पादप कार्यिकी विभाग
आचार्य नरेंद्र देव कृषि एवं प्रौद्योगिक विश्वविद्यालय,
कुमारगंज, अयोध्या–224229 (उ०प्र०), भारत

Department of Plant Physiology
Acharya Narendra Deva University of Agriculture and Technology,
Kumarganj, Ayodhya-224229 (U.P.), India

ABOUT THE DEPARTMENT: The Department was established in 1978 with the establishment of the College of Agriculture. The postgraduate programme leading to the M.Sc. (Ag.) degree in Crop Physiology commenced in 1981, followed by the Ph.D. programme in 1985. In 2022, the Department was formally renamed the Department of Plant Physiology. Over the years, the intake capacity of the Department has progressively declined. At present, the Department admits 12 students to the M.Sc. (Ag.) Plant Physiology programme and 2 students to the Ph.D. programme. Since the inception of the respective programmes in 1981 and 1985, the Department has produced 195 M.Sc. (Ag.) and 57 Ph.D. graduates, respectively. The Department has been a key research partner of the International Rice Research Institute (IRRI), Los Baños, Philippines and has undertaken several collaborative research programmes since 1991. Research activities in the Department have been supported by various national and international funding agencies, including the Asian Development Bank (ADB), the European Commission (EC), AICAR, Australia, IRRI, the Rockefeller Foundation, USA, EC-IFAD, the Indian Council of Agricultural Research (ICAR), the Rashtriya Krishi Vikas Yojana (RKVY) and the Government of Uttar Pradesh.

In recognition of its significant contributions to teaching, research and extension in Plant Physiology, the Department was accorded the status of a Centre of Advanced Studies (CAS) in Plant Physiology by ICAR in 1995. Subsequently, in 2009–10, ICAR upgraded the Department to a Centre of Advanced Faculty Training (CAFT), with the mandate to provide specialised training to teachers and scientists from State Agricultural Universities (SAUs), ICAR institutes and other organisations across the country in important and emerging areas of Plant Physiology. So far, the Centre has conducted 25 training programmes, benefiting 454 participants from 21 states.

In 2017–18, a Centre of Excellence for Rice was established in the Department to strengthen and promote high-quality research in rice. Through collaborative research programmes with IRRI, several rice varieties have been developed or evaluated and promoted, including Narendra 8002, Narendra Mayank, Narendra Jal Pushp, Swarna Sub-1, Samba Mahsuri Sub-1, NDR 8015, NDR 9930111, and IR64 Sub-1.

VISION

To develop highly skilled and scientifically competent postgraduate and doctoral students and strengthen advanced physiological and molecular research to address critical challenges in crop production, particularly those associated with abiotic and biotic stresses, thereby contributing to sustainable, climate-resilient and productive agriculture.

MISSION

The Department of Plant Physiology is committed to achieving excellence in teaching, research and extension by imparting quality education, conducting basic, applied and adaptive research and developing cost-effective, eco-friendly and sustainable agricultural technologies to enhance crop productivity, quality and profitability.

OBJECTIVES

1. **To strengthen postgraduate and doctoral education** by developing the scientific knowledge, research skills, critical thinking and technical competence of M.Sc. and Ph.D. students in Plant Physiology.
2. **To establish an integrated physiological and molecular research and training system** for understanding plant growth, development, metabolism and adaptive mechanisms under diverse environmental conditions.
3. **To investigate the effects of abiotic stresses**, including drought, salinity, sodicity, submergence, high temperature and to develop strategies for improving crop stress tolerance.

FACULTY STRENGTH:

Sr. No.	Name of faculty	Designation
1.	Dr. Raj Bahadur	Professor & Head, Plant Physiology
2.	Dr. R.K. Yadav	Professor, Plant Physiology
3.	Dr. Alok Kumar Singh	Assistant Professor, Plant Physiology
4.	Dr. Deepak Kumar Rawat	Assistant Professor, Plant Physiology

FACULTY PROFILE



Prof. Raj Bahadur

Head of the Department

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Mob.No. 7080090326

Designation: Professor & Head, Plant Physiology
Research Interests & Expertise: Stress Physiology
Qualifications: Ph.D. in Crop Physiology
Experience: Teaching: >22 Years; Research: >24 Years
Publications: Research Paper: 64; Books: 13, Book Chapters: 19
Research Projects: Varieties Developed-02 (Wheat), Patent-01
Students Guided: Ph. D. - 01, M. Sc. -30
Awards & Recognitions: 09
Papers Presented in Conference: National – 02 & International – 03
Other Qualifications: Participated in three 21-day and two less than 21-day training



Dr. Ram Kalap Yadav

Professor

drrkyadavnduat@gmail.com

Mob. No. :8840427316

Designation: Professor
Research Interests & Expertise: Stress Physiology & Production Physiology
Qualifications: Ph.D. in Crop Physiology
Experience: Teaching: >22 Years; Research: >22 Years
Publications: Research Paper: 80; Books: 5, ,Book Chapters: 65
Students Guided: Ph. D. - 01, M. Sc. -38
Awards & Recognitions: 10



Dr. Alok Kumar Singh

Assistant Professor

alokksinghcp@nduat.org

aloksingh.agri@gmail.com

Mob. No. 9450045391

Designation: Assistant Professor
Research Interests & Expertise: Production Physiology & Nutrition Management
Qualifications: Ph.D. in Crop Physiology
Experience: Teaching: >7 Years; Research: >16.6 Years; Extension: >10 Years; Industry: >10 Years
Publications: Research Paper: 59; Books: 5, Book Chapters: 8
Research Projects: 10 (PI- UPCAR Project (2 Project Heat & High Moisture Stress on Wheat), Co-PI-02 UPCAR Project, Associated Project- 03 (IRRI & Government of Uttar Pradesh), Testing Project- 03 (Syngenta, Nuziveedu & Nirmal Seed))
Varieties Developed-1 (Rice)
Patent-2
Students Guided: M. Sc. -10
Awards & Recognitions: 12



Dr. Deepak Kumar Rawat

Assistant Physiologist/Assistant Professor

rawatk2233@gmail.com

Mob. No. 9559475918

Designation: Assistant Physiologist/Assistant Professor

Research Interests & Expertise: Stress Physiology

Qualifications: Ph.D. in Plant Physiology

Other Qualifications: ICAR- ASRB NET qualified

Experience: 1.10 Years

Publications: Research Papers: 12; Book: 01; Practical Manual: 02

PROGRAMMES OFFERED

1. M. Sc. (Ag.) Plant Physiology
2. Ph.D. Plant Physiology

PG and Ph.D. Courses:

Major courses offered to M.Sc. (Ag.) Plant Physiology		
Course Code	**Course Title**	**Credit Hours**
PP-501*	Principles of Plant Physiology-I: Plant Water Relations and Mineral Nutrition	**2+1**
PP-502*	Principles of Plant Physiology-II: Metabolic Processes and Growth Regulation	**2+1**
PP-503*	Plant Developmental Biology: Physiological and Molecular Basis	**2+1**
PP-504	Physiological and Molecular Responses of Plants to Abiotic Stresses	**2+1**
PP-505	Hormonal Regulation of Plant Growth and Development	**2+1**
PP-506	Physiological and Molecular Mechanisms of Mineral Nutrient Acquisition and their Functions	**2+1**
PP-507	Photosynthetic Processes, Crop Growth and Productivity and Concepts of Crop Modelling	**2+1**
PP-508	Physiology of Field Crops	**2+0**
PP-509	Physiology of Horticulture Crops	**2+0**
PP 510*	Seed Physiology	**2+1**
PP 511	Phenotyping Physiological Processes	**2+0**
PP 512	Crop Growth Regulation and Management	**2+0**
PP 591	Master's Seminar	**1+0**
PP 599	Master's Research	**30**
***Core Courses**		
Major courses offered to Ph.D. Plant Physiology		
Course Code	**Course Title**	**Credit Hours**

PP-601	Functional Genomics and Genes Associated with a Few Physiological Processes	**2+0**
PP 602*	Signal Perceptions and Transduction and Regulation of Physiological Processes	**2+0**
PP 603	Molecular Approaches for Improving Physiological Mechanisms Through Trait Introgression	**2+1**
PP 604	Plant Phenomics – Next Generation Phenomics Platforms	**2+0**
PP 605	Experimental Techniques to Characterize Plant Processes for Crop Improvement	**0+2**
PP 606	Global Climate Change and Crop Response	**2+0**
PP 607*	Physiological and Molecular Aspects of Source-sink Capacity for Enhancing Yield	**3+0**
PP 608	Seed and Fruit Growth and their Quality Improvement	**2+0**
PP 609	Plant-microbe Interactions	**2+1**
PP 610	Weed Biology and Physiology of Herbicide Action	**2+0**
PP 691	Doctoral Seminar I	**1+0**
PP 692	Doctoral Seminar II	**1+0**
PP 699	Doctoral Research	**75**
***Core Courses**		

List of Major equipment Available in the Department

S.N.	Name of Equipment	No.
1.	AAS	**1**
2.	Gel Electrophoresis Unit	**1**
3.	PCR	**1**
4.	IRGA	**1**
5.	Leaf Area Meter	**2**
6.	Centrifuge Machine	**4**
7.	UV Spectrophotometer	**1**
8.	SPAD	**1**
9.	Deep Freezer	**1**
10.	Ultra Low Temperature Deep Freezer	**2**
11.	Shaker	**1**
12.	Digital Moisture Meter	**1**
13.	IR Thermometer	**1**
14.	Flame Photometer	**1**
15.	Distillation Unit	**1**
16.	Hot Plate	**1**
17.	Water Bath	**1**
18.	Electric Balance	**1**
19.	pH. Meter	**2**
20.	Magnetic stirrer	**1**
21.	Pressure Bomb Chamber	**1**
22.	Autoclave	**1**
23.	Hot Air Oven	**1**
24.	Microwave	**1**
25.	Refrigerator	**1**
26.	Grain Moisture Meter	**1**

27.	Soil Moisture Indicator	**1**

Ongoing Research Projects:

S. No	Title of The Project	Amount	Funding agency	Duration
1.	Physiological and Molecular Approaches for Genetic Enhancement of Temperature Stress in Wheat	25 lacs	UPCAR, Lucknow	03 years
2.	Identification, Characterization and Validation of Wheat Germplasm for Tolerance to Heavy Soil Moisture Conditions at Germination and Early Vegetative Stages through Integrated Morpho-Physiological, Biochemical and Molecular Approaches along with screening of high yielding naked barely with a focus on β-glucan content.	39.81 lacs	UPCAR, Lucknow	03 years

Major Achievements the Department (Teaching, Research, Extension)

S. No	Major Achievement Varieties Developed Under IRRI Collaborated projects
1.	Narendra 8002
2.	Narendra Mayank
3.	Narendra Jal Pushp
4.	Narendra Dhan
5.	Improved Swarna
6.	Sambha Mahsuri Sub-1
7.	IR-64 Sub-1
8.	NDR 8015

Distinguished Alumni of the Department

S. No	Name of Alumni & Batch	Designation and Address	Degree
1.	Dr. Ram Gopal Upadhyaya & 1985-86	Professor, Himanchal Pradesh	Ph.D.
2.	Dr.A.K. Singh & 1986-87	Ex-Professor & Head, Department of Crop Physiology, ANDUAT, Kumarganj, Ayodhya	Ph.D.
3.	Dr.T.N.Tiwari & 1986-87	Principal Scientist, IIPR, Kanpur	Ph.D.
4.	Dr. Parsu Ram & 1987-88	District Administrative Officer, Department of Health, Uttar Pradesh	Ph.D.
5.	Dr. Alok Kumar Singh & 2004-05	Assistant Professor, Department of Crop Physiology ANDUAT, Kumarganj, Ayodhya	Ph.D.

6.	Dr. Ashish Kumar Srivastava & 2005-06	Associate Plant Physiologist, ISARC, IRRI-Varanasi Centre	Ph.D.
7.	Dr. Pradeep Kumar & 2006-07	Assistant Director Agriculture, New Delhi	Ph.D.

Photographs of Different Activities

