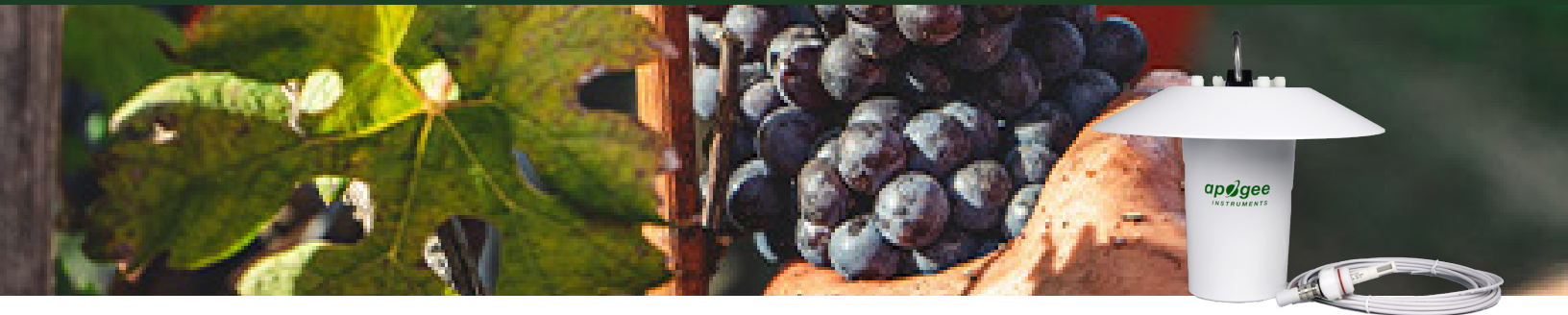


Remote Sensing of Stress Events and PRI in Vineyard

TS-120 Aspirated shield with humidity probe



Introduction:

California vineyards require irrigation and plant stress management due to drought and high temperatures. The most effective way to monitor vineyards is through remote sensing of both short- and long-term stress in the grapes. In this study, researchers remotely monitored the photochemical reflectance index (PRI) to gauge photosynthesis during stress events and plant recovery.

Set Up:

The researchers set up a tower-based optical-remote sensing system to monitor four vineyard subplots growing merlot grapes (*Vitis vinifera* L.) in California's Central Valley. The monitoring system used both normalized difference vegetation index (NDVI) and PRI to track variations of eddy covariance estimated gross primary productivity (GPP) during four stress events between July and September 2020. An Apogee aspirated radiation shield was used in conjunction with an EE08-SS temperature and humidity probe (the Apogee TS-120 package) to remotely monitor the temperature of the vineyard.

Results:

Over the three-month period, there were four stress events, characterized by a decline and recovery of GPP in the vineyard subplots. These stress events were caused by air temperature, solar radiation, soil moisture, and other factors. During these events, they found that NDVI did not vary, but PRI was able to track short-term declines and recovery of GPP.

Conclusion:

Remote sensing of plants provides continuous real-time data, and physiology-based indices, such as PRI, can be used to monitor photosynthetic activity during stress events to aid in management decisions.

Application Summary

Summary:

Stress events in a vineyard were remotely monitored using an Apogee aspirated shield and humidity probe package and PRI measurements.

Apogee Product Used:

TS-120-SS: Aspirated shield with EE08-SS temperature and humidity probe package

Location:

Four vineyard plots in Central Valley, California

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Reference Article:

Detecting short term stress and recovery events in a vineyard using tower based remote sensing of photochemical reflectance index (PRI)