

# DataFEWSion Graduate Traineeship

## Innovations at the Nexus of Food Production, Renewable Energy & Water Quality

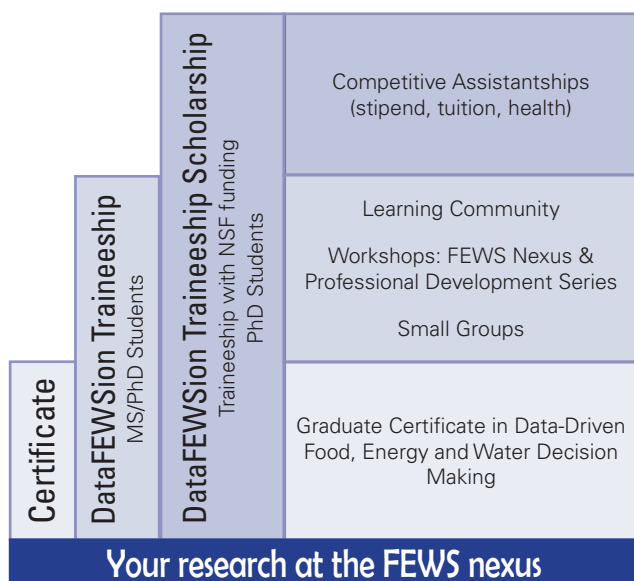
DataFEWSion is an interdisciplinary graduate traineeship focused on research at the nexus of Food, Energy and Water Systems (FEWS). The program provides students with data analytics and decision modeling knowledge combined with professional skills needed to address the complexities around the FEWS nexus, to produce implementable solutions for the real world.

### Benefits to Trainees

- Perform world-class interdisciplinary research
- Participate in a Graduate Learning Community of highly motivated and talented graduate students
- Develop technical expertise across disciplines with data science and decision modeling at the core
- Develop a knowledge base to address complex issues and effect change, with an awareness of social, political and economic impacts
- Develop communication skills to address a diverse audience from producers to policy makers to industry executives
- Prepare for career paths in academia, industry, NGOs, or entrepreneurship



### Traineeship



DataFEWSion program is structured to develop new leaders with technical knowledge, professional skills and cross-disciplinary communication. The key components of the Traineeship are:

- Research employing data analytics and decision modeling at the FEWS nexus.
- Graduate Learning Community:
  - Workshop series on understanding the issues, interacting with stakeholder and developing professional skills to implement innovations.
  - Small group engagement in interdisciplinary sharing, communication and peer review.
- Graduate certificate based on coursework in FEWS nexus issues; communication; entrepreneurship; data analytics & visualization; system modeling; and social science.

### How to Apply

Students interested in pursuing graduate study and professional training at the FEWS nexus are encouraged to explore the DataFEWSion website at [www.datafewsion.iastate.edu](http://www.datafewsion.iastate.edu). Admittance to the DataFEWSion Traineeship program is contingent upon acceptance to a relevant ISU MS or PhD program.

DataFEWSion Traineeship Scholarships are available to select PhD students, enrolled or enrolling to ISU. The financial package includes \$34,000 stipend, full tuition waiver and health insurance for one year. Consideration is limited to US citizens and permanent residents.

*Students from groups traditionally under-represented in science and engineering are especially encouraged to apply.*



# DataFEWSion Graduate Traineeship

## Data-driven Decisions for Sustainability

### Vision

Enhancing sustainable agriculture practices at the FEWS nexus by building a community of professionals who explore, develop and implement innovative decision making models, based on large and complex data sets.

Research technologies to increase agriculture's contributions to energy supply while reducing its negative impacts on water quality

Decision sciences to manage trade offs and promote best practices among diverse stakeholders

### Research Themes

Use of data science to increase crop productivity within the constraints of sustainable intensification

### Outcomes

**Innovative Products**  
relevant and immediately usable by stakeholders -- from producers and industry to policy makers and NGOs.

**Improved Agricultural Production**  
Closing the gap between intensified agricultural practices and environmental degradation.

**Emerging Professionals**  
with 21st century communications tools and an inclusive mindset.

**Synergistic Alliances**  
across disciplines that lead to innovative real world solutions.

### Leadership Team



Sarah Ryan, PI  
Industrial & Manufacturing Systems Engineering



Amy Kaleita, Co-PI  
Agricultural & Biosystems Engineering



Robert Brown, Co-PI  
Bioeconomy Institute



Sergio Lence, Co-PI  
Economics



Michelle Soupir, Co-PI  
Agricultural & Biosystems Engineering

### Graduate Degree Programs

The interdisciplinary focus of the traineeship makes it open to any degree program that is part of the nexus of Food Production, Renewable Energy or Water Quality

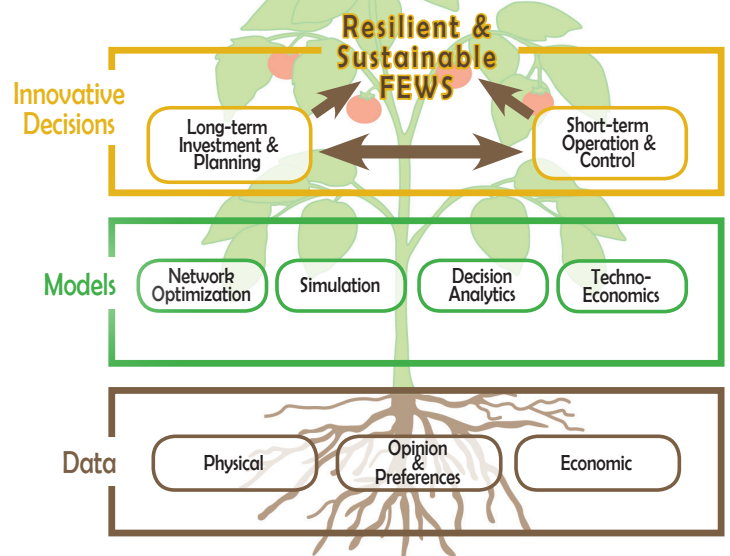
#### A partial list of Departments/Degree Programs

- Agronomy
- Biorenewable Resources & Tech.\*
- Economics
- Engineering (all programs)
- Environmental Science\*
- Natural Resources Eco. & Mgmt.
- Sociology
- Statistics
- Sustainable Agriculture\*

Please contact us if you are interested in exploring how the traineeship can fit within your program of interest.

\* *Interdepartmental Degrees*

### DataFEWSion Model



Sustainable provision of food, renewable energy and clean water requires understanding the interdependencies among the systems as well as the motivations and incentives of farmers, industry and rural policy makers. Effective innovations at the nexus of the food, energy and water systems (FEWS) will require data-rich system modeling with analytic capabilities for diverse types of data to provide decision tools to stakeholders.



The National Science Foundation Research Traineeship (NRT) program is designed to encourage the development and implementation of bold, new, potentially transformative, and scalable models for STEM graduate education training. The NRT program also seeks to catalyze and advance cutting-edge interdisciplinary research, and prepare STEM graduate students more effectively for multiple research and research-related career paths.