

Matthew B. Espe

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Data Science Initiative
Shields Library
University of California - Davis
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Dept. of Plant Sciences
Plant Environmental Sciences
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Education

| | | |
|-----------|--|---|
| 2014–2016 | PhD in Horticulture and Agronomy <i>conc: Agroecology</i> | University of California - Davis <i>GPA: 4.00</i> |
| 2012–2015 | MSc in Horticulture and Agronomy <i>conc: Agroecology</i> | University of California - Davis <i>GPA: 4.00</i> |
| 2002–2008 | BSc in Horticulture <i>conc: Horticulture Science - Magna Cum Laude</i> | Colorado State University <i>GPA: 3.96</i> |
| 2002–2008 | BA in International Studies <i>conc: Asian Studies - Magna Cum Laude</i> | Colorado State University <i>GPA: 3.96</i> |

Professional Experience

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|--------------|---|------------------|
| 2017–present | Post-doctoral researcher <i>Data Science Initiative, UC Davis</i> Create new data science tools to enable researchers to collect, manage, and manipulate data in new and more efficient means. Teach data science best practices, programming languages, and existing techniques and technologies. Collaborate with interdisciplinary teams on scientific research. | <i>Davis, CA</i> |
| Spring 2017 | Lead Instructor <i>Science and Technology Studies, UC Davis</i> Lead instructor for STS198: Data Sense and Critical Thinking using R, an upper-division undergraduate course introducing students to the basic concepts of programmatic exploration, error checking, and story-telling using real world examples and data. | <i>Davis, CA</i> |
| 2012–2016 | Graduate Student Researcher <i>Agroecology Lab, UC Davis</i> Investigated the drivers of yield variability in US rice production systems. Employed multiple methods, including mechanistic and statistical models utilizing large data sets collected from multiple sources. Statistical models focused on spatial and temporal variation in yields using data sets spanning 8 to 10 sites across 15+ years. | <i>Davis, CA</i> |

Computing Skills

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| Statistics | R, Stan , Python, SAS |
| Data | R, SQL , MS Excel, MS Access |
| General | bash, Git , Go, C/C++, fortran |
| Documents | GNU Emacs, knitr, markdown, MS Word, L^AT_EX |
| GIS | R , ArcMap, QGIS |
| OS | Linux, Windows, OSX |

proficient working knowledge

Publications

Published

- 2017 **Matthew B. Espe**, Jim E. Hill, Robert J. Hijmans, Kent McKenzie, Randall Mutters, Luis A. Espino, Michelle Leinfelder-Miles, Chris van Kessel, and Bruce A. Linquist. Point stresses during reproductive stage rather than warming seasonal temperature determine yield in temperate rice. *Global Change Biology*
- 2017 Aifen Tao, Reza Keshavarz Afshar, **Matthew B. Espe**, and Chengci Chen. Variation in yield, starch, and protein of dry peas grown across Montana. *Agronomy Journal*, 2017
- 2016 **Matthew B. Espe**, Haishun Yang, Kenneth G. Cassman, Nicolas Guilpart, Hussain Sharifi, and Bruce A. Linquist. Yield gap analysis of US rice production systems shows opportunities for improvement. *Field Crops Research*, 193:123–132, 2016
- 2016 **Matthew B. Espe**, Haishun Yang, Kenneth G. Cassman, Nicolas Guilpart, Hussain Sharifi, and Bruce A. Linquist. Estimating yield potential in temperate high-yielding, direct-seeded US rice production systems. *Field Crops Research*, 193:123–132, 2016
- 2016 Rongzhong Ye, **Matthew B. Espe**, Bruce A. Linquist, Sanjai J. Parikh, Timothy A. Doane, and William R. Horwath. A soil carbon proxy to predict CH₄ and N₂O emissions from rewetted agricultural peatlands. *Agriculture Ecosystems and the Environment*, 220:64–76, 2016
- 2015 **Matthew B. Espe**, Emilie Kirk, Chris van Kessel, William R. Horwath, and Bruce A. Linquist. Indigenous nitrogen supply of rice is predicted by soil organic carbon. *Soil Science Society of America Journal*, 79(2), 2015

In preparation (Data Science)

- 2017 Paul Baines, **Matthew B. Espe**, and Duncan Temple Lang. RCUDA: General programming facilities for GPUs in R. *Journal of Statistical Software. In Preperation*
- 2017 **Matthew B. Espe** and Duncan Temple Lang. Rteseract: A package for Optical Character Recognition (OCR) in R. *R Journal, In Preperation*, 2017

In preparation (Life Science)

- 2017 **Matthew B. Espe**, David McGill, Chris van Kessel, Kent McKenzie, and Bruce A. Linquist. Advances in rice grain yield are offset by yield erosion over time. *In Preperation*, 2017
- 2017 Myfanwy E. Johnston, Anna E. Steel, **Matthew B. Espe**, Ted Sommer, A. Peter Klimley, and David Smith. Survival of juvenile chinook salmon in the Yolo Bypass and North Sacramento Delta, California. 2017. *Submitted*
- 2017 **Matthew B. Espe** and Bruce A. Linquist. Poor air quality reduces solar radiation and yields in intensive rice production systems. *In Preperation*, 2017
- 2016 Hussain Sharifi, Robert Hijmans, **Matthew B. Espe**, and Bruce A. Linquist. Optimal estimation of phenological crop model parameters for rice (*Oryza sativa*). *Agronomy Journal*, *In revision*, 2017

Presentations

Data Science

- 2017 **Matthew B. Espe**. Optimized data workflow for the busy scientist. UC Davis Data Science Initiative Fall Workshop Series, 2017. *Workshop presenter*
- 2017 **Matthew B. Espe** and Duncan Temple Lang. Introduction to data cleaning using R and regular expressions. UC Davis Data Science Initiative Fall Workshop Series, 2017. *Workshop presenter*
- 2017 **Matthew B. Espe**. A gentle introduction to Bayesian inference, MCMC, and Stan. Data Science Initiative Workshop Series, 2017. *Oral presentation*
- 2016 **Matthew B. Espe**. Data management best practices: What I wish I knew my first year. Horticulture and Agronomy Graduate Group Seminar, 2016. *Oral presentation*
- 2016 **Matthew B. Espe**. Introduction to Stan, a probabilistic programming language for Bayesian inference. The Hacker Within - Davis, 2016. *Oral presentation*

Life Science

- 2016 **Matthew B. Espe**. Yield potential and opportunities in US rice production systems. Horticulture and Agronomy Graduate Group Seminar, 2016. *Oral presentation*
- 2016 **Matthew B. Espe**, Haishun Yang, Kenneth G. Cassman, Nicolas Guilpart, Hussain Sharifi, and Bruce A. Linquist. Calibration and validation of Oryza(v3) for simulation of yield potential in US rice production systems. Rice Technical Working Group Conference, 2016. *Oral presentation*
- 2016 **Matthew B. Espe**. Future directions of agriculture. PLS101: Agriculture and the Environment, 2016. *Guest lecture*
- 2015 **Matthew B. Espe**, Haishun Yang, Kenneth G. Cassman, Nicolas Guilpart, Hussain Sharifi, and Bruce A. Linquist. Calibration and validation of the Oryza(v3) rice model for US rice production. Rice Research Field Day, 2014. *Poster presentation*

Life Science (cont.)

- 2014 **Matthew B. Espe**, Emilie Kirk, Chris van Kessel, William H. Horwath, and Bruce A. Linquist. The AFRI rice project: Developing a strategy for rice in the Sacramento-San Joaquin Delta. The Bay Delta Science Conference, 2014. *Oral presentation*
- 2014 **Matthew B. Espe**, Emilie Kirk, Chris van Kessel, William H. Horwath, and Bruce A. Linquist. Soil carbon provides nitrogen in continuously flooded rice paddy soils dominated by peat. Horticulture and Agronomy Seminar Series, 2014. *Oral presentation*
- 2014 **Matthew B. Espe**, Emilie Kirk, Chris van Kessel, William H. Horwath, and Bruce A. Linquist. The influence of soil total carbon on yield and nitrogen uptake in continuously flooded rice paddy soils dominated by peat. Rice Technical Working Group Conference, 2014. *Poster presentation*

Referee/Reviewer

Global Change Biology
Field Crops Research
European Journal of Agronomy
Soil Science Society of America Journal
Agricultural and Forest Meteorology

Teaching

- Spring 2017 Instructor: STS198 - Data Sense and Exploration
- Winter 2016 Teaching assistant: PLS101 - Agriculture and the Environment
- Fall 2014 Teaching assistant: PLS206 - Multivariate Analysis of Agricultural and Ecological Data (*graduate level*)
- Winter 2013 Teaching assistant: BIS2C - Introduction to Phylogeny and the Tree of Life

Service

- 2015–2016 Affiliate, UC Davis Data Science Initiative
- 2015–2016 Member, Search committee for faculty hire - Crop Modeler
- 2015–2016 Member, Horticulture and Agronomy admissions committee
- 2015–2016 Member, Department of Plant Sciences website committee

Awards

- 2013–2016 Department of Plant Sciences Graduate Research Fellowship
- 2015–2016 Golden International Fellowship
- 2014–2016 Jastro Shields Graduate Research Fellowship
- 2014 Nor-Cal United Growers Fellowship
- 2013 Horticulture and Agronomy Fellowship
- 2004 US State Department Benjamin A. Gilman Fellowship

References

Duncan Temple Lang

Core Developer

The R Project for Statistical Computing

Director

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Professor

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Chris van Kessel

Department Chair

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Editor in Chief

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Bruce A. Linquist

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