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Vineyard Alert: Extreme Heat and Droughty Conditions Affecting NC Vines

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Vineyard owners should be closely monitoring vines for symptoms of water stress. I have received several reports of vines showing symptoms of nutrient deficiency in basal leaves and leaf loss. Vines will move water and nutrients from the older, basal leaves to the newer growth when under water stress. Other signs of water stress will be leaf angles indicating wilting, leaf scorch (leaf temperature increases when vines are under water stress), and death of shoot terminals and tendrils. Merlot is very sensitive to water stress. A mild degree of stress is not harmful, but severe stress can reduce crop level and delay fruit ripening, potentially harm fruit quality at harvest. If fruit has not been exposed to sunlight from the time of fruit set, defoliation will cause fruit sunburn, shrivel and death.

If vines are not showing symptoms of water stress at the present time and you have not had effective rainfall in the past several weeks, you should still irrigate to maintain vines at their current water status. If vines are showing symptoms of water stress, irrigation should begin immediately to relieve stress.

Daily total reference evapotranspiration (ET) rates in most wine growing regions were between 0.20 and 0.30 inches/day for the past week. One acre-inch of water is equivalent to 27,154 gallons of water/acre. At an ET rate 0.25 in/acre/day, total water loss replacement for a fully grown vine requires application of about 9 gallons/day/vine in a vineyard on a 6' x 10' spacing. However, as long as you are not watering the cover crop, which uses as much or more water than the vine, water replacement rates are not on par with ET losses. Typical recommendations for the western states are to replace 40% of the water lost to ET. This is equal to about 3.5 gallons water/vine/day at an ET rate of 0.25 inches/day. Water should be pulsed on for better penetration into the soil and to avoid ponding and runoff.

To check ET rates in your area, go to:

<http://www.nc-climate.ncsu.edu/ETdynamic2.php?date=2010-07-01&unit=inches>

When leaves are drought stressed, Dr. John Havlin, NCSU Soil Scientist, does not recommend foliar nutrient applications, especially for nutrients such as boron, which have a narrow window between correct and toxic rates. The danger for potential toxicity is enhanced with drought stress.