

Robert Wallace Sims

EDUCATION

Cornell University, College of Agriculture & Life Sciences | **B.S** in Plant Science | GPA 3.82 Expected May 2028
Concentration: Soil Chemistry | **Minors:** Philosophy, Mathematics | Humanities Scholars Program
Selected Coursework: General & Organic Chemistry, Environmental Chemistry, Materials Chemistry, Thermodynamics of Condensed Systems, Differential Equations, Linear Algebra, Applied Complex Analysis, Statistics and Data Science

RESEARCH EXPERIENCE

Enid-Martinez Lab, Cornell University, Ithaca, NY May 2026 – Current
Undergraduate Researcher

- Modeled molecular adsorption and desorption of PFAS and fluorinated pesticides on mineral, and polymer surfaces using ab-initio DFT simulations across Gaussian, Quantum ESPRESSO, VASP validated with experimental ATR-FTIR data
- Performed in-situ ATR-FTIR spectroscopy in a microfluidic adsorption system on synthesized thin-films that were characterized for consistency and reproducibility using advanced instruments at CCMR (XPS, LC-MS, NMR)
- Utilized chemometric techniques to structurally validate spectral data with DFT-predicted adsorption conformations
- Co-authoring 2 papers and a conference presentation on contaminant adsorption at mineral-polymer interfaces
- Undergoing intensive technical training under a senior post-doctoral mentor, learning advanced laboratory protocols and safety, complex equipment usage and troubleshooting, independent research methodologies and technical writing

Sustainable Cropping Systems Lab, Cornell University, Ithaca, NY May 2025 – September 2025
Research Assistant

- Executed standardized field/lab sampling protocols and processed data across 20 concurrent projects
- Built and maintained structured datasets in spreadsheets to support quality-controlled data entry and analysis
- Shadowed senior researchers to acquire knowledge and skills in sustainable cropping systems and agroecology
- Attended and participated in field days and conferences discussing relevant agroecological research

Soil Health Lab, Cornell University, Ithaca, NY December 2024 – September 2025
Student Lab Technician

- Performed independent lab analyses following strict protocols to ensure accurate, reproducible results
- Shadowed senior lab staff to acquire knowledge and skills in soil health analysis, soil science and experimentation
- Assisted growers in employing beneficial and sustainable land management decisions through soil analysis framework

LEADERSHIP EXPERIENCE

Anabel's Grocery, Cornell University, Ithaca, NY August 2025 – December 2025
Purchasing Coordinator

- Deepened my understanding of modern food-system supply chains and the challenges of running a value-driven business
- Redesigned purchasing operations and workflows to improve efficiency and document mission impact
- Practiced collaborative, non-hierarchical leadership, strengthening team-based operations skills
- Analyzed and improved purchasing systems and vendor relationships with local producers, driving process improvements

WORK EXPERIENCE

Hamlet Organic Gardens Farm, Brookhaven, NY June-August 2023/2024
Farm Laborer

- Applied soil and crop science principles to optimize agroecological health and crop yield
- Collaborated with a 12-person team in a physically demanding, safety-focused operation managing 20 acres of cropland

TECHNICAL SKILLS

Analytical/Computational Chemistry • Quantum ESPRESSO • ORCA • Gaussian • ATR-FTIR Spectroscopy •
Chemometrics (PCA, PLS, 2D-COS) • R • MATLAB • Python • Avogadro • Chimera • AutoCAD • QGIS • Microsoft Suite