Combining Intelligent Sprayer Technology and a Warning System for Sooty Blotch and Flyspeck

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Introduction

Airblast sprayers have been standard equipment in U.S. apple orchards for >60 years. But much of each airblast-applied pesticide spray fails to hit its target. A modified airblast sprayer called an Intelligent Sprayer **[Figure 1]** uses Light Detection and Ranging (LiDAR) technology to more precisely target sprays.

Most apple growers follow calendar-based spray timing for pesticides. Alternatively, a new warning system for sooty blotch and flyspeck (SBFS) **(Figure 2)**, a fungal disease complex, inputs cumulative hours of relative humidity (RH) >90% to predict SBFS risk – saving an average of 2.3 fungicide sprays per year.

Combining Intelligent Sprayer technology with the SBFS warning system could conserve pesticides by 1) reducing the amount applied per spray and 2) reducing the number of applications.

Objectives

In field trials in Iowa and Ohio, determine:

- **Efficacy of disease and pest control when using the Intelligent Sprayer with the SBFS warning system.**
- **Reduction in spray volume per application.**
- **Change in number of fungicide sprays per season.**

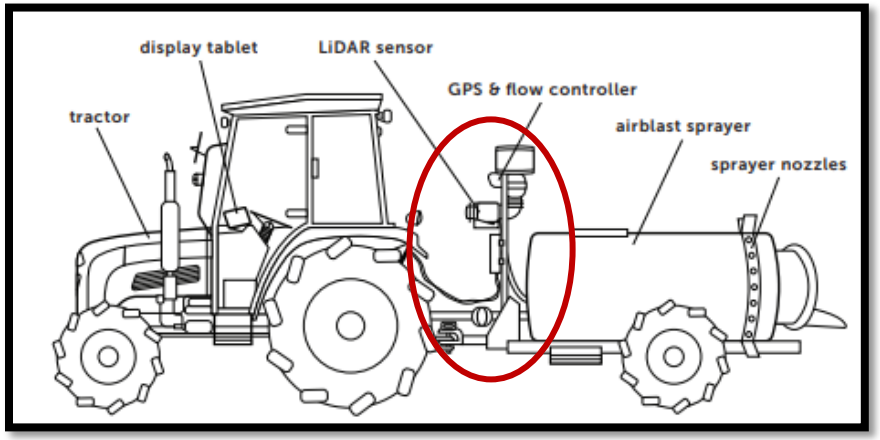
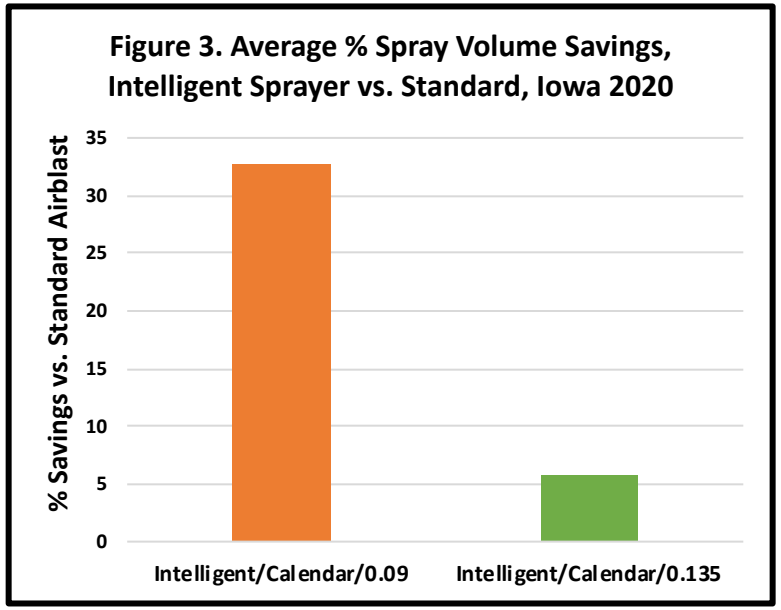


Figure 1. Intelligent Sprayer system retrofitted to a conventional airblast sprayer (see circle above).

Figure 2. Sooty blotch and flyspeck colonies on an apple.



Year 1 (2020) results in Iowa:

- **SBFS warning system saved 4 fungicide sprays vs. calendar-based timing.**
- **Intelligent Sprayer reduced spray volume per application by >30% compared to standard airblast at lower flow rate setting (0.09 oz/ft^3) (Figure 3).**
- **No loss of insect or disease control.**