

## TESTING VINEYARD THERMOMETERS PRIOR TO FROST SEASON

### Examine thermometers for problems:

- There can be a very small crack near the top where it is attached to the frame. This is usually too small to see. Look for a noticeably lower temperature reading out of the ice water as well as in. If this happens, toss it.
- The minimum temperature stick is stuck at the top due to poor storage. Try to dislodge it by heating the thermometer in hot water and causing the alcohol to rise to the top. Hold the thermometer vertically, bulb end down, and tap the bottom of the frame on a hard surface.  
**BE CAREFUL! THE HOT ALCOHOL COULD CAUSE THE GLASS TO EXPLODE!**
- The temperature markings have been rubbed off. This means they were painted on and not etched into the glass. Return for a refund.
- The alcohol column has separated. Grab the top of the thermometer and sharply sling your arm downward a few times. If that doesn't work, heat the thermometer in hot water to cause the alcohol to rise and hopefully reconnect the segmented alcohol. **BE CAREFUL!** Re-check after it cools down.

### Ice-water container used to test thermometers:

If you have up to 20 thermometers, use a five-gallon bucket. Otherwise, find a container that is as deep as half the length of the thermometer. Crushed ice works best but ice cubes are OK. Colder ice is best, but barely frozen ice will work if testing is done quickly. Fill the container with enough ice to immerse at least the bottom third of the thermometer. Add only enough water to reach the top of the ice – it's OK if some ice floats. Just make sure the lower third of the thermometer is submerged in the ice-water solution.

Gently immerse the thermometer – bulb end down – down through the ice-water mixture until the metal frame is touching the bottom of the container. If your thermometer is not attached to a protective metal frame, then do not allow the bulb to touch the container bottom since this may produce a warmer reading. When dealing with several thermometers, use your hand to temporarily shove the ice aside to get them into the bucket without breaking them.

### Reading the temperature:

After 5 to 10 minutes, they should have reached exactly 32° F. For those that don't, note on a tag “add 1°” or “subtract ½ °” etc. The person reading it out in field should follow the instructions on the tag in order to read the correct air temperature. Attach the tag to the top – high temperature end – of the frame.

### Storing the thermometer:

Store or mount them in the vineyard in a slightly tilted position so that the high temperature end is up and the bulb end down. This will help prevent the alcohol column from separating. This is also true during a rough truck ride out to the vineyard. Examine the alcohol column before you mount it in the field.

### Reference:

**This instruction sheet first appeared in the March 1996 issue of the UCCE Sonoma County Viticulture Newsletter. I wrote it with input from Mr. Harold Coffey, Agricultural Meteorologist, with the National Weather Service (NWS). That year, the Agriculture Weather – Fruit Frost Program was discontinued in the United States. Spring frost forecasts in Napa and Sonoma Counties had been provided by the NWS for 59 and 37 years respectively. Harold Coffey was the onsite Agricultural Meteorologist for the last 15 years of the Napa-Sonoma Fruit Frost Program.**