Faculty Profile

Sushma Tamta

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1.Name: Dr. Sushma Tamta

2.Designation: Associate Professor

3. Qualification: Ph.D. (Botany)

4. Area of Specialization/Research field: Plant Biotechnology

5. Awards/Recognition-

- Received **1st prize** in poster presentation (Title "Propagation of Cedrus deodara by means of Conventional and Tissue Culture Techniques") **in International Symposium** on breeding and improvement of Asian Conifers during 20th century at **Forest Research Institute, Dehradun**, UA, India from Sep 11 to 13, 2006

6. Number of Research Projects:

i) Completed

S.N.	Title of the Project	Funding Agency	Amount (Rs.)	Year (From-To)
1	"Propagation and improvement of a therapeutically important orchid, *Dactylorhiza hatagirea,* using conventional and biotech approaches"	Uttarakhand State Council for Science and Technology, Dehradun	Rs.7,25,000.00	2007-2010
2	"Propagation and Conservation of Oaks of Central Himalaya through in vitro methods".	G.B.Pant National Institute of Himalayan Environment and Sustainable Development, Kosi-Katarmal, Almora	Rs.8,49,450.00	2009-2012
3	Macro and Micropropagation with Biochemical and Molecular Characterization of *Aconitum balfourii* Stapf, and *Prunella vulgaris* L. Important medicinal plant species of	Uttarakhand Council for Biotechnology (UCB), Biotech Bhavan, Haldi, 263 146 U.S. Nagar	Rs. 10.00 lakhs	2012-2015

	Uttrakhand			
4	"Genetic transformation through *Agrobacterium rhizogenes* for enhanced production of potential alkaloids in *Berberis spp.* of Kumaun Himalayan region "	Uttarakhand Council for Biotechnology (UCB), Biotech Bhavan, Haldi, 263 146 U.S. Nagar	Rs.5.35 lakhs	2012-2015
5	"Isolation and optimization of growth conditions of microalgal isolates for biodiesel production from waste water resources of Nainital district",	Innovative Research Activities Scheme (U.G.C.), Kumaun University, Nainital	1.00 Lakh	September 2016

7.Number of Ph.D candidates successfully completed -04 + 08= 12

8. Number of Ph.D. candidates currently working - 05

9. Publications:

i) Books-Nil

ii) Research Article published in journals-

In National Journals

1.Tamta S., Purohit V.K., Nandi S.K. and Palni L.M.S. (2000) Chemical induction of root formation in *Quercus leucotrichophora* L. stem cuttings. ***Indian Journal of Forestry.***23(2): 135-138.

2.Tamta S. and Palni L.M.S. (2004) Studies on *in vitro* propagation of Himalayan cedar (*Cedrus deodara*) using zygotic embryos and stem segments. ***Indian J Biotech***. 3:209-215.

3.Tamta S., Palni L.M.S., and Nandi S.K. (2007) Adventitious root formation in shoot cuttings of Himalayan cedar (*Cedrus deodara* Roxb. ex Lamb.) G. Don under mist chamber conditions. ***Journal of Non-timber Foresr Products***. 14(3): 231-238

4.Giri D and **Tamta S** (2007) *Dactylorhiza hatagirea* (D.Don) Soo. (Orchidaceae)- Requires ex-situ conservation efforts. **Oaks**. 3:13-14.

5.Giri,D; L.M.Tewari and **S.Tamta** (2008). Quantative analysis of tree species in Oak dominant forest of Uttarakhand, Central Himalaya. ***Indian Journal of Botanical Research*** 4(2):313-318.

6.Giri D and **Tamta S** (2008) Plant tissue culture for conservation of medicinal plants. **Oaks.** 4:18-19.

7.Giri D and **Tamta S** (2010) Combined effect of PGRs and soil facilitate early flowering of an endangered alpine orchid *Dactylorhiza hatagirea* at lower elevation. ***Current Science*** 99(1):21-23.

8.Manhas S, **Tamta S**, Giri D and Pandey A (2010) *In vitro* seed germination study in *Berberis chitria*. **Oaks**.6:8-11.

9.Pandey A, **Tamta S** and Giri D. (2010) Oak (*Quercus*): An important tree species of Himalaya. **Oaks**.6:20-22.

10.Pandey A, Negi D, Giri D and **Tamta S** (2011) *In vitro* seed germination study in *Citrus sinensis*. **Oaks**.7:52-55.

11.Giri D., Pandey A. and **Tamta S** (2011) Major milestones in plant tissue culture. **Oaks**.7: 58-60.

12.Bhatt N.C. and **Tamta S** (2013) Integration of microalgae cultivation with wastewater for sustainable biofuel production. **Current Science**. 105(6):749.

13. Sharma R. and **Tamta S** (2013) Nutritive value of Sugarcane leaves for cattles. **Oaks**.9: 29-31.

14. Megta A K and **Tamta S** (2015) Regeneration of *Origanum vulgare* L. through nodal explants. **Oaks**. 10:105-108. ISSN0975-5918.

15.Kumar V, Tamta S and Khulbe K (2015) Plant growth Promoting Rhizobacterial Communities to Induce Suppressive Soils. Indian Farmers Digest. 48(12):24-25.

In International Journals-47

1.Sah R**.**, **Shail S.*** and Dubey R. C. (1997) Fungistasis and Community dynamics of microfungi in soils of banj oak, chir pine and cypress forests of Kumaun Central Himalaya. ***Int. J. Tropical Plant Diseases*****,** 12:159-169.

2.Purohit V.K, **Tamta S**., Chandra S., Vyas P., Palni L.M.S. and Nandi S.K. (2002) *In vitro* multiplication of *Quercus leucotrichophora* L. and *Q. glauca* Thunb.: Important Himalayan oaks. ***Plant Cell, Tissue and Organ Culture*** 69(2):121-133.

3.Nandi S.K., **Tamta S.** and Palni L.M.S. (2002) Adventitious root formation in young shoots of *Cedrus deodara* L. ***Biologia Plantarum*** 45(3): 473-476.

4.Purohit V.K, **Tamta S.,** Nandi S.K., Rikhari H.C., and Palni L.M.S. (2003) Does acorn weight influence germination and subsequent seedling growth of Central Himalayan oaks? ***Journal of Tropical Forest Science***. 15 (3): 483-492.

5**.Tamta S**., Palni L.M.S., and Pandey A. (2008) Use of rhizosphere soil for raising *Cedrus deodara* and *Quercus semecarpifolia* seedlings. ***Journal of Tropical Forest Science*** 20(2): 82-90.

6.**Tamta S.**, Palni L.M.S., Purohit V.K, and Nandi S.K. (2008) *In vitro* propagation of brown oak (*Quercus semecarpifolia* Sm.) from seedling explants. ***In Vitro Cell.Dev.Biol.-Plant***. 44:136-141.

7.Giri,D; D.Arya; **Tamta S.** and L.M.Tewari (2008). Dwindling of an endangered orchid *Dactylorhiza hatagirea* (D.Don) Soo: A case study from Tungnath Alpine meadows of Garhwal Himalaya, India. ***Nature and Science*** 6(3): 6-9.

8.**Tamta S**., Palni L.M.S., Vyas P. and Bisht M.S. (2009). Conservation through in vitro method: A case of plant regeneration through somatic embryogenesis in *Q. semecarpifolia* Sm. ***Journal of American Science.***5(1):70-76.

9.Giri D and **Tamta S** (2010). A General Account on Traditional Medicinal Uses of *Dactylorhiza hatagirea* (D. Don) Soo. ***New York Science Journal*** 3 (2): 78-79.

10Giri D and **Tamta S** and Pandey A (2010) A review account on medicinal value of Hedychium spicatum Buch ex Sm: Vulnerable medicinal plant. **Journal of Medicinal Plants Research.** 4(25):2773-2777.

11.Pandey A, **Tamta S** and Giri D. (2011) Role of auxin on adventitious root formation and subsequent growth of cutting raised plantlets of *Ginkgo biloba* L. **International Journal of Biodiversity and Conservation**. 3(4):142-146.

12.Giri D and **Tamta S** (2011) Effect of plant growth regulators (PGRs) on micropropagation of a vaulnerable and high value medicinal plant *Hedychium spicatum*. **African Journal of Biotechnology**. 10(20): 4040-4045.

13.Giri D and **Tamta S** (2012) Propagation and Conservation of *Dactylorhiza hatagirea* (D. Don) Soo, an endangered alpine orchid. **African Journal of Biotechnology**. 11(62):12586-12594.

14.Pandey A and **Tamta S** (2012) Influence of kinetin on *in vitro* rooting and survival of banj oak (*Quercus leucotrichophora L.*). **African Journal of Biotechnology.** 11(62):12538-12545.

15.Giri D and **Tamta S** (2012) Effect of pre-sowing treatments on seed germination in *Hedychium spicatum:* An important vulnerable medicinal plant of Indian Himalayan region. **Scientific Research and Essays** 7(19):1835-1839.

16.Brijwal L., Pandey A, **Tamta S** (2013) An overview on phytomedicinal approaches of *Zanthoxylum armatum* DC.:An important magical medicinal plant. **Journal of Medicinal Plants Research** 7(8): 366-370.

17.Giri D and **Tamta S** (2013) Effect of Plant Growth Substances on Rooting of *Hedychium spicatum* under Different Temperature Regimes. **Pakistan Journal of Biological Sciences**. 16(5): 226-232.

18.Pandey A, Brijwal L., **Tamta S** (2013) *In vitro* propagation and phytochemical assessment of *Berberis chitria*: An important medicinal shrub of Kumaun Himalaya, India. **Journal of Medicinal Plants Research** 7(15): 930-937.

19.Pandey A, **Tamta S** (2013) Effect of pre-sowing treatments on seed germination in *Quercus serrata* Thunb. and *Quercus semecarpifolia* Sm. **International Journal of Biodiversity and Conservation**. 5(12):791-795.

20.Giri D and **Tamta S** (2013) Induction of somatic embryogenesis in vulnerable medicinal plant *Hedychium spicatum* Buch-Ham ex Smith. **Plant Tissue Cult. & Biotech.** 23(2): 147-155.

21.Dhakar K. Jain R., **Tamta S.** and Pandey A. (2014) Prolonged Laccase Production by a cold and pH tolerant strain of *Penicillium pinophilum* (MCC 1049) isolated from a low temperature environment. **Enzyme Research.** Vol. 2014, Article ID120708, 6 pages.

22.Bhatt N.C. Panwar A. Bisht T. S. and **Tamta S** (2014) Coupling of algal biofuel production with wastewater. **The Scientific World Journal.** Vol. 2014, Article ID 210504, 10 pages.

23.Pandey A and **Tamta S** (2014) *In Vitro* Propagation of the Important Tasar Oak *Quercus serrata* Thunb) by Casein Hydrolysate Promoted High Frequency Shoot Proliferation. **J of Sus Forestry**. 33:590-603.

24.Tiwari V, Mahar K S, Singh N, Meena B, Nair K N, Datt B, Upreti D K, **Tamta S**, Rana T S (2015) Genetic variability and population structure of *Bergenia ciliate* (Saxifragaceae) in TheWestern Himalaya inferred from DAMDand ISSR markers. ***Biochemical Systematics and Ecology***. 60: 165-170.

25. Pandey A and **Tamta S** (2015) High-molecular-weight DNA extraction from six *Quercus* species of Kumaun Himalaya, India**.** ***International Journal of Advanced Research***.3(7): 30-34.

26. Sharma R and **Tamta S** (2015) A Review on Red Rot: The "Cancer" of Sugarcane. ***J Plant Pathol Microbiol*** 51:637-647.

27.Brijwal L., **Tamta S** (2015) *Agrobacterium rhizogenes* mediated hairy root induction in endangered *Berberis aristata* DC. ***SpringerPlus***. 4:443. DOI 10.1186/s40064-015-1222-1.

28. Brijwal L, Pandey A and **Tamta S** (2015) *In vitro* propagation of the endangered species *Berberis aristata* DC. via leaf-derived callus. ***In Vitro Cell.Dev.Biol.-Plant***. DOI 10.1007/s11627-015-9716-7.

29. Bisht P, **Tamta S** and Umesh (2015) Bacteriological Profile and Antibiotic Resistance Pattern of Urinary Tract Infections in Kumaun Region. ***Int.J.Curr. Microbiol.App. Sci***. 4(8): 874-883.

30. Umesh, Bisht P and **Tamta S** (2016) Microbiological Profile in Urinary Tract Infections among children in a tertiary care center in Kumaun region, India. ***Int.J.Curr. Microbiol.App. Sci***. 5(4):101-108.

31. Pandey A and **Tamta S** (2016) Efficient micropropagation of *Citrus sinensis* (L.) Osbeck from cotyledonary explants suitable for the development of commercial variety. **African Journal of Biotechnology.** 15(34): 1806-1812, 24 August,DOI: 10.5897/AJB2015.14986.

32. Singh N, Pal A.K., Roy R. K., Tewari S. K., **Tamta S.** and Rana T.S. (2016) Assessment of genetic variation and population structure in Indigenous *Gladiolus* cultivars inferred from molecular markers. **The Nucleus** 59 (3):235–244.

33. .Kumar V, Khulbe K, **Tamta S**, Srivastava R. and Sharma A. K. (2016) Biochemical and Molecular identification Oxalate oxidizing bacteria isolating from rhizosphere of biomineralizing tree, *Terminelia alcata* from Kumaun Himalaya. **India. Int. J of Current Research.** 8(11):42179-42182.

34. Tiwari V, Meena B, Nair K.N., Upreti D.K., **Tamta S.** and Rana T.S. (2017) Assessment of genetic diversity and population structure of *Bergenia stracheyi* (Saxifragaceae) in the western Himalaya (India). **Biochemical Systematics and Ecology.** 70 : 205-210.

35. Singh N, Pal A K, Meena B, Roy R K, Tamta S and Rana T S (2017a) Development of ISSR and RAPD-derived SCAR markers for identification of Gladiolus germplasm. **Journal of Horticultural Science and Biotechnology**. 1-6 https://doi.org/10.1080/14620316. 1309995

36. Singh N, Meena B, Pal A K, Roy R K, Tewari S K, **Tamta S** and Rana T S (2017A) Nucleotide diversity and phylogenetic relationships among *Gladiolus* cultivars and related taxa of family Iridaceae. **Journal of Genetics**. 96 (1): 135-145.

37. Singh N, Pal A K, Roy R K, Tewari SK, **Tamta S** and Rana T S (2017b) Development of cpSSR markers for analysis of genetic diversity in Gladiolus cultivars**. Plant Gene.** 10:31-36

38. Singh N, Pal A K, Roy R K, **Tamta S** and Rana T S (2017c) Characterization of Gladiolus Germplasm Using Morphological, Physiological, and Molecular Markers. ***Biochemical Genetics.*** https://doi.org/10.1007/s10528-017-9835-4.

39. Pandey A, Sekar K.C., **Tamta S** and Rawal R S (2017) Assessment of phytochemicals, antioxidant and antimutagenic activity in micropropagated plants of *Quercus serrata*, a high value tree species of Himalaya· ***Plant Biosystems-*** An International Journal Dealing with all Aspects of Plant Biologyhttps://doi.org/10.1080/ 11263504.2017.1395372

40. Sharma R and **Tamta S** (2017) Red rot resistant gene characterization using RGAP markers among sugarcane cultivars resistant and susceptible to the red rot disease. **3 Biotech** 7 (5), 306

41. Pandey N, Jain R, Pandey A and **Tamta S** (2018). Optimisation and characterisation of the orange pigment produced by a cold adapted strain of *Penicillium* sp. (GBPI_P155) isolated from mountain ecosystem, ***Mycology*****,** DOI: 10.1080/21501203.2017.1423127

42. Pandey A, Ngashangva N and **Tamta S** (2018) Effect of GA3 treatments and sowing conditions on ex situ seed germination of *Oroxylum indicum* (L) Benth. Ex Kurz: A threatened high value medicinal plant**. J App Biol Biotech**. 6(3):9-14. DOI: 10.7324/JABB.2018.60302

43.Pandey A, Sekar K C, Tamta S and Rawal R S (2018) Assessment of phytochemicals, antioxidant and antimutagenic activity in micropropagated plants of *Quercus serrata,* a high value tree species of Himalaya. **Plant Biosystems-An International Journal Dealing with all Aspects of Plant Biology** 152(5):929-936.

44.Pandey A, Belwal T, Tamta S, Bhatt I D and Rawal R S (2019) Phenolic compounds, antioxidant capacity and antimutagenic activity in different growth stages of in vitro raised plants of *Origanum vulgare* L. **Molecular Biology Reports**, 46(2): 2231-2241.

45.Pandey A and Tamta S (2019) Synergistic Influence of Seed Scarification and Plant Growth Regulators on Prompt Multiplication of *Quercus serrata* Thunb. **The National Academy of Sciences, India.** DOI: 10.1007/s40011-019-01116-7

46.Sharma R and Tamta S (2019) Genetic variation in sugarcane cultivars for red rot resistance revealed by resistant gene analog polymorphism markers. **Vegetos**, 1-8

47.Sharma P, Joshi T, Joshi T, Chandra S and Tamta S (2020) In silico screening of potential antidiabetic phytochemicals from Phyllanthus emblica against therapeutic targets of type 2 diabetes. **Journal of ethnopharmacology**. 248, 112268.

In Edited Books

1.**Shail S.** * and Dubey R. C. (1997) Seasonal changes in microbial community in relation to edaphic factors in two forests soils of Kumaun Himalaya. *Recent researchs in Ecology, Environment and Pollution* vol.XI , (eds) S.C.Sati, J. Sexena and R.C. Dubey. Todays and Tomorrows Printers and Publishers, New Delhi –5, pp. 381-391.

2.Palni L.M.S., Bag N., Nadeem M., **Tamta S**., Vyas P., Bisht M.S., Purohit V.K., Kumar A., Nandi S.K., Pandey A. and Purohit A.N. (1998) Micropropagation: Conservation through tissue culture of selected Himalayan plants. In: Anonymous (ed.) Research for mountain development: some initiatives and accomplishments, Gyanodaya Prakashan, Nainital, pp. 431-452.

3.Purohit V.K., Palni L.M.S., Nandi S.K. Vyas P. and **Tamta S**. (2002) Somatic embryogenesis in *Quercus floribunda*, an important Central Himalayan oak. In: Role of plant tissue culture in biodiversity conservation and economic development. Eds. Nandi S.K., Palni L.M.S. and Kumar A. Gyanodaya Prakashan, Nainital, pp. 41-52.

4.Pandey A, **Tamta S** (2012) Oaks of Central Himalaya:A Source of Tasar Silk. Glimpses of Forestry Research in the Indian Himalayan Region. (eds) Negi G.C.S. and Dhyani P.P. M/s Bishan Singh Mahendra Pal Singh, 23 A, New Connaught Place, Dehra Dun, India. pp.149-152.

5. Pandey A and **Tamta S** (2013) Effect of different light conditions on *in vitro* seed germination in *Quercus serrata* Thunb. In *Assessment and conservation of forest genetic resources through biotechnological interventions*. (eds) S. Singh & R. Das. Institute of Forest Productivity (ICFRE), Aranyodaya, NH-23, Lalgutwa, Ranchi. Pp.150-155.

6. Pandey A and Tamta S (2013) Conservation of banj and kharsu oak. Agroforestry and Climate Change Management (eds) Arunachalam A., Dagar J.C. and Singh A.K.. Pointer Publishers, Jaipur (Raj.) India (ISBN No. 978-81-7132-756-0 India.

7. Pandey A and Tamta S (2017) Clonal propagation of a high value multipurpose timberline tree species *Quercus semecarpifolia* Sm. of West Himalaya, India. In: Biotechnology for Sustainability – Achievements, Challenges and Perspectives (eds) Bhore S., Marimuthu K. & Ravichandran M.- Publisher, AIMST University, Bedong-Semeling Road, 08100 Bedong, Kedah Darul Aman, Malaysia; ISBN: 978-967-14475-3-6 (Print version) eISBN: 978-967-14475-2-9 (e-Book version). P79-87

iii) Paper presented in Conferences/Seminars-

S.No.	Title of the paper	Title of conference/seminar	Year
	Conservation through *in vitro* methods: A case of plant regeneration through somatic embryogenesis in *Quercus semecarpifolia* Sm	**2nd World Scientific Congress**: Challenges in Botanical Research and Climate Change, **Delft University of Technology, The Netherlands.**	2008
	Propagation of *Quercus sp.* by means of conventional and tissue culture techniques	**International Conference**: Women Scientist in changing world, **Beijing, China**.	2010
	In Vitro Approach for Multiplication and Conservation of Important Himalayan Medicinal Plant Species	**International Conference** on Women in Science and Technology for the Developing World, **Kuwait.**	2016
	Biofuel and Microalgae from waste water	**International seminar** on Environmental governance and Sustainable Development in 21st Century India: Challenges for the Mountain Regions in the Anthropocene**,** Kumaun University, **Nainital**	2017

iv) Articles/review articles published in books/journals

S.No.	Title of the paper	Title of the book/journal	Editor/Publisher	Year of Publication	Page No.

10. Conference/Seminars organized:

S.No.	Status as organizer	Title of conference/seminar	Year and dates
	Co-Principal Coordinator	Workshop on plant tissue culture: A course Designed for M.Sc. (Botany) Students of P.G. Colleges in Uttarakhand at Botany Department, D.S.B. Campus, KU, Nainital	7 to 16 June20 07
	Coordinator	Workshop on plant tissue culture: A course Designed for M.Sc. (Botany) Students of P.G. Colleges in Uttarakhand at Botany Department, D.S.B. Campus, KU, Nainital	7 to 14 Dec 2009
	Coordinator	Hands on training in plant tissue culture and molecular biology for Faculty/Scholars/ Students at Biotechnology Department, Bhimtal Campus, KU, Nainital	20-29 April, 2012
	Co-Coordinator	Hands on training programme on Modern Techniques in Biotechnology (Microbial Biotechnology) for post graduate Students/ Researchers /Faculty members at Biotechnology Department, Bhimtal Campus, KU, Nainital	2-11 Jan, 2013

11. Session chaired in Conferences/Seminars

S.No.	Title of conference/seminar	Organized by	Year and dates
1	International conference on "Advancement on Technologies and its Applications in Current Era" (ICATACE-2018)	B.T. Kumaun Institute of Technolgy, Dwarahat, Almora, UK, India	6-7 April 2018

12.Academic/Administrative positions held

S.No.	Post	Committee/Authority	Year (From-To)
1	Assistant- Proctor	Proctorial Board, D.S.B. Campus, KU, Nainital	2019- cont.

13.Membership to professional Organization/Associations:

S.No.	Name of Organization/Associations:	Status of the membership
1	Women in Science for the Developing World (OWSD) [formerly Third World Organization for Women in Science (TWOWS)	Life-Member
2	International Society for Development and Sustainability (ISDS Society) in Japan,	Life-Member
3	The Indian Science Congress Association (ISCA)	Life-Member

14. Any other information:

- Starting plant tissue culture work after establishment of Plant Tissue Culture laboratory in the department and inauguration by Prof. R.C. Pant, Former VC.

- **Session coordinator** of botany session in 2nd Uttarakhand State Science Congress held at ATI Nainital from 15-17 Nov, 2007.
- **Member** of organizing committee of 2nd Uttarakhand State Science Congress held at ATI Nainital from 15-17 Nov, 2007.
- Received **DST International Travel Grant** to attend 2nd World Scientific Congress held in Netherlands
- **Member** of Editorial Board of Oaks**,** D.S.B. Campus, KU, Nainital since 2007.
- **Member** of University Court
- **Member** of IBSC (Institutional Biosafety Committee) of Kumaun University
- Visiting examiner for the ISC Biotechnology Practical Examination 2014, 2015, and 2016
- Deliver lecture(s) in a day workshop on Plant Tissue Culture: basic tools, laboratory practices and techniques on 22-02-2017 at Biochemical Engineering Department, BT Kumaun Institute of Technology, Dwarahat.

Sushma Tamta