Cooperative Extension, University of California

Water & Land Resource Manager

TEHAMA, GLENN, COLUSA, AND SHASTA COUNTIES
1754 WALNUT ST, RED BLUFF, CA 96080
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A newsletter from the University of California Cooperative Extension seeking to support wise and judicious use of limited water and land resources in the Northern Sacramento Valley.

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Water Meetings in April 2007

University of California Agricultural and Water Resources Coordinating Conference.

- Thursday, April 19, 2007, 9:00 a.m. to 4:30 p.m.
- Heidrick Ag History Center, 1962 Hays Ln, Woodland, CA 95766
- Topics: Perspectives on Water Resource Issues, Urban Water and Agricultural Water Conservation
- For more information: http://www.waterresources.ucr.edu/

Linking Land Use and Water in the Upper Sacramento Valley

- Monday, April 30, 9:30 a.m. to 4:00 p.m.
- Red Bluff Community Center, 1500 Jackson St, Red Bluff, CA 96080
- Topics: Water and land use, planning for wise growth, sustainable strategies, and policy solutions
- For more information: contact Vallia Dahdouh at (916)-448-1198 x 327 or vdahdouh@lgc.org

Is Your Irrigation System Ready for 2007?

Maintenance of microsprinkler and drip irrigation systems is an important part of obtaining economical and uniform performance. Below, is a checklist to consider in getting ready for the irrigation season.

- **Check media level and cleanliness in sand media filters.** Depending upon what you see, you may want to replace the media or perform several repeated backflush cycles and re-examine the media.
- **Clean backup screen filter down stream of media filters.** Many systems with sand media filtration will have a screen filter just downstream to protect against a major sand tank failure

(i.e. broken underdrain) where large amounts of sand media may flow out of the tank into the mainline.

- **Check disc and screen filters for cleanliness and repairs.** Disc filters are not usually self-cleaning and they may take some time to clean or may require replacement discs.
- **Clean fertilizer and chemical holding tanks.** Fill tanks with clean water and operate injection pump or venturi device and make sure metering devices are functional.
- **Manually operate the backflush system.** Make sure the backflush controller is working, that proper flush times and dwell times are set, and that tanks flush in sequence and open and close completely.
- **Check for working pressure gages.** Pressure gages should be located before and after the water flows through the filters. A 4 to 6 psi difference signals the need for backflushing.
- **Check pressure regulators and in-line screen filters.** Some systems might have regulators and in-line filters. Make sure the regulators are operating properly and the in-line screen filters are clean.
- **Walk lateral lines or drip lines.** Look for physical damage to hoses, external emitters, risers, and sprinkler nozzles. Inspect drip emitters and sprinkler nozzles for clogging.
- **Flush each sprinkler line or drip line.** Rid the system of sediments that may have built up during past use. Be sure to have sufficient flow velocity to achieve effective flushing.
- **Acidification or Chlorination.** If you observe precipitates clogging emitters or nozzles, acidification might be appropriate. Chlorination to control algae and fungi may be timely when temperatures warm up.

Weekly Reports of Crop Water Use During 2007 Season

The Northern District of the California Department of Water Resources and the University of California Cooperative Extension in Red Bluff work together to provide a weekly report of soil moisture loss (Evapotranspiration or ET) estimates for some major crops grown in the northern Sacramento Valley. Each report provides an estimate of soil moisture loss for the past seven days and a running total of the soil moisture loss for the entire season. A sample report for 2007 is provided below. Electronic reports are available upon request for your convenience every Friday starting April 13, 2007 and will continue through October.

WEEKLY SOIL MOISTURE LOSS IN INCHES				
(Estimated Evapotranspiration)				
3/23/07 through 3/29/07				
West of Sacramento River			**East of Sacramento River**	
Weekly Water Use	Accumulated Seasonal Use	**Crop (Leaf-out Date)**	Weekly Water Use	Accumulated Seasonal Use
1.02	4.09	**Pasture**	1.01	4.10
1.02	4.09	**Alfalfa**	1.01	4.10
0.77	3.13	**Olives**	0.76	3.12
0.66	2.67	**Citrus**	0.65	2.66
0.74	2.36	**Almonds (3/1)**	0.73	2.38
0.64	1.34	**Prunes (3/15)**	0.64	1.31
0.00	0.00	**Walnuts (4/1)**	0.00	0.00
0.11	0.54	**Rainfall since 2/23**	0.28	0.71

How can these weekly soil moisture loss reports help decision-making? They can help guide when to begin irrigation, help judge how well rainfall balances the soil moisture loss, and how long to operate your irrigation system to replace the soil moisture loss. The soil moisture loss estimates

are most conveniently used with drip, micro-sprinkler, or sprinkler irrigation where the hourly water application rate can be determined in inches of water per hour.

Example of how to use this report in decision-making: The table on the previous page shows accumulated seasonal water use for almonds grown west of the Sacramento River from March 1 through March 29, 2007 was 2.36 inches while accumulated rainfall since February 23, 2007 was 0.54 inches. Rainfall has fallen short of the soil moisture loss from almonds during this period, suggesting a soil moisture deficit is developing and that modest levels of irrigation with micro sprinkler or drip may be appropriate. But, to be more confident some type of field verification to check soil moisture levels or crop stress levels is encouraged. In the case of almonds, which have had a full canopy for a few weeks, 0.74 inches of soil moisture loss was estimated from March 23 to March 29, while rainfall was 0.00 inches. If a micro sprinkler system were in use with an hourly water application rate of 0.06 inches per hour, similar to the one described below for an almond orchard, it would require about 12 hours of irrigation to replenish the past seven days of soil moisture loss from almond.

What if the hourly water application rate is unknown? Determining the hourly water application rate of a drip or micro sprinkler system requires knowing the number of drip or micro sprinkler emitters per acre, the specific emission rate of the drip or micro sprinkler emitter, and remembering that 1.0 inch of water covering an acre of land (acre-inch) equals 27,154 gallons. Refer to the example on the right. Contact the Tehama County Farm Advisors office for assistance with impact sprinkler and flood or furrow irrigation systems.

Determining the Hourly Water Application Rate of Your Irrigation System:

1. Example of information needed
   - Micro sprinklers per acre of almonds= 180
   - 8.5 gph emission rate per micro sprinkler
2. Calculation
   - 180 micro sprinklers per acre multiplied by 8.5 gph per sprinkler = 1,530 gallons applied per acre per hour
   - 1, 530 gallons per acre per hour divided by 27,154 gallons per inch = 0.06 inch per hour of operation

How is soil moisture loss (ET) estimated? The estimates are based upon hourly measurements of sunlight, temperature, humidity, and wind obtained from weather stations located near Gerber (westside) and Durham (eastside). Estimates are for specific crops to adjust for different leaf-out and planting dates and, in the case of orchard crops, for orchard floors with resident vegetation that are managed using strip applications of herbicides and mowing.

How reliable are the ET estimates? The weather stations have a long history of operation and are maintained regularly. They are automated so that data is recorded hourly. Estimates are for healthy crops where soil moisture is plentiful and the management goal is to avoid crop stress. In the case of fruit and nut crops, the estimates are for mature, productive orchards. They will overestimate ET for unhealthy crops, young non-bearing orchards with smaller canopies, or for periods of crop development when water stress might be beneficial. They may underestimate where cover crops are growing vigorously in orchard middles.

Since these are regional estimates they should be supported with field monitoring and crop observation. Information is available on techniques for measuring crop stress in orchard crops with a pressure chamber and manually operated and automated methods of monitoring soil moisture in either orchard or agronomic crops.

How to get these weekly reports? Weekly e-mail reports at available upon request. Submit your request with your name and e-mail address. Weekly reports are also published in area newspapers, usually in the Agriculture section. Participating newspapers include: the Anderson Valley Post, Happy Valley Times, the Red Bluff Roundup, the Corning Observer, the Chico Enterprise Recorder, the Gridley Herald, the Orland Press Register, the Willows Journal, and the Colusa County Sun Herald. The information can also be accessed at the UC Cooperative Extension web site: http://cetehama.ucdavis.edu.

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