

## IMAGERY AND ANALYTICS

# Thermal

Using the most accurate thermal cameras available for agriculture, Ceres Imaging measures the heat emitted from trees, vines, or areas of a row crop canopy. Unlike similar products derived from satellite data, our scientific-grade imagery reveals plant health issues before they're visible to field scouts—and before damage impacts the grower's bottom line.

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**Minute temperature differences reveal issues invisible to the naked eye.**

### Common uses

- Detecting and controlling pre-symptomatic pest and disease issues
- Pinpointing common issues in both drip and pivot irrigation systems—including leaks, clogged emitters, pressure issues
- Evaluating soil fertility and salinity
- Optimizing irrigation scheduling and system design for terrain and soil conditions

## How it works

Thermal imagery captured from the air makes visible the heat emitted from objects on the ground, revealing temperature differences that correspond to crop stress. Careful calibration and image correction ensures that irrelevant objects—for example, pivot equipment—don't skew the data. In the resulting imagery, cooler areas appear purple, while warmer areas appear yellow.

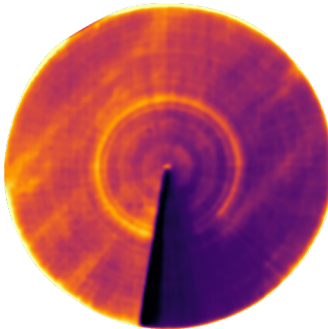
Because water cools vegetation, thermal imagery is useful for detecting leaks, clogs, and other irrigation issues. By revealing subtle changes in leaf surface temperature, thermal imagery also helps growers detect pre-symptomatic disease and pest pressures—and respond with more timely and targeted interventions.



### FROM IMAGERY TO ACTION

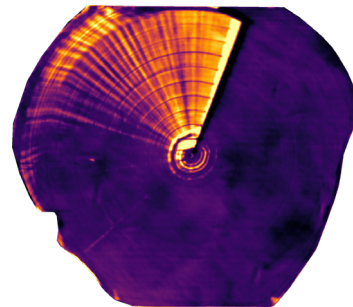
High-resolution multispectral imagery is only the beginning. Our analytics tools help you interpret your data—translating what you can see in your imagery into what you can do about it.

**Thermal imagery is included standard in all Ceres Imaging service packages.**



#### Clogs

The distinct inner orange ring shows where a clogged nozzle has resulted in underwatering.



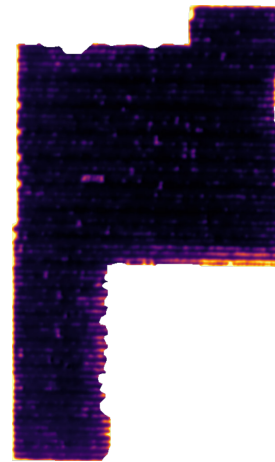
#### Pressure issue

Thermal imagery can reveal irrigation pressure failures easily missed in scouting.



#### Plant stress

In this drip-irrigated field, tree stress was found to increase with distance from the filter station.



#### System design

Thermal imagery revealed that trees in an adjacent property were contributing to stress on edges of the field.

