IRRIGATING YOUNG TREES

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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, U.C. researchers have obtained young tree water use values over a three year period. These data were used to develop the numbers shown in Table 1. To apply this information to a given orchard, make a rough measurement of the three 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.

- **IRRIGATION EFFICIENCY.** The table assumes high efficiency since the test 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.

- **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.

- **SOIL TYPE.** On very sandy soils where water may be leaching beyond the root one, extra water will likely need to be applied.

- **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 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.