

Getting good coverage: Sprayer choice and calibration for best disease management.

Effective Disease Management in Northeastern Vineyards

January 10, 2018 Flag Hill Winery, Route 155, Lee NH George Hamilton Extension Field Specialist UNH Cooperative Extension

Spraying of Yesteryear!







The Objective of Grape Spraying



Would you say this is efficient and effective? The objective of spraying is to efficiently deliver an effective, uniform dose of product to the target area in a safe and timely manner.

> Dr. Jason S.T. Deveau Application Technology Specialist OMAFRA

Vineyard Spraying

- Better spray practices could do more to improve fruit quality in New England than any single vineyard practice.
- Effective spraying is the result of doing your homework, using the right equipment and materials, and proper calibration
- Obtain and maintain the pesticide applicator's license
- Use common sense! e.g. weather, vineyard and vine conditions
- Do not develop bad habits!
- Spraying is not intuitive!

Vineyard Spraying

The amount of spray required will depend on

- Label Directions
- Growth stage of the plant
- Method and equipment used to apply

The "foundation" for spray applications

Dilute application

- Amount of pesticide per gallon or 100 gallons (from the label) or per acre
- Spray foliage "to the point of run off"

Concentrate applications are based on the dilute application rate, and adjusted according to the "concentration factor"

"to the point of run off"

Spray is applied until it just begins to drip from the leaves

DO NOT spray beyond this point

- Will waste chemicals if they drip to the ground
- Knocks drops off the leaves, less stays on the plant



A hand sprayer can be used for a very small vineyard; a hand or backpack sprayer will handle an acre or more.



Hydraulic sprayer is when the sprayer's pump supplies energy that carries spray material to the target (plant foliage).





Air blast sprayers or mist blowers can either be mounted on a three-point hitch on the tractor or on a trailer.

Air blast sprayers or mist blowers can be divided into two types, both types utilize a high-pressure air stream but differ in the way the spray solution are broken up into droplets





DID YOU KNOW?

Air, not pressure, propels fine droplets. Raising the pressure creates more fine droplets, but they don't travel much further. So, if you are trying to get spray to go higher, don't increase the pressure. Rather, try venturi nozzles in the top positions to lob coarser drops.

Dr. Jason S.T. Deveau Application Technology Specialist OMAFRA

The first type sprayer is called the axial flow, axial fan or air-blast type.









The second type sprayer is wind shear, air-assisted, or pneumatic sprayer.





- Calibration is the process of adjusting sprayer components in order to deliver the desired volume (rate) per area when applying chemical products.
- Why do we calibrate sprayers?
 - Calibration confirms the sprayer is functioning correctly.
 - Calibration confirms each nozzle is delivering the desired rate (e.g. gal./min.) and spray quality.
 - Calibration ensures the desired rate (gal./ac) is applied to the crop.
 - Calibration improves coverage and reduces product waste (i.e. saves money and reduces unnecessary environmental impact).

But *calibration* is more than confirming sprayer output (e.g. is the rate actually sprayed per acre - what it should be?).

It needs to include:

- Sprayer inspection (e.g. is it worn out, broken or leaking?).
- Adjusting the sprayer settings to match the crop and the environmental conditions.

Calibration is a three step process:

- First inspection
 - (I refer to this as the pre-calibration check)
- Second output per given area
- Three spray coverage

There are five very important checks to be done with the sprayer to assure proper calibration, they are:

- 1. Speed
- 2. Effective Swath Width Row Spacing
- 3. Nozzle Flow
- 4. Operating Pressure
- 5. Coverage

Calibration – 1. Speed





2. Effective Swath Width – Row Spacing







Calibration 3. Nozzle Flow











Sprayers101€



Calibration 4. Operating Pressure

Your pressure gauge can tell you a lot more than your operating pressure – it can indicate a problem with your regulator, pump, lines or overall sprayer engineering. Don't ignore it – address it.







Calibration 5. Coverage



Calibration 5. Coverage

What Can I Do?

Spray Cards





Fluorescent or Regular dye



Kaolin Clay

Get Immediate Feedback

water sensitive paper indicates coverage



Confirm Spray Coverage

- Use water sensitive paper to confirm spray is reaching the target!
- Remember coverage for grapes at 6 inch shoot growth, may be great at that stage but is the coverage the same at harvest?



Confirm Output and Spray Coverage







Keep the spray in the vineyard

Don't spray when it's too windy, or completely calm

Pay special attention to drop size:

- small enough or numerous enough for coverage
- large enough for drift resistance





Take Home!

- One calibration setup for the growing season will NOT guarantee proper spray coverage for the whole season.
- Calibration is a three step process:
 - First inspection
 - Second output per given area
 - Third spray coverage
- Check calibration based on volume used and vineyard/field size.

Take Home!

- When spraying spray up the row this application, next application spray down row – change direction of sprayer coverage.
- Do not start spraying block at the same row or end on the same row.
- Double check your speed and pressure.
- Clean filters every time the sprayer is filled.
- The skills of the person who will operate the sprayer should be considered.
- Can of Air!

http://sprayers101.com

Dr. Jason Deveau

Application Technology Specialist with OMAFRA in Ontario







http://sprayers101.com

TONS of great information to make your applications and spray placement more accurate

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Adjusting airblast sprayer air settings – Part 1

🛦 Spray_Guy 🛛 👒 Adjusting Airblast Settings, Horticulture Sprayers

Adjusting the airblast air direction This is part one of a two part article on how to adjust the air direction, and air speed/volume. If you've purchased a new airblast sprayer, you're spraying a crop you're not familiar with, or you are ready to reconsider your *_Read Nove*



Adjusting airblast sprayer settings – Part 2

🛓 Spray_Guy 🛛 👒 Adjusting Airblast Settings, Horticulture Sprayers

Adjusting airblast Air speed / volume This is the second part of a two part article on how to adjust airblast air direction, and air speed/volume. It's recommended that you read part one first! When performed correctly, these adjustments are a qualitative form of calibration that ...Read More



Pressure affects airblast spray quality

& Spray_Guy 👋 Adjusting Airblast Settings. Horticulture Sprayers

Here's a short article to remind you about the power of pressure. You may have noticed how integral pressure is to spray quality. Lower pressures reduce nozzle rate, increase median droplet size, and typically reduce spray angle. Higher pressures increase nozzle rate, reduce median *__Read More*