



Postdoctoral opportunity

Understanding cover crop efficacy in the upper Midwest with agroecosystem simulation models

We seek a **postdoctoral scientist** to study how cover crops growing in various cropping systems affect carbon, nitrogen, phosphorus, and water dynamics. Many studies point to improved yields and soil/nutrient retention when cover crops are incorporated into annual cropping systems, but just as many indicate otherwise. The ecosystem state factors climate, organisms (including management), relief, parent material and time interact to shape cover crop efficacy. We must explore interactions between combinations of cover- and main-crops in a range of environmental settings, but to do so, existing agroecosystem simulation models must be parameterized, calibrated, and validated. We have compiled a dataset of many site-years to apply to this effort.

This is a 2-year project funded jointly by the UW's Center for Integrated Agricultural Systems (CIAS), the Michael Fields Agricultural Institute (MFAI), and a USDA NIFA Sustainable Agricultural Systems CAP grant. The post doc will join the Agroecosystem Research labs of Drs. Randy Jackson, Chris Kucharik, and Claudio Gratton and be part of a collaborative interdisciplinary team that includes several graduate students, research scientists, outreach specialists, and other faculty. The postdoc will use the extant cover crop dataset (compiled by Dr. Gregg Sanford) to calibrate and validate a state-of-the-art agroecosystem model (Agro-IBIS). Model runs from Agro-IBIS will be used to compare and contrast output from a widely used farm management tool (Snap-Plus). Finally, output from Agro-IBIS and Snap-Plus will feed a landscape decision support tool (SmartScape™) to test and explore cover crop efficacy for improving crop yields, soil health, and water quality in the upper Midwest. Results will be used to identify more effective cropping system management and inform new experiments.

Qualifications. Applicants must have strong leadership, critical thinking, and quantitative skills with an interest in agriculture, agroecosystem modeling, and investigating the impacts of changing land management and climate on ecosystem services. A background in agronomy, plant sciences, soil science, environmental biophysics, agroecology or a similar field is required. Experience with process-based ecosystem modeling and knowledge of common programming languages is required. Applications are encouraged from outstanding candidates who enjoy and work well in a collaborative team setting, have excellent communication skills, and a record of publishing in the peer-reviewed literature.

To apply. Please email a cover letter stating experiences and interests and a current curriculum vitae (CV) as a single PDF to Dr. Maggie Phillips (maggie.phillips@wisc.edu).

UW-Madison is an equal opportunity employer, and specifically invites and encourages applications from women and minorities. The Immigration Reform and Control Act of 1986 requires the University to verify the identity and work authorization of the successful applicant. Any offer of employment is contingent upon verification.