Dr. Neha Sharma
PhD (Biotechnology), M. Tech, B. Tech from JUIT
Post Doc from ICAR-CPRI

Personal Details:

Name	Neha Sharma
Date of Birth	19th January, 1988
Husband's Name	Arjun Sharma
Permanent Address	H. No. - B 407, Sector 3, New Shimla Shimla, (H.P.) 171009
Email Address	neha.sharma1812@gmail.com
Contact Number	+91-9418354445

Professional Qualifications:

- **Ph. D. (Biotechnology)** (2017)

  Jaypee University of Information Technology, Waknaghat, Solan (H.P.)

  "*Investigation of morphogenetic differences and seaweed extract stimulated increase in biomass and picroside-I content in Picrorhiza species*"

- **M. Tech - B. Tech dual degree in Biotechnology** (2011)

  Jaypee University of Information Technology, Waknaghat, Solan (H.P.) with CGPA 8.0 equivalent to 83%

  "*Isolation and characterization of endophytes from Picrorhiza kurroa and their analysis for picroside production*"

- **ICAR-ASRB NET** in **Agricultural Biotechnology** (2018)

Work Experience:

- **Guest Faculty (July, 2023-Till date)**

  Department of Microbiology, St. Bede's College, Shimla (H.P.)

- **Research Associate (April, 2021-October, 2022)**

  ICAR-Central Potato Research Institute, Shimla (H.P.)

  "*Targeted editing of potato genome to develop variety specific true potato seed (TPS)*"

  Funded by ICAR-National Agricultural Science Fund

- **National-Post Doctoral Fellow (April, 2018 – April 2020)**

  ICAR-Central Potato Research Institute, Shimla (H.P.)

  "*Generation of functional genetic resources for nutrient rich potatoes using activation tagging*"

  Funded by **Science and Engineering Research Board**, Department of Science and Technology, Government of India. PDF/2017/000131

- **Junior Research Fellow** (June, 2017 - November, 2017)
  ICAR-Indian Agricultural Research Institute, Regional Station, Shimla (H.P.)

- **Senior Research Fellow** (November, 2016- March, 2017)
  ICAR-Central Potato Research Institute, Shimla (H.P.)

- **Junior Research Fellow** (December, 2015-May, 2016)
  Jaypee University of Information Technology, Waknaghat, Solan (H.P.)

- **Research Associate (**June, 2011-July, 2012**)**
  CSK Himachal Pradesh Agriculture University, Palampur (H.P.)

Trainings:

- SERB sponsored hands-on training on "CRISPR/Cas9 mediated gene editing in plants" organized by the Department of Plant Sciences, University of Hyderabad (October 3-10, 2021)

- DBT sponsored short term training course on "Plant Transgenic Technologies" at Centre for Biotechnology, Maharshi Dayanand University, Rohtak, Haryana (October 1-16, 2014)

- Institute of Himalayan Bio-resources and Technology (CSIR), Palampur, (H.P.) (June-July, 2009)

- CSK Himachal Pradesh Agriculture University, Palampur, (H.P.) (June-July, 2008)

List of Publications:

Neha Sharma[*], Sundaresha Siddappa[*], Neha Salaria, Kajal Thakur, Shruti Pathania, Baljeet Singh, Himani Sharma, Salej Sood, Vinay Bhardwaj, Ajay K. Thakur, Vikas Mangal, Vinod Kumar, Ravi Muruthachallam, Kashmir Singh, Rakesh Tuli (2023) CRISPR/Cas9-mediated editing of phytoene desaturase (PDS) gene in an important staple crop, potato. 3 Biotech 13:129. https://doi.org/10.1007/s13205-023-03543-w (*Authors share equal contribution) (IF 2.89)

Ashwani Kumar, Sundaresha Siddappa, Vinay Bhardwaj, Dalamu, Baljeet Singh, **Neha Sharma**, Bhawna Dipta, Vinod Kumar, Umesh Goutam and Salej Sood (2023) Generation of asynaptic mutants in potato by disrupting StDMC1 gene using RNA interference approach. Life 13:174. https://doi.org/10.3390/life13010174 (IF 3.25)

Neha Sharma, Sundaresha Siddappa, Nikhil Malhotra, Kajal Thakur, Neha Salaria, Salej Sood and Vinay Bhardwaj (2022) Advances in potato functional genomics: implications for crop improvement. Plant Cell Tissue and Organ Culture, 148:447-464. https://doi.org/10.1007/s11240-021-02221-0 (IF 2.72)

Madhu Patial, H.K. Chaudhary, **Neha Sharma**, O. P. Gangwar, Naval Kishore, Dharam Pal, K. K. Pramanick, S. C. Bhardwaj and Ruchi Chauhan (2021) Developing genetic stock for yellow and brown rust resistance in *Triticum aestivum* L. via *Imperata cylindrica*-mediated

doubled haploidy technique. Cereal Research Communications. https://doi.org/10.1007/s42976-021-00180-y (IF 1.24)

Maharishi Tomar, Sundaresha S., Baljeet Singh, Vinay Bhardwaj, Salej Sood, Brajesh Singh, Neha Salaria, Kajal Thakur, Ashwani Kumar, **Neha Sharma**, Umesh Goutam (2021) Validation of molecular response of tuberization in response to elevated temperature by using a transient Virus Induced Gene Silencing (VIGS) in potato. Functional & Integrative Genomics 21(2):215-229. https://doi.org/10.1007/s10142-021-00771-2 (IF 3.67)

Madhu Patial, H. K. Chaudhary, **Neha Sharma**, S. Sundaresha, Ritika Kapoor, Dharam Pal, K. K. Pramanick, A. K. Shukla, Jagdish Kumar (2021) Effect of different in vitro and in vivo variables on the efficiency of doubled haploid production in *Triticum aestivum* L. using *Imperata cylindrica*-mediated chromosome elimination technique. Cereal Research Communications 49:133-140. https://doi.org/10.1007/s42976-020-00069-2 (IF 1.24)

Neha Salaria, Sundaresha Siddappa, Kajal Thakur, Maharishi Tomar, Umesh Goutam, **Neha Sharma**, Salej Sood, Vinay Bhardwaj, Brajesh Singh (2020) *Solanum tuberosum* (CYCLING DOF FACTOR) CDF1.2 allele: A candidate gene for developing earliness in potato. South African Journal of Botany 132: 242-248. https://doi.org/10.1016/j.sajb.2020.05.008 (IF 3.11)

Neha Sharma, Rajinder Singh Chauhan and Hemant Sood (2016). Discerning Picroside-I biosynthesis via molecular dissection of in vitro shoot regeneration in *Picrorhiza kurroa.* Plant Cell Reports, 35:1601–1615. https://doi.org/10.1007/s00299-016-1976-0 (IF 4.96)

Neha Sharma, Varun Kumar, Rajinder Singh Chauhan and Hemant Sood (2016). Modulation of Picroside-I biosynthesis in grown elicited shoots of *Picrorhiza kurroa* in vitro. Journal of Plant Growth Regulation, 35:965–973. https://doi.org/10.1007/s00344-016-9594-1 (IF 4.64)

Varun Kumar, **Neha Sharma**, Hemant Sood and Rajinder Singh Chauhan (2016). Exogenous feeding of immediate precursors reveals synergistic effect on picroside-I biosynthesis in shoot cultures of *Picrorhiza kurroa* Royle ex Benth. Scientific Reports 6, 29750. https://doi.org/10.1038/srep29750 (IF 4.99)

Shubham Sharma, Devanshi Popli, **Neha Sharma**, O. P Chaurasia and Hemant Sood (2016). Effect of temperature on in vitro organogenesis of *Rhodiola imbricata* Edgew. – A medicinal herb. World Journal of Pharmacy and Pharmaceutical Sciences, 5(12):1228-1243. https://doi.org/10.20959/wjpps201612-8266

Neha Sharma, Rajinder Singh Chauhan and Hemant Sood (2015). Seaweed extract as a novel elicitor and medium for mass propagation and picroside-I production in an endangered medicinal herb *Picrorhiza kurroa*. Plant Cell Tissue and Organ Culture, 122:57-65. https://doi.org/10.1007/s11240-015-0749-8 (IF 2.72)

Kirti Shitiz, **Neha Sharma**, Tarun Pal, Hemant Sood and Rajinder Singh Chauhan (2015) NGS transcriptomes and enzyme inhibitors unravel complexity of picrosides biosynthesis in *Picrorhiza kurroa* Royle ex. Benth. PLoS One 10(12): e0144546. https://doi.org/10.1371/journal.pone.0144546 (IF 3.75)

Varun Kumar, **Neha Sharma**, Kirti Shitiz, Tiratha Raj Singh, Chanderdeep Tandon, Hemant Sood and Rajinder Singh Chauhan (2015). An insight into conflux of metabolic traffic leading to picroside I biosynthesis by tracking molecular time course changes in a medicinal herb, *Picrorhiza kurroa*. Plant Cell Tissue and Organ Culture, 123:435–441. https://doi.org/10.1007/s11240-015-0839-7 (IF 2.72)

Hemant Sood, Kirti Shitiz and **Neha Sharma** (2015). Rapid method for *in vitro* multiplication of hypericin rich shoots of *Hypericum perforatum.* Journal of Plant Sciences, 3(5): 279-284. https://doi.org/10.11648/j.jps.20150305.16

Neha Sharma, Kirti Shitiz, Disha Kalia, Jasleen Kaur Ahuja, Rajinder Singh Chauhan and Hemant Sood (2015). Expression analysis of key genes for picroside-I production in *in vitro* grown shoots of different genotypes and species of endangered herb *Picrorhiza.* International Journal of Basic and Applied Biology, 2(1):36-39

Pawan Kumar, Tarun Pal, **Neha Sharma**, Varun Kumar, Hemant Sood and Rajinder Singh Chauhan (2015). Expression analysis of biosynthetic pathway genes vis-à-vis podophyllotoxin content in *Podophyllum hexandrum* Royle. Protoplasma, 252:1253-1262. https://doi.org/10.1007/s00709-015-0757-x (IF 3.18)

Book Chapters:

Ira Vashisht, **Neha Sharma** (2023) Functional role of receptor-like kinases in mediating brassinosteroid signaling pathway. In: Santosh Kumar Upadhyay and Shumayla (Eds.) Plant Receptor-Like Kinases. Academic Press pp 257-279. https://doi.org/10.1016/B978-0-323-90594-7.00006-5 (ISBN 978-0-32-390594-7)

Neha Sharma and Hemant Sood (2021) In vitro production of medicinal compounds from endangered and commercially important medicinal plants. In: D. K. Srivastava, Ajay Kumar Thakur, Pankaj Kumar (Eds.) Agricultural Biotechnology: Latest Research and Trends. Springer, Singapore pp 53-74. https://doi.org/10.1007/978-981-16-2339-4_3 (ISBN 978-981-16-2339-4)

Neha Sharma and Hemant Sood (2021) 'Plant-microbe interaction and recent trends in biotechnology for secondary metabolite production in medicinal plants' in *Plant-Microbial Interactions and Smart Agricultural Biotechnology*, Swati Tyagi, Robin Kumar, Baljeet Saharan and Ashok Kumar Nadda (Eds.) CRC Press Taylor and Francis group pp 199-216 (ISBN: 978-1-003-21386-4)

Neha Sharma (2021) '*Picrorhiza kurroa*' in: *Himalayan Medicinal Plants Advances in Botany, Production & Research*, Nikhil Malhotra and Mohar Singh (Eds.). Academic Press Elsevier Inc. pp 67-83 (ISBN: 978-0-12-823151-7)

Neha Sharma and Ira Vashisht (2020) 'Role of long noncoding RNAs in Brassicaceae family' in: *Long Noncoding RNAs in Plants: Roles in Development and Stress*, Santosh Kumar Upadhyay (Ed.) Academic Press Elsevier Inc. pp 197-208 (ISBN 978-0-12-821452-7)

Madhu Patial, RS Bana, **Neha Sharma**, Dharam Pal and KK Parmanik (2019) 'Importance of genetic diversity to bear biotic and abiotic stresses in changing climatic scenario' in: *Climate resilient agro-technologies for enhanced crop and water productivity under water deficit agro ecologies*, KS Rana, Anil K Chaudhary and RS Bana (Eds.) pp 139-147 (ISBN 978-93-83168-31-6)

National/International Conference Publications:

Neha Sharma, Sundaresha S., Neha Salaria, Kajal Thakur, Ashwini Kumar, Salej Sood, Vinay Bhardwaj and N. K. Pandey. Generation and molecular dissection of activation tagged functional mutants for gene discovery and trait improvement in potato. International potato e-

conference on New paradigms in food security and industrial applications, ICAR-Central Potato Research Institute, Shimla (H.P.), November 23-26, 2021

Ashwini Kumar, Salej Sood, Sundaresha S., Baljeet Singh, **Neha Sharma**, Vinay Bhardwaj and Umesh Goutam. "Generation of DMC1 mutants by using RNA interference (RNAi) in potato". **1st prize in poster presentation** in International potato e-conference on new paradigms in food security and industrial applications, ICAR-Central Potato Research Institute, Shimla (H.P.), November 23-26, 2021

Neha Sharma, Sundaresha S., Jasparam Kaur, Neha Salaria, Kajal Thakur, Umesh Goutam, Salej Sood, Vinay Bhardwaj and S.K. Chakrabarti. Generation of functional mutants in potato using activation tagging. Global potato conclave-Roadmap for better world, Gandhinagar, Gujrat, January 28-31, 2020 pp76

Sundaresha S., Sanjeev Sharma, Neha Salaria, Kajal Thakur, **Neha Sharma**, Ravinder Kumar, Vinay Bhardwaj and S.K. Chakrabarti. RNAi fungicides: dsRNA formulations as an alternative and novel protection strategy for potato late blight. Global potato conclave-Roadmap for better world, Gandhinagar, Gujrat, January 28-31, 2020 pp101

Neha Sharma, Sundaresha S., Neha Salaria, Kajal Thakur, Vinay Bhardwaj and S.K. Chakrabarti, "Generation of activation tagged mutants in potato using in planta transformation". In: International conference on recent trends in biotechnology and bioinformatics, Jaypee University of Information Technology, Waknaghat, Solan (H.P.), August 1-3, 2019 pp 148

Madhu Patial, **Neha Sharma**, Dharam Pal, H K Chaudhary, Ritika Kapoor, Sundaresha S, R.S. Bana, Neelu Jain, Naval Kishore, K.V. Prabhu, S.C Bhardwaj, O.P. Gangwar, Satish Kumar, K.K Pramanick and Jagdish Kumar, "Development of rust resistant wheat doubled haploid lines via *Imperata cylindrica* mediated chromosomal elimination technique and their molecular characterization". In: 4th International group meeting on Wheat productivity enhancement through climate smart practices. CSKHPKV, Palampur, (H.P.), February 14-16, 2019 pp13

Madhu Patial, Dharam Pal, H.K. Chaudhary, K. V. Prabhu, Ritika Kapoor, **Neha Sharma**, Sundresha S., K.K. Pramanick, Subhash C. Bharadwaj, Om Prakash Gangwar, Subodh Kumar, Naval Kishore, Satish Kumar and Jagdish Kumar, "Development of Doubled Haploid Lines in Wheat using Wild Grass *Imperata cylindrica*". In: XIV Agricultural Science congress, New Delhi, February 20-23, 2019

Madhu Patial, Dharam Pal, H K Chaudhary, **Neha Sharma**, Sundresha S, K K Pramanick, J Kumar, A K Shukla and K. V Prabhu, "Curtailing wheat rust breeding programme via *Imperata cylindrica* mediated doubled haploidy and marker assisted approaches". 1st National Genetic Congress on Genetics for sustainable food, health and nutrition security. In ICAR-Indian Agricultural Research Institute, December 14-16, 2018 pp181

Sundaresha S., Sanjeev Sharma, Neha Salaria, Kajal Thakur, **Neha Sharma**, Vinay Bhardwaj and SK Chakrabarti, "dsRNA formulation (fungicide):as an alternative and novel protection strategy for potato late blight". **2nd prize in poster presentation** in National symposium on Alternative approaches in plant health management for enhancing farmer's income, UHF, Nauni, November 2-3, 2018 pp41

Kajal Thakur, S. Sundaresha, Neha Salaria, Vinay Sagar, Umesh Goutam, **Neha Sharma**, Sanjeev Sharma, Vinay Bharadwaj, SK Chakrabarti, "Alternative approach for management of *Ralstonia solanacearum* in potato by silencing host susceptible gene". **1st prize in oral presentation** in National symposium on Alternative approaches in plant health management for enhancing farmer's income, UHF, Nauni, November 2-3, 2018 pp28

Shubham Sharma, Sahil Kapoor, **Neha Sharma**, Rajinder Singh Chauhan, O. P Chaurasia and Hemant Sood, "Callus induction and shoot regeneration for conservation of high value medicinal plant *Rhodiola imbricate*" 3rd International Conference on Biotechnology and Bioinformatics (ICBB-2016), Pune, India, February 5-7, 2016

Neha Sharma, Rajinder Singh Chauhan and Hemant Sood, "Seaweed extract an effective alternative of growth hormones for mass propagation and enhanced secondary metabolite production in *Picrorhiza* spp." Proceedings of International Conference on Emerging Trends in Biotechnology, Jawaharlal Nehru University, New Delhi, November 6-9, 2014

Pawan Kumar, **Neha Sharma**, Tarun Pal, Hemant Sood, Rajinder S. Chauhan, "Molecular components control podophyllotoxin biosynthesis in *Podophyllum hexandrum*: A medicinal herb of North-Western Himalayas" Proceedings of International Conference on Emerging Trends in Biotechnology, Jawaharlal Nehru University, New Delhi, November 6-9, 2014

Neha Sharma, Pawan Kumar, Tarun Pal, Hemant Sood and Rajinder S. Chauhan, "In-vitro conservation and SSR fingerprinting in *Podophyllum hexandrum* Royle accession from North-Western Himalayas" National Symposium on Advances in Biotechnology for Crop Improvement, Eternal University, Baru Sahib, Himachal Pradesh, July 12, 2014 pp14

Pawan Kumar, **Neha Sharma**, Tarun Pal, Hemant Sood and Rajinder S. Chauhan, "Differential expression analysis of phenylpropanoid pathway genes controlling podophyllotoxin biosynthesis in *Podophyllum hexandrum*: A medicinal herb of North-Western Himalayas" National Symposium on Advances in Biotechnology for Crop Improvement, Eternal University, Baru Sahib, Himachal Pradesh, July 12, 2014 pp 39

Neha Sharma, Kashika Gupta, R. S. Chauhan, Saurabh Pandit and Aayushi Mahajan, "Isolation and characterization of endophytes from *Picrorhiza kurroa* and their analysis for picroside production" National Conference on Plant and Microbial Biodiversity, Present Scenario, Threats and Conservation Strategies, Panjab University, Chandigarh, India, March 1-2, 2012

Virendra Singh, R.K. Gupta, C. Arumughan, R.C. Sawhney, R.K. Rana, Ashok Singh, Manohar Lal, Reena Devi and **Neha Sharma**, "Biochemical Evaluation of *Hippophae salicifolia* and *H. mongolica* as Horticultural Crops in Dry Temperate Himalayas" National Conference on Seabuckthorn (*Hippophae* L.): Emerging Trends in R&D on Health Protection & Environment Conservation, CSK HPKV, Palampur, India, December 1-3, 2011

Virendra Singh, V. K. Sharma, Mandeep Sharma, Y. S. Dhaliwal, S. P. Tyagi and **Neha Sharma, "**Learning Experience from the NAIP Projects on "A Value Chain on Seabuckthorn (*Hippophae* L.)" National Conference on Seabuckthorn *(Hippophae* L.): Emerging Trends in R&D on Health Protection & Environment Conservation, CSK HPKV, Palampur, India, December 1-3, 2011

Patents applied:

Sundaresha S., Kajal Thakur, Vinay Sagar, Neha Salaria, Umesh Goutam, **Neha Sharma**, Sanjeev Sharma, Vinay Bhardwaj, Bir Pal Singh, S.K. Chakrabarti (2019). Recombinant construct for controlling gene expression and implementations thereof. Patent application number 201911041086 with Indian Patent Office applied on 10.10.2019

Dr. Neha Sharma
PhD (Biotechnology), M. Tech, B. Tech from JUIT
Post Doc from ICAR-CPRI

GenBank Submissions:

- Partial cloned sequence of Mevalonate-5-pyrophosphate decarboxylase (MVDD) gene in *Valeriana jatamansi* – KJ923209
- Partial cloned sequence of Mevalonate kinase (MVK) gene in *V. jatamansi* - KJ923210
- Partial cloned sequence of 3-hydroxy-3-methylglutaryl-coenzyme A reductase gene (HMGR) in *V. jatamansi* - KJ923211
- Partial cloned sequence of MYB family transcription factor (PhMYB) in *Podophyllum hexandrum* - KP299959
- Partail cloned sequence of bZIP family transcription factor (PhbZIP) in *P. hexandrum* - KP299960
- Partial cloned sequence of WRKY family transcription factor (PhWRKY) in *P. hexandrum* - KP299961

References:

Dr. Vinay Bhardwaj
Principal Scientist, Division of Crop Improvement and Seed Technology
ICAR-Central Potato Research Institute, Shimla (H.P.)
Email: vinaycpri@gmail.com, Vinay.Bhardwaj@icar.gov.in, Phone: 09418046415

Dr. Hemant Sood
Associate Professor, Department of Biotechnology and Bioinformatics
Jaypee University of Information Technology, Waknaghat, (H.P.)
Email: hemant.sood@juit.ac.in, Phone: 9418689098

Declaration:

I hereby declare that all the information furnished above is true to the best of my knowledge and belief.

(**Neha Sharma**)