spite of several shortcomings, the University Department of Botany being one of the oldest Departments in the Universities of Bihar has acquired sufficient infrastructural facilities both for the teaching and research with pace of the time. The Department has acquired expertise in diverse field of research like mutagenic studies in plants, seed pathology, ecophysiology, plant microbial genomics, microbial

pathology, fresh water ecology, ethnobotany and conservation biology as is evident from the research publications by the faculty members of the department, project conducted and seminar / conferences organized in the department. Moreover, the University Department of Botany acts as nodal body for teaching and research in Botany in all colleges / institutions affiliated to the University. In this way the department has the opportunity to enhance facilities for students and to augment research facilities to achieve the objectives.

Challenges:

In the era of globalization the knowledge society is changing very fast and appreciating the recommendations of the Knowledge Commission. There has been felt a need to renovate the present infrastructure because of the natural aging of existing facilities. In order to keep a pace with the new developments of the century in the field of plant sciences, a complete overhaul would be a need of the hour.

52. Future plan of the Departments. :

The Department of Botany proposes to establish an Advance Research Centre in Plant Sciences. The two floored building of this center would be constructed separately in the open space North-West of the department which would include one lecture hall, two laboratories, chamber (for

faculty members), one store and one office in addition to one toilet on each floor. The Advance Research Centre would be equipped with the latest sophisticated molecular and analytical instruments like ELISA kit, spectrophotometer, electrolyte analyser, HPLC, PCR, qPCR, and facilities including WiFi internet connectivity to pursue advance researches in different areas of plant and allied sciences. The proposed Advance Research Centre aims to renovate existing infrastructure and facilities required for Magadh University of Bihar being the largest University in Bihar state with potential for recent developments in plant science. Funds required for construction of new building and purchase of major equipment have been sought under UGC Plans.