New Technologies:
Calibration Calculators & Characterization Analysis Cloud Applications

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VALENT BIOSCIENCES. SUMITOMO CHEMICAL

Change and Innovation 3.0
For a Sustainable Future

Why should we Calibrate/Characterize?

VALENT BioSciences
Health.

Label Requirements

Efficacy and Cost

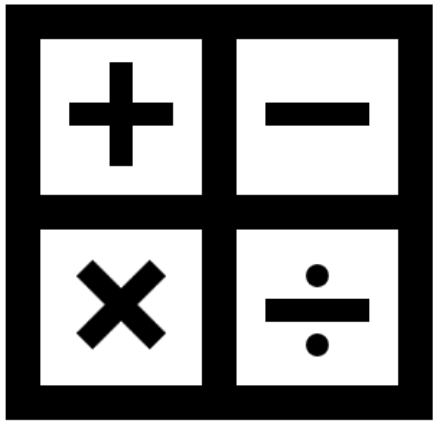
Reduce Liability (Cost)

Protects Public Health with correct and defendable applications

Prevents resistance by delivering the proper application rate

Standard Calibration Math

- Flow Calibration Equation
  - PPM=[PPA x Speed (mph) x Swath (Ft)] ÷ 495
    - 495= 43,560 square feet/1 acre x 1 mile/5,280 feet x 60 minutes/1 hour
- Mix Ratio
  - 1:1 or 1:2 or 2:1
- Percent Mix
  - Percent Mix = weight of dry product ÷ weight of water



Online Calibration Calculators

- https://www.valent[illegible]on-calculators/

Online Calibration Calculators

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Application Rate - Pounds/Acre (lbs./ac): *
5
Pounds/Acre (lbs./ac)

Speed of the equipment - Miles/Hour (mph): *
70
Miles/Hour (mph)

Swath - Feet (ft): *
70
Feet (ft)

Flow Rate - Pounds/Minute (PPM):
49.49
Pounds/Minute (PPM)

Equation
Flow Rate (Granular) = (Application Rate x Speed of the equipment x Swath) / 495

Altitude - Feet (ft): *
50
Feet (ft)

Summary

Units of Measure: Imperial (US)
Type of Equipment: Helicopter
Type of Habitat:
Product:
Application Rate - Pounds/Acre (lbs./ac): 5
Speed of the equipment - Miles/Hour (mph): 70
Swath - Feet (ft): 70
Flow Rate - Pounds/Minute (PPM): 49.49
Altitude - Feet (ft): 50

% Mix = (Pounds of Product ÷ Pounds of Water) * 100

Pounds (lbs.) of Product: *
Pounds (lbs.)

Ounces (oz.) of Product:
0.00
Ounces (oz.)

Gallons (gal) of Water: *
Gallons (gal)

Pounds (lbs.) of Water:
0.00
Pounds (lbs.)

% Mix:
0

Estimate Coverage (Acres/Minute)

Speed of equipment - Miles/Hour (mph): *
Miles/Hour (mph)

Coverage - Acres/Minute (APM):
0.0000
Acres/Minute (APM)

Swath width of application (Feet (ft)): *
Feet (ft)

Total Acres Treated

Acres Per Minute (APM):
0.000
Acres/Minute (APM)

Total Acres (ac) Treated:
0.0000
Acres (ac)

Minutes (min) Treated: *
Minutes (min)

Swath Analysis

- Goals
  - Achieve desired mean application rate
  - Achieve a CoV of <30
    - Ensure even distribution across the swath

Aerial Granular Flow Calibration

- Materials Needed
  - Sprayer Equipment
  - Product
  - Timer
  - Scale (accurate to the second decimal place)
  - Catch Can/Tub/Bag

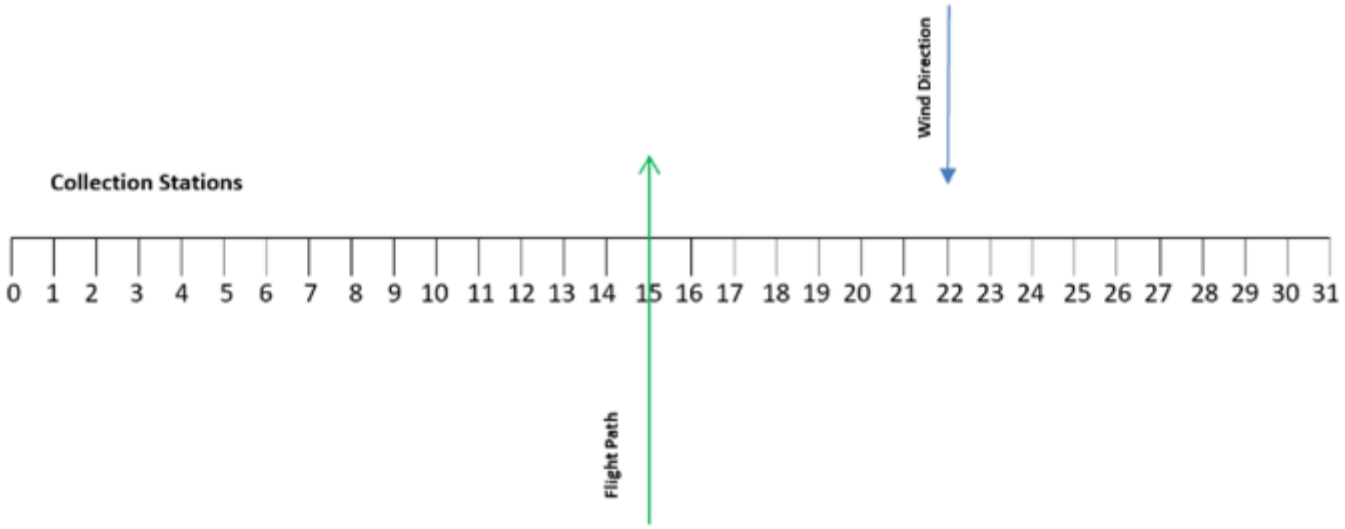
- Directions
  - Collect material for one min.
  - Weigh contents
  - Adjust roller speed if needed or gate opening
  - Repeat until 3 consistent measurements are achieved

Aerial Granular Swath Characterization

- Materials Needed
  - Application Equipment
  - Product
  - Scale
  - Catch Buckets/Tubs (26)
  - Tape Measure or Wheel
  - Cones or Flags (3) for flight line

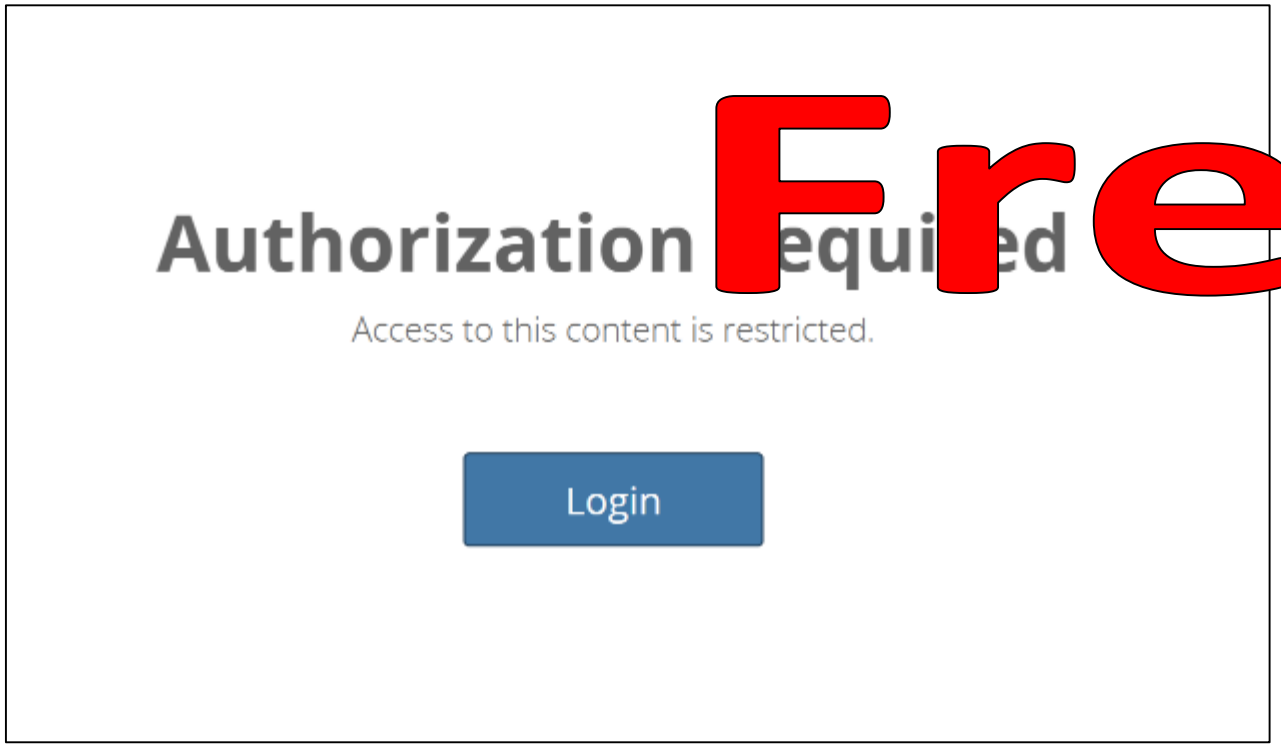
Swath Analysis

- Methods
  - Fly perpendicular over the buckets
    - Using operational speeds and altitude
  - Collect material in buckets and weigh (3 replicates)
  - Enter weight (grams) data into excel worksheet
  - Download excel sheet into analysis program to determine application rate & swath



Aerial Granular Swath Characterization Tool

- https://valentbiosciences.shinyapps.io/Swath_Analysis_Excel/



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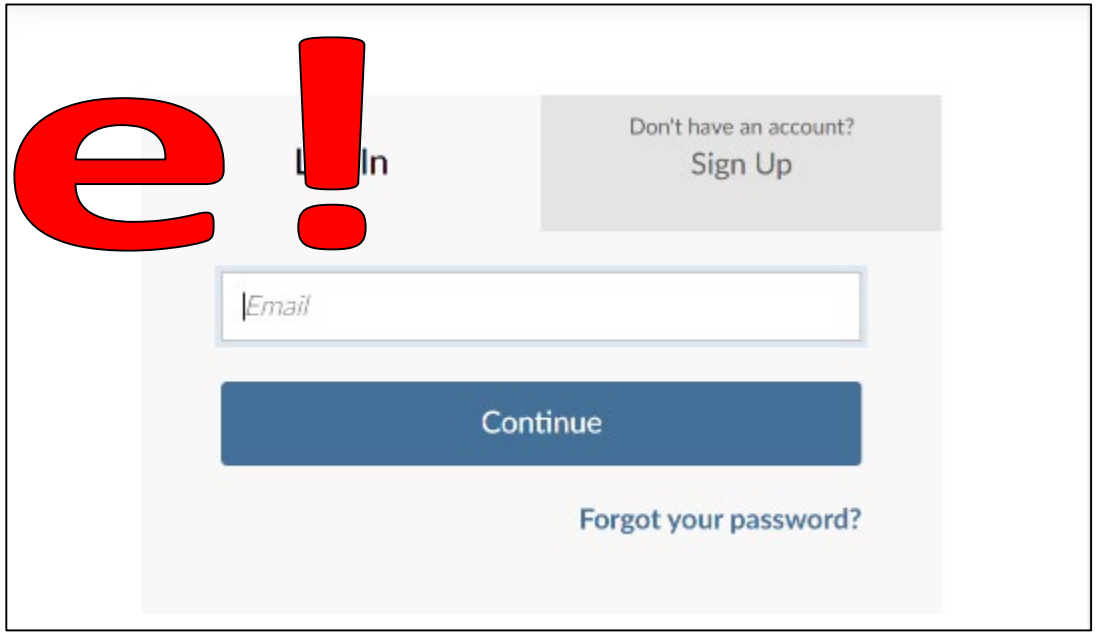
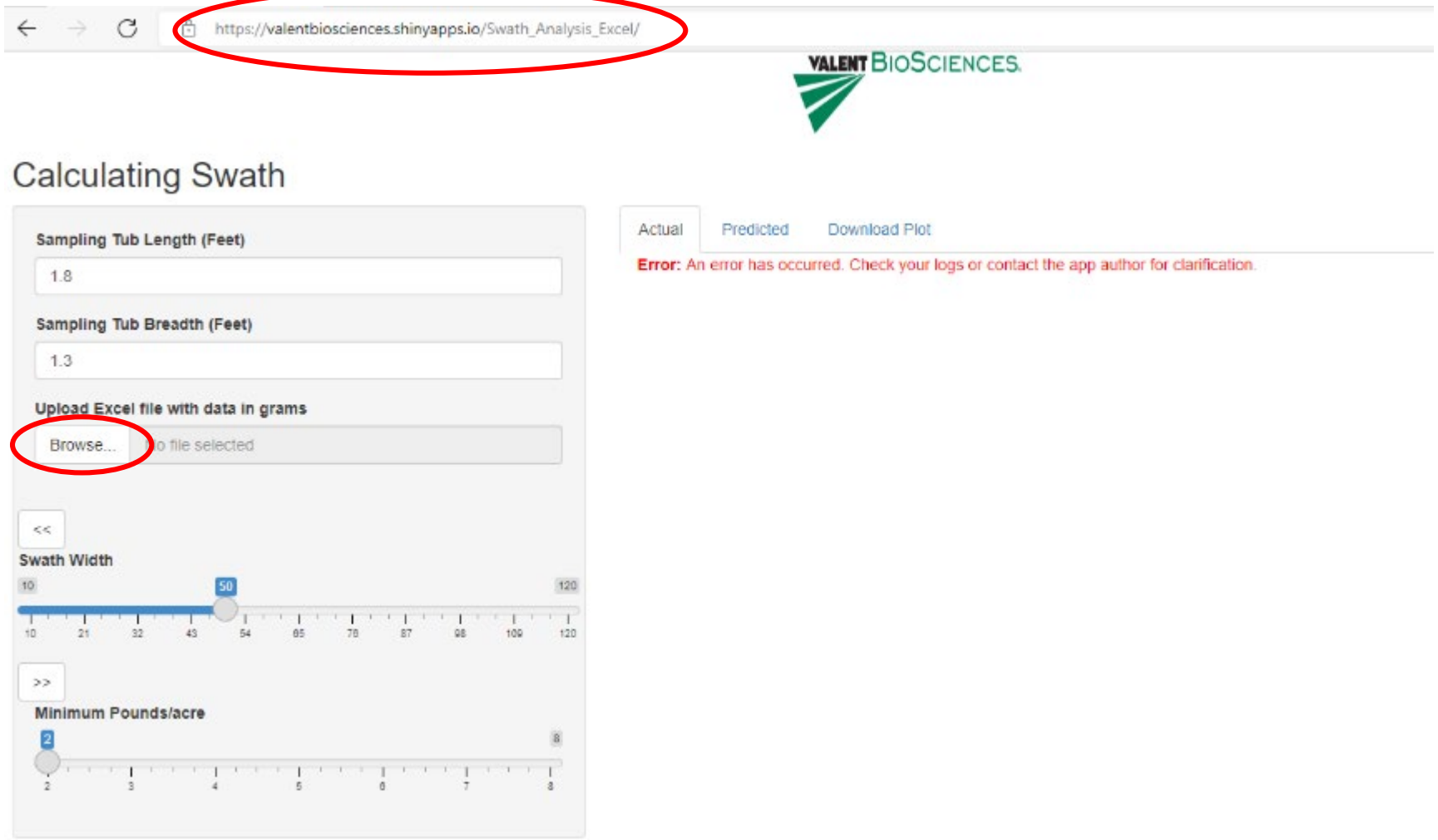
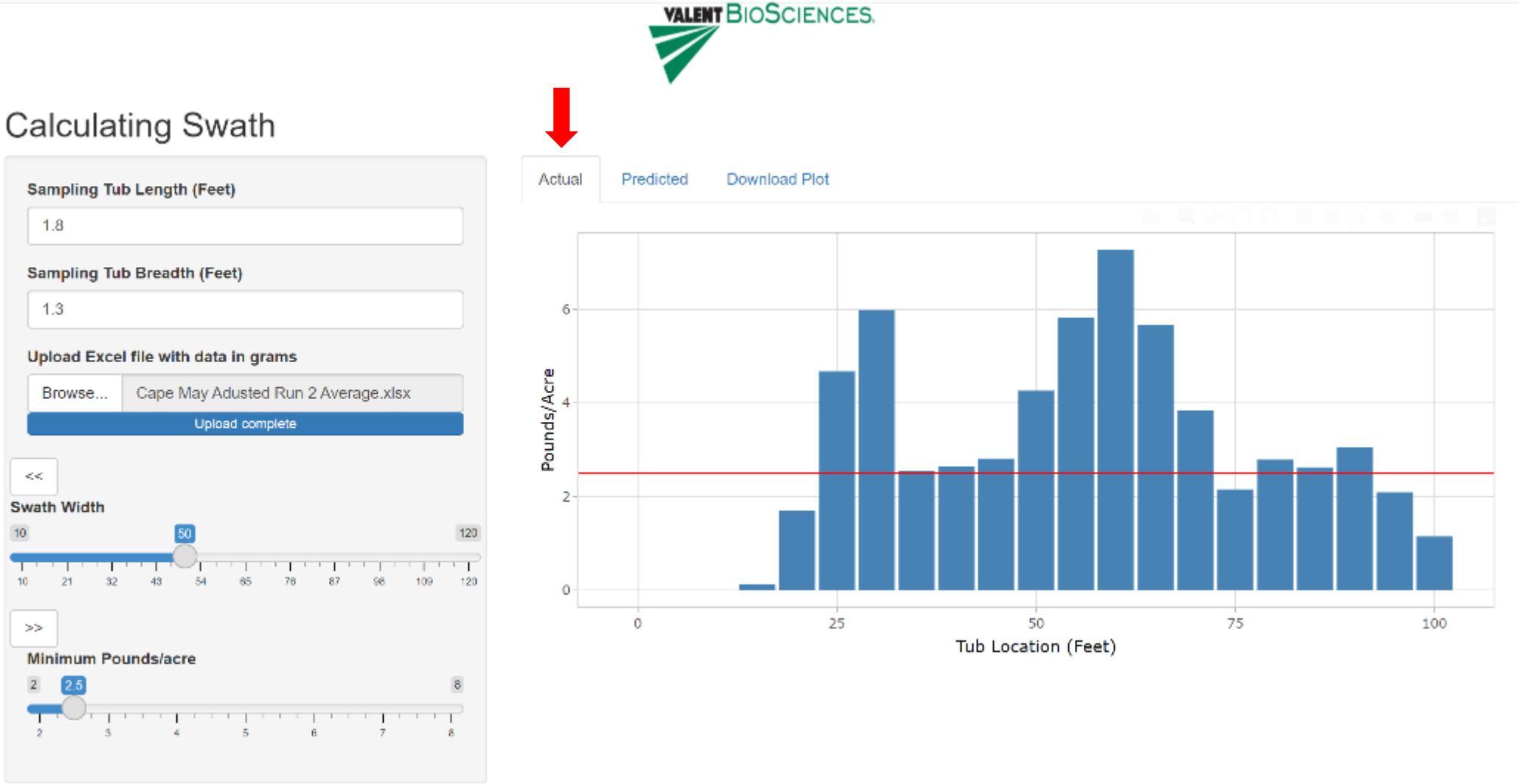


Swath Analysis

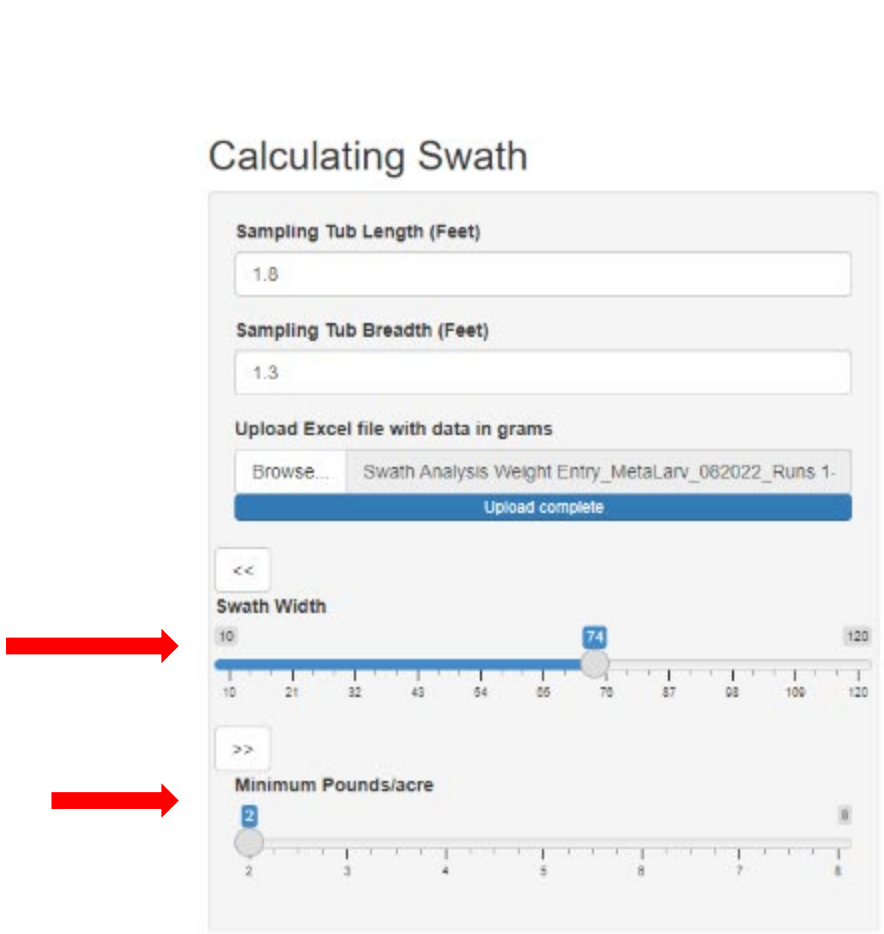
	A	B
1	Feet	Deposit
2	0	0.008
3	3	0.013
4	6	0.049
5	9	0.043
6	12	0.109
7	15	0.114
8	18	0.072
9	21	0.064
10	24	0.069
11	27	0.112
12	30	0.095
13	33	0.103
14	36	0.109
15	39	0.099
16	42	0.152
17	45	0.223
18	48	0.233
19	51	0.307
20	54	0.234
21	57	0.180
22	60	0.117
23	63	0.065
24	66	0.066
25	69	0.071
26	72	0.075
27	75	0.151
28	78	0.000
29	81	0.000
30	84	0.000
31	87	0.000
32	90	0.000

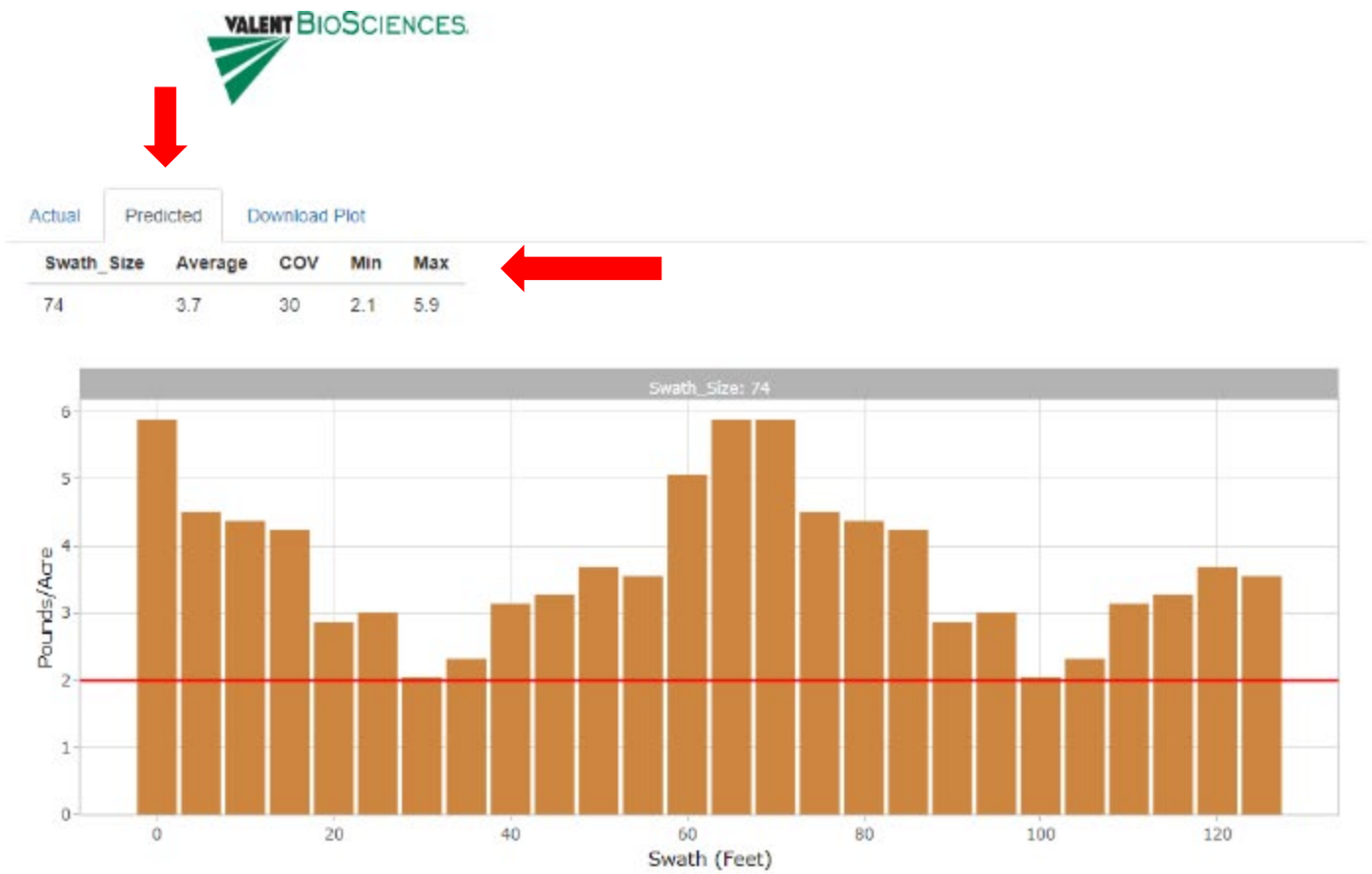


Calculating Swath



Calculating Swath





Calculating Swath

Calculating Swath

Sampling Tub Length (Feet)

1.8

Sampling Tub Breadth (Feet)

1.3

Upload Excel file with data in grams

Browse... Cape May Adusted Run 2 Average.xlsx

Upload complete

<<

Swath Width

10 50 120

10 21 32 43 54 65 76 87 98 109 120

>>

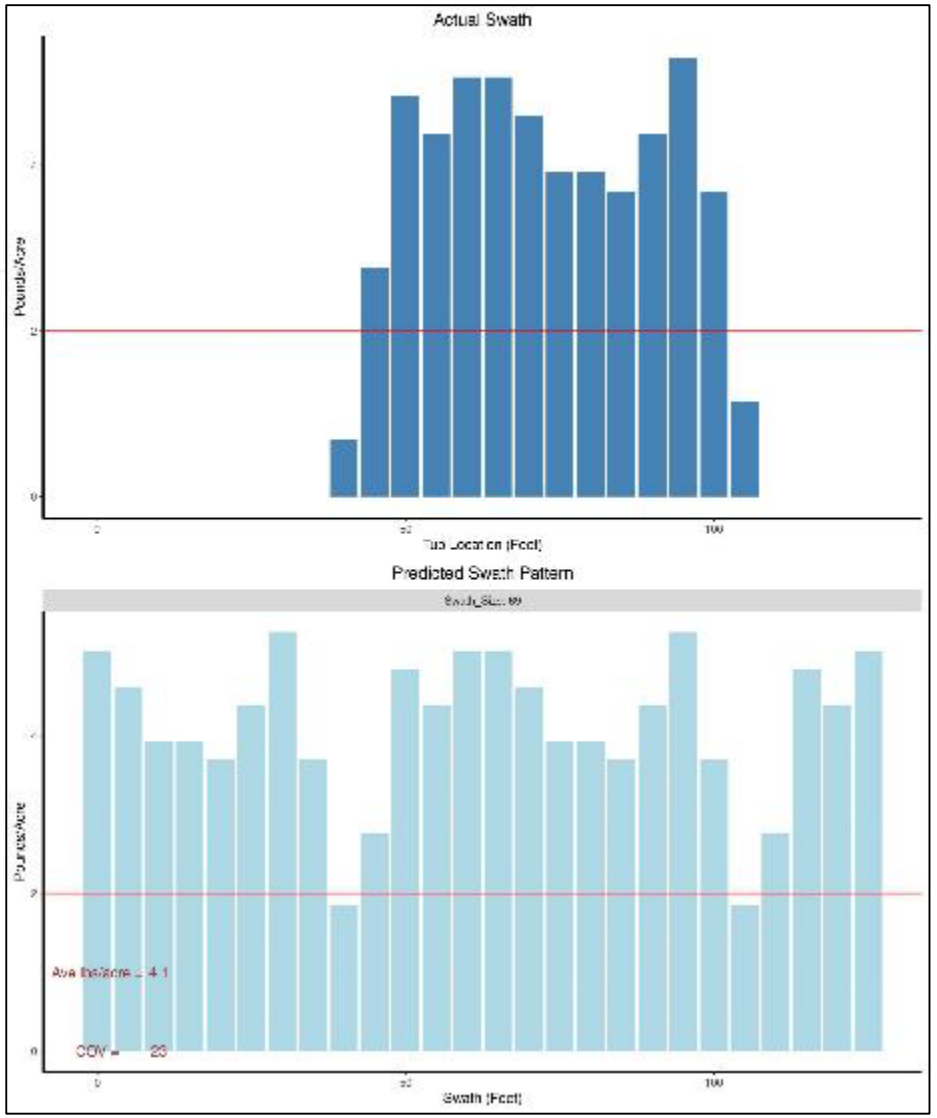
Minimum Pounds/acre

2 2.5 8

2 3 4 5 6 7 8

Actual Predicted Download Plot

Actual Predicted Combined



BacDrop™ Analysis Tool

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Health.

WALS requires a unique droplet size range in the extremely fine to fine (30 – 235 microns), which can drift through areas such as neighborhood backyards where inaccessible containers may be abundant.

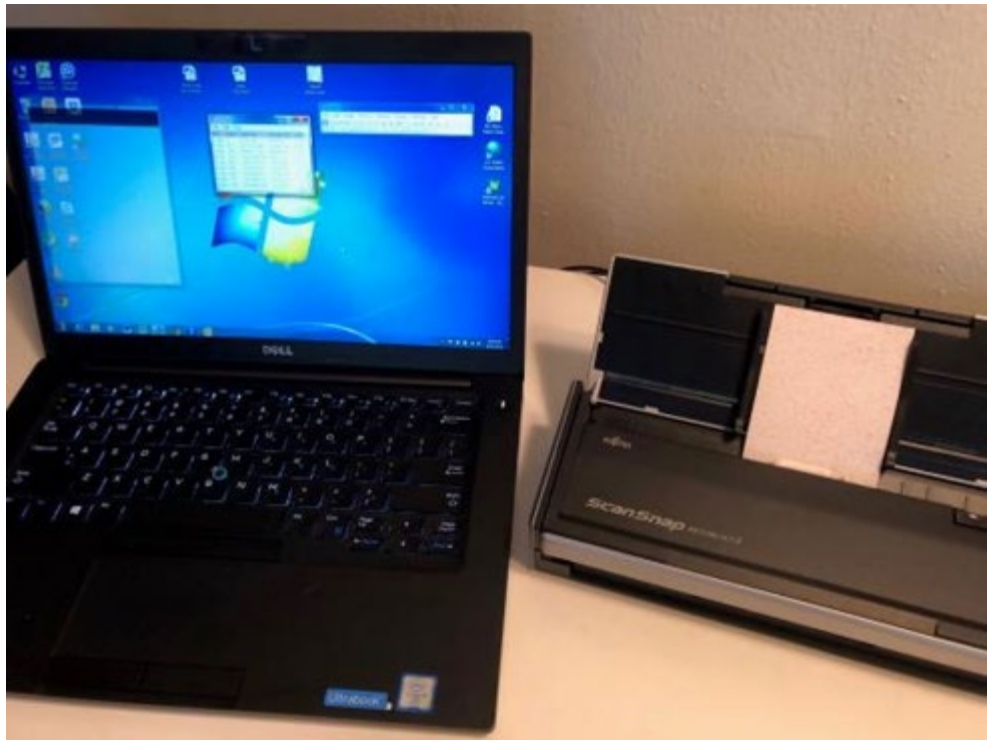
Optimal WALS Droplet Size

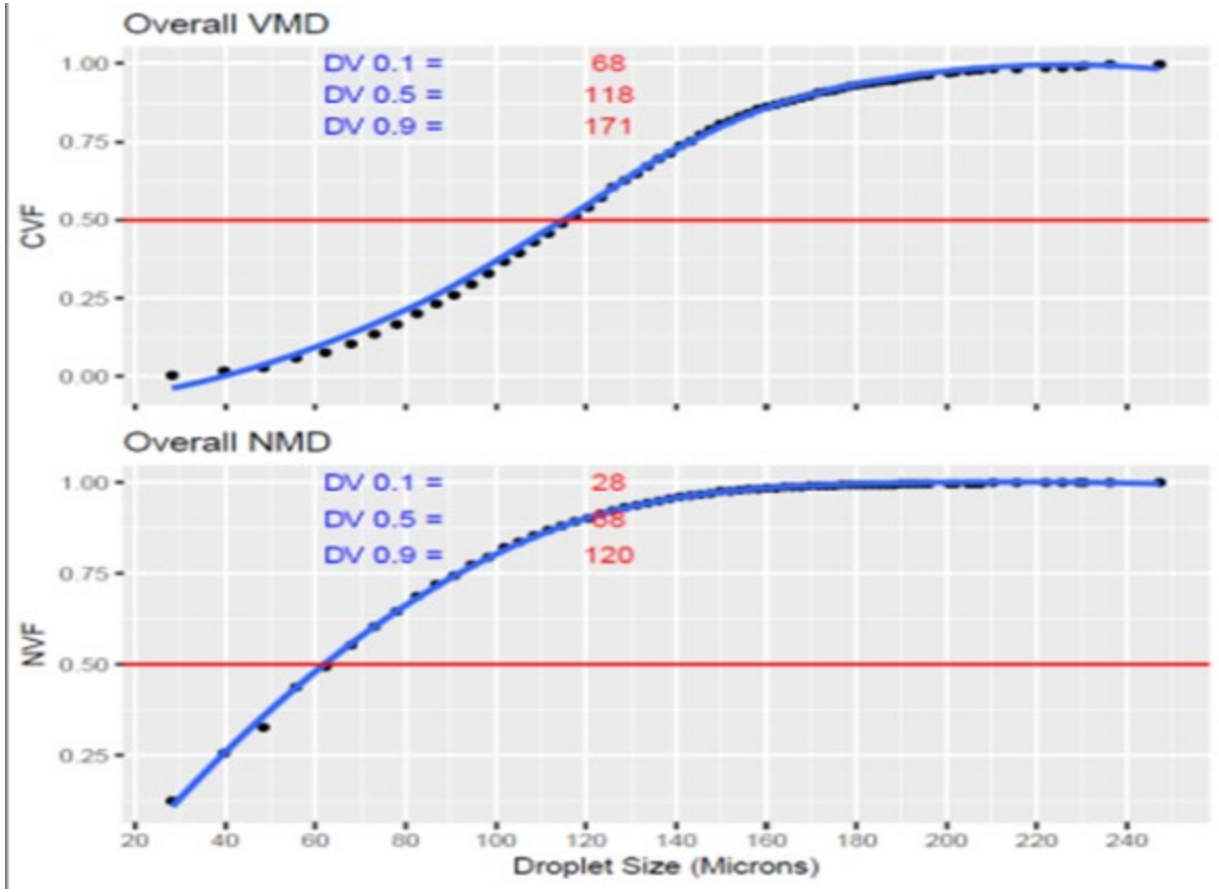
SPRAY QUALITY	VOLUME MEAN DIAMETER (MICRONS)	EQUIPMENT TYPE
Extremely Fine	30 - 60	Cold Fogger / Air Blast (Micronair AU 5000 with EX6353 set at 55°)
Very Fine	61 – 105	
Fine	106 - 235	

ACHIEVES RAPID COVERAGE

DEPOSITS IN CRYPTIC CONTAINERS

WALS BacDrop™ Analysis





Scanner

ScanSnap iX1300

[Amazon.com: Fujitsu ScanSnap iX1300 Compact Wireless or USB Double-Sided Color Document, Photo & Receipt Scanner with Auto Document Feeder and Manual Feeder for Mac or PC, Black : Office Products]

Roll over image to zoom in

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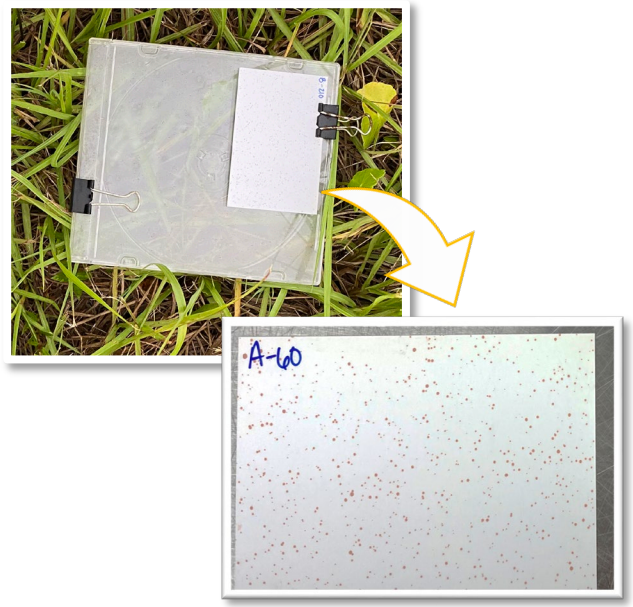
Open-Field Droplet Characterization

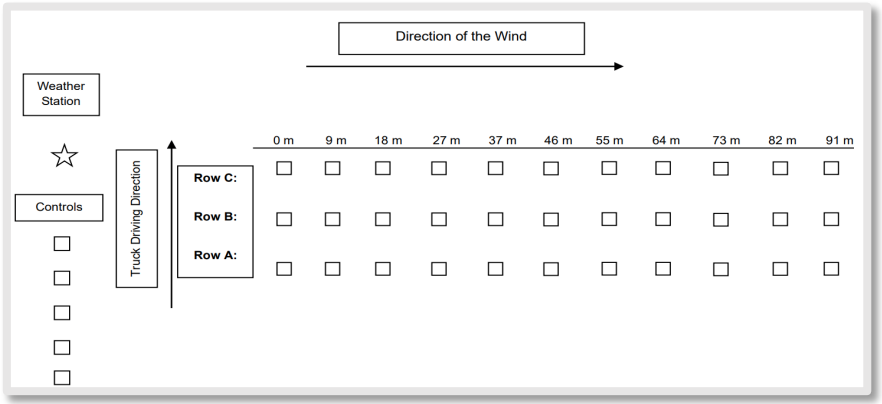
Supplies:

- BacDrop™ Software
- CD case
- Kromekote cards
- Red food dye (Red-40)

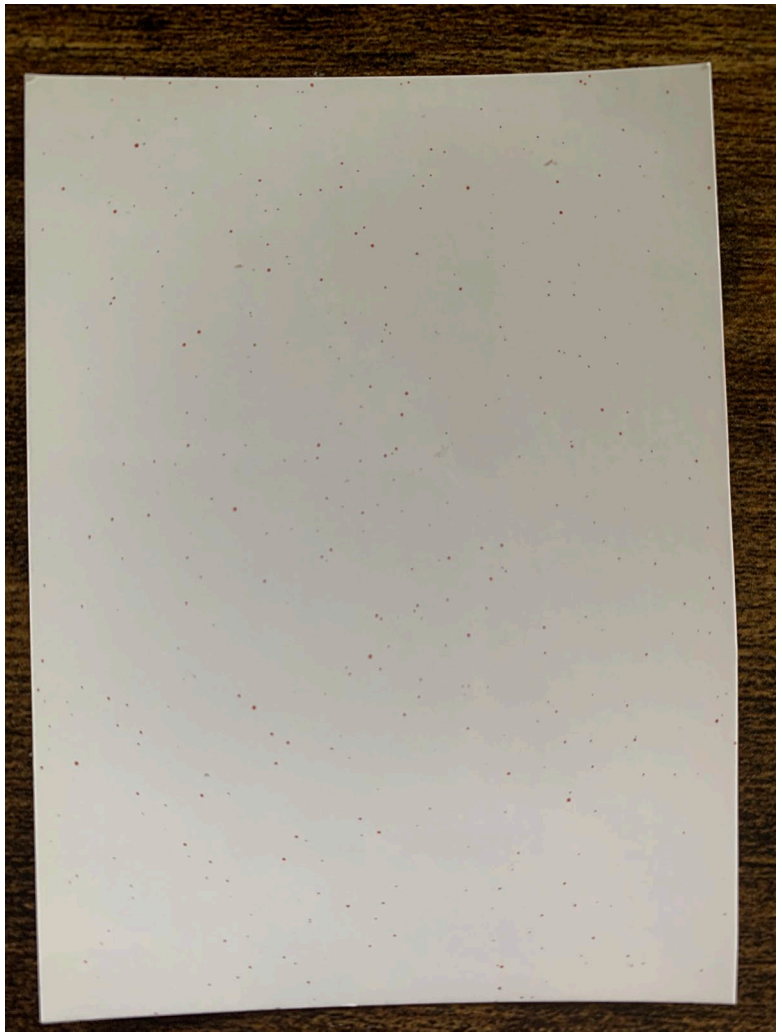
Weather Monitoring:

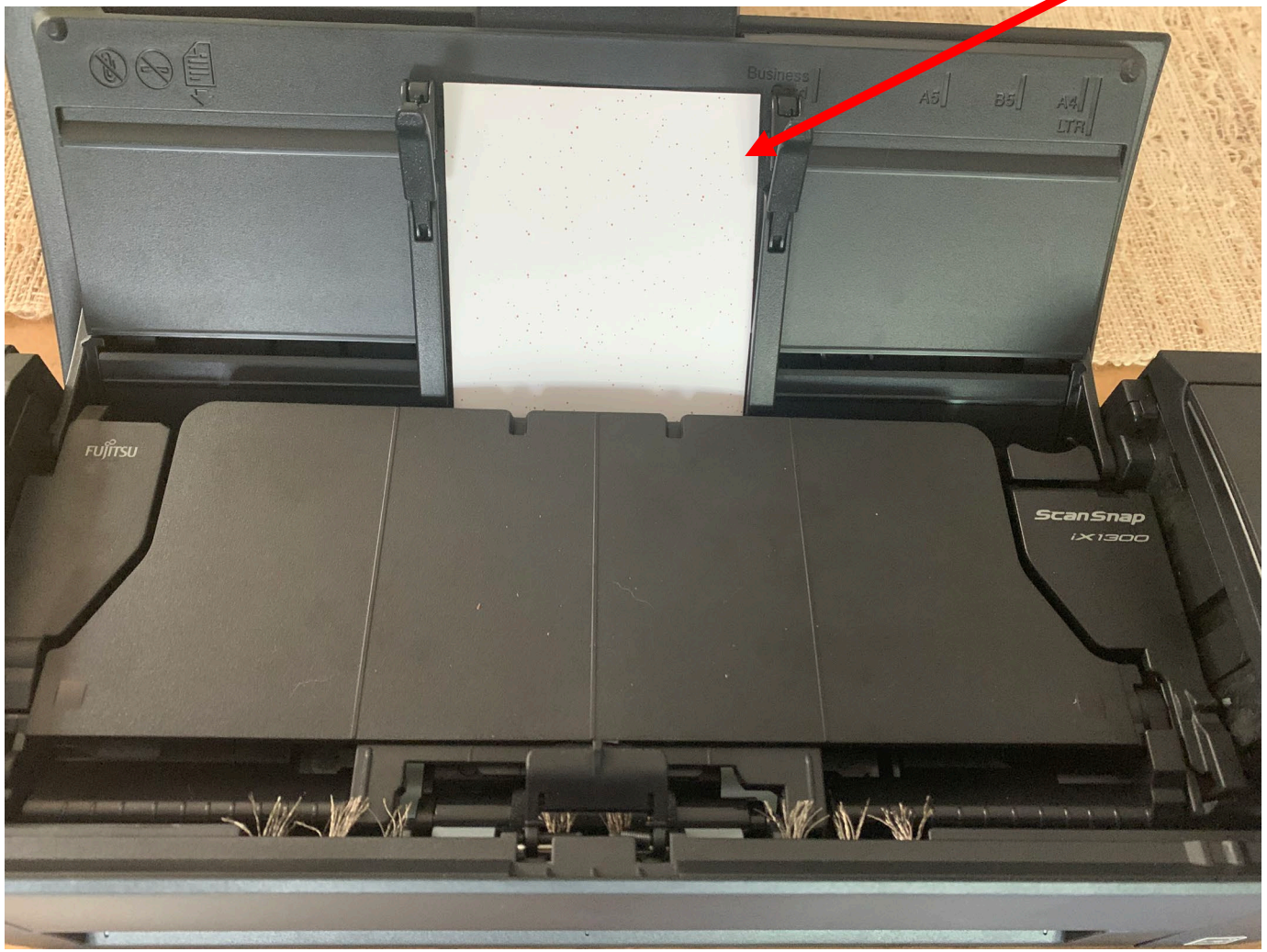
- Kestrel 4500NV Weather Tracker



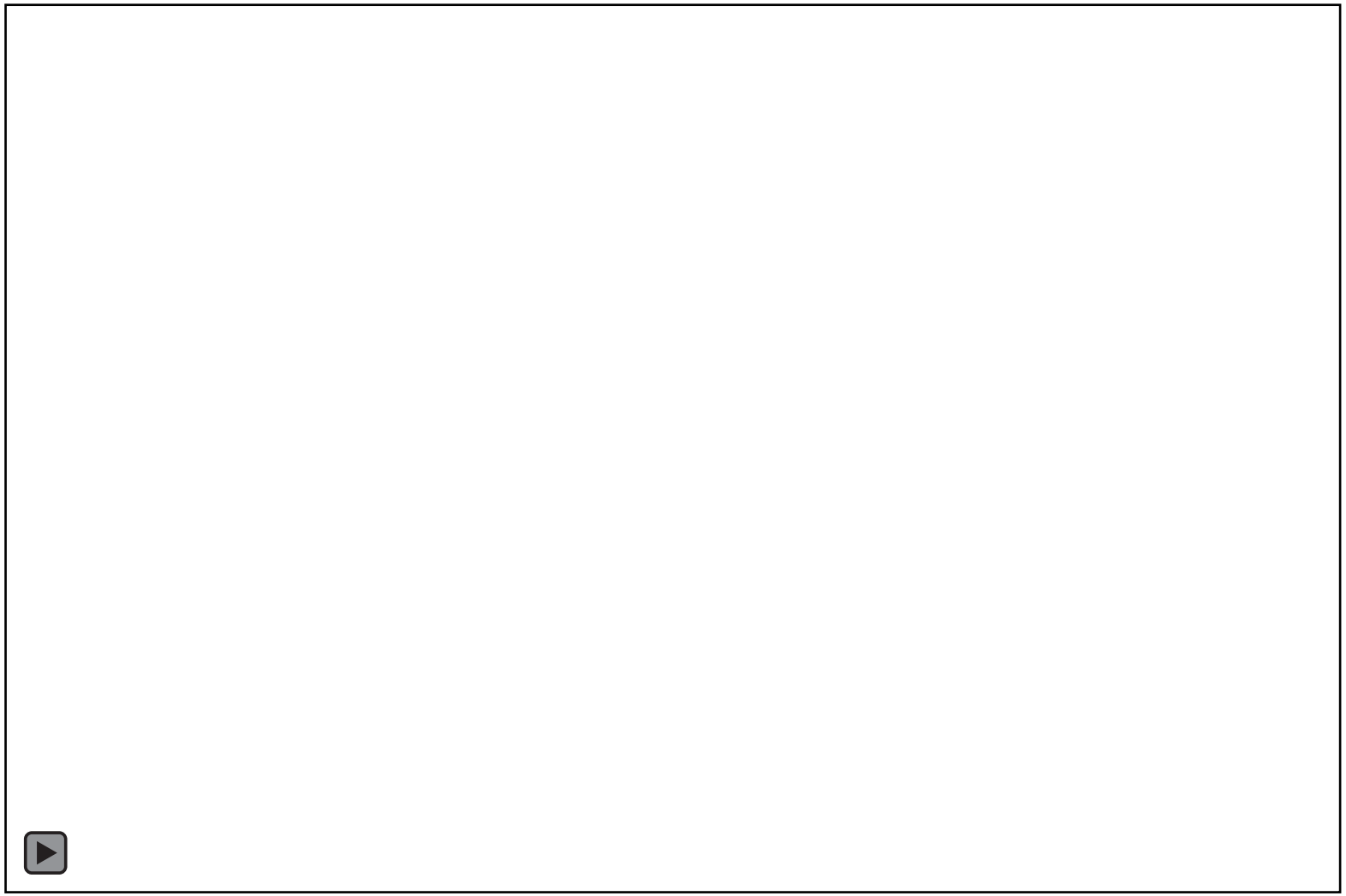


Scanning Kromekote Cards



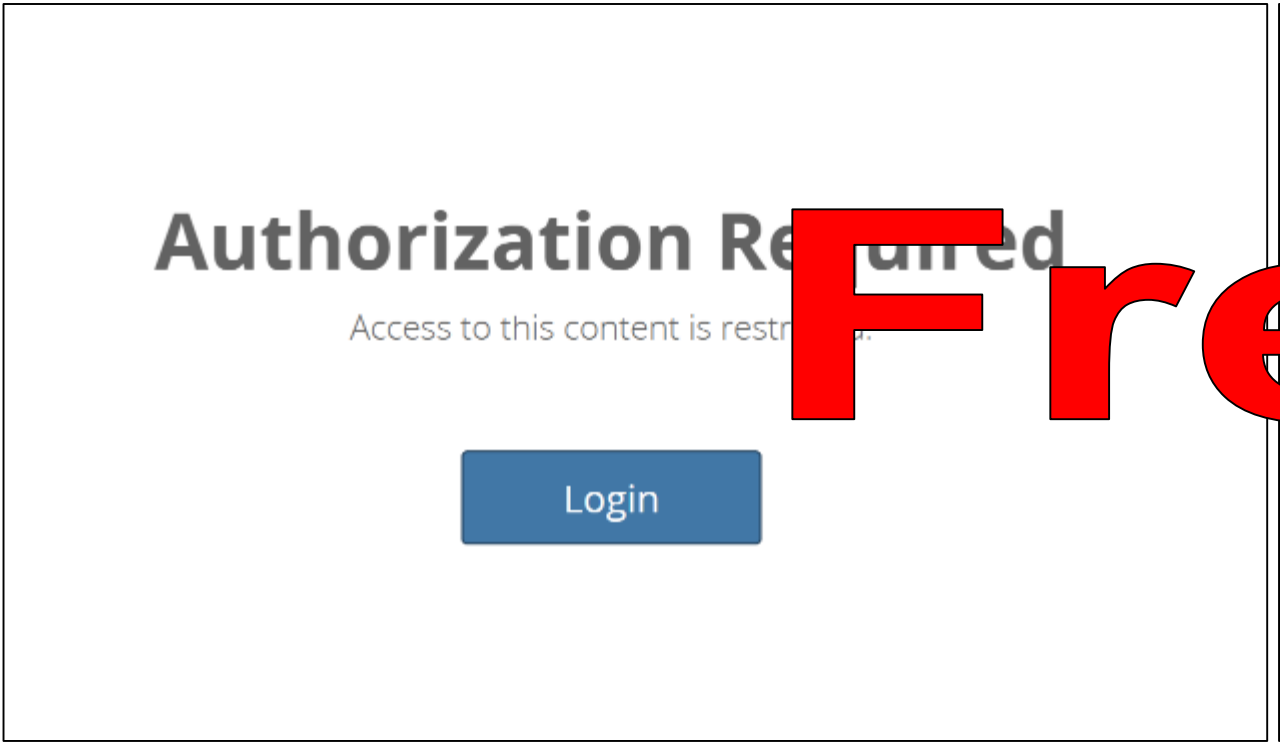


How to use BacDrop



BacDrop

- [BacDrop - A tool for calculating Larvicide Droplet Parameters (shinyapps.io)]



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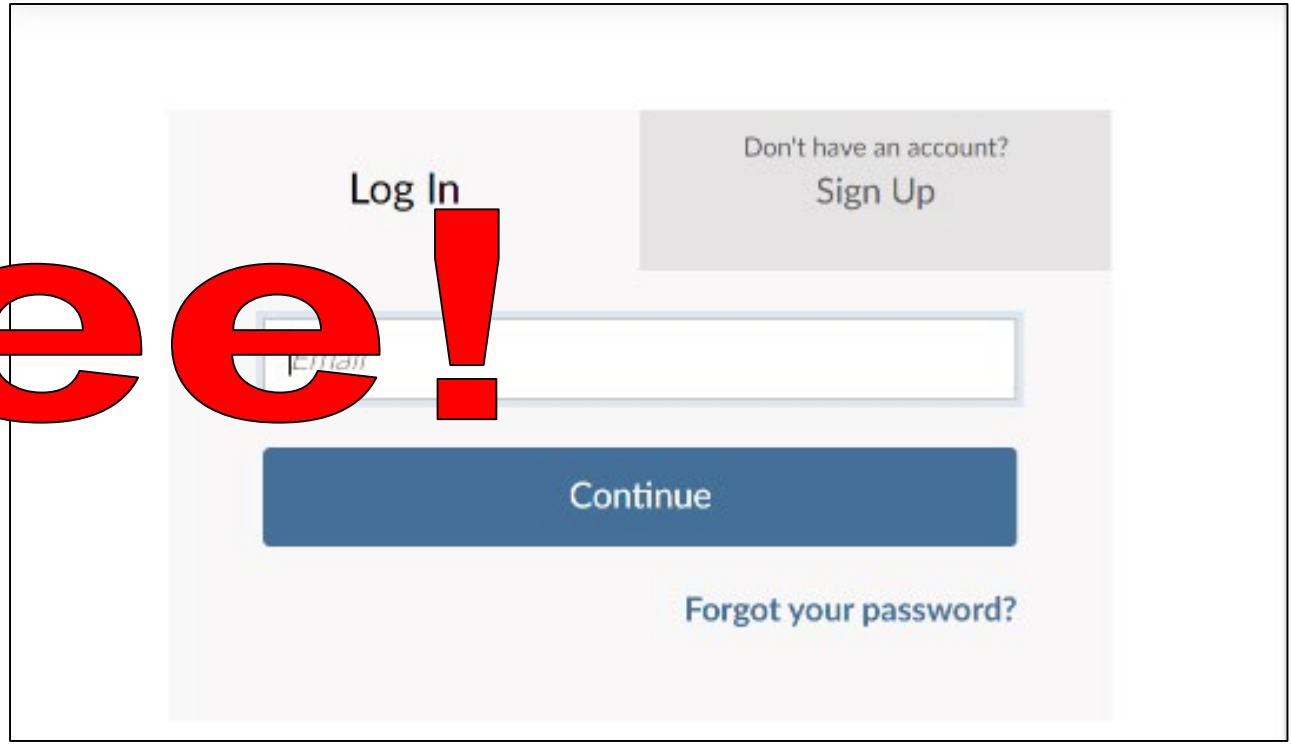

Any Questions?

Thank You!

Katie.williams@valentbiosciences.com

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