COOPERATIVE EXTENSION UNIVERSITY OF CALIFORNIA GLENN COUNTY

ORCHARD FACTS

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Irrigating Young Trees

Method 1

Knowing how much to irrigate young trees can be problematic because they do not fill all of their allotted space and will use less than a full-canopy mature tree. One way to estimate young tree water use is to estimate the percent canopy. Determine the percent canopy by squaring the average canopy diameter and dividing by the available tree space (row times tree spacing). Multiply the percent canopy by 2 to account for additional use due to reflected heat and light. Multiply this number by mature tree water use. Once the canopy reaches 55%, water usage will be the same as 100% canopy. This type of estimate is based on some research conducted years ago on young almonds which showed that young trees used approximately 2 times as much water as their canopy would indicate.

Method 2

The following information is provided by UC Extension Specialist Scott Johnson and describes another method of predicting water use by young trees.

Irrigating young trees in the first few years of orchard establishment is a critical practice. The goal is to maximize tree growth and root expansion without stressing the trees or waterlogging the root system. Since the roots are constantly growing, it is difficult to know just where and how much water should be applied.

Using the weighing lysimeter at the Kearney Agricultural Center, we have obtained young tree water use values over a three year period. This data was used to develop the numbers shown in the table on page 3. To apply this information to a given orchard, make a rough measurement of the 3 dimensions (height, E-W width, N-S width) of an average tree in the field. Multiply these together to give an estimate of tree volume. The table gives estimates of the

amount of water used during the months of the season by trees of varying volumes. Units are in **gallons per tree per week.** For instance, a tree with a volume of 200 cubic feet will need 67 gallons of water each week in July. Values within the table may need to be altered for any given orchard because of the following factors.

U Irrigation efficiency. The table assumes high efficiency since our trees were irrigated with multiple drip emitters per tree. If microsprinklers are used, there could be more soil evaporation and water application which goes beyond the root zone; such trees could possibly require 10-20% more water. For most flood or furrow irrigated orchards, application efficiency is usually poor and more water may be required.

U Current weather conditions. Since the table is based on long term temperature averages, abnormally hot or cold spells should be taken into account when scheduling irrigations.

USoil type. On very sandy soils where water may be leaching beyond the root zone, extra water will likely need to be applied.

U Cover crops & weed growth. The values in the table were derived from trees with no weed growth. Any other plant growth in the orchard will significantly increase the water requirements.

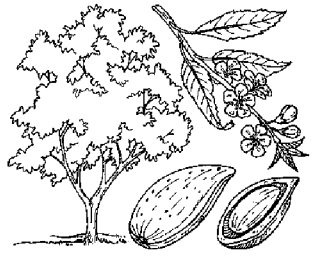
TABLE 1. WATER USE OF YOUNG TREES IN GALLONS PER WEEK

Tree Volume (ft. x ft. x ft.)	March	April	May	June	July	Aug.	Sept.	Oct.
10	9*	13	23	30	44	34	22	9**
25	9*	14	24	36	45	35	23	10**
50	10*	16	27	40	49	38	25	11**
100	12*	19	31	45	54	43	28	13**
200	17*	26	40	57	67	54	37	18**
300	22*	33	46	63	72	59	42	23**
400	26*	40	55	74	84	69	50	28**
500	31*	48	61	82	90	76	55	33**
600	35*	54	69	93	101	86	63	38**

* In years of normal rainfall, irrigation in March and April may not be necessary and may actually inhibit root growth.

** These values for late September and October should only be applied in years when temperatures stay high. Once the weather starts to cool down, irrigation should be cut off to reduce the potential for root and crown diseases.

On young trees, Method 2 may predict slightly greater water use than Method 1. Method 2 predictions correlated very well with field observations in a first leaf almond orchard using tensiometers for soil moisture monitoring. Either method can be used to predict young tree water use, but soil moisture monitoring should be used to verify predictions and adjust water application accordingly. For more information on irrigation scheduling or soil moisture monitoring, contact our office.



Almond

Leaf Analysis

July is the time to take a leaf analysis to determine the nutritional status of your orchard. This analysis can be used to evaluate and adjust your fertilizer program. The elements most commonly deficient are nitrogen, potassium and zinc.

Each sample should be representative of variety, rootstock, soil and cultural conditions. Samples from problem areas can be compared to good areas to help identify the reason for poor growth.

The type of sample to take varies with the crop as follows:

Walnut - Select 25-30 terminal leaflets from spurs or from the middle of moderately growing shoots.
Almond - Select 80-100 fully expanded, mature leaves from non-fruiting spurs.
Prune - Select 60-100 fully expanded, mature leaves from non-fruiting spurs.
Pistachio - Select 4 to 10 fully expanded leaves from nonbearing branches; from 10 to 20 trees per block.

Critical Nutrient Levels

	Almond	Walnut	Prune	Pistachio
%Nitrogen (N)				
Deficiency	2	2.3	2.2	2.3
Adequate	2.2-2.5	2.4-3.2	2.3-2.8	2.5-2.8
% Potassiium (K)				
Deficiency	1	0.9	1.0(1)	1.0
Adequate	1.4	1.2	1.3	1.0-2.0
%Magnesium (Mg)				
Adequate	0.25	0.3	0.25	0.6
% Calcium (Ca)				
Adequate	2	1	1	1.3
PPM Zinc (Zn)				
Adequate	18	18	18	10
% Chloride (Cl)(2)				
Excess	0.3	0.3	0.3	?
% Sodium (Na) (2)				
Excess	0.25	0.1	0.2	?
PPM Boron (B)				
Deficiency	25	20	25	90
Adequate	30.0-65.0	36.0-200.0	30.0-80.0	120-250
Excess	85	300	100	

Based on July leaf samples. Adequate levels for all orchard crops: Phosphorus (P) 0.1-0.3%; Copper (Cu), over 4 ppm; Manganese (Mn), over 20 ppm. (1) K levels between deficient and adequate are considered "low" and may cause reduced fruit sizes in some years. (2) Excess Na or Cl cause reduced growth at the levels shown, leaf burn may or may not occur when levels are higher. Confirm salinity problem with soil or root samples.

IPM Update

Based on our original biofix of April 18th, the 2nd flight of CM should have started on July 4th, at 1060 DD. Low CM activity in our orchard makes it difficult to be sure of the exact biofix. If we use July 4th as the biofix, as of the 12th , this new generation had accumulated 220 DD. The recommended treatment time is at 250 DD, which should occur around July 13/14th with average temperatures. We are currently catching .6 moths per night.

PTB in almonds is now at 1236 DD (Biofix on April 21). We are catching 54 moths per night on average. PTB in prunes is at 1128 DD (Biofix on April 29). We are currently catching .5 moths per night. Approximately 1060 DD are required per generation so we should be into the next generation in our almond orchard and it should be just about ready to begin in our prune orchard.

NOW eggs are caught on June 10th in a trap in an almond orchard southeast of Orland. If this is a biofix for NOW, then the next generation should start around August 2nd assuming average temperatures. These IPM updates are available through e-mail on a weekly basis. If you have e-mail and are interested in receiving them, contact our office.

Almond Hullsplit Sprays

When hullsplit sprays are required in almonds, they are best applied at early hullsplit (1% split on sound nuts). Later, sprays will be less effective because emerging larvae between the hull and the shell will be protected.

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