

Curriculum Vitae

Rima Kumari

Ph.D

Present Designation

Assistant Professor
Botany
Langat Singh College
(Constituent College of BRA Bihar University)
Muzaffarpur, Bihar

Personal detail

DOB: 01/07/1982
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Education:

Degree	Board/ University	Subjects	Year of Degree Completed	% Marks / CGPA	Division
High School	C.B.S.E.	Hindi, English, Science, Soc. Science, Math	1997	65.4%	First
Intermediate	C.B.S.E.	Hindi, English, Physics, Chemistry, Biology	1999	61.8%	First
B.Sc. (Hons.)	B.H.U., Varanasi	Botany (Hons.), Zoology, Chemistry	2003	68.6%	First
M.Sc.	B.H.U., Varanasi	Botany Specialization: Plant Ecology	2005	73.1%	First
Ph. D	B.H.U., Varanasi	Botany Thesis title: Effect of supplemental Ultraviolet-B radiation on selected medicinal plants	2010	-	-

Past Employment Details:

3 Post Doctoral Research: Total 7 years and 9 month of Post Doctoral Research Experience

- Project 1** CSIR-Senior Research Associate
Department of Environmental Science
Babasaheb Bhimrao Ambedkar University
Place: Lucknow, India
Tenure: 13/11/2017- to- 23/08/2019
- Project 2** DST -Start Up Young Scientist
Department of Environmental Science
Babasaheb Bhimrao Ambedkar University
Place: Lucknow, India
Tenure: 16/06/2014- to- 15/06/2017
- Project 3** UGC-Dr. DS Kothari Post Doctoral Fellow
Department of Plant Science
University of Hyderabad
Place: Hyderabad, India
Tenure: 15/11/2010- to- 14/11/2013

Honors and Awards:

- **CSIR NET-JRF** (CSIR-National Eligibility test for Lectureship, Junior Research Fellowship in year 2005 subject: Life Science).
- **CSIR SRF** (CSIR-Senior Research Fellowship, award in year 2007)
- **UGC-Dr. DS Kothari Post Doctoral Fellowship, 2010** (on Post Doctoral Research project titled “Yield of Volatiles, Antimicrobial and Antioxidants of some medicinal plants exposed to UV-B radiation” by UGC, New Delhi).
- **DST-Start Up Young Scientist Research Project** in year 2014 (project titled “The impact of silver nanoparticles on crop plants *Vigna radiata* and *Fagopyrum esculentum*: Morphological, Biochemical, Genotoxic and Proteomics aspects” by DST, New Delhi).
- **CSIR-Senior Research Associate (under Pool Scientist scheme)** in year 2017, (project titled “Fabricating Zeolite based nanocomposites as high performance fertilizer: its efficacy to increase nutrient use efficiency, plant productivity and quality attributes of some vegetable crops”) by CSIR, New Delhi.

Research Interests:

Ecology & Environmental Science

Research area: To evaluate the impact of various abiotic stress factors on crop and medicinal plants (especially ultraviolet-B) by adopting various physiological, biochemical and bio-monitoring of UV-B, etc.

Plant metabolomics of medicinal plants

Nanobiotechnology (*in vivo* and *in vitro* synthesis of silver nanoparticle, Fabrication of zeolite based slow release nanofertilizer

Research Experience:

1. CSIR-Senior Research Associateship project Nov. 2017– till present
“Fabricating Zeolite based nanocomposites as high performance fertilizer: its efficacy to increase nutrient use efficiency, plant productivity and quality attributes of some vegetable crops’
In this Project studied to develop a highly efficient slow release fertilization system to boost up plant yield and productivity with maximized nutrient use efficiency and water retention capacity as well as enriching soil nutrient status by application of nanocomposite based efficient eco-safe slow release fertilization.
2. DST-Start Up Young Scientist Project June 2014– June, 2017
“The impact of silver nanoparticles on crop plants *Vigna radiata* and *Fagopyrum esculentum*: Morphological, Biochemical, Genotoxic and Proteomics aspects’
In this Project we studied on in-vivo and in-vitro synthesis of silver nanoparticles in eco-safe, simple process and cost effective way as well as assessing the toxicological concern of silver nanoparticle uptake by plants through different pollutant sources to assess its impacts on growth and productivity of agricultural crops via assessing the primary and secondary metabolism based analysis through integrated assay of morphological, biological and molecular aspects of different parameters.
3. UGC- Dr. DS Kothari Post Doctoral Research (Nov. 2010 – Nov. 2013)
“This project project entitled ” Yield of Volatiles, Antimicrobial and Antioxidants of some medicinal plants exposed to UV-B radiation”
*This Project study offers preliminary insights on effect of UV-B stress on qualitative and quantitative composition of volatile oil of selected medicinal plants of Indian variety i.e., *Acorus calamus* and *Talinum triangulare*. as well as key enzymes responsible for activating secondary metabolism pathway of metabolite production..*

List of Research Publications:

- 4 Book chapters in International SCI referred book
- 17 International research papers in SCI and UGC referred research journals
- 4 Peer reviewed research papers in non UGC referred research journals

International Book Chapters Published (SCI referred):

1. **Rima Kumari** and D.P. Singh, 2016, Silver Nanoparticle in Agroecosystem: Applicability on plant and risk benefit Assessment. A. Singh, S.M. Prasad, R.P. Singh (Eds) Plant responses to xenobiotics, ISBN no. 978-981-10-2859-5, pp 293-305, Springer, Singapore, https://doi.org/10.1007/978-981-10-2860-1_12.
2. **Rima Kumari**, M.N.V. Prasad, S.B. Agrawal, 2015, Growth and defense metabolism of plants exposed to ultraviolet-B radiation. E. Lichtfouse (ed.), Sustainable Agriculture Reviews, ISBN no. 2210-4410, Vol. 17, 263-305. . https://link.springer.com/chapter/10.1007/978-3-319-16742-8_8
3. **Rima Kumari**, Majeti Narasimha Vara Prasad, Andrzej Waloszek, Kazimierz Strzalka, 2014, Structural and functional aspects of photosynthetic apparatus under U-B stress. T.K. Golovko, W. I. Gruszecki, M.N.V. Prasad, K.J. Strzalka (Eds), Photosynthetic Pigments: Chemical structure, Biological function and Ecology, Syktyvkar, ISBN No. 581.132.1: 581.174.1/2:581.5, Chapter 19, pp. 333-355, (Komi Scientific Centre of the Ural Branch of the Russian Academy of Sciences). <http://ofr.su/photosynthetic-pigments-chemical-structure-biological-function-and-ecology>
4. **Rima Kumari** and Majeti Narasimha Vara Prasad, 2013, Medicinal Plant Active Compounds Produced by UV-B Exposure. E. Lichtfouse (ed.), Sustainable Agriculture Reviews 12, pp. 225- 254, ISBN no. 2210-4410, DOI 10.1007/978-94-007-5961-9_8, © Springer Science + Business Media Dordrecht 2013, Copyright: Springer Science, [DOI: 10.1007/978-94-007-5961-9_8](https://doi.org/10.1007/978-94-007-5961-9_8)

International Research papers (SCI and UGC refereed journals):

1. Rima Kumari and Devendra Pratap Singh (2019) Ameliorating effect of surfactants against silver nanoparticle toxicity in crop *Fagopyrum esculentum* L. in Journal: Environmental Nanotechnology, Monitoring & Management. ISSN: 2215-1532. Accepted (article in press)
2. Rima Kumari, D.P, Singh, (2019) Nanobiofertilizer: An Emerging Eco-Friendly Approach For Sustainable Agriculture. Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci. ISSN: 0369-8211, <https://doi.org/10.1007/s40011-019-01133-6>. Impact Factor 0.396
3. **Rima Kumari**, Manjari Barsainya & Devendra Pratap Singh (2017) Biogenic synthesis of silver nanoparticle by using secondary metabolites from *Pseudomonas aeruginosa* DM1 and its anti-algal effect on *Chlorella vulgaris* and *Chlorella pyrenoidosa*. Environmental Science and Pollution Research, 24: 4645–4654. ISSN: 0944-1344, **Impact Factor of Journal: 2.741**. UGC refereed Journal ID: 11172. [doi: 10.1007/s11356-016-8170-3](https://doi.org/10.1007/s11356-016-8170-3)
4. **Rima Kumari**, J. S. Singh, D. P. Singh (2017) Biogenic synthesis and spatial distribution of silver nanoparticles in the legume mungbean plant (*Vigna radiata* L.). Plant Physiology and Biochemistry, 110 158- 166. ISSN: 0981-9428, **Impact Factor of Journal: 2.724**. UGC refereed Journal ID: 29711. [doi: 10.1016/j.plaphy.2016.06.001](https://doi.org/10.1016/j.plaphy.2016.06.001)
5. S.B. Agrawal and **Rima Kumari** (2013) Assessment of litter degradation in medicinal plants subjected to ultraviolet-B radiation. Journal of Environmental Biology, 34: 739-745. ISSN: 0254-8704. **Impact**

Factor of Journal: 0.697 UGC refereed Journal ID: 187.
http://www.jeb.co.in/journal_issues/201307_jul13/paper_12.pdf

6. Suruchi Singh, **Rima Kumari**, S. B. Agrawal, Madhoolika Agrawal, (2012) Differential response of radish plants to supplemental ultraviolet-B radiation under varying NPK levels: chlorophyll fluorescence, gas exchange and antioxidants" *Physiologia Plantarum*, 145: 474–484. ISSN: 1399-3054. **Impact Factor of Journal: 3.33** . UGC refereed Journal ID 29576. DOI: [10.1111/j.1399-3054.2012.01589.x](https://doi.org/10.1111/j.1399-3054.2012.01589.x)
7. Suruchi Singh, **Rima Kumari**, Madhoolika Agarawal, S.B. Agrawal, (2011). Modification in growth, biomass and yield of radish under supplemental UV-B at different NPK levels. *Ecotoxicology and Environmental Safety*, 74, 897–903. ISSN: 0147-6513. **Impact Factor of Journal: 3.743**. UGC refereed Journal ID10425. DOI:[10.1016/j.ecoenv.2010.12.011](https://doi.org/10.1016/j.ecoenv.2010.12.011)
8. **Rima Kumari** and S.B. Agrawal, (2010). Comparative analysis of essential oil composition and oil containing glands in *Ocimum sanctum* L. (Holy basil) under ambient and supplemental level of UV-B through Gas chromatography-mass spectrometry (GC-MS) and Scanning electron microscopy (SEM)". *Acta Physiologiae Plantarum*, 33, 1093-1101. ISSN: 0137-5881 (print version). **Impact Factor of Journal: 1.364**. UGC refereed Journal ID 917. DOI: [10.1007/s11738-010-0637-0](https://doi.org/10.1007/s11738-010-0637-0)
9. Suruchi Singh, **Rima Kumari**, Madhoolika Agrawal, S.B. Agrawal, (2011). Growth, yield and tuber quality of *Solanum tuberosum* L. under supplemental ultraviolet-B radiation at different NPK levels. *Plant Biology*, 13, 508-517. ISSN: 1438-8677. **Impact Factor of Journal: 2.106**. UGC refereed Journal ID 29676. DOI: [10.1111/j.1438-8677.2010.00395.x](https://doi.org/10.1111/j.1438-8677.2010.00395.x)
10. **Rima Kumari**, Suruchi Singh, S.B. Agrawal, (2010). Responses of Ultraviolet-B induced antioxidant defense system in a medicinal plant *Acorus calamus* L. *Journal of Environmental Biology*, 31, 907-911. ISSN: 0254-8704. **Impact Factor of Journal: 0.697**. UGC Journal ID 187. http://jeb.co.in/journal_issues/201011_nov10/paper_03.pdf,
11. **Rima Kumari** and S.B. Agrawal, (2010). Supplemental UV-B induced changes in leaf morphology, physiology and secondary metabolites of an Indian aromatic plant *Cymbopogon citratus* (D.C.) Stapf under natural field conditions. *International Journal of Environmental Studies*, 67(5), 655- 675. ISSN: 0020-7233. UGC refereed Journal ID 16808. <https://doi.org/10.1080/00207233.2010.513828>
12. **Rima Kumari**, Suruchi Singh, S.B. Agrawal, (2009). Combined effects of furocoumarin compounds (Psoralens) and supplemental ultraviolet-B radiation on growth, pigmentation and Biochemical parameters of *Abelmoschus esculentus* L. plants. *Ecotoxicology and Environmental Safety*, 72, 1129–1136. ISSN: 0147-6513. **Impact Factor of Journal: 3.743**. UGC refereed Journal ID10425. DOI: [10.1016/j.ecoenv.2008.12.009](https://doi.org/10.1016/j.ecoenv.2008.12.009)
13. **Rima Kumari**, S.B. Agrawal, Suruchi Singh, N.K. Dubey, (2009). Supplemental Ultraviolet-B induced changes in volatile composition and total phenolics of *Acorus calamus* L. (Sweet flag). *Ecotoxicology and Environmental Safety*, 72, 2013–2019. ISSN: 0147-6513. **Impact Factor of Journal: 3.743**. UGC refereed Journal ID 10425. DOI: [10.1016/j.ecoenv.2009.02.006](https://doi.org/10.1016/j.ecoenv.2009.02.006)
14. **Rima Kumari**, S.B. Agrawal, Abhijit Sarkar, (2009). Evaluation of changes in oil cells and composition of volatile in Lemongrass (*Cymbopogon citratus* (D.C.) Stapf.) due to supplemental Ultraviolet–B irradiation. *Current Science*, 97, 1137-1142. ISSN: 0011-3891. **Impact Factor of Journal: 0.843**. UGC refereed Journal ID 40. <https://www.jstor.org/stable/24111955>,
15. **Rima Kumari**, Suruchi Singh and S.B. Agrawal, (2009). Responses of supplemental Ultraviolet-B radiation on growth and physiology of *Acorus calamus* L. (Sweet flag). *Acta Biologica Cracoviensia Series Botanica*, 51, 19-27. ISSN: 0001-5296. **Impact Factor of Journal: 0.491**. UGC Journal ID:560. https://www.researchgate.net/publication/280900965_Effects_of_supplemental_ultraviolet-b_radiation_on_growth_and_physiology_of_acorus_calamus_L_sweet_flag
16. Suruchi Singh, Shweta Mishra, **Rima Kumari** and S.B. Agrawal, (2009). Response of Supplemental Ultraviolet-B and Nickel on pigments, metabolites, and antioxidants of *Pisum sativum* L. cv Arkel.

Journal of Environmental Biology, 30(5), 677-684. ISSN : 0254-8704. **Impact Factor of Journal: 0.697.** UGC refereed Journal ID: 187, http://jeb.co.in/journal_issues/200909_sep09/paper_11.pdf,

17. Suruchi Singh, **Rima Kumari**, Madhoolika Agrawal, S.B. Agrawal, (2009). Modification of growth and yield responses of *Amaranthus tricolor* L. to sUV-B under varying mineral nutrient supply. *Scientia Horticulturae*, 120, 173-180. ISSN: 0304-4238. Impact Factor of Journal: 1.624. UGC refereed Journal ID: 33537. <https://doi.org/10.1016/j.scienta.2008.10.013>

Other referred research publications

1. Abin Sebastian, **Rima Kumari**, Boda Ravi Kiran and Majeti Narasimha Vara Prasad (2018) Ultraviolet B induced bioactive changes of enzymatic and non-enzymatic antioxidants and lipids in *Trigonella foenum-graecum* L. (Fenugreek). *The EuroBiotech Journal* 2.
2. **Rima Kumari** and D.P. Singh (2015) Recycling of hyperaccumulator plants in synthesis of nanoparticles: green technological approach, *International Journal of Current Research*, 7, pp.24684-24686.
3. **Rima Kumari** and M.N.V. Prasad (2014) Effect of UV-B pretreatment on essential oil components, health sensory secondary metabolites and antioxidant potential of *coleus aromaticus*. *International Journal of Biological and Pharmaceutical research*, 5, 675-688, 2014 ISSN : 0976 – 3651,
4. Suruchi Singh, **Rima Kumari** and S.B. Agrawal (2008) Impact of enhanced UV-B Radiation on growth and yield of plants. A review: In: *Journal of Scientific Research*. 52, 107-123. ISSN: 0447-9483.

Conference/ Symposium/ Hands on Training Program presented:

1. National Symposium on “*Issues and Challenges For Environment Management: Vision 2025*” organized by BBA University, Lucknow at dated 17th- 19th February, 2006
2. “*Hands on Training on SEM, FTIR, FPLC and Ion Chromatography*” organized at USIC, BBA University, Lucknow.
3. Active participation in National conference on “*Climate Change and Sustainable development*” *Emerging issues and mitigation strategies (CCSD-2015)* organized at B.B.A. University, Lucknow at date 23rd -24th, November, 2015.
4. Actively participated and presented poster in “*Biokumbh-2016*” a National conference on recent trends and advances in Biotechnology, organized by Allahabad University, Allahabad at dated 20th - 21st February, 2016.
5. Actively participated and presented poster in “*ICES-2017*” a National conference on topic "Role of surfactant in ameliorating the toxicity of Silver nanoparticle in Legume crop *Vigna radiata*, on national symposium on Issues and Challenges in Ecological Sciences (ICES-2017) held in BHU, Varanasi at dated 23rd -25th February, 2017.
6. Actively participated and presented poster in *national conference on efficient management to protect Environment* organized by Bareilly College, Bareilly at dated 5th June, 2017.

Research skills and Techniques known:

- i. *Separation Techniques*: Electrophoresis - SDS PAGE and Agarose Gel.; Chromatography – Paper, Column, Thin Layer, HPLC and GC-MS.
- ii. *Biochemical Techniques*: Quantitative and qualitative analysis of protein, carbohydrates and lipids; Enzymes activity assay; LICOR Photosynthetic System; Ozone analyzer.
- iii. *Microscopic techniques*: Compound microscope; Scanning electron microscope (SEM) ; Confocal microscope.

(Dr. Rima Kumari)