

CURRICULUM VITAE OF DR. RAJAN KUMAR GUPTA

Professor, Centre of Advanced Study in Botany

Institute of Science, Banaras Hindu University, Varanasi 221010, Uttar Pradesh, India

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Work Experience

Teaching Experience

Twenty eight years to Undergraduate and Postgraduate students. Currently posted as **Professor in Botany** at Banaras Hindu University, Institute of Science, Banaras Hindu University, Varanasi 221005, UP, India.

Research Experience

- ♦ Twenty eight years. The main areas of research work are: **Experimental Phycology, Microbial Ecology, Biotechnology.**
- ♦ PhD/ D.Phil degree of Sixteen students have been awarded. Supervision of four students is underway for the D.Phil degree of BHU as well as Banasthali Vidyapeeth University.

Projects

- ♦ One Minor Research Projects funded by UGC, New Delhi on Use of Algae as Biofertilizers in Foot Hills of Uttaranchal, India. **Completed**
- ♦ One Major Research Projects funded by UGC, New Delhi on Nitrogen Fixation by Cyanobacteria in Paddy Fields of Dehradun, Uttarakhand, India **Completed**
- ♦ One Major Research Projects funded by Uttarakhand Council for Science & Technology, Dehradun on Vascular Arbuscular Mycorrhiza, India **Completed.**
- ♦ One Major Research Projects funded by Uttarakhand Council for Science & Technology, Dehradun on Lichens **Completed**
- ♦ One Major Project sponsored by UGC, New Delhi on Lichens – **Completed**
- ♦ **One Major interdisciplinary project on microplastics sponsored by IoE, BHU- Running**

Books & Research Papers

- ♦ **Three Text Books (Practical)**
 1. **Practical Botany for B.Sc. Ist Year Botany Students Published by Anand Publication, Noida, India.**
Rajan Kumar Gupta, Manjul Dhiman and Ajai Swami. (Eds.), 2007.
 2. **Practical Botany for B.Sc. IInd Year Botany Students Published by Anand Publication, Noida, India.**
Rajan Kumar Gupta, Manjul Dhiman and Ajai Swami. (Eds.), 2007.
 3. **Practical Botany for B.Sc. IIIrd Year Botany Students Published by Anand Publication, Noida, India.**
Rajan Kumar Gupta, Manjul Dhiman and Ajai Swami. (Eds.), 2007.
- ♦ Edited books Published
 1. **Glimpses of Cyanobacteria.** (2006). **ISBN No. 81-7035-435-8**
Daya Publishing House, New Delhi, (eds) Rajan Kumar Gupta, Mukesh Kumar & G.S. Paliwal.
 2. **Advances in Applied Phycology.** (2007) **ISBN No. 81-7035-476-5**
Daya Publishing House, New Delhi, (eds) Rajan Kumar Gupta and Vidya Dhar Pandey.
 3. **Soil Microflora.** (2009) **ISBN No. :81-7035-597-4 978-81-7035-597-7**
Daya Publishing House, New Delhi, Uttarakhand, (eds) Rajan Kumar Gupta, Mukesh Kumar & Deepak Vyas.
 4. **Biodiversity: An Overview** (2011) **ISBN No. 978-93-80578-88-0**
I.K. International Publisher, New Delhi, India. (eds) Mukesh Kumar & Rajan Kumar Gupta.
 5. **Diversity of Lower Plants** **ISBN No. 978-93-82332-41-1**
I.K. International Publisher, New Delhi, (eds) Rajan Kumar Gupta & Mukesh Kumar. in Press
 6. **Microbial Biotechnology & Ecology Vol. I** (2011) **ISBN No.: 81-7035-695-4 978-81-7035-695-0**
Daya Publishing House, New Delhi, (eds) D. Vyas, G.S. Paliwal, P.K. Khare & Rajan Kumar Gupta
 7. **Microbial Biotechnology & Ecology Vol II** (2011) **ISBN No.: 81-7035-696-2 978-81-7035-696-7**
Daya Publishing House, New Delhi, (eds) Deepak Vyas, G.S. Paliwal, P.K. Khare & Rajan Kumar Gupta
 8. **Biotechnology: An Overview** (2015) **ISBN No.: 978-93-5124-333-5 978-93-5130-303-9**
Daya Publishing House, New Delhi, (eds) Rajan Kumar Gupta, Nasim Akhtar and Deepak Vyas
 9. **Environmental Biotechnology: A New Approach** (2016) **ISBN No.: 978-81-7035**
Daya Publishing House, New Delhi, (eds) Rajan Kumar Gupta and Satya Shila Singh
 10. **Bio-hydrogen Energy and Sustainable Development** (2016) **ISBN No.: 978-81-7035**
Astral International Publisher, Darya Ganj, New Delhi Deepak Vyas and Rajan Kumar Gupta (Eds) 2016

Conferences & Academic Visits Abroad

Antarctica

- ♦ Deputed by Government of India for my Participation in “**XI Indian Scientific Expedition to Antarctica 1991-1992**”, as a Biological Indian Scientist to carryout the Scientific Project in Antarctica from Nov, 1991-March 1992 .

Antarctica

- ♦ Deputed by Government of India for my Participation in “**XIV Indian Scientific Expedition to Antarctica 1994-1995**”, as a Biological Indian Scientist to carryout the Scientific Project in Antarctica from Dec., 1994-March 1995 .

Mauritius

- Visit to Mauritius University for Academic Exchange, Nov, 1991 & March 1992.

Mauritius

- ♦ Visit to Mauritius University for Academic Exchange Dec., 1994 & March 1995.

Nepal

Participated in International Conference on Environment & Agriculture Ecological Society (ECOS) Kathmandu, Nepal from 01-03, Nov. 1998.

Japan

- ♦ Visited University of Tsukuba on 21st July 2002. Attended “**algae2002: at National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan 19-24 July, 2002.,**

Thailand

- ♦ Visited University of Thailand. 5th Feb 2003. The 3rd World Congress on Medicinal and Aromatic Plants for Human Welfare. Chiang Mai, Thailand 3-7, Feb, 2003.

Nepal

- Visited Tribhuwan University, Nepal from 25, Feb, 2003. Participated in International Conference on Himalayan Biodiversity (ICHB-2003). Kathmandu, Nepal 26-28, Feb, 2003.

Nepal

- Participated in Conference on Natural Resource Management, Birat Nagar, Nepal 13-14, Feb, 2004.

South Africa

- ♦ Participated in International Conference in Durban 13, Aug, 2005. 8th International Phycological Congress. Durban, South Africa 13-19, Aug, 2005

Belgium

- ♦ Participated in International Conference in Brussels 30, July to 4 Aug, 2008 8th European Nitrogen Fixation Conference. Ghent, Brussels, Belgium- Europe 30-Aug. Sept. 3, 2008.
- ♦ Participated in International Conference in Brussels 30, July to 4 Aug, 2008 11th International Symposium on Nitrogen Fixation with Non-legumes Conference . Ghent, Brussels, Belgium- Europe 03-04, Sept. 2008.

Mauritius

- ♦ Participation in International Congress on Environmental Research ICER-10, Reduit, Mauritius University, Mauritius 16-18 Sept, 2010

Nepal

- ♦ Participation in International Congress on Biodiversity, Livelihood & Climate Change in the Himalayas, Tribhuwan University, Kathmandu, Nepal 12-14 Dec, 2010

Singapore

- Participation in 3rd International Conference on Chemical, Biological & Environmental Engineering Singapore 16-18, Sept. 2011
- Participation in 4th International Conference on Environmental and Computer Science – ICECS 2011 Singapore 16-18 Sept, 2011

Nepal

- ♦ Participation in International Symposium on Mountain Resource Management in Changing Environment (MRMCE 2012). Budanilkantha, Kathmandu, Nepal 29-31 May, 2012

Srilanka

- Participation in International Conference on Environment and Humanity ECO REVOLUTION 2012. Colombo, Srilanka 16-18 August, 2012

Bangkok, Thailand

- Participation in 1st International Congress on Science & Technology for Society Bangkok, Thailand 23-25 May, 2014

Nepal

- ♦ Participation in International Conference “Asian Plant Science Conference”, Bhairahawa, Nepal 01 – 03 Nov, 2014

United States of America

- ♦ Participation in International Conference in Las Vegas , USA 15 – 17 June, 2015

Dubai

- ♦ Participation in International Conference in Dubai , 21 – 23 Nov 2015

Thailand

- Participation in International Conference in Thailand, 08 – 10 Nov 2023

Switzerland

- Participation in International Conference in Lucerne, Switzerland, 05 – 07 June 2024

Malaysia

Participation in International Conference in Kota Kinabalu, Malaysia 18 – 19 Oct. 2024

Fellowships & Memberships

Fellow of the **Society for Environment & Ecoplanning**, Fellow of International Congress of **Environmental Research** and

Membership of about 10 Scientific Societies in: **India, Nepal and America.**

Member of Editorial Board of Journal of Graphic Era University, Dehradun

Awards & Recognitions & Chairperson

- ♦ **Research Award-** University Grants Commission, New Delhi --2009
- ♦ **Honored by the then Prime Minister of India Mr. Narshimha Rao at his official Residence for my Participation and contribution in XIth Indian Scientific Expedition to Antarctica.**
- ♦ **Honored by the then Minister of Science & Technology, India Mr. Kumar Mangalam for my Participation and contribution in XIVth Indian Scientific Expedition to Antarctica.**
- ♦ **Chaired one of the session in the Conference in Birat Nagar, Nepal**

Academic & Professional Qualifications

M. Sc. (Botany) and Ph. D. (Botany)

Various Courses like

- **Orientation Course** in Aligarh Muslim University 1998
- **Refresher course** in Botany in Banaras Hindu University 2000
- **Refresher Course** in Botany in H.S. Gaur University, Sagar, M.P., India
- **Refresher course** in Botany in Banaras Hindu University 2007
- **Other Computer Training Course**

Various workshops attended

- **Participation in *Wet Workshop on “DNA Recombinant Technology”* Organised jointly by the Society for Plant Research & Indian Veterinary Research Institute (IVRI) at Barielly, U.P., India. On 17th Nov. 2000.**
- Participation in ***National Natural Resource Management System (NNRMS)*** Two month Course organised by Indian Institute of Remote Sensing, Dehradun sponsored by NSRA, Department of Space, Govt. of India. in May-June, 2002
- Participation in ***Workshop on “Patent Awareness”*** Organised Jointly by the CST UP & DST New Delhi at Department of Plant Science, Rohilkhand University Barielly, U.P., India. On 27th Nov. 2002.
- Participation in ***Workshop on “Industrial Microbiology”*** Organised by the department of Industrial Microbiology, Chinmaya Degree College, BHEL, Hardwar, Uttaranchal, India, on 14th Dec, 2002.
- ***Workshop on Tissue culture Training*** organized by Thapar Institute in Patiala, Punjab from 17th Sept. 2007 to 23 Sept. 2007

Personal Details

Date of Birth: October 25th, 1963

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Communication Port

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- 1 **A.K. Kashyap, K.D. Pandey and R.K. Gupta (1991)** Nitrogen Fixation by Antarctic Cyanobacterium *Nostoc commune* : Influence of temperature. *Folia Microbiologica*, 36:557-560.
- 2 **K.D. Pandey, A. K. Kashyap and R. K. Gupta. (1992).** Nitrogen Fixation by Cyanobacteria associated with moss communities in Schirmacher Oasis, Antarctica. *Israel J. Botany* 41:187-198.
- 3 **R.K. Gupta and A.K. Kashyap (1994)** Water uptake and loss by Antarctic Cyanobacterium *Nostoc commune* under field and laboratory conditions. *Phycos* 33:25-30.
- 4 **K.D. Pandey, R.K. Gupta and A.K. Kashyap. (1995)** Nutrient Status, Algal and Cyanobacterial Flora of Six Fresh Water Streams of Schirmacher Oasis, Antarctica. *Hydrobiologia* 229:83-91.
- 5 **Mohd. Arif, R.K. Gupta and M.C. Joshi (1995)** Studies on use of Cyanobacteria as Biofertilizer in vegetable cultivation in Hydroponic system in Schirmacher Oasis, East Antarctica. Eleventh Indian Scientific Expedition to Antarctica Report, DOD. *Technical Report Publication No. 9* pp 243-246.
- 6 **Mohd. Arif, R.K. Gupta, V.R. Biswas and M.C. Joshi (1995).** Effect of Cyanobacteria on various Vegetables growth in Antarctica. Eleventh Indian Scientific Expedition to Antarctica Report, DOD. *Technical Report Publication No. 9* pp 247-266.
- 7 **R.K. Gupta and A.K. Kashyap. (1995).** Water uptake and loss by Antarctic Cyanobacterium *Nostoc commune*. Eleventh Indian Scientific Expedition to Antarctica Report, DOD. *Technical Report Publication No. 9* pp 221-227.
- 8 **R.K. Gupta and A.K. Kashyap. (1996).** Morphological Characteristics of Antarctic Cyanobacterium *Nostoc commune* under field and laboratory condition (1996). *Phycos* 35:(122) 1-7.
- 9 **R.K. Gupta and A. N. Yadav.** Occurrence of Nitrification in Antarctica.. Proceedings of National Conference on Rehabilitation Strategies for *degraded Environment*. pp. 105-110.
- 10 **R. K. Gupta. (1997).** Cyanobacteria occurring in Schirmacher Oasis, Antarctica. *Nat. Environ.* 14 (I) 1-9.
- 11 **A.K. Kashyap and R. K. Gupta (1998) .** Checklist of cyanobacteria occurring in Schirmacher Oasis, Antarctica (1998). *Journal of Scientific Research* 47:171-179, 1998.
- 12 **R.K. Gupta and A.K. Kashyap. (1998).** Algal Colonization of Schirmacher Oasis, Antarctica. Fourteenth Indian Scientific Expedition to Antarctica Report, DOD. *Technical Report Publication*. 12: 187-192
- 13 **S.P. Shukla, A.K. Kashyap and R.K. Gupta (1999).** Algal Colonization of Schirmacher Oasis, Antarctica. Fifteenth Indian Scientific Expedition to Antarctica Report, DOD. *Technical Report Publication*. 13: 109-116
- 14 **R.K. Gupta (1999).** Ecobiological Studies of Antarctica . In: *Modern Trends in Environmental Pollution and Ecoplanning*. Chapter 15: 178-184. Edt. By Arvind Kumar. A.B.D. Publishers, Jaipur
- 15 **R.K. Gupta and Rita Sachan (2000).** Antarctica : A Pristine Environment Still Away From Human Interferences . *Indian J. Environ. & Ecoplan.* 3(2) 431-432.
- 16 **K.D. Pandey, A.K. Kashyap and R.K. Gupta (2000).** N₂-Fixation by Non-heterocystous Cyanobacteria in an Antarctic Ecosystem. *Israel J. of Plant Science*. Israel 48: 267-270
- 17 **A.K. Kashyap, A.N. Sahi, S.P. Shukla and R.K. Gupta (2000).** Metal Concentration in Water bodies of Schirmacher Oasis, Antarctica: An Assessment. Seventeenth Indian Scientific Expedition to Antarctica Report, DOD. *Technical Report Publication*. 15: 211-219
- 18 **V.K. Jain, V. Jain and R.K. Gupta (2000).** Diversity and Conservation of Wild Edible Fruit Plants Occurring in Foot Hills of Shivalik. In: *Conservation of Biodiversity* 83-92edt. By V.P. Agrawal and S.K. Gupta
- 19 **R.K. Gupta, P. Jaiswal, S. Chaturvedi and A.K. Kashyap (2000).** Occurrence of Nitrification in Antarctica. In: *Biotechnology: Today & Tomorrow Special Volume : VEGETOS* 13:2000: 37-40. edt. By S.K. Bhatnagar & B.D. Singh
- 20 **R.K. Gupta, K.D. Pandey and A.K. Kashyap (2001).** Species Diversity of Cyanobacteria growing on Moss Community in Schirmacher Oasis, Antarctica. *ECOPRINT* Vol 8, No.1: 45-51
- 21 **D.M. Tripathi, and R.K. Gupta. (2001).** An Alarming Scientific Report on Various Causes of River Mandakini Water Pollution at Kedar Valley of Uttaranchal, India. In: *Ecology of Polluted Waters*. Chapter 56:677-680. edt. By Arvind Kumar. Ashish Publishing House, New Delhi
- 22 **S. Kaushik, P. Sharma, R. K. Gupta and V.K. Jain (2002).** Effect of Growth Hormone Gibberellic Acid and an Antibiotic Chloremphenicol on Seedling Growth of *Cicer arietinum*.. *Indian J. Environ. & Ecoplan.* 6(2) 281-284.
- 23 **R.K. Gupta (2002).** Antarctica : A Model System for Environmental Research. In: *Ecology & Conservation of Lake, Reservoirs and Rivers* Chapter 29: 489-505 Edt. by A. Kumar ABD Publishers, Jaipur
- 24 **R.K. Gupta, K.D. Pandey and A.K. Kashyap (2002).** Role of Cyanobacteria in relation of 'Usar land'. In: *Waste Land Management and Environment*, Chapter 26:239-248. edt by A.K Roy And S.K. Verma..
- 25 **G.K. Dhingra, V.K. Jain, S. Kaushik and R.K. Gupta (2003).** Effect of UV-B irradiance on seed germination and seedling growth in *Vigna* spp. *ECOPRINT* Vol 10, No.1: 25-30
- 26 **D. Vyas and R.K. Gupta (2003).** Response of two *Nostoc* strains isolated from tropical and, Antarctic habitat grown under different light qualities. *J. Bot Soc. Univ. Sagar.* 36-38: 36-47
- 27 **D. Vyas and R.K. Gupta (2003).** Impact of UV-B radiation on hydrogen production, hydrogen uptake and nitrogen fixation in cyanobacterium *Nostoc* sp. *J. Bot Soc. Univ. Sagar.* 36-38: 89-97.
- 28 **R.K. Gupta, S. Kaushik, P. Sharma and V.K. Jain. (2003).** Biofertilizer: An Ecofriendly alternative to Chemical fertilizers (2003) In: "Environment & Its Challenges of 21st Century Chapter 17: 275-287. Edt. By Arvind Kumar . Ashish Publishing House, New Delhi

29. **R.K. Gupta, S. Kaushik and P. Sharma (2003).** Disappearing Plants : An Environmental crisis. In: *"Environment & Its Challenges of 21st Century Chapter 21: 331-342. Edt. By Arvind Kumar. Ashish Publishing House, New Delhi*
30. **P. Sharma, S. Kaushik and R.K. Gupta (2003).** Wild Medicinal Plants occurring at foot hills of Shivalik range. In: *Environment , Pollution and Management, ed by A. Kumar, Ashish Publishing House, New Delhi*
31. **Sahi, A.N., R.K.Gupta and S. Kaushik (2004).** Metal Concentration in water bodies of Schirmacher Oasis, Antarctica : An assessment. In: *Environment & Biodiversity. Chapter 44: 565-569. ed by A. Kumar Ashish Publishing House, New Delhi*
32. **Sharma, P., V.K. Jain, S. Kaushik and R.K. Gupta (2004).** Biodiversity : The key to sustainable agriculture. In: *Environment & Biodiversity ed by A. Kumar. Chapter 10: 149-153 Ashish Publishing House, New Delhi*
33. **R.K. Gupta (2006).** Invasion of algal flora in the lesser known continent, Antarctica. In: *National Resource management. 11-18 Eds. S.B. Karmacharya, et. Al., Kathmandu, Nepal*
34. **R.K. Gupta, V.D. Pandey and A.K. Kashyap (2006).** Morphology and Physiology of Antarctic cyanobacterium *Nostoc commune*. In: *Glimpses of Cyanobacteria. Chapter 11: 162-179 ed. by R.K. Gupta, M. Kumar & G.S. Paliwal, Daya Publishing House, New Delhi*
35. **R.K. Gupta, V.D. Pandey, K.D. Pandey and D. Vyas (2006).** Algal Species Diversity of Streams of Schirmacher Oasis, Antarctica. In: *Glimpses of Cyanobacteria. Chapter 15: 224-234 ed by R.K. Gupta, M. Kumar & G.S. Paliwal, Daya Publishing House, New Delhi*
36. **V.D. Pandey , R.K. Gupta, R.C. Gupta, A.K. Mishra, S.K. Singh (2006)** Cyanobacteria as a source of Antimicrobial compounds. In: *Glimpses of Cyanobacteria. Chapter 5: 78-86 ed by R.K. Gupta, M. Kumar & G.S. Paliwal . Daya Publishing House, New Delhi*
37. **D. Vyas, A. Dubey, P.K. Singh, M.K. Mishra and R.K. Gupta (2006).** Distribution of VAM Fungi in two different rice crop fields. *J. Bot. Soc. Univ. Sagar 41: 160-170*
38. **R.K. Gupta and D. Vyas (2007).** Arbuscular mycorrhizal fungi in early land plants Himalayan Journal of Science 1 (1) 21-25
39. **R.K. Gupta and S.S. Mishra (2007).** Environmental Awareness in Vedas. In: *Environment in Historical perspective. Pp. 220-227. Edt. Raman Sinha*
40. **Vishwanath Prasad and, R.K. Gupta (2007)** Food, feed and nutraceutical applications of algae In: *Advances in Applied Phycology. Chapter 11: 131-141 ed by R.K. Gupta and V.D. Pandey Daya Publishing House, New Delhi*
41. **D. Vyas and R.K. Gupta (2007)** Cyanobacterial Hydrogen metabolism with special reference to transcriptional regulation of hydrogenases In: *Advances in Applied Phycology. Chapter 11: 155-168 ed by R.K. Gupta and V.D. Pandey . Daya Publishing House, New Delhi*
42. **V.D. Pandey , R.K. Gupta and, S.K. Singh (2007).** Cyanobacteria as a source of Pharmaceutical compounds In: *Advances in Applied Phycology. Chapter 19: 250-260 ed by R.K. Gupta and V.D. Pandey Daya Publishing House, New Delhi*
43. **R.K. Gupta (2008).** Biotechnological Applications of Algae. In: *Environmental Biotechnology and Biodiversity Conservation. pp. 1-20. ed by M.K. Das .Daya Publishing House, New Delhi*
44. **D. Vyas, A. Dubey, A. Soni, M.K. Mishra, P.K. Singh, and R.K. Gupta (2008).** Vascular arbuscular mycorrhizal association in Bryophytes isolated from Eastern and Western Himalayas. *Mycorrhiza News 19 (4): 16-20*
45. **R.K. Gupta and Shiwani Kaushik.** Himalayas: Seat of Pristine Biodiversity In: *Environment New Challenges 86-97. Edt. By Arvind Kumar& Preeti. Daya Publishing House, New Delhi*
46. **Mukesh Kumar, Anjali Khare and Rajan Kumar Gupta (2009)** Soil Microflora: A General Aspect In: *Soil Microflora. Chapter 1:1-5 ed by R.K. Gupta and Mukesh Kumar and Deepak Vyas. Daya Publishing House, New Delhi*
47. **Roshini Khare, D.K. Upreti, Sanjeeva Nayaka and R.K. Gupta (2009)** Diversity of soil Lichens in India : In: *Soil Microflora. Chapter 7:64-75 ed by R.K. Gupta and Mukesh Kumar and Deepak Vyas. Daya Publishing House, New Delhi*
48. **Ravi Rajhans and Rajan Kumar Gupta (2009)** Molecular Mechanism of Nitrogen Fixation in *Rhizobium* In: *Soil Microflora. Chapter 12:122-138 ed by R.K. Gupta and Mukesh Kumar and Deepak Vyas. Daya Publishing House, New Delhi*
49. **Rajan Kumar Gupta and Mukesh Kumar (2009)** Freeze Recovery and Nitrogenase activity in Antarctic Cyanobacterium *Nostoc commune* In: *Soil Microflora. Chapter 16:192-200 ed by R.K. Gupta and Mukesh Kumar and Deepak Vyas .Daya Publishing House, New Delhi*
50. **Deepali Bithare, Pramod Kumar Richariya, Deepak Vyas and Rajan Kumar Gupta (2009)** Association of vesicular Arbuscular Mycorrhizas with Ornamental Plant *Petunia* In: *Soil Microflora. Chapter 20:246-250. ed by R.K. Gupta and Mukesh Kumar and Deepak Vyas .Daya Publishing House, New Delhi*
51. **Deepak Vyas, Rajesh Yadav and Rajan Kumar Gupta (2009)** Biocontrol of Root Rot of Pan Caused by *Phytophthora parasitica* var. *Piperina* by Native Fungal Species. In: *Soil Microflora. Chapter 23:272-278: ed by R.K. Gupta and Mukesh Kumar and Deepak Vyas .Daya Publishing House, New Delhi*
52. **Rajan Kumar Gupta (2009).** Microbial Biotechnology in Agriculture. *Journal of Graphic Era University*
53. **Rajan Kumar Gupta (2009).** Biotechnological Relevance of Microbes in Agriculture. In: *New Vista in Biotechnology 159-169. ed by Mihir Kumar Das. Daya Publishing House, New Delhi*
54. **Rajan Kumar Gupta (2009).** Nanobiotechnology : An Overview. *Journal of Graphic Era University*

55. **Mukesh Kumar, Anjali Khare, Rajan Kumar Gupta and A K Goyal (2010).** Biodiversity: Status Threat and Conservation . In: *Biodiversity of Lower Plants*. pp 1-23. ed by Mukesh Kumar and R.K. Gupta and G.S. Paliwal . I.K. International Publisher, New Delhi
56. **Himanshu Rai and Rajan Kumar Gupta (2010)** Biodiversity Hotspot: A Tool for Biodiversity Conservation. In: *Biodiversity: An Overview*, pp 17-28. ed by Mukesh Kumar and R.K. Gupta & G.S. Paliwal I.K. International Publisher, New Delhi
57. **Kaushal Kishore Choudhary, Rajan Kumar Gupta and Mukesh Kumar (2010).** Cyanobacterial Biodiversity : A Profile. In: *Biodiversity of Lower Plant*. pp 36-53 ed by Mukesh Kumar and R.K. Gupta . I.K. International Publisher, New Delhi
58. **Anjali Khare, Mukesh Kumar and Rajan Kumar Gupta (2010).** Freshwater Cyanobacterial Diversity of Doon Valley . In: *Biodiversity of Lower Plants*. pp 54-63. ed by Mukesh Kumar and R.K. Gupta. I.K. International Publisher, New Delhi
59. **Ashu, Mukesh Kumar and Rajan Kumar Gupta (2009).** Algae: General aspects, ecological relationship and economic values. In: *Biodiversity of Lower Plants*. pp 96-107. ed by Mukesh Kumar and R.K. Gupta. I.K. International Publisher, New Delhi
60. **Sushma Gupta and Rajan Kumar Gupta (2010).** Strategies for sustainable Biodiversity Conservation. In: *Biodiversity of Lower Plants*. pp 190-95. ed by Mukesh Kumar, R.K. Gupta I.K. International Publisher, New Delhi
61. **Devendra Singh, R.K. Gupta and Mohd Irfan (2010).** Mycorrhiza – A symbiotic fungi. In: *Biodiversity of Lower Plants*. pp 331-336. ed by Mukesh Kumar and R.K. Gupta. I.K. International Publisher, New Delhi
62. **Himanshu Rai, R.K. Gupta, D.K. Upreti and Pramod Nag (2010).** Distribution patterns of Terricolous lichens in Garhwal Himalayas (Chopta Tungnath tract) with reference to morphological and environmental variables In: *Biodiversity of Lower Plants* pp. 264-278 ed by Mukesh Kumar and R.K. Gupta. I.K. International Publisher, New Delhi
63. **Jay Shankar and Rajan Kumar Gupta (2010).** Extremophilic Bacteria and Microbial Biodiversity. In: *Biodiversity of Lower Plants*. pp 108-122 ed by Mukesh Kumar and R.K. Gupta I.K. International Publisher, New Delhi
64. **Khare, Roshni, Rai, Himanshu, Upreti, Dalip, Urvashi, Gupta, Rajan Kumar (2010)** Occurrence of a rare, crustose lichen, *Ophioparma ventosa* (Ophioparmaceae, lichenized Ascomycota), from alpine regions of Arunachal Pradesh, India
Feddes Reperterium 121: 5–6, 184–188
65. **Kaushal Kishore Choudhary and Rajan Kumar Gupta (2010).** Bioremediation and Cyanobacteria – an Overview. In: *Bioremediation: An overview* eds. R.C. Dubey. I.K. International Publisher, New Delhi
66. **Chitra Sharma, R.K. Pathak, Sarika Kashyap, Mohd. Irfan, R.K. Gupta. (2010).** Effect of VAM on *Camellia sinensis*. *Proceedings of 11th Uttarakhand Science Congress*
67. **Rajan Kumar Gupta and Chitra Sharma (2010).** Diversity of VAM fungi in roots of *Camellia sinensis*. *African Journal of Biotechnology*, Vol. 9(33) 5313-5319
68. **Deepak Vyas, Pradeep Kumar Singh, Meenakshi Mishra and R.K. Gupta (2010)** Phytoprotection by Arbuscular Mycorrhiza. In: *Bioinoculants for integrated Plant Growth* ed. Dr H C Lakshman. MD Publication, Darya Ganj, New Delhi
69. **Himanshu Rai, R. K. Gupta and D.K. Upreti (2010).** Terricolous Lichens of Chopta-Tungnath region of Garhwal, Himalaya. *Journal of Graphic Era University*
70. **Devendra Singh, R.K. Gupta Gulshan Dhingra and Mukesh Kumar.** Mycorrhiza – A symbiotic fungi. *Journal of Graphic Era University*
71. **Amrita Gupta, R.K. Gupta, G.K. Dhingra, Swati Kuriyal, Sanjeev Lal & Ramdas (2010).** Variations in growth of tubers of field grown *Coleus barbatus* as affected by different hormonal treatments. *African Journal of Plant Science* Vol. 4 (12), 467-473
72. **Rajan Kumar Gupta and Mukesh Kumar (2010).** Biodiversity & Biotechnology . *The Scientific Temper*: No.1:15-20
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