Caneberry II

Tuesday afternoon 2:00 pm

Where: Gallery Overlook (upper level) Room A & B
MI Recertification credits: 2 (1C, COMM CORE, PRIV CORE)
OH Recertification credits: 1 (presentations as marked)
CCA Credits: PM(1.5) CM(0.5)
Moderator: Diane Brown, Extension Educator, MSU Extension, Mason, MI

2:00 pm	New Developments in Spotted Wing Drosophila Management (OH: 2B, 0.5 hr) • Hannah Burrack, Entomology Department, North Carolina State Univ. • Rufus Isaacs, Entomology Dept., MSU
2:40 pm	Sprayer Technology for Caneberries (OH: CORE, 0.5 hr) • Jason Deveau, Application Technology Specialist, OMAFRA, Ontario, Canada
3:20 pm	Growing Blackberries in Colder Climates • George Elder, Elderslie Farm, Valley Center, KS • Chuck McCallum, Extraordinary Berry, Benton Harbor, MI • Chris Eckert, Eckert Orchards Inc., Belleville, IL • Brett Rhoads, Rhoads Farm Inc., Circleville, OH
4:00 pm	Session Ends

Sustainable Spotted Wing Drosophila Management for United States Fruit Crops

A USDA Specialty Crops Research Initiative (SCRI) supported project (Award number 2015-51181-24252)

Project information
Four years: 15 Sept 2015 through 14 Sept 2019

Participants:

NC State University
Hannah Burrack, Entomology
Max Scott, Entomology
Zack Brown, Ag & Resource Economics
Jean-Jaques Debois, Southern IPM Center
Rhonda Conlin, Extension IT

Michigan State Unversity
Rufus Isaacs, Entomology
Larry Gut, Entomology
Ke Dong, Entomology

University of Maine
Frank Dummond

University of Notre Dame
Zain Syed

University of Georgia
Ash Sial

Oregon State University
Vaughn Walton
Nik Wiman

Cornell University
Greg Loeb
Miguel Gomez

Rutgers University
Cesar Rodriguez-Saona

University of California, Davis
Joanna Chiu
Frank Zalom

University of California, Berkeley
Kent Daane

USDA-ARS
Kim Hoelmer

Stakeholder advisory board members (13)

Goals:
To integrate SWD management practices with those necessary for other pest species, to reduce the reliance on insecticides as the sole means of SWD management, to deliver this information to stakeholders, and to facilitate stakeholder adoption of recommendations.

Mechanics:
Our project is headquartered at North Carolina State University and directed by Dr. Hannah Burrack. Activities are grouped by primary objectives, and each activity is led by a team member. Activity leads develop standard methods, design projects, coordinate data collection, and summarize and interpret results.

Specific objectives and activities:
1. Implement and evaluate SWD management programs
    - 1.1. On-farm evaluation and optimization of SWD management programs (Lead: Burrack)
    - 1.2. Build bioeconomic models that measure SWD impact, predict losses, and suggest mitigation strategies (Lead: Gomez)

1.3. Provide stakeholders with results, applications, and interpretation (Lead: Burrack)
2. Develop tactics and tools that predict SWD risk
2.1. Field validate population models (Lead: Walton)
2.2. Determine sources of SWD populations before and during growing seasons (Leads: Loeb and Chiu)
2.3. Develop monitoring tools that accurately estimate SWD populations and predict infestation (Lead: Rodriguez-Saona)
3. Optimize sustainable SWD management programs
3.1. Reduce reliance on insecticides in management programs (Lead: Isaacs)
3.2. Detect, monitor, and minimize insecticide resistance (Leads: Sial and Brown)
3.3. Discover natural enemies capable of contributing to SWD population reduction (Lead: Daane)
3.4. Reduce infestation rates in fruit post-harvest (Lead: Burrack)
3.5. Develop genetic SWD management tactics (Leads: Scott and Brown)

For more information and future updates, see:
SWDManagement.org
or contact Hannah Burrack (hjburrac@ncsu.edu)

We need your help to measure SWD impact and guide future project direction

Please complete this approximately 30 minute survey: https://survey.ncsu.edu/swd/

Sprayer Technology for Caneberries

Dr. Jason Deveau
Ontario Application Technology Specialist
jason.deveau@ontario.ca @spray_guy www.sprayers101.com

In the last eight years of working with airblast sprayers, I have only twice advised an operator to buy a new sprayer. In both cases, it was because the sprayer was woefully underpowered for the crop (an apple orchard and a hopyard) and wrong for the field conditions it was expected to work in (high winds and hilly terrain). Given the parade of sprayers I've seen, that's an interesting ratio. It suggests that in most cases, there's always something an operator can do to improve their efficiency and effectiveness. It also implies that when a sprayer is mismatched, an overpowered sprayer can be toned down, but an underpowered sprayer may not be capable of salvation.

Let's talk about how to improve the match between a sprayer and a highbush or cane berry crop. First, recognize that the crop, sprayer and weather have to be addressed together. Beware the sprayer salesman that parks an airblast sprayer on a gravel road and sends up an impressive wall of mist. If you really want to assess performance, drive it through the crop in weather conditions you would normally spray in. Let's get the obvious parts out of the way before we dive into sprayers.

The Crop:
An overgrown, unmanaged crop canopy can make or break an application. It becomes that much more difficult for a droplet to navigate through all those obstacles to eventually land in the densest part… and that's quite often where the disease and insects are. Everyone knows to prune to improve air flow and light penetration, but prune to improve spray coverage as well.

Also, your sprayer settings should reflect the stage of crop development. Would you use the same settings on your first application of the season as you would the last? The crop canopy changes significantly throughout the season, and so should your sprayer.

The Weather:
The smaller the spray droplet, the more difficult it is to predict what it will do when it leaves a nozzle. High humidity, lower temperatures and light wind (not dead calm) help keep spray droplets intact and on course. Hotter, drier and windier conditions make droplets smaller and take them off course. A sprayer calibration established in one set of conditions is generally not appropriate for the other.

The Sprayer:
In my experience, most sprayers used in highbush and cane berry are trailed, axial fan, airblast sprayers that may (or more often, may not) have air deflectors or ducting. They employ conventional hydraulic nozzles and drive every row spraying from both sides. Less frequently, I see cannon sprayers that use a duct to direct spray over multiple rows from one direction. They employ either conventional hydraulic nozzles, or some manner of air-shear misting nozzle. Finally, and most rare, there are vertical or horizontal boom sprayers with no air-assist. Conveniently, their commonality is also my order of preference, which stems from how I like to adjust them.

Adjusting the sprayer:
Start with air direction and speed.

1) Adjust deflectors (if available) to just overshoot the canopy and drop fan gear to low (if available).
2) Set your tractor rpms (~540 rpm but preferably less) and ground speed (~5.0 k/hr or ~3.0 mph).

3) Attach 25 cm (10 in) lengths of flagging tape to the far side of the plant canopy you wish to spray. If spraying in a light cross wind, choose the upwind target so the tapes are blowing into the canopy, not away from it. Do this at the top, middle and bottom of the canopy for three plants in a row.
4) With a partner standing in the next alley watching the tapes, bring up the rpms and drive by with the fan on and the spray booms off.

If the ribbons stand out taut, or hang limp, you are using too much or too little air, respectively. Make changes until the ribbons flag briefly as the sprayer passes.

Next, adjust the nozzles.

1) Place water-sensitive paper in three locations (top, middle and bottom of the canopy, centre vertical axis). Put two papers in each position, back-to-back, yellow side facing the alleys. Do this for three plants.
2) Spraying clean water, drive the down-wind side of the crop. Stop and inspect the papers without removing or disturbing them. Then, spray up the other alley on the upwind side. Check them out again.

Trouble shooting coverage is too involved to include it all here, but go to this article for a guide to interpreting water sensitive paper: http://sprayers101.com/spray-coverage-diagnostics/. Basically, if there isn't enough coverage, you need more volume from the corresponding nozzle position. If there's too much, you can cut back. This is accomplished by changing operating pressure, or preferably, the individual nozzles.

Which sprayer is best for you:

Returning to my preferences, you might note that certain sprayers don't fit the adjustment process as well as others. An axial airblast sprayer with a positive displacement pump (i.e. not centrifugal) can have its fan speed, pressure and nozzle rate/spray quality adjusted independently. It is a very flexible option.

A cannon sprayer may seem more efficient, but trying to cover too many rows in a single pass can compromise coverage. Typically, too much closest to the sprayer and too little at the far end of the swath. Additionally, cannons with air-shear nozzles need higher air speeds to create spray, so you cannot adjust air without affecting spray quality and flow.

Finally, vertical or horizontal booms with no air assist rely entirely on hydraulic pressure to propel spray; Wind influences the spray too much, and canopy penetration is hard to achieve consistently.

Last thoughts:

Only after coverage is confirmed should you measure all the settings for a spray record (e.g. volume-per-acre and travel speed). Those figures will inform how you mix your tank. Be aware of changing weather conditions and crop development, and recognize that sprayer settings have to change to compensate.

"Sprayer calibrations, like milk, expire over time."

Further reading:

Read more and watch videos about matching sprayer settings to the crop:
http://sprayers101.com/the-right-sized-sprayer-for-the-job/

The Extraordinary Berry

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- Overview of business
- Location of business
- Size of operation
- Berry varieties
- Advertising/Marketing/Promotion
- Sales: U-Pick, Wholesale, Retail, Wineries
- Customer profile
- Future challenges
- Pest controll and management
- Labor
- Clean plants

Growing Blackberries in Colder Climates

Brett Rhoads
Rhoads Farm Inc.
rhoadsfarms@yahoo.com

Rotating Cross Arm (RCA)

- Blackberries are grown on the RCA by Trellis Growing Systems (TGS)

Varieties Include:

- Ouachita
- Natchez
- Apache
- Triple Crown
- Osage

The berries will get covered in December with a 3 oz. row cover.

Since 2010 temperatures have hit between -18 F and -22 F

Mid March Canes are rotated to bud break position

After blooms emerge trellis then is rotated to harvest position

- Berries market during the time southern U.S. and Mexico are finished.
- Season runs between Mid July through Mid September

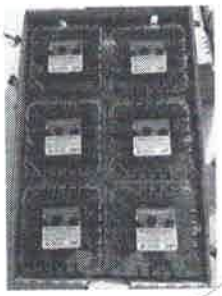
- Yields after the major 'Polar Vortex' have been around 9,000-10,000 lbs./Ac.

- With the RCA trellis system there is more training labor required, which means we try to capture higher prices.

Marketing

Berries are packaged in 6oz and 12oz clamshells and marketed by Glumarra International Berry under the Nature's Partner Label.

nature's partner



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Pros and Cons

Pros of RCA System

- Winter protection
- Consistent yields
- Better spray coverage (SWD)
- Increased harvest efficiency
- Fruit quality
- Less white drupelet
- Better air drainage for disease control

Cons of RCA System

- Training Labor

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