



Pilot: Smoke Monitoring for Agricultural Safety and Health (SMASH)

FINAL REPORT

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Challenge

The hazard of wildfire smoke exposure continues to increase in the Northwest and presents an important health risk to outdoor workers, including those in agriculture.

Project Overview

Our aim is to develop wildfire decision aid tools for growers, driven by data from a high-density network of low-cost air quality monitoring sensors. During the 2020 wildfire season, new smoke sensors were tested in Washington state to assess needs for worker health, crop protection, and plume tracking. Improving access to more localized air quality information could help agricultural employers protect both worker and crop health as wildfire smoke exposure increases.

Findings to Date

- This pilot study demonstrates proof-of-concept for air quality monitoring based on Washington State University's AgWeatherNet platform. Our results from before and during an intense wildfire smoke episode in 2020 indicated that the Thingy AQ smoke sampling platform provides a strategy to increase access to real-time air quality information in rural areas where monitoring networks are sparse.

Accomplishments

"Does it make sense for an individual grower to own a PM1.0 sensor? Will we be able to correlate those levels to potential smoke exposure risk?"
-Grower

- Permanent deployment of Thingy:AQ sensor at Wenatchee regulatory air monitoring site.
- Our project partnership has connected local sensor startup company (Thingy:AQ) with wine and tree fruit industries. As a result, they have become heavily involved in new precision agriculture "smart farm" initiatives, such as innov8.ag and agaid.org.
- The project team has responded to requests for public technical comments in 2021 smoke and heat rulemaking efforts in Washington and Oregon states.
- This project's technology and identified risk factors for agriculture were presented locally and nationally at the 2021 Washington Ag Safety Day, 2021 Washington State Tree Fruit Association Annual Meeting, and in a 2021 AgriSafe webinar.

Next Steps

This project's work will continue with the goal of deploying 30 additional Thingy:AQ sensors on the AgWeatherNet platform. Spinoff proposals have been written for two upcoming grant opportunities to test and develop this system for Washington growers and related proposals have been funded for smoke taint research in local agriculture.

Resources



[SMASH website](#)



Austin E., Kasner E., Seto E., Spector J. [Combined Burden of Heat and Particulate Matter Air Quality in WA Agriculture](#). J Agromedicine. 2020 Jul 30;1-10.



[Heat, fire, smoke and health in Washington's ag industry](#). 2020 Sep 3.