

## **Start and stop frost protection sprinklers based on Wet bulb temperatures.**

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The [National Weather Service is forecasting “patchy frost”](#) tonight for some regions of the Sacramento Valley, mostly on the east side of the valley. Dew points should be low tonight, following several days of dry, north winds. Most growers are already aware of the following, but just as a reminder:

To frost protect with sprinkler irrigation, turn “on” irrigation when the WET bulb temperature is above the critical temperature, not when the dry bulb temp reaches critical temperatures. Sprinklers should be turned “off” when the wet bulb temperature is above the critical temperature. Turning sprinklers “on” or “off” when the wet bulb temperature is below the critical temperature may result in orchard cooling and possible crop damage. Specific “on” and “off” temperatures can be determined from dew point temperature in the orchard and critical temperature for the crop using the tables from Dr. Rick Snyder, UCCE Biometeorology Specialist at UC Davis on the charts below. For example, if the critical damage temperature for your crop is 29°F and the dew point in the orchard is 25°F, then the sprinklers should go “on” at 31.3°F to avoid dropping the temperature below 29°F when the sprinklers initially go on. The same holds for shut of time.

For more information, including educational videos in English and Spanish, please visit the following web site from Dr. Rick Snyder, UCCE Biometeorology Specialist at UC Davis: <http://biomet.ucdavis.edu/frost-protection.html>

Best wishes for a warm and breezy night.

**Air temperatures (°F) corresponding to dew point and critical damage temperatures (°F)**

<b>Dew point</b>	<b>Critical Damage Temperature (°F)</b>										
<b>°F</b>	<b>22.0</b>	<b>23.0</b>	<b>24.0</b>	<b>25.0</b>	<b>26.0</b>	<b>27.0</b>	<b>28.0</b>	<b>29.0</b>	<b>30.0</b>	<b>31.0</b>	<b>32.0</b>
32											32.0
31										31.0	32.7
30									30.0	31.7	33.3
29								29.0	30.6	32.3	34.0
28							28.0	29.6	31.2	32.9	34.6
27						27.0	28.6	30.2	31.8	33.5	35.2
26					26.0	27.6	29.2	30.8	32.4	34.0	35.7
25				25.0	26.5	28.1	29.7	31.3	32.9	34.6	36.3
24			24.0	25.5	27.1	28.6	30.2	31.8	33.5	35.1	36.8
23		23.0	24.5	26.0	27.6	29.1	30.7	32.3	34.0	35.6	37.3
22	22.0	23.5	25.0	26.5	28.1	29.6	31.2	32.8	34.5	36.1	37.8
21	22.5	24.0	25.5	27.0	28.5	30.1	31.7	33.3	34.9	36.6	38.2
20	22.9	24.4	25.9	27.4	29.0	30.6	32.1	33.7	35.4	37.0	38.7
19	23.4	24.9	26.4	27.9	29.4	31.0	32.6	34.2	35.8	37.5	39.1
18	23.8	25.3	26.8	28.3	29.8	31.4	33.0	34.6	36.2	37.9	39.5

Percentage damage expected to some almond varieties at various development stages after 30 minutes below the indicated temperature.

Variety	Stage	Temperature (°F)							
		21.9	23.0	24.1	25.0	26.1	27.0	28.0	28.9
Peerless [F]	full bloom				100	75	45	25	
	showing pink		100	75	50	25			
Peerless [C]	full bloom				79	50	14	1	
	petal fall						63	14	3
	nut stage						46	45	9
NePlus Ultra [F]	full bloom			100	75	50	25		
Mission [F]	showing pink	100	80	60					
Drake [F]	full bloom		100	75	50	25			
	showing pink	75	50	25					
Nonpareil [F]	full bloom	75	60	40	20				
	showing pink	20	10						
Nonpareil [C]	nut stage						19	14	3
Butte [C]	nut stage					90	45	27	10

[C] indicates tests with excised branches in a freezing chamber (Connell and Snyder, 1988).

[F] indicates results of several years of unpublished field observations by Harry Hansen (retired USA National Weather Service) using a Stevenson screen and fruit frost shelter temperatures.