



Spray Rig Distribution Uniformity Optimization for California Strawberry Production

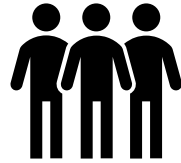
Caleb Fink, Jonathan Banuelos, Luke Rossi, Molly Barker, John Lin



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Outline



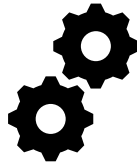
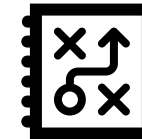
Grower Surveys

Simulations



Volume Calculation

Key Design Variables



Test Rig

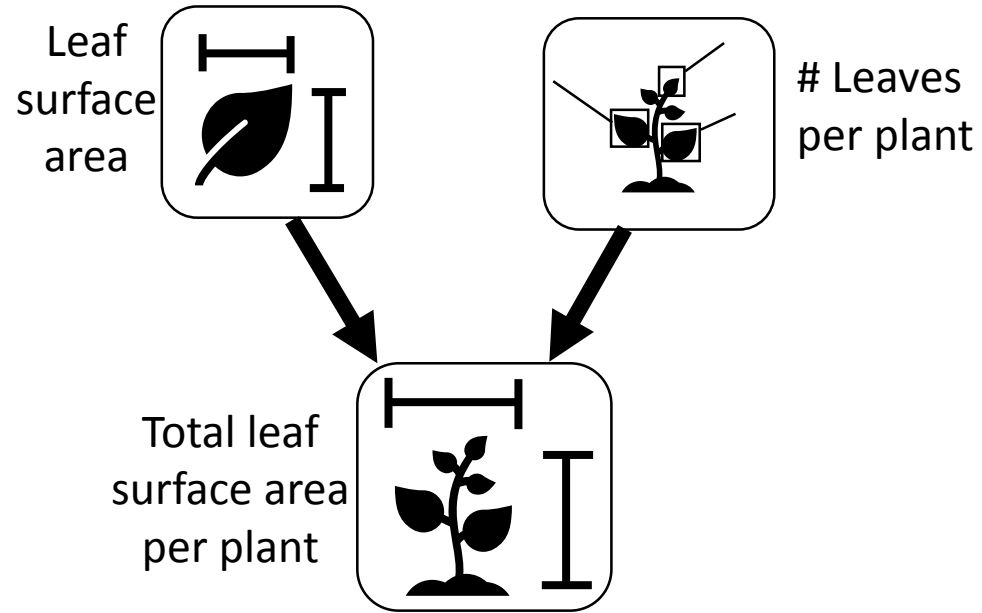
Spray Card Evaluations



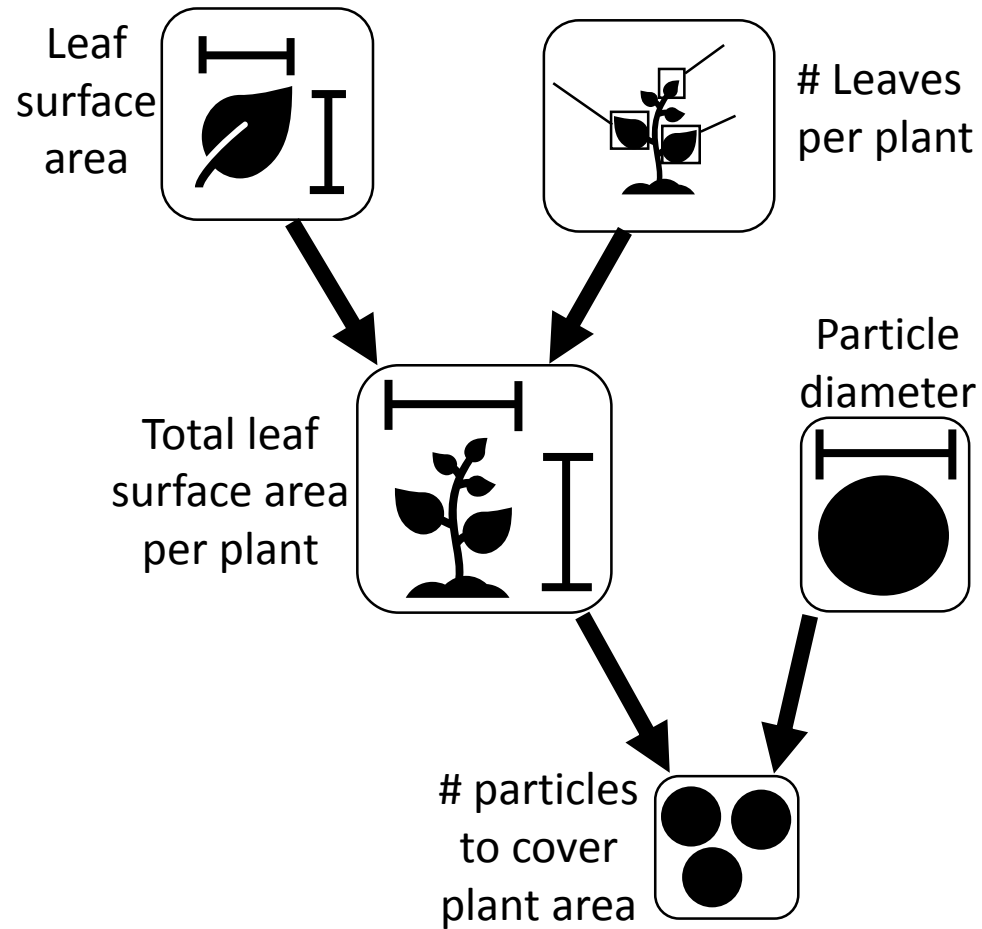
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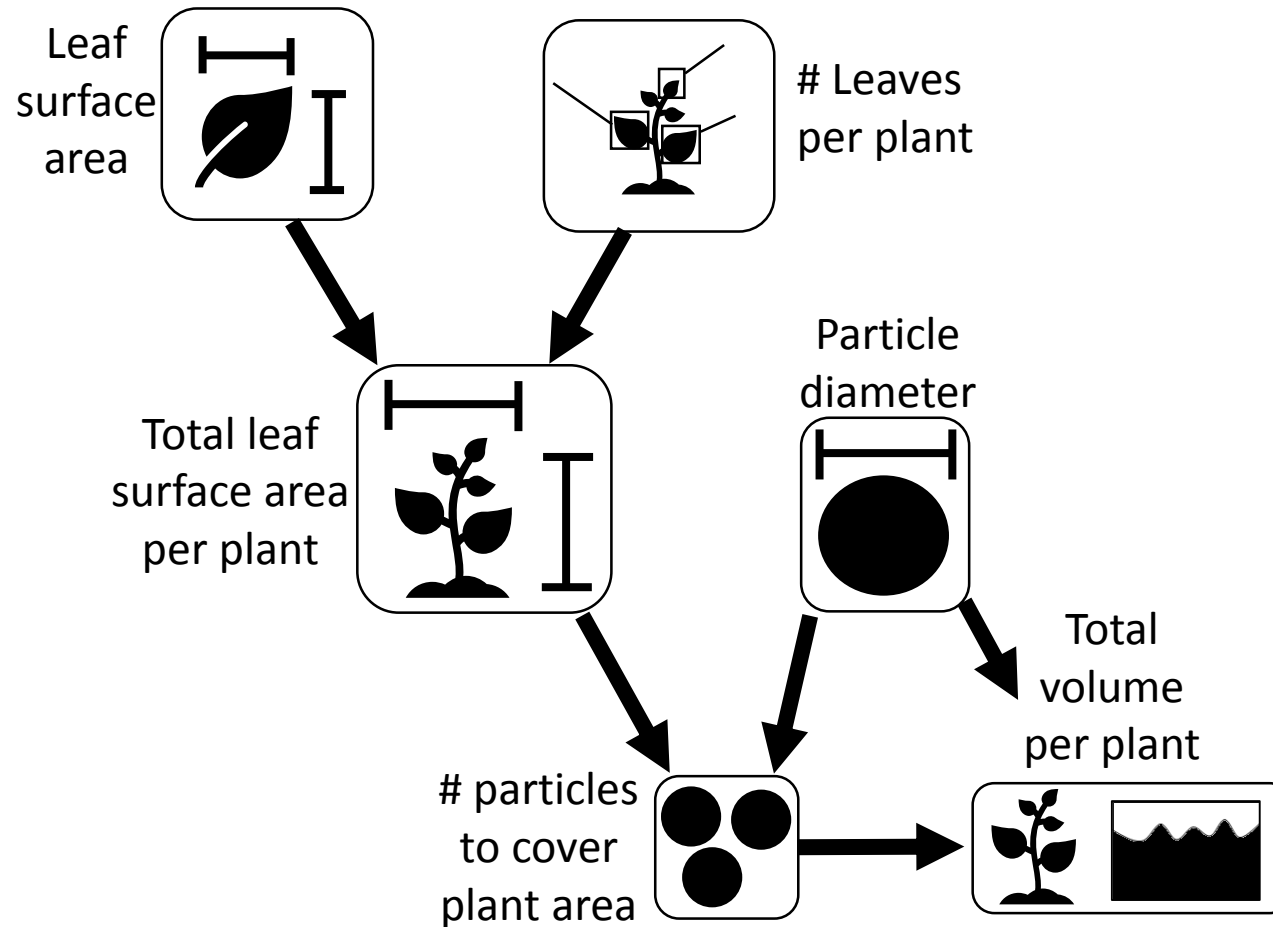
Volume Calculation



Volume Calculation



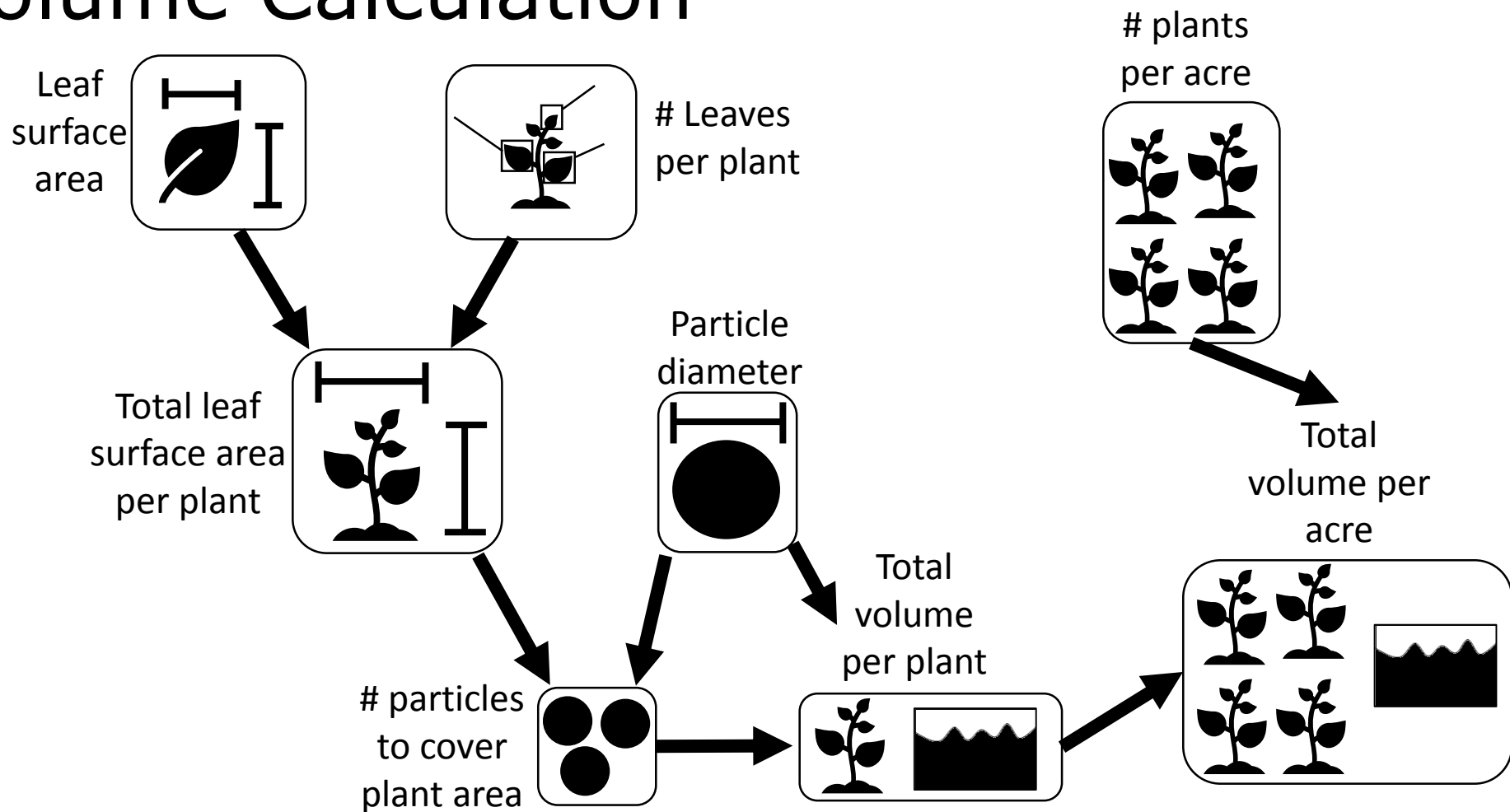
Volume Calculation



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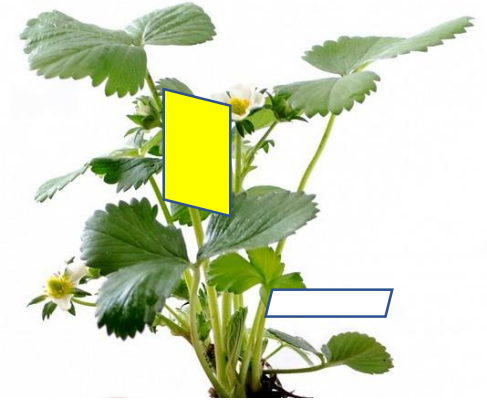
Volume Calculation



Spray Card Trials

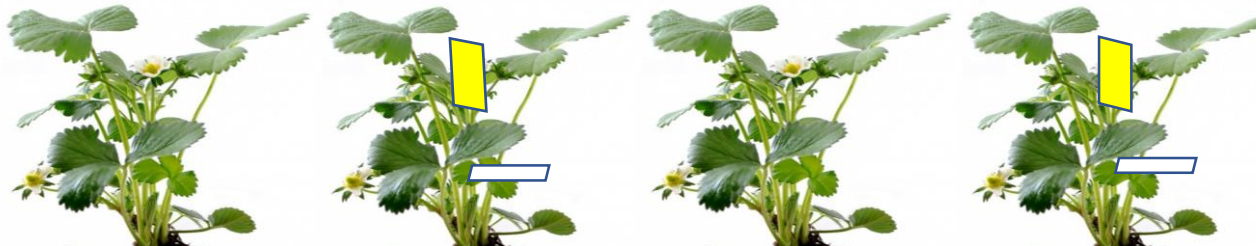
- Cards determine canopy coverage
- Water sensitive cards
- Sensitive side placed away from approaching boom, challenging the sprayer

Vertical and Horizontal Cards



Mid Card Placement

Edge Card Placement



Vertical



Horizontal

----- 4 Row Bed -----

Middle

Edge

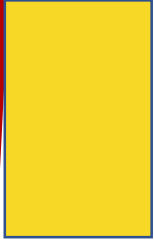


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Grower Standard Sprayer (8/30/2018)

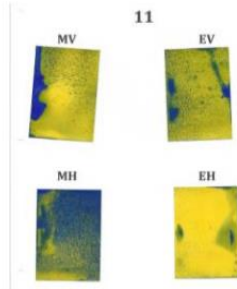
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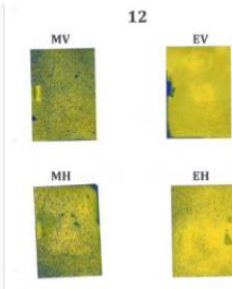
100 %



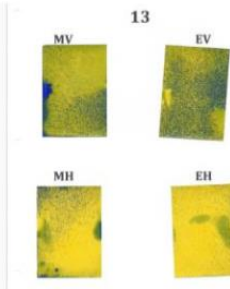
Middle Edge



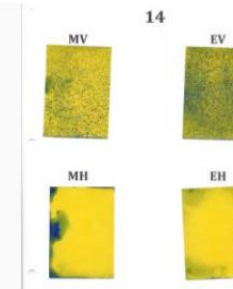
Middle Edge



Middle Edge



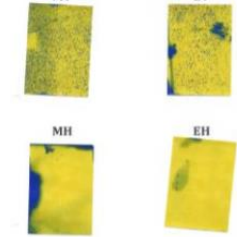
Middle Edge



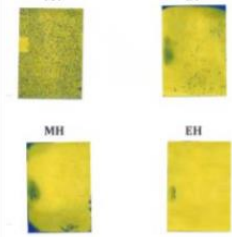
Vertical

Horizontal

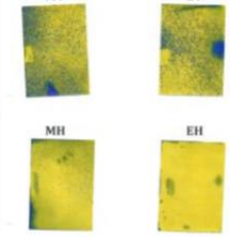
Middle Edge



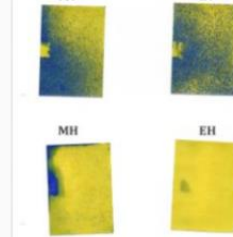
Middle Edge



Middle Edge



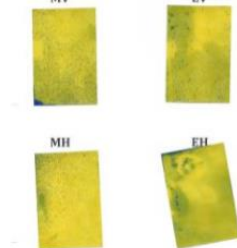
Middle Edge



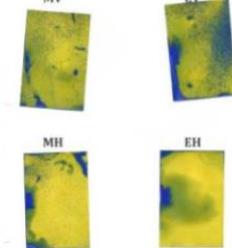
Vertical

Horizontal

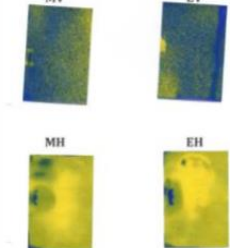
Middle Edge



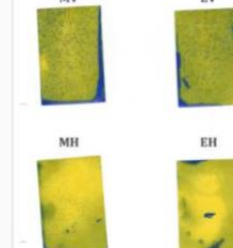
Middle Edge



Middle Edge



Middle Edge



Vertical

Horizontal

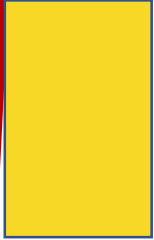


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Strawberry Center Test Rig (8/30/2018)

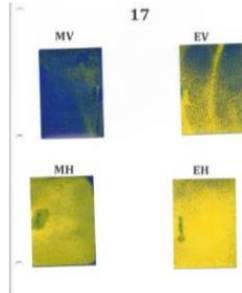
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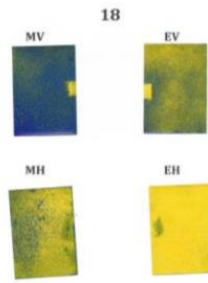
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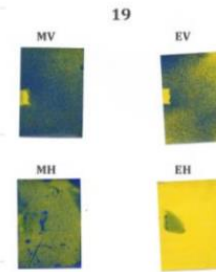
Middle Edge



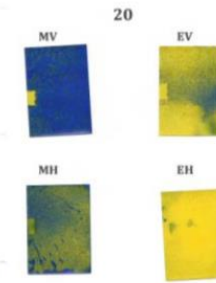
Middle Edge



Middle Edge



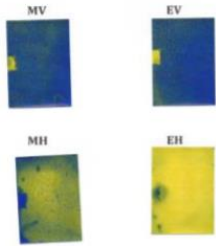
Middle Edge



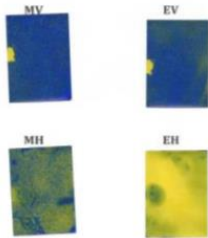
Vertical

Horizontal

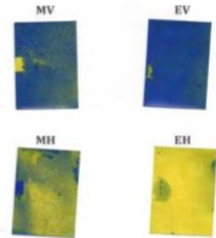
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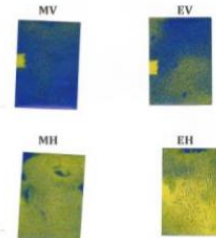
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24



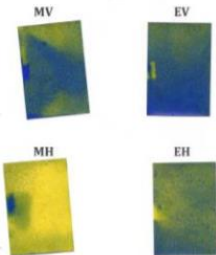
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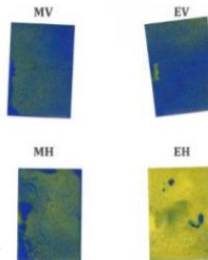
Vertical

Horizontal

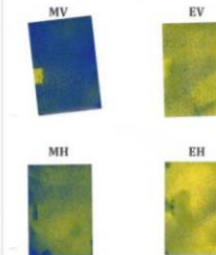
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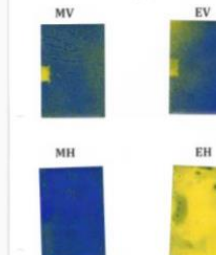
38



39



40



Vertical

Horizontal



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Spray Rig – Field Trials

	8/30/18	3/18/19	3/18/19
Grower Standard	51 %	60 %	45 %
CP Strawberry Center	80 %	78 %	75 %



We'll Evaluate Your Rig!

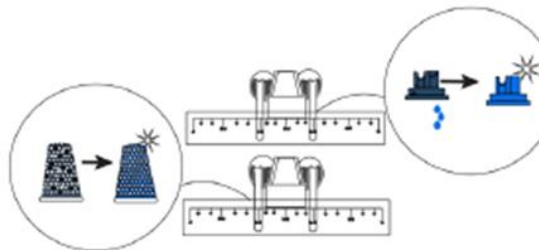
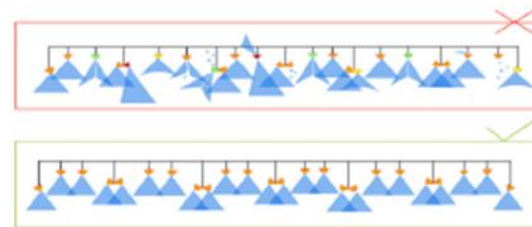
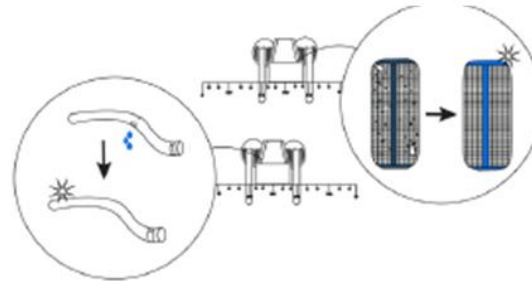
- Experienced Education Team
- Ensure Rig is Calibrated Prior to Evaluation
- Record Weather
- Recommend Maintenance If Needed
- Provide Coverage Percentages



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Maintain and Calibrate!



1

Put on personal protective equipment.

2

Clean, repair, or replace filters that are clogged or have holes.

Verify that hoses are intact and unobstructed; clean, repair or replace as necessary.

3

Verify that nozzles match or are arranged in a pattern and that the output appears visually uniform.

4

Correct mismatched nozzles.

Clean or replace nozzles and/or nozzle filters that are clogged, worn, or damaged.



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Thank you!

Special Thanks: Mark Edsall, Daniel Olivier,
Miriam Mendez, Ignacio Mendoza, Interns
Teejet donations

Questions?



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