

DEPARTMENT OF PLANT MOLECULAR BIOLOGY AND BIOTECHNOLOGY

ASPEE College of Horticulture & Forestry, NAU, Navsari

The Department of Plant Molecular Biology and Biotechnology was established in the year 2005 to undertake research, training and teaching in the recent areas of Molecular Biology, Plant Tissue culture and Biotechnology. M.Sc. and Ph.D. programme in the subject of Plant Molecular Biology and Biotechnology was started in 2007. Since inception, the Department has acquired high level of scientific competence and established excellent research infrastructure. The ultimate aim of the department is to take lead for increasing national and state productivity of agricultural commodities for the augmentation of sustainable development.

Staff position in Department of Fruit Science and PSMA

Sr. No.	Name of the faculty members	Designation	Contact details	Area of interest
1	Dr. N.B. Patel	Associate Professor In Charge Head	9998002505 nitin_nau@yahoo.co.in	Plant tissue culture
2	Mr. K.P. Suthar	Assistant Professor	9978888938 kiransuthar@nau.in	Plant Biotechnology
3	Dr. Chintan V Kapadia	Assistant Professor	9725018789 chintan_bt@yahoo.co.in	Plant Biotechnology
4	Dr. Diwakar Singh	Assistant Professor	9979246301 diwakar@nau.in	Plant Biochemistry

TEACHING

List of UG courses (Course No., Title and Credits)

Sr. No.	Course No.	Course Title	Credit	Sem. No.
1.	BSC 5.10	Elementary Plant Biochemistry and Biotechnology	2+1	V
2.	BIOCHEM 8.2	Molecular Diagnostics	1+2	VIII
3.	PBG 8.11	Bioinformatics	1+2	VIII

List of M.Sc. and Ph.D. courses (Course No., Title and Credits)

Plant Molecular Biology and Biotechnology Courses

Sr. No.	Course No.	Course Title	Credit
1.	MBB 501	Principles of Biotechnology	2+1
2.	MBB 502	Fundamentals of Molecular Biology	3+0
3.	MBB 503	Molecular Cell Biology	3+0
4.	MBB 504	Plant Tissue Culture & Genetic Transformation	1+2

5.	MBB 505	Techniques in Molecular Biology I	0+3
6.	MBB 507	Molecular Breeding	2+0
7.	MBB 508	Genomics & Proteomics	2+0
8.	MBB 509	Techniques in Molecular Biology II	0+3
9.	MBB 512	Immunology and Molecular Diagnosis	2+1
10.	MBB 552	Basic Biochemistry	2+1
11.	MBB 554	Principles of Microbiology	2+1
12.	MBB 555	Introduction to Bioinformatics	2+1
13.	MBB 557	Molecular Cytogenetics	2+1
14.	MBB 558	Molecular Farming	1+1
15.	MBB 601	Advances in Plant Molecular Biology	3+0
16.	MBB 602	Advances in Genetic Engineering	3+0
17.	MBB 603	Advances in Microbial Biotechnology	3+0
18.	MBB 604	Advances in Crop Biotechnology	3+0
19.	MBB 605	Advances in Functional Genomics And Proteomics	3+0
20.	MBB 606	Commercial Plant Tissue Culture	2+0

Other Faculty Courses

Sr. No.	Course No.	Course Title	Credit
Horticulture Faculty			
1.	FSC 509	Biotechnology of Horticultural Crops	2+1
2.	FLA 605	Advances in Biochemistry and Biotechnology of Flowers	2+1
3.	FSC 604	Genomics and Bioinformatics In Horticulture	2+1
4.	VSC 604	Biotechnology of Vegetable Crops	2+1
5.	PSMA 606	Biotechnology of Plantation Crops & Spices	1+1
Forestry Faculty			
6.	FB 523	Molecular Biology	2+1
7.	FB 524	Principles and Techniques in Genetic Engineering	2+1
8.	FB 525	Environmental Pollutants and Biotechnology	2+0
9.	FB 623	Molecular Biochemistry	2+1
Biochemistry Faculty			
10.	Biochem 504	Molecular Biology	2+1
11.	Biochem 505	Biochemical Techniques	1+2
12.	Biochem 506	Immunochemistry	2+1
13.	Biochem 507	Plant Biochemistry	3+0
14.	Biochem 603	Biochemistry of Biotic and Abiotic Stress	3+0
15.	Biochem 607	Advanced techniques in Biochemistry	0+2

Number of passed out students (M.Sc. and Ph.D.)

Passed out students	Plant Molecular Biology and Biotechnology	
	M.Sc.	Ph.D.
Total	20	13

List of qualified students who qualified ICAR- NET in the discipline of Plant Molecular Biology and Biotechnology

Sr. No.	Name	Year
1.	Mr. Chintan V Kapadia	2011
2.	Mr. Rishi Kalaria	2012
3.	Miss Raina Jain	2012
4.	Mr. Patil Vishal R.	2011
5.	Mr. Patel Hiren K.	2013
6.	Mr. Nand Kishore S	2013
7.	Miss Swati Patel	2014
8.	Mr. Praveen Prajapat	2014
9.	Mr. Ankit Patel	2014
10.	Mr. Haider Abbas	2014
11.	Miss. Madhuri Tandel	2013
12.	Mr. Vanrajsinh Solanki	2013
13.	Mr. Vishal Srivashtav	2012

List of students from department of Plant Molecular Biology and Biotechnology who were awarded medals

Sr. No.	Name of the student	Year
Nil		

ASPEE Gold Medal conferred to M.Sc students from Department of Plant Molecular Biology and Biotechnology

Sr. No.	Name of the student	Year
Nil		

ASPEE Gold Medal conferred to Ph.D. students from Department of Plant Molecular Biology and Biotechnology

Sr. No.	Name of the student	Year
Nil		

List of Students who have won gold medals, poster paper awards, oral paper awards or other awards

Sr. No.	Name of Students	Award	Conference/ Seminar/ Symposium/ Flower show	Year
1	Srivastava Vishal S.	Best paper award	ISPP West Zonal Seminar on Enhancement of crop productivity through physiological interventions organized by	2015

			N. M. College of Agriculture, NAU, Navsari & Indian society of plant physiology, New Delhi	
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List of M.Sc. and Ph.D. thesis submitted to Department of Plant Molecular Biology and Biotechnology

M.Sc. (Plant Molecular Biology and Biotechnology)

Sr. No.	Title of the thesis	Year	Name of the student	Name of the Major Advisor
1.	<i>In planta</i> transformation in cotton variety G-Cot 10	2010	Vanraj Solanki	Dr. Vikas Khandelwal
2.	Molecular Variation Analysis in Date Palm (<i>Phoenix dactylifera</i> L.)	2010	Vishal Shrivastava	Dr. M.K. Mahatma
3.	Isolation and molecular characterization of arsenite tolerant bacteria	2010	Raina Jain	Dr. Sanjay Jha
4.	<i>In vitro</i> regeneration and genetic transformation of castor (<i>Ricinus communis</i> L.) genotype SKP 84	2011	Rohan Kansara	Dr. Sanjay Jha
5.	Molecular and biochemical characterization of pigeonpea (<i>Cajanus cajan</i> L.) genotypes for fusarium wilt resistance	2011	Rakesh Swami	Dr. M.K. Mahatma
6.	Molecular and biochemical characterization of karanja (<i>Derris indica</i>)	2011	Hake Anil A	Dr. Sanjay Jha
7.	Molecular dissection of phenylpropanoid pathway during <i>Ricinus communis</i> - <i>Fisarium oxysporium</i> f.sp. <i>ricini</i> interaction	2011	Pritam Jadhav	Dr. M.K. Mahatma
8.	Characterization of LOX gene and Polyamines in Castor (<i>Ricinus communis</i> L) during wilt pathogen interaction	2011	Mhaske Somnath	Dr. M.K. Mahatma
9.	Isolation and molecular characterization of phosphate solubilizing bacteria from rhizospheric soil	2012	Lochan Singh	Dr. Sanjay Jha
10.	<i>In vitro</i> regeneration and genetic transformation of pigeonpea [<i>Cajanus cajan</i> (L.) Millsp] genotype GT-102	2012	Parekh Mithil J.	Dr. M.K. Mahatma
11.	Molecular and biochemical characterization of chickpea genotypes for <i>Fusarium oxysporum</i> f. sp. <i>ciceris</i>	2013	Himanshu Maisuriya	Dr. R.M. Patel
12.	Cross Talk of Various Genes of Phenylpropanoid Pathway in Castor (<i>Ricinus communis</i> L.) During Multiple Abiotic Stress.	2014	Dobariya Bhavikaben Rameshbhai	Dr. Diwakar Singh
13.	Isolation and Cloning of Phytase Gene from Diverse Sources.	2014	Chaitanya Sahebrao Mogal	Dr. Diwakar Singh
14.	Transcriptome analysis of pigeon pea (<i>Cajanus cajan</i> L.) During various temperature, drought and heavy metal stresses	2014	Radadiya Nidhi Ghanshyambhai	Dr. Lalit Mahatma
15.	Molecular and Biochemical Characterization of <i>Capsicum annuum</i> L. Varieties.	2015	Dimple Vasant Gor	Dr. Diwakar Singh
16.	<i>In vitro</i> regeneration and genetic transformation of Finger Millet (<i>Eleusine coracana</i> L.) genotype GN-4	2015	Kirti Dabhi	Dr. Sanjay Jha
17.	Comparative protein expression analysis of bacterial wilt susceptible and resistant brinjal	2016	Gandhi Anjali	Dr. C.V. Kapadia
18.	Biochemical and molecular characterization of cellulose producing micro organisms from termite	2016	Komal Gadhiya	Dr. Lalit

				Mahatma
19.	Analysis of defence metabolites production in brinjal infected by the bacterial pathogen <i>Ralstonia solanacearum</i> L.	2016	Vasava Divyesh	Dr. C.V. Kapadia
20.	Differential Gene Expression in Rice (<i>Oryza Sativa</i> L.) in Response to Salinity Stress through cDNA-AFLP.	2016	Bhumi Jayeshbhai Patel	Dr. Diwakar Singh

Ph.D. (Plant Molecular Biology and Biotechnology)

Sr. No.	Title of the thesis	Year	Name of the student	Name of the Major Advisor
1.	Characterization of resistant gene analogs (RGA) from castor (<i>Ricinus communis</i> L) for Fusarium wilt	2012	Chintan V. Kapadia	Dr. M.K. Mahatma
2.	Heterologous expression of pneumococcal surface antigen <i>PsaA</i> gene	2014	Nafeesa Patel	Dr. Lalit Mahatma
3.	Identification of molecular marker for introgression of mungbean yellow mosaic virus (mymv) resistant in mungbean (<i>Vigna radiata</i> L.)	2014	Rishi Kalari	Dr. Lalit Mahatma
4.	Identification and molecular characterization of halophilic soil conditioning and phosphate solubilizing fungus from coastal area of south Gujarat	2015	Swati Patel	Dr. Sanjay Jha
5.	Molecular characterization and metabolic profiling of banana (<i>Musa paradisiacal</i> L.) pseudostem waste degrading microbes	2015	Hiran Kanubhai Patel	Dr. Lalit Mahatma
6.	Molecular and biochemical basis of <i>Fusarium</i> wilt resistance in pigeonpea [<i>Cajanus cajan</i> (L.) Millsp.]	2015	Vishal Patil	Dr. R.M. Patel
7.	Molecular dissection of brassinosteroid biosynthesis pathway in chickpea (<i>Cicer arietinum</i> L.) during abiotic stress	2015	Raina Jain	Dr. R.M. Patel
8.	Study on <i>Fusarium oxysporum</i> f. Sp. <i>Lycopersici</i> and tomato (<i>Solanum lycopersicum</i>) interaction: molecular and biochemical perspectives	2016	Vanrajsinh Solanki	Dr. R.M. Patel
9.	<i>In vitro</i> mutagenesis in finger millet (<i>Eleusine coracana</i> L.) for blast (<i>Pyricularia grisea</i>) tolerance	2016	Rohan Kansara	Dr. R.M. Patel
10.	Genetic transformation of rice (<i>oryza sativa</i> L.) var. NAUR-1 with <i>gsfF</i> gene for enhanced abiotic stress tolerance	2016	Vishal Shrivastava	Dr. Sanjay Jha
11.	Isolation and molecular characterization of phosphate solubilizing fungi	2016	Bina Panchal	Dr. Sanjay Jha
12.	Molecular and biochemical characterization of oil degrading bacteria	2016	Mohsin Topiwala	Dr. Lalit Mahatma
13.	Transcriptome Analysis in Cotton (<i>Gossypium Hirsutum</i> L.) under Drought Stress Condition.	2016	Pravin Prajapat	Dr. Diwakar Singh

Recommendations made by the Department of Plant Molecular Biology and Biotechnology

Sr. No.	Recommendation	Project Incharge	Co-PI
1.	Shoot tips from 8-10 days old seedlings of cotton variety G.Cot.10 can be cultured on MS basal medium supplemented with glucose (30g/l), MgCl ₂ (750 mg/l), clarigel (phytagel) (2.2g/l), NAA (0.05 mg/l) + BAP (0.2 mg/l). After 20 days these shoots can be rooted on ½ MS basal medium supplemented with glucose (20g/l), MgCl ₂ (750mg/l), clarigel (phytagel) (2.2g/l) + IBA (0.1 mg/l). After hardening in the culture room for one week followed by two weeks in the green house survival percent of 81.5 % could be achieved.	Dr. Taslim Ahmad	Dr. D.H. Patel, Dr. V. Khandelwal, Dr. Sanjay Jha, Dr. M.K. Mahatma, Dr.V. Kumar and Dr. R.R. Shah
2.	Best stage for maximum recovery of pectate lyase (PEL) enzyme from G-9 variety of banana pulp is 4 days after 5% etheral treatment. Optimum activity of PEL enzyme is obtained in 20mM sodium phosphate buffer at pH 8.5 and temperature 37°C. PEL enzyme activity was increased by two thiol group chemicals (cystine and cysteine at 5.0 mM concentration) and one metal ion i.e. Mg ²⁺ as MgCl ₂ (0.6 mM concentration). Major inhibitors of PEL enzyme are phenolics (ferulic acid, caffeic acid, p-Coumaric acid and salicylic acid), reducing agents (ascorbic acid and sodium metabisulphite), thiol groups (β-ME and DTT) and metal ions (Ba ²⁺ , Co ²⁺ , Cu ²⁺ , Fe ²⁺ and Zn ²⁺), which may increase shelf life of banana variety G-9.	Dr. Diwakar Singh	Mr. K.P. Suthar, Dr. Taslim Ahmad and Dr. R.M. Patel
3.	In the micropropagation of stevia, nano particles(< 50 nm) of ZnO (10 μM) and CuO (0.05 μM) can be incorporated in place of ZnSO ₄ & CuSO ₄ in the MS medium for getting more number of shoots per culture, higher fresh weight, dry weight & stevioside content (1.40% FW).	Mr. K.P. Suthar	Dr. Diwakar Singh, Dr. Taslim Ahmad and Dr. R.M. Patel

Projects

1. Experiential Learning on Plant Tissue Culture (B. H. 16035)

Objectives:

- To give practical exposure to students for plant tissue culture.

2. Strengthening of Tissue culture Research and Development at all campuses (B. H. 12092)

Objectives:

- Development of commercial tissue culture protocols for important crops of south Gujarat region.
- To develop highly skilled manpower in the field of plant tissue culture.

3. Research in Tissue Culture in Fruit Crops (B. H. 12014-5)

Objectives:

- Standardization of methods for establishment of tissue culture plants of horticulture crops of south Gujarat regions.

4. Establishment of New Department of Biotechnology (B. H. 12969)

Objectives:

- Development of teaching facility for UG and PG students in the subject of Plant Molecular Biology and Biotechnology.
- Development of research facility at Navsari Agricultural University in the area of Plant Molecular Biology and Biotechnology for PG students.
- To train the students and entrepreneurs in the area of plant molecular biology and biotechnology and to develop trained man power.

5. Strengthening of Department of Biotechnology (B. H. 12097)

Objectives:

- To conduct research related to molecular, biochemical and microbial aspects to solve agricultural problems of south Gujarat regions.
- To impart special training to the PG students for research related to plant molecular biology to solve the agricultural problems.
- To develop highly skilled manpower in the field of biotechnology.

6. Revolving fund scheme (B. H. 9510-N-39 R. F.)

Objectives:

- To rotate the fund by using it for commercial purposes.

7. Establishment of new commercial banana tissue culture laboratory (NHM Project) (B. H. 18928M)

Objectives:

- To establish new commercial Banana (Grand Naine) tissue culture unit at Navsari agricultural university.
- To produce and supply quality planting material of banana (Grand Naine) tissue culture plants.

Publication details

Research Papers Published

Sr.No.	Name (s) of Authors	Title of the paper	Name of the Journal, year Vol. No. & Issue No.
2011-12			
1.	CV Kapadia, MK Mahatma, Vishal Shrivastava, Taslim Ahmad and RT Desai	Defense response of resistant and susceptible genotypes of castor (<i>Ricinus communis</i> L.) to wilt disease.	Archives of Phytopathology and Plant Protection, 2012, 46 (2): 180-192
2.	Bahubali D Mangave, Alka Singh, Mahesh K Mahatma	Effects of different plant growth regulators and chemicals spray on post harvest physiology and vase life	Plant Growth Regulation, 2012, DOI 10.1007/s10725-012-

		of heliconia inflorescence cv. Golden Torch.	9768-1
3.	Raina Jain, Hemanta Adhikary, Sanjay Jha, Anamika Jha, G. Naresh Kumar	Remodulation of central carbon metabolic pathway in response to arsenite exposure in <i>Rhodococcus</i> sp. strain NAU-1.	Microbial Biotechnology, 2012, 5(6): 764–772.
4.	Suthar, K.P., Bhatnagar, R., Shukla, Y.M., Patel, N.J., Suthar, V.P. and Patel, J.P.	Assessment of Genetic Diversity among Chickpea Genotypes using RAPD, Protein Profiling and Isozyme Markers.	Indian Journal of Agricultural Biochemistry, 2012, 25 (1). pp. 25-30
5.	Suthar, K.P., Bhatnagar, R., Shukla, Y. M., Suthar, V. P., Kadam, S. D. and Patel, N. J.	Genetic Diversity Assessment In Chickpea Genotypes Using STMS.	Legume Research, 2012, 35 (4) : 285 - 293,
2012-13			
1.	Somnath D Mhaske, Mahesh Kumar Mahatma, Sanjay Jha, Pushpendra Singh, Lalit Mahatma, Vipul B Parekh and Taslim Ahmad	Castor (<i>Ricinus communis</i> L.) Rc-LOX5 plays important role in wilt resistance.	Industrial Crops and Products, 2013, 45: 20-24.
2.	V.H. Solanki, Vikas Khandelwal, D. H. Patel, M.K. Mahatma and Suman Jha	Optimization of gene transfer in cotton via <i>Agrobacterium tumefaciens</i> : an assessment of factors influencing the efficiency of gene transfer mechanisms.	Journal of Cotton Research and Development, 2013, 27(1): 1-6
3.	R.V. Padaliya, K.P. Suthar, Diwakar Singh, M.K. Mahatma and V.R. Patil	Marker assisted characterization of chickpea genotypes for wilt resistance.	<i>African Journal of Biotechnology</i> , 2013, 12 (50): 6907-6912.
4.	Kansara, R.V., Sanjay Jha, Suman Kumar Jha and M. K. Mahatma	An efficient protocol for <i>in vitro</i> mass propagation of <i>Fusarium</i> wilt resistant castor (<i>Ricinus communis</i> L.) parental line SKP-84 through apical meristem.	The Bioscan, 2013, 8(2): 403-408.
5.	Pritam R Jadhav, Mahesh Kumar Mahatma*, Sanjay Jha, Lalit Mahatma, Vipul B Parekh and Suman Kumar Jha	Changes in Phenylpropanoid Pathway during Compatible and Incompatible Interaction of <i>Ricinus communis-Fusarium oxysporum</i> f.sp. <i>ricini</i>	<i>Indian J Agric Biochem</i> , 2013, 26 (1), 56-60,
2013-14			
1.	Taslim Ahmad, Kumar, V., Patel, N. L., Kapadia, C. V., Suthar, K. P. and Singh, D.	Effect of different plant hormones on node culture in pointed gourd.	Journal of Cell and Tissue Research, 2014, 14 (2): 4323-4331
2.	Parekh, M. J., Mahatma, M. K. and Kapadia, C.V.	<i>In Vitro</i> Regeneration of Pigeon Pea { <i>Cajanus Cajan</i> (L.) Millsp. } Genotype Gt-102 Using Apical Meristem	<i>Journal of Cell and Tissue Research</i> , 2014, Vol. 14(1) 4099-4103
3.	Mithilkumar J Parekh, Mahesh Kumar Mahatma, Rohan V Kansara, DH Patel, Sanjay Jha and DA Chauhan	<i>Agrobacterium Mediated Genetic Transformation of Pigeon Pea (Cajanus cajan L. Millsp) using Embryonic Axes for Resistance to Lepidopteron Insect</i>	<i>Indian J Agric Biochem</i> , 2014, 27 (2), 176-179,

4.	Patel, N., Kansara, R., Mahatma, M. and Mahatma, L.	Optimization for the Most Organogenic Responsive Combinations of Plant Growth Regulators through <i>In Vitro</i> Regeneration of Tomato Cv Pusa Dwarf	<i>Journal of Cell and Tissue Research</i> , 2014, Vol. 14(2) 4357-4362
5.	R. K. Kalaria, Digvijay Chauhan, Mahesh Kumar Mahatma and Lalit Mahatma	Identification of RAPD and ISSR makers for resistance against mungbean yellow mosaic virus in mungbean (<i>Vigna radiata</i> L.) under south Gujarat agro climatic condition of India	The Bioscan, 2014, 9(3): 1177-1182
6.	Nafisa Patel, Vandana Prajapati, Lalit Mahatma and Vadodariya, G. D.	A Study on the Occurrence of <i>Streptococcus</i> spp. as a Causative Agent of Respiratory Distress in Children	<i>Trends in Biosciences</i> , 2014, 7(7): 547-550,
7.	Charles Mugisa , Harshal P Patel , Mahesh Mahatma and Lalit Mahatma	Molecular Characterization of Mungbean Yellow Mosaic Virus Infecting Mungbean in South Gujarat	<i>J Mycol Plant Pathol</i> , 2014, Vol. 44, No.2
8.	D.H. Patel , D.U. Patel, Sanjay Jha , Rajkumar and V. Kumar	Genetic diversity assessment in cotton genotypes (<i>Gossypium hirsutum</i> and <i>G. barbadense</i>) using PCR based markers	<i>Green Farming</i> , 2014, Vol. 5 (6) : 1016-1019
9.	L.K. Thakur, Sunita Roy, Rajmani Prajapati, Mukesh Kr. Singh, S.K. Raza, B .D. Mangave, Alka Singh and Sanjay Jha	Development and Evaluation of Environment & User Friendly Turmeric Oil Emulsifiable Concentrate (Ec) Formulations for Postharvest Quality and Life in Rose Cv. Poison	<i>International Journal of Recent Scientific Research</i> , 2014, Vol. 5, Issue, 1, pp.178-185, January
10.	Mangave Bahubali D., Alka Singh, Sanjay Jha and S.L. Chawla	Post harvest physiology and quality of heliconia inflorescence cv. Golden Torch as influenced by antioxidants	<i>Indian J. Hort.</i> , 2014, 71(2), June: 232-236
11.	Raina Jain, Sanjay Jha, Hemanta Adhikary, Prasant Kumar, Vipul Parekh, Anamika Jha, Mahesh K. Mahatma and G. Naresh Kumar	Isolation and Molecular Characterization of Arsenite-Tolerant <i>Alishewanella</i> sp. GIDC-5 Originated from Industrial Effluents	<i>Geomicrobiology Journal</i> , 2014, 31 , 82–90
2014-15			
1.	V.S. Patel, R. Mehta, K.H. Naik, D. Singh, D.U. Patel and S.C. Mali	Callus induction & whole plant regeneration in sugarcane (<i>Saccharum</i> spp. complex) variety Co 86032.	<i>Green Farming</i> , 2015, 6 (5): 935-939.
2.	Diwakar Singh, T. Radhakrishnan, Vinod Kumar, N.B. Bagwan, M.S. Basu, J.R. Dobaria, Gyan P. Mishra and S.V. Chanda	Molecular characterisation of <i>Aspergillus flavus</i> isolates from peanut fields in India using AFLP. <i>Braz.</i>	<i>Brazilian J. Microbiol.</i> , 2015, 46 (3): 673-682.
3.	Singh D, Thankappan R, Kumar V, Bagwan NB, Basu MS, Dobaria JR, Mishra GP and Chanda S	Morphological and toxigenic variability in the <i>Aspergillus flavus</i> isolates from peanut (<i>Arachis hypogaea</i> L.) production system in Gujarat (India).	<i>J Environ Biol</i> , 2015, 36 (2): 441-9.
4.	Desai Charmi V., Desai Heta B., Suthar*, K. P.,	Phytotoxicity of Zinc Nanoparticles and its Influence on Stevioside	<i>Applied Biological Research</i> , 2015, 17 (1):

	Singh, D., Patel, R. M. and Taslim, A.	Production in Stevia.	1-7.
5.	Kapadia C.V., Mahatma M.K., Parekh M.J., Patel Nafisa and Tomar R.S	Identification of resistance gene analogs (RGAs) from highly wilt resistant castor (<i>Ricinus communis</i> L.) genotype.	<i>Research Journal of Biotechnology</i> , 2015, 10 (5): 16.
6.	Chintan V Kapadia, Mahesh K Mahatma and Harsur M Jajda	Ethylene as a key regulator in early resistance of Castor to <i>Fusarium oxysporium</i> infection.	<i>Current Plant Science</i> , 2015, 1 (1): 8-13.
7.	Rakesh M Swami, M K Mahatma, M J Parekh, K A Kalariya and L Mahatma	Alteration of Metabolites and Polyphenol Oxidase Activity in Wilt Resistant and Susceptible Pigeonpea Genotypes during <i>Fusarium udum</i> Infection	<i>Indian J Agric Biochem</i> , 2015, 28 (1)
8.	Rakesh M. Swami and M. K. Mahatma	Study of Antioxidant Enzymes Activity in Wilt Resistant and Susceptible Pigeonpea Genotypes during <i>Fusarium udum</i> Infection	<i>Trends in Biosciences</i> , 2015, 8(2), Print : ISSN 0974-8, 575-582,
9.	Rakesh M. Swami, Mahesh K. Mahatma, Mithil J. Parekh and V. Khandelwal	Molecular characterization of wilt resistant and susceptible genotypes of <i>Cajanus cajan</i> (L.)	<i>Legume Research</i> , 2015, 38 (6) : 726-733
10.	Patel, H. and Mahatma, L.	Isolation, Identification and Metabolic Characterization of Cellulolytic Enzyme Producing Bacteria From Banana Pseudostem Waste Using Phenotypic Microarray Technology	<i>Journal of Cell and Tissue Research</i> , 2015, Vol. 15(1) 4903-4911
11.	Bina J. Panchal, Swati Patel, Rajkumar, Sanjay Jha, Lalit Mahatma and Diwakar Singh	Isolation and identification of phosphate solubilizing <i>Penicillium expansum</i> NAUG-B1 and their consequence on growth of brinjal	<i>Eco. Env. & Cons.</i> , 2015, 21 (Dec. Suppl.)
12.	Swati Patel, Bina Panchal, Nilima Karmakar, Rajkumar and Sanjay Jha	Solubilization of rock phosphate by two <i>Rhizopus</i> species isolated from coastal areas of South Gujarat and its effect on chickpea	<i>Eco. Env. & Cons.</i> , 2015, 21 (Dec. Suppl.)
13.	Purvi Zaveri, Nasreen Munshi, Alok Vaidya, Sanjay Jha, and G. Naresh Kumar	Functional microbial diversity dynamics in common effluent treatment plants of South Gujarat and hydrocarbon degradation	<i>Can. J. Microbiol.</i> , 2015, 61 : 389–397
2015-16			
1.	M. K. Yadav, N. L. Patel, S. L. Chawala, M. K. Mahatma	Exposure of Medium Dose Gamma Rays and Storage Conditions Influenced the Weight Loss and Ripening of Alphonso Mango	<i>International Journal of Sustainable Agricultural Research</i> , 2016, 3(2): 35-41
2.	Raina Jain, Sanjay Jha, Mahesh K. Mahatma, Anamika Jha & G. Naresh Kumar	Characterization of arsenite tolerant <i>Halomonas</i> sp. Alang-4, originated from heavy metal polluted shore of Gulf of Cambay	<i>Journal Of Environmental Science and Health, Part A</i> 2016, VOL. 0, NO. 0, 1–9

Books Published

Sr.No.	Title of the Book	Faculty Member
1.	In vitro Regeneration and Genetic Transformation of Pigeon Pea: An Approach Towards Pulses Improvement, Publisher; LAP Lambert Academic Publishing ISBN 978-3-8383-23	Mithilkumar Parekh and Mahesh Mahatma (2012)
2.	Molecular variation analysis in Date palm (Phoenix dactylifera): An molecular Approaches for characterization of Date palm; Publisher LAP LAMBERT Academic Publishing, ISBN-13: 978-3659	Vishal Srivashtav, Mahesh Mahatma and Sanjay Jha (2012)

Books in Vernacular Language

Sr. No.	Title of the book	Year of Publication	Publisher
Nil			

Chapters

Nil

Teaching manuals published

Sr. No.	Title of manual	Course title and Number
1	Practical manual of Elementary Plant Biochemistry and Biotechnology	BSC 5.10 Elementary Plant Biochemistry and Biotechnology
2	Practical manual of Plant Biochemistry and Biotechnology	BSH 5.13 Plant Biochemistry and Biotechnology
3	Practical manual of Bioinformatics	PBG 8.11 Bioinformatics

Seminars/Symposia/Workshop/Training Organized

Sr. No.	Seminar/ Symposia/Conferences details
1	National seminar on plant physiology, “ Crop Productivity and Quality Improvement through Physiological Interventions ” from 23 rd – 25 th November, 2005, organized by Indian Society for Plant Physiology, New Delhi and Department of Plant Molecular Biology and Biotechnology, ACHF, NAU, Navsari.
2	One day seminar on Technology and Research Management, “ Translating Research 2 Rupees ” on 13 th March 2013 organized by GSBTM, Gandhinagar and Department of Plant Molecular Biology and Biotechnology, ACHF, NAU, Navsari.
3	One day seminar on “ Biotech Ignition Grant Awareness Program ” on 11 th July 2014 organized by GSBTM, Gandhinagar and Department of Plant Molecular Biology

SWOT Analysis**Strength:**

- 1) Well equipped modern Molecular Biology and Tissue Culture laboratories.
- 2) Well qualified and experienced faculty members.

Weakness:

- 1) Lack of sufficient technical and auxiliary staff in the department
- 2) Less co-ordination with other disciplines

Opportunities:

- 1) Hiring of technical and non technical trained man power
- 2) More co-ordination between molecular biologist and plant breeders

Threats:

- 1) Competition with advance basic and applied research in the field of plant molecular biology and biotechnology

Income generation:

Sr. No.	Year	Income generated (Rs.)
1.	2011-12	1,41,000
2.	2012-13	3,92,500
3.	2013-14	1,21,740
4.	2014-15	2,84,904
5.	2015-16	2,87,475