CV-Bishnu Ghimire

Professional Summary

A dedicated researcher and educator with a Ph.D. in Precision Agriculture, specializing in Digital Agronomy, Cropping Systems, Irrigation Water Management, and Crop Modeling. My research focuses on assessing the resilience of cropping systems under changing climate conditions, integrating crop models and AI tools to optimize agricultural sustainability. Committed to advancing climate-resilient practices, I aim to bridge research and real-world applications through teaching, research, and extension, empowering the next generation of agricultural professionals.

Education

Ph.D. - Crop Science
(Area: Precision agriculture, Spatial/Crop Modeling, and Climate Change)
Texas Tech University, Lubbock, Texas (2025)

Graduate Certificate - Geoscience
(Area: Spatial Modeling, Remote Sensing, Data Science)
Texas Tech University, Lubbock, Texas (2024)

Master of Science (Agriculture) - Crop Science
(Area: Plant Breeding) (2009)
Tribhuvan University, Institute of Agriculture and Animal Science, Nepal (2009)

Publications

- **Ghimire, B.,** Adedeji, O., Ritchie G, & Guo, W. (2024). Application of DSSAT in predicting crop Yields of three cropping systems in the Texas High Plains. Crop and Environment.
- Adedeji, O., Abdalla A., **Ghimire, B.,** Ritchie G, & Guo, W. (2024). Flight Altitude and Sensor Angle Affect Unmanned Aerial System Cotton Plant Height assessments. Computers and Electronics in Agriculture (Submitted: January 30, 2024).
- Guo, W., Gu, H., Adedeji, O., & **Ghimire, B.** (2023). Advances in remote/aerial sensing of crop water status. In Advances in remote/aerial sensing of crop water status. Burleigh Dodds Science Publishing.
- Bhandari, S., Paneru, S., Pandit, S., Rijal, S., Manandhar, H. K., & **Ghimire, B.** (2020). Assessment of pesticide use in major vegetables from farmers' perception and knowledge in Dhading district, Nepal. Journal of Agriculture and Natural Resources, 3(1), 265-281.
- **Ghimire, B.P.,** B.R. Bhandari, and S. Gautam (2018). Husk cover improvement and its effect on grain yield and other traits in Maize. Agriculture Development Journal. Directorate of Agriculture Training (DAT). Volume 14. Hariharbhawan, Nepal.
- Bhattarai, P., S. Gautam, & **B.P. Ghimire** (2018). Impact of climate change in Agriculture and adaptation practices adopted by local farmers: A case of Madi valley, Chitwan, Nepal.

Agriculture Development Journal. Directorate of Agriculture Training (DAT). Volume 14. Hariharbhawan, Nepal.

- Acharya, A.K., and **B.P. Ghimire** (2016). Synchronization of Horticulture with Environment and Human being. International Horticulture Conference organized by Nepal Horticulture Society.
- Qamer, F. M., Shah, S. N., Murthy, M. S. R., Baidar, T., Dhonju, K., & **Ghimire, B.** (2014). Operationalizing crop monitoring system for informed decision making related to food security in Nepal. The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, 40, 1325-1330.

Oral and Poster presentations

- Ghimire, B. Ritchie, G. & Guo, W. (2024). Modeling future climate change impacts on cotton production in Texas High Plains. Presented at American Society of Agronomy 2024 International Annual Meeting, San Antonio, TX. (Oral)
- Ghimire, B. Ritchie, G. & Guo, W. (2024). Application of DSSAT crop model in predicting crop yields in different cropping systems in the Texas High Plains. Presented at American Society of Agronomy 2024 International Annual Meeting, San Antonio, TX. (Poster).
- Adedeji, O., Karn, R., Weiber, E. Ghimire, B. & Guo, W. (2024). Assessment of cotton water stress on a spatial and temporal scale using unmanned aerial systems. Presented at American Society of Agronomy 2024 International Annual Meeting, San Antonio, TX. (Oral).
- Ghimire, B., Karn, R., Oluwatola, A., Ritchie, G., & Guo, W. (2024). Assessing the Impact of Climate Change on Cotton Yield: Spatiotemporal variations in Texas High Plains. Presented at 2024 Beltwide Cotton Conference, Fort Worth, TX. (Oral)
- Ghimire, B., Oluwatola, Adedeji, O., Lin, Z. and Guo, W. (2022). Modeling Spatial and Temporal Variability of Cotton Yield Using DSSAT for Decision Support in Precision Agriculture Presented at 2022 International Conferences in Precision Agriculture, Minneapolis, MN. (Oral)
- Ghimire, B., Karn, R., Oluwatola, A., Abdalla, A., Wieber, E., & Guo, W. (2023). Predicting Cotton Yield Variability within Field using DSSAT for Decision Support in Precision Agriculture. Presented at American Society of Agronomy 2023 International Annual Meeting, St. Louis, MO. (Poster)
- Adedeji, O., Karn, R., Ghimire, B., Wieber, E., & Guo, W. (2023). Retrieving Surface Soil Water Content using Sentinel-21 Microwave Remote Sensing. Presented at American Society of Agronomy 2023 International Annual Meeting, St. Louis, MO. (Poster)
- Karn, R., Ghimire, B., Oluwatola, A., Lewis, K., Ritchie, G., & Guo, W. (2022). Evaluation of Unmanned Aerial Vehicle in Estimating Cotton Nitrogen Content. Presented at 2022 International Conferences in Precision Agriculture, Minneapolis, MN. (Poster)

Teaching experiences and student mentoring

- Mentored one undergraduate student in sorghum phenotyping project using UAS images in Texas Tech University (2023).

Professional experiences

Postdoctoral Research Associate
Texas Tech University, Lubbock, Texas
June 2025 – Present

- Role & responsibilities

    o Evaluating the impacts of oil and gas industry-produced water on soil health, crop performance, and environmental quality.
    o Leading field-scale experiments on precision forage management under varying irrigation and nutrient regimes.
    o Applying crop model and AI tools (machine learning and deep learning) to simulate and predict crop responses under diverse scenarios in the Texas environment.

Distinguished Graduate Research Assistant
Texas Tech University, Lubbock, Texas
June, 2021 – May, 2025

- Role & responsibilities
    o Conducted research on digital phenotyping and water stress assessment of cotton cultivars in the Texas High Plains using unmanned aerial vehicle (UAV) and machine learning tools.
    o Developed and validated predictive models (DSSAT) for regional crop yield predictions under various climate change scenarios (SSP1-2.5, SSP2-4.5 and SSP5-8.5).
    o Tested different nitrogen rates and irrigation amounts to identify adaptive measures of climate change.
    o Published findings in peer-reviewed journals and presented at society meetings (Agronomy society of America, International Society of Precision Ag).
    o Compiled project reports based on research data and analysis for funding agencies under the guidance of the Major Professor (Cotton Inc, USDA-NIFA, BASF).
    o Presented research progress updates to the Department of Plant and Soil Science at Texas Tech University, providing insights into the research project.

Senior Agriculture Officer
Ministry of Agricultural Development, Kathmandu, Nepal
June 2017-May 2021

- Role & responsibilities
    o Formulated and implemented agricultural development programs for growers.
    o Organized training programs on climate change adaptation, GIS, and remote sensing for farmers, growers, and agricultural technicians.

- Conducted farmer-managed crop production and fertilizer trials and shared findings with stakeholders.
- Led committees on agriculture policies, including the preparation of climate-smart village development programs.
- Led for clustering municipals in districts for sustainable soil management, soil sampling and cover crop in Gandaki Province of Nepal
- Trained over 200 individuals on climate change adaptation, sustainable soil management, GIS, and remote sensing.

National Project Director
Building Resilience to Climate related Hazards Project (Agriculture Management Information System), Ministry of Agricultural Development, Kathmandu, Nepal
May 2016-June 2017

- Role & responsibilities
  - Formulated and implemented climate change adaptation programs in 25 districts of Nepal.
  - Reported project progress to the Ministry of Agriculture Development and the World Bank.
  - Coordinated with national stakeholders and developed climate information products such as the Agro-met Advisory Bulletin.
  - Mapped soil fertility status in 25 districts of the Terai region, focusing on nitrogen, organic matter, and pH.
  - Organized national and regional level workshops on climate change and its impact on agriculture.

Agriculture Officer
Ministry of Agricultural Development, Kathmandu, Nepal
August, 2009-April, 2016

- Role & responsibilities
  - Served as lead trainer in GIS and remote sensing for district-level agriculture and veterinary officers.
  - Organized training programs on climate change adaptation, GIS, and remote sensing, and soil fertility mapping for farmers and agricultural technicians.
  - Contributed to the development of an online Agriculture Atlas of Nepal in collaboration with ICIMOD.
  - Acted as a focal person for the Working Group of Agro-met (WOGRAM) in the Ministry of Agriculture Development.
  - Developed Agriculture Atlas of Nepal showing different soil types as well as crop production status.
  - Developed interactive Digital Agriculture Atlas of Nepal in collaboration with non-governmental organization (ICIMOD).

Skills

- o **Technical Skills**: Programming and statistical tools (Python, and R), Crop modeling (DSSAT, APSIM, WOFOST), SWAT model, Geospatial tools (ArcGIS Pro, and ENVI), Machine learning (RF, SVM, LSTM etc)
- o **Research and Analysis**: Experience in big data analysis (temporal and spatial), statistical modeling, spatial analysis, digital phenotyping (UAV and satellite remote sensing-based images).
- o **Agricultural Expertise**: Climate smart crop production packages, Precision Agriculture technologies, Plant phenotyping techniques etc.
- o **Climate Science and policy**: Understanding climate science and policy, impact assessments, adaptation strategies, etc.
- o **Communication**: Info-products, technical writing, presentations, and ability to communicate complex data to specialists and general audiences.

Certifications and Training

- Remote pilot-Unmanned Aerial Vehicle – FAA, 2021
- DSSAT - Process based crop modeling – University of Florida, 2022
- Certified trainer (level 2) of Integrated Food Security Phase Classification – FAO.

Awards and Scholarships

- Gerald O Mott Award, Crop Science Society of America, 2025.
- Outstanding Graduate Student Award, International Society of Precision Agriculture (ISPA), 2024, Manhattan, Kansas.
- TTU L&C Olsak End Ag Scholarship Award amount: $ 5000
- TTU David Koeppe Scholarship Award amount: $4000
- Second place award for PhD student poster presentation competition 2024, ASA/CSSA/SSSA conference at San Antonio, Texas Award amount: $ 100
- Second place award for PhD student oral presentation competition 2023, ASA/CSSA/SSSA conference at St. Louis, Missouri Award amount: $ 250
- Graduate student travel fund ASA/CSSA/SSSA conference at St. Louis, Missouri, 2023 Award amount: $450
- West Texas Agricultural Chemicals Institute 2023 Scholarship Recipient Award Amount: $ 1000
- Graduate student travel fund ASA/CSSA/SSSA conference at Maryland, Baltimore, 2022 Award amount: $450
- Third place in poster presentation at ASA conference, Baltimore, Maryland 2022, ASA/CSSA/SSSA conference at Baltimore, Maryland Award amount: $ 100
- Best staff of the year, 2015 Ministry of Agricultural Development, Kathmandu, Nepal
- CIMMYT Research grantee for Masters' research, 2007 Institute of Agriculture and Animal Science, Tribhuvan University, Nepal.

International Exposure and Coordination

- Presented success story of agro-climate services delivered in Nepal – Seoul National University, Seoul, South Korea (July 20-25, 2017) (Speaker)
- Exposure training and visit program in World meteorological Organization (WMO), Geneva, Switzerland (April 10-18, 2017) (World Agriculture Meteorological Information System) (Team Leader)
- Training and visit program at NOAA and USDA-WAOB, Washington DC (July 14-23, 2015), (Agro-met Advisory Bulletin) (Team member)
- Observational study at Indian Meteorological Department (IMD), ICAR-IARI, ICRISAT, India (May 12-16, 2013) (Team member)

Professional Affiliations

- Student member, International Society of Precision Agriculture (ISPA)
- Graduate student member, ASA, CSSA, SSSA, USA.