

Weekly Crop Evapotranspiration (Crop ET) Reports Are Available to Assist Farm Water Management

The Northern Region of the California Department of Water Resources and the University of California Cooperative Extension in Tehama and Glenn counties have teamed up to provide “**Weekly ET Reports**” to agricultural water users. This is the first Weekly crop ET Report for the 2017 irrigation season. It includes water use information for a variety of crops. Background information about the reports and ways to use them in on-farm water management are outlined in this article.

Information in each Weekly ET Report

Estimates provided are for healthy crops where soil moisture is not limiting growth. Estimates for bearing orchards are in reference to fifth leaf or older trees. The following week’s historical crop ET is also provided. Estimates suggest a maximum amount of irrigation water needed. Rainfall received during the growing season and stored soil moisture from the dormant season contributes to meeting these estimates and will reduce the irrigation water needed. Irrigation decisions based on this information should be confirmed with field monitoring. Irrigation systems that apply water with a high uniformity require less water to supply the crop needs.

Use in the Spring Season to Help Decide When to Begin the Irrigation Season

November thru February rainfall was much more than we have seen in recent years and has effectively refilled the soil profile. Referring to the first table, select the crop in question and compare the “*Accumulated Seasonal Water Use*” since leaf-out to the “*Accumulated Precipitation*”. As the seasonal crop water use exceeds accumulated rainfall, compare the difference to the water holding capacity of the soil in the crop root zone. The choice is to rely on soil moisture storage to supply the difference or to begin to irrigate.

An Example: Accumulated seasonal water use for almonds from February 21 through March 30, 2017 was 2.30 inches while accumulated rainfall from the Gerber South weather station in Tehama County was 2.15 inches. Rainfall measurements taken from your own farm or ranch will improve the accuracy of this projection. In the case of almonds, which are the earliest orchard crop to leafout and begin developing a full canopy, a 0.15 inch soil moisture deficit had developed through March 30. When the deficit accrues to an amount greater than will be applied with a single irrigation event, it may be time to begin irrigating unless a grower has concerns about root diseases from irrigating too early and prefers to wait longer. Monitoring soil moisture levels or crop water stress should be used together with these ET estimates to confirm decisions on when to begin irrigation.

Use throughout the Season to Aid Irrigation Operation

Crops go through phases of growth and the weather can be highly variable during the season. These weekly reports can be used to help adjust for changing growth phases and weather conditions. In order to apply this information, the water application rate from the irrigation system must be known. For orchards, this can be estimated with a count of micro sprinklers or drip emitters per acre along with a reliable estimate of the water emission rate per micro sprinkler or dripper. Another option is to contact the Tehama County Mobile Irrigation Lab listed below and arrange an irrigation system evaluation. In the past, this service has been available at no cost but a fee may be required in 2017.

Almond Orchard Example: One micro sprinkler is used per almond tree; each micro sprinkler emits nine gallons of water per hour; and the orchard design has 151 trees per acre. The **hourly** water application rate for this example is 1359 gallons per acre. This equates to a water application rate of 0.05 inches per acre per hour of operation. The math is as follows: 1) 151 micro sprinklers per acre multiplied by 9 gallons per hour emission rate equals 1359 gallons per acre per hour; and 2) 1359 gallons per acre per hour divided by 27,154 equals 0.05 inches per acre per hour of operation (there are 27,154 gallons of water per acre-inch).

Suppose an upcoming weekly report shows that almonds from May 5 to May 11, 2017 use 1.80 inches of water per acre and they are irrigated with the micro sprinkler system described above. At an hourly water application rate of 0.05 inches per acre per hour of operation, a maximum of 36 hours of operation would be needed during the week to match the estimated crop ET. The weekly hours of operation may be reduced further if rainfall occurs or if a reasonable contribution from soil storage is allowed.

Additional water is needed to compensate for non-uniform application of water. Field evaluations conducted by the Tehama County Mobile Irrigation Lab suggest 10 to 15 percent more water may be necessary. Table 2 in the Weekly ET Report helps determine how much water is needed based upon your systems irrigation efficiency keeping in mind that less efficient irrigation systems apply water less uniformly.

Have Questions or Looking for More Assistance?

Contact: Allan Fulton, UC Farm Advisor, (530) 527-3101 or aefulton@ucdavis.edu

Contact: Dani Lightle, UC Orchard Systems Farm Advisor, (530) 865-1153 or dmlightle@ucanr.edu

Contact: Mark Rivera, California Department of Water Resources, Northern Region, (530) 529-7301 or mark.rivera@water.ca.gov

Contact: Kevin Greer, Tehama County Resource Conservation District Mobile Irrigation Lab, (530) 737-5167 or kevin@tehamacountyrcd.org