COLLEGE OF AGRICULTURE AND LIFE SCIENCES
SCHOOL OF PLANT AND ENVIRONMENTAL SCIENCES
VIRGINIA TECH

Postdoc and Ph.D. Positions in Climate-Smart Agriculture at Virginia Tech

I am seeking **a Postdoctoral Researcher** and **a Ph.D. Student** to join my research group in the School of Plant and Environmental Sciences at Virginia Tech. Our group is dedicated to advancing climate-smart agriculture (CSA) by monitoring, assessing, and predicting agroecosystem dynamics (e.g., crop yield, greenhouse gas (GHG) emissions, and soil organic carbon (SOC)) under various environmental factors, such as climate change, agricultural management practices, rising CO_2 levels, land use change, and disturbances like droughts and heatwaves. Our overarching goal is to develop science-informed, actionable solutions to enhance food security, mitigate climate change, and promote sustainable and resilient agricultural systems. We approach our work using data-driven systems methods that integrate domain knowledge with process-based agricultural modeling, artificial intelligence (AI), geospatial data science, and big data analytics.

Position 1: Postdoctoral Researcher (AI-Driven Climate-Smart Agriculture)

This position offers an exciting opportunity to leverage cutting-edge technologies, such as AI, agroecosystem modeling, and model-data integration, to advance the implementation of CSA practices. Depending on the postdoc's interests and expertise, potential research topics include:

- Evaluating environmental outcomes (e.g., GHG emissions, SOC sequestration, yield, and nutrient loading) of CSA practices (e.g., cover cropping, biochar application, and reduced tillage).
- Optimizing CSA practices tailored to specific environmental conditions to maximize overall benefits.
- Short-term predictions of agroecosystem dynamics under different CSA practices to enable proactive interventions.

The postdoc will have the opportunity to pursue their own research interests in related fields, collaborate with multidisciplinary teams, and engage with stakeholders, including state implementers and farmers.

Required Qualifications:

- Ph.D. in agroecology, Earth and environmental sciences, soil science, geography, remote sensing, or a closely related field (**within 4 years after completing the PhD**)
- Experience in AI research and geospatial data processing
- Strong programming skills (e.g., Python, R, MATLAB, C++)
- Ability to conduct independent research and effectively disseminate findings

Preferred Qualifications:

- Experience with process-based modeling, data assimilation, and model-data integration
- Proficiency in handling large datasets, Google Earth Engine, or high-performance computing

Salary Information: $55K – $62K/year with full benefits (commensurate with experience)

Starting Date: After August 1, 2025 (flexible)

Position 2: Ph.D. Student (Agricultural Carbon Systems)

We are seeking a highly motivated and fully funded Ph.D. student to join our research group starting in **Fall 2025 or Spring 2026**. This position offers an exciting opportunity to explore innovative solutions to climate-smart agriculture through interdisciplinary research. The selected candidate will integrate field experiments, modeling approaches, and advanced analytical tools (e.g., AI and geospatial analysis) to advance our understanding of carbon dynamics and environmental sustainability in agricultural systems. The candidate will have the flexibility to shape their research direction based on their interests and expertise.

Potential areas of focus include (but are not limited to):

- Advancing AI and model-data integration for precision agriculture
- Monitoring, assessing, and predicting agroecosystem dynamics (e.g., yield, GHG emissions, SOC)
- Developing and evaluating mitigation and adaptation strategies in agriculture
- Investigating carbon dynamics, nutrient cycling, and soil health interactions within agroecosystems

Qualifications:

- A master's degree in a relevant field, such as agroecology, geography, soil science, Earth and environmental sciences, GIS, remote sensing, agronomy, hydrology, computer science, or a related discipline.
- Proficiency in programming languages (e.g., Python, R, Matlab, C++)
- Experience with machine learning/deep learning and process-based modeling is preferred

Application Deadline for Fall 2025 Admissions: January 5, 2025.

Application process:

Interested candidates are strongly encouraged to contact **Dr. Yongfa You (yongfayouau@gmail.com)** before the application with the following documents: 1) a brief description of research experience, expertise, and interests; 2) curriculum vitae; 3) academic transcripts; 4) contact information of three references

About Virginia Tech:

Virginia Tech, located in Blacksburg, Virginia, is a distinguished R1 research university ranked #51 among National Universities and #21 among Top Public Schools in the 2025 U.S. News & World Report rankings. Guided by its motto *Ut Prosim* (*That I May Serve*), Virginia Tech embraces a hands-on, transdisciplinary approach to education, preparing scholars to become innovative leaders and problem-solvers. As a comprehensive land-grant institution, the university enhances the quality of life locally and globally through a commitment to knowledge, discovery, and creativity.