Awards issued prior to January 20, 2025, were funded under previous Administrations and may not reflect the priorities and policies of the current Administration.

United States Department of Agriculture
Project Initiation

Project Data for Accession Number 1031609

Project Title

Innovation on Small Farms Through a Project-based Learning Curriculum

Project Details

Sponsoring Institution National Institute of Food and Agriculture	**Project Status** ACTIVE
Funding Source NIFA Non Formula	**Grant Year** 2024
Grant No. 2024-70003-41449	**Cumulative Award Amt.** $719,756.00
Proposal No. 2023-05278	**Multistate No.** (N/A)
Project Start Date Jan 01, 2024	**Project End Date** Dec 31, 2027
Program Code [ER] Higher Ed Challenge	

Project Director

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Recipient Organization

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Performing Department

(N/A)

Non Technical Summary

Small farms are crucial to building resilient local food systems, yet they face compounding issues including loss of quality farmland, increases in severe weather, and high labor costs. In order to run a successful business, farmers need tools and infrastructure suited to their scale that is not widely provided by the market in the US. Our goal is to develop a project-based learning curriculum that partners both engineering and agriculture students with farmers to develop innovative solutions to the problems identified by the farmer. This could be development of a new tool, a new management approach, or an infrastructure project. Through these projects, we aim to generate innovative tools or systems that can benefit all small farmers. We aim to train students on skills such as teamwork, critical thinking, leadership, or entrepreneurship, and make students aware of the opportunities in the agricultural field that would benefit from their education and skillsets.We plan to establish an online curriculum with a focus on agricultural challenges for the small farmer, skills development, and career opportunities. We will also develop a process for

recruiting farmers and projects, managing project teams and supporting their success, and sharing that success with others in the farming communities through outreach events. As we evaluate and iterate on this curriculum, we will share it with the higher education community in order to promote its use elsewhere. We also anticipate students that participate in the program to more likley pursue careers or higher education in the agricultural fields.

Animal Health Component

Animal Health Component: 0%

Research Effort Categories

Basic	0%
Applied	0%
Developmental	0%

Classification

Knowledge Area (KA)	Subject of Investigation (SOI)	Field of Science (FOS)	Percent
402	5399	2020	25%
903	5399	3020	50%
402	5399	3020	25%

Knowledge Area

[402] Engineering Systems and Equipment

[903] Communication, Education, and Information Delivery

Subject Of Investigation

[5399] Structures, facilities, and equipment, general/other

Field Of Science

[2020] Engineering

[3020] Education

Keywords

small farms, teamwork, universal design; multi-disciplinary

Goals / Objectives

The increasing use of technology in agriculture, coupled with the increasing difficulty of farming economically on small farms increases the challenges for the farmers in the northeast, but also increases the opportunities for students trained in a wide variety of disciplines to enter a career where they can apply their knowledge to pressing needs. Accordingly, our goals in developing this project-based curriculum that engages farmers, professionals, students and faculty from multiple disciplines encompass building community, developing effective curriculum, and effecting

institutional change:1. Aid in the development of innovations for small farms2. Build new partnerships between the SOE, CAHNR, farmers, and farm-focused non-profit groups that could lead to future research or community development.3. Develop relationships between agricultural businesses and students that have the potential to lead to transformative career opportunities, products or business development4.Develop online modules and in-class activities to enable multi-disciplinary teams to integrate knowledge on complex agricultural systems and develop professional skills.5. Implement inclusive teaching practices in a project-based learning curriculum6. Broaden the perspective of students to future job prospects that are less traditional in their major course of study. 7. Develop a specialization in agricultural technology for multi-disciplinary engineering students that bridges curriculum from the school of engineering and the college of agriculture.8. Increase the diversity of students that will pursue postsecondary education in food and agricultural sciences.

Project Methods

The project will consist of five major aspects, including recruitment of projects, development of curriculum, development of course structure, evaluation, and outreach.Project recruitment: We have partnered with the New CT Farmer Alliance, CT Resource Conservation and Development Area, and the State Department of Agriculture to recruit projects from farmers through various forms of advertising. In addition, the New CT Farmer Alliance will host a farm-hack event each year to both share the new products generated from the previous year and to aid in recruitment of future projects. The State Department of Agriculture will include advertisements and success stories in their newsletters to producers across the state.Development of Curriculum: The curriculum will focus around skillsets and topics that will be of use to interdisciplinary teams and focus on small farm concerns. The faculty involved in the project will develop online course curriculum in addition to in class exercises that will help develop skills in the areas of teamwork, communication, entrpreneurship. In addition, curriculum will be developed that highlight the unique concerns and issues for small farmers, and the career pathways that engineering or agricultural sciences students may take when leaving university. Curricular materials will be based on best practices from the literature, principles of universal design, and the experience of the individual faculty members.Development of Course structure: The structure of the course and project-based learning curriculum will be developed in conjunction with the School of Engineering Senior Design program, the College of Agriculture, and the farmers involved in the projects. In addition to the project faculty, members of these other groups will be part of an advisory board to review and provide feedback on how this cross-disciplinary project can best function within the typical academic structure.Evaluation: There will be several levels of evaluation, including an advisory board made of of faculty, our partners, administrators from the School of Engineering and College of Agriculture, farmers, and students. Bi-annual meetings will review plans and progress over the course of the project. A professor of education will aid in the evaluation of learning materials and student feedback to improve upon them in subsequent years. An external evaluator will serve to evaluate progress and whether outcomes were met for students, farmers and the overall program through a series of surveys, interviews, and document review. A report will be provided to the PIs to inform any changes in subsequent offerings of the program.Outreach: The curriculum developed will be shared through educational workshops at engineering and agricultural sciences education focused conferences and through a website. Success stories from the projects will be shared through partner organizations and the CT Department of Agriculture in newsletters and on social media.