

Mist-type Evaporative Cooling Helps Wine Grapes Deal With Heat And Drought Stress

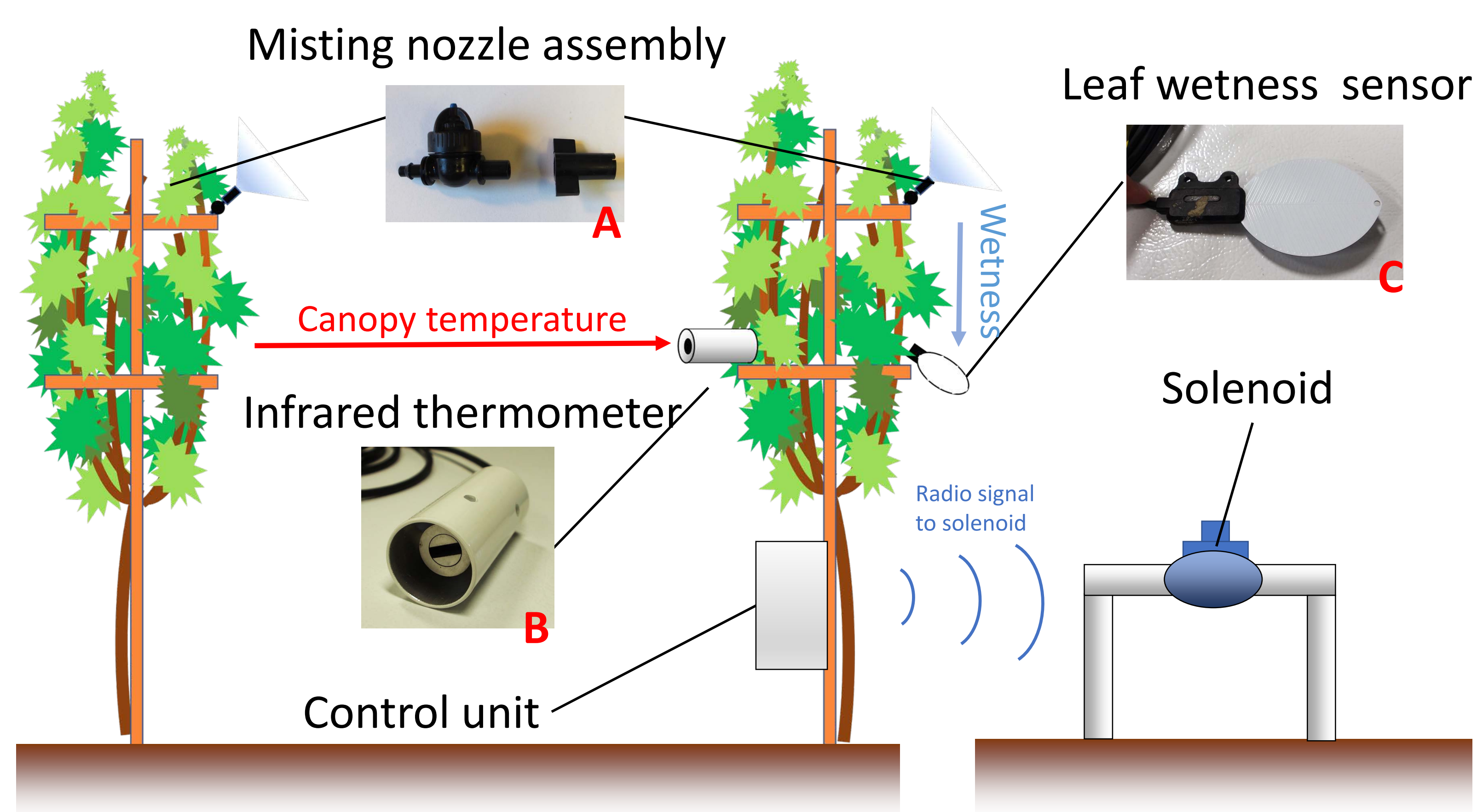
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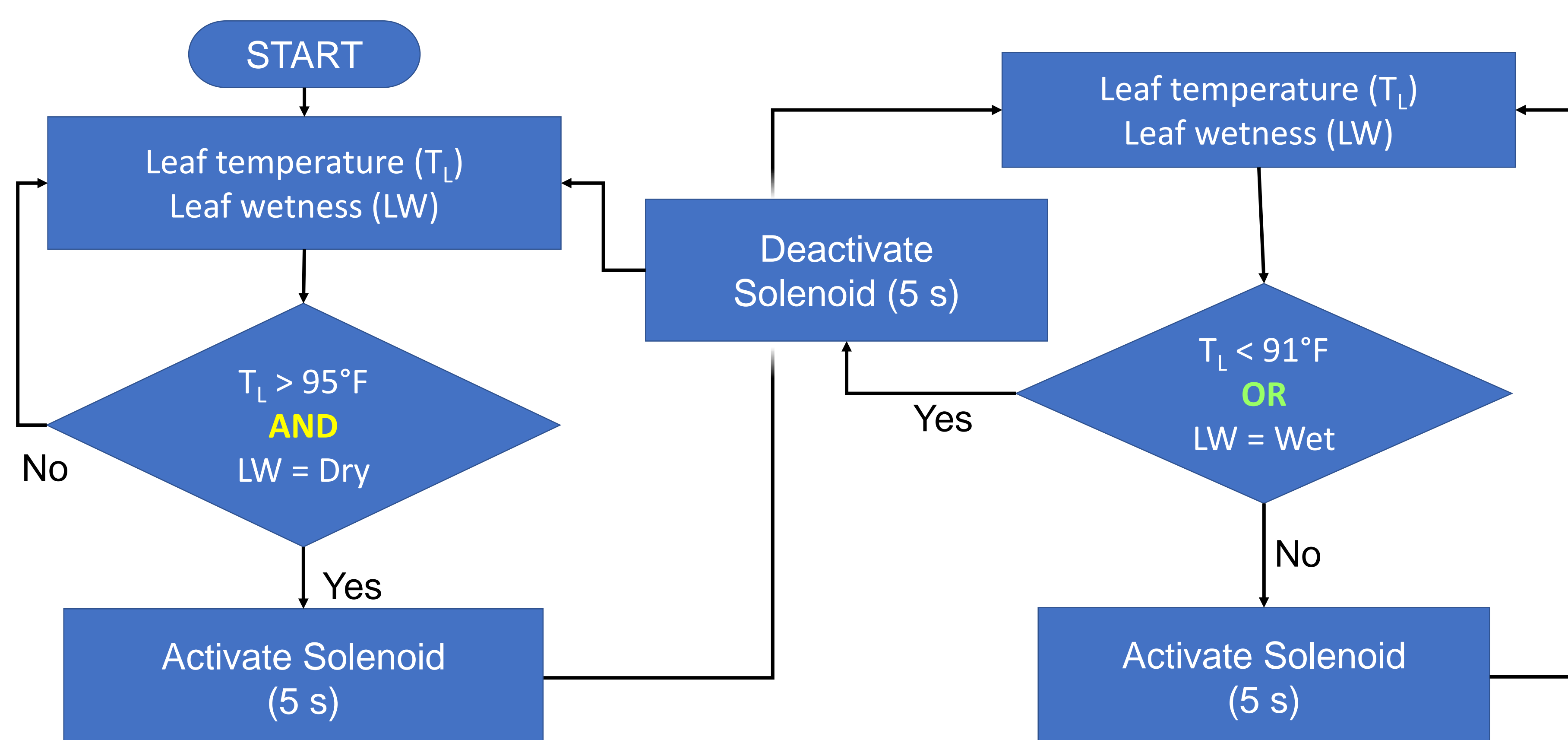
TOOL TO MANAGE OVERHEATED CANOPY

Heat and drought stress are unavoidable in eastern Washington because of recurrent heatwaves and regulated deficit irrigation (RDI). Our mist-type evaporative cooling system (MECS) mitigates canopy overheating from a combination of heat and drought stress. The MECS runs only when vines need cooling.



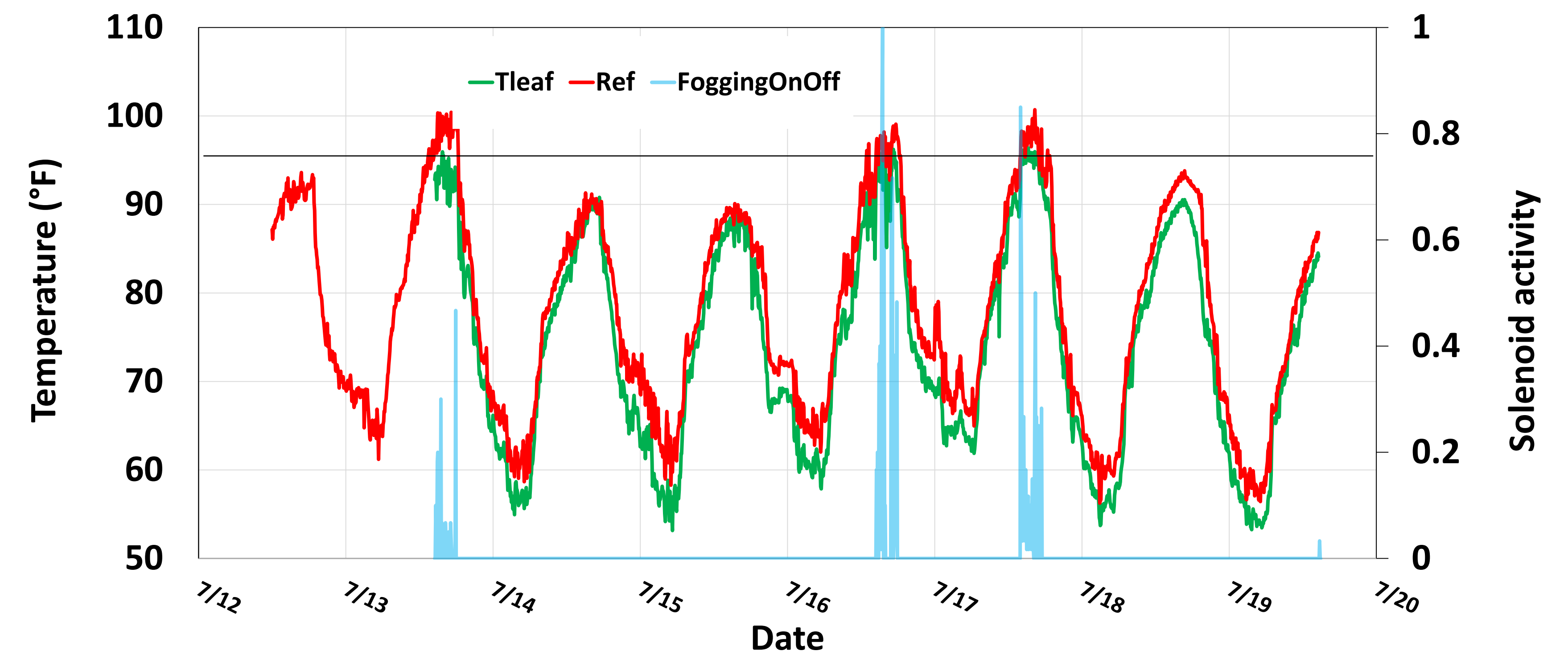
MECS COMPONENTS

- **A. Misting nozzle** creates fine mist for cooling
- **B. Infrared thermometer** measures canopy temperature
- **C. Leaf wetness sensor** stops misting if canopy is wet



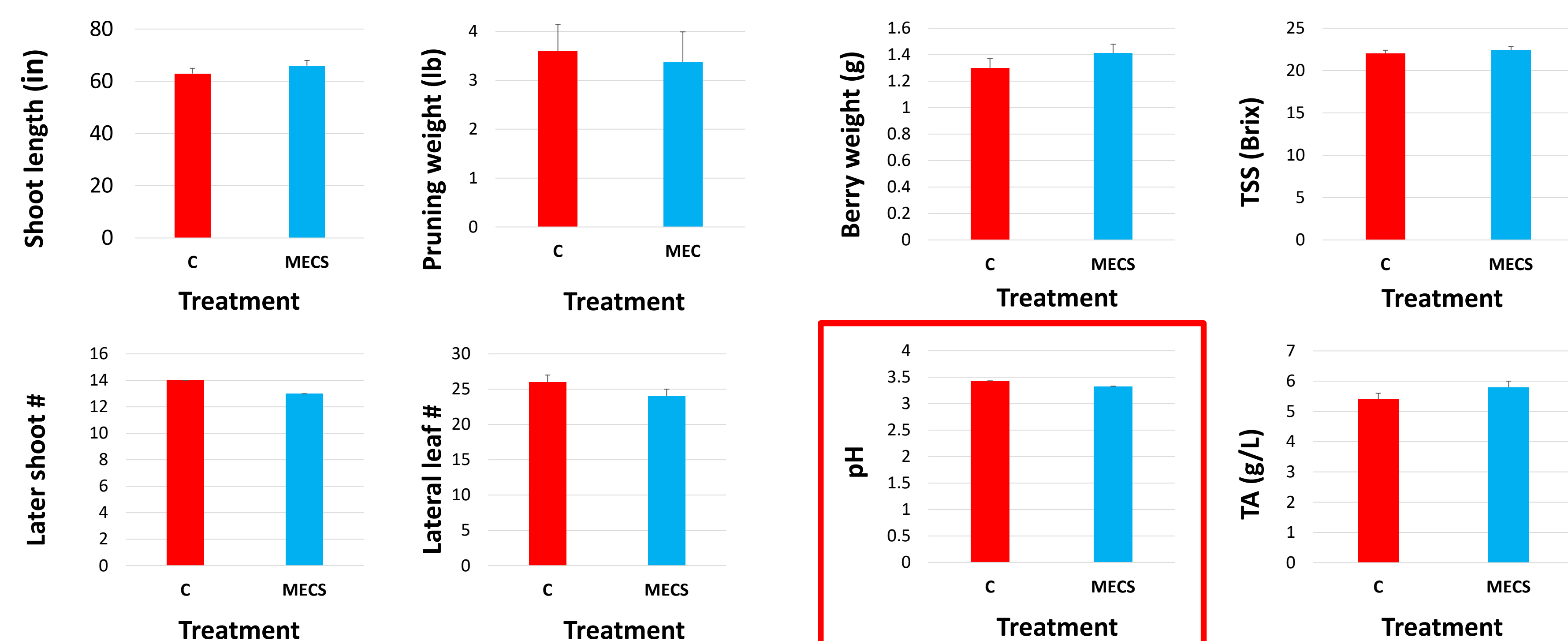
WORK FLOW

The goal is to maintain canopy temperature below 95°F while keeping the soil surface dry. The system activates only if the canopy is hot and leaves are dry.



GUARD THE 95°F LINE

The results show the canopy temperature was 96°F when the air temperature was 101°F. The canopy was cooled down by short misting pulses. Air temperature in the canopy was up to 8°F lower than ambient during the activation periods.



MECS JUICE pH LOWER

- Juice pH was lower in the treated blocks.
- No significant difference berry weight, TSS, and TA.
- No significant difference in vegetative growth.
- No significant difference in diseases incidence and berry splitting.

TAKE HOME

- MECS is compatible with existing trellis
- MECS controls canopy temperature effectively with minimal water supply
- Vegetative and reproductive growth were not affected
- No negative effects were noticed at this point
- Effects on wine quality is still unknown



Viticulture &
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