Larvicide Applications with Unmanned Aircraft Systems

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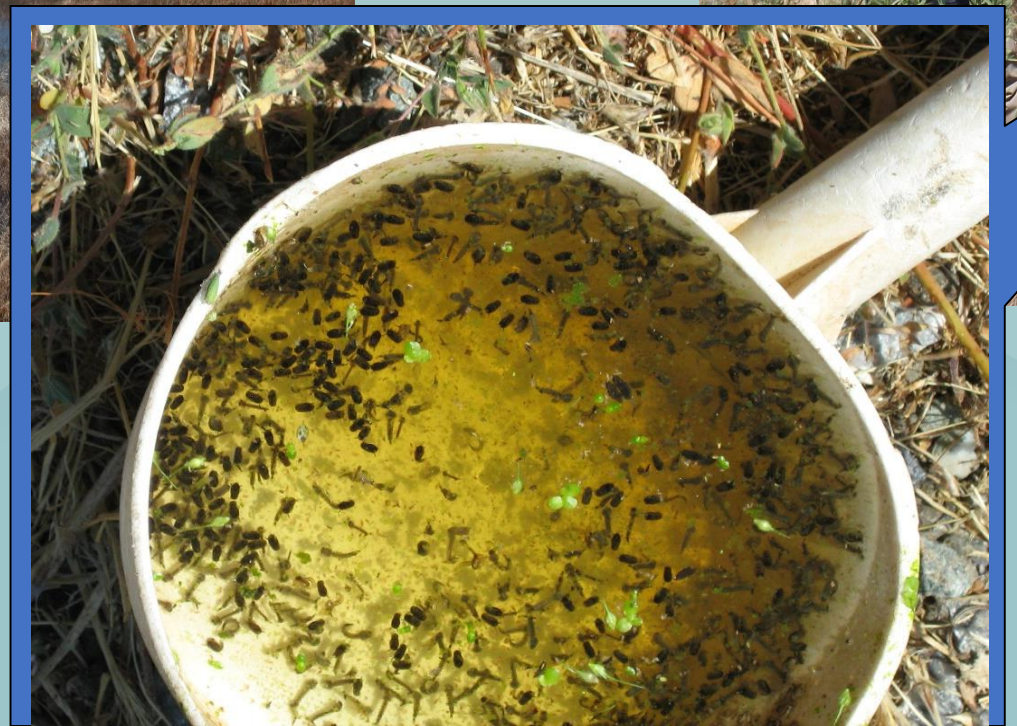
PLACER MOSQUITO & VECTOR CONTROL DISTRICT

Traditional Larval Mosquito Inspection in a Rural Area



Larval Detection with UAS

Traditional Larval Mosquito Control in a Rural Area

Unmanned Aircraft System

DJI AGRAS MG-1S

- 2.64 gallon tank
- 8 motors
- 4 XR11001VS TeeJet Nozzles
- 2 variable speed pumps

Regulatory Requirements for small UAS applications

1. Small UAS pilot certification (Part 107)
2. Agricultural Aircraft Operating Permit (Part 137)
3. Exemptions from portions of Part 107 and Part 137
4. Government Ops w/ COA (Public)
5. State and/or local regulations

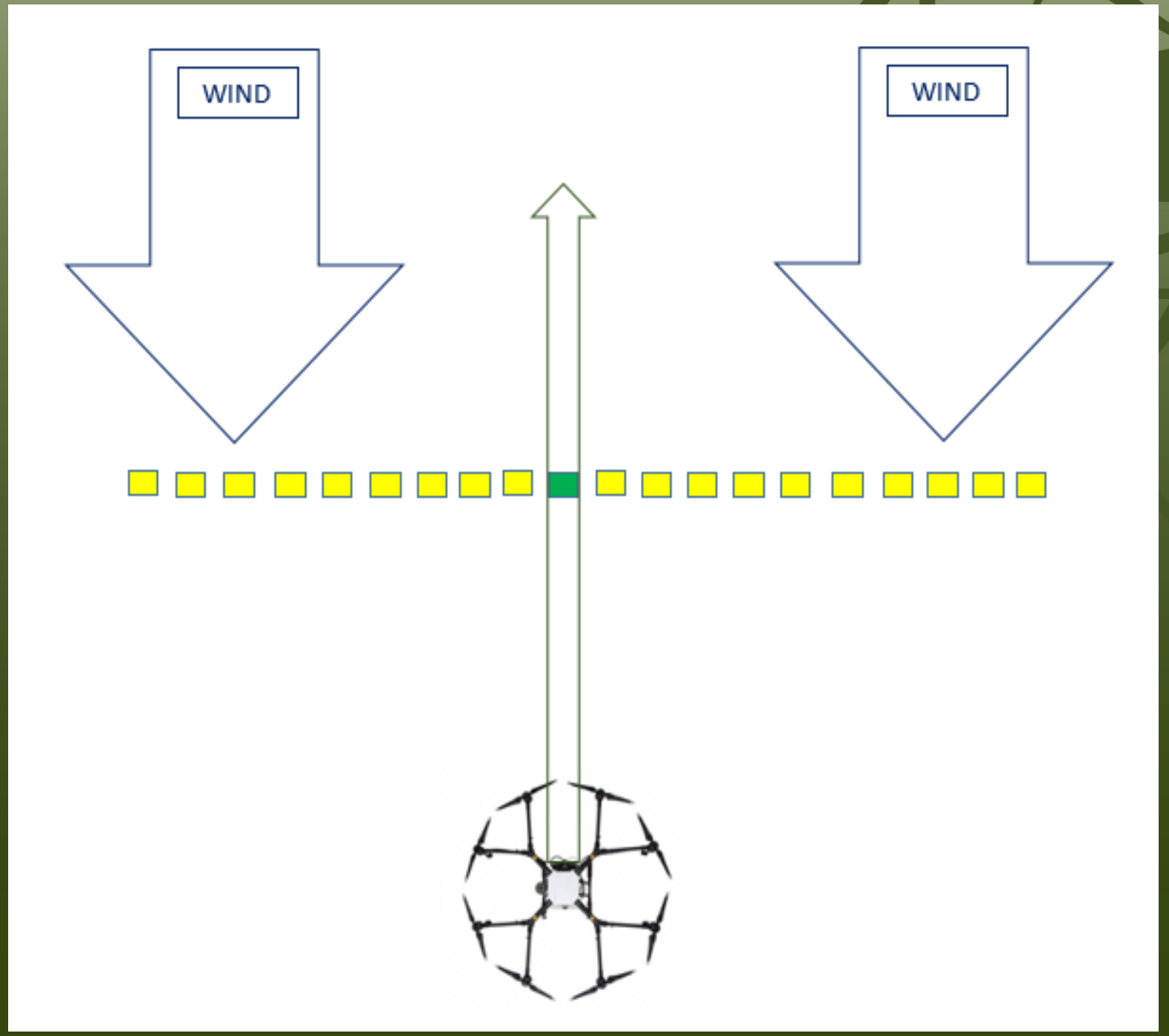
Calibration of Flow Rate

DJI AGRAS MG-1s controller has a flow calibration function.

Verify flow rate on the ground by operating sprayer with known amount of product in tank.

Swath Width/Droplet Characterization

1. Calibrate UAS to desired flow rate
2. Identify wind direction
3. Place a row of collection cards perpendicular to wind direction
   a. 1 or 2 feet apart from each other
   b. Place enough cards to capture entire swath width
4. Fly UAS over center card and directly into the wind
   a. Fly at application height and speed
   b. Three replicates are desired
5. Read Cards
   a. Droplet Size (DV 10, DV 50, DV90)
   b. Droplet Density

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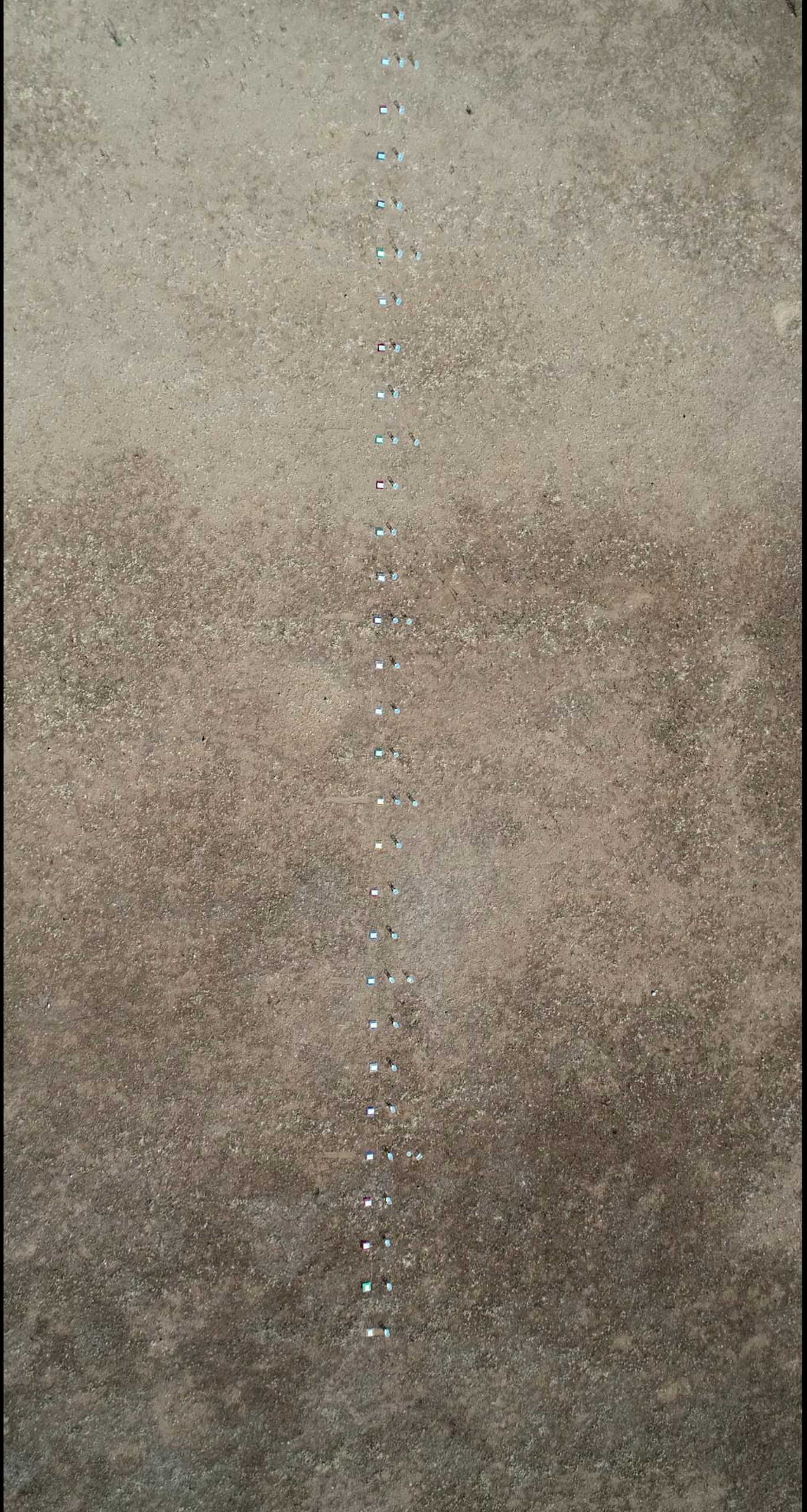
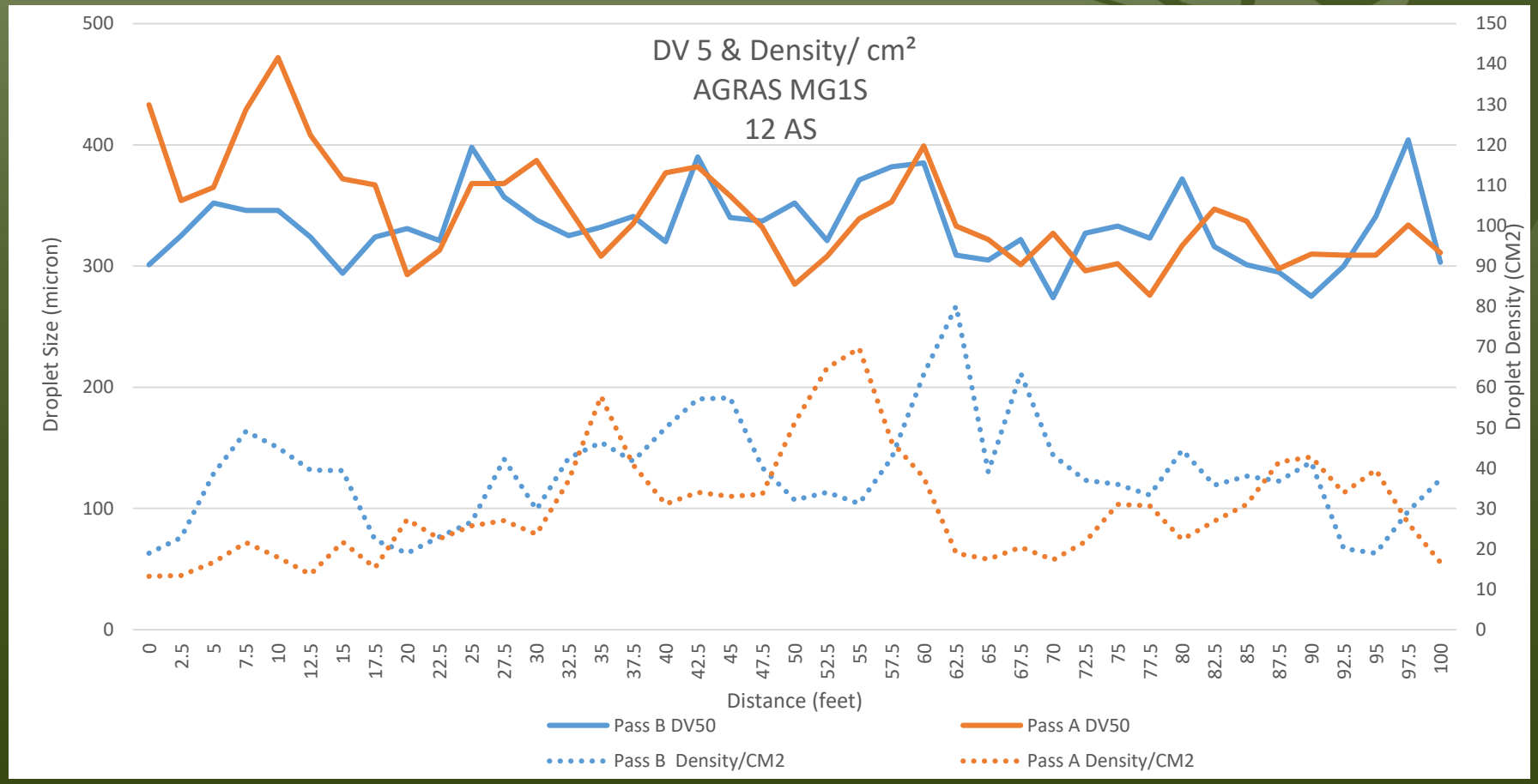


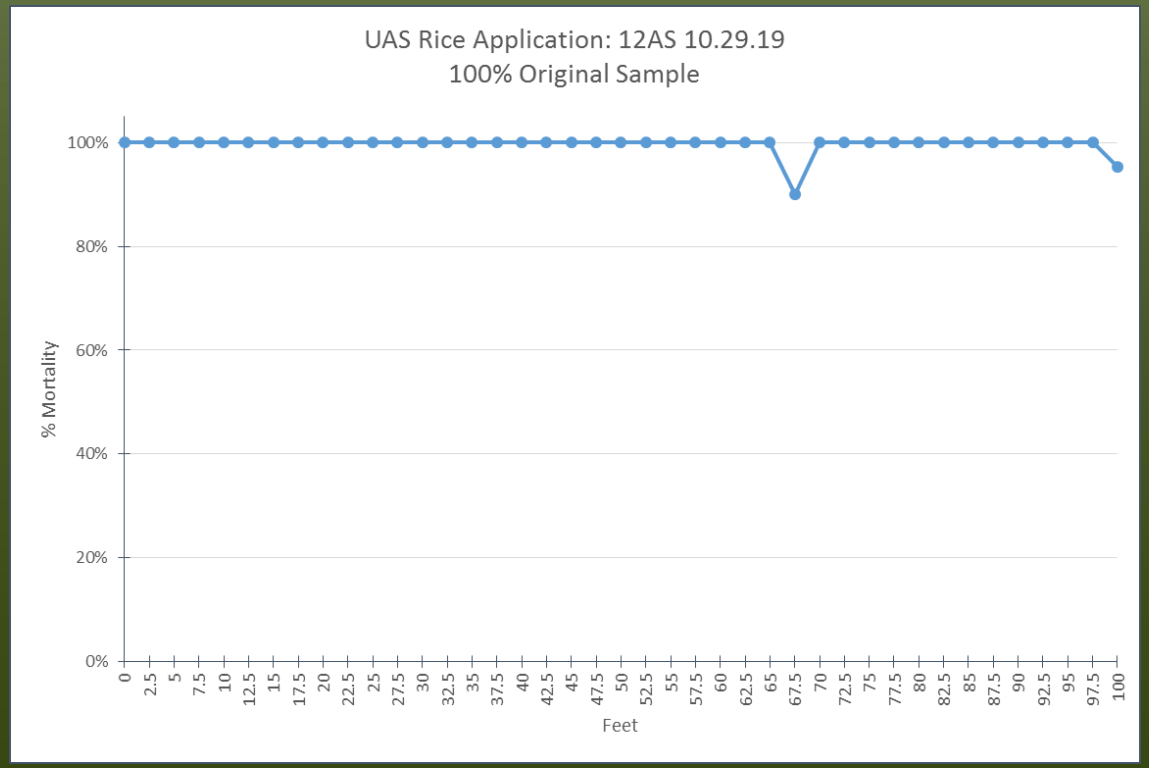
Droplet Data:



Droplet Size: VMD/DV 5

Droplet Density: Amount of drops in a cm^2

Larval Assay



Application Flight Parameters

UAS	DJI AGRAS MG-1S
Application Height	10’ – 12’ AGL
Swath	18’ – 32’
Speed	7 – 11 mph
Nozzle	extended range fan
Application Rate	1 gal/acre

Source Types for UAS Larvicide Applications

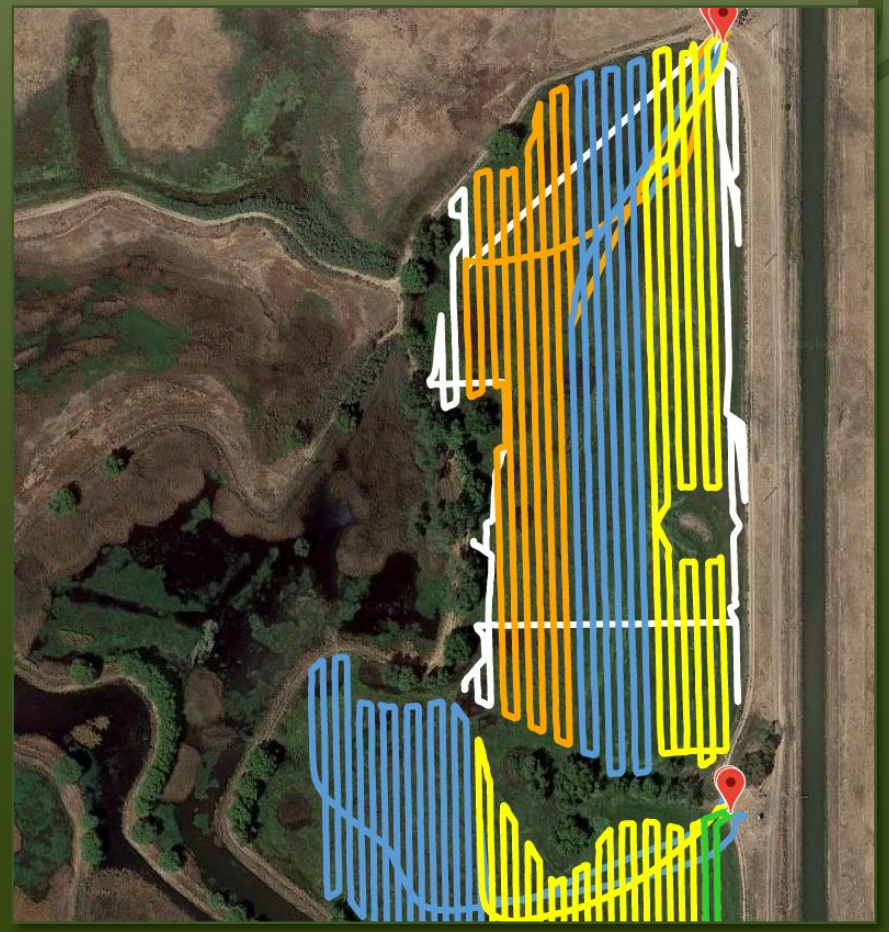
- Pastures
- Wetlands
- Snow melt
- Sloughs / low areas

Irrigated Pastures

Wetlands

Challenges with Liquid Applications using AGRAS MG-1S

- Hazards / Obstacles
- Creating spray block



Snow Melt

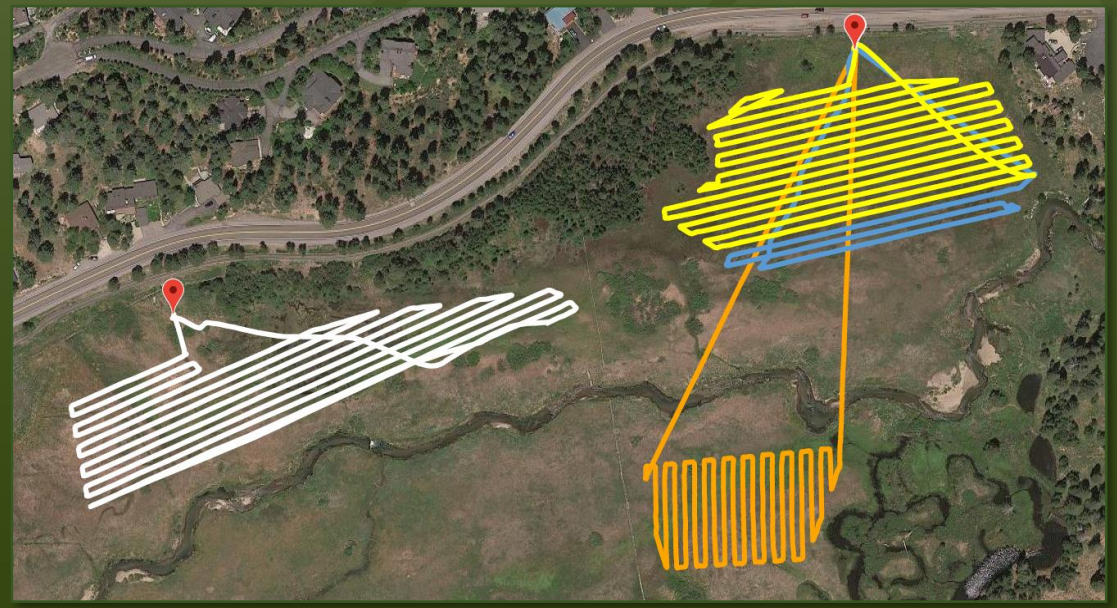
Snow Melt

Pros:

- Size of source
- Accessibility
- Traditional treating methods

Cons:

- Hazards / Obstacles
- Penetrating vegetation



Future UAS Operations

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