

Courses offered/covered at U.G. level – Department of BSH, CoF, NAU, Navsari

Course Number	Title of Course	Credits
BSH 1.1	Information & Communication Technology	1+1
BSH 1.2	Introductory Botany	1+1*
BSH 1.3	Communication Skills and Personality Development	1+1
BSH 1.4	Plant Physiology	2+1
BSH 2.7	Statistical Methods and Experimental Techniques	2+1
BSH 2.8	Principles of Plant Cytology and Genetics	2+1
BSH 6.9	Entrepreneurship Development and Business Management	1+1
BSH 8.10	Forest Tribology and Anthropology	2+0
BSH 8.11	Agricultural Informatics	1+1

Facilities Available:

- i) Compound and binocular microscopes, Physiological apparatus for demonstration of transpiration, respiration, photosynthesis viz – types of potometer, respirometer, clinostat (vertical and horizontal for demonstration of growth), leaf area meter, dendrometer and photosynthetic apparatus.
- ii) Well equipped Forest Biotechnology Laboratory having the State of Art facilities for Molecular Biotechnology related research.
- iii) Permanent slides of plant tissues, cell divisions and charts for morphological studies of various flowering plant families as also of root, stem and leaves including collection of preserved specimens of Algae, Fungi and other plant groups.
- iv) 4 ha Model Nursery on Medicinal and Aromatic Plants for identification, multiplication and collection of medicinal and aromatic germplasm.
- v) Biodiversity Conservation Centre for students and researchers – collection of unique flora of Gujarat and India.
- vi) Collection of over 200 dried herbarium specimens.

Research Activities:

A. Completed Projects and Experiments:

No.	Title of Project	Name of PI	Funding Agency
1.	Reproductive Biology and Phenological studies of Tropical Tree species – <i>Sterculia urens</i> , <i>Tectona Grandis</i> and <i>Terminalia arjuna</i>	Dr. Bimal S Desai	Gujarat Council On Science & Technology (GUJCOST) Gandhinagar
2.	Forest Resource Survey of Rajpipla Forest Division	Dr. Bimal S Desai	Gujarat Forest Research Institute (GFRI), Gandhinagar
3.	Induced resistance in <i>Eucalyptus</i> seedling against Gall insect	Dr. Kirti Bardhan	Departmental Research
4.	<i>In vitro</i> regeneration of <i>Eucalyptus</i> (<i>Eucalyptus tereticornis</i>)	Dr. Vipulkumar Patel	Departmental Research
5.	<i>In vitro</i> growth of callus from normal & gall infected <i>Eucalyptus</i> tissue	Dr. Kirti Bardhan	Departmental Research

B. Ongoing Project & Departmental Experiments:

No.	Title of Project	Name of PI	Funding Agency
1.	Exploration and evaluations of mangrove diversity along coastal belt of South Gujarat	Dr. Vipulkumar Patel	Departmental Research
2.	Metagenomic analysis of flooded rice ecosystem under climate change resilience.	Dr. Vipulkumar Patel	Departmental Research
3.	DNA barcoding of different <i>Bamboo</i> and <i>Ficus</i> species	Dr. Vipulkumar Patel	Departmental Research
4.	Exploration of molecular tools for identification of potential DNA barcodes and biomarkers for Red Sanders (<i>Pterocarpus santalinus</i> L. f.) authentication.	Dr. Vipulkumar Patel	Departmental Research
5.	Transcriptome profiling of wild rice [<i>Oryza coarctata</i> (Roxb.)] under different salt regimes	Dr. Vipulkumar Patel	Departmental Research
6.	Genetic enhancement of niche crops of South Gujarat through conventional and biotechnology approach.	Dr. Vipulkumar Patel	Plan Research Project, GoG.
7.	Integrative centre for translational research to explore the worth of plant genetic resources of South Gujarat	Dr. Vipulkumar Patel	Plan Research Project, GoG.
8.	Quantitative and Cross Cultural Ethnobotanical Studies of plants used by Kukna tribe of South Gujarat.	Dr. Bimal SDesai	Departmental Research
9.	Documentation and Quantitative analysis of plants used for Oral Health Care by local inhabitants of Dharampur and Dangs Forests.	Dr. Bimal SDesai	Departmental Research

A) Paper published by Dr. Bimal S. Desai, Asst. Prof. (Botany)

Research Paper published in Journals

1. Pilo B, Desai B. S., Manoj E and Dave M. (2005). "Conservation Status of *Citrullus colocynthis* in Gujarat". *Ecology, Environment and Conservation*. **8(1)**: pp. 105-110.
2. Jasrai, Y. T., Wala, B and B. S. Desai. (1999). "Computer Based Complementary Technique for Plant Herbaria". *Current Science*. Vol. 75. Page 695

Review Articles Published in Edited Books

1. Jasrai, Y. T and B. S. Desai. (2002). "Herbal Resources available for commonest disease = Diabetes". In: Role of Biotechnology in Medicinal Plants – VIII. Ukaaz Publications. Hyderabad. Edited by Irfan Ali Khan & Atiya Khanum.
2. Desai, B. S., Pradeepkumar, G and G. Prathapasenan (2003). "Biodiversity of Gujarat with Special Reference to Protected Areas-Problems and Perspectives". In: Protected Habitats and Biodiversity. Published by NATCON, Muzzarfarnagar.
3. Desai, B. S., Desai, R. B. and Y. T. Jasrai (2005). "Herbal Therapy for Rheumatoid Arthritis". In: Herbal Medicines for Human Diseases. Vol. 2. Ukaaz Publications. Hyderabad. 2005. Edited by Irfan Ali Khan & Atiya Khanum.

Books/Booklets Published

1. Jasrai, Y. T., PradeepKumar, G. and B. S. Desai. (2001). "Medicinal Plants = I". Published by University Press. M. S. University of Baroda. Vadodara (Book)
2. Jasrai, Y. T., Sisodia, P and B. S. Desai. (2005). "Plants = Importance, Diversity and Conservation". Published by Botanical Garden and B. Sc. Environmental Science Programme. M. S. University of Baroda, Vadodara (Booklet)
3. Desai, B. S., Jasrai, Y. T., Parabia, F. M and M. H. Parabia (2008). "Medicinal Plants and Glossary of Selected Terms". Published by Bharatiya Kala Prakashan. Delhi. (Book)

Abstracts Published in Souvenirs of Seminars/Conference – Total 27 Popular Articles/Gujarati Articles – Total 10

(B) Paper published by Prof. Kirti Vardhan, Asst. Prof. (Crop Physiology)

In Research Journals

1. Thakre H.S., **Kirti Bardhan** and Kumar V. (2011) : Effect of square removal on growth, yield and fiber quality of transgenic Bt Cotton hybrids: *Indian Journal of Plant Physiology*: Vol. 16 No. 2(N.S.) pp 200-204
2. M.K.Yadav, Patel N.L., Patel S.R. and **Kirti Bardhan** (2009): Response of banana (*Musa paradisiacal L.*) cv. Grand Nine to micronutrient: *Annals of Plant Physiology*: vol.23, No.1 pp 71-73
3. **Kirti Bardhan**, Kumar V., and Dhimmara S.K. (2007): An evaluation of the potentiality of exogenous osmoprotectants mitigating water stress on chickpea: *The journal of Agricultural Sciences*. Vol. 3, No.-2 pp 67-74.
Published by : Sabaragamuwa University of Srilanka.
4. M.K.Yadav, Singh P.S, Patel N.L. and **Kirti Bardhan** (2006):Response of GA₃, Ca(NO₃), bavistin and neem extract on the storage life of Nagpur mandarin (*Citrus reticulata Blanco*): *Indian Journal of Arid Horticulture*: Vol.1, No.1 pp-80-82

Papers Presented in Seminars/Symposiums

5. V. Kumar and **Kirti Bardhan** (2009): Screening of cotton genotypes for moisture stress using drought stress indices: National Conference on frontiers in Plant Physiology towards Sustainable Agriculture. 5-7 Nov., 2009 held at AAU, Jorhat, Assam.pp-42
6. H.S. Thakre, V.Kumar and **Kirti Bardhan** (2009): Effect of square removal on cotton growth, yield and fiber quality: National Conference on frontiers in Plant Physiology towards Sustainable Agriculture. 5-7 Nov., 2009 held at AAU, Jorhat, Assam.pp-109
7. **Kirti Bardhan**, V.Kumar, Tashlim Ahmed, Patel D.H. and Shah R.R. (2008): Establishment of tissue cultures of elite parental lines of cotton: Golden Jubilee Conference on “Challenges and Emerging Strategies for Improving Plant Productivity”.12-14 Nov.2008 held at IARI, New Delhi pp.206
8. V.Kumar and **Kirti Bardhan** (2008): Physiological variation in Bt cotton hybrids. Golden Jubilee Conference on “Challenges and Emerging Strategies for Improving Plant Productivity”.12-14 Nov.2008 held at IARI, New Delhi pp.170
9. **Kirti Bardhan** and V.Kumar (2007): An evaluation of the potentiality of exogenous osmoprotectants mitigating water stress on chickpea: International Conference on Sustainable Agriculture for Food, Bio-energy and Livelihood Security.14-16 Feb.2007 held at J.N.K.V.V. Jabalpur, M.P.
10. **Kirti Bardhan**, Kumar V. and Vashi P.S.(2005): Evaluation of the potentiality of exogenous osmoprotectants on the growth and yield of chickpea under unirrigated condition. National Seminar on Plant Physiology (Crop productivity and quality improvement through physiological interventions). 23-25 Nov, 2005 held at NAU, Navsari(Guj.)pp-13
11. **Kirti Bardhan** and Kumar V.(2005): Alleviation of water stress by foliar application of osmoprotectants in chickpea. National Seminar on Plant Physiology (Crop productivity and quality improvement through physiological interventions). 23-25 Nov, 2005 held at NAU, Navsari (Guj.)pp-62

(C) Paper published by Dr. Vipulkumar Patel, Asst. Prof. (Biotechnology)

In Research Journals

1. Patel, C. S.; Jani, J. J., **Parekh, V. B.**, Darji, V. B. and Vaishnav, P. R. (2009). Genetic diversity and differentiation of *Helicoverpa armigera* nuclear polyhedrosis virus isolates from India. *Phytoparasitica*, 37: 407–413.
2. Patel, C. S.; Jani, J. J., **Parekh, V. B.**, Darji, V. B. and Vaishnav, P. R. (2009). Geographic variations and their impact on bioefficacy amongst *Helicoverpa armigera* Nuclear polyhedrosis Virus isolates from India. *World J. Microbiol. Biotechnol.*, DOI 10.1007/s11274-009-0234-9 (Volume 26, Number 5, Pages 783-794)

Books/Monographs

1. **Vipul Parekh, Jadeja G.C., Subhash N.** (2011) Molecular Marker Polymorphism and Hybrid Performance: A study on Pearl millet [*Pennisetum glaucum* (L.) R Br. emend. stuntz] for yield and drought resistance traits. LAP LAMBERT Academic Publishing GmbH & Co. KG. Germany. ISBN No. 978-3-8473-1618-3.

Papers Presented In Seminar/Symposiums

2. Oral paper presentation entitled "Genetic diversity Diversity analysis of CMS and Restorer lines of Pear millet (*Pennisetum glaucum*(L.) Br. emend. stuntz) using RAPD and Microsatellite Markers" at the National Conference on "Frontiers in Biological Sciences", S. P. University, Vallabh Vidyanagar, Gujarat, India. (Won 2nd prize)
3. "Genomic Characterization of geographic isolates of Nuclear Polyhedrosis Virus against *Helicoverpa armigera* (Hubner) (Lepidoptera: Noctuidae)." C.S. Patel, V.B. Parekh and J. J. Jani National Seminar on Emerging areas in Plant Sciences, sponsored by CSIR, New Delhi, Department of Botany, M. S. University, Vadodara
4. "Forest Biotechnology: Present status and future perspectives." National Seminar on Agroforestry: An evergreen agriculture for food security and environmental resilience. 2-4th February, 2012 organized by Aspee College of Horticulture and Forestry, Horticultural society of Gujarat, Gujarat Association of Agricultural Sciences, Navsari.

9. Extension work:

- A. Plant identification to foresters, farmers, students and researchers.
- B. Guidance to schools and colleges for science related projects.
- C. Training to farmers for propagation methods of medicinal and aromatic plants.
- D. Krushi Mela and Krushi Rath duties.
- E. Providing guidance with respect to Mangroves identification and conservation.
- F. Organized Hands on Training in Molecular Techniques.

10. Future Plan:

- To develop a well equipped laboratory of Botany and Plant Physiology.
- Strengthening of Forest Biotechnology Laboratory.
- To develop informative database of Biodiversity of Gujarat.
- Exploration of Mangroves and associated flora – Biodiversity and Conservation.
- Establishment of Integrative Centre for Translational Research.
- To explore under exploited and underutilized medicinal and ethnobotanical plant species.
- Strengthening of Medicinal and Aromatic Plant Nursery.
- Priority based innovative research on packaging practices of medicinal & aromatic Plants.
- Strengthening of Herbarium specimens of forest species (Digital Herbarium).

11). Major Achievements:

- 02 students got Scholar ship and minor project of Rs. 25000 from GUJCOST, Gandhinagar under Student Sci-Tech Programme (**Dr. Bimal S. Desai**)
- 13 students completed M. Sc. and 01 student completed Ph.D and 03 are pursuing their Doctorate in Medicinal and Aromatic Plants (FPU) (**Dr. Bimal S. Desai**)
- Guided nearly 80 farmers on cultivation and processing of Medicinal and Aromatic Plants.
- 04 students completed and 03 students are pursuing their M.Sc. in Plant Molecular Biology and Biotechnology (**Dr. Vipulkumar Patel**)
- **DR. KIRTI VARDHAN** is the recipient of the following awards and honors:
- Recipient of **Best Poster Presentation Award** from Indian Society for Plant Physiology for poster presentation during National Seminar based on M.Sc. Research.
- Selected for **University P.G. Fellowship** from Agricultural Faculty for Ph.D. Studies by Navsari Agricultural University, Navsari (Gujarat)
- **Recipient of Second Prize during Inter-college paper presentation competition of Navsari Agricultural University, Navsari (Gujarat)**

- **ACHIEVEMENTS OF DR. VIPULKUMAR PATEL:**

- Won **Second price in oral presentation** on “Diversity analysis of CMS and Restorer line in pearl millet using RAPD and Microsatellite markers” at National seminar on frontier in biological sciences. BRD school of Biosciences, SPU, V.V.Nagar, Gujarat.
- **Got selected and Trained at International training on Genome Editing Technology (CRISPR/Cas technology)** at The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), October, 2019.
- Organized a **short-term training program in collaboration with Gujarat Biotechnology Research Centre (GBRC), (Government Of Gujarat) Gandhinagar**, under aegis of "KAUSHALYA" (Knowledge Advancement Using Skills on High-end Applied Lifetechnology for Aspirants), Gujarat State Biotechnology Mission (GSBTM) GBRC on “Basic Molecular Biology Techniques” during 10th to 14th April, 2023 at Forest Biotechnology Laboratory, College of Forestry, NAU, Navsari.
- **Conferred “Best Oral Presentation award”** at Progressive Horticulture Summit-2024. Organized by the Indian society for Horticulture research and Development, Uttarakhand and ASPEE College of Horticulture, NAU, Navsari, January -18-20, 2024.