Getting Started with tule vision

A Step-by-Step Guide

tule vision

TABLE OF CONTENTS

01 **Introduction**

02 **iPhone App**
- a. Downloading the app
- b. Using the app

03 **Web Dashboard**
- a. How to log in
- b. How to view readings

04 **Additional Resources**
- a. Adding new users
- b. Adjusted Leaf Water Potential

01 Introduction

tule vision

Take a picture with your phone, get the **leaf water potential.**

Say goodbye to the pressure chamber.

TULE VISION

KEY ADVANTAGES

1. Simpler and less error-prone than the pressure chamber.
2. Less expensive than pressure chambers.
3. Measure more sites than a pressure chamber.
4. Automatic reporting to the web.
5. Latest pictures of your vines.

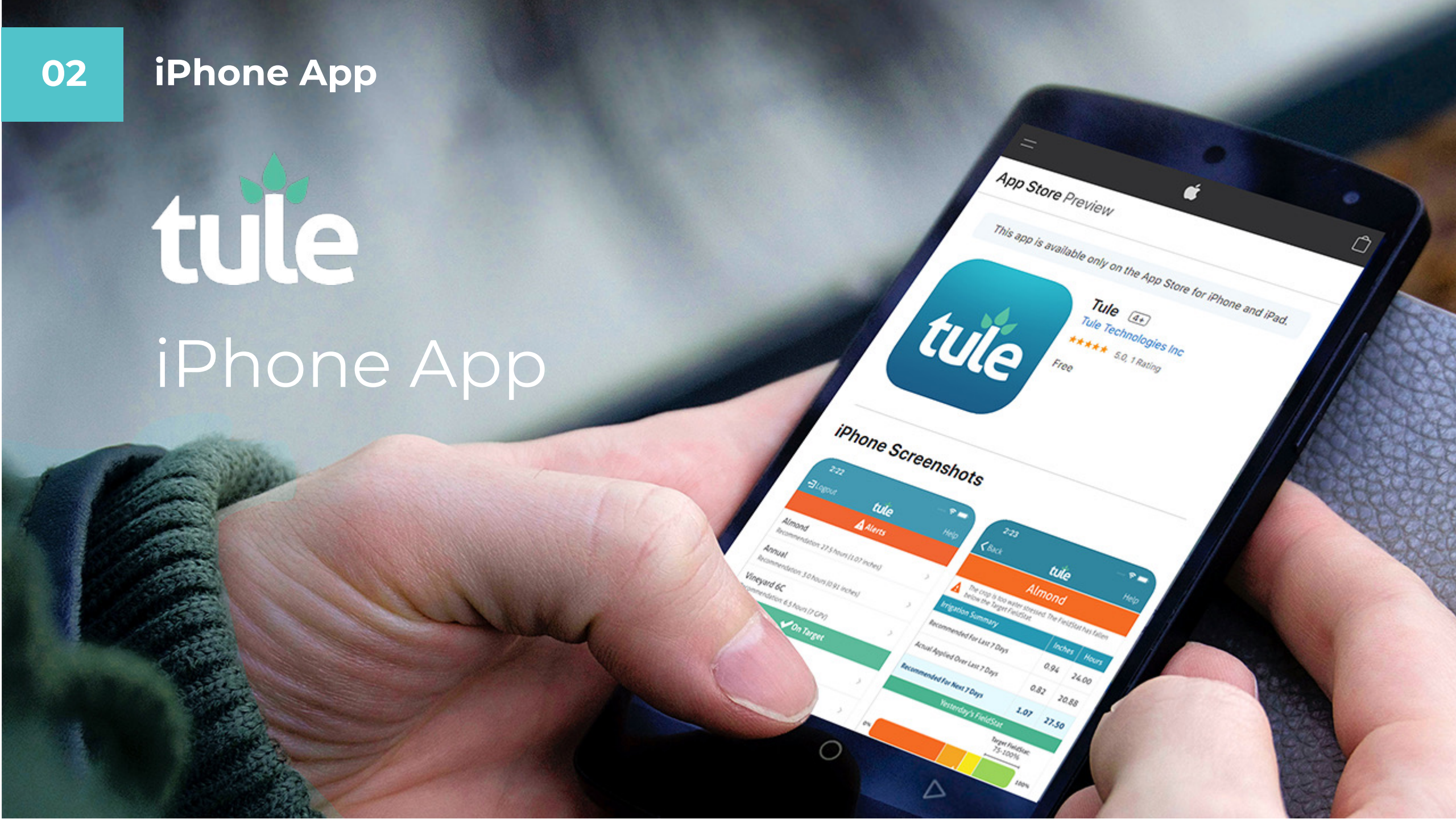
DEVELOPING

THE TULE VISION MODEL

Using thousands of water stress measurements from Tule sensors and photos taken by field technicians, Tule was able to develop the artificial intelligence model that powers Tule Vision.

02 iPhone App

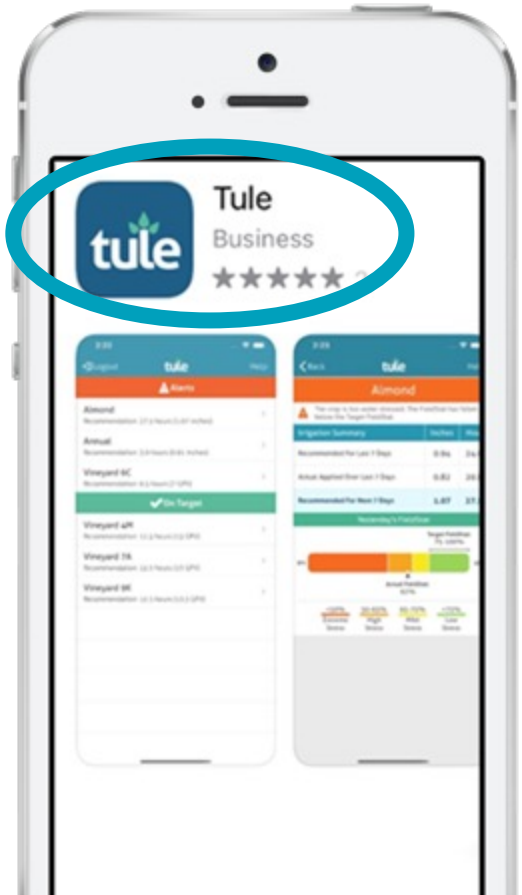
iPhone App



HOW TO SET UP TULE IPHONE APP FOR MANAGERS

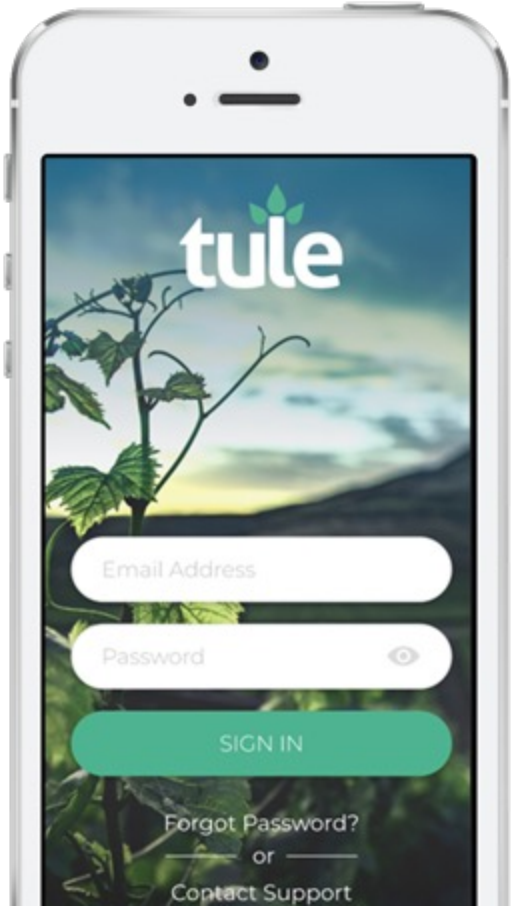
1

Download **Tule** app from App Store.



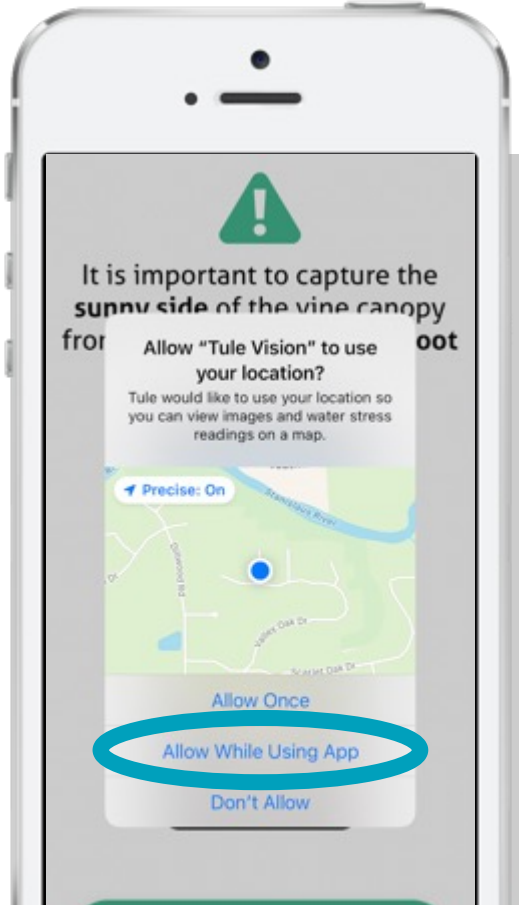
2

Log in.



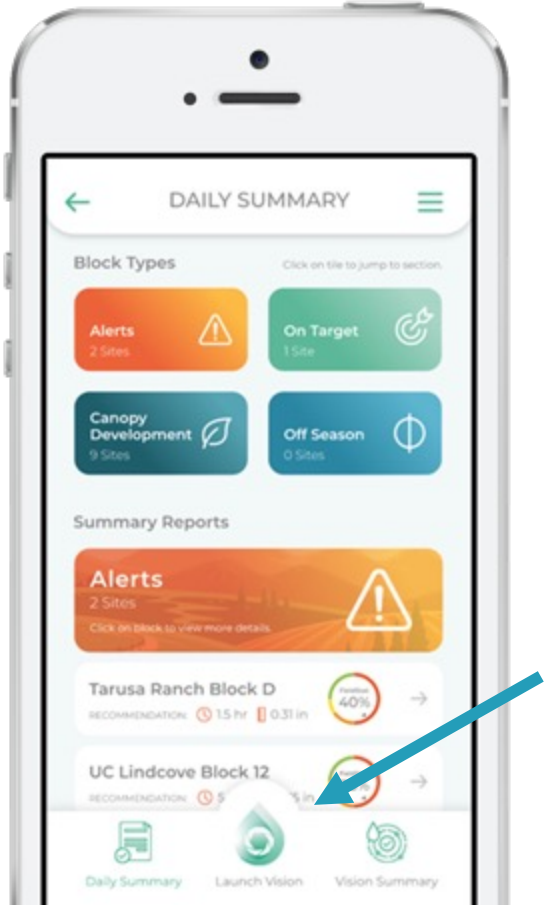
3

Allow Tule Vision to use your location while in app.



4

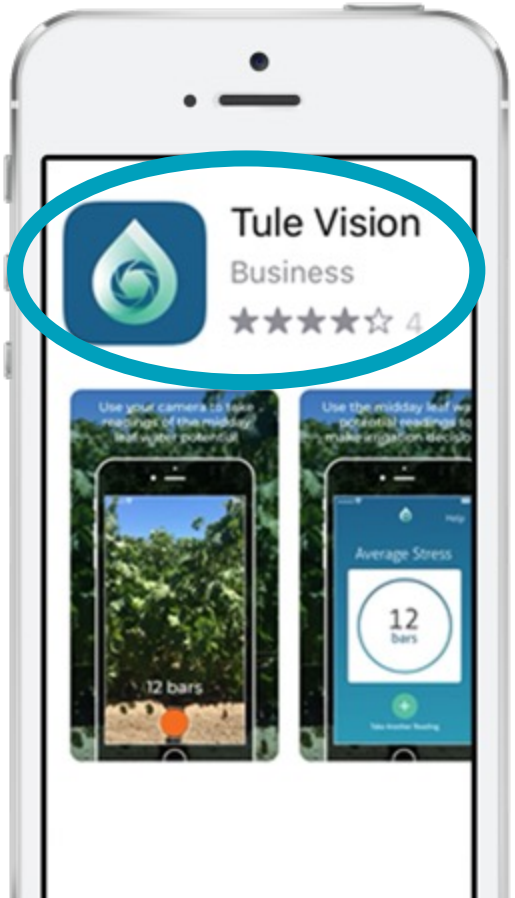
Tap on the Launch Vision tab at the bottom.



HOW TO SET UP TULE VISION IPHONE APP FOR IN-FIELD WORKERS

1

Download **Tule Vision** app from App Store.



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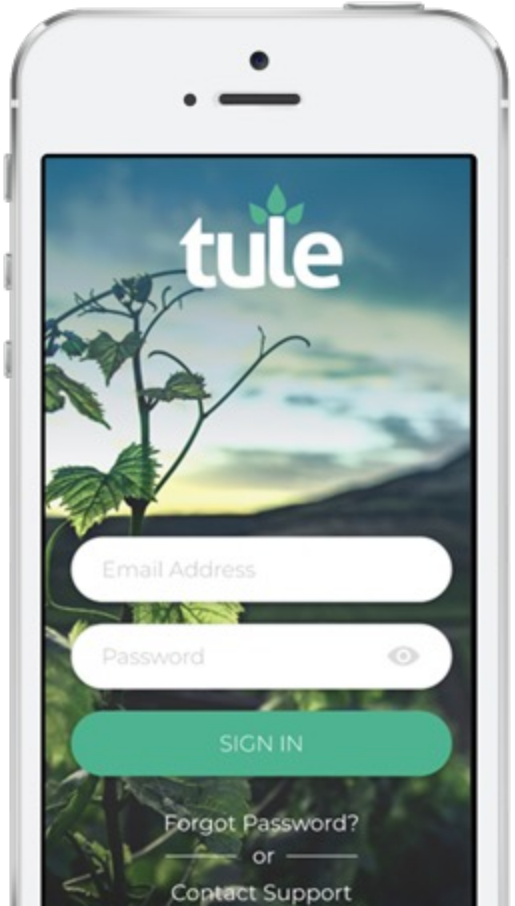
Log in.



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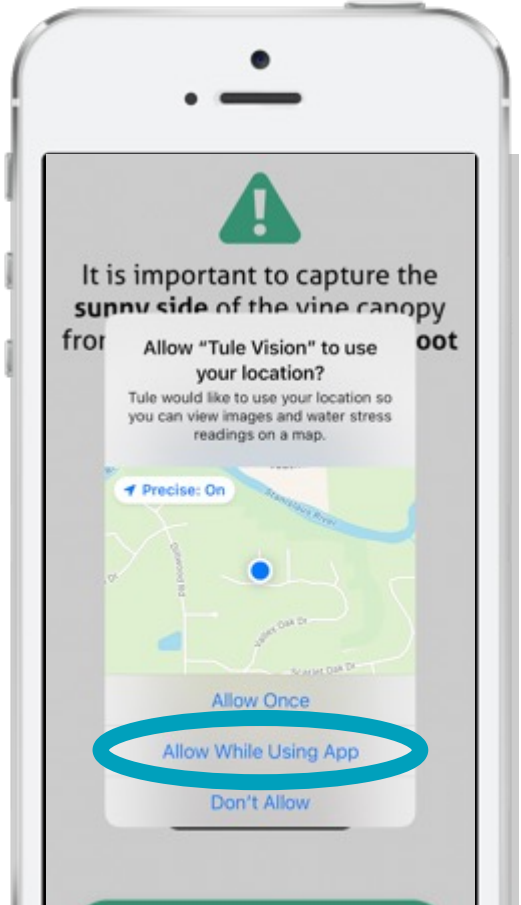

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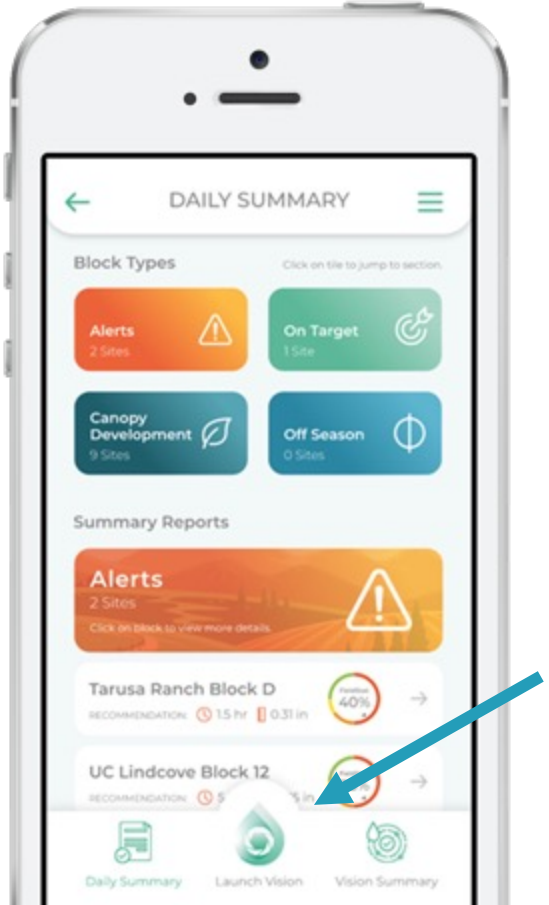


HOW TO TAKE READINGS

1. Point the iPhone at a vine.
    a) Capture the entire sunny side of the canopy. Videos that are too dark or do not capture the entire canopy will not work.
    b) Take Tule Vision readings any time during daylight hours. Do not take readings during dawn and dusk
    c) No need to be concerned about having cell service when taking readings. They will upload to your account as soon as internet access is restored.
2. Tap the blue start button to begin recording.
3. While recording, walk past the vines you would like to measure. On average, users take a reading of 3 vines, but there is no minimum requirement or limit.
4. Tap the red stop button to finish recording.
5. Tule Vision reports the average LWP over the area you recorded on your iPhone screen in real-time.
6. Your reading is complete! Readings will be sent to the web interface and the Tule iPhone app. You may now begin another reading.
7. Recordings are also sent to the Tule Vision web interface and Tule iPhone app, allowing for real-time, remote field monitoring.

COACHING FEATURE

If the images are not the sunlit side of the entire vine canopy, then the water stress readings are less accurate. Readings will not start until phone is positioned correctly.

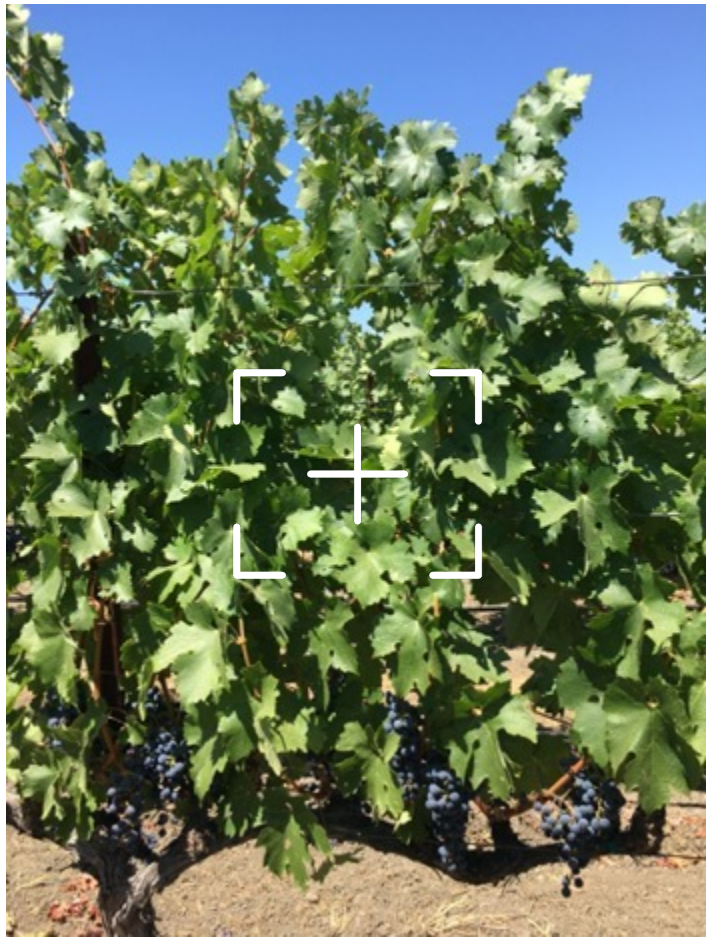
The built-in coaching feature is an A.I. model that teaches you how to take Tule Vision readings. During a session, it coaches you and it automatically removes all images that are not the sunlit side of the entire vine canopy.

The coaching works well, but sometimes it erroneously accepts a bad image. Also, it doesn't guard against some types of bad images, such as blurry images, certain types of twilight images, and partial canopy images.

WHAT TO CAPTURE

When taking readings, please DO:

- Take videos of the entire canopy of the vine
- Take videos of the sunny side of the canopy
- Take videos during the daytime when the canopy is well lit
- Clean the lens on your phone’s camera



WHAT TO AVOID

When taking readings, please DO NOT:

- Take readings of anything other than a grapevine
- Take readings of the shady side of the vine canopy
- Take readings at dawn or dusk
- Take blurry readings
- Take readings of just a leaf, a shoot tip, or a portion of the canopy
- Take videos of the vine at an oblique angle

SUNNY VS. SHADY

SIDE VS. OBLIQUE

DAYTIME VS. DAWN/DUSK

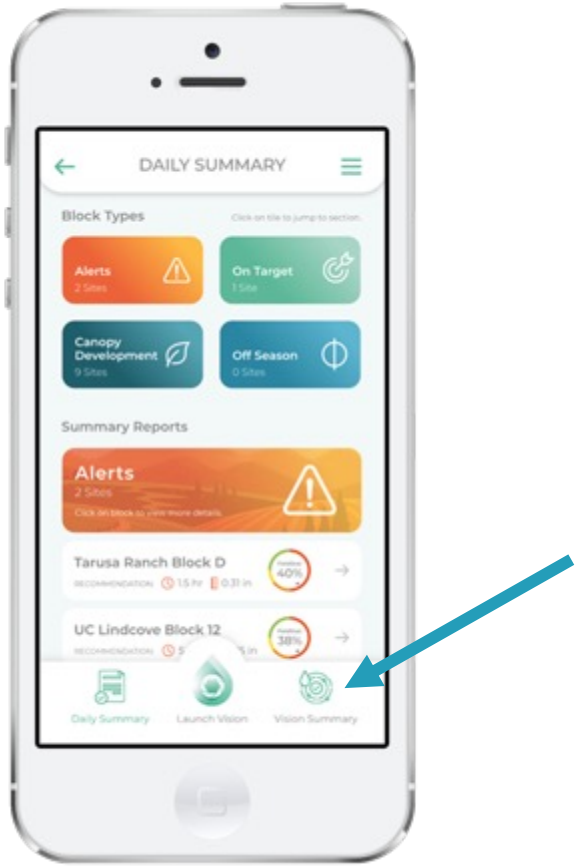
CLEAR VS. BLURRY

ENTIRE CANOPY VS. LEAF

ENTIRE CANOPY VS. TOO CLOSE

ENTIRE CANOPY VS. SHOOT TIPS

HOW TO VIEW HISTORICAL DATA



View historical LWP readings by clicking the ”Vison Summary” tab on the homepage (Not available on Tule Vision app)

Tule Vision readings are also available in real-time on the web dashboard online.

03

Web Dashboard

tule

Web Dashboard

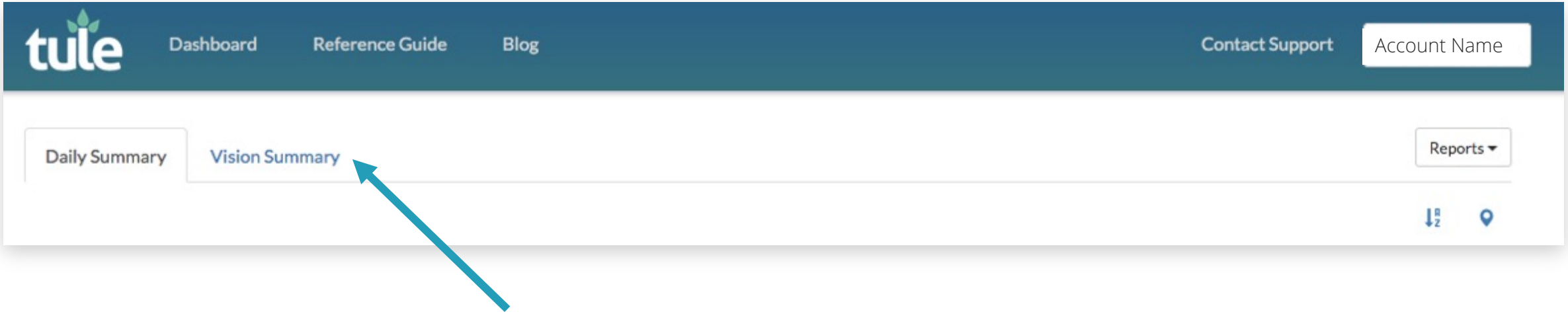
HOW TO LOGIN TO ONLINE DASHBOARD

Visit tule.ag & enter in your credentials.

If you forget your password, click on "Forgot your password?" and instructions will be emailed to you.

If you do not have login credentials, contact info@tuletechnologies.com.

ACCESSING THE WEB DASHBOARD



The Tule Vision dashboard is where you can view all Tule Vision readings in real-time.

For users with both sensors and Tule Vision, the web dashboard includes both sensor Daily Summary and Vision Summary tabs. Click on "Vision Summary".

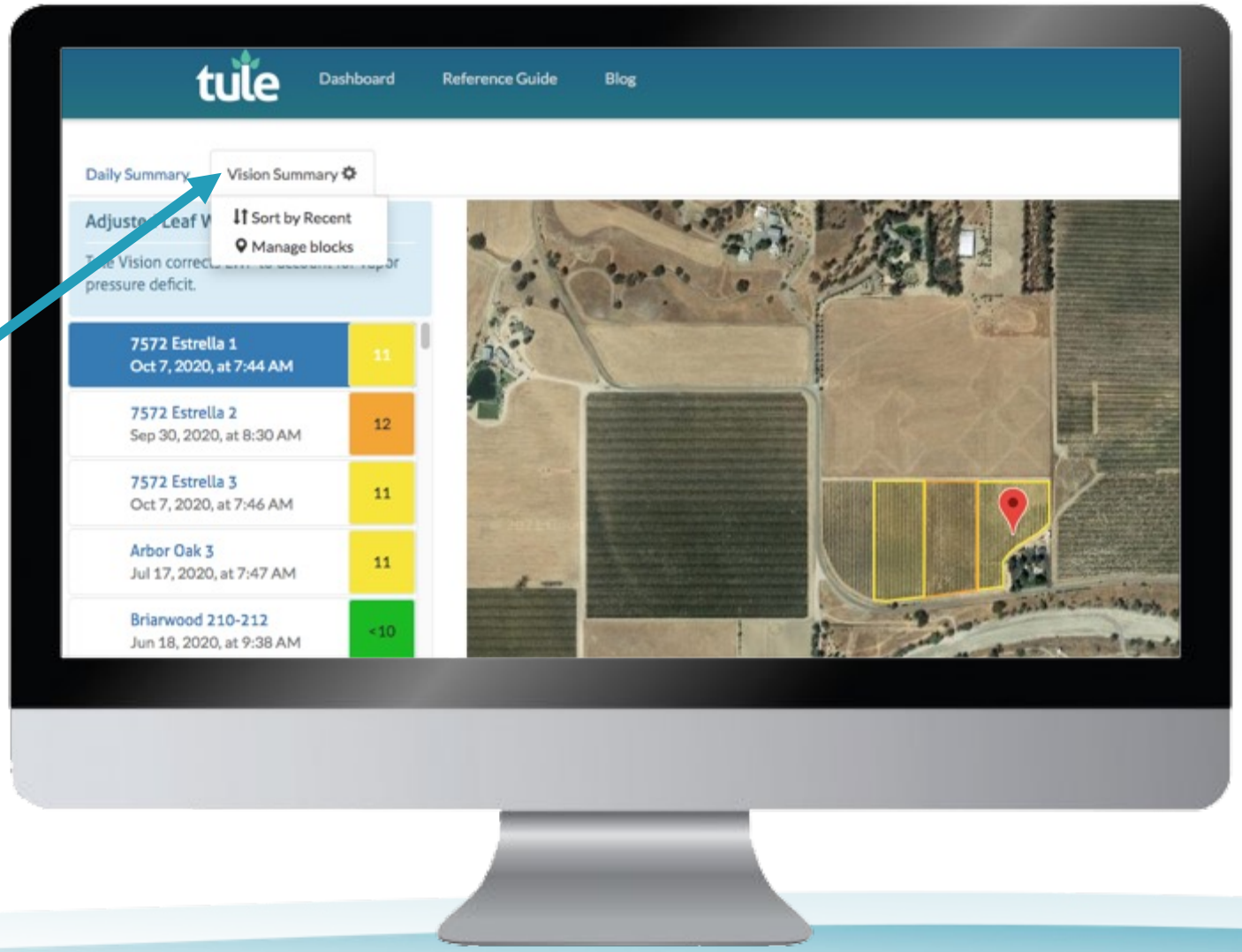
Users of Tule Vision only will automatically be directed to the Vision Summary view.

VISION SUMMARY

The Vision Summary page conveniently displays LWP readings for all blocks. Readings can be sorted by most recent or alphabetically.

SORTING BLOCKS IN VISION SUMMARY

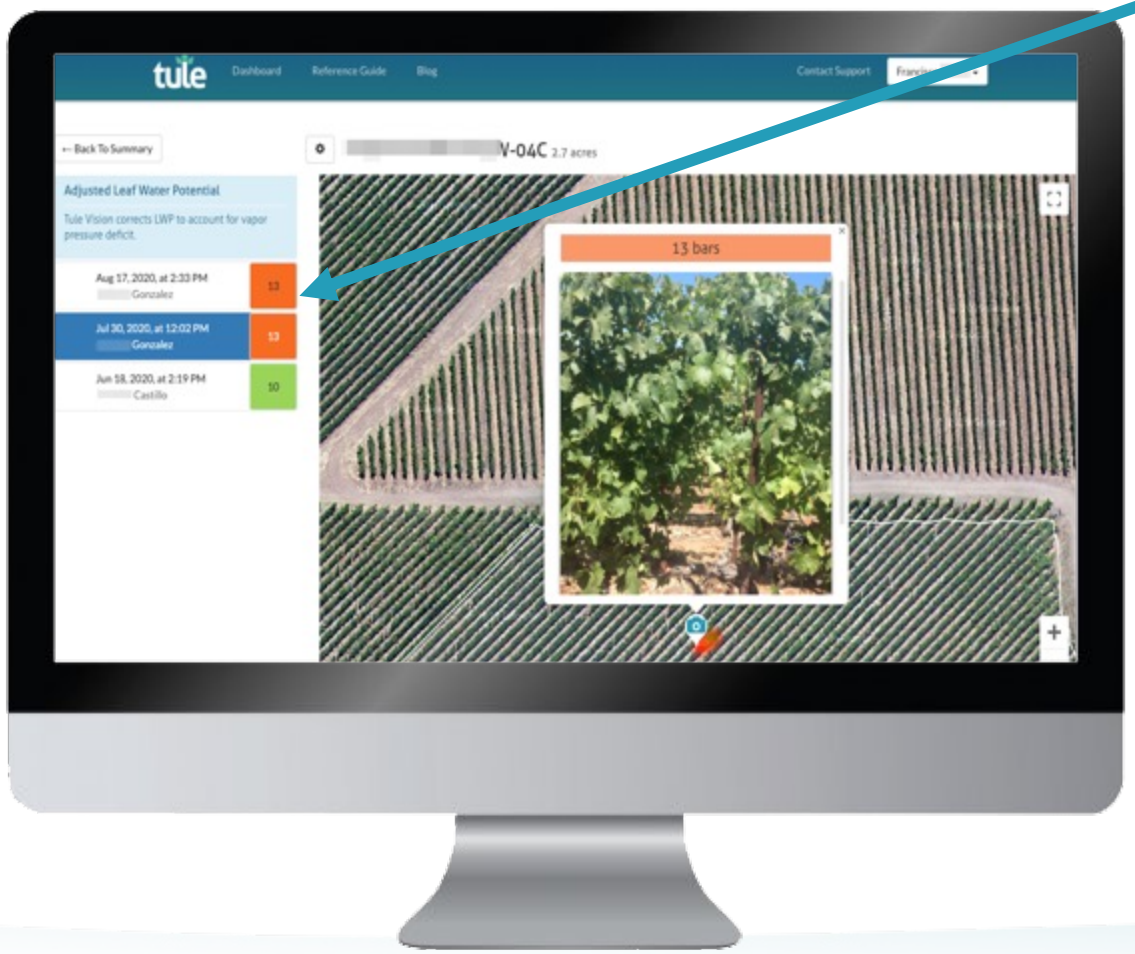
To sort blocks with the most recent readings first, click on the gear icon next to "Vision Summary".



HOW TO SELECT A BLOCK

To see all the Tule Vision readings for a specific block, click on the block name.

BLOCK SUMMARY

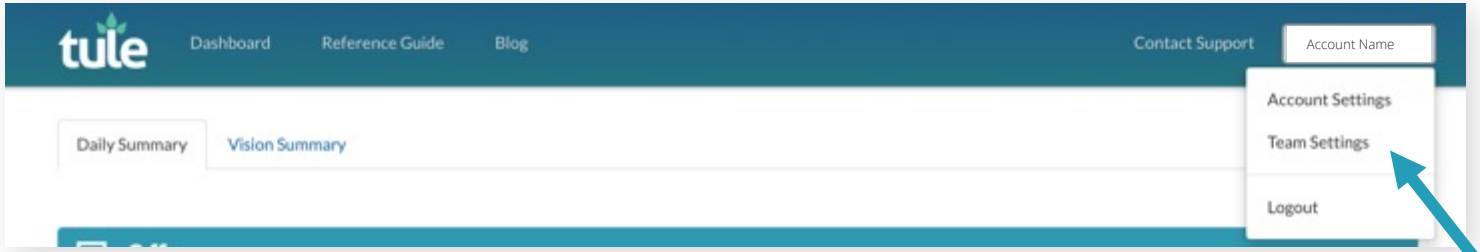


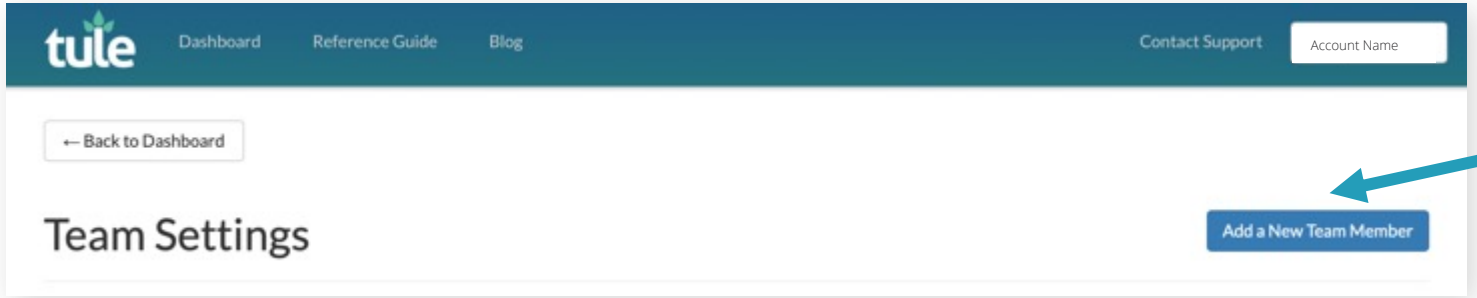
The Block Summary page sorts all readings taken within a block in chronological order. The values shown are the average LWP for all readings taken on a particular date.

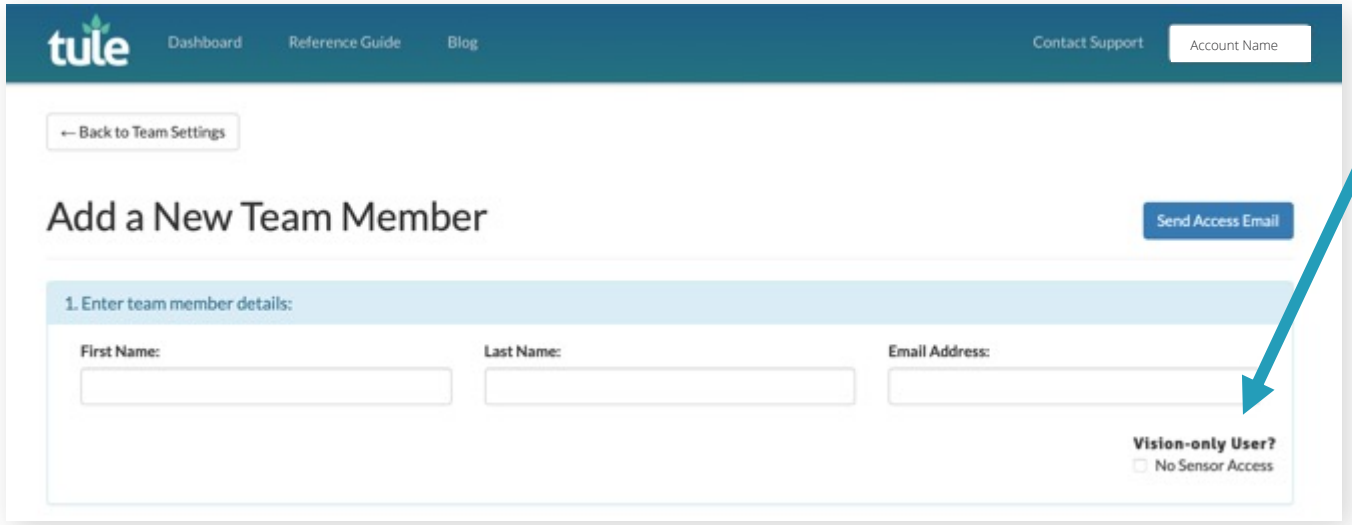
The right side of the screen shows the location of the reading in the block. Click on the camera icon to view photos captured in the recording. The photos will also show the LWP of that particular photo. The longer the recording, the more photos will be available. There will be one clickable image for every 1.5-3 seconds of video captured in a reading.

Additional Resources

ADDING NEW USERS



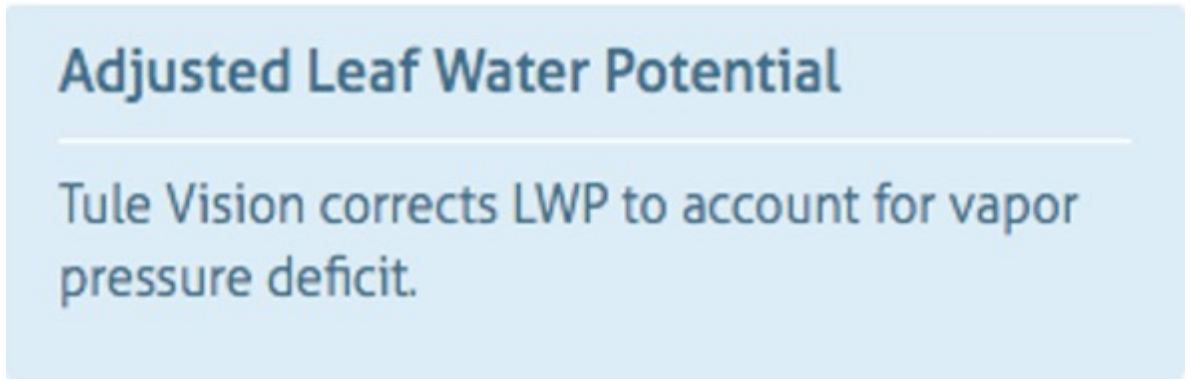




To add new users:

1. Navigate to the top right corner of the screen and click the drop-down arrow near your account owner's name. Only the account admin can add new users.
2. Click on "Team Settings".
3. On the Team Settings page, click on "Add a New Team Member".
4. Enter the new user's name and email address. If a Vision user should not have access to sensor data, click on "No Sensor Access".
5. Click on "Send Access Email".
6. The new user will receive an email with instructions to create their own login credentials.

ADJUSTED LEAF WATER POTENTIAL



Pressure chamber readings of midday leaf water potential vary greatly with the vapor pressure deficit (i.e., the dryness of the air). Tule Vision readings do not vary with vapor pressure deficit. For more information, visit our blog post on this topic.

https://tuletechnologies.com/blog/how-to-correct-pressure-chamber-readings-for-vpd

QUESTIONS? CONTACT US.

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