

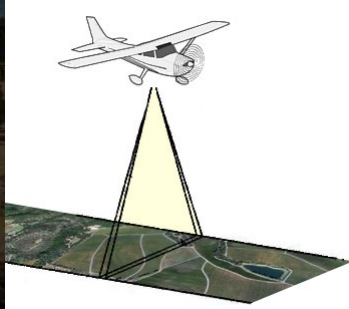


Remote Sensing for Vineyard and Orchard Management



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Chief Scientist / Co-Founder

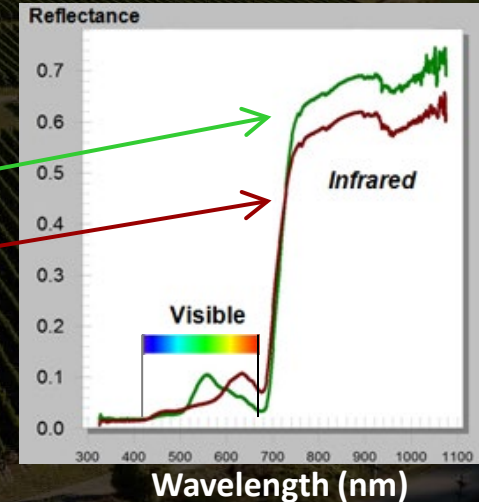
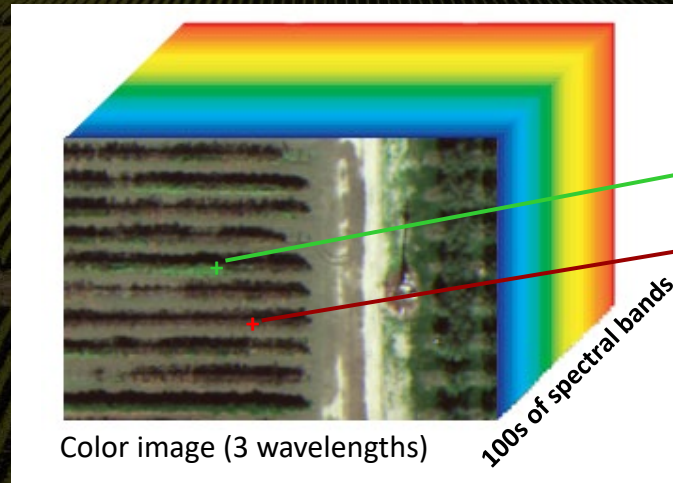
Remote Sensing



→ Collecting information about an object from a distance

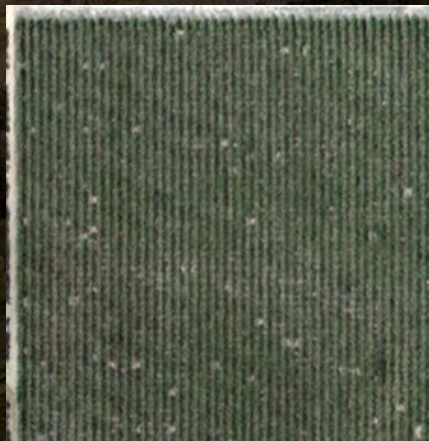
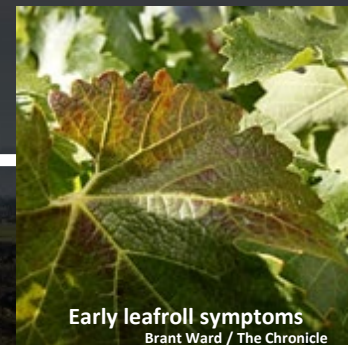
Visible light is only a small portion of the information that can be measured remotely

Scientific cameras can measure small differences in reflected light across many wavelengths providing information about the properties of vegetation

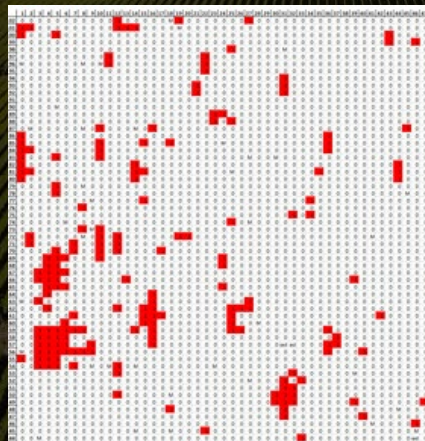


Mapping of Grapevine Leafroll Disease

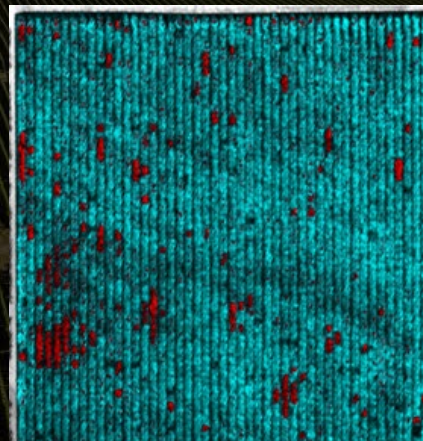
- Leafroll is global problem that reduces grape quality & yield
No known treatment except vine removal
- 2 Year study w/ UC Davis & Napa County (MacDonald et al, 2016)
- Scientists scouted all the vines in 5 vineyards; many lab tested



Visible color image



Field scouting
(M. Cooper, UCCE data)



Hyperspectral Leafroll Map:
Red = High Blue = Low

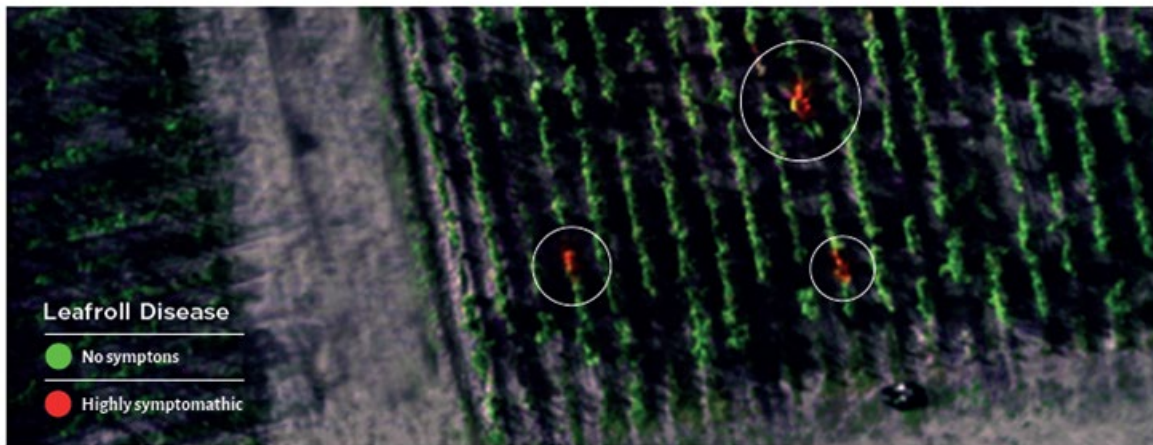
> 94% detection success from hyperspectral imagery alone

Some Challenges:

- *High spatial detail needed to separate vines from soil and cover crop*
- *Mixed diseases complicates ID, requiring field verification*
- *Trade-offs between accuracy (# wavelengths) & cost*

DISEASE DETECTION

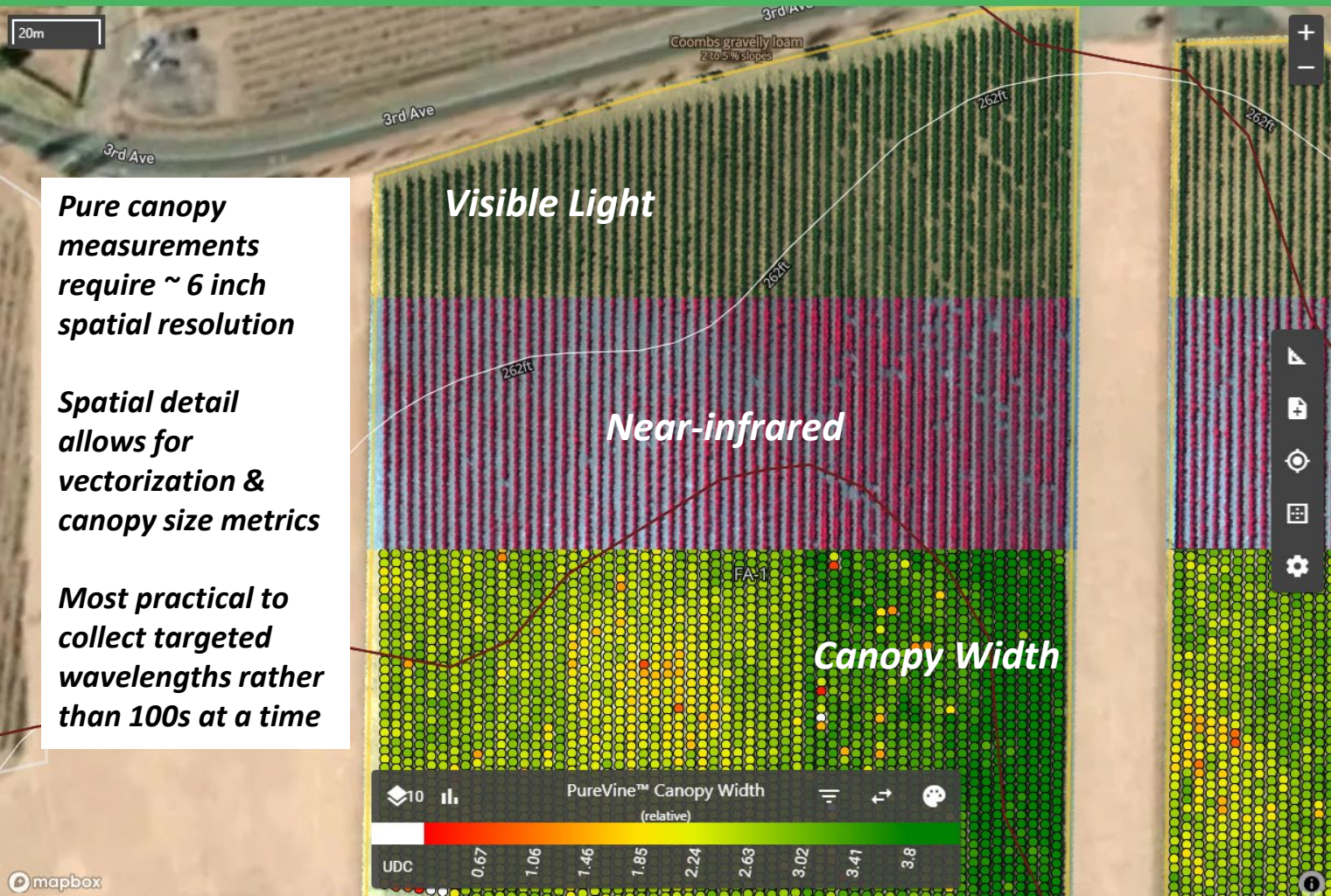
Plant-level disease detection



Napa, CA



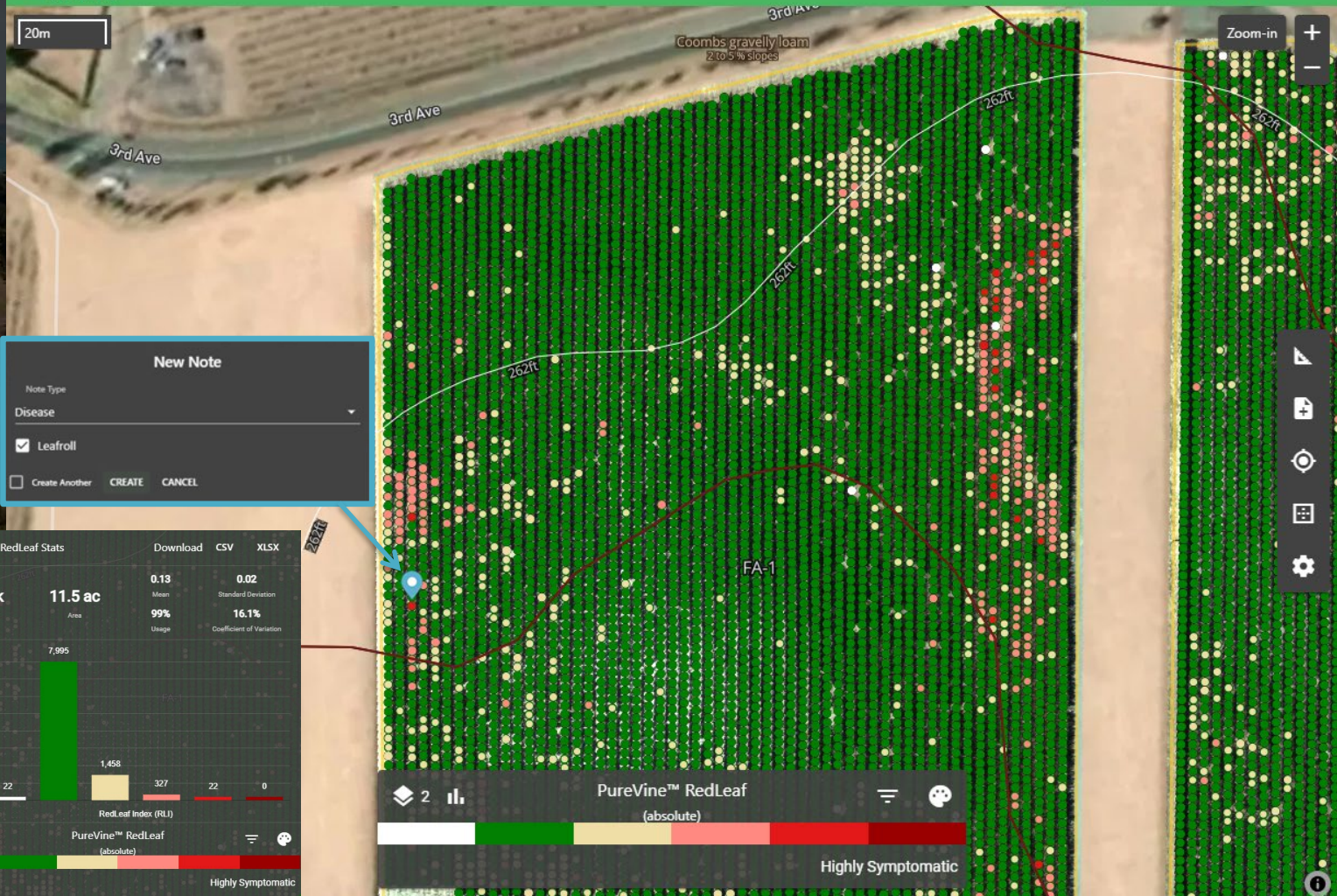
Bordeaux, France



Pure canopy measurements require ~ 6 inch spatial resolution

Spatial detail allows for vectorization & canopy size metrics

Most practical to collect targeted wavelengths rather than 100s at a time



New Note

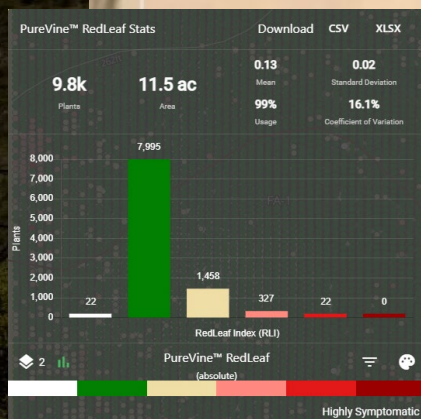
Note Type

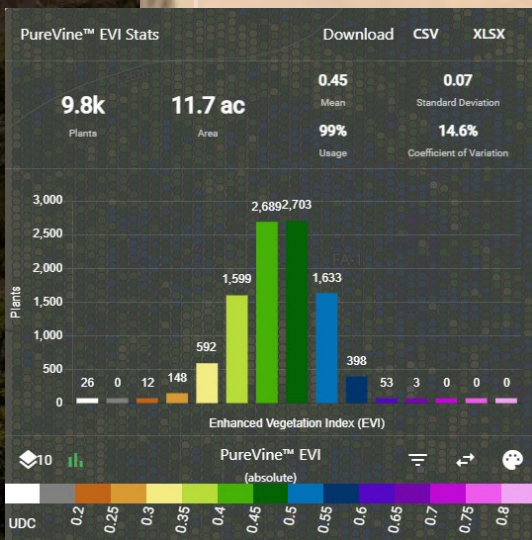
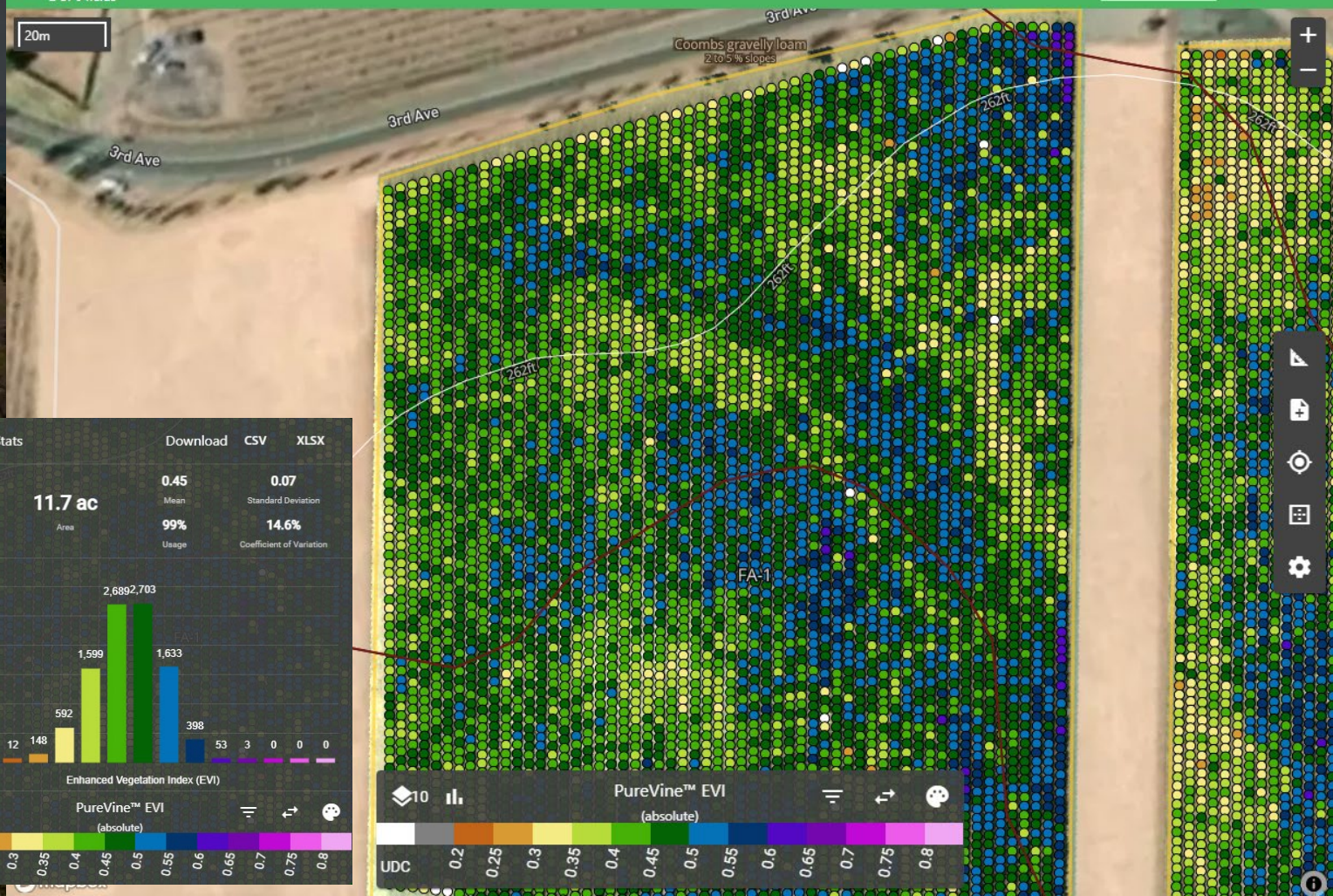
Disease

☒ Leafroll

☐ Create Another

CREATE CANCEL









Farming |

South

Orchard Bloom Density

2022-02-17 ▾

all 38 fields

50m

Bloom Density Stats

Download

CSV

XLSX

7.7k

Plants

75.2 ac

Area

0.26

Mean

0.11

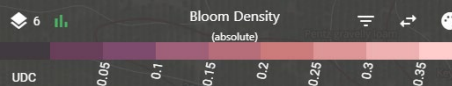
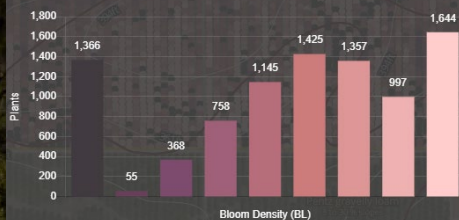
Standard Deviation

85%

Usage

42.6%

Coefficient of Variation



7



Bloom Density

(absolute)

UDC

0.05

0.1

0.15

0.2

0.25

0.3

0.35



all 2 fields

Orchard Canopy Water Content

2021-06-22

