

## BIJAY P. SHARMA

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### EDUCATION

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Ph.D. in Natural Resource Economics, University of Tennessee Dissertation: <i>Analyzing the Impacts of Policy Supports and Incentive Programs on Resource Management</i>	08/2014–07/2018
M.Sc. (Agricultural Economics), Tribhuvan University, Nepal	11/2010-12/2012
B.Sc. (Agricultural Sciences), Tribhuvan University, Nepal	06/2005-07/2009

### RESEARCH AND TEACHING EXPERIENCE

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Post-doctoral Research Associate, Department of Agricultural & Resource Economics, University of Tennessee	11/2018–Present
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*Research Project:* Optimal spatial targeting of payments for forest-based ecosystem services under climate and market risks. Funded from the *USDA's National Institute of Food and Agriculture (NIFA)*.

- Currently working on forecasting costs and benefits of forest-based biodiversity conservation and setting up mean-variance optimization model employing Modern Portfolio Theory (MPT) to develop an optimal risk-return portfolio for spatial targeting of conservation funds under market and climate uncertainty.

Graduate Research Assistant, Department of Agricultural & Resource Economics, University of Tennessee	08/2014–07/2018
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*Research Project:* Economic Impacts Analysis of Inland Waterways Disruptions on the Transport of Corn and Soybeans. Funded from the *USDA's Agricultural Marketing Service (AMS)*.

- Updated an older version of the International Grain Transportation Model (IGTM), for evaluating the net welfare implications of major lock failures in the Upper Mississippi River (UMR).
- Estimated a Spatial Durbin Model (SDM) that incorporates spatial spillover effects, in determining the factors affecting lock navigation delays in the UMR.

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*Research Project: Alternative Jet Fuel Supply Chain Analysis: Cover Crop Potential as a Feedstock for Aviation Fuel. Funded by the US Federal Aviation Administration (FAA).*

- Designed a Conditional Value-at-Risk (CVaR) model to evaluate the impact of Biomass Crop Assistance Program (BCAP) on investment decisions of switchgrass-based biofuel supply chain under yield uncertainty in west Tennessee.
- Applied a bi-level Stackelberg model for economic and environmental analysis of renewable jet fuel produced using lignocellulosic feedstock addressing the interaction and profitability requirements of the market participants.

Graduate Teaching Assistant, Department of Agricultural & Resource Economics, University of Tennessee

Fall 2017

- Prepared and delivered class lectures on “Cost functions” for graduate-level Microeconomic Analysis in addition to grading assignments and exams.

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## **TRAINING AND PROFESSIONAL EXPERIENCE**

Assistant Level Teaching Certificate, Center for the Integration of Research, Teaching, and Learning (CIRTL), University of Tennessee

Fall 2016

Agricultural Economist, Nepal Agricultural Research Council (NARC), Nepal

03/2014-06/2014

- Surveyed and compiled data in coordination with field level officers and technicians for evaluating impacts of regional agriculture development programs.

Training on Research Methodology and Statistical Tools on Climate Change Study, Nepal Academy of Science and Technology (NAST), Nepal

03/2012-03/2012

Diploma Certificate in Desert Agriculture, Arava International Centre For Agriculture Training (AICAT), Israel

10/2009-04/2010

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## **GRANTS AND AWARDS**

Research Assistantship and Tuition Waiver for Pursuing Ph.D., University of Tennessee

08/2014–07/2018

Travel Grants for Presentations at National Conferences, University of Tennessee

2016/17- 2017/18

Research Grant for Climate Change Study from NAST, Nepal	03/2012-03/2012
Full Government Scholarship for Pursuing M.Sc., Nepal	11/2010-12/2012
Full Government Scholarship for Pursuing B.Sc., Nepal	06/2005-07/2009

### SELECTED PRESENTATIONS (\*Indicates Presenter)

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Cho, S. H. \*, and **B. P. Sharma**. Optimal spatial distribution of forest carbon payments that balances returns and risks of future economic growth scenarios. *8<sup>th</sup> Congress of the East-Asia Association of Environmental and Resource Economics, Beijing, China, August 2-4, 2019.*

Cho, S. H. \*, and **B. P. Sharma**. [Optimal spatial distribution of forest carbon payments that balances returns and risks of future economic growth scenarios](#). Poster presented at *Agricultural & Applied Economics Association annual meeting, Atlanta, GA, July 21-23, 2019.*

Cho, S. H. \*, **B. P. Sharma**, and C. M. Hellwinckel. Optimal budget allocations for protected area acquisition to store carbon in a local community under economic growth uncertainty. Paper presented at *Northeast Agricultural & Resource Economics Association annual workshop, Portsmouth, NH, June 11-12, 2019.*

**Sharma, B. P.**, T. E. Yu\*, B. C. English., and C. N. Boyer. Economic Analysis of Renewable Jet Fuels: A Game-theoretic Approach. Paper presented at *International Conference on Transportation and Logistics, Dalian, China, September 8–10, 2018.*

**Sharma, B. P.**, T. E. Yu\*, B. C. English, C. N. Boyer, and J. A. Larson. Stochastic optimization of cellulosic biofuel supply chain incorporating feedstock yield uncertainty. Paper presented at *International Conference on Applied Energy, Hong Kong, China, August 22-25, 2018.*

**Sharma, B. P.**, T. E. Yu\*, and B. C. English, and C. N. Boyer. [Analyzing the Economics of Renewable Jet Fuels Using a Game-theoretic Approach](#). Paper presented at *Agricultural & Applied Economics Association annual meeting, Washington, DC, August 5-7, 2018.*

**Sharma, B. P.**, T. E. Yu\*, B. C. English, C. N. Boyer, and J. A. Larson. Impact of Subsidies on the Optimization of a Stochastic Biofuel Supply Chain with Different Risk Preferences. *Proceedings, 5<sup>th</sup> International Conference on Environment Pollution and Prevention, Singapore, December 14-16, 2017.*

**Sharma, B. P.**\*, S. H. Cho, and T. E. Yu. Designing Cost-effective Payments for Afforestation under Target and Budget Constraints: An Auction-based Modeling Approach. Paper presented at *Southern Economic Association annual meeting, Tampa, FL, November 17-19, 2017.*

**Sharma, B. P.**\*, T. E. Yu, B. C. English, J. A. Larson, and C. N. Boyer. [Stochastic Optimization of Switchgrass-based Biofuel Supply Chain Considering Feedstock Yield Uncertainty and Risk Preference](#). Poster presented at *Agricultural & Applied Economics Association annual meeting, Chicago, IL, July 30-August 1, 2017.*

Yu, T. E. \*, **B. P. Sharma**, and B. C. English. A Spatial Autocorrelation Analysis for Lock Delays on the Upper Mississippi River. Paper presented at *International Conference on Transportation and Logistics, Hsinchu, Taiwan, September 7–9, 2016*.

Yu, T. E. \*, **B. P. Sharma**, and B. C. English. [Determinants of Lock Delays on the Upper Mississippi River: A Spatial Econometrics Approach](#). Paper presented at *Agricultural & Applied Economics Association annual meeting, Boston, MA, July 31-August 2, 2016*.

## SELECTED PUBLICATIONS

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Cho, S. H., A. B. Ayara, D. M. Lambert, C. D. Clark, G. Chen, D. J. Hayes, and **B. P. Sharma**. Deriving site-specific and time-varying supply curves for forest carbon storage. *Journal of Environmental Planning and Management*. [Accepted]

**Sharma, B. P.**, and S. H. Cho. 2019. [Using portfolio theory in spatial targeting of forest carbon payments: An effective strategy to address spatiotemporal variation in land use opportunity costs?](#) *Canadian Journal of Forest Research*.

Cho, S. H., and **B. P. Sharma**. 2019. [Optimal spatial budget distribution of forest carbon payments that balances the returns and risks associated with conservation costs](#). *Environment, Development and Sustainability*.

Koç, A. A., T. E. Yu, T. Klymaz, and **B. P. Sharma**. 2019. [Effects of government supports and credits on Turkish agriculture](#). *Journal of Agribusiness in Developing and Emerging Economies*.

**Sharma, B. P.**, S. H. Cho, and T. E. Yu. 2019. [Designing cost-efficient payments for forest-based carbon sequestration: An auction-based modeling approach](#). *Forest Policy and Economics*.

Cho, S. H, K. Thiel, P. R. Armsworth, and **B. P. Sharma**. 2019. [Effects of Protected Area Size on Conservation Return on Investment](#). *Environmental Management*.

**Sharma, B. P.**, T. E. Yu, B. C. English, C. N. Boyer, and J. A. Larson. 2019. [Stochastic Optimization of Cellulosic Biofuel Supply Chain Incorporating Feedstock Yield Uncertainty](#). *Energy Procedia*.

Yu, T. E., **B. P. Sharma**, and B. C. English. 2018. [Investigating Lock Delay on the Upper Mississippi River: a Spatial Panel Analysis](#). *Networks and Spatial Economics*.

## PAPERS IN REVIEW

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Cho, S. H., Y. G. Lee, **B. P. Sharma**, and D. J. Hayes. Do ecological-economic tradeoffs change by budget distribution option for forest carbon sequestration in the Central and Southern Appalachian Region? *Sustainability Science*. [Revised and resubmitted]

**Sharma, B. P.**, S. H. Cho, and C. M. Hellwinckel. Optimal budget allocations for protected area acquisition to store carbon in a local community under economic growth uncertainty. *Agricultural and Resource Economics Review*. [Revised and resubmitted]

**Sharma, B. P.**, T. E. Yu, B. C. English, C. N. Boyer, and J. A. Larson. Impact of Government Subsidies on a Cellulosic Biofuel Sector with Diverse Risk Preferences toward Feedstock Uncertainty. *Energy Policy*. [Initial submitted]

**Sharma, B. P.**, T. E. Yu, B. C. English, and C. N. Boyer. Economic and Environmental Analysis of a Sustainable Jet Fuel Sector: A Game-theoretic Perspective. *Energy Economics*. [Initial submitted]

## **RESEARCH AND TEACHING INTERESTS**

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Natural resource economics  
Economics of renewable energy  
Payments for ecosystem services  
Spatial economics/econometrics  
Supply-chain logistics/economics  
Advanced microeconomic theory

## **TECHNICAL COMPETENCIES**

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Statistical software: SPSS, Stata, MATLAB, R, EViews  
Optimization software: GAMS  
Geospatial software: ArcGIS Desktop Application  
Biogeochemical modeling: DayCent

## **LEADERSHIP SKILLS**

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Executive Committee Secretary for the Nepalese Student Association at the University of Tennessee (UTNSA) for the academic year 2015/16

## **PROFESSIONAL MEMBERSHIPS**

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Agricultural and Applied Economics Association (AAEA)  
Association of Environmental and Resource Economists (AERE)  
Southern Economics Association (SEA)

## REFERENCES

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Tun-Hsiang Edward Yu, Associate Professor  
Department of Agricultural & Resource Economics  
The University of Tennessee, Knoxville  
2621 Morgan Circle, Knoxville, TN 37996  
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