

Preparing the Next Generation of Scientists: A Transdisciplinary Approach

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Introduction

An important aspect of the Corn CAP has been preparing graduate students—the next generation of scientists—as transdisciplinary researchers and scholars. Over the past five years, many educational and professional development activities have been offered for students, including several webinar series on climate and agriculture; a graduate level course at The Ohio State University Stone Laboratory on Lake Erie; planning, leading, and evaluating climate camps and webinars; and presentation and publication opportunities.

These activities have provided unique opportunities for transdisciplinary learning and collaboration with faculty, graduate students, and postdoctoral associates. Evaluation of these activities provides information needed to continue to improve graduate students' experiences and will be useful in future planning in other regions of the country.

Graduate Student Roadmap

Project leaders and graduate students developed a “roadmap” that would guide and document graduate student activities. Components of the Roadmap include:

- Attend graduate seminar offered for CSCAP students
- Film a 5 minute video of your research for the team external website
- Attend a regional or national society meeting and present your CSCAP research
- Engage others through presentations at institutional-based events and seminars
- Submit a peer reviewed publication
- Complete the MOOC Course on Climate Change
- Join and participate in the LinkedIn Sustainable Corn Graduate Group

Profile of Next Generation Scientists

Students in the Corn CAP come from a diversity of natural, biological, and social science backgrounds including agronomy, economics, statistics, sociology, entomology, and crop sciences. Students have participated in annual Corn CAP meetings, conference calls, and collaborative opportunities with faculty across disciplines.

Involvement in the Sustainable Corn team to-date has included 85 graduate students (32% minority and 47% women) and 20 postdoctoral associates (75% minority and 10% women). Our team's current contingent includes 39 graduate students and 7 postdoctoral associates.

This amounts to a total of 3674 months of experience for all student and postdoctoral participants.



Publications, Theses, and Dissertations

To-date, approximately 70 journal articles have been published by graduate students and postdoctoral associates as lead or co-authors. More than 65 theses and dissertations have been written or are in the process of completion. Some examples include:

- *Measurement of drain flow, soil moisture, and water table to assess drainage water management.* (K.A. Brooks, Purdue University)
- *Effects of perennial and cover crops on hydrology in Iowa.* (R. Goeken, Iowa State University)
- *Long-term effect of crop rotation and tillage on soil properties.* (S. Zuber, University of Illinois)
- *A longitudinal panel study of participants' attitudes and behaviors towards transdisciplinary science* (L.M. Frescoln, Iowa State University)

Objectives and Methods

I am currently reviewing evaluation materials and working in collaboration with project faculty, staff, and graduate students to develop several journal articles on key findings. Additionally, I am preparing a survey of past and present students and postdoctoral associates in order to learn more about their experiences and accomplishments with the project, while discovering the ways in which their involvement with the project has contributed to their professional development.

Next Steps:

The survey will be implemented in early 2016. Faculty may also be surveyed to gain insight into their involvement and experiences working with graduate students. Evaluation findings from the survey and other educational components of the Corn CAP will be summarized for dissemination to researchers, Extension and outreach specialists, and educational planners.