Preamble

Department of Biochemistry
Post Graduate Institute
Mahatma Phule Krishi Vidyapeeth, Rahuri-413722, Dist. Ahilyanagar (MS)

The Department of Biochemistry was established on 19th July, 1984 (Maharashtra Govt. Resolution No. MPKV-1283/CR-233/20-A, dated 17 May, 1984). The Department started M. Sc. (Agri.) degree programme in 1984 with an intake capacity of nine students and a Ph.D. programme was started from 1998 with an intake capacity of two students. The principal mandate of starting this department was to cater the need of the entire State in developing a skilled manpower in Biochemistry required for all the four State Agricultural Universities, the semi-government, public and private sector organizations. The objectives also included to undertake basic and applied biochemical research through Post-Graduate students and through adhoc research projects. Dr. S. S. Kadam becomes the first Head of the department initiating the nutritional and quality analysis of the promising germplasm of field, forage and horticultural crops. The Department is further lead by Dr. B. B. Desai (1987-1999), Dr. J. K. Chavan (1999-2007), Dr. S. V. Munjal (2007-2011), Dr. R. M. Naik (2011-2021) Dr. A. A. Kale (2021-2025). Dr. P. K. Lokhande (1 July, 2025 Continue). Until now total 208 M. Sc. (Agri.) and 10 Ph. D. students have completed their degree programme in Biochemistry and most of them are employed in various educational, public sector and private organizations *viz*., Agricultural Universities, Agril. Schools, Jr. Science Colleges, MCVC Programme, State Govt. Civil Services including agriculture, police and forest departments, research organizations, municipal corporations, seed, fertilizer and irrigation agencies. Many are working as scientists in various *adhoc* research projects. Since the inception of the Department, the academic staff succeeded in obtaining financial assistance of over Rs. 554.5 lakhs through *adhoc* research projects funded by various agencies such as ICAR, and DST New Delhi, USDA (PL-480), RGSTC, Govt. of Maharashtra etc. both in basic and applied areas.

Mandate:

1. To conduct teaching and training programmes to develop skilled human resources.
2. To undertake fundamental and applied biochemical, molecular biological and nutritional/nutraceuticals research related to current problems in agriculture/farmers/industries.
3. To develop instructional aids/ infrastructural facilities for teaching and research in Biochemistry.

Vision

The department envisions integrating education, research, and innovation to address agricultural challenges, promote climate-resilient and sustainable farming, and translate scientific advancements into practical solutions for farmers and rural development.

Academic achievement:

Total number of students completed their M.Sc. degree successfully	Total number of students completed their Ph.D. degree successfully
208	**10**

Students working in various fields

Sr. No.	Examination qualified	No. of students	Working places	No. of students
1	**JRF**	00	**Agriculture officer**	08
2	**SRF**	03	**Banking sector**	05
3	**NET**	02	**Administrative officer**	02
4	**SET**	01	**Private industries**	10
5			**Entrepreneurs**	02

Faculty

Sr. No.	Name of Faculty	Designation	Email	Google link
1.	Dr. P. K. Lokhande	Professor and Head	pklokhande@gmail.com	https://scholar.google.co.in/citations?user=B0E4m0QAAAAJ&hl=en
2.	Dr. U. S. Dalvi	Associate Professor	usdalvi2008@gmail.com	https://scholar.google.com/citations?user=yI68ScwAAAAJ&hl=en
3.	Dr. B. M. Bhalerao	Assistant Professor	bharatbhalerao@gmail.com	https://scholar.google.co.in/citations?user=u83l8v0AAAAJ&hl=en
4.	Dr. R. R. Jadhav	Assistant Professor	rcw7bio@yahoo.co.in	
5.	Ms. S. G. Mohite	Sr. Research Assistant	mohitesmitha3@gmail.com	

Academic Programmes

A) M.Sc. (Agri.)
Capacity of
students:11 Year of

B) Ph. D (Biochemistry)
Capacity of students: 2+2*Year
of start: 1998 (*in service
candidate)

Sr. No.	Component	Required Minimum Credits		Proposed Credits	
		M. Sc.	Ph. D.	M. Sc.	Ph. D.
I	**Course Work**				
	Major Courses	20	12	20	15
	Minor Courses	8	6	9	6
	Supporting Courses	6	5	6	5
	Non Credit Common Courses	5	-	5	-
	Seminar	1	2	1	2
II	**Thesis Research**	30	75	30	75
	Total	**70**	**100**	**71**	**103**

Course Layout

Degree Program: M. Sc. (Agri.) **Name of Discipline: Biochemistry**

Semester wise course layout (As per BSMA Recommendations)

	Course No	Course Title	Credits (T + P = Total)
SEMESTER - I			
A) Major			
1.	BIOCHEM - 501	Basic Biochemistry	3+1 = 4
2.	BIOCHEM - 503	Enzymology	2+1 = 3
		Total (A)	**5+2 = 7**
B) Minor			
1.	MICRO - 504	Microbial Genetics	2+1 = 3
2.	MBB -502	Fundamentals of Molecular Biology	3+0 = 3
		Total (B)	**5+1 = 6**
C) Supporting			
1.	PP- 504	Physiological and Molecular Responses of Plants to Abiotic Stresses	2+1 = 3
		Total (C)	**2+1 = 3**
D) Non-Credit Courses			
1.	PGS- 501	Library and Information Services	0+1 = 1
2.	PGS- 504	Basic Concept on Laboratory Techniques	0+1 = 1
		Total (D)	**0+2 = 2**
E) Research			
1.	BIOCHEM-599	Research work	0+5 = 5
		Total (E)	**0+5 = 5**
		Grand Total (A+B+C+D+E)	**12+11 = 23**
SEMESTER - II			
A) Major			
1.	BIOCHEM - 502	Intermediary Metabolism	3+0 = 3
2.	BIOCHEM - 505	Techniques in Biochemistry	2+2 = 4
3.	BIOCHEM - 507	Plant Biochemistry	2+1 = 3
		Total (A)	**7+3 = 10**
B) Minor			
1.	PP- 505	Hormonal Regulation of plant growth and development	2+1 = 3
		Total (B)	**2+1 = 3**
C) Supporting			
1.	STAT- 522	Data Analysis using Statistical Packages	2+1 = 3
		Total (C)	**2+1 = 3**
D) Non-Credit Courses			
1.	PGS- 502	Technical Writing and Communication Skill	0+1 = 1
2.	PGS- 503	Intellectual Property and its Management in Agriculture	1+0 = 1
		Total (D)	**1+1 = 2**
E) Research			
1.	BIOCHEM-599	Research work	0+5 = 5
		Sub Total (E)	**0+5 = 5**
		Grand Total (A+B+C+D+E)	**12+11 = 23**

MAHATMA PHULE KRISHI VIDYAPEETH, RAHURI

Degree Program: Ph.D. **Name of Discipline:** Biochemistry
Semester wise course layout (As per BSMA Recommendations)

	Course No	Course Title	Credits (T + P = Total)
SEMESTER - I			
A) Major			
1.	BIOCHEM-601	Advanced Enzymology	2+1 = 3
2.	BIOCHEM-602	Advanced Molecular Biology	3+0 = 3
3.	BIOCHEM-607	Applications of Techniques in Biochemistry	1+2 = 3
		Total (A)	**6+3 = 9**
B) Minor		**Total (B)**	**-**
C) Supporting			
1.	PP 602	Signal Perception and Transduction and Regulation of Physiological Processes	2+0 = 2
		Total (C)	**2+0 = 2**
D) Research			
1.	BIOCHEM-699	Research work	0+10 = 10
		Total (D)	**0+10 = 10**
		Grand Total (A+B+C+D)	**8+13 = 21**
SEMESTER - II			
A) Major			
1.	BIOCHEM-603	Biochemistry of Biotic and Abiotic Stresses	3+0 = 3
2.	BIOCHEM-605	Concepts and Applications of Omics in Biological Science	3+0 = 3
		Total (A)	**6+0 = 6**
B) Minor			
1.	MICRO 605	Plant Microbe Interactions	2+1 = 3
2.	PP 607	Physiological and Molecular Aspects of Source and Sink Capacity for Enhancing Yield	3+0 = 3
		Total (B)	**5+1 = 6**
C) Supporting			
1.	GPB 605	Genomics in Plant Breeding	3+0 = 3
		Total (C)	**3+0 = 3**
D) Research			
1.	BIOCHEM-699	Research work	**0+10 = 10**
		Total (D)	**0+10 = 10**
		Grand Total (A+B+C+D)	**14+11 = 25**
SEMESTER - III			
A) Major		**Total (A)**	**-**
B) Minor		**Total (B)**	**-**
C) Supporting		**Total (C)**	**-**

D) Research			
1.	BIOCHEM-699	Research work	0+10 = 10
		Total (D)	**0+10 = 10**
E) Doctoral Seminar			
1.	BIOCHEM 691	Doctoral Seminar-I	0+1 = 1
		Total (E)	**0+1 = 1**
		Grand Total (A+B+C+D+E)	**0+11 = 11**

	Course No	**Course Title**	**Credits** **(T + P = Total)**
SEMESTER - IV			
A) Major		**Total (A)**	**-**
B) Minor		**Total (B)**	**-**
C) Supporting		**Total (C)**	**-**
D) Research			
1.	BIOCHEM-699	Research work	0+15 = 15
		Total (D)	**0+15 = 15**
E) Doctoral Seminar			
1.	BIOCHEM 691	Doctoral Seminar-II	0+1 = 1
		Total (E)	**0+1 = 1**
		Grand Total (A+B+C+D+E)	**0+16 = 16**
SEMESTER - V			
A) Major		**Total (A)**	**-**
B) Minor		**Total (B)**	**-**
C) Supporting		**Total (C)**	**-**
D) Research			
1.	BIOCHEM-699	Research work	0+15 = 15
		Total (D)	**0+15 = 15**
		Grand Total (A+B+C+D)	**0+15 = 15**
SEMESTER - VI			
A) Major		**Total (A)**	**-**
B) Minor		**Total (B)**	**-**
C) Supporting		**Total (C)**	**-**
D) Research			
1.	BIOCHEM-699	Research work	0+15 = 15
		Total (D)	**0+15 = 15**
		Grand Total (A+B+C+D)	**0+15 = 15**
		Grand Total of Semesters (I+II+III+IV+V+VI)	27+44 = **71**

Laboratories

Research Laboratory-I:

Sr. No.	Instrument/Equipment	Purpose
1	Shimadzu make UV-Visible spectrophotometer	To measure the absorbance of chromophoric solution
2	Kubota make high speed refrigerated centrifuge	To separate and extract biomolecules from composite sample
3	YSI oxygen Monitoring system	To measure the oxygen level
4	Nano-Drop Spectrophotometer	To measure the absorbance of nucleic acid/ protein
5	Gradient PCR	To optimize the annealing temp. and to Amplify DNA by using specific primers
6	Agarose and PAG Electrophoresis units	To separate and characterize nucleic acids and proteins
7	Mili-Q-water purification system	To provide purified water for biochemical/ molecular analysis
8	-20^{o}Cdeepfreezer	To store the extracted nucleic acid, primers and Chemicals and biological

A) Research Laboratory-II:

Sr. No.	Instrument/Equipment	Purpose
1	Chemi-imulscence Gel documentation system	To capture the images of separated nucleic acids and proteins on Agarose and PAGE gels
2	High Performance Liquid Chromatography	To quantify the metabolites and active compounds
3	Gas Liquid Chromatography	To analyse the fatty acid profile and to assay nitrogenase activity



B) Teaching Laboratory

Sr. No.	Instrument/Equipment	Purpose
1.	Centrifuge machines	To separate biomolecules present in the analytes
2.	Spectrophotometer	To absorbance of chromphoric Measure solution
3.	Digestion and distillation unit for Nitrogen estimation	To estimate the protein content of grain sand fodder
4.	pH meter	To measure pH of buffers and solutions
5.	Muffle furnace	To determine ash content of the sample
6.	Glass distillation unit	To prepare distilled water for biochemical analysis
7.	Oven	To estimate the moisture content of the sample/ drying of glassware's
8.	Hotplate	To reflux and heat the content while estimation of cellulose, hemicellulose, lignin, ADF, NDF etc.

	
Gel Documentation system	**Ultracentrifugation**
	
Gas liquid chromatography	**High Performance liquid chromatography**
	
Gel Electrophoresis	**PCR Machine**

Projects Completed by Students

M. Sc. (Agri.) (Last five years)

Sr. No.	Name of M.Sc. (Agri.)Student and Reg. No.	Name of Guide	Title of the M.Sc.(Agri.)Thesis	Year of submission
1	Mr. Faltankar Ankush Ganpat (017/276)	Dr.S.V.Damame	Biochemical evaluation of oat (*Avenasativa* L.) for lodging tolerance.	2020
2	Mr. RaundalPavanJaywant (017/280)	Dr.P.K. Lokhande	Biochemical characterization of medicinal plant extract and its bioefficacy against cotton sucking pest.	2020
3	Mr. Bhoyar Sandip Chhagan (018/262)	Dr. D.P Kachare	Evaluation of nutritional and milling quality of *CajanusCajan* grains.	2020
4	Mr. Baravkar Sagar Annasaheb (018/263)	Dr.U.S. Dalvi	Biochemical evaluation of *rabi*sorghum genotypes for shoot fly resistance.	2020
5	Mr. Padole Kamlesh Dadarao (018/264)	Dr.P.K. Lokhande	Investigation of antibacterial activity of copper nanoparticle against plant pathogenic micro-organisms.	2020
6	Mr. Bhorade Suresh Devidas (018/266)	Dr. S.V.Damame	Evaluation of fodder quality of grasses and legumes at different growth stages.	2020
7	Miss. Paliwal Jaya (019/263)	Dr.P.K. Lokhande	Fatty acid profiling of different oil seed crops.	2021
8	Miss. Husukale Neha Sheshrao (019/265)	Dr. U. S. Dalvi	Biochemical, physical and morphological evaluation of colored grain sorghum.	2021
9	Mr. Jadhav Ravindra Balu (019/267)	Dr. S.V.Damame	Evaluation of nutritional quality of fodder Cactus (*OpuentiaFicus - indica*) germplasm.	2021
10	Mr. Landage Harhar Baban (019/268)	Dr. D. P. Kachare	Biochemical evaluation of CMS (cytoplasmicmale sterility), restorers and hybrids of pearlmillet (*Pennisetumglaucum* L.) againstdrought tolerance	2021
11	Mr. Suke Sushant Dashrath (019/269)	Dr. B.M. Bhalerao	Synthesis of silver nanoparticles by using *Annonasquamosa*L. seedand fruit peel and their antimicrobial	2021

			activity.	
	Mr. Kalwanghe Bhushan Ramesh	Dr. D. P. Kachare	Biochemical studies on the garlic cloves extract on pathogenic bacteria	2021
12	Mr. Mohammad Faiz Ahmed (019/271)	Dr. A.A. Kale	Effect of imposed salinity stress on the carbon partitioning and sugar metabolism in sugarcane.	2021
13	Miss. Patil Dnyaneshwari Dili p (2020/268)	Dr. A.A.Kale	Effect of burning of the sugarcane on its juice quality.	2022
14.	Miss. Dhakne Aishwarya Sudhakar (2020/269)	Dr. B.M. Bhalerao	Antioxidant potential of pomegranate peel aqueous extracts and synthesis of silver nanoparticles.	2022
15	Miss. Jadhao Bharati Babusing (2020/270)	Dr. D. P. Kachare	Evaluation of nutritional and chapatti making quality of wheat.	2022
16.	Mr. Shinde Prashant Mahadeo (2020/274)	Dr.P.K. Lokhande	Biochemical and molecular evaluation of parents and segregating generations of safflower for wilt resistance.	2022
17.	Mr. Dhangare Tushar Rameshrao (2020/275)	Dr. U. S. Dalvi	Screening of sorghum (*Sorghum biclor*) genotype for water stress tolerance using biochemical analysis of root and shoot tissues.	2022
18.	Miss. Chinta Sravani (2021/272)	Dr. B.M. Bhalerao	Studies on induced biochemical defensive system on application of silver nanoparticles developed from *Annonasquamosa* L. against *Fusarium* wilt in chickpea.	2023
19.	Miss. Kale Akshatha (2021/270)	Dr. P. K. Lokhande	Combinational effect of *Fusarium* wilt and drought stress on biochemical parameters in chickpea genotypes.	2024
21	Miss. Kadale Pallavi Balu (2021/271)	Dr. A. A. Kale	Assessment of foxtail millet germplasm in relation to nutritional perspective.	2024
22	Miss. Shiney Shaji (2021/273)	Dr. U. S. Dalvi	Nutritional and organoleptic evaluation of hurda grain sorghum.	2024

23.	Mr. Kudale Shivam Mahavir (2021/274)	Dr. P. K. Lokhande	Nutritional and antinutrional characterization of chickpea (*Cicerarietinum*) genotype.	2024
24	Mr. Narale Shrikrishna Balaso (2021/275)	Dr. D. P. Kachare	Evaluation of nutritional and antinutritionalqualities of mung bean genotypes.	2024
25	Mr. Adhari Yogesh Narayan (2021/276)	Dr. A. A. Kale	Biochemical evaluation of some promising QPM maize genotypes.	2024
26	Miss. Mundhe Bhairavi Satishrao (2021/278)	Dr. D. P. Kachare	Evaluation of nutrional quality and self-life of pearl millet flour.	2024
27	Miss. Divade V.P. (022/270)	Dr.P.K. Lokhande	Biochemical basis of submergence tolerance in sugarcane	2025
28	Miss. Pulate G.D. (022/269)	Dr. S.V. Damame	Assessment of nutritional value and anthelmintic activity in cactus (*Opuntia ficus indica L. mill)* cladodes	2024
29	Miss. Ghogare S.B. (022/268)	Dr.U.S. Dalvi	Assessment of finger millet germplasm in relation to nutritional perspective.	2024
30	Mr.Yadav T.J. (022/273)	Dr. D.P. Kachare	Evaluation of dal milling,cooking and nutritional quality of chickpea (*Cicer arietinum L.)* cultivars.	2024
31	Miss. Bhosale S.V. (022/271)	Dr. A.A. Kale	Biochemical analysis of sorghum in context to salinity tolerance at pre-flowering stage under field condition.	2025
32	Miss. Yevle P.S. (023/308)	Dr. B.R. Bhite	Screening of promising wheat genotypes for nutritional quality.	2025
33	Mr. Sarate V.T. (023/311)	Dr.U.S. Dalvi	Studies of effect of roasting and storage on biochemical attributes in *Hurda* sorghum.	2026
34	Mr. Garole S.S. (023/312)	Dr. D.P. Kachare	Amelioriative effect of salicylic acid on *Rabi* sorghum during drought stress.	2026
35	Ms. Kamble A.S.(2023/315)	Dr.R.R. Jadhav	Effect of physical modification on physicochemical properties of starch from rice and sorghum	2026

Ph. D. (Biochemistry) (Last five years)

Sr. No.	Name of the P h. D. student and Reg. No.	Guide	Title of the Ph.D. Thesis	Year of submission
1.	Mr. S. C. Fattepurkar (Ph.D./013/81)	Dr. R. M.Naik	Biochemical and molecular characterization of phytase from low phytate soybean (*Glycinemax* (L.) Mirr.)	2017
2.	Miss. Abuj Bhagyashree Bhaskarrao (Ph.D./018/49)	Dr.R.M.Naik	Biochemical and molecular basis of differential nitrogen use efficiency in contrasting wheat (*Triticum aestivum* L.)	2023
3.	Mr. Chougule Pankaj Suresh (Ph.D./015/66)	Dr.A.A.Kale	Physiochemical studies on effect of endophytic bacteria in combating induced salinity stress in sugarcane	2023

Research Achievements

Sr. No	Research Recommendations	Approved in the Joint Agresco meeting
1.	The retrogradation method is recommended to improve the health-promoting resistant starch content in rice and sorghum as per the following steps. 1. Heat the native starch of rice or sorghum in water to a 1:2 ratio till gelatinization. 2. Cool gelatinized starch to room temperature. 3. After that, store the gelatinized starch at 4°C for 36 hours before using it.	54th Joint AGRESCO held on September 9-11,2026 at Dr. BSKKV, Dapoli
2.	Biochemical parameters viz., chlorophyll stability index, ascorbate peroxidase, alcohol dehydrogenase activity and lipid peroxidase is recommended to screen the sugarcane genotypes at seedling stage for waterlogging tolerance.	53nd Joint AGRESCO held on May 27-29, 2025 at VNMKV, Parbhani
3.	Based on biochemical parameters analysed at laboratory and field conditions, RSV 2481, RSV 2482 and RSLG 1876 sorghum genotypes are recommended as salinity tolerant donor in sorghum improvement programme.	53nd Joint AGRESCO held on May 27-29, 2025 at VNMKV, Parbhani
4.	Application of endophytic bacteria *Gluconacetobacter* @ 5 ml L-1 (1 x 108c.f.u.) at the time of planting by dipping the setts for 15 min. and subsequent spraying at 30, 45 and 60 days after planting is recommended based on the plant physiological and biochemical parameters for Amelioration of salinity stress in sugarcane.	52th Joint AGRESCO held on June 07-09, 2024 at Dr. PDKV, Akola
5.	Based on juice extractability and biochemical analysis of juice for keeping quality during 2hr dwell time period, sugarcane genotype PDN-15012 is recommended specially for *Rasvanti* purpose.	49th Joint AGRESCO held on December 24-30, 2021atVNMKV, Parbhani

6.	Delayed harvested fodder of hybrid napier (up to 70 days) of cv. Phule Gunwant treated with 2% jaggery is recommended for preparation of good quality silage.	49th Joint AGRESCO held on December 24-30,2021atVNMKV, Parbhani
7.	Pigeon pea genotype can be rapidly and reliably screened for *Fusarium* wilt resistance by analyzing the level of OD phenols, activity profile of β-1-3 –glucanase and amplification of genomic DNA with RAPD OPG-08, SCAR-1 and ASSR-1 primers.	Joint Agresco, Dr. BSKKV, Dapoli-2018
8.	Beside ICC 4958, Vijay variety of chickpea exhibiting deep and prolific root systems with higher ascorbate peroxidase activity and minimum lipid peroxidation rate under drought stress could be used as genetic resource in chickpea breeding programme aimed at evolving drought tolerant variety.	43rd Joint AGRESCO held on May 28-30, 2015 at MPKV, Rahuri
9.	The use of three enzymes (phenylalanine ammonia lyase, chitinase and β-1,3 glucanase) and SSR primer NKS11 is recommended for rapid screening of sugarcane clones for smut resistance.	43rd Joint AGRESCO held on May 28-30, 2015 at MPKV, Rahuri
10.	Temperature Induction Response (TIR) with comparative analysis of biochemical parameters identified wheat cultivar NIAW -917 as a thermo tolerant cultivar and be used in further breeding programme for abiotic stress management.	42nd JointAGRESCO held on May 12-14, 2014 at Dr. SBKKV, Dapoli
11.	In kharif season harvesting of sweet sorghum green canes at 45 days after 50% flowering (physiological maturity) is recommended for obtaining maximum juice, sugar content and ethanol yield.	42nd Joint AGRESCO held on May12-14,2014 at Dr. SBKKV, Dapoli
12.	Sowing of sweet sorghum in second fortnight of June is recommended for obtaining maximum juice, sugar content and Ethanol yield.	42nd Joint AGRESCO held on May12-14,2014 at Dr. SBKKV, Dapoli
13.	The biochemical parameters *viz*; ascorbate peroxidase activity and rate of lipid peroxidation has been recommended for screening chickpea genotypes for drought tolerance.	42nd JointAGRESCO held on May 12-14, 2014 at Dr. SBKKV, Dapoli

Extension Activities

The staff members have actively participated in shetakari mela, agricultural exhibitions, State Agril Department activity of "*Majha Ek Divas Majhya Balirajasathi"*and the university activites *viz*., Indradhanushya, Climax-2022, convocation, Joint Agresco, small millet workshop, NIRF ranking, Placement cell. Recently, on the eve of Golden Jubilee year celebration of this University the Indian society of Agricultural Biochemists, Kanpur and Department of Biochemistry, Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth, Rahuri, have jointly organizing "Food and Nutritional Security Conclave" along with the XIV Convention of the Indian Society of Agricultural Biochemists at Mahatma Phule Krishi Vidyapeeth Rahuri-413 722 (MS), India, from February 25-27, 2019.



Inaugural ceremony of conclave organized by this department



Visit to Takli kazi veterinary Hospital



All scientist visits to farmer field

Scientist from Department of Biochemistry conducted informal discussion with each of the farmer and communicated to solve problems during visit at Takalikazi

Research Publications

Research Papers Published in National and International Journals (Last Five years)

Sr. No.	Title of paper	Name of theauthor/s	Name of journal	Year of publication
1	Optimization of biogenic synthesis of biocompatible platinum nanoparticles with catalytic, enzyme mimetic and antioxidant activities.	Sadalage, P.S., Dar, M.A., Bhor, R.D., **Bhalerao, B.M.**, Kamble, P.N., Paiva-Santos, A.C., Nimbalkar, M.S., Sonawane, K.D., Pai, K., Patil, P.S. and Pawar, K.D	*Food Bioscience* **(NAAS: 11.32)**	(2022) 1:50:102024.
2.	Effect of cow urine and vermiwash application on growth and yield of organic chickpea.	Patil S, Ugale N, **Bhalerao B**, Takate A, Kolse R, Patil M.	*The PharmaInnov.*	2022; 11 (12): 424-428
3.	Effect of endophytic bacteria on physiological parameter's under induced salt stress in sugarcane varieties	PS Chougule **AA Kale PK Lokhande RM Naik and BM Bhalerao**	*The PharmaInnov.*	2022; 11 (9): 101-111
4	Seasonal variation in sowing and its effect on ethanol and biomass yield of sweet sorghum	G. S. Pagire, S. R. Gadakh, M. S. Shinde, **U. S. Dalvi**, V. R. Awari and S. S. Gadakh	Energy Resources Part A, Online **(7.18)**	April 2021
5	Effect of temperature and rainfall regimes on growth phases and biological yield in *Rabi* sorghum	S. S. Gadakh, U. S. Dalvi, S.V. Nirmal and D. D. Dudhade.	Journal of Progressive Agriculture, **(4.21)**	12(1), 58-65. 2021
6	Key root traits and its association with grain and dry fodder yield under deficient water regimes in *Rabi* sorghum.	S. S. Gadakh, **U. S. Dalvi**, S. V. Nirmal, A. S. Jadhav, S. R. Gadakh and M. S.Shinde	Multilogic in Science, **4.51**	1858-1861. 2021.
7	Screening and biochemical evaluation of different sorghum genotypes for shoot fly resistance.	D. C. Shid, U. K. Kadam and **U. S. Dalvi**	The Pharma Innovation Journal **5.21**	10(12):134-138. 2021.
8	Antioxidant enzymes respond to osmotic stress in the leaves of sugarcane (*Saccharum Officinarum* L.).	Pote, C. L., Chougule, P. S., Shirsat, D. V., **Kale, A. A.,** Naik, R. M., Jadhav, A. S., Garkar, R. M. and Nimbalkar, C. A.	*Int. J. Curr. Microbiol. App. Sci.*	2019; 8(12): 1489-1495
9	Elevated levels of osmoprotectants securing sugarcane (*Saccharum officinarum* L.) during salinity stress.	Pote, C. L., Chougule, P. S., **Kale, A. A.,**Shirsat, D. V., Naik, R. M., Jadhav, A. S., Garkar, R. M. and Nimbalkar, C. A.	*Int. J. Curr. Microbiol. App. Sci.*	2019; 8(12): 1482-1488

10	Incorporation of null allele of Kunitz trypsin inhibitor through molecular backcross breeding in soybean (*Glycine max* (L.) Merril.).	Pawale, S. T., Bhise, R. S., Chimote, V. P., Deshmukh M. P., **Kale, A. A.** and **Naik, R. M**	*Indian J. Genet. Pl. Breeding*	2021; 81(4): 594-597.
11	Nitrate uptake and assimilation potential under limiting N-status in wheat genotypes.	B. B. Abuj, R. M. Naik, U. S. Dalvi, **P. K. Lokhande** and R. S. Wagh	Indian Journal of Agricultural Biochemistry, **4.38**	34(2): 161-169.2021
12	Biochemical and morphological 17ssessment of rabi Sorghum genotype for shoot fly resistance	S.A. Baravkar, **U.S. Dalvi,** A.S. Totre, M.S. Shinde, **R. M. Naik** and **A.A. Kale**	*Int. J. Bioresource and Stress Management*	2023 14(1): 138-144
13	Water stress induced proline accumulation and antioxidative enzymes in groundnut (*Arachis hypogaea* L.)	S.S. Shinde, **D.P. Kachare*** R.D. Satbhai and R.M. Naik	*Legume Research*	2018 41(1) : 67-72
14	Evaluation of pigeon pea (*Cajanus Cajan* L.) genotypes for nutritional quality	**D.P. Kachare*,** R.D. Satbhai, D.B. Rathod and **R.M. Naik**	*Legume Research*	2017 LR-3899 1-5
15.	Biodegradability and nitrogen use efficiency of crotonaldehyde diurea in wheat	Jadhav N.R., **Kachare D.P**., Satbhai R.D., and **Naik R.M.**	*Int. Res. J. Multidis. Stud.*	2017 3(7) : 1-13
16.	Evaluation of nutritional and cooking quality of rice grains	Gavit.V.J , **D.P.Kachare** , R.D. Satbhai and **R.M Naik**	*Int. Res. J. Multidis. Stud.*	2017 3(7) : 1-10
17.	Effect of foliar application of salicylic acid and thiourea on wheat grown under drought stress	K Ramakrishna, **PK Lokhande**, US Dalvi, SG Mohite and RM Naik	*The PharmaInnov.*	2022 11(10): 1792-1799
18.	Antioxidative and root attributes response of chickpea parents and crosses under drought stress	**P.K. Lokhande*,** R.M. Naik, U.S. Dalvi, L.B. Mhase and P.N. Harer	*Legume Research*	2018 LR-4031 1-6
19	Effect of consortium of nitrogen fixing endophytic bacteria on sucrose metabolism and nitrate assimilation in sugarcane (*Saccharum officinarum*)	P.S. Chougule*, **P.K. Lokhande** , H.D. Gaikwad , R.M. Naikand R.R. More	*Int.J.Curr.Microbiol.App.Sci.*	2019 8(5): 115-122
20.	Biochemical and molecular characterization of sweet sorghum varieties and hybrids	**U.S. Dalvi,** P.U. Barve, M.S. Shinde and **R. M. Naik**	*Int. J. Agri. Env. Biotechnol.*	2022 15(03) 765-771
21.	Biochemical and molecular evaluation of pigeonpea against *Fusarium* wilt	S.B. Shinde, **R.M. Naik,** S.G. Mohite, **U.S. Dalvi,** V.P. Chimote and N.S. Kute	*Indian Phtopathology*	2022 75, 37–45

22.	Nutritional quality of fodder cactus (*Opuntia ficusindica* (L.) Mill.) Germplasm	R. B. Jadhav, **S. V. Damame*,** S. A. Landge And D. C. Vanjare	*Forage Res.*,	2022 48(3) : pp. 362-366
23.	Biosynthesis , characterization and application of silver nanoparticle (agnps) to enhance seed quality: a review	WankhadeNitesh, Shelar V.R, **Bhalerao B. M.,**Karjule A. P. and Jadhav V. B.	*Biological forum-An Internationa l Journal*	2023 15 (12): 457-469
24	Investigation of antimicrobial activity of copper nanoparticle against plant pathogenic microorganisms	K.D. Padole,P.K. Lokhande, U.S. Dalvi,**B. M. Bhalerao**, S.G. Mohite, D.P. Kachare, S.V. Damame and R.M. Naik	*The Pharm a Innov.*	2023 12(12) 3483-3492
24	A role of biosynthesized zinc oxide nanoparticles (znonps) for enhancing seed quality: a review	WankhadeNitesh, Shelar V.R, **Bhalerao B. M.,**Karjule A. P. And Jadhav V. B	*Internation al Journal of Environme nt and Climate Change*	2024 14(04) 313-329
26	Enrichment of phytochemicals in dairy products: A review	Kubade KB, Patil BD, Lokhande AT, Kamble DK, Memane CV, KhobragadeShriya, **Bhalerao BM,**KhomneVaishnavi and Lashkare SV	*Internat ional Journa l of Advanc ed Bioche mistry Resear ch*	2024 8(04) 624-631
27	Nutritional and organoleptic evaluation of Hurda grain sorghum.	S. Shiney, **U.S. Dalvi**, J.M. Patil, **P.K. Lokhande** and A.A. Kale	Plant Archives, **5.59**	24(2):899-907,2024.
28	Genetic analysis for the improvement grain yield contributing traits and quality in rabi sorghum.	P. N. Mhase , J.M. Patil , **U.S. Dalvi** , A.R. Aher and S. D. Deokar	Journal of Advances in Biology & Biotechnolog y, **5.30**	27 (10): 1274-1286,2024.
29	Host plant resistance for sorghum shoot fly *Atherigona soccata* Rondani.	A.B. More, U.K. Kadam and **U.S. Dalvi**	Journal of Entomologica l Research, **5.63**	48 (2) : 186-190,2024.
30	Genetic Variation of Sorghum (*Sorghum bicolor* L. Monech) Varieties Assessed by ISSR Markers.	**U.S. Dalvi**, V.R. Awari, V.B. Shinde, U.K. Kadam and D.D. Dudhade.	Indian Journal of Agril. Biochemistry, **5.12**	37(1): 99-103,2024.

31	Coloured sorghum grain evaluation for nutritional perspective.	N.S. Husukale, **U.S. Dalvi**, A.A. Kale, R.M. Naik and M.S. Shinde.	Indian Journal of Agril. Biochemistry, **5.12**	37(1):58-65,2024.
32	G x E Interaction for Grain Yield and it's Contributing Traits in Rabi Sorghum [*Sorghum bicolor* (L.) Moench] under Medium Soil of Western Maharashtra.	R.S. Bagate, J.M. Patil, **U.S. Dalvi** and S.D. Deokar	Biological Forum – An International Journal **4.96**	16(9): 101-103, September, 2024.
33	Morphological and Biochemical Assessment Of Post-Rainy Sorghum Genotypes For Shoot Fly Resistance.	S. D. Deokar, S. V. Pawar, **U. S. Dalvi**, J. M. Patil, U. K. Kadam.	Multilogic in Science, **4.17**	Vol. XIV, Issue XXXXX, :117-119,2024.
34	Effect of silica application on biochemical parameters in relation to lodging tolerance in oat (*Avena sativa* L.)	**S.V. Damame** and A.G. Faltankar	International J. Advanced Bochemistry Research, **5.29**	8(1):198-202, 2024.
35	Endophytic solutions: Alleviating salinity stress in sugarcane.	P. S Chougule, A. A Kale, **P.K. Lokhande**, R.M Naik, Ayesha Siddiqua and A. M Navale	International Journal of Advanced Biochemistry Research **5.12**	2024; **8**(11): 551-564
36	Storability studies in sweet orange cv. Phule Mosambi.	R. Pachuau, V. K Garande, J.K Dhemre, P.S Pawar, V.P. Kad, **Dr. P. K Lokhande** and D.B. Kshirsagar	International Journal of Advanced Biochemistry Research **5.12**	2024; **8**(7): 562-565
37	Influence of Different Rootstocks on Vine Growth, Cane Storage, and Yield in Crimson Seedless Grapevine	A. S. Thutte, J. K. Dhemre R. G. Somkuwar P. H. Nikumbhe, **P. K. Lokhande** and M. N. Bhalekar	Journal of Experimental Agriculture International **5.14**	Volume 46, Issue 10, Page 236-242, 2024;
38	Biochemical basis of submergence tolerance in sugarcane.	V.P. Divade, **P. K. Lokhande**, A.A Kale, U.S. Dalvi, V.R. Awari and S.K. Ghodke	Int. J. Advanced Biochemistry Research. **5.12**	ISSN: 2617-4707. 2025
39	Evaluation of dal milling, cooking and nutritional quality of chick pea (*Cicer arietinum* L.) cultivars.	T. J. Yadav, **D. P. Kachare**, S. B. Narale, A.A. Kale, P. K. Lokhande and **B. M. Bhalerao**	Plant Archives, Vol. 25, **5.59**	Supplement-1, January, 2025
40	Analysis of correlation between physical, nutritional, and antinutritional components in Mungbean genotypes	S. B. Narale, **D. P. Kachare**, P. R. Thombre, V. B. Gore, A. A. Kale, P**. K. Lokhande and B. M. Bhalerao**	Plant Archives **5.59**	Vol. 25, Supplement 1, 2025 pp. 2350-2366

41	Biochemical analysis of sorghum in context to salinity tolerance at pre-flowering stage under field condition.	S. V. Bhosale, **A. A. Kale**, U.S. Dalvi, P. K. Lokhande, S.R. Shelke, V. S. Wani and S.B. Narale	Plant Archives, **5.59**	Vol. 25, No. 1, April- 2025
42	Assessment of nutritional value and anthelmintic activity in cactus (*Opuntia ficus-indica* (L.) Mill.) cladodes.	G. D. Pulate, **S.V. Damame**, J. G. Wagh, A. A. Kale, P.K. Lokhande	Int. J. Advanced Biochemistry Research. **5.12**	2024, 8(12) ISSN: 1189-1195.
43	Assessment of finger millet germplasm in relation to nutritional perspective.	S. Ghogare, **U.S. Dalvi**, Y. G. Ban, P.K. Lokhande and A. A. Kale	ARCC journal, **5.00**	2025
44	Root and Biochemical Responses of Sorghum to Drought Stress: A Comprehensive Review	U.S. Dalvi, T.R.Dhangare and P.K.Lokhande	Indian Journal of Agril. Biochemistry, **5.12**	38(2): 109-120,2025.
45	Evaluation of Root Traits for Water Stress Tolerance in Rabi Sorghum Genotypes	T.R.Dhangare, U.S. Dalvi and P**.K.Lokhande**	International Journal of Environmental & Agriculture Research, **5.30**	11(9) , 83-87,2025
46	Biochemical basis of submergence tolerance in sugarcane	VP Divade, **PK Lokhande**, AA Kale, US Dalvi, VR Awari and SK Ghodke	International Journal of Advanced Biochemistry Research**5.29**	2025; 9(1): 300-3
47	Mitochondrial antioxidative response to osmotic stress in chickpea	D.A. Sapakale, **P.K. Lokhande**, S.B. Narale*, S.G. Mohite, U.S. Dalvi, A.A. Kale and R.M. Naik	Plant Archives **5.59**	Vol. 25, No. 2, 2025 pp. 1521-1524
48	The physico-biochemical and pasting properties of rice and sorghum.	A.S. Kamble, R.R. Jadhav, P.K. Lokhande, U.S. Dalvi, V.P. KAD, J.G. Wagh and S.G. Mohit	International Journal of Advanced Biochemistry Research **5.29**	2026; SP-10(2): 60-66
49	Evaluation of cotton genotypes against thrips, thripstabaci (lindemann) for host plant resistance.	Jayasree M., N.K. Bhute, B.V. Deore, Y.S. Saindane and R.R. Jadhav	Plant Archives,. 5.59	2026 (1) 1491-1499
50	Diversity, Foraging Behavior and Temporal Activity of Pollinators and Floral visitors on Dragon Fruit (*Hylocereus Undatus* and H. Polyrhizus)	S.G. Biradar, S.B.Kharbade, S.T. Aghav, U.K. Kadam J. K. Dhemre and **B.M. Bhalerao**	Plant Archives **5.59**	2026 V.26/1 1310-131
51	Green synthesis of zinc oxide nanoparticles using leaf extract of neem (*Azadirachta indica* L.) and their characterization	Tushar S. Kambdi, H.J. Rajput **B.M. Bhalerao** and Laxman S. Kadam	International Journal of Advanced Biochemistry Research **5.29**	2026 10/1 P. No. 1075-107

52	Genetic variability in Napier grass (*Pennisetum Purpureum* L.)	HS Ramole, SA Anarase, VL Amolic, RR Jadhav, LN Tagad, SS Garole, SS Gholave, ST Pagar, YM Chandankhede and Pruthviraj R Kothavale,	*International Journal of Agriculture and Food Science* **4.97**	2025; 7(11): 513-518
53	Nanotechnology Applications in enhancing crop disease resistance and postharvest quality:A Review.	MohdAshaq , Himanshu Mishra ,Narinder Panotra, Aranav Yadav, Har Nam Singh, Akshita Bisht, Shobha Thaku, Sagar Kashinath Khokale, Achyuta Basak and Reshma Jadhav	*Plant Cell Biotechnology and Molecular Biology,* **5.20**	2026 (7-8)162-174.
54	Biochemical analysis of sorghum in context to salinity tolerance at pre-flowering stage under field condition	S.V. Bhosale, A.A. Kale, U.S. Dalvi, P.K. Lokhande,	Plant Archives, **5.59**	25(1), 197-202,2025
55	Assessment of Finger Millet Germplasm in Relation to Nutritional Perspective	Sonali Ghogare, Udaykumar Dalvi, Yogesh Ban, Prakash Lokhande, Anil Kale	Bhartiya Krishi Anusandhan Patrika, **4.95**	Volume 40 Issue 1: 86-92 (March 2025).
56	Amelioriative effect of salicylic acid on rabi sorghum under drought stress	Sadashiv S Garole, DP Kachare, PK Lokhande, US Dalvi, AS Kamble, PS Yevle, SB Narale and SG Mohite	International Journal of Advanced Biochemistry Research **5.29**	2025; SP-9(12): 1121-1127
57	Effect of roasting on biochemical attributes in hurda sorghum	VT Sarate, US Dalvi, S Shiney, AS Kamble, PS Yevle, Y Gautam	International Journal of Advanced Biochemistry Research **5.29**	2025; SP-9(12): 1670-1675
58	Assessment of little millet (panicum sumatrense l.) germplasms for morphophysiological and dus characters	Vaibhav M. Thombare, Yogesh G. Ban, Udaykumar S. Dalvi, Shubham A. Raut and Dnyaneshwar P. Shinde	Plant Archives **5.59**	Vol. 25, Supplement 1, 2025 pp. 2525-2530
59	Morpho-physio characters study, biochemical and calyx growth yield variation of roselle (hibiscus sabdarriffa l.)	Tejas K. Jadhav1, Vilas R. Awari, Udaykumar S. Dalvi	Plant Archives **5.59**	Vol. 25, Supplement 1, 2025 pp. 2388-2398.
60	Environmental resilience and yield stability in sweet sorghum: Unlocking dual-purpose potential for juice and green cane	RA Gaikwad, SR Gadakh, SS Kulkarni, US Dalvi and SD Shinde	International Journal of Research in Agronomy **5.20**	2025; 8(8): 300-305

61	Harnessing Omics Technologies to Mitigate Drought Stress in Crop Plants	Rautela, I., Chaurasiya, D.K., Singh, S., Pathak, S., Manjeet, Bhoomika, , Prasad, R., Ahmed, M., **Bhalerao, B.M**., Chettri, D., Punia, H., Ahlawat, Y.K., Malik, A., Kumar, V., Patial, S. an	J Agro Crop Sci, **NAAS: 8.80** . https://doi.org/10.1111/jac.70135,	212: e70135 2026
62	Post-Harvest Deterioration in Sugarcane Juice Quality and Sucrose Under Different Harvesting Methods and Storage Duration in the Tropic	Borase, D.N., Thorat, Y.E., **Bhalerao, B.M**. *et al.*	*Sugar Tech* **NAAS***:* **8.00** https://doi.org/10.1007/s12355-026-0172,	2026
63	Biosynthesized sulfur-chitosan nanocomposites for sustainable powdery mildew management in grapes	Nutan Napte , Sanjay Kolase , Sujoy Saha , Vikas Bhalerao , **Bharat Bhalerao** , Satish Jadhav and Ruchir Priyadarshi	Physiological and Molecular Plant Pathology https://doi.org/10.1016/j.pmpp.2026.103391 **NAAS:9.30**	145, 103391 2026
64	Morpho-Molecular Characterization and Technique for Induction of Growth, Sporulation in *Cercospora longipes* Causing Brown Spot Disease in Sugarcane	Dnyaneshwar Borase ,Yogesh Thorat, Santosh Watpade, Dinesh Singh, Sayanti Guha Majumdar · Dinesh Singh · R. Viswanathan · Jyotsana Tilgam· Prashant Patil and **Bharat Bhalerao**	Current Microbiology **NAAS:8.60**	83 418 Pages 1-12 2026
	Book /Book chapters			
1	Anti-nutritional Factors, Processing Technologies and Bioavailability Improvement in Underutilized Pulses	S. B. Narale, **P.K. Lokhande**, A.M. Suryawanshi.	Gore Underutilized Pulse Crops of India, Elite Publishing House	
2	Functional Insights of Nutrients Solubilizing Extremophiles for Potential Agriculture Application. In: Ranjan, A., Rajput, V.D., Chauhan, A., Prazdnova, E.V., Minkina, T., Zargar, S.M. (eds) Extremophiles for Sustainable Agriculture and Soil Health Improvement.	**Bhalerao Bharat**, Khaire Pravin, Borase Dhyaneshwar, Kamble Bhimrao, Arjun Singh, Murugan Kumar, Aniket Gade and Arunima Mahto	(2024) **Springer**, Cham. https://doi.org/10.1007/978-3-031-70203-7_10	
3	Environmental and Safety Considerations of Nano-formulations for Sustainable Agriculture	**Bharat M. Bhalerao**, Krishan K. Verma, Vishnu D. Rajput	Nano-formulations for Sustainable Agriculture; **Springer Nature** Switzerland AG	

4	Potential of Nano-based Biosensors on Plant Growth, Development and Stress Adaptation Strategies: An Overview	**Bharat M. Bhalerao** and Kiran D. Pawar	Nano-formulations for Sustainable Agriculture; **Springer Nature** Switzerland AG	
5	Nanotechnology in Agriculture: Opportunities and Risks for Human Health. In: Jatav, H.S., Raiput, V.D., Minkina, T. (eds) Ecologically Mediated Development. Sustainable Development and Biodiversity	**Bhalerao, B.M**., Rajput, V.D., Ranjan, A., Minkina, T., Devki and Neelam, D.K.	(2025) vol 41 **Springer, Singapore.** https://doi.org/10.1007/978-981-96-2413-3_26	
6	Exploring Nanotechnology for *In Vitro* Plant Improvement , Azamal Husen, Manu Pant (eds) Exploring Nanotechnology for In Vitro Plant Improvement, Book subtitle Nanoparticles in Plant Tissue Culture Systems	**Bhalerao, B.M**	2026 https://doi.org/10.1007/978-981-95-8765-0 Publisher **Springer Singapore**	
7	Availability of Plant Biomass for the Replacement of Fossil Fuels with Biofuels Verma, K.K., Song, X.-P., Huang, H.-R., Kumari, A., & Li, Y.-R. (Eds.). Sugarcane Transformation: Biofuels, Biotechnology, and Beyond (1st ed.).	**Bhalerao, B.M** and Verma, K.K	(2026). **Apple Academic Press**. https://doi.org/10.1201/9781779641571 **Taylor and Francis Group**	
8	The Role of Phytomelatonin Under Plant Stress . Maheshwari, C., Hasan, M., & Khan, M.I.R. (Eds.).. Phytomelatonin: Regulating Development and Stress Protection in Plants (1st ed.).	Ashok Kumar, Mallesh Gampa, Sonal Warkad, Abhishek Chitranshi, Neelesh Mishra, S. Bharath, **Bharat Bhalerao**, Rajeev Kumar and Chirag Maheshwari	(2025) **CRC Press**. https://doi.org/10.1201/9781003527633 **Taylor and Francis Group**	
9	Synthesis of Iron Oxide Nanoparticles and Their Role in Regulation of *In Vitro* Plant Organogenic Development. In: Husen, A., Pant, M. (eds) Exploring Nanotechnology for In Vitro Plant Improvement. Smart Nanomaterials Technology.	**Bhalerao, B.M.,** Bhagat, R.P., Pant, M.	(2026). Springer, Singapore. https://doi.org/10.1007/978-981-95-8765-0_12	

10	Plant Secondary Metabolites : Natural Defences in Disease Management	Pratima Raypa, Susheel Kumar**,** **Reshma Jadhav,** Zuby Ansari, Praneet Chauhan, Vinod Chouhan**,** Sheetanshu Gupta	Taylor & Francis group CRC Press ISBN-9781041205661	
11	Nutritional and Technological Potential of Cactus Pear: From Bioactive Compounds to Industrial Uses	R. R. Jadhav*, P. A. Gunjal , S. A. Landge and L. N. Tagad	ISBN -978-93-344-0114-1 Green Gold A Guide to Forage Crops-2025 Published by Central Agricultural University, Imphal, Manipur. pp.93-108	
12	Non chemical management of biopesticides against defoliator insect pests of lucerne (medicago sativa l.)	S A Landge1 , L. N. Tagad2 , R.R. Jadhav	**ISBN -978-93-344-0114-1 Green Gold** A Guide to Forage Crops-2025 Published by Central Agricultural University, Imphal, Manipur. 128-133.	
13	Biorational Management of Fall Armyworm, Spodoptera Frugiperda (J.E. Smith) (Lepidoptera: Noctuidae) on Fodder Maize	S A Landge1 , L. N. Tagad2 , R.R. Jadhav	**ISBN -978-93-344-0114-1 Green Gold** A Guide to Forage Crops-2025 Published by Central Agricultural University, Imphal, Manipur. 134-138	

Adhoc Projects (ongoing)

Sr. No.	Title of Project	Sponsoring Agency & Duration	Grants (Rs.in Lakh)		
1.	**Metabolomics profiling knowledge based breeding of crop plants**	Government of Maharashtra	1,15,00,000/-	2023-240 to 2025-26	Uni.Reso.No.MTG-3(730)/222/of 2023,27.07.2023
2.	**Ameliorating crop protection, crop production and productivity by nanotechnology application**	Government of Maharashtra	3,75,00,000/-	2023-240 to 2025-26	Uni.Reso.No.MTG-3(729)/222/of 2023,27.07.2023
3.	**Biochemical studies for extending shelf life of sugarcane juice with different packaging material**	(RGSTC), Government of Maharashtra	5,00,000/-	2023-24 to 2025-26	Uni.Reso.No.MTG-3(713)/363/of 2023,09.03.2023
4.	**Mitigation of biotic and abiotic stresses in crop plants mediated through potassium metaphosphatedimer, a new nutrient immunity booster**	(RGSTC), Government of Maharashtra, Mumbai	48,32,000/-	2025-26 to 2027-28	Uni.Reso.No.MTG-3(755)/236/of 2026,13.01.2026
		Total=	**5,43,32,000/-**		

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