

Precision U: Utilizing Technology to Improve Crop Production in a Virtual World

Abstract

The Ohio State University Extension's Digital Ag Team has been hosting an annual workshop focused on Precision Ag called *Precision U* since 2017. Each year's program focuses on a different theme with the educational objective of delivering research-based information to improve participants' knowledge on technology and equipment in order to enhance on-farm decision-making and crop performance.

This program has been held in-person annually from 2017-2020. A total of over 530 participants have attended the annual in-person *Precision U* programs. In 2021 *Precision U* was adapted to a virtual format due to COVID-19. This year's theme was *Tackling Spring Operations with Reduced Working Days*. Four live sessions were held on a weekly basis over Zoom webinar, with recordings available to registrants who were unable to attend live sessions. The virtual format enabled more widespread participation with attendees logging on from 50 Ohio counties, 17 states, and 4 nations. Total registration for all four online programs offered in 2021 was 989 with a total attendance at the live sessions of 515. The recorded sessions have 551 views to date .

Educational Objectives

The Ohio State University Extension's Digital Ag Team includes faculty from OSU's Department of Food, Agricultural, and Biological Engineering (FABE), Extension Field Specialists, and County Extension Educators in Agriculture and Natural Resources. The team works together to host an annual workshop focused on Precision Ag called *Precision U*. Each year's program focuses on a different theme.

Educational objectives include:

- Deliver research-based information to improve participants' knowledge of technology and equipment and how it can be successfully used on their farming operation;
- Empower participants to improve decision-making related to precision technology in order to increase profitability of their operations;
- Utilize hands-on equipment and technology demonstrations to illustrate practical application of research;
- Facilitate adoption of new technology, equipment, site-specific practices or behavior that can reduce environmental risks within their operations.

Program activities

In 2021, four live sessions were held on a weekly basis over Zoom webinar with recordings available to registrants who were unable to attend live sessions. Sessions were one hour in length, including Q&A. In years past, the program has included both classroom style educational sessions, small group breakout sessions, and equipment or technology demonstrations. By incorporating different teaching styles, participants have been able to acquire an overview of the information in the classroom setting and then see how the information is practically implemented using equipment demonstrations. Regardless of delivery method, the program always includes a diverse range of speakers including academic and

industry experts from across the country, so that a wide range of expertise and perspectives on technology are presented. Both research and issues of practical application are addressed.

Each year, program themes are selected with the objective of presenting critical issues that face farmers in Ohio and presenting participants with technology and equipment that can help address those issues. This year's theme was *Tackling Spring Operations with Reduced Working Days*. Changing weather patterns have led to fewer days available in the spring to complete planting, spraying, and fertilizing. This series presented research results and technology available to help producers work smarter and more efficiently to make the most out of limited workdays. Session titles and speakers included:

- **Gambling with Planting Decisions** Dr. Aaron Wilson (Ohio State University Extension) and Dr. Bob Nielson (Purdue University)
- **Improving Fertilizer Efficiency with the Planter Pass** - Matt Bennett (Precision Planting Technology) and Dr. John Fulton (Ohio State University)
- **Pre-season Crop Protection Decisions**, Dr. Mark Loux and Dr. Scott Shearer (Ohio State University)
- **Sprayer Technology to Improve Field Performance** – Dr. Joe Luck (University of Nebraska-Lincoln)

Each year program themes have been selected with the objective of presenting critical issues that face farmers in Ohio and presenting participants with technology and equipment that can help address those issues. Past program themes include:

- 2020 – Precision U: Combating Compaction
- 2019 – Precision U: In-Season Decisions
- 2018 – Precision U: Nutrient Technology
- 2017 – Precision U: Planter Technology

Programs have historically included a tradeshow with vendors showcasing technology and equipment related to the educational program, allowing participants to talk with companies on-site about practical applications for the information presented during the program. The traditional tradeshow was not a part of the 2021 program. In lieu of a tradeshow, companies were invited to submit short video clips to demonstrate technology and equipment which ran before the program began as participants logged on.

Teaching Methods

Live sessions were held on a weekly basis over Zoom webinar, with recordings available to registrants who could not attend live. Sessions were one hour in length. The first 40 minutes included a prepared presentation by a guest speaker with the remaining 20 minutes reserved for Q&A between attendees and the guest speaker. Several sessions included two speakers with different areas of expertise to provide multiple perspectives on the topic, with the goal of facilitating a more comprehensive presentation. Poll questions and the chat box features of Zoom webinar were utilized throughout each session to encourage participation and facilitate an interactive webinar environment.

Results

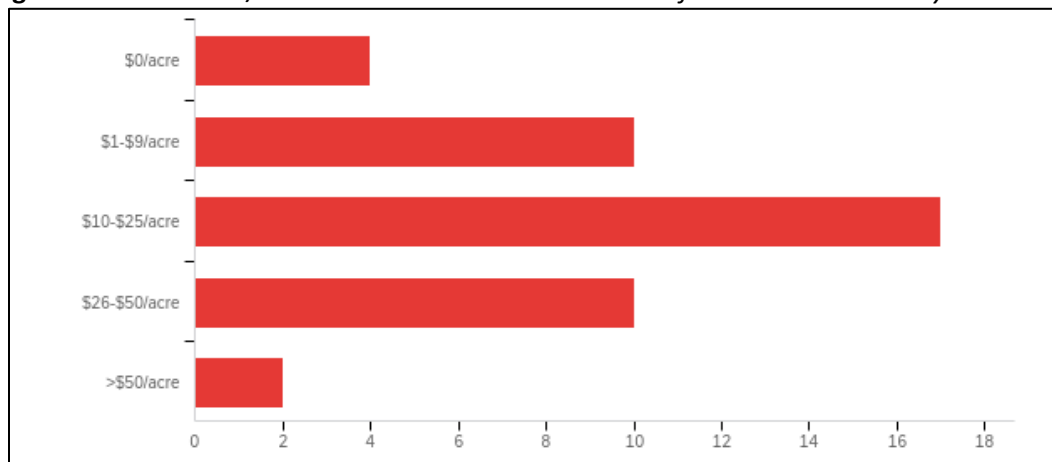
Total registration for all four online programs offered in 2021 was 989 (average 247.8/session), with total attendance at the live sessions 515 (average 128.8/session). The recorded sessions have 551 views

to date (average 137.8/session). From 2017-2020, a total of over 530 participants had attended the in-person *Precision U* programs. The virtual format enabled more widespread participation with attendees logging on from 50 Ohio counties, 17 states, and 4 nations. A program evaluation for the virtual sessions was completed by 61 attendees and indicated that the program attracted new audiences, with 51.16% of respondents reporting they had not attended *Precision U* in the past. 97.7% reported they would recommend the program to others.

27 respondents (44% of evaluation respondents) answered the open-ended question “How many acres do you farm?” to total 43,648. 20 respondents (32.8% of evaluation respondents) answered the open-ended question “How many acres do you consult for?” with 261,600 acres consulted for. With over 1,000 with either the live or recorded sessions, a small fraction of the acres impacted is represented in the 305,248 acres reported on the evaluation.

Participants were asked to put a dollar/acre value on the information received by attending the program. 23.3% placed the value at \$1-9/acre, 39.5% at \$10-25/acre, and 27.9% valued the information at over \$26/acre (Figure 1).

Figure 1: What Dollar/Acre Value Would You Put on the Information Received by Attending?



The collaborative nature of this program also serves to strengthen relationships between OSU Extension and the FABE department as well as industry which has led to new partners in other programs and on-farm research.

Impact Statement

This program brings industry and academic specialists from universities across the continent together to deliver information allowing participants to get a deep breadth of perspectives on managing technology to improve their operations. Participants hear from leading speakers from across North America who deliver new perspectives on emerging issues, and get both academic perspectives on current research as well as an understanding of the practical application of the information. Attendees are farmers, crop consultants, equipment providers, agency professionals, and Extension.

Total registration for all four virtual programs in 2021 was 989 (average 247.8/session) representing 50 Ohio counties, 17 states, and 4 countries. Total attendance for live sessions was 515 (average 128.8/session). The recorded sessions have 551 views to date (average 137.8/session).

Evaluation

A voluntary program evaluation was distributed to participants at the conclusion of each program with a more comprehensive evaluation distributed after all four sessions were complete. Evaluation was voluntary, seeking to measure knowledge gained, changes in behavior, and gather information about future programming needs. Each year, the evaluation summary is used to make adjustments and improvements in the program and to determine the focus of the educational sessions and overall theme of the program for the following year. This year the evaluation also included questions to gauge preferences for virtual formats compared to in-person meetings.