



DEVELOPING A MULTI-INSTITUTION COVER CROP COURSE

Training the next generation of cover crop professionals

Andrea Basche¹, Sam Wortman¹, Dara Park², Erin Haramoto³, Kate Tully⁴, Rich Smith⁵, Karen Renner⁶, Dean Baas⁶, Matt Ryan⁷

AGRONOMY AND HORTICULTURE

1. University of Nebraska; 2. Clemson University; 3. University of Kentucky;
4. University of Maryland; 5. University of New Hampshire; 6. Michigan State University; 7. Cornell University

BACKGROUND

- Increasing interest in the use of cover crops in US agriculture necessitates that educators adequately prepare undergraduate students with an enhanced cover crop curriculum.
- The **goal of our work** is to **create and deliver a novel, multi-institution multi-region upper-level undergraduate course centered on cover crops** for a **range of cropping systems and agro-ecoregions** using a **collaborative and experiential learning approach**.



University of Nebraska-Lincoln students complete cover crop challenge activities in Spring 2019.



SURVEY METHODS

In September 2018, we deployed a survey to assess existing gaps in undergraduate cover crop education consisting of nine questions though Qualtrics. We recruited participants through a snowball sampling method using a number of professional list serves including the Cover Crop Councils, as well the Agronomy-Crop Science-Soil Science Society of America's related community email lists.



Andrea Basche
University of Nebraska



Matthew Ryan
Cornell University



Richard Smith
University of New Hampshire



Kate Tully
University of Maryland



Erin Haramoto
University of Kentucky



Dara Park
Clemson University



Sam Wortman
University of Nebraska



Karen Renner
Michigan State University



Dean Baas
Michigan State University

SURVEY RESULTS

- The survey was completed by 157 agriculture professionals across 44 U.S. states (Fig. 1) and included representation from 7 international institutions.
- Nearly all respondents (97%) agreed with the statement, "Students interested in agriculture should learn about cover crops as part of their undergraduate education."
- Despite the perceived importance of cover crops in undergraduate education, no single respondent identified a course dedicated solely to the study of cover crop principles, management, and benefits.
- While 69% of respondents noted that their institution provides a course that includes some element of cover crop education, only half include experiential learning activities or more than two lectures on cover crops.
- Respondents rated a number of topics as important to include in an undergraduate cover crop course (Fig. 2).
- Respondents noted that advances in technologies offered new opportunities for training and experiential learning (Fig. 3).

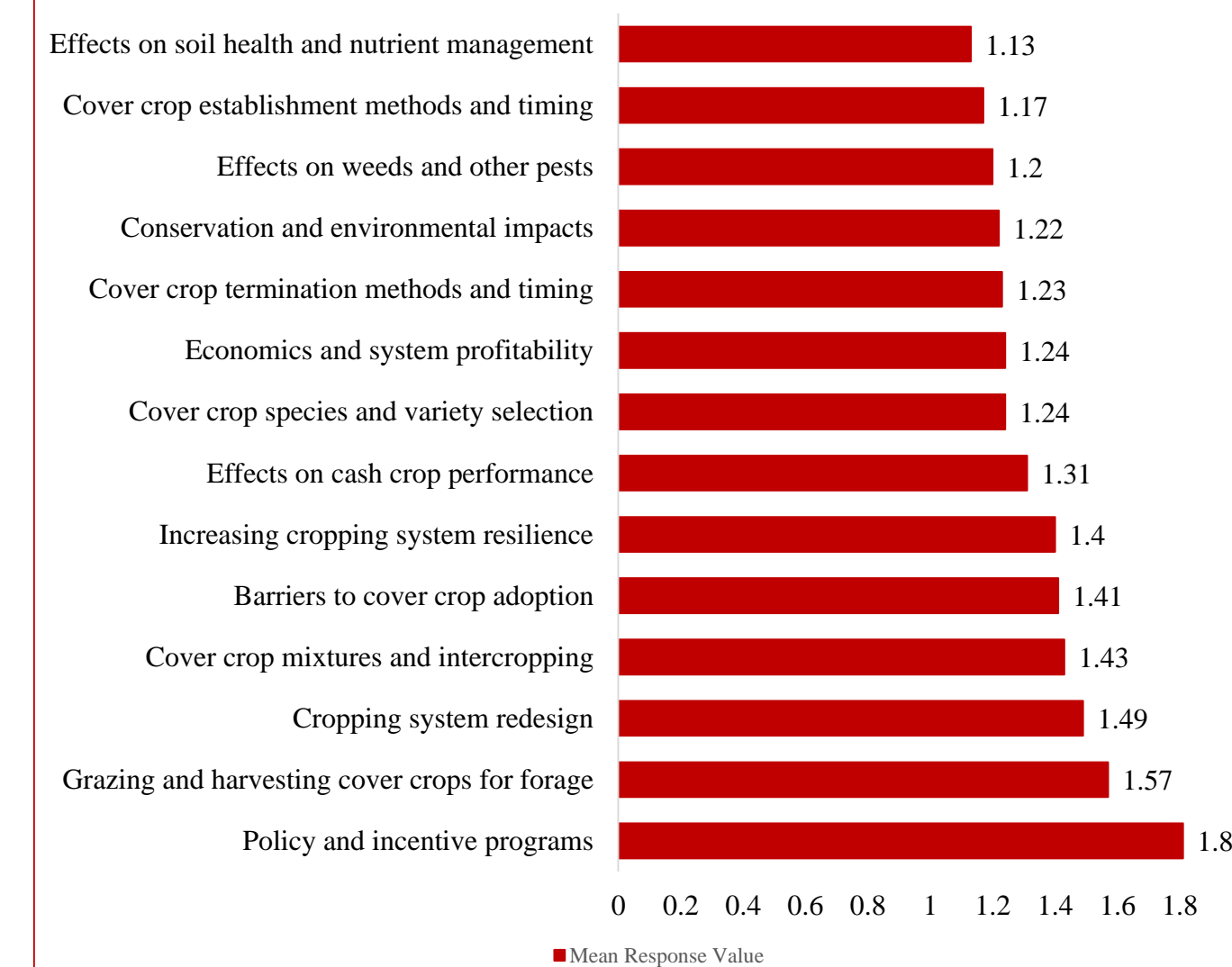


Figure 2. Ranked responses to the question "Rate the importance of including the following topics in an undergraduate course on cover crops?" where 1=critically important, 2=somewhat important, and 3=not important (n=146-148).

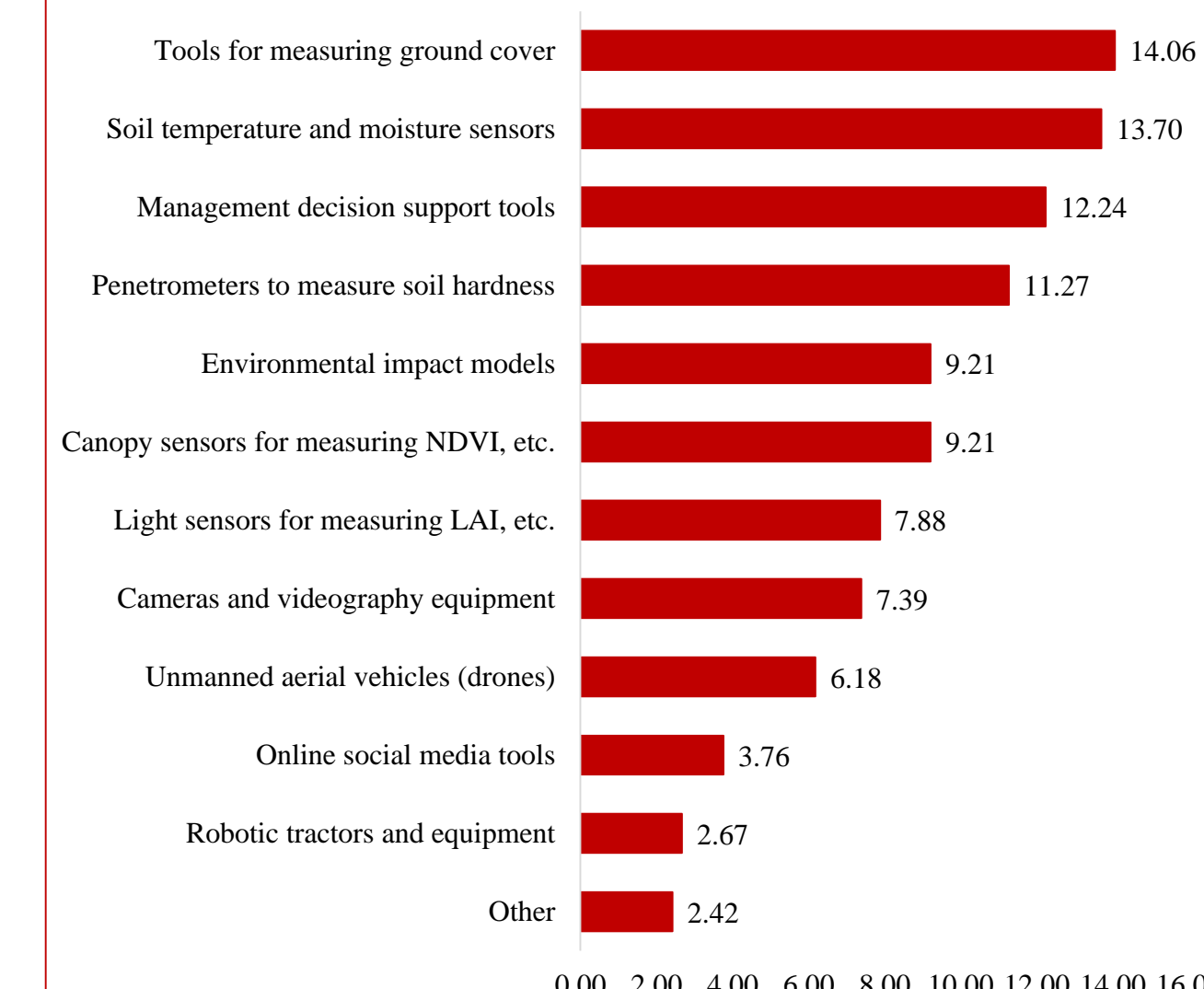


Figure 3. Percent of respondents selecting the above digital tools and equipment that "should be integrated into a cover crop course."

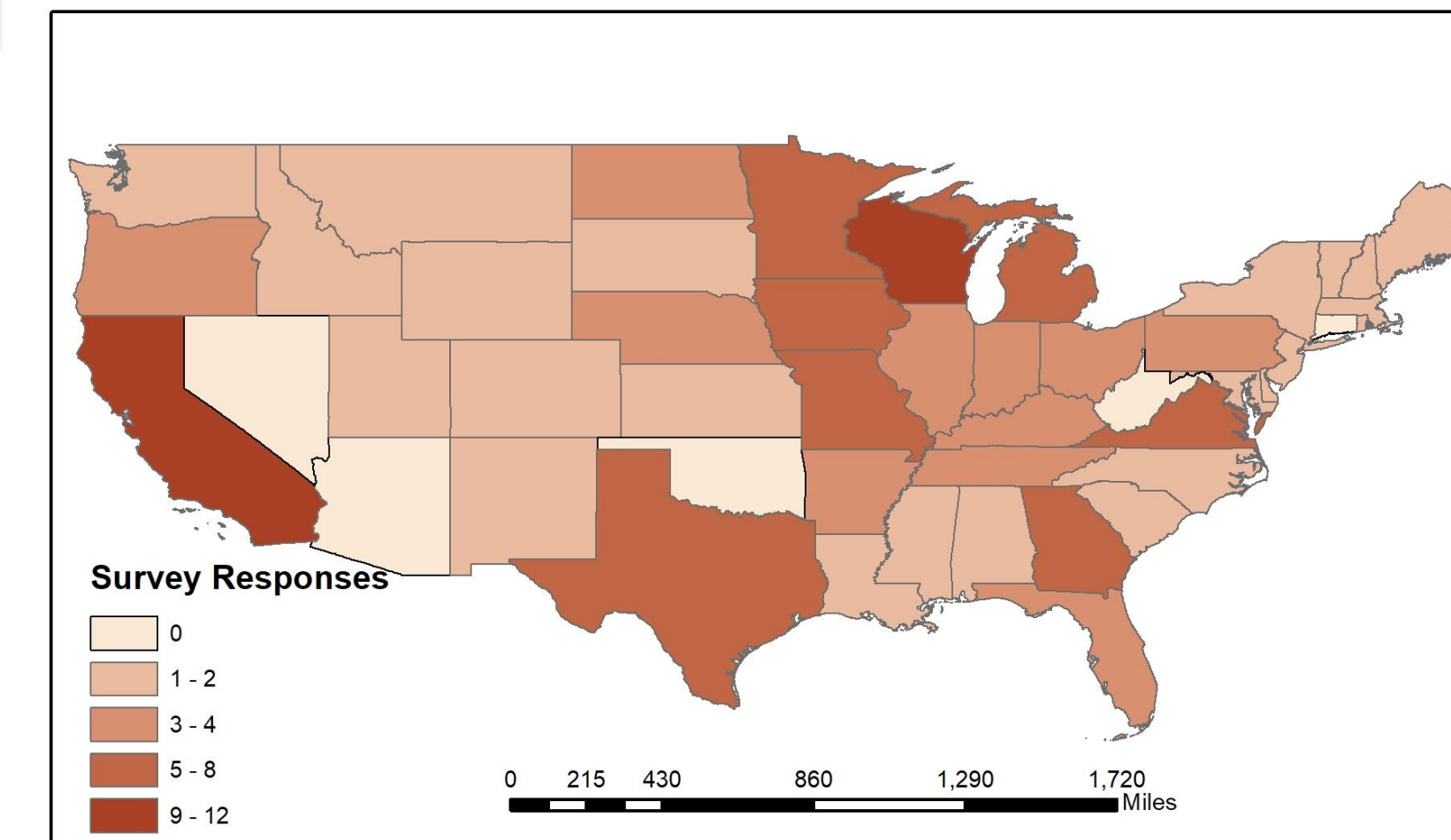


Figure 1. Map of US states representing agriculture professionals who completed the cover crop education survey. The majority of institutions represented were public, four-year institutions although the respondents also represented private institutions and vocational or technical schools.



Cornell University students complete cover crop challenge activities in Fall 2019.



COURSE EXECUTION

The course will be offered concurrently at approximately seven institutions beginning in the 2021-2022 academic year. We will use Canvas, an open-source learning management platform, to connect students and instructors. There will be weekly laboratory, greenhouse and field experiments with an intercollegiate cover crop competition. An open-access lab manual will be published for the course.



United States
Department of
Agriculture

National Institute
of Food and
Agriculture