

Improving Student and Teacher Knowledge of Climate Change and Agricultural Science in the Inland Pacific Northwest

Jodi Johnson-Maynard¹, Kattlyn Wolf², Jonathan Velez³, Erin C. Corwine¹, P. Troy White², and Sanford D. Eigenbrode¹

1: Department of Plant, Soil and Entomological Sciences, University of Idaho 2: Department of Agricultural Education and 4-H Development, University of Idaho 3: Department of Agricultural Education and General Agriculture, Oregon State University

REACCH Education Initiatives Overview

The Regional Approaches to Climate Change-Pacific Northwest Agriculture (REACCH-PNA) project brings together over 20 scientists from four institutions (UI, WSU, OSU and USDA-ARS) to develop more sustainable wheat-production systems given current projections of climate change. One of the goals of REACCH is to develop a network to improve agricultural and climate change education across the Inland Pacific Northwest. This goal is in response to the recognized need for improved agricultural and climate change literacy among future agricultural professionals and the general population.



Left to Right: Undergraduate interns work with the REACCH project director to identify pests. The intern group poses for a final photo after the summer research symposium. Interns sample soil organisms in a wheat field.



Summer Workshop teachers participate in a pitfall trap activity as a vehicle for teaching about biotic influences on carbon cycling.

K-12 Students and Teachers:

The K-12 component of this project includes hands-on teacher workshops and the development and distribution of lesson plans. A specific goal is to engage students in the study of agriculture and climate change through the development of curriculum based on regional issues. The formation of partnerships with other education based projects (NASA-funded ICE-Net) has allowed expansion of the REACCH geographic influence and the number of teachers served.

Teacher Professional Development:

Teachers participated in hands-on sessions such as: Using pitfall traps to teach about agro-ecology, phenology themed citizen science efforts around the country, cropping systems research, and an overview of greenhouse gas monitoring.



Young students have their first lesson in earthworm sampling with REACCH scientists and graduate students.



REACCH soil scientist teaches local kindergartners about soil and decomposition before earthworm sampling.

Elementary School Curriculum:

REACCH faculty and staff are working with local elementary schools to provide hands-on learning experiences related to REACCH research. Teachers can ask for specific topic activities that align with classroom grade level standards.

REACCH CURRICULUM TOPICS

- CLIMATE & AGRICULTURAL ECOLOGICAL ZONES
- WATER
- ECOLOGICAL CYCLES
- SOCIO-ECONOMICS OF CLIMATE & CROP PRODUCTION
- INSECTS, WEEDS, & BENEFICIALS
- CULTIVATION PRACTICES
- GIS APPLICATIONS
- SOILS

Undergraduate Students: Undergraduate students are trained through a summer research internship program. Students are recruited from across the country and spend nine weeks conducting research at one of the three academic institutions.

Graduate Students:

Twenty two graduate students are working within and across REACCH research teams. Graduate students are exposed to tools for engaging in interdisciplinary research and are required to integrate their research data into either extension or education-based products. Students from different institutions interact at annual meetings and a graduate student retreat.



REACCH graduate and undergraduate students collecting biomass samples at the WSU experimental farm; REACCH graduate students at the first annual Graduate Student Retreat;



A REACCH PhD student shares his curriculum development work. The curriculum is comprised of local, relevant topics that align with Common Core Standards.



REACCH graduate students processing biomass samples using a Vogel stationary thresher.

High School Curriculum: PhD students and faculty are working together to develop a 9th – 12th grade agricultural education curriculum (Agriculture 515) based on teacher identified content needs and local issues. The curriculum is designed to be used as stand alone units of interest to both high school agricultural and science teachers.