

Patrick S. Ward, Ph.D.

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Research Interests:

Agricultural development, technology adoption, behavioral economics, risk and uncertainty, production economics, information economics.

Education:

Ph.D. Agricultural Economics, Purdue University (2011).

M.A. Economics, Indiana University-Purdue University at Indianapolis (2007).

B.S. Financial Counseling and Planning, Purdue University (2002).

Employment:

International Food Policy Research Institute (IFPRI), New Delhi (5/2012 - 3/2016); Washington, DC (3/2016 - present)

Research Fellow I/II: April 2014—present

Postdoctoral Fellow/Associate Research Fellow: April 2012—April 2014

International Center for Climate Governance (ICCG), Venice, Italy

Visiting Researcher: November 2011—March 2012

Purdue University, Department of Agricultural Economics, West Lafayette, IN, USA

Research Assistant: January 2008—October 2011

Teaching Assistant: August 2009—May 2010

Graduate Instructor: June 2010—August 2010

Research:

Publications

Refereed journals

1. **Ward, Patrick S.**, David L. Ortega, David J. Spielman, Neha Kumar, Sumedha Minocha. "Demand for complementary financial and technological tools for managing drought risk," accepted for publication in *Economic Development and Cultural Change*.
2. Arora, Anchal, Sangeeta Bansal, and **Patrick S. Ward**. "[Do farmers value rice varieties tolerant to droughts and floods? Evidence from a discrete choice experiment in Odisha, India](#)," accepted for publication in *Water Resources and Economics*.

3. **Ward, Patrick S.** and Simrin Makhija (2018). "New modalities for managing drought risk in rainfed agriculture: Evidence from a discrete choice experiment in Odisha, India," *World Development* 107:163–175.
4. Bell, Andrew R., Jennifer Zavaleta, Frazer Mataya, and **Patrick S. Ward** (2018). "Do as they did: peer effects explain adoption of conservation agriculture in Malawi," *Water* 10(51):1-16.
5. **Ward, Patrick S.**, Andrew R. Bell, Klaus Droppelmann, and Tim Benton (2018). "Early adoption of conservation agriculture practices: Understanding partial compliance in programs with multiple adoption decisions," *Land Use Policy* 70: 27–37.
6. Spielman, David J., **Patrick S. Ward**, Deepthi E. Kolady, and Harun-Ar-Rashid (2017). "Public incentives, private investment, and outlooks for hybrid rice in Bangladesh and India," *Applied Economics and Policy Perspectives* 39(1): 154–176.
7. **Ward, Patrick S.** and Gerald E. Shively (2017). "Disaster risk, social vulnerability and economic development," *Disasters* 41(2): 324–351.
8. Bell, Andrew Reid, **Patrick S. Ward**, Mary E. Killilea, and Md. Ehsanul Haque Tamal (2016). "Real-time social data collection in rural Bangladesh via a 'microtasks for micropayment' platform on Android smartphones," *PLoS ONE* 11(11): e0165924.
9. Bell, Andrew R., **Patrick S. Ward**, and Md. Azeem Ali Shah (2016). "Increased water charges improve efficiency and equity in an irrigation system," *Ecology and Society* 21(3): 23.
10. **Ward, Patrick S.**, Andrew R. Bell, Gregory M. Parkhurst, Klaus Droppelmann, and Lawrence Mapemba (2016). "Heterogeneous preferences and the effects of incentives in promoting conservation agriculture in Malawi," *Agriculture, Ecosystems & Environment* 222: 67–79.
11. **Ward, Patrick S.** (2016). "Transient poverty, poverty dynamics and vulnerability to poverty: An empirical analysis using a balanced panel from rural China," *World Development* 78: 541–553.
12. Ortega, David L. and **Patrick S. Ward** (2016). "Information processing strategies and the effects of framing in developing country choice experiments: Results from rice farmers in India," *Agricultural Economics* 47: 493–504.
13. **Ward, Patrick S.** and Vartika Singh (2015). "Using field experiments to elicit risk and ambiguity preferences: Behavioral factors and the adoption of new agricultural technologies," *Journal of Development Studies* 51(6): 707–724.
14. **Ward, Patrick S.** and Valerien O. Pede (2015). "Capturing social network effects in technology adoption: The spatial diffusion of hybrid rice in Bangladesh," *Australian Journal of Agricultural and Resource Economics* 59(2): 225–241.
15. **Ward, Patrick S.** and Gerald E. Shively (2015). "Migration and land rental as responses to income shocks in rural China," *Pacific Economic Review*, 20(4): 511–543.
16. Bell, Andrew Reid, M. Azeem Ali Shah and **Patrick S. Ward** (2014). "Reimagining cost recovery in Pakistan's irrigation system through willingness-to-pay estimates for irrigation water from a discrete choice experiment," *Water Resources Research* 50(8): 6679–6695.
17. **Ward, Patrick S.**, David L. Ortega, David J. Spielman, and Vartika Singh (2014). "Heterogeneous preferences for drought-tolerant rice: Evidence from Bihar, India," *World Development* 64: 125–139.
18. **Ward, Patrick** (2014). "Measuring the level and inequality of wealth: An application to China," *Review of Income and Wealth* 60(4): 613–635.
19. **Ward, Patrick S.**, Raymond J.G.M. Florax and Alfonso Flores-Lagunes (2014). "Climate change and agricultural productivity in Sub-Saharan Africa: A spatial sample selection model," *European Review of Agricultural Economics* 41(2): 199–226.
20. Spielman, David J., Deepthi E. Kolady and **Patrick S. Ward** (2013). "The prospects for hybrid rice in India," *Food Security* 5(5): 651–665.
21. **Ward, Patrick** (2013). "On the use of tradable development rights for reducing flood risk," *Land Use Policy* 31: 576–583.

22. **Ward, Patrick** and Gerald Shively (2012). "[Vulnerability, income growth and climate change](#)," *World Development* 40(5): 916–927.

Submitted or under final preparation for submission to refereed journals

1. Bell, Andrew R., Tim Benton, Klaus Droppelmann, Lawrence Mapemba, Oliver Pierson, and **Patrick S. Ward**. "Transformative change through Payments for Ecosystem Services (PES): A conceptual framework, and application to conservation agriculture in Malawi," *revise and resubmit*.
2. Tamal, Md. Ehsanul Haque, Andrew R. Bell, **Patrick S. Ward**, and Mary Killilea. "Data Descriptor: Social dynamics of short-term variability in key measures of household and community wellbeing in rural Bangladesh," *manuscript being prepared for submission*.
3. Bell, Andrew R., **Patrick S. Ward**, Lawrence Mapemba, Zephaniah Nyirenda, Wupe Msukwa, and Edwin Menamu. "Data Descriptor: Smart Subsidies for Catchment Conservation in Malawi," *submitted*.
4. **Ward, Patrick S.**, Simrin Makhija, and David J. Spielman. "Drought-tolerant rice, weather index insurance, and comprehensive risk management for smallholders: Evidence from a multi-year field experiment in India," *manuscript being prepared for submission*.
5. Hill, Ruth Vargas, Neha Kumar, Simrin Makhija, Nicholas Magnan, Francesca de Nicola, David J. Spielman, and **Patrick S. Ward**. "Ex ante and ex post effects of hybrid index insurance Bangladesh," *revised version submitted*.
6. Kouser, Shahzad, **Patrick S. Ward**, and David J. Spielman. "Farmer preferences for Cotton Leaf Curl Virus-resistant cultivars: Empirical evidence from Pakistan," *manuscript being prepared for submission*.
7. Gars, Jared, and **Patrick S. Ward** "Can differences in individual learning explain patterns of technology adoption? Evidence on heterogeneous learning patterns and hybrid rice adoption in Bihar, India," *manuscript being prepared for submission*.
8. Ortega, David L., **Patrick S. Ward**, and Vincenzina Caputo. "Understanding information processing heuristics to target development interventions: The case of drought risk management interventions in Bangladesh," *revise and resubmit*.
9. Bell, Andrew R., **Patrick S. Ward**, Muhammad Ashfaq, and Stephen Davies. "Valuation and aspirations for drip irrigation in Punjab, Pakistan," *submitted*.
10. Gars, Jared, **Patrick S. Ward**, Ram Fishman, Avinash Kishore, and Yoav Rothler. "Can information help reduce imbalanced application of fertilizers in India? Experimental evidence from Bihar," *manuscript being prepared for submission*.

IFPRI Discussion Papers

1. **Ward, Patrick S.**, Simrin Makhija, and David J. Spielman (2017). "[Drought-tolerant rice, weather index insurance, and comprehensive risk management for smallholders: Evidence from a multi-year field experiment in India](#)", International Food Policy Research Institute (IFPRI) Discussion Paper 01679.
2. Bell, Andrew R., **Patrick S. Ward**, Muhammad Ashfaq, and Stephen Davies (2017). "[Can agricultural aspirations influence preferences for new technologies? Cropping systems and preferences for high-efficiency irrigation in Punjab, Pakistan](#)", International Food Policy Research Institute (IFPRI) Discussion Paper 01636.
3. Hill, Ruth Vargas, Neha Kumar, Nicholas Magnan, Simrin Makhija, Francesca de Nicola, David J. Spielman, and **Patrick S. Ward** (2017). "[Insuring against droughts: Evidence on agricultural intensification and index insurance demand from a randomized evaluation in rural Bangladesh](#)", International Food Policy Research Institute (IFPRI) Discussion Paper 01636.
4. Gars, Jared and **Patrick S. Ward** (2016) "[The role of learning in technology adoption: Evidence on hybrid rice adoption in Bihar, India](#)", International Food Policy Research Institute (IFPRI) Discussion Paper 01630.
5. **Ward, Patrick S.** and Simrin Makhija (2016). "[New modalities for managing drought risk in rainfed agriculture: Evidence from a discrete choice experiment in Odisha](#)", International Food Policy Research Institute (IFPRI) Discussion Paper 01563.

6. **Ward, Patrick S.**, Andrew R. Bell, Klaus Droppelmann, and Tim Benton (2016). [“Understanding compliance in programs promoting conservation agriculture in Malawi”](#), International Food Policy Research Institute (IFPRI) Discussion Paper 01530.
7. Fishman, Ram, Avinash Kishore, Yoav Rothler, **Patrick S. Ward**, Shankar Jha, and R.K.P. Singh (2016). [“Can information help reduce imbalanced application of fertilizers in India? Experimental evidence from Bihar”](#), International Food Policy Research Institute (IFPRI) Discussion Paper 01517.
8. **Ward, Patrick S.**, Andrew R. Bell, Gregory M. Parkhurst, Klaus Droppelmann, and Lawrence Mapemba (2015). [“Heterogeneous preferences and the effects of incentives in promoting conservation agriculture in Malawi”](#), International Food Policy Research Institute (IFPRI) Discussion Paper 01440.
9. **Ward, Patrick S.**, David J. Spielman, David L. Ortega, Neha Kumar, and Sumedha Minocha (2015). [“Demand for complementary financial and technological tools for managing drought risk”](#), International Food Policy Research Institute (IFPRI) Discussion Paper 01430.
10. Arora, Anchal, Sangeeta Bansal, and **Patrick S. Ward** (2015). [“Eliciting farmers’ valuation for abiotic stress-tolerant rice in India”](#), International Food Policy Research Institute (IFPRI) Discussion Paper 01409.
11. **Ward, Patrick S.** and Vartika Singh (2014). [“Risk and ambiguity preferences and the adoption of new agricultural technologies: Evidence from field experiments in rural India”](#), International Food Policy Research Institute (IFPRI) Discussion Paper 01324.
12. **Ward, Patrick S.**, David L. Ortega, David J. Spielman and Vartika Singh (2013). [“Farmer preferences for drought tolerance in hybrid versus inbred rice: Evidence from Bihar, India”](#), International Food Policy Research Institute (IFPRI) Discussion Paper 1307.
13. Spielman, David J., Deepthi Kolady, **Patrick Ward**, Harun-Ar-Rashid, and Kajal Gulati (2012). [“Public Expenditures, Private Incentives, and Technology Adoption: The Economics of Hybrid Rice in South Asia”](#), International Food Policy Research Institute (IFPRI) Discussion Paper 01233.

Research notes/briefs

1. Singh, Vartika and **Patrick S. Ward** (2018). [“Challenges in implementing India’s Aadhar-enabled fertilizer management system.”](#) CSISA Research Note No. 11. Published online.
2. Singh, Vartika, **Patrick S. Ward**, and Shweta Gupta (2018). [“Who are the entrepreneurs? A case for accelerated service economy for agricultural machinery in Odisha.”](#) CSISA Research Note No. 10. Published online.
3. **Ward, Patrick S.**, David L. Ortega, David J. Spielman, and Vartika Singh (2014). [“Farmer Preferences for Drought Tolerance in Inbred and Hybrid Rice: Evidence from Bihar, India.”](#) CSISA Research Note No. 5. Published online.
4. **Ward, Patrick S.** (2012). [“Can Tradable Development Rights be used to Manage Land and Reduce Flood Risks?”](#) *Reflections*. International Center for Climate Governance. Published online.
5. **Ward, Patrick S.** (2012). [“Review of the Key Findings from the IPCC Special Report on Managing the Risks of Extreme Events.”](#) *Reflections*. International Center for Climate Governance. Published online.
6. **Ward, Patrick S.** (2012). [“Opportunities for Sustainable Agricultural Development Through Conservation.”](#) *Reflections*. International Center for Climate Governance. Published online.
7. **Ward, Patrick S.** (2011). [“Can Countries Use Energy Consumption to ‘Grow’ Out of Being Vulnerable to Climate Extremes?”](#) *International Climate Policy & Carbon Markets* 17, pp. 7-8.

Electronic datasets

1. Pede, Valerien O., Vijesh Krishna, Nils Teufel, **Patrick S. Ward**, Takashi Yamano, Arindam Sammadar, David J. Spielman, Surabhi Mittal, Thelma Paris, Dhiraj Singh, Vartika Singh, Subhash Ghimire, and Meerah Mehrotra (2013). [Cereal Systems Initiative for South Asia \(CSISA\) Baseline Household Survey \(2010-2011\)](#). Published electronically. IFPRI Dataverse.
2. IFPRI (2014). [Farmers’ preferences for abiotic stress tolerance in hybrid versus traditional rice](#). Published electronically. IFPRI Dataverse.

Research in progress or under preparation

In progress

1. "Intrahousehold valuation, preference heterogeneity, and demand of an agricultural technology in Bihar, India" (with Kajal Gulati, Travis Lybbert, and David J. Spielman).
2. "Confidence and information usage: Evidence from Bihar, India" (with Jared Gars, Avinash Kishore, Ram Fishman, and Yoav Rothler).
3. "High frequency measurement of subjective wellbeing: Can we measure satisfaction with life? (with Helen Adams, Andrew R. Bell, and Md. Ehsanul Haque Tamal).
4. "Dynamical systems theory for transformative change: a conceptual framework for Payments for Ecosystem Services" (with Andrew R. Bell, Tim G. Benton, Klaus Droppelmann, Lawrence Mapemba, and Oliver Pierson)
5. "Leveraging network externalities to promote soil conservation and ecosystem services: A randomized evaluation of the impacts of agglomeration payments on the diffusion of conservation agriculture in the Shire River Basin in southern Malawi" (with Andrew R. Bell, Lawrence Mapemba, Klaus Droppelmann, and Tim Benton).
6. "Bundling technology with insurance: Evidence from a randomized evaluation in Odisha, India" (with David J. Spielman and Simrin Makhija).

Studies under preparation

1. "Options for improved targeting of mechanization subsidies to enhance the service economy in Odisha" (with Simrin Makhija, Shweta Gupta, and Vartika Singh)
2. "Behavioral constraints to the adoption of nutrition-sensitive food production systems" (with Muzna Alvi, Simrin Makhija, Neha Kumar, and David J. Spielman)
3. "Improving the conveyance of information to facilitate behavioral change: The case of fertilizer recommendations in Bihar and Odisha, India" (with Vartika Singh)
4. "Assessing the effectiveness of India's fertilizer subsidy reforms: A process evaluation of the Aadhar-enabled fertilizer management program in India" (with Vartika Singh)
5. "Market segmentation and improved fertilizer policies in Nepal" (with Srinivas Gautam, David Guereña, and Vartika Singh)

Recent Conference and Seminar Presentations:

1. "Ex ante and ex post effects of hybrid index insurance in Bangladesh." Agricultural & Applied Economics Association Annual Meeting (Chicago, IL, USA), July 2017 (Selected presentation).
2. "Insuring against droughts: Evidence on agricultural intensification and insurance demand from a randomized evaluation in rural Bangladesh." Northeastern Agricultural and Resource Economics Association Annual Meeting (Washington, DC), June 2017 (Selected presentation).
3. "Demand for a comprehensive risk management product in rainfed production systems: Evidence from a multi-year field experiment in Odisha, India." Northeastern Agricultural and Resource Economics Association Annual Meeting (Washington, DC), June 2017 (Selected presentation delivered by Simrin Makhija).
4. "Insuring against droughts: Evidence on agricultural intensification and insurance demand from a randomized evaluation in rural Bangladesh." United States Department of Agriculture Economic Research Service seminar, March 2017 (Invited presentation).
5. "Insuring against droughts: Evidence on agricultural intensification and insurance demand from a randomized evaluation in rural Bangladesh." University of Georgia, Department of Agricultural and Applied Economics seminar, March 2017 (Invited presentation).

6. "Early adoption of conservation agriculture practices: Understanding partial compliance in programs with multiple adoption decisions." African Association of Agricultural Economists Annual Meeting (Addis Ababa, Ethiopia), September 2016 (Invited presentation).
7. "Can information help reduce imbalanced application of fertilizers in India? Experimental evidence from Bihar." International Food Policy Research Institute (Washington, DC, USA), Environment and Production Technology Division Brown Bag Seminar, August 2016 (Invited presentation).
8. "Early adoption of conservation agriculture practices: Understanding partial compliance in programs with multiple adoption decisions." Agricultural & Applied Economics Association Annual Meeting (Boston, MA, USA), August 2016 (Selected presentation).
9. "Early adoption of conservation agriculture practices: Understanding partial compliance in programs with multiple adoption decisions." 20th Annual Conference of of the International Consortium for Applied Bioeconomic Research (Ravello, Italy), June 2016 (Selected presentation)
10. "New modalities for managing drought risk in rainfed agriculture: Evidence from a discrete choice experiment in Odisha, India." 20th Annual Conference of of the International Consortium for Applied Bioeconomic Research (Ravello, Italy), June 2016 (Selected presentation)
11. "Ensuring sustainable food production systems in South Asia's transforming rural economies." George Washington University (Arlington, VA, USA), June 2016 (Invited lecture).
12. "Can information help reduce imbalanced application of fertilizers in India? Experimental evidence from Bihar." Michigan State University (East Lansing, MI, USA), April 2016 (Invited presentation).

Professional Activities:

Association memberships and participation

Member, Agricultural & Applied Economics Association (AAEA, 2008–Present), International Association of Agricultural Economists (IAAE, 2009–Present), South Asian Network for Development and Environmental Economics (SANDEE, 2011–Present), Agricultural Economics Society (AES, 2015–present).

Selected Participant–Belpasso International Summer School in Environmental and Resource Economics, 2011 (Belpasso, Sicily, Italy).

Service

Reviewer for: *Agricultural Economics*, Agricultural and Applied Economics Association (2014–2017 AAEA Annual Meetings), *American Journal of Agricultural Economics*, *Australian Journal of Agricultural and Resource Economics*, *Climatic Change*, *European Review of Agricultural Economics*, *Food Policy*, *Food Security*, HarvestPlus Working Paper Series, International Association of Agricultural Economists (2015 Triennial International Conference of Agricultural Economists), *Journal of Agricultural Economics*, *Journal of Development Studies*, *Journal of Environmental & Policy Planning*, *Journal of South Asian Development*, *Land Economics*, *Land Use Policy*, *Natural Resources Forum*, *Population and Environment*, *Resource and Energy Economics*, *Review of Income and Wealth*, *Sustainability*, and *World Development*.

Local Organizing Committee–IVth World Conference of the Spatial Econometrics Association, 2010.

Agricultural and Applied Economics Association (AAEA) Employment Services Committee, 2010–2013 (3 yr. appointment)

Cereal Systems Initiative for South Asia (CSISA) India Management Team and Country Coordinating Committee, 2012–present.

International Food Policy Research Institute (IFPRI) Workplace Committee, Member, 2016–present.

International Food Policy Research Institute (IFPRI) Institutional Review Board (IRB), Member, 2016–present.

Honors, Awards, & Fellowships:

Selected participant in American Enterprise Institute's Emerging Scholar's Workshop in Agriculture and Food Economics

Recipient of N.J. Yaraswy Memorial Best Paper Award at the 4th International Conference on Applied Econometrics (ICAE-IV) organized by IBS Hyderabad in collaboration with the Indian Econometric Society, 2014.

AAEA Young Professional and Graduate Student Travel Grant, 2010 and 2011.

Committee for the Education of Teaching Assistants (CETA) Teaching Award, Purdue University, 2011.

Purdue Climate Change Research Center (PCCRC) Travel Grant, 2011.

Visiting Research Fellowship, International Center for Climate Governance (ICCG), 2011-2012.

First Prize, International Food Policy Research Institute Strategic Innovations Fund Postdoctoral Competition (with Avinash Kishore), 2014.

Computer Skills:

Expertise in R, Stata, NLOGIT, L^AT_EX

Proficiency in LIMDEP, Matlab, ArcMap

Familiarity with GAMS, GEMPack (GTAP)

References:

Available upon request