

BIKASH GHIMIRE

Department of Plant Pathology

University of Georgia – Griffin Campus

1109 Experiment Street, Griffin, GA 30223 USA

Phone: 509-715-7050

Email: bg98946@uga.edu | ghimiraybikas@gmail.com

EDUCATION

- **PhD in Plant Pathology**, University of Georgia, USA **Aug 2017 – May 2022**
Dissertation: “Exploring population diversity of *Fusarium* species and genetics of Fusarium head blight resistance in soft red winter wheat”
- **MS in Crop Science**, Washington State University, USA **Aug 2015 – Aug 2017**
Thesis: “*In situ* imaging of root system architecture to improve drought tolerance and yield in spring wheat (*Triticum aestivum* L.)”
- **B.Sc. (Agriculture)**, Tribhuvan University, Nepal **Dec 2006 – Dec 2010**

RESEARCH EXPERIENCE

May 2022 – Ongoing

Postdoctoral Research Associate

Department of Plant Pathology, University of Georgia, USA

(Principal investigators: Dr. Bochra A. Bahri and Dr. James W. Buck)

- Greenhouse and field disease phenotyping and identifying sources of disease resistance in switchgrass and turfgrass via bi-parental quantitative trait loci (QTL) mapping and genome-wide association study (GWAS)
- Conducting functional analysis of gene expression using RNA sequencing and whole genome sequencing approach
- Studying pathogen population structure, diversity and pathogen genomes using next generation sequencing technologies
- Investigating parasite-pathogen-plant interactions in turfgrass
- Drafting reports, articles for peer-reviewed journals, and grant proposals
- Assisting with the supervision of the other members including graduate students of the laboratory
- Communicating regularly and in a timely fashion with the PIs regarding research and other relevant topics

Aug 2017 – May 2022

Research Assistant

Department of Plant Pathology, University of Georgia, USA

(Advisors: Dr. James W. Buck and Dr. Alfredo D. Martinez-Espinoza)

- Assessing *Fusarium* spp. composition and their chemotype, population structure, genetic diversity, and their pathogenicity of isolates collected across wheat and corn fields of Georgia associated with Fusarium head blight (FHB) of wheat
- Identifying the novel sources of host plant resistance against FHB in soft red winter wheat through genome-wide association mapping
- Assessing the FHB epidemics associated with pre- and post-anthesis weather variables across wheat fields of Georgia
- Characterization and pathogenicity assessment of *Fusarium poae* isolates recovered from

wheat fields of Georgia

- Responsible for independent project development, experimental design, implementation, data collection, data analyses, grant writing, and publication of results

Aug 2015 – Aug 2017

Research Assistant

Department of Crop and Soil Sciences, Washington State University

(Advisor: Dr. Karen A. Sanguinet)

- *In situ* root phenotyping using minirhizotron technique to study adult plant root system in the greenhouse and dryland field conditions for improving drought tolerance and yield in spring wheat
- Study of seedling root growth in the petri-dish assay using the repeated measures design

Apr 2012 – Jul 2015

Technical Officer (Agronomist & Plant Breeder)

Nepal Agricultural Research Council, Nepal

- Involvement in on-station and on-farm collaborative varietal development research for characterization, registration, and release of several field crop varieties including upland rice, quality protein maize, wheat, buckwheat, and finger millet
- Screening disease nurseries and assessing breeding lines of rice, wheat, and maize in multi-location yield trials in collaboration with national commodity research programs
- Survey and surveillance of major pests and diseases through scouting and profiling
- Training and dissemination of research-based improved crop cultivation practices to promote sustainable crop production in the remote hills of Nepal

PEER-REVIEWED JOURNAL ARTICLES

- **Ghimire, B.**, Bahri, B. A., Martinez-Espinoza, A. D., Mergoum, M., Glenn, A. E., Bowen, K. L., and Buck, J. W. Genetic diversity, mycotoxin profiling, and population structure of *Fusarium* spp. recovered from wheat and corn fields in Georgia, U.S.A. (currently being revised for submission)
- **Ghimire, B.**, Mergoum, M., Martinez-Espinoza, A. D., Sapkota, S., Pradhan, S., Babar, M. A., Dong, Y., and Buck, J. W. Genetics of Fusarium head blight resistance in soft red winter wheat using genome-wide association study (accepted for publication in The Plant Genome)
- **Ghimire, B.**, Buck, J. W., Mergoum, M., and Martinez-Espinoza, A. D. 2022. Fusarium head blight epidemics in soft red winter wheat fields in Georgia from 2018 to 2019. Plant Heal. Prog. (in press)
- Harrelson, B. C., Kemerait, R. C., Culbreath, A. K., **Ghimire, B.**, Li, Z., Severns, P. M., and Buck, J. W. 2021. Assessment of quinone outside inhibitor sensitivity and frogeye leaf spot race of *Cercospora sojina* in Georgia soybean. Plant Dis. 105:2946-2954.
- **Ghimire, B.**, Martinez-Espinoza, A. D., Ghimire, B., Harrelson, B. C., Youmans, J., Mergoum, M., and Buck, J. W. 2021. First report of *Fusarium poae* causing Fusarium head blight of wheat in Georgia, U.S.A. Plant Dis. 105:491.
- Sapkota, S., Mergoum, M., Kumar, A., Fiedler, J. D., Johnson, J., Bland, D., Lopez, B., Sutton, S., **Ghimire, B.**, Buck, J., Chen, Z., and Harrison, S. 2020. A novel adult plant leaf rust resistance gene *Lr2K38* mapped on wheat chromosome 1AL. Plant

Genome, 13:e20061.

- **Ghimire, B.**, Sapkota, S., Bahri, B. A., Martinez-Espinoza, A. D., Buck, J. W., and Mergoum, M. 2020. Fusarium head blight and rust diseases in soft red winter wheat in the southeast United States: State of the art, challenges and future perspective for breeding. *Front. Plant Sci.* 11:1080.
- **Ghimire, B.**, Hulbert, S. H., Steber, C. M., Garland-Campbell, K., and Sanguinet, K. A. 2020. Characterization of root traits for improvement of spring wheat in the Pacific Northwest. *Agron. J.* 112:228–240
- Tiwari, D. N., Bastola, B. R., and **Ghimire, B.** 2018. Agro-morphological variability of upland rice hill landraces evaluated at central terai region of Nepal. *Int. J. Adv. Sci. Res. Eng.* 4:45–51.
- Koirala, K. B., Rijal, T. R., Pokhrel, K. P., **Ghimire, B.**, and Panthi, G. P. 2017. Identification of pro-vitamin A maize genotypes for Nepal. *Asian J. Sci. Technol.* 8:7170–7178
- Shrestha, J., Koirala, K. B., Katuwal, R. B., Dhimi, N. B., Pokhrel, B. B., **Ghimire, B.**, Prasai, H. K., Paudel, A., Pokhrel, K., and KC, G. 2015. Performance evaluation of quality protein maize genotypes across various maize production agro ecologies of Nepal. *J. Maize Res. Dev.* 1:21–27.

CONFERENCE PROCEEDINGS/ABSTRACTS

- **Ghimire, B.**, Mergoum, M., Glenn, A. E., Bowen, K. L., Martinez-Espinoza, A. D., and Buck, J. W. Youmans, J. 2021. Population diversity of *Fusarium* species causing Fusarium head blight in wheat and greenhouse pathogenicity tests of *F. poae* isolated from Georgia. Page 60 in: Proc. 2021 National Fusarium Head Blight Forum. Virtual.
- **Ghimire, B.**, Mergoum, M., Martinez-Espinoza, A. D., Babar, M. A., and Buck, J. W. 2021 Genome-wide association study for Fusarium head blight resistance in soft red winter wheat (Abstr.). ASA, CSSA, SSSA International Annual Meeting, Salt Lake City, UT. <https://scisoc.confex.com/scisoc/2021am/meetingapp.cgi/Paper/134470>
- **Ghimire, B.**, Mergoum, M., Martinez-Espinoza, A. D., and Buck, J. W. 2020. Genome-wide association analysis for Fusarium head blight resistance in elite soft red winter wheat lines. Page 107 in: Proc. 2020 National Fusarium Head Blight Forum. S. Canty, A. Hoffstetter, and R. Dill-Macky, eds. Virtual.
- **Ghimire, B.**, Mergoum, M., Youmans, J., Martinez, A. D., and Buck, J. W. 2020. Diversity of *Fusarium* fungi causing Fusarium head blight of wheat in Georgia. Page 69 in: Proc. NAPA Conference 2020 Second Biennial Conference. Virtual.
- **Ghimire, B.**, Hulbert, S. H., Steber, C. M., Garland-Campbell, K., and Sanguinet, K. A. 2020. Exploring hidden root traits for improving spring wheat in the Pacific Northwest. Page 92 in: Proc. NAPA Conference 2020 Second Biennial Conference. Virtual.
- **Ghimire, B.**, Mergoum, M., Sapkota, S., Youmans, J., Pradhan, S., Babar, M. A., Martinez-Espinoza, A. D., and Buck, J. W. 2020. A preliminary genome-wide association study of Fusarium head blight resistance in soft winter wheat in the southeast United States. (Abstr.) *Phytopathology* 110:S2.4.
- **Ghimire, B.**, Mergoum, M., Johnson, J., Glenn, A. E., Bowen, K. L., Youmans, J., Sapkota, S., Martinez, A. D., and Buck, J. W. 2019. Understanding the genetic diversity of *Fusarium* species causing Fusarium head blight (FHB) of wheat in Georgia. Page 71 in: Proc. 2019 National Fusarium Head Blight Forum. S. Canty, A. Hoffstetter, B.

- Wiermer, and R. Dill-Macky, eds. Milwaukee, WI.
- **Ghimire, B.**, Martinez-Espinoza, A. D., Glenn, A. E., Mergoum, M., Bowen, K. L., and Buck, J. W. 2019. A preliminary investigation into the genetic diversity of *Fusarium* species causing Fusarium head blight (FHB) of wheat in Georgia and Alabama. (Abstr.) *Phytopathology* 109:S2.166.
 - **Ghimire, B.**, Arroyo, R., and Sanguinet, K. A. 2016. *In situ* imaging of root system architecture to improve drought tolerance and yield in wheat (Abstr.). ASA, CSSA, and SSSA International Annual Meetings. Phoenix, AZ.
<https://scisoc.confex.com/crops/2016am/webprogram/Paper100419.html>
 - **Ghimire, B.**, Hulbert, S. H., and Sanguinet, K. A. 2017. The wheat root system: Opportunity for crop improvement in dryland farming systems (Abstr.) 2017 Dryland Field Day Abstracts: Highlights of research progress, Washington State University, University of Idaho, Oregon State University
 - **Ghimire, B.**, Arroyo, R., and Sanguinet, K. A. 2016. *In situ* imaging of root architecture to improve drought tolerance in spring wheat (Abstr.) 2016 Dryland Field Day Abstracts: Highlights of research progress, Washington State University, University of Idaho, Oregon State University

SKILLS

- Programming: R programming language, SAS, JMP/SAS
- Bioinformatics and molecular genetics: Genotyping-by-sequencing (GBS), sanger sequencing, fragment analysis using simple sequence repeat (SSR) markers (GeneMarker), sequence alignment and phylogenetic analysis (Geneious, MEGA, IQ-TREE, Fig Tree), structure analysis (STRUCTURE), diversity analysis (DnaSP, GenALEX)
- Laboratory skills: Pathogen isolation, culture preparation and maintenance, fungal DNA extraction, quantitative mycotoxins test using rapid one step assay (ROSA) lateral flow strip technique
- Field and greenhouse skills: Isolates collection, designing field and greenhouse experiments, disease inoculation and scoring (phenotyping) on several diseases of wheat, barley, and soybean including wheat rusts, Fusarium head blight, frog eye leaf spot, and soybean stem canker
- Plant breeding: Genome-wide association study (GWAS), QTL mapping
- Communication: English (fluent in speaking and writing), Hindi (fluent), Nepali (Native)
- Good interpersonal communication skills and ability to conduct collaborative research with a diverse group of people/institution

HONORS AND AWARDS

- First place, Student Poster Presentation, Association of Nepalese Agricultural Professionals of Americas (NAPA) Conference 2020 Second Biennial Conference, Virtual
- Honorable mention, Student Oral Presentation, NAPA Conference 2020 Second Biennial Conference, Virtual
- 2021 Summer Research Grant from the University of Georgia Graduate School
- Travel grant award 2019, Society of Aspiring Plant Pathologists (SAPPs), Department of Plant Pathology, University of Georgia
- First place, Pioneering Ideas Student Poster Competition, DuPont Pioneer Plant Science Symposium 2017, Washington State University

- Harry E. Goldsworthy Scholarship 2016, Department of Crop and Soil Sciences, Washington State University
- Tribhuvan University Merit scholarship (2006 – 2010), Tribhuvan University, Nepal

PROFESSIONAL MEMBERSHIPS

- Co-chair, Student Coordination Committee (SCC), Association of Nepalese Agricultural Professionals of Americas (NAPA) (Dec 2019 – present)
- UGA Griffin Ambassador, University of Georgia, Griffin Campus (Sept 2019 – Aug 2020)
- Member, American Phytopathological Society (Nov 2017 – present)
- Member, Society of Aspiring Plant Pathologists (SAPPs), University of Georgia (Nov 2017 – present)
- Washington State University Alumni Association (WSUAA) (Aug 2017 – present)
- Secretary, Nepalese Student Association (NSA), Washington State University (May 2016 – May 2017)
- Member, American Society of Agronomy, Crop Science Society of America, Soil Science Society of America (Aug 2015 – present)

SERVICES TO THE LOCAL AND SCIENTIFIC COMMUNITIES

- Moderator, Early Career Meet-up–FHB Management session, 2021 National Fusarium Head Blight (NFHB) Forum
- Moderator, Legal issues, visa status, work eligibility, and permanent residency, Association of Nepalese Agricultural Professionals of Americas (NAPA)
- Student representative, Departmental Ad-hoc Committee assigned for “Integrating students from three campuses”, Department of Plant Pathology, University of Georgia
- Judge, 2021 Griffin RESA Regional Science & Engineering Fair, Virtual
- Mentor, 2019 Young Scholars Program, University of Georgia, Griffin Campus
- Featured in a live radio program regarding Young Scholars Program, UGA Griffin Campus News. <https://university-of-georgia-griffin-campus-news.simplecast.com/episodes/dr-james-buck-and-bikash-ghimire-with-t-xRxR37rK>
- Teaching Assistant (TA), ‘PATH 3530 Introductory Plant Pathology’ and ‘PATH 6280 Disease Diagnostic and Management’, Department of Plant Pathology, University of Georgia
- Reviewed articles in peer-reviewed journals: Agronomy Journal, Archives of Phytopathology and Plant Protection, Heliyon, Plant Molecular Biology Reporter, and Tropical Plant Pathology

REFERENCES

- Dr. Bochra A. Bahri, Assistant Professor, Department of Plant Pathology, University of Georgia
UGA-Turfgrass Research and Education Building 285 Higgins Road Griffin, GA 30223 USA
Phone: 770-229-3004 Email: bbahri@uga.edu
- Dr. James W. Buck, Professor, Department of Plant Pathology, University of Georgia
1109 Experiment Street, Griffin, GA 30223 USA
Phone: 770-403-9251 Email: jwbuck@uga.edu

- Dr. Karen A. Sanguinet, Associate Professor, Department of Crop & Soil Sciences,
Washington State University
255 Johnson Hall PO Box 646420, Pullman WA 99164 USA
Phone: 506-335-3662 Email: karen.sanguinet@wsu.edu