



*Desmond R. Layne*

# Stone Fruit

## The Importance Of Water

**W**ATER is a vital resource for peach tree growth, productivity, and survival. Too much water (flooding) or too little (drought) can be fatal. Soil type and profile, orchard floor management, and site topography can dramatically affect soil water availability to the tree root system.

The time of year that water is provided is critical. Since the fruit grower cannot change what is provided by rainfall, he is left with the challenge of managing the tree's needs through supplemental irrigation. This depends on a source of water to draw from (i.e., wells, reservoirs, ponds, rivers, lakes, etc.) and a means to deliver it. Some vital considerations come to mind. How much water is needed? When should it be applied? Is supplemental irrigation necessary and is it cost effective? Are there any differences in irrigating trees grown in southern versus northern (U.S.) climates? How should trees of different ages be treated?

It is obvious that supplemental irrigation of peach trees grown in a dry climate is necessary. However, how critical is supplemental irrigation for trees grown in a humid climate (i.e., South Carolina, Georgia, etc.)? The answer depends upon the amount of rainfall received and the tree water use requirements during the season.

### Monitoring Is Important

It has been estimated that a mature peach tree with a full crop can utilize up to 45 gallons of water per day during the peak water usage period of the summer. This is a tremendous amount of water! If the decision is made that supplemental irrigation is necessary, then the type of delivery needs to be decided. Various systems are possible, with under-tree microsprinklers perhaps providing the greatest water use efficiency.

For the grower without sophisticated monitoring tools, supplemental irrigation decisions can be helped by maintenance of accurate rainfall records, visual monitoring of tree vigor and fruit growth, and measuring soil moisture content (i.e., hand squeeze test). For growers using the Internet, various resources are now available such as the new peach irrigation scheduling system, part of



In a research project at Clemson University, fruit on irrigated trees were larger and ripened over a shorter time frame, with fewer fruit that did not make minimum size grade. More fruit met the minimum size grade in the supplementally irrigated plot (12 baskets, pictured from a three-tree plot in one of four harvests) compared with the non-irrigated plot (five baskets).

the Georgia Automated Environmental Monitoring Network ([www.griffin.uga.edu/laemnl/peaches](http://www.griffin.uga.edu/laemnl/peaches)).

For more sophisticated growers, on-farm electronic monitoring of rainfall, pan evaporation, soil moisture content, tree water use, etc., can be linked to a computer system and software programs to predict when irrigation is needed and how much water should be applied. Elaborate computer-controlled systems can be developed to automatically turn on/off irrigation for specific zones of the farm or ranch.

It is intuitive that tree water needs change throughout the season. Prior to budbreak in the spring, tree water use is negligible. During the period of bloom and canopy development, water use increases substantially.

Once the canopy is established, as fruit continue to grow and the heat load on the tree increases, more water is required for transpirative cooling and cell expansion in developing fruits. Peak water usage occurs during the "final swell" phase in the last two weeks or so prior to harvest. Many growers in humid climates prioritize their supplemental irrigation to increase fruit size and yield.

### Long-Term Planning

Once fruit is harvested, trees should continue to receive rainfall or supplemental irrigation to maintain a healthy canopy into the fall so that sufficient carbohydrate reserves will be stored in the tree for growth the following spring. For trees growing in the northern U.S., irrigating too late in the summer/fall after harvest can predispose trees to winter injury.

Many growers wonder whether irrigating young, non-cropping trees is necessary or beneficial. In a long-term research project at Clemson University, we found that providing supplemental irrigation to trees from the year of planting resulted in substantial differences in tree growth during the first two years compared to trees receiving natural rainfall only. Supplementally irrigated trees were larger, had a bigger canopy, and could support more fruit by the third year. This resulted in higher yields in the early production years of the orchard.

If supplemental irrigation is not possible, summer pruning is a viable practice that will reduce tree water use, improve size, and increase red coloration. This is best accomplished by removal of strong, upright, current-season shoots before harvest. ●

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