BISHAL G. TAMANG
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EDUCATION

PHD | 2016 | AGRONOMY AND CROP SCIENCES | VIRGINIA TECH | BLACKSBURG, VA
"Exploration of physiological and molecular responses to precipitation extremes in soybean and nitrogen fertility in wheat"

MSC | 2012 | PLANT BREEDING AND GENETICS | TRIBHUVAN UNIVERSITY | NEPAL
BSC | 2009 | PLANT BREEDING AND GENETICS | TRIBHUVAN UNIVERSITY | NEPAL

RESEARCH APPOINTMENTS

Research Scientist | Lisa Ainsworth's lab | University of Illinois, Urbana- Champaign, IL | 2020 - Current
As a research scientist at the University of Illinois, I am leading a collaborative effort to develop soybean population with altered canopy architecture affecting productivity, traits stacking, executing design of field experimentation, high throughput data collection using aerial and proximal sensors, analysis and communication.
• Developed 200 soybean backcrossed lines and 20 soybean transgenic lines with altered canopy architecture using CRISPR gene editing system.
• Designed field experiments and led data collection and analysis effort using remote and proximal sensors.
- Designed and analyzed transcriptomic data collected from altered soybean canopy architecture lines.

Postdoctoral Research Fellow | Walid Sadok's lab | University of Minnesota, Saint Paul, MN | 2016 - 2020
Development of high throughput controlled-environment phenotyping platform characterizing canopy conductance under atmospheric drought, GWAS and biparental mapping in small grain crops.

Graduate Research Assistant | Virginia Polytechnic Institute and State University, Blacksburg VA | 2013 - 2016
Identification of traits to improve NUE in wheat and genes in soybean with putative functional role in flooding and drought tolerance using physiological and transcriptomics assays.

Graduate Research Assistant | Biotechnology Unit, Nepal Agriculture Research Council, Nepal | 2010 - 2012
Collection of rice landraces for physiological and molecular characterization of flooding stress tolerance.

PATENTS

1. Tamang BG, BW Diers, EA Ainsworth. “Breeding soybean for reduced leaf area index”, U.S. Provisional Application No. 63/781,061, filed on March 31, 2025.
2. Tamang BG, BW Diers, EA Ainsworth. “Soybean with stacked genes to improve photosynthesis”, U.S. Provisional Application No, 63/781,059, filed on March 31, 2025.

PEER REVIEWED PUBLICATIONS (Google Scholar)

18. **Tamang BG**, BW Diers, EA Ainsworth (2025) Registration of four soybean germplasms in a common genetic background with contrasting leaf shapes. Accepted at Journal of Plant Registration.

17. **Tamang BG**, Bernard G, Bernacchi CJ, Diers BW, Ainsworth EA. 2025. Bigger is not always better: optimizing leaf area index with narrow leaf shape in soybean. Plant Physiology kiaf663.

16. Monnens D, JR Lopez, E McCoy, **BG Tamang**, AJ Lorenz, W Sadok (2024) High-throughput phenotyping of soybean transpiration response curves to rising atmospheric drying in a mapping population. *Functional Plant Biology* Nov;51: FP23281.

15. **Tamang BG**, Y Zhang, MA Zambrano, EA Ainsworth (2023) Anatomical determinants of gas exchange and hydraulics vary with leaf shape in soybean. *Annals of Botany*. 131: 909-920.

14. **Tamang BG**, D Monnens, JA Anderson, BJ Steffenson, W Sadok (2022) The genetic basis of transpiration sensitivity to vapor pressure deficit in wheat. *Physiologia Plantarum*. 174: e13752.

13. López JR, **BG Tamang**, DM Monnens, KP Smith, W Sadok (2022) Canopy cooling traits associated with yield performance in heat-stressed oat. *European Journal of Agronomy*. 139: 126555.

12**. Tamang BG**, JR López, E McCoy, A Hanning, A Sallam, BJ Steffenson, GJ Muehlbauer, KP Smith, W Sadok (2021) Association between xylem vasculature size and freezing survival in winter barley. *Journal of Agronomy and Crop Science*. 208: 362-371.

11. **Tamang BG**, S Li, D Rajasundaram, S Lamichhane, T Fukao (2021) Overlapping and stress-specific transcriptomic and hormonal responses to flooding and drought in soybean. *The Plant Journal*. 107: 100-117.

10. Sadok W, JR López, Y Zhang**, BG Tamang,** GJ Muehlbauer (2020). Sheathing the blade: Significant contributions of sheaths to daytime and nighttime gas exchange in a grass crop. *Plant, Cell and Environment*. 43: 1844-61.

9. **Tamang BG**, R Schoppach, D Monnens, BJ Steffenson, JA Anderson, W Sadok (2019) Variability in temperature-independent transpiration responses to evaporative demand correlate with nighttime water use and its circadian control across diverse wheat populations. *Planta*. 250: 115-127.

8. Sadok W and **BG Tamang** (2019). Diversity in daytime and night-time transpiration dynamics barley indicates adaptation to drought regimes across the Middle-East. *Journal of Agronomy and Crop Science*. 205: 372-84.

7. Brasier KG, **BG Tamang**, NR Carpenter, T Fukao, MS Reiter, RM Pitman, CH Sneller, WE Thomason, CA Griffey (2018). Photoperiod response gene *Ppd-D1* affects nitrogen use efficiency in soft red winter wheat. *Crop Science*. 58: 2593-2606.

6. **Tamang BG**, W Sadok (2017). Nightly business: links between daytime canopy conductance, nocturnal transpiration and its circadian control illuminate physiological trade-offs in maize. *Environmental and Experimental Botany*. 148: 192-202.

5. **Tamang BG**, KG Brasier, WE Thomason, CA Griffey, T Fukao (2017). Differential responses of grain yield, grain protein, and their associated traits to nitrogen supply in soft red winter wheat. *Journal of Plant Nutrition and Soil Science*. 180: 3.

4. **Tamang BG**, T Fukao (2015) Plant adaptation to multiple stresses during submergence and following desubmergence. *International Journal of Molecular Sciences*. 16: 30164-180.

3. Amgai RB, RK Niroula, S Pantha, SS Hamal, **BG Tamang**, BP Sah, MR Bhatta (2015). Marker assisted screening of Nepalese rice for bacterial leaf blight (BLB) resistance. *Nepal Journal of Biotechnology*. 3: 35-39.

2. **Tamang BG**, JO Magliozzi, MA Saghai-Maroof, T Fukao (2014). Physiological and transcriptomic characterization of submergence and reoxygenation responses in soybean seedlings. *Plant, Cell and Environment*. 37: 2350-65.

1. **Tamang BG**, RK Niroula, RB Amgai, BP Sah, SK Ghimire (2011). Determination of adaptive mechanisms for flash flooding tolerance in Nepalese cultivated rice genepool based on morpho-physiological and molecular analysis. *Asian Journal of Plant Sciences*. 10: 347-56.

PRESENTATIONS, SEMINARS AND POSTERS

- FAO Global Agrifood Biotechnologies Conference 2025. Rome, Italy (**Presenter**)
- AGBT Agricultural Meeting 2025. Orlando, FL (**Speaker**)
- Soybean Breeders Workshop 2024. St. Louis, MO (**Oral and Poster**)
- Soybean Breeders Workshop 2023. St. Louis, MO (**Poster**)
- ASA-CSSA-SSSA International Annual Meeting 2022. Baltimore, MD (**Oral**)
- Rubisco Oxygenase Annual Meetings, 2022, University of Illinois, Urbana, IL (**Poster**)
- Webinar at Global Change and Photosynthesis Research Unit, 2021, USDA, IL (**Oral**)
- Phenome Techtalk at University of Minnesota-2019. (**Oral**)
- ASA-CSSA-SSSA International Annual Meetings- 2019, Saint Antonio, TX (**2 posters**)

- Department of Plant Pathology, University of Minnesota-2018. (**Invited oral**)
- ASA-CSSA-SSSA International Annual Meeting, 2017, Tampa, FL, USA. (**2 posters**)
- Molecular and Cellular Biology of Soybean, 2016, The OSU, Columbus, OH. (**Poster**)
- Graduate Student Research Symposium, 2016, CSES, Virginia Tech, VA. (**Poster**)
- 20th Penn State Plant Biology Symposium, 2015, Penn State University, PA. (**Poster**)
- Graduate Student Research Symposium, 2015, CSES, Virginia Tech, VA. (**Poster**)
- Conference of the Molecular and Cellular Biology of Soybean, 2014, UMN, MN. (**Oral**)

GRANTS

- W Sadok (PI), **BG Tamang (co-PI)**, BJ Steffenson (co-PI), JA Anderson (co-PI). 2018. Maximizing canopy conductance to enhance spring wheat yield potential in the Upper Midwest (Phase II). Amount funded: $49,027.
  Source: Minnesota Wheat Research and Promotion Council

AWARDS AND HONORS

• ASPB Plantae's Network Champion for "Phenome2019" Conference ($1000).
• Charles I. Rich Fellowship 2016 at Virginia Tech ($900).
• Phyllis G. and Reginald H. Nelson IV Tuition Scholarship 2015 at Virginia Tech ($4500).
• Virginia Tech Translational Plant Sciences (TPS) Graduate Travel Grant 2015 ($1500).
• Virginia Tech Graduate Student Travel Grant 2014 ($500).
• Merit tuition Scholarship during entire BS and MS study 2005-2012 (equivalent to $10,000).

ADVISING AND MENTORING

University of Minnesota, Saint Paul, MN

- *Graduate student research directed*: Erik McCoy (MS, 2017-2020), Daniel Monnens (MS, 2018-2021)
- *Technicians supervised*: Reina Nielsen (2019), Daniel Monens (2017-2018)
- *Visiting scholars supervised*: Ejaz-ul-Hasan (Ph.D, 2019-2020), Yangyang Zhang (MS, 2017-2018), Haji Muhammad Umer Memon (Ph.D, 2017-2018).

University of Illinois, Urbana-Champaign, IL

- *Technicians/graduate students supervised*: Michelle Zambrano (2020-Current), Samuel Cheung (2023-Current), Casey Kramer (2025-Current).

TEACHING

Institute of Agriculture and Animal Science, Tribhuvan University, Nepal

- Instructor: PLB 421: Hybrid Seed Production (2 credits), undergraduate course (25 students)

Gokuleshwor Agriculture and Animal Science College, Baitadi, Nepal

- Instructor: GEN 211: Introductory Genetics (3 credits), undergraduate course (20 students), PLB 221: Introductory Plant Breeding (3 credits), undergraduate course (20 students)

PROFESSONAL MEMBERSHIPS AND SYNERGISTIC ACTIVITIES

- **Member**: American Society for the Advancement of Science (AAAS), American Society of Agronomy (ASA), Crop Science Society of America (CSSA) and American Society of Plant Biologists (ASPB).
- **Peer reviewer for journals**: *Frontiers in Plant Sciences, PloS One, Scientific Reports, Agronomy, Crop Science, Environmental and Experimental Botany, Euphytica, Plant Cell and Environment, Plant Phenomics, Scientific Reports, Theoretical and Applied Genetics.*
- Ambassador for RIPE (Realizing Increased Photosynthetic Efficiency) project 2025-2026.
- Judge for club poster contest among undergraduates in 2017 ASA annual meetings, Tampa, FL and Twin Cities, MN Regional Science Fair 2019.
- Moderator for Zoom poster session in RIPE annual conference 2020.
- Counsellor for summer camp program “Pollen Power” 2021.
- Mentor for Urbana, IL high school students in conducting science projects (2020-2021).