




Faculty Details proforma for DU Web-site

Title	Professor	First Name	Vishnu	Last Name	Bhat	Photograph
Designation	Professor					
Address	Department of Botany, University of Delhi, North Campus, Delhi-110007					
Phone No Office	011-27662091					
Residence	011-27662141					
Mobile	9868470120					
Email	bhatv64@rediffmail.com;vbhat@botany.du.ac.in					
Web-Page						
Educational Qualifications						
Degree	Institution				Year	
Ph.D.	Forest Research Institute, Dehradun-6				1998	
PG	University of Agricultural Sciences, Bangalore-65				1990	
UG	University of Agricultural Sciences, Bangalore-65				1986	
Career Profile						
<p>August, 2009 onwards - Professor</p> <p>July, 2006 – August, 2009: Associate Professor, Department of Botany, University of Delhi.</p> <p>August, 2003 – July, 2006: Reader, Department of Botany, University of Delhi.</p> <p>February, 1999 - August, 2003: Scientist (Sr. Scale), Indian Grassland and Fodder Research Institute, Jhansi.</p> <p>February, 1995 – 1999: Scientist, Indian Grassland and Fodder Research Institute, Jhansi.</p>						
Administrative Assignments						
<p>2007- 2010: Coordinator (Botany), College Affairs, University of Delhi.</p> <p>2014- Participated in Antardhwani which won third prize for the Department of Botany</p>						
Areas of Interest / Specialization						
<p>Genetic and molecular mechanisms controlling apomixis in plants</p> <p>Plant developmental biology</p>						
Subjects Taught						
<p>Developmental Biology</p> <p>Reproductive Biology of Flowering Plants</p> <p>Developmental Biology to Ph.D. students</p>						
Time table of the subjects taught during the current semester						
S.No.	Subject	Days	Time	Classroom		
1.	Bot. 201 Developmental Biology	i) Monday (Theory & Practical)	Theory: 8.45-9.40am Practical: 10.35am - 2.15pm	Theory: #37 Practical: #26		
		ii) Thursday (Practical)	Practical: 10.35am- 2.15pm	Practical:#26		
2.	Bot .402 Reproductive Biology of flowering plants	Wednesday (Theory & Practical)	Theory: 8.45-10.35am Practical: 10.35am - 4.05pm	Theory: #207 Practical: #26		
3.	Bot. 409	Saturday	10..00am-1.00pm	Room# 13		

	Dissertation			
4.	Ph.D. EI-04 Developmental Biology	Wednesday (Theory)	2.30pm-4.00pm	Committee Room

Research Guidance

1. Supervision of awarded Doctoral Thesis

1. Dwivedi, Krishna Kumar. 2005. Isolation, cloning and characterization of genes associated with apomixis in *C. ciliaris*.
2. Upadhyay, Chandrama Prakash. 2008. Studies on genetic transformation of *Vigna mungo* (black gram) for abiotic stress tolerance.
3. Sharma, Roopam 2010 Embryological and molecular investigation of apomixis in F2 individuals of *C. ciliaris*.
4. Chaurasia, Anjana Rustagi nee Chaurasia. 2010. Investigations on genetic manipulation of *Musa* species.
5. Mahalakshmi, C. 2011. Elucidation of reproductive pathways in selected angiosperm taxa, and study of differential expressions of orthologues of meiotic regulatory gene DYAD at key developmental stages in an Apo- and a diplosporous taxa.
6. Jha, Pooja. 2011. *In-vitro* genetic manipulation of *Pennisetum glaucum*.
7. Yadav, Chandrabhan. 2012. Genetic linkage and linkage disequilibrium mapping of apomixis specific genomic region in *Cenchrus ciliaris* using molecular markers.
8. Shashi, 2014. Developmental morphogenesis and *in vitro* genetic manipulation of *Cenchrus ciliaris* L.
9. Anuj Dwivedi, 2016. Analysis of putative candidate genes associated with apomictic and sexual modes of reproduction in *Cenchrus ciliaris* L. using transcriptomic, *in situ* hybridization and phylogenetic approaches.

2. Supervision of Doctoral Thesis, under progress

1. Pankaj Kumar Agnihotri, Isolation of promoters of *Nucellin* gene from *H.vulgare* L. and *Kinase Interacting Protein* gene from *C.ciliaris* L. and characterization of *Nucellin* promoter activity in *A.thaliana* (thesis submitted)
2. Ms. Sazda Abdi. Fine mapping of apomixis locus by genetic linkage & linkage disequilibrium mapping in *Cenchrus ciliaris*.
3. Ms. Laishram Sundari. Genetic manipulation of apomictic pathways in *Cenchrus ciliaris* by downregulating *CcEZ1* and *CcKIP1* genes
4. Ms. Priyanka Rathore. Study of epigenetic regulation of apomixis associated retrotransposons in *Cenchrus ciliaris*.
5. Ms. Amrita Raj. Embryological investigations of events associated with apospory in *Cenchrus ciliaris*.
6. Ms. Shipra Goyal. Characterization of *KIP1* and *Nucellin* gene promoters in *C.ciliaris*

3. Supervision of awarded M. Phil. dissertations

1. Jha, Pooja. 2005. *In vitro* plant regeneration through somatic embryogenesis and direct shoot organogenesis in *Pennisetum glaucum*.
2. Yadav, Chandrabhan. 2005. *In vitro* plant regeneration through somatic embryogenesis and direct shoot organogenesis in *Cenchrus ciliaris*.

3. Shashi. 2008. *In vitro* plant regeneration through somatic embryogenesis and direct organogenesis in apomictic *Dichanthium annulatum* and *Pennisetum pedicellatum*.
4. Alok Arun. 2009. Isolation and characterization of a Polycomb group gene, *CCEZ1* from apomictic *C. ciliaris*.
5. Pandey, Indresh Kumar. 2010. Isolation, cloning and expression analysis of a Polycomb group gene, *Ccez1* from apomictic *C. ciliaris*.
6. Mamgain, Akshay. 2010. Development of a genetic linkage map for drought tolerance using RAPD based markers in tea.
7. Krati Vikram. 2013. Development of RNAi vectors for CCSMC and CCEZ1 genes isolated from apomictic *Cenchrus ciliaris* L.
8. Saxena, Ramit. 2013. Female gametophyte development and fertilization

Publications Profile

List against each head (If applicable) (as Illustrated with examples)

1. Books/Monographs (Authored/Edited): Nil
2. Research papers published in Refereed/Peer Reviewed Journals

Agnihotri, PA, Jha Maity, P., Dwivedi, KK and Bhat, V., 2018. Isolation of Nucellin gene promoter from *Hordeum vulgare* and its characterization in *A.thaliana*. *The International J. of Plant Reproductive Biology*, 10(2): 151-156.

Upadhyaya, C.P., Pandey, N., Bhat, V. and Bhalla-Sarin, N., 2016. Alleviation of transplantation shock of tissue cultured raised black gram (*Vigna mungo* L. Hepper) by inoculation with Arbuscular Mycorrhizal fungi and rhizobium. *European J. Biotech & Biosciences*, 4 (9), 59-65.

Rustagi, A., Shekhar, S., Kumar, D., Jayaswal, A., Bhat, V. & Sarin, NB, 2016. *Genetic Fidelity of In Vitro Cultures of an Elite Indian Musa (Aa) Variety Matti*, *Adv. in Plants & Agriculture Res.*, 4(3) DOI: 10.15406/apar.2016.04.00141.

Jha Maity, P., Shashi, Kulkarni, VM and Bhat, V, 2016. Thiadiazuron-induced multiple shoot regeneration and *in vitro* flowering in *Pennisetum glaucum* (L.) Br. *Phytomorphology*, 66 (1&2): 45-50.

Khanduri, P., Sharma, R., Bhat, V. and Tandon, R., 2016. Isolation, Expression and Evolution of *FERTILIZATION INDEPENDENT ENDOSPERM 1* Homologs in Podostemaceae. *J. Plant Res.*, 129 (2): 241-250 (DOI 10.1007/s10265-015-0771-2).

Bali, S., Mamgain, A., Raina, SN, Yadava, SK, Bhat, V., Das, S., Pradhan A.K. and Goel, S., 2015. Construction of a genetic linkage map and mapping of drought tolerance trait in Indian beverage tea. *Mol. Breeding*, 35: 112 (DOI 10.1007/s11032-015-0306-5).

Rustagi, A., Jain, S., Kumar D., Shekhar S., Jain M., Bhat, V. and Sarin, NB, 2015. High Efficiency Transformation of Banana [*Musa acuminata* L. cv. Matti (AA)] for Enhanced Tolerance to Salt and Drought Stress Through Overexpression of a Peanut Salinity-Induced Pathogenesis-Related Class 10 Protein, *Mol. Biotechnol.*, 57:27-35. (DOI 10.1007/s12033-014-9798-1).

Khanduri, P., Tandon, R., Uniyal, P., Bhat, V. and Pandey, AK, 2015. Comparative morphology and molecular systematics of Indian Podostemaceae. *Plant Syst and Evol.* 301: 861-882 (DOI 10.1007/s00606-014-1121-x).

- Sharma, R., Geeta, R., Bhat, V., 2014. Asynchronous male/female gametophyte development in facultative apomictic plants of *Cenchrus ciliaris* (Poaceae). *South African J. of Botany*, 91: 19-31.
- Bali, S., Raina, SN, Bhat, V., Aggarwal, RK, Goel, S., 2013. Development of a set of genomic microsatellite markers in tea (*Camellia* L.) (Camelliaceae). *Mol Breed.* 32: 735-741.
- Dwivedi, KK, Bhat, V, Bhat, BV, Gupta, MG, 2013. Identification of ovule specific proteins associated with apomixis and sexuality in *Cenchrus ciliaris*. *Range Mgmt. & Agroforestry*, 34(1): 82-87.
- Kumar S, Bhat, V., 2012. High frequency direct plant regeneration via multiple shoot induction in an apomictic forage grass *Cenchrus ciliaris* L. *In vitro cell and dev. biol.-Plant*, 48: 241-48.
- Raina, SN,.....Bhat, V.,.....Mandi, SS (31 authors), 2012. Genetic structure and diversity of India hybrid tea. *Genet Resour Crop Evol*, 59: 1527-41.
- Yadav, CB, Anuj, Kumar, S., Gupta, M.G., Bhat, V., 2012. Genetic linkage maps of the chromosomal regions associated with apomictic and sexual modes of reproduction in *Cenchrus ciliaris*, *Mol. Breed.* 30: 239-250.
- Raina SN, Jain S, Sehgal D, Kumar A, Dar TU, Bhat V, Pandey V, Vaishnavi S, Bhargav A, Singh V, Rani V, Tandon R, Tewari M, Mahmoudi A 2012. Diversity and relationships of multipurpose seabuckthorn (*Hippophae* L.) germplasm from the Indian Himalayas as assessed by AFLP and SAMPL markers. *Genet Resour and Crop Evol*, 59: 1033-53.
- Srivastava, MK, Yadav, CB, Bhat, V., Kumar, S., 2011. Cloning and characterization of cDNA encoding xyloglucan endotransglucosylase in *Pennisetum glaucum* L. *African Journal of Biotechnology*, Vol. 10(46), pp. 9242-9252.
- Jha, P., Shashi, Rustagi, A., Agnihotri, PK, Kulkarni, VM, Bhat, V., 2011. Efficient *Agrobacterium*-mediated transformation of *Pennisetum glaucum* (L.) R. Br. using shoot apices as explant source. *Plant Cell Tiss Organ Cult*, 107(3):501-512.
- Yadav, C B, P Jha, C Mahalakshmi, A Vanamala and V Bhat. 2009. Somatic embryogenesis and regeneration in apomictic and sexual genotypes of *Cenchrus ciliaris* from immature inflorescence explants. *Biologia plantarum*. 53(4): 603-609.
- Jha, P, C B Yadav, A Vanamala and V Bhat. 2009. In- vitro plant regeneration through somatic embryogenesis and direct shoot organogenesis in *Pennisetum glaucum*. *In vitro cell and dev. biol.-Plant*. 45(2):145-154.
- Bhat, B V, V Bhat, M G Gupta and S Gupta. 2007. Isozyme based genetic similarity in *Cenchrus* (Poaceae). *Range Mgmt. & Agroforestry*. 28(2): 285-286.
- Dwivedi, K K, S R Bhat, V Bhat, B V Bhat and M G Gupta. 2007. Identification of a SCAR marker linked to apomixis in buffelgrass (*Cenchrus ciliaris*). *Plant Science*. 172(4): 788-795.
- Chandra, Atika, Mukesh Jain, Vishnu Bhat, Jyoti Vora, Sanjay Ghawna and Paramvir S Ahuja. 2007.

Frontiers of plant biology research, Meeting Report. *Current Science*. 92(11): 1131-1135.

Gupta, S, S Gupta, V Bhat and M G Gupta. 2006. Somatic embryogenesis and *Agrobacterium* mediated genetic transformation in Indian accessions of Lucerne (*Medicago sativa*). *Indian J. Biotechnology*. 5(3): 269-275.

Kumar, J, S M Shukla, V Bhat, S Gupta and M G Gupta. 2005. In-vitro plant regeneration and genetic transformation of *Dichanthium annulatum*. *DNA and Cell Biology*. 24(11): 270-279.

Jha, G, V Bhat and A Vanamala. 2005. Plant growth-promoting activity of rhizobacterial strains, *Bacillus* and fluorescent *Pseudomonas*, on tomato plants. *Indian Phytopathology*. 58(4): 462-465.

Bhat, V, K K Dwivedi, J P Khurana and S K Sopory. 2005. Apomixis: An enigma with potential applications. *Current Science*. 89(11): 1879-1893.

Dalton, S, A Bettany, V Bhat, M G Gupta, Catharine, E Timms and P Morris. 2003. Genetic transformation of *Dichanthium annulatum*- an apomictic forage grass. *Plant Cell Rep*. 21(10): 974-980.

Gupta, M G, V Bhat, B V Bhat, C N Neeraja and S Gupta. 2003. Phylogenetic relationships in tetraploid agamospecies of *Dichanthium* complex based on isozyme phenotypes. *J. Pl. Biol*. 30(1): 61-64.

Mojumdar, A, G P Shukla, V Bhat and K S Kohli. 2003. Variability for quality traits in forage alfalfa (*M. sativa*). *Range Mgmt. & Agroforestry*. 24(2): 164-166.

Thakur, J K, M R Malik, V Bhat, M K Reddy, S K Sopory, A K Tyagi and J P Khurana. 2003. A POLYCOMB group gene of rice, OsIEZ1, codes for a nucleolocalised protein expressed preferentially in young seedlings and during reproductive development. *Gene*. 314(18th September): 1-13.

Kumar, S, V Bhat, B V Bhat and M G Gupta. 2002. *Agrobacterium* mediated transformation of Lucerne (*Medicago sativa* Linn.): Optimizing biological and physical parameters. *Ind. J. Biotech*. 1(3): 298-300.

Ortiz, J P A, S C Pessino, V Bhat, N Hayward and C L Quarin. 2001. A genetic map of diploid *Paspalum notatum*, an apomictic forage grass. *Crop Sci*. 41(3): 823-830.

Gupta, S, M G Gupta, B V Bhat and V Bhat. 2001. Status of apomixis and sexuality in four species of *Cenchrus*. *J. Plant Biol*. 28(2): 153-159.

Kumar, S, M G Gupta, V Bhat and B V Bhat. 2001. *Agrobacterium* mediated transformation of Lucerne. *Crop Improv*. 28(2): 163-166.

Bhat, V, S Dalton, S Kumar, B V Bhat, M G Gupta and P Morris. 2001. Particle in flow gun mediated genetic transformation of buffel grass (*Cenchrus ciliaris*): Optimizing biological and physical parameters. *J. Appl. Genet*. 42(4): 405-412.

Gupta, M G, B V Bhat and V Bhat. 2000. Effect of chemical mutagens on *Sesbania sesban*. *Range Mgmt. & Agroforestry*. 21(2): 145-152.

Mishra, U S, V Bhat and D S Katiyar. 1999. Strategies for utilization of the germplasm of a tropical apomictic buffel grass. *Indian J. Pl. Genet. Resources*. 12(1): 81-85.

Gupta, S, B V Bhat, V Bhat, M G Gupta and S T Ahmed. 1998. Estimation of facultative apomixis in the

somaclones of *Dichanthium annulatum*. *Range Mgmt. & Agroforestry*. 19(2): 149-153.

Gupta, S, B V Bhat, V Bhat, M G Gupta and BhagMal. 1998. Somaclonal variation for facultative apomixis in Marvel Grass (*Dichanthium annulatum*, Forssk. Stapf.). *Forage Research*. 24(2): 111-114.

Gupta, M G, S Gupta, B V Bhat and V Bhat. 1997. *In-vitro* regeneration and somaclonal variation in a tropical pasture grass, *Dichanthium annulatum*. *Range Mgmt. & Agroforestry*. 18(1): 25-30.

Publications in the Last one year

Research papers:

Agnihotri, PA, Jha Maity, P., Dwivedi, KK and Bhat, V., 2018. Isolation of *Nucellin* gene promoter from *Hordeum vulgare* and its characterization in *A.thaliana*. *The International J. of Plant Reproductive Biology*, 10(2): 151-156.

Conference Organization/ Presentations (in the last three years)

Shashi and Vishnu Bhat 2015. An efficient *Agrobacterium*- mediated genetic transformation protocol for *Cenchrus ciliaris* L. using shoot apices. Proceeding of National Symposium on Germplasm to genes: Harnessing Biotechnology for Food Security and Health held at Pusa Campus, New Delhi, 9-11 August, 2015.

Shashi and Vishnu Bhat 2015. Improved high- efficiency protocol for plant regeneration through somatic embryogenesis in *Cenchrus ciliaris*. Proceeding of National Conference on Innovative research in Agriculture, Food Science, Forestry, Horticulture, Aquaculture, Animal Sciences, Biodiversity, Environmental Engineering and Climate Change (AFHABEC-2015) organized by Krishi Sanskriti on 31 October- 1 November 2015, pp. 10.

Shashi, Anuj Dwivedi and Vishnu Bhat 2015. Down regulation of Receptor like kinase gene in apomictic *Cenchrus ciliaris*. Proceeding of XXIII International Grassland Congress on Sustainable use of Grassland Resources for Forage Production, Biodiversity and Environmental Protection, organized by Range Management Society of India (RMSI) and Indian Grassland Fodder Research Institute, from 20-24 November 2015, Ab-1570.

Shashi, Pooja Jha Maithy and Vishnu Bhat 2016. Direct plant regeneration from *in-vitro* derived shoot apical meristems of apomictic *Dichanthium annulatum* and *Pennisetum pedicellatum*. Proceeding of National Conference on Plant Science Research: Looking Beyond 21st Century for Environmental and Agricultural Revolution organized by Society of Plant Research (VEGETOS) and Department of Botany, University of Delhi on February 5-7, 2016 pp.96-97.

Sazda Abdi and Vishnu Bhat,2016, Identification of Co-dominant Microsatellite Based Markers Associated with Apomixis in *Cenchrus ciliars.*, Proceedings of National conference on “Plant Science Research: Looking Beyond 21st Century for Environmental & Agricultural Revolution” held at Department of Botany, University of Delhi, Delhi, India from February 5th -7th 2016, pp. 69-70

Sazda Abdi and Vishnu Bhat,2017, Development of Co-dominant Intron Length Polymorphism Markers Associated with Apomixis in *Cenchrus ciliaris.*, Proceedings of International

conference on "Technological Advancement for Sustainable Agriculture and Rural Development" held at National Agricultural Science Complex (NASC), New Delhi, India from February 20th-22nd, 2017, pp. 236

Sazda Abdi and Vishnu Bhat, 2017, Morphological and Embryological Trait Diversity in F₃ Segregating Population of *Cenchrus ciliaris*., Proceedings of International conference on "XXVII Annual Conference of Indian Association for Angiosperm Taxonomy & International Symposium on Plant Systematics : Priorities and Challenges" held at Department of Botany, University of Delhi, Delhi, India from November 10th-12th 2017, pp.130

P. Rathore and V. Bhat, 2017. Identification and characterization of retrotransposons associated with mode of reproduction in *Cenchrus ciliaris*. Poster proceeding of the International conference on technological advancement for sustainable agriculture and rural development, India, 20-22 February, 2017 pp. 239-40.

Pankaj Kumar Agnihotri & Vishnu Bhat, 2017. Isolation of *Nucellin* promoter from *Hordeum vulgare* and its characterization in *Arabidopsis thaliana*, Poster proceeding of the "National Conference on Interdisciplinary aspects of Plant Sciences" held at SMVDU, Katra, J&K from 2-4 November, 2017 (Awarded Best poster).

Research Projects (Major Grants/Research Collaboration)

DAE-BRNS funded research project entitled "Induction of autonomous endosperm development in *Pennisetum* species by down-regulating a Polycomb gene *CCEZ1* using RNAi approach" for the duration 2016-2019.

Awards and Distinctions

Award of Best Research Paper published from Indian Grassland & Fodder Research Institute, Jhansi during 2001


Member, Editorial Board, *Journal of Genetics*, 2008-2009

Association With Professional Bodies

Life Member, Delhi University Botanical Society, Delhi.
Life Member, Range Management Society of India, Jhansi.
Life Member, Indian society of Plant Genetic Resources, New Delhi.
Life Member, Society of Plant Biochemistry and Biotechnology, New Delhi.

Other Activities

Nil


Signature of Faculty Member
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