



Preamble

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-continuing). Until now total 198 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. 554.5lakhs 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 research project will be undertaken on new technologies viz., metabolomics, transcriptomics and nanotechnology in crop plants.
- The research projects will be planned in context to climate change scenario, nutraceuticals in food and forage crops.
- To provide opportunities to get hands on experience in –
 - ✓ Apprenticeship in industries and service agencies
 - ✓ Entrepreneurship in Biochemistry-related areas.

Academic achievement:

Total number of students completed their M.Sc. degree successfully	Total number of students completed their Ph.D. degree successfully
198	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	04
3	NET	02	Administrative officer	01
4	SET	01	Private industries	06
5			Entrepreneurs	02

Faculty

Sr. No.	Name of Faculty	Designation	Email	Google link
1	Dr. A. A. Kale	Professor and Head	aakale2003@yahoo.com	https://scholar.google.co.in/citations?user=ImvMkiUAAAAJ&hl=en
2	Dr. P. K. Lokhande	Associate Professor	pklokhande@gmail.com	https://scholar.google.co.in/citations?user=B0E4m0QAAAAJ&hl=en
3	Dr. D. P. Kachare	Associate Professor	dpkachare@rediffmail.com	--
4	Dr. B. M. Bhalerao	Assistant Professor	bharatbhalerao@gmail.com	https://scholar.google.co.in/citations?user=u8318v0AAAAJ&hl=en

Academic Programmes

A) M.Sc. (Agri.) Capacity of students: 9
Year of start: 1984

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

Sr.No.	Component	Proposed Credits	Minimum Credits	
		M. Sc.	M. Sc.	Ph. D.
I	Course Work			
	Major Courses	20	20	12
	Minor Courses	09	08	06
	Supporting Courses	06	06	05
	Common Courses	05	05	-
	Seminar	01	01	02
II	Thesis Research	30	30	75
	Total	71	70	100

CourseLayout

Degree Program: M.Sc.(Agri.) Name of Discipline: Biochemistry
Semester wise course layout (As per BSMA Recommendations)

Semester - I

Semester - I	Course No	Course Title	Credits (T + P = Total)
A. Major			
1.	BIOCHEM - 501	Basic Biochemistry	3+1 =4
2.	BIOCHEM - 503	Enzymology	2+1= 3
Sub 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
Sub Total (B)			5+1=6
C. Supporting Credits Compulsory Courses			
1.	PP- 504	Physiological and Molecular Responses of Plants to Abiotic Stresses	2+1=3
Sub Total (C)			2+1=3
D. Non Credit Compulsory Courses			
1.	PGS- 501	Library and Information Services	0+1=1
2.	PGS- 504	Basic Concept on Laboratory Techniques	0+1=1
Sub Total (D)			0+2=2
E. Research work	BIOCHEM-599	--	0+2=2
Sub Total (D)			0+2=2
Total Course Credits (A+B+C+D+E)			12+08=20

Semester - II			
Semester - II	Course No	Course Title	Credits (T + P = Total)
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
		Sub Total (A)	7+3=10
B. Minor			
1.	PP- 505	Hormonal Regulation of plant growth and development	2+1=3
		Sub Total (B)	2+1=3
C. Supporting Credits Compulsory Courses			
1.	STAT- 522	Data Analysis using Statistical Packages	2+1=3
		Sub Total (C)	2+1=3
D. Non Credit Compulsory Courses			
	PGS- 502	Technical Writing and Communication Skill	0+1=1
	PGS- 503	Intellectual Property and its Management in Agriculture	1+0=1
		Sub Total (D)	1+1=2
E. Research work			
	BIOCHEM-599	--	0+02=04
		Sub Total (E)	0+02=02
		Total Course Credits (A+B+C+D+E)	12+08=20

Semester - III

Semester - III	Course No	Course Title	Credits (T + P = Total)
A. Major			
1.	BIOCHEM - 510	Nitrogen and Sulphur Metabolism	2+1 =3
		Sub Total (A)	2+1 =3
B. Minor			
	--	--	--
		Sub Total (B)	--
C. Supporting Credits Compulsory Courses			
		Sub Total (C)	--
D. Seminar			
	BIOCHEM- 591	Master's Seminar	0+1=1
		Sub Total (D)	0+1=1
E. Non Credit Compulsory Courses			

1.	PGS- 505	Agriculture Research, Research Ethics and Research Development Programme	1+0=1
Sub Total (E)			1+0=1
F. Research work			
	BIOCHEM-599	--	0+15=15
Sub Total (F)			0+15=15
Total Course Credits (A+B+C+D+E)			3+17=20
Semester - IV			
Semester - IV	Course No	Course Title	Credits (T + P = Total)
A.Major			
	--	--	--
Sub Total (A)			--
B. Minor			
	--	--	--
Sub Total (B)			--
C. Supporting Credits Compulsory Courses			
	--	--	--
Sub Total (C)			--
	--	--	--
D. Seminar	--	--	--
Sub Total (D)			--
E. Non Credit Compulsory Courses			
	--	--	--
Sub Total (E)			--
F. Research work			
1.	BIOCHEM-599	--	0+11=11
Sub Total (E)			0+11=11
Total Course Credits (A+B+C+D+E+F)			0+11=11
Grand Total Credit			71

MAHATMA PHULE KRISHI VIDYAPEETH, RAHURI

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

Semester: I

Sr. No.	Course No.	Course Title	Credits
A. Major Courses			
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
Sub Total (A)			6+3 = 9
B. Minor Courses			
1.	MICRO 605	Plant Microbe Interactions	2+1 = 3
Sub Total (B)			2+1=3
C. Supporting Courses			
1.	PP 602	Signal Perception and Transduction and Regulation of Physiological Processes	2+0=2
2.	GPB 605	Genomics in Plant Breeding	3+0 = 3
Sub Total (C)			5+0= 5
D. Research work			
1.	BIOCHEM-699	--	0+3 = 3
Sub Total (D)			0+3 = 3
Total Course Credits (A+B+C+D)			13+7=20

Semester: II

Sr. No.	Course No.	Course Title	Credits
A. Major Courses			
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
Sub Total (A)			6+0 =6
B. Minor Courses			
1.	PP 607	Physiological and Molecular Aspects of Source and Sink Capacity for Enhancing Yield	3+0=3
Sub Total (B)			3+0=3
C. Supporting Courses			
--	--	--	--
--	--	--	--
Sub Total (C)			0+0=0
D. Research work			
1.	BIOCHEM-699	--	0+10=10
Sub Total (D)			0+10=10
Total Course Credits (A+B+C+D)			9+10=19

Semester: III

Sr. No.	Course No.	Course Title	Credits
A. Major Courses			
--	--	--	--
		Sub Total (A)	--
B. Minor Courses			
--	--	--	--
		Sub Total (B)	--
C. Supporting Courses			
--	--	--	--
		Sub Total (C)	--
		Total(A+B+C)	--
D. Doctoral Seminar			
1.	BIOCHEM 691	Doctoral Seminar I	0+1=1
		Sub Total (D)	0+1 =1
E. Research Work			
1.	BIOCHEM 699	Research	0+10=10
		Sub Total (E)	0+10=10
		Total(A+B+C+D+E)	0+11=11

Semester: IV

Sr. No.	Course No.	Course Title	Credits
A. Major Courses			
--	--	--	--
		Sub Total (A)	--
B. Minor Courses			
--	--	--	--
		Sub Total (B)	--
C. Supporting Courses			
--	--	--	--
		Sub Total (C)	--
		Total(A+B+C)	--
D. Doctoral Seminar			
1.	BIOCHEM 691	Doctoral Seminar II	
		Sub Total (D)	0+1 = 1
E. Thesis Research Work			
1.	BIOCHEM 699	Research Work	0+12=12
		Sub Total (E)	0+12=12
		Total(A+B+C+D+E)	0+13=13

Semester: V

Sr. No.	Course No.	Course Title	Credits
A. Major Courses			
--	--	--	--
		Sub Total (A)	--
B. Minor Courses			
--	--	--	--
		Sub Total (B)	--
C. Supporting Courses			
--	--	--	--
		Sub Total (C)	--
		Total(A+B+C)	
D. Doctoral Seminar			
--	--	--	--
		Sub Total (D)	--
E. Research Work			
1.	BIOCHEM 699	Research Work	0+20=20
		Sub Total (E)	0+20=20
		Total(A+B+C+D+E)	0+20=20

Semester: VI

Sr. No.	Course No.	Course Title	Credits
A. Major Courses			
--	--	--	--
		Sub Total (A)	--
B. Minor Courses			
--	--	--	--
		Sub Total (B)	--
C. Supporting Courses			
--	--	--	--
		Sub Total (C)	--
		Total(A+B+C)	
D. Doctoral Seminar			
--	--	--	--
		Sub Total (D)	--
E. Research Work			
1.	BIOCHEM 699	Research Work	0+20=20
		Sub Total (E)	0+20=20
		Total(A+B+C+D+E)	0+20=20

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 PAGE 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°C deep freezer	To store the extracted nucleic acid, primers and Chemicals and biological

A) Research Laboratory-II:

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



B) Teaching Laboratory

Sr.No.	Instrument/Equipment	Purpose
1.	Centrifugemachines	To separate biomolecules present in the analytes
2.	Spectrophotometer	To measure absorbance of chromophoric solution
3.	Digestion and distillation unit for nitrogen estimation	To estimate the protein content of grains and fodder
4.	pHmeter	To measure Hof 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. Kyatham Ramkrishna (015/287)	Dr.P.K. Lokhande	Effect of foliar application of salicylic acid and thiourea on wheat grown under drought stress	2018
2	Mr. Gaikwad Deepak Dattu (015/280)	Dr.D.P. Kachare	Biochemical evaluation of groundnut genotypes for resistance against leaf spot disease.	2018
3	Miss. Mali Poonam Rajendra (016/263)	Dr.P.K.Lokhande	Evaluation of antimicrobial activity of medicinal plant extract against a plant pathogenic microorganism.	2018
4	Miss. Kharat Jayshree Kisan (016/265)	Dr. A.A.Kale	Polyamine effects on biochemical events in sugarcane grown under sodic soil.	2018
5	Mr. Magar Ganesh Babasaheb (016/266)	Dr.P.K.Lokhande	Biochemical investigation of drought stress effect on reproductive development in chickpea	2018
6	Mr. Mane Virsinh Rohit Rajendra (016/267)	Dr.R.M.Naik	Evaluation of molecular markers associated with high oleic acid trait in safflower (<i>Carthamus tinctorius</i> L.).	2018
7	Mr. Faltankar Ankush Ganpat (017/276)	Dr.S.V.Damame	Biochemical evaluation of oat (<i>Avena sativa</i> L.) for lodging tolerance.	2020
8	Mr. Gadakh Chaitan Ratan (017/277)	Dr. D.P Kachare	Screening of wheat genotypes for moisture stress tolerance.	2019
9	Mr. Pawar Dhananjay Vijay (017/279)	Dr. R.M.Naik	Biochemical characterization for nitrogen use Efficiency (NUE) in wheat (<i>Triticum aestivum</i>)	2019
10	Mr. Raundal Pavan Jaywant (017/280)	Dr.P.K. Lokhande	Biochemical characterization of medicinal plant extract and its bioefficacy against cotton sucking pest.	2020
11	Mr. Puri Sagar Rajendra (017/281)	Dr. A.A.Kale	Biochemical studies on browning of the sugarcane juice in relation to beverage.	2019

12	Mr. GudlaVarun(017/282)	Dr. D.P Kachare	Nutritional analysis of restorers, maintainers, population and hybrids of pearl millet (<i>Pennisetumglaucum</i> (L.) R.Br.)	2019
13	Miss. KhadseAnushreeShashikant(017/283)	Dr. R.M.Naik	Biochemical and molecular evaluation of soybean germplasm for seed quality parameter and antinutritional content.	2019
14.	Miss. Patil Manisha Ramesh Rao (017/284)	Dr. A.A.Kale	Molecular profiling of sugarcane under salinity stress.	2019
15	Mr. BhoyarSandipChhagan (018/262)	Dr. D.P Kachare	Evaluation of nutritional and milling quality of <i>CajanusCajan</i> grains.	2020
16.	Mr. BaravkarSagarAnnasahab (018/263)	Dr.U.S. Dalvi	Biochemical evaluation of <i>rabisorghum</i> genotypes for shoot fly resistance.	2020
17.	Mr. Padole KamleshDadarao (018/264)	Dr.P.K. Lokhande	Investigation of antibacterial activity of copper nanoparticle against plant pathogenic micro-organisms.	2020
18.	Mr. Bhorade Suresh Devidas (018/266)	Dr. S.V.Damame	Evaluation of fodder quality of grasses and legumes at different growth stages.	2020
19.	Miss. Paliwal Jaya (019/263)	Dr.P.K. Lokhande	Fatty acid profiling of different oil seed crops.	2021
20.	Miss. HusukaleNehaSheshrao (019/265)	Dr. U. S. Dalvi	Biochemical, physical and morphological evaluation of colored grain sorghum.	2021
21	Mr. Jadhav Ravindra Balu (019/267)	Dr. S.V.Damame	Evaluation of nutritional quality of fodder Cactus (<i>OpuntiaFicus - indica</i>) germplasm.	2021
22	Mr. LandageHarharBaban (019/268)	Dr. D. P. Kachare	Biochemical evaluation of CMS (cytoplasmicmale sterility), restorers and hybrids of pearlmillet (<i>Pennisetumglaucum</i> L.) againstdrought tolerance	2021
23.	Mr. SukeSushantDashrath (019/269)	Dr. B.M. Bhalerao	Synthesis of silver nanoparticles by using <i>Annonasquamosa</i> L. seedand fruit peel and their antimicrobial activity.	2021
24	Mr. KalwangheBhushanRa	Dr. D. P. Kachare	Biochemical studies on the garlic cloves extract on pathogenic bacteria	2021

	meshwar (019/270)		and fungi.	
25	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
26	Miss. PatilDnyaneshwariDilip (2020/268)	Dr. A.A.Kale	Effect of burning of the sugarcane on its juice quality.	2022
27.	Miss. DhakneAishwaryaSudhakar (2020/269)	Dr. B.M. Bhalerao	Antioxidant potential of pomegranate peel aqueous extracts and synthesis of silver nanoparticles.	2022
28.	Miss. JadhaoBharatiBabusing (2020/270)	Dr. D. P. Kachare	Evaluation of nutritional and chapatti making quality of wheat.	2022
29.	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
30.	Mr. Dhangare Tushar Ramesh (2020/275)	Dr. U. S. Dalvi	Screening of sorghum (<i>Sorghum bicolor</i>) genotype for water stress tolerance using biochemical analysis of root and shoot tissues.	2022
31.	Miss. Kale Akshatha (2021/270)	Dr. P. K. Lokhande	Combinational effect of <i>Fusarium</i> wilt and drought stress on biochemical parameters in chickpea genotypes.	2024
32.	Miss. KadalePallaviBalu (2021/271)	Dr. A. A. Kale	Assessment of foxtail millet germplasm in relation to nutritional perspective.	2024
33.	Miss. Chinta Sravani (2021/272)	Dr. B.M. Bhalerao	Studies on induced biochemical defensive system on application of silver nanoparticles developed from <i>Annonasquamosa</i> L. against <i>Fusarium</i> wilt in chickpea.	2023
34.	Miss. Shiney Shaji (2021/273)	Dr. U. S. Dalvi	Nutritional and organoleptic evaluation of hurda grain sorghum.	2024
35.	Mr. KudaleShivamMahavir (2021/274)	Dr. P. K. Lokhande	Nutritional and antinutritional characterization of chickpea (<i>Cicerarietinum</i>) genotype.	2024
36.	Mr. NaraleShrikrishnaBalaso (2021/275)	Dr. D. P. Kachare	Evaluation of nutritional and antinutritional qualities of mung bean genotypes.	2024
37.	Mr. AdhariYogesh Narayan (2021/276)	Dr. A. A. Kale	Biochemical evaluation of some promising QPM maize genotypes.	2024
38.	Miss. MundheBhairaviSatishrao (2021/278)	Dr. D. P. Kachare	Evaluation of nutrional quality and self-life of pearl millet flour.	2024

Ph.D.(Biochemistry) (Lastfiveyears)

Sr. No.	NameofthePh.D.student and Reg. No.	Guide	TitleofthePh.D.Thesis	Year of submission
1.	Mr. S.C.Fattepurkar (Ph.D./013/81)	Dr.R.M.Naik	Biochemical and molecular characterizationofphytasefromlowphytate soybean(<i>Glycinemax(L.)Mirr.</i>)	2017
2.	Miss. Abuj BhagyashreeBhas karrao (Ph.D./018/49)	Dr.R.M.Naik	Biochemical and molecular basis of differential nitrogen use efficiency in contrasting wheat (<i>Triticumaestivum L.</i>)	2023
3.	Mr. ChougulePankaj Suresh (Ph.D./015/66)	Dr.A.A.Kale	Physiochemical studies on effect of endophytic bacteria in combating induced salinity stress in sugarcane	2023

ResearchAchievements

Sr. No.	ResearchRecommendations	Approved in the JointAgrescome eting
1	Application of endophytic bacteria <i>Gluconacetobacter @ 5 ml L-1 (1 x 10⁸c.f.u.)</i> 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
2	Delayed harvested fodder of hybrid napier (up to 70 days) of cv. PhuleGunwant treated with 2% jaggery is recommended for preparation of good quality silage.	49th Joint AGRESCO held on December 24-30, 2021 at VNMKV, Parbhani
3	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 <i>Rasvantipurpose</i> .	49th Joint AGRESCO held on December 24-30, 2021 at VNMKV, Parbhani
4	Pigeon pea genotype can be rapidly and reliably screened for <i>Fusarium</i> 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
5	The content of phenols and the activity profile of defense related enzymes both under control (constitutive) and pathogen inoculated (inducible) condition could be used as a criteria for selection of smut resistant sugarcane clones as evident from their significant higher levels in Co 6806, a national check for smut resistance in sugarcane. The SSR primer	43 rd Joint AGRESCO held on May 28-30, 2015 at MPKV, Rahuri

	NKS11 showing a specific amplicon fragment could aid in selecting / confirming smut resistant sugarcane clones.	
6	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.	43 rd Joint AGRESCO held on May 28-30, 2015 at MPKV, Rahuri
7	The biochemical parameters viz; ascorbate peroxidase activity and rate of lipid peroxidation has been recommended for screening chickpea genotypes for drought tolerance.	42 nd Joint AGRESCO held on May 12-14, 2014 at Dr. SBKKV, Dapoli
8	Temperature Induction Response (TIR) with comparative analysis of biochemical parameters identified wheat cultivar NIAW -917 as a thermotolerant cultivar and be used in further breeding programme for abiotic stress management.	42 nd Joint AGRESCO held on May 12-14, 2014 at Dr. SBKKV, Dapoli
9	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.	42 nd Joint AGRESCO held on May 12-14, 2014 at Dr. SBKKV, Dapoli
10	Sowing of sweet sorghum in second fortnight of June is recommended for obtaining maximum juice, sugar content and ethanol yield.	42 nd Joint AGRESCO held on May 12-14, 2014 at Dr. SBKKV, Dapoli

ExtensionActivities

The staff members have actively participated in shetakarimela, agricultural exhibitions, State Agril Department activity of “*MajhaEk Divas MajhyaBalirajasathi*” and the university activities 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 PhuleKrishiVidyapeeth, Rahuri, have jointly organizing “Food and Nutritional Security Conclave” along with the XIV Convention of the Indian Society of Agricultural Biochemists at Mahatma PhuleKrishiVidyapeethRahuri-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 the author/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	<i>Food Bioscience (NAAS: 11.32)</i>	(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.	<i>The PharmaInnov.</i>	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	<i>The PharmaInnov.</i>	2022; 11 (9): 101-111
4	Antioxidant enzymes respond to osmotic stress in the leaves of sugarcane (<i>Saccharum Officinarum</i> 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.	<i>Int. J. Curr. Microbiol. App. Sci.</i>	2019; 8(12): 1489-1495
5	Elevated levels of osmoprotectants securing sugarcane (<i>Saccharum officinarum</i> 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.	<i>Int. J. Curr. Microbiol. App. Sci.</i>	2019; 8(12): 1482-1488
6	Incorporation of null allele of Kunitz trypsin inhibitor through molecular backcross breeding in soybean (<i>Glycine max</i> (L.) Merril.).	Pawale, S. T., Bhise, R. S., Chimote, V. P., Deshmukh M. P., Kale, A. A. and Naik, R. M	<i>Indian J. Genet. Pl. Breeding</i>	2021; 81(4): 594-597.
7	Biochemical and morphological assesment of rabi Sorghum genotype for shootfly resistance	S.A. Baravkar, U.S. Dalvi , A.S. Totre, M.S. Shinde, R. M. Naik and A.A. Kale	<i>Int. J. Bioresource and Stress Management</i>	2023 14(1): 138-144
8.	Water stress induced proline accumulation and antioxidative enzymes in groundnut (<i>Arachis hypogaea</i> L.)	S.S. Shinde, D.P. Kachare* R.D. Satbhai and R.M. Naik	<i>Legume Research</i>	2018 41(1) : 67-72
9.	Evaluation of pigeon pea (<i>CajanusCajan</i> L.) genotypes for	D.P. Kachare* , R.D. Satbhai, D.B. Rathod and R.M. Naik	<i>Legume Research</i>	2017 LR-3899

	nutritional quality			1-5
10.	Biodegradability and nitrogen use efficiency of crotonaldehydediurea in wheat	Jadhav N.R., Kachare D.P. , Satbhai R.D., and Naik R.M.	<i>Int. Res. J. Multidis. Stud.</i>	2017 3(7) : 1-13
11.	Evaluation of nutritional and cooking quality of rice grains	Gavit.V.J , D.P.Kachare , R.D. Satbhai and R.M Naik	<i>Int. Res. J. Multidis. Stud.</i>	2017 3(7) : 1-10
12.	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	<i>The PharmaInnov.</i>	2022 11(10): 1792-1799
13.	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	<i>Legume Research</i>	2018 LR-4031 1-6
14	Effect of consortium of nitrogen fixing endophytic bacteria on sucrose metabolism and nitrate assimilation in sugarcane (<i>Saccharumofficinarum</i>)	P.S. Chougule*, P.K. Lokhande , H.D. Gaikwad , R.M. Naikand R.R. More	<i>Int.J.Curr.Microbiol.App.Sci.</i>	2019 8(5): 115-122
15.	Biochemical and molecular characterization of sweet sorghum varieties and hybrids	U.S. Dalvi , P.U. Barve, M.S. Shinde and R. M. Naik	<i>Int. J. Agri. Env. Biotechnol.</i>	2022 15(03) 765-771
16.	Biochemical and molecular evaluation of pigeonpea against <i>Fusarium</i> wilt	S.B. Shinde, R.M. Naik , S.G. Mohite, U.S. Dalvi , V.P. Chimote and N.S. Kute	<i>Indian Phtopathology</i>	2022 75, 37–45
17.	Nutritional quality of fodder cactus (<i>Opuntiaficusindica</i> (L.) Mill.) Germplasm	R. B. Jadhav, S. V. Damame* , S. A. Landge And D. C. Vanjare	<i>Forage Res.,</i>	2022 48(3) : pp. 362-366
18.	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.	<i>Biological forum- An International Journal</i>	2023 15 (12): 457-469
19	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	<i>The Pharma Innov.</i>	2023 12(12) 3483-3492
20	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	<i>International Journal of Environment and Climate Change</i>	2024 14(04) 313-329
21	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	<i>International Journal of Advanced Biochemistry Research</i>	2024 8(04) 624-631

AdhocProjects(ongoing)

Sr. No.	TitleofProject	SponsoringAgency &Duration	Grants (Rs.in Lakh)
1	Amelioration crop protection, crop production and productivity by nanotechnology applications	Govt. of Maharashtra	3,75,00,000/-
2	Metabolomics profiling for knowledge based breeding of crop plants	Govt. of Maharashtra	1,15,00,000/-
3	Biochemical studies for extending shelf life of sugarcane juice with different packaging material	Rajiv Gandhi Science and Technology (RGSTC)	5,00,000/-
		Total (Rs.)	4,95,00,000/-

ContactDetails

DepartmentofBiochemistry,
PostGraduateInstitute,
MahatmaPhuleKrishiVidyapeeth,
Rahuri-413722,Dist.Ahmednagar(M.S.)
Phone:(02426)243265(O)
E-mail:hodbiochem84.mpkvrahuri@gmail.com
