
BIOGRAPHICAL SKETCH

NAME: Gehendra Bhattarai

POSITION TITLE: Postdoctoral fellow

EDUCATION & TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
University of Arkansas, AR, USA	Ph.D.	12/2019	Cell and Molecular Biology
Oregon State University, OR, USA	MS	9/2015	Horticulture (Plant Breeding)
Arava International Center for Agriculture Training, Israel	Diploma	8/2010	Agriculture
Tribhuvan University, Nepal	BS	8/2009	Agriculture (Plant Breeding)

A. Research & Professional Experience

Post Doctoral Fellow, - Department of Horticulture, University of Arkansas.	2020-Present
Senior Graduate Research Assistant - Cell and Molecular Biology Program, University of Arkansas.	2016- 2019
Research Assistant - Department of Horticulture, University of Arkansas.	2016- 2016
Research Assistant - Department of Horticulture, Oregon State University.	2015- 2016
Graduate Research Assistant - Department of Horticulture, Oregon State University.	2012- 2015

B. Collaborators & Affiliations

C. Publications (last four years and relevant)

Bhattarai, G.*, Shi, A.*, Mou, B.*, Correll, J.C*. 2023. Skim resequencing finely maps the downy mildew resistance loci in spinach cultivars Whale and Lazio. *Horticulture Research* **10**, doi.org/10.1093/hr/uhad076

Bhattarai, G.*, Olaoye, D., Mou, Beiquan*, Correll, J.C*, Shi, A.*. 2022. Mapping and selection of downy mildew resistance *RPF3* locus in spinach cv. Whale by low coverage whole genome sequencing. *Frontiers in Plant Science* **13**:1012923. <https://doi:10.3389/fpls.2022.1012923>

Bhattarai, G. *, Shi, A.*, Mou, B*, Correll, J.C*. 2022. Resequencing worldwide spinach germplasm for identification of downy mildew field resistance QTLs and assessment of genomic selection methods. *Horticulture Research* **9**, <https://doi:10.1093/hr/uhac205>

Shi, A. *, **Bhattarai, G.**, Xiong, H., Avila, C. A. *, Feng, C., Liu, B., Joshi, V., Stein, L. *, Mou, B. *, du Toit, L. J. * and Correll, J. C*. 2022. Genome-wide association study and genomic prediction of white rust resistance in USDA GRIN spinach Germplasm. *Horticulture Research* **9**, <https://doi:10.1093/hr/uhac069>

Gyawali, S. †, **Bhattarai, G. †**, Shi, A.*, Kik, C. and du Toit, L. J*. 2021. Genetic diversity, structure, and selective sweeps in *Spinacia turkestanica* associated with the domestication of cultivated spinach. *Frontiers in Genetics* **12**, 2469. <https://doi:10.3389/fgene.2021.740437>

Bhattarai, G*. and Shi, A*. 2021. Research advances and prospects of spinach breeding, genetics, and genomics. *Vegetable Research* **1**, 1–18. <https://doi/10.48130/VR-2021-0009>

Simko, I.*, Jia, M., Venkatesh, J., Kang, B. C., Weng, Y., Barcaccia, G., Lanteri, S., **Bhattarai, G.** and Foolad, M. R*. 2021. Genomics and marker-assisted improvement of vegetable crops. *Critical Reviews in Plant Sciences* **40**, 303–365. <https://doi:10.1080/07352689.2021.1941605>

Bhattarai, G., Yang, W., Shi, A.*, Feng, C., Dhillon, B., Correll, J. C* and Mou, B*. 2021. High resolution mapping and candidate gene identification of downy mildew race 16 resistance in spinach. *BMC genomics* **22**, 478. <https://doi:10.1186/s12864-021-07788-8>

Bhattarai, G., Shi, A.*, Kandel, D. R., Solís-Gracia, N., da Silva, J. A. and Avila, C. A*. 2021. Genome-wide simple sequence repeats (SSR) markers discovered from whole-genome sequence comparisons of multiple spinach accessions. *Scientific Reports* **11**, 9999. <https://doi:10.1038/s41598-021-89473-0>

Bhattarai, G., Shi, A.*, Feng, C., Dhillon, B., Mou, B. and Correll, J. C*. 2020. Genome wide association studies in multiple spinach breeding populations refine downy mildew race 13 resistance genes. *Frontiers in Plant Science* **11**, 563187. <https://doi:10.3389/fpls.2020.563187>

Dhillon, B., Feng, C., Villarroel-Zeballos, M. I., Castroagudin, V. L., **Bhattarai, G.**, Klosterman, S. J. and Correll, J. C*. 2020. Sporangiospore viability and oospore production in the spinach downy mildew pathogen, *Peronospora effusa*. *Plant Disease* **104**, 2634–2641. <https://doi:10.1094/PDIS-02-20-0334-RE>

Bhattarai, G., Feng, C., Dhillon, B., Shi, A., Villarroel-Zeballos, M., Klosterman, S. J. and Correll, J. C*. 2020. Detached leaf inoculation assay for evaluating resistance to the spinach downy mildew pathogen. *European Journal of Plant Pathology* **158**, 511–520. <https://doi:10.1007/s10658-020-02096-5>

D. Synergistic Activities

Moderator: Vegetable breeding session. American Society of Horticultural Science (August 1, 2022; August 13, 2020; July 24, 2019; August 2, 2018).

Judge: Graduate student poster competitions. American Society of Horticultural Science, August 7, 2021.

Collaborate and coordinate: Texas A&M University vegetable breeding team to evaluate white rust disease evaluation trial and breeding effort in spinach (Winter 2018 and 2019). USDA research station, Salinas, CA, and Seminis vegetable seeds research station, San Juan Bautista, CA, to evaluate spinach cultivars and germplasm for downy mildew resistance (Fall 2017 and 2018). Yuma agriculture research station at the University of Arizona to conduct annual downy mildew field trials (Winter 2018 and 2019).

President: Nepalese Association of Northwest Arkansas (NANA), a registered student organization at the University of Arkansas (2017-2018).

Founding member: Plant Breeding and Genetics Student Association (PBGSA), a graduate student group at Oregon State University, focused on fostering relationships among undergraduate and graduate students, faculty, and industry leaders in the plant breeding community.

Member: Pi Alpha Xi- Alpha Rho chapter, Oregon State University. I participated in several fundraising and other professional events from 2013 to 2015.

Review service: Agronomy, Euphytica, Frontiers in Microbiology, Frontiers in Plant Science, Genes, Genetic Resources and Crop Evolution, International Journal of Molecular Sciences, Journal of the American Society for Horticultural Science, Nature- Scientific Reports, Plant Breeding, Plant Species Biology, Plos One, Theoretical and Experimental Plant Physiology.

Complete list of published work in by Bibliography:

2023

1. **Bhatarai, G.***, Shi, A.*, Mou, B.*, Correll, J.C*. 2023. Skim resequencing finely maps the downy mildew resistance loci in spinach cultivars Whale and Lazio. *Horticulture Research* **10**, doi.org/10.1093/hr/uhad076

2022

2. **Bhatarai, G.***, Olaoye, D., Mou, Beiquan*, Correll, J.C*, Shi, A.*. 2022. Mapping and selection of downy mildew resistance *RPF3* locus in spinach cv. Whale by low coverage whole genome sequencing. *Frontiers in Plant Science* **13**:1012923. <https://doi:10.3389/fpls.2022.1012923>
3. **Bhatarai, G.***, Shi, A.*, Mou, B*, Correll, J.C*. 2022. Resequencing worldwide spinach germplasm for identification of downy mildew field resistance QTLs and assessment of genomic selection methods. *Horticulture Research* **9**, <https://doi:10.1093/hr/uhac205>
4. Shi, A.* , **Bhatarai, G.**, Xiong, H., Avila, C. A.* , Feng, C., Liu, B., Joshi, V., Stein, L.* , Mou, B.* , du Toit, L. J.* and Correll, J. C*. 2022. Genome-wide association study and genomic prediction of white rust resistance in USDA GRIN spinach Germplasm. *Horticulture Research* **9**, <https://doi:10.1093/hr/uhac069>
5. Ravelombola, W., Shi, A.*, Huynh, B. L., Qin, J., Xiong, H., Manley, A., Dong, L., Olaoye, D., **Bhatarai, G.**, Zia, B., Alshaya, H. and Alatawi, I. 2022. Genetic architecture of salt tolerance in a Multi-Parent Advanced Generation Inter-Cross (MAGIC) cowpea population. *BMC Genomics* **23**, 1–22. <https://doi:10.1186/s12864-022-08332-y>

2021

6. Gyawali, S. †, **Bhatarai, G. †**, Shi, A.*, Kik, C. and du Toit, L. J*. 2021. Genetic diversity, structure, and selective sweeps in *Spinacia turkestanica* associated with the domestication of cultivated spinach. *Frontiers in Genetics* **12**, 2469. <https://doi:10.3389/fgene.2021.740437>
7. **Bhatarai, G*** and Shi, A*. 2021. Research advances and prospects of spinach breeding, genetics, and genomics. *Vegetable Research* **1**, 1–18. <https://doi/10.48130/VR-2021-0009>
8. Simko, I.*, Jia, M., Venkatesh, J., Kang, B. C., Weng, Y., Barcaccia, G., Lanteri, S., **Bhatarai, G.** and Foolad, M. R*. 2021. Genomics and marker-assisted improvement of vegetable crops. *Critical Reviews in Plant Sciences* **40**, 303–365. <https://doi:10.1080/07352689.2021.1941605>
9. **Bhatarai, G.**, Yang, W., Shi, A.*, Feng, C., Dhillon, B., Correll, J. C*. and Mou, B*. 2021. High resolution mapping and candidate gene identification of downy mildew race 16 resistance in spinach. *BMC genomics* **22**, 478. <https://doi:10.1186/s12864-021-07788-8>
10. Ravelombola, W., Dong, L., Barickman, T. C., Xiong, H., Olaoye, D., **Bhatarai, G.**, Zia, B., Alshaya, H., Alatawi, I. and Shi, A*. 2021. Evaluation of salt tolerance in cowpea at seedling stage. *Euphytica* **217**, 1–20. <https://doi:10.1007/s10681-021-02832-w>
11. **Bhatarai, G.**, Shi, A.*, Kandel, D. R., Solís-Gracia, N., da Silva, J. A. and Avila, C. A*. 2021. Genome-wide simple sequence repeats (SSR) markers discovered from whole-genome sequence comparisons of multiple spinach accessions. *Scientific Reports* **11**, 9999. <https://doi:10.1038/s41598-021-89473-0>

2020

12. **Bhattarai, G.**, Shi, A.*, Feng, C., Dhillon, B., Mou, B. and Correll, J. C*. 2020. Genome wide association studies in multiple spinach breeding populations refine downy mildew race 13 resistance genes. *Frontiers in Plant Science* **11**, 563187. <https://doi:10.3389/fpls.2020.563187>
13. Dhillon, B., Feng, C., Villarroel-Zeballos, M. I., Castroagudin, V. L., **Bhattarai, G.**, Klosterman, S. J. and Correll, J. C*. 2020. Sporangiospore viability and oospore production in the spinach downy mildew pathogen, *Peronospora effusa*. *Plant Disease* **104**, 2634–2641. <https://doi:10.1094/PDIS-02-20-0334-RE>
14. **Bhattarai, G.**, Feng, C., Dhillon, B., Shi, A., Villarroel-Zeballos, M., Klosterman, S. J. and Correll, J. C*. 2020. Detached leaf inoculation assay for evaluating resistance to the spinach downy mildew pathogen. *European Journal of Plant Pathology* **158**, 511–520. <https://doi:10.1007/s10658-020-02096-5>

2019

15. Yang, Y., Shi, D.*, Wang, Y., Zhang, L., Chen, X., Yang, X., Xiong, H., **Bhattarai, G.**, Ravelombola, W., Olaoye, D., Yang, G*. and Shi, A*. 2020. Transcript profiling for regulation of sweet potato skin color in Sushu8 and its mutant Zhengshu20. *Plant Physiology and Biochemistry* **148**, 1–9. <https://doi:10.1016/j.plaphy.2019.12.035>
16. Dong, L., Ravelombola, W., Weng, Y., Qin, J., Zhou, W., **Bhattarai, G.**, Zia, B., Yang, W., Shi, L., Mou, B. and Shi, A*. 2019. Change in Chlorophyll Content over Time Well-differentiated Salt-tolerant, Moderately Salt-tolerant, and Salt-susceptible Cowpea Genotypes. *HortScience* **54**, 1477–1484. <https://doi:10.21273/HORTSCI13889-19>
17. Dong, L., Ravelombola, W., Weng, Y., Qin, J., **Bhattarai, G.**, Zia, B., Zhou, W., Wang, Y., Mou, B. and Shi, A*. 2019. Seedling salt tolerance for above ground-related traits in cowpea (*Vigna unguiculata* (L.) Walp). *Euphytica* **215**, <https://doi:10.1007/s10681-019-2379-4>

2018

18. Mou, B., Ravelombola, W., Shi, A.*, Qin, J., Weng, Y., **Bhattarai, G.**, Zia, B. and Zhou, W. 2018. Investigation on various aboveground traits to identify drought tolerance in cowpea seedlings. *HortScience* **53**, 1757–1765. <https://doi:10.21273/HORTSCI13278-18>
19. **Bhattarai, G.** and Mehlenbacher, S. A*. 2018. Discovery, characterization, and linkage mapping of simple sequence repeat markers in Hazelnut. *Journal of the American Society for Horticultural Science* **143**, 347–362. <https://doi:10.21273/JASHS04461-18>
20. Ravelombola, W., Qin, J., Shi, A.*, Miller, J. C., Scheuring, D. C., Weng, Y., **Bhattarai, G.**, Dong, L. and Yang, W. 2018. Population structure analysis and association mapping for iron deficiency chlorosis in worldwide cowpea (*Vigna unguiculata* (L.) Walp) germplasm. *Euphytica* **214**, 96. <https://doi:10.1007/s10681-018-2176-5>
21. Ravelombola, W., Shi, A.*, Weng, Y., Mou, B., Motes, D., Clark, J., Chen, P., Srivastava, V., Qin, J., Dong, L., Yang, W., **Bhattarai, G.** and Sugihara, Y. 2018. Association analysis of salt tolerance in cowpea (*Vigna unguiculata* (L.) Walp) at germination and seedling stages. *Theoretical and Applied Genetics* **131**, 79–91. <https://doi:10.1007/s00122-017-2987-0>

2017

22. Qin, J.*, Shi, A.*, Mou, B., Grusak, M. A., Weng, Y., Ravelombola, W., **Bhattarai, G.**, Dong, L. and Yang, W. 2017. Genetic diversity and association mapping of mineral element concentrations in spinach leaves. *BMC Genomics* **18**, <https://doi:10.1186/s12864-017-4297-y>

23. Ravelombola, W., Qin, J., Shi, A.*, Weng, Y., **Bhatarai, G.**, Dong, L. and Morris, J. B. 2017. A SNP-based association analysis for plant growth habit in worldwide cowpea (*Vigna unguiculata* (L.) Walp) Germplasm. *Euphytica* **213**, <https://doi:10.1007/s10681-017-2077-z>
24. Shi, A.*, Qin, J., Mou, B.*, Correll, J.*, Weng, Y., Brenner, D., Feng, C., Motes, D., Yang, W., Dong, L., **Bhatarai, G.** and Ravelombola, W. 2017. Genetic diversity and population structure analysis of spinach by single-nucleotide polymorphisms identified through genotyping-by-sequencing. *PLoS ONE* **12**, <https://doi:10.1371/JOURNAL.PONE.0188745>
25. **Bhatarai, G.**, Shi, A.*, Qin, J., Weng, Y., Bradley Morris, J., Pinnow, D. L., Buckley, B., Ravelombola, W., Yang, W. and Dong, L. 2017. Association analysis of cowpea mosaic virus (CPMV) resistance in the USDA cowpea germplasm collection. *Euphytica* **213**, <https://doi:10.1007/s10681-017-2015-0>
26. Ravelombola, W., Qin, J., Shi, A.*, Lu, W., Weng, Y., Xiong, H., Yang, W., **Bhatarai, G.**, Mahamane, S., Payne, W. A., Miller, J. C. and Scheuring, D. 2017. Association mapping revealed SNP markers for adaptation to low phosphorus conditions and rock phosphate response in USDA cowpea (*Vigna unguiculata* (L.) Walp.) germplasm. *Euphytica* **213**, <https://doi:10.1007/s10681-017-1971-8>
27. **Bhatarai, G.**, Mehlenbacher, S. A.* and Smith, D. C. 2017. Inheritance and linkage mapping of eastern filbert blight disease resistance in ‘Uebov’ Hazelnut. *Journal of the American Society for Horticultural Science* **142**, 289–297. <https://doi:10.21273/JASHS04145-17>
28. **Bhatarai, G.** and Mehlenbacher, S. A*. 2017. *In silico* development & characterization of tri-nucleotide simple sequence repeat markers in hazelnut (*Corylus avellana* L.). *PLoS ONE* **12**, e0178061. <https://doi:10.1371/journal.pone.0178061>
29. **Bhatarai, G.**, Mehlenbacher, S. A.* and Smith, D. C. 2017. Eastern filbert blight disease resistance from *Corylus americana* ‘Rush’ and selection ‘Yoder #5’ maps to linkage group 7. *Tree Genetics and Genomes* **13**, 1–10. <https://doi:10.1007/s11295-017-1129-9>
30. Qin, J., Shi, A.*, Mou, B.*, **Bhatarai, G.**, Yang, W., Weng, Y. and Motes, D. 2017. Association mapping of aphid resistance in USDA cowpea (*Vigna unguiculata* L. Walp.) core collection using SNPs. *Euphytica* **213**, <https://doi:10.1007/s10681-016-1830-z>