Accelerating adoption of agricultural technology

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In-field technology demonstrations help growers "road-test" new equipment and may speed their adoption of new technologies. Credit: Photo courtesy of Katie Ellis

Research shows that it takes about eight years from the time public research funds are invested in technology development to the time the technology is first implemented. In the agricultural sector it can take as long as 15 years before full adoption by stakeholders occurs. Because many technologies in the agricultural world become obsolete in 15 years, it becomes increasingly important to find ways to move technology more rapidly from research to adoption.

In a study published in *HortTechnology*, Katie Ellis, Tara Auxt Baugher, and Karen Lewis report on an information technology survey that was

designed to better understand concerns and design effective outreach methods for the tree fruit industry. The survey was part of the U.S. Department of Agriculture Specialty Crop Research Initiative project titled Comprehensive Automation for Specialty Crops (CASC). "The project aims to accelerate technology adoption by analyzing its return on investment and identifying and mitigating barriers to adoption", said Ellis, corresponding author of the study. "Low adoption rates are largely the product of skepticism, which can lead to weaknesses in the commercialization process and affect future research and product development."

The authors analyzed survey responses obtained from attendees at tree fruit meetings in the Pacific northwestern and eastern United States. Results showed that many of the misgivings about new automated technologies, such as equipment cost and reliability of harvest assist, sensor systems, and fully automated harvest machinery, were consistent across the country. The results indicated subtle differences between the eastern U.S. and Pacific northwestern U.S. responses, including justifiable equipment price points and irrigation and pest concerns. "These are likely attributable to regional differences in climate, operation size and scale, and marketing strategies", said the researchers.

Orchard owners and managers identified fuel costs, labor regulations, labor costs, insurance costs, and market conditions as the most important external influences on their businesses. Water availability/cost and quarantine regulations were least important. These responses have implications for future research and outreach efforts; studies that emphasize economic analyses with evidence of increased returns and workforce productivity will be important.

Another survey finding supported previous research showing that growers place a high value on "in my backyard" field trials and are more likely to adopt innovations that are developed or tested locally. Survey

responses from tree fruit growers indicated a desire to see technological benefits through on-farm trials, particularly in the eastern United States.

"CASC members designed this project to bridge the gap between developer and end user. The survey data will help the project team better address grower concerns and uncertainty on a regional and national level, thereby improving adoption speed and rates after CASC-developed technologies are rolled out", the authors concluded.

More information: The complete study and abstract are available on the ASHS HortTechnology electronic journal web site: horttech.ashspublications.org/ … t/abstract/20/6/1043

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