Joseph (Jay) Weeks, Ph.D.

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QUALIFICATIONS SUMMARY

- Soil/data scientist with a farming background and expertise in the impact of farm management practices on environmental outcomes (e.g., greenhouse gas emissions, soil health, etc.)
- Seven years of experience in wet chemical and synchrotron-based soil research
- Well-versed in soil data collection, validation, QA/QC, analysis, visualization, and modeling (e.g., DAYCENT, machine learning, remote sensing, soil sampling, etc.)
- Proven ability to lead teams in taking novel, abstract, complex ideas and transforming them into tangible products and solutions that drive real business value
- Proficient in experimental design, statistical analysis/interpretation, technical scientific writing, proposal writing, and communication to both technical and lay audiences
- Skills: Python, R, SQL, AWS, Git

EDUCATION

Ph.D. | **Soil and Environmental Chemistry** | 2019
Kansas State University | Manhattan, KS

B.S. | **Agricultural Sciences** | 2012
Cornell University | Ithaca, NY
magna cum laude, Dean's Award for Academic Excellence (Highest GPA in major upon graduation)

EXPERIENCE

Data Scientist | 2021 – 2024
Indigo Ag | Boston, MA

- Combined academic literature, domain expertise, and other sources to design, build, validate, and sell low greenhouse gas emitting and soil health promoting corn, soy, and winter wheat sourcing programs to clients (e.g., consumer packaged goods brands)
- Implemented machine learning and other statistical techniques to estimate life cycle greenhouse gas emissions from corn, soy, and winter wheat fields at field and regional scales
- Led the development of innovative methods and models to simulate potential program outcomes and target regions of highest potential business success and largest reduction in GHG emissions
- Communicated the value of regenerative agricultural practices and Indigo's programs through internal trainings, external stakeholder engagement, and technical science presentations

Soil Scientist / Data Manager | 2019 – 2021
Indigo Ag | Boston, MA

- Developed soil sampling/analysis protocols for the Carbon by Indigo program and executed experiments to support subsequent refinements to fill knowledge gaps
- Led the transformation of a disordered data collection endeavor into a well-functioning, quality-controlled system that delivered on business goals with a significantly reduced error rate
- Trained internal and external sampling teams on general soil science/health concepts and proper sampling techniques
- Managed relationships and contracts between soil analysis vendors and internal stakeholders

Technical Project Associate | 2018 – 2019
Kanas State University – Global Food Systems Initiative | Manhattan, KS

- Produced and co-hosted the "Something to Chew On" podcast interviewing faculty members and visiting scholars to explore cutting-edge research and ideas related to food systems
- Other responsibilities included workshop development/logistics and facilitation of cross-disciplinary networking amongst university researchers

Graduate Research Assistant, Ph.D. | 2012 – 2019
Kansas State University – Soil and Environmental Chemistry | Manhattan, KS

- Researched phosphorus fertilizer reaction chemistry in P fixing soils to uncover mechanisms that can be leveraged to produce practices or products that improve crop P use efficiency
- Investigated unconventional methods to alter phosphorus chemistry for improved plant uptake on calcium-rich and tropical soils
- Applied soil wet chemical and synchrotron-based analysis techniques to determine nutrient fate and transport as it relates to agricultural applications
- Explored lead exposure pathways and risks to urban gardeners
- Managed soil chemistry laboratory operations including coordination of activities with partnering researchers, analytical instrument maintenance, and materials acquisition
- Successfully co-authored small grants to obtain funding from industry/Fluid Fertilizer Foundation and proposals for allocated synchrotron beamtime at national laboratories

Craft Bartender | 2013 – 2018
4 Olives Wine Bar / 801 Fish / Wine Dive and Kitchen | Manhattan / Leawood, KS

- Guided guest experiences in several fine dining restaurants focusing on pairing handcrafted cocktails and wines with fare of various influence
- Conducted training for staff members on wine and spirit production techniques and styles

Laboratory Technician | Summers of 2010 – 2011
Cornell University - Soil Health Team | Ithaca, NY

- Measured physical indicators of soil health to assist growers in managing their crop production systems more efficiently

Farmhand | Summers 2004 – 2011
Wagner Farms | Niles, NY

- Operated farm field machinery to produce feed for dairy cattle.
- Performed routine maintenance and repairs on a variety of equipment.

PUBLICATIONS

1) **Weeks, J.**, G.M. Hettiarachchi, E. Santos, and J. Tatarko. 2021. Potential human inhalation exposure to soil contaminants in urban gardens on brownfields sites– a breath of fresh air? J. Environ. Qual. 50:782-790.

2) **Weeks, J.** and G.M. Hettiarachchi. 2020. Source and formulation matter: new insights into phosphorus fertilizer fate and transport in mildly calcareous soils. Soil Sci. Soc. Am. J. 84:731-746.

3) **Weeks, J.** and G.M. Hettiarachchi. 2019. A review of the latest in phosphorus fertilizer technology: Possibilities and pragmatism. J. Environ. Qual. 48:1300-1313.

4) **Weeks, J.** and G.M. Hettiarachchi. 2018. Can humic substances alter fertilizer reaction pathways in acid soils? Fluid Journal. 26:5-7.

5) **Weeks, J.** and G.M. Hettiarachchi. 2017. Blending MAP, APP reduces fluid fertilizer input costs. Fluid Journal. 25:12-16.

6) Vega, M., H.V. Kulkarni, N. Mladenov, K. Johannesson, G.M. Hettiarachchi, P. Bhattacharya, N. Kumar, **J. Weeks**, M. Galkaduwa, and S. Datta. 2017. Biogeochemical controls on the release and accumulation of Mn and As in shallow aquifers, West Bengal, India. Front. Environ. Sci. 5:29.

7) Montag, B.W.; M.A. Reichenberger; N. Edwards; P.B. Ugorowski; M. Sunder; **J. Weeks** and D.S. McGregor. 2015. Static sublimation purification process and characterization of LiZnP semiconductor material. J. Cryst. Growth. 419:133-137.

PATENTS

1) Campbell et al. 2024. Systems and methods for ecosystem credit recommendations. U.S. Patent 11,880,894, issued January 23, 2024.

2) Campbell et al. 2023. Systems and methods for ecosystem credit recommendations. U.S. Patent 11,830,089, issued November 28, 2023.

3) Campbell et al. 2023. Systems and methods for ecosystem credit recommendations. U.S. Patent 11,810,021, issued November 7, 2023.

SCIENTIFIC PRESENTATIONS

1) 2024. How high is your supply? Estimating field-level greenhouse gas emissions across the continental United States via remote sensing and machine learning. American Geophysical Union – Oral Session.

2) 2019. Should greater emphasis be placed on phosphorus fertilizer source selection to build better P management systems? ASA, CSSA and SSSA Annual International Meetings – Oral Session.

3) 2018. Do content, concentration and co-applicants spatially impact liquid phosphorus fertilizer fixation in a Brazilian oxisol? World Congress of Soil Science – Poster Session.
4) 2018. Can humic substances alter fertilizer phosphorus reaction pathways in soil? Great Plains Soil Fertility Conference (Denver, CO) – Poster Session.

5) 2017. In search of a solution to pollution: Improving phosphorus fertilizer use efficiency through simple formulation alterations. ASA, CSSA and SSSA Annual International Meetings – Oral Session.

6) 2016. Fixing phosphorus: considering cation complexing co-applicants to maintain phosphorus lability in calcareous soils. ASA, CSSA and SSSA Annual International Meetings – Oral Session.

7) 2015. Taking the next step: Exploration of naturally produced, organic compounds to alter the mobility and lability of soil elements. ASA, CSSA and SSSA Annual International Meetings – Oral Session.

8) 2014. Assessment of potential human inhalation exposure to soil trace elements resulting from agricultural activity on urban brownfields sites. ASA, CSSA and SSSA Annual International Meetings – Oral Session.

9) 2014. Increased urban gardening activity in the United States – A breath of fresh air? Soil in the City – Poster Session.

10) 2013. Assessing soil preparation techniques to improve portable XRF precision and recovery efficiency of lead in urban soils as compared to the EPA 3051 total soil digestion method. ASA, CSSA and SSSA Annual International Meetings – Oral Session.

HONORS

2018 – Wilford Gardner International Union of Soil Sciences (IUSS) Congress Fellow
2017 – Soil Science Society of America (SSSA) – Soil Chemistry Conveners Award
2017 – International Plant Nutrition Institute (IPNI) - Scholar Award
2017 – Sunset Zoo Science Communication Fellow
2017 – U.S. Borlaug Summer Institute on Global Food Security Fellow
2017 – ASA, CSSA, & SSSA Future Leader in Science
2016 – EPA Rainworks Challenge – Demonstration Project – 1st Place
2016 – N. American Colleges & Teachers of Agriculture Graduate Student Teaching Award
2015 – Roscoe Ellis Jr. Scholarship (Kansas State University Agronomy)
2015 – International Phytotechnologies Conference – 2nd place student presentation
2012 – Timothy R. Donoghue Graduate Scholar (Recruitment scholarship for top U.S. candidates)

TEACHING

Teaching Assistantship - Soils | Spring 2013-Fall 2015
Kansas State University | Manhattan, KS

- Supervisors: Dr. Stephen Thien & Dr. Colby Moorberg
- Instructed lab sections and review sessions, occasionally presented lectures
- Topics included soil physical, biological, and chemical properties along with appropriate management considerations

Teaching Assistantship - Soil Management for Sustainability | Spring 2012
Cornell University | Ithaca, NY

- Supervisor: Dr. Harold van Es
- Worked one-on-one with Dr. van Es assisting with lab setup, demonstrations, lectures, and administrative tasks for an intermediate-level soil management course
- Material ranged from physical, biological, and chemical soil properties to management techniques and progressive agricultural systems

Teaching Assistantship - Field Cropping Systems Lab | Fall 2010
Cornell University **|** Ithaca, NY

- Supervisor: Dr. Ralph Obendorf
- Assisted with laboratory setup, instruction, and quiz administration
- Main foci were plant identification, crop physiology, and system management as well as elementary research methods and tools