JAESEOK HWANG

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Summary: Ph.D. candidate in Applied Economics with deep experience in causal inference and geo-spatial analysis. Built ML pipelines in R and Python to estimate and predict U.S. farm productivies across diverse weather and market conditions.

EXPERIENCE (Ph.D Research Assistant)

Data Intensive Farm Management (USDA NRCS) Sep 2020 – Present

- Developed geospatial data pipelines for a public-facing analytics platform (difm.farm)
- Collaborated with Oracle Cloud engineers to implement scalable data infrastructure
- Analyzed farm productivity across 100+ commercial farms in 16 states
- Applied machine learning models using PyTorch, scikit-learn (Python),and R6, caret (R)

Center for the Economics of Sustainability (UIUC) Jan 2021 – Present

- Simulated sustainable and profitable farm models
- Integrated economic and agronomic data pipelines for large-scale scenario analysis

Advanced Ag Alliance (with Cornell University) Jan 2019 – Dec 2019

- Conducted data analysis on field experiments to estimate optimal hybrid seeding and fertilizer application
- Collaborated with crop scientists at Cornell University on experimental design and result interpretation

PUBLICATION

Bullock, D., Mieno, T., & Hwang, J. (2020). *Precision Agriculture*, 21(5), 1027–1044. DOI

- *The Value of Conducting On-Farm Field Trials Using Precision Agriculture Technology.*

WORKING PAPERS

Reproducible R & Python Code: github.com/jaeseokh

Leveraging Multi-Field On-Farm Experiment Data: Externalities in Collected Data
- Examines the broader economic value and unintended effects of multi-field precision experiments
- Demonstrates external validity using harmonized datasets across 100+ farms

Evaluating the Profitability of Corn Seeding Decisions
- Estimates and validates growers' input decisions and optimizes future recommendations

Can On-Farm Subplot Experiments Improve Regional Nitrogen Decisions? A Distributional Perspective
- Estimated higher moments and yield distributions using GAM and maximum entropy methods
- Showed subplot data improves EONR accuracy under varying precipitation compared to field-level aggregation

Informing Site-Specific Input Management in South Africa Using On-Farm Experimentation (M. Delport et al. 2025)
- Led data management, reproducibility workflows, and statistical analysis across all projects

EDUCATION

University of Illinois at Urbana-Champaign Expected Aug. 2025
Ph.D. Agricultural & Applied Economics

- Dissertation: U.S. commercial crop and input allocation analysis under spatial and weather uncertainty

University of Illinois Urbana-Champaign May 2020
M.A. Agricultural & Applied Economics

- Focus on empirical policy evaluation, statistics, and environmental economics

Sogang University Aug. 2013, South Korea
B.S. Economics

SELECTED PRESENTATIONS

International Conference for On-farm Precision Experimentation Jan. 2024 / Brownsville, TX

- Title: Shape of Yield Distribution: County-Level vs Field-Level Analysis

6th Agri-Tech Economics Symposium Sep. 2023 / Newport, UK

- Title : Estimate the Accurate Profitability of U.S. Corn Seeding Rate: How Accurate is the Farmer's Decision?

5th Agri-Tech Economics Symposium Sep. 2022 / Newport, UK

- Title: Economic Externality from the Shared Field Information and Data

Cyber-Infrastructure Development Meeting for DIFM Jan. 2023 / Corpus Christi, TX

- Title : Value of Multiple Field Experiment Data: Insight from Information Overflow

TECHNICAL SKILLS

Programming:	Python (advanced), R (expert), SQL, Shell, LaTeX
Data Science & ML:	PyTorch, scikit-learn, Bootstrap, Causal inference, Bayesian modeling
Econometrics:	Panel data, Treatment effect estimation, Simulation-based inference
Geospatial:	GIS pipelines with R and QGIS; Spatial econometrics; Satellite data integration
Tools & Workflow:	GitHub, Jupyter, Quarto, VS Code, RStudio, Oracle Cloud, SQL
Visualization:	ggplot2, matplotlib, Quarto dashboards, automated PDF/HTML reporting