

# Utilizing Grower Partnerships to Validate and Promote Laser-Guided Intelligent Spray Technology for Apple Disease and Pest Management

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## Introduction

Implementation of new technologies in agriculture is impeded by high cost, perceived risk, and equipment complexity. On-farm demonstration trials with early adopters and industry influencers can increase the adoption of new technologies. Intelligent spray technology is a laser-guided spray control system that targets pesticide to the tree canopy. This technology promises reduced pesticide use and spray drift without compromising disease and insect pest control.

## Objective

To validate an intelligent sprayer for apple production while providing growers with firsthand experience with the intelligent sprayer technology.

## Methods

- The demonstration trial was conducted on a commercial apple farm in Ohio in 2020, consisted of two side-by-side 2.5 Acre plots sprayed with either airblast or intelligent sprayer technology.
- The grower used their standard calendar fungicide and insecticide program for application timing.
- At the end of the season apples were harvested from 15 random trees in two rows to quantify fruit disease and insect damage incidence.
- Multiple outreach tools were utilized to inform growers of the intelligent sprayer research (Fig. A)

## Conclusions

- The intelligent sprayer lowered pesticide output (Fig. B) allowing the grower to cut down on pesticide costs without compromising fruit quality (Fig. C).
- The science-based outreach program, has been able to reach audiences and promote conversations around intelligent sprayer technology (Fig. D).
- A survey will be distributed to Iowa and Ohio growers in 2022 to assess the impact and grower perception of the intelligent sprayer.

The outreach initiatives and grower partnerships allowed for successful adoption of intelligent technology by apple growers in the Midwest.

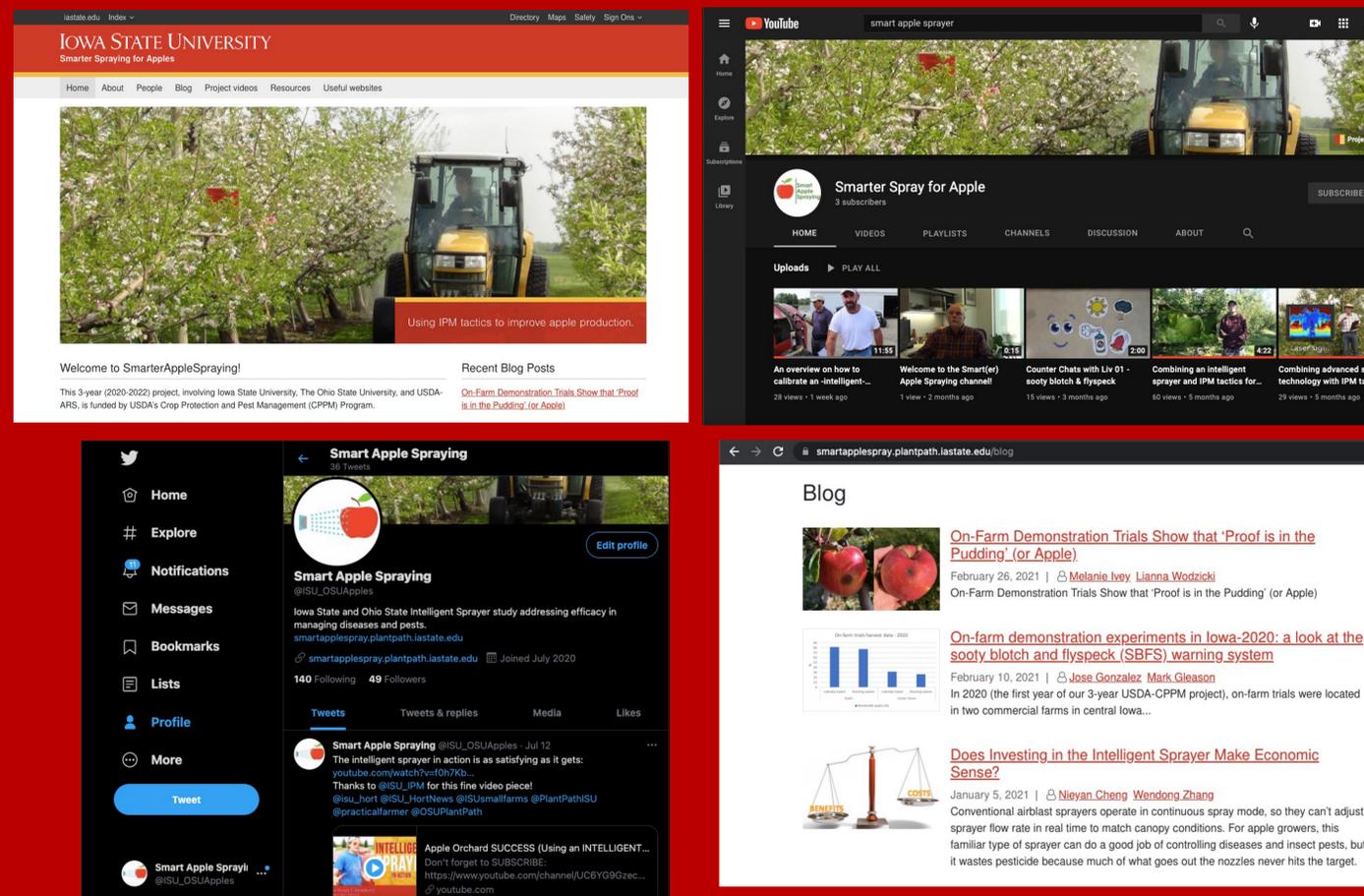
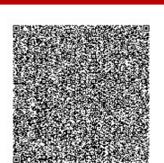
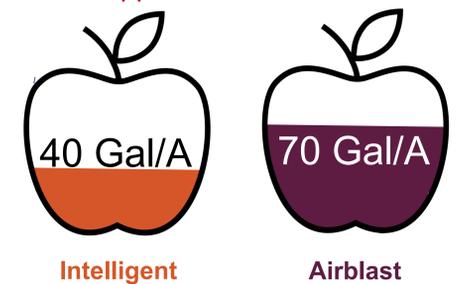


Figure A. Intelligent sprayer outreach efforts have included (from top left corner, going clockwise) Smart spray for apples website, a YouTube channel, a blog series, and twitter account.

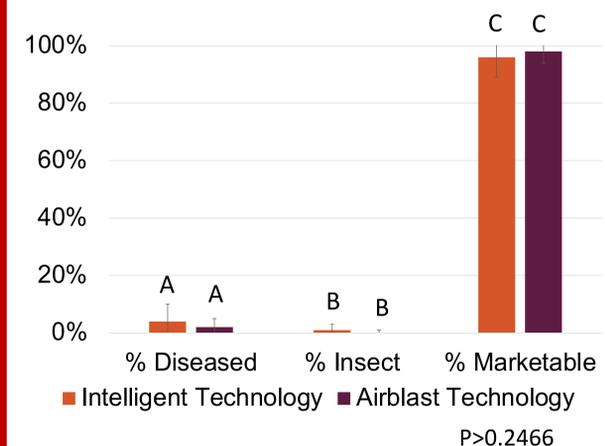


## Results

**B** The intelligent sprayer applied less pesticide volume per acre than the airblast applications.



**C** There was no difference in the percent of diseased, insect damaged or marketable fruit when using intelligent or airblast technology.\*



**D** Outreach efforts have included:

36 Tweets  
@ISU\_OSUApples

Six Youtube Videos  
Smarter Spray for Apples

Facebook Group  
Smart Apple Spraying

Nine Part Blog Series  
www.smartapplespray.plantpath.iastate.edu

\* Bars represent standard deviation in each graph.