

Supporting Fruit Production

OHIO FRUIT NEWS

Research and Recommendations from Experts at The Ohio State University

August 2022

New Apple Varieties to Improve Customer Experience.

By Dr. Diane Doud Miller - Associate Professor, Department of Horticulture and Crop Sciences

While there is no shortage of apple varieties throughout the fall season, new variety releases are raising the bar on apple quality. It can be a bit of a double-edged sword from a grower perspective. Basically, new varieties with better crunch are going to replace older varieties which lack crunch. But right now the older varieties are productive trees bearing fruit in orchards. Bringing a new variety into a production mix will likely entail dropping some older variety from the current array. My suggestion is to take the leap and do that! While there may be some lingering demand for an older variety, our experience with on-farm apple taste testing is that consumers are delighted to buy new varieties which have crunch (and flavor) if such is available. Just a taste is all it takes to move on from an old standard.

A conservative way to move forward to new varieties is to determine what is your weakest time during the season in terms of exciting apples and then look for what new varieties fit into that window. I will offer a couple suggestions of winners here.

The easiest and most obvious is likely the end of August 'early season' apple window. There now is a crisp, juicy, red eating apple available in that window – **Sweet Maia** from the Midwest Apple Improvement Association (MAIA) ([Figures 1 and 2](#)). *(Please note that membership in MAIA is required to obtain this apple, and in addition an annual production trademark fee is required back to MAIA; and Sweet Maia may not be readily available yet through nurseries but watch for it).*

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Figure 1. Sweet Maia is a new early season (end of August) MAIA apple variety.

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Surprisingly, in my observations Sweet Maia has an extended timeframe of harvest, getting progressively deeper red and ripe over at least a couple weeks. It doesn't drop but the birds do like it! There really is nothing else like it in this end August window and it is the eating apple that could carry you through to Summerset or Honeycrisp.

A step up in mid-season apples is **Crimson Crisp**. This apple has taken a while to gather traction but is proving to be a winner with customers. The fruit are medium-large, bright red, crisp, and widely liked flavor. The tree is annually productive with the bonus of Vf scab resistance. The apple is a release from the former Purdue-Rutgers-Illinois breeding program and is available through commercial nurseries.

It is easy to recommend giving Sweet Maia and Crimson Crisp a try at Ohio orchards. They each raise the bar of quality for their season and will result in happy customers.



Figure 2. Tree architecture of Sweet Maia

Grower's Corner

Are concord grapes with brown spots on the skin safe to can or juice?

In general, fruit that is bruised, damaged or diseased should not be consumed raw as the risk of a foodborne illness is higher than if it is cooked or processed. Grapes with brown spots are mostly infected with the fungus that causes black rot disease, but the spots could also be due to sour rot disorder. If the spots are sour rot the fruit quality will be poor, and the flavour will be compromised. I don't know if black rot disease alters the quality of the juice, but I know that wine makers will use fruit with some black rot as they typically do not sort the fruit. Therefore, I do not recommend using the fruit for juice unless it is pasteurized or made into wine (fermentation process).



Black rot on grape. Photo courtesy of A. Schilder, MSU Extension

Getting it right: Pesticide mixing tips when spraying with the Intelligent Sprayer

By Jose Gonzalez, Graduate Student, Mark Gleason, Professor- Department of Plant Pathology and Microbiology, and Olivia Meyer, Graduate Student, Iowa State University

* This article was first published as a blog on the Smart Apple Spray website.

The Intelligent Sprayer (Figure 1), which uses a laser-guided precision spray control system called Smart-Apply, is a breakthrough spray technology for fruit, nut, and nursery trees and perennial vine crops.

The technology – an add-on to modify a standard airblast sprayer - comes in a kit with a LiDar (Light Detection and Ranging) scanning system that creates a 3D map of the orchard canopy ([see our previous post on this topic here](#)). A computer uses the 3D scanning information to calculate how much spray to apply and where to apply it. The computer controls a set of solenoid valves that open and close individual nozzles so that the spray matches the shape, size, and location of the crop canopy.

Our studies in Ohio and Iowa apple orchards in 2020 and 2021 showed a **reduction in spray volume of 40 to 80% when using the Intelligent Sprayer, compared to a standard airblast sprayer applying 100 gallons per acre** (Figure 2).

Despite this major reduction in spray volume, using the Intelligent Sprayer achieved marketable yield and pest and disease control equivalent to using the standard airblast sprayer.

This reduction in spray volume is great news since it's no secret that pesticide use presents hazards for humans and the environment. Reducing the amount of pesticide also cuts costs. Depending on the crop, using the Intelligent Sprayer can save growers \$50 to \$980 per acre annually. **IMPORTANT:** when using an Intelligent Sprayer, the amount of pesticide that actually hits the foliage is equivalent to that of a standard airblast. The savings with an Intelligent Sprayer comes about because **much more of the spray that comes out the nozzles actually hits the target** – the trees – and less gets wasted in off-target drift.

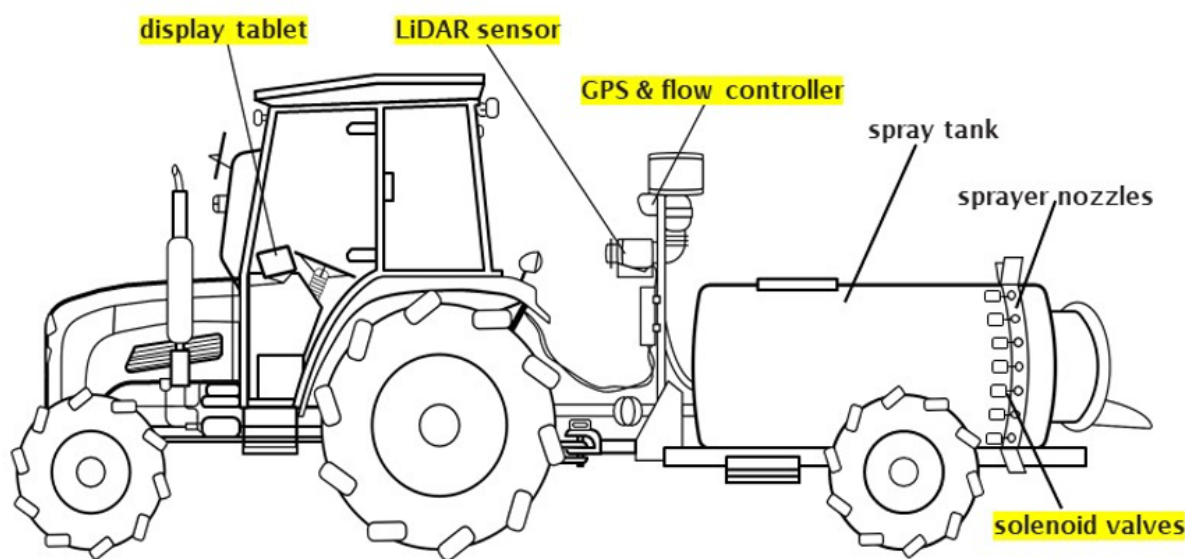
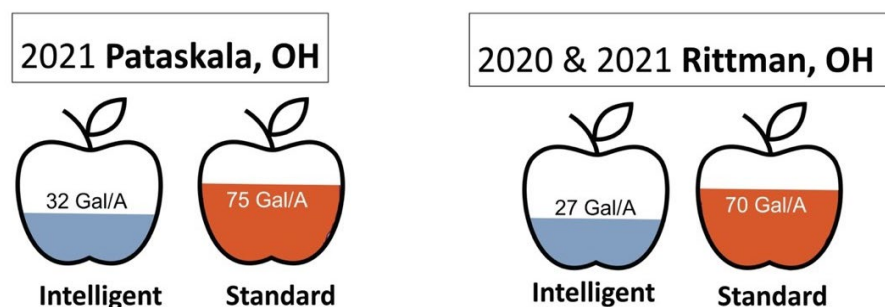


Figure 1. Diagram of the Intelligent Sprayer kit retrofitted to an airblast sprayer. Highlighted in yellow are the components of the kit. Image credit: Eric Hoile, modified by Jose Gonzalez.

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57-61% spray volume reduction

Figure 2. Spray volume records from two commercial apple orchards in Ohio in 2020 and 2021, comparing Intelligent vs. standard air blast sprayers. Credits: L. Wodzicki and M. Lewis Ivey, The Ohio State University, CFAES Wooster.

Below are some frequently asked questions about the new sprayer technology:

Question 1: What is the best way to calculate the amount of water to use per acre with the Intelligent Sprayer to achieve proper coverage?

Growers traditionally apply a fixed amount of spray volume per acre. For example, many Midwest growers use 100 gallons per acre as a standard for summer sprays (figure 3). However, with the Intelligent Sprayer, the software automatically calculates how much to spray “on the fly,” according to canopy size and thickness. In other words, the technology decides how much volume to apply per acre.

Question 2: If I spray less volume per acre, will I use the same amount of pesticide per acre with an Intelligent Sprayer as with a standard airblast sprayer?

The short answer is no. **However, concentrations of pesticides for the Intelligent Sprayer are the same as for a standard airblast sprayer.** How can that be, considering that the Intelligent Sprayer sprays only about half as much per acre as an airblast? The Intelligent Sprayer wastes less spray – a lot less – since it’s much more accurate. For example, it will not spray gaps between trees. Assuming a 50% boost in spray accuracy in an apple orchard with the Intelligent Sprayer, the same volume and concentration of pesticide you’d mix for an airblast sprayer will **cover twice the acres**. A bonus is that you’ll need to refill

Box 1. Buzzwords explained

•**LiDar:** Light Detection and Ranging. It is a type of remote sensing method that uses laser pulses (light beams) to measure distance and location of nearby objects.

•**Intelligent Sprayer:** An airblast sprayer that has been retrofitted with the Smart-Apply software and kit.

•**SmartApply:** Intelligent spray control system developed by USDA-ARS ATRU at Ohio State University and commercialized by Smart Guided Systems LLC (Indianapolis, IN).

•**Solenoid valve:** Electromechanical device that uses an electric current to regulate the opening and closing of the spray flow.

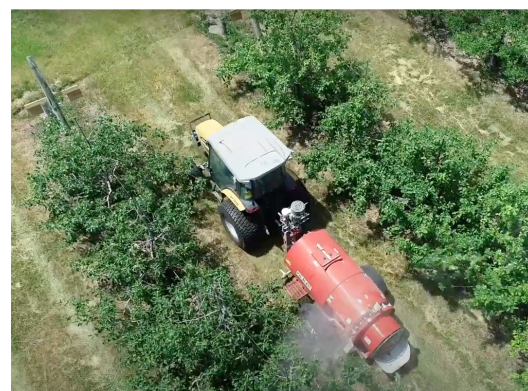


Figure 3. Standard airblast sprayer and its spray plume at an application rate of 100 gallons per acre in an Iowa orchard. Photo: Brandon Kleinke.

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spray tank only half as often – saving labor, time, and fuel. Intelligent Sprayer technology is still quite new. But it's beginning to prove itself in commercial apple orchards around the country. Looking ahead, this type of technology may ultimately become standard for pesticide application in many orchards.

Question 3: Where can I learn more about spray rates?

For further reference on pesticide-spray rates see EPA's FIFRA's section 2(ee) [link here](#)



Jose Gonzalez is a graduate student at Iowa State University and Project Coordinator for Smarter Spraying for Apples [link here](#).

Apple Field Day Returns to CFAES Wooster

By Dr. Melanie Lewis Ivey- Associate Professor, Extension Fruit Pathologist, Department of Plant Pathology

After more than 20 years, CFAES Wooster (previously OARDC) held an Apple Field Day on July 26th, 2022. The field day was sponsored by Ohio Fruit Growers Marketing Association and the Department of Plant Pathology. Around 30 growers, industry representatives, and OSU faculty, students and staff attended the field day.

The field day was held at the high-density apple orchard that was planted in 2018. The orchard has six replicated blocks, consisting of a row each of Gala, Honeycrisp, McIntosh, Gibson golden delicious, and Evercrisp. Each variety is grafted to B9 or G41 rootstocks, providing an opportunity to see each rootstock side-by-side. The trellis system features three different types of end posts – end post with steel anchor; end post with tie-back post and H-brace. ([Figure 1](#)). The orchard

was designed to accommodate research in plant pathology, entomology, and horticulture.

At the field day information on the types of end posts was provided by Becky Colon, Assistant Superintendent – Research Farms and a demonstration of the Intelligent Sprayer was provided by Adam Clark and Dr. Heping Zhu, USDA – ARS. The field day featured four research projects; a brief description of each projects is provided.

- 1. Integration of intelligent sprayer technology and netting – M. L. Lewis Ivey, Dept. of Plant Pathology** In this study we are testing how the use of netting for bird control impacts the efficiency of the Intelligent Sprayer. ([Figure 2](#)).



Figure 1. End post types. A: End post with steel anchor; B: End post with tie-back post C: H-brace. [Link](#) to more information on end-post types.

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88th Ohio Plant Diagnostic Workshop

Friday, September 2, 10:00 AM-3:00 PM

Learn about horticultural, plant pathological, and entomological problems and opportunities. Time will be spent looking at insect and disease samples

Speakers include, Joe Boggs, OSU Entomology; Jim Chatfield, OSU Emeritus; Paul Snyder, OSU, Secrest Arboretum; Denise Ellsworth, OSU Entomology; Dan Herms, Research VP, Davey Tree Expert Co.

ISA, ONLA and Master Gardener credit eligible.

Location: Miller Pavilion
Secrest Arboretum
2122 Williams Rd., Wooster

Cost: \$40

Lunch is included

Register at:
<https://secrest.osu.edu/events/88th-ohio-plant-diagnostic-workshop>



[Secrest.osu.edu](https://secrest.osu.edu)



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2. Evaluation of fungicide spray programs for control of apple scab - M. L. Lewis Ivey, Dept. of Plant Pathology. In this study we are evaluating the efficacy of Luna® fungicides (Bayer Crop Sci.) spray programs in controlling apple scab.

3. Evercrisp Pruning – D. Doud Miller, Dept. of Horticulture and Crop Sciences Evercrisp produces forked shoots, which is one reason it's difficult to get tree size. In this study two different pruning strategies were used – 1: ALL forked shoots were cut to one shoot and 2: removal of some but not all forked shoots (normal pruning). The removal of all shoots has not interrupted the habit of Evercrisp.

4. Bloom delay for frost escape - D. Doud Miller and I. Dami, Dept. of Horticulture and Crop Sciences In this study FrostShield, a proprietary formula developed by OSU Viticulturalist Dr. Imed Dami, to delay spring development of grapevines was tested for spring development delay in apple (Honeycrisp, Golden Delicious, and McIntosh) (**Figure 3**). Preliminary results indicate a 5-day delay in spring development.



Figure 2. Netting applied to apples for bird control.



Figure 3. Dr. Dami applying FrostShield to apple trees in early spring (March 2, 2022). Photo courtesy of D. Miller.

2022 Apple Field Day Pictures



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WESTERN AG RESEARCH STATION PRESENTS

Pumpkin & Sunflower Field Day

Join us for the first ever joint Pumpkin and Sunflower Field Day at the Western Ag Research Station! Visitors will be loaded onto wagons to tour the pumpkin and sunflower plots. Five speakers will present on a range of topics important to production, pest management and ag tourism. Refreshments will be provided.

DATE: August 25, 2022

LOCATION: 7721 S. Charleston Pike, S. Charleston OH 45368

TIME: 5:30–7:30 p.m.

COST: \$5 per person

CONTACT: Jim Jasinski, Jasinski.4@osu.edu

Pre-registration required

Visit <https://go.osu.edu/pumpsun22>



THE OHIO STATE UNIVERSITY
EXTENSION

CFAES

STOP ONE

Hop off wagons and look at 9 colorful sunflower hybrids. Presentations include grower's perspective on benefits and challenges of raising sunflowers plus ag tourism aspects of incorporating sunflowers on the farm

STOP TWO

Hop off wagons and tour three pumpkin trials.

Presentations include

- Pollinator protection in cucurbits
- Selecting Powdery Mildew fungicides
- Using foliar fertilizers in pumpkin and squash production
- Reviewing the pumpkin and squash trial (24 hybrids)

Spend the remaining time talking with growers and specialists, take a closer look at the sunflower and pumpkin trials.

EVENT SPEAKERS:

Ashley Leach
OSU Entomology

Bryan Reeb
Sunrise Coop

Matt Sullivan
Sunflower & Pumpkin Grower

Kate Hornyak
OSU Extension

Jim Jasinski
OSU Extension

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Photo courtesy of [OMAFRA](#)

Rhizopus rot is a post-harvest fungal rot that affects peaches, nectarines, plums and cherries. The fungus attacks over-ripe fruit on the tree as well as ripe harvested peaches. Warm temperatures encourage fungal growth and spore production. The fungus produces a lot of spores and will quickly spread from fruit to fruit at the contact point. The rot is a soft (or watery) rot that causes the skin to easily slip from the flesh. The last fungicide spray prior to harvest should include Rhizopus rot on the label. Newly harvest fruit should be held in the shade and moved to cold storage (40 F or lower) as soon as possible. Consumers should store their fruit in the refrigerator.

Grower Resources:

- OSU Fruit Pathology website (u.osu.edu/fruitpathology)
- OSU Fruit and Vegetable Safety website (<https://producesafety.osu.edu>)
- OSU Fruit and Vegetable Pest Management website (entomology.osu.edu)
- OSU Fruit and Vegetable Diagnostic Laboratory (u.osu.edu/vegetablediseasefacts/)
- OSU Bramble: Production Management and Marketing Guide (Bulletin 782) (extensionpubs.osu.edu)

OSU Upcoming Events-2022

New Pesticide Applicator Training – August 18 [link here](#)
Pumpkin and Sunflower Field Day – August 25 [link here](#)
Farm Science Review – September 20-22 [link here](#)
88th Ohio Plant Diagnostic Workshop – September 2 [link here](#)
Urban Landscape Pest Management Workshop – September 28 [link here](#)
CFAES Homecoming Weekend – September 29 - Oct 1 [link here](#)
Autumn Discovery day Plant Sale – October 8 [link here](#)
2023 Ohio Produce Network – January 16-17 [link here](#)

*Contact your county Extension office to register for events by phone.

For a list of CFAES events and schedule changes go to the [CFAE Events Page](#)

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