



This research has allowed at least 40 students to enhance their communication and problem solving skills by engaging them in multidisciplinary sustainable agriculture research and/or making accessible to them courses in sustainable agriculture.

Building Curriculum and Experiential Learning in Sustainable Agriculture to Enhance Students' Communication and Problem-Solving Skills

Who cares and why?

Changing consumer preferences, food safety concerns, climate change, and the need to balance the environment and agriculture are pressing issues today. There is an urgent national need to tackle these problems using a multifaceted, multidisciplinary approach and to prepare students to be a part of a workforce that will contribute to solutions. However, employers complain that graduates are deficient in some skills, including problem solving and communication. Specifically, the problems addressed were limited exposure to sustainable agriculture in the current agriculture curriculum at UMES, inadequate communication and problem-solving skills of agriculture graduates, and the need to enhance experiential learning opportunities to develop undergraduate skills.

What has the project done so far?

A new course, Current Issues in Sustainable Agriculture, was developed and team taught by four faculty members from the disciplinary areas of plant science, soils science, animal science, and agricultural economics, respectively. Decision cases were integrated in the course to stimulate students' problem solving skills. The course and a revised introductory plant science lab course with an added honors designation were approved for addition to the university's undergraduate catalog. Fifteen paid interns and other unpaid agriculture majors conducted sustainable agriculture



Intern conducting a nutrient study on lettuce.

research projects under the mentorship of faculty members. Students presented their research findings to fellow students and faculty on and off campus, including at meetings of the American Society for Horticultural Science (ASHS), UMES research days, the 2012 Minorities in Agriculture Natural Resources and Related Sciences



Interns sorting worms for a vermiculture project.

conference, the 2013 Association of 1890 Research Directors Symposium, and NOAA's 2014 7th Education and Science Forum. Dissemination of information on the impact of this project on students has been done at national teaching meetings and at the project director's meeting. The retention rate of these research interns in the department has been 100%. Twelve of the 15 paid interns have graduated and are either in graduate or professional school or employed; the remaining three are successfully progressing in their senior year studies. The unpaid interns acquired their experience working on sustainable agriculture projects through their enrollment in independent

studies, internships, and special problem courses. More than 40 students have participated in the research experiences or taken the sustainable agriculture class.

Impact Statement

The curricular changes opened new opportunities for students to gain knowledge and learn about sustainable agriculture. This opportunity has been extended to others outside the UMES campus as the course is now offered online and is currently being taken by some students at Lincoln University of Missouri. Undergraduate agriculture majors gained research experience and developed a broad understanding of the multidisciplinary nature of problem solving through the research projects they conducted. Students' research, communication, and problem solving skills were enhanced as demonstrated in (a) paper and poster presentations of their research findings to fellow students and faculty on and off campus, (b) awards they won for their presentations, and (c) their responses to surveys they completed.

What research is needed?

This project has been completed. Due to the effectiveness of the tools used to grow the skills of these research interns, some of the methodology, such as evaluation rubrics and surveys, is now being applied in other student experiential projects.

Want to know more?

Lurline Marsh, Ph.D.
lemarsh@umes.edu, 410-651-7731

Strategic Priority?

Food Safety, Water Quality, and Sustainable Agriculture

Additional Links?

<http://www.nactateachers.org/images/stories/NACTA/Conference/2012/AB0348.jpg>

<http://www.umes.edu/ard/Default.aspx?id=46285>

http://www.nactateachers.org/images/stories/2013-0123_Poster_Marsh-Undergraduate_Research_Experiences_in_Sustainable_Agriculture.jpg

Year and Institution?

University of Maryland Eastern Shore, Princess Anne, MD 21853
Submitted 2014

Funding?

This project was supported by 1890 USDA Capacity Building Teaching Grant 0223136.