

## IRRIGATION AND FERTILIZATION MANAGEMENT OF AVOCADO

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The overall project was divided into 2 research components during 1992-1993, which will be discussed below.

### **A. *Cashin Creek Ranch Fertilizer Study***

The Cashin Creek Ranch fertilizer trial, located near Valley Center, was established in spring 1988. Trees have been irrigated at 100% ET<sub>c</sub> based on Temecula CIMIS data in cooperation with the grove management. Although the trial was initiated in Spring 1988 we were not able to collect meaningful yield data until 1990 (1989 bloom), although other data such as leaf analysis and tree size data were collected beginning in 1988. Two blocks were utilized for the study due to the established irrigation system. The two blocks are identified by color code, brown and blue. The brown block contains a nitrogen trial replicated 24 times. The blue block contains a nitrogen, phosphorus and potassium trial replicated 12 times. Due to funding cutbacks we terminated the project after the 1993 harvest. We reported extensively on this project last spring. We are in the process of finalizing the final report on this project

### **B. *The Covey Irrigation Trial***

The Covey Lane irrigation trial (W. Lilac Rd.) was initiated in the summer of 1992. It is both an irrigation rate and frequency trial on mature 'Hass' avocado trees. The differential irrigation treatments were imposed in November 1992 and will be maintained as much as possible throughout the year. Table 1 lists the 9 irrigation treatments included in the study. The irrigation rate will be determined by using the K<sub>c</sub> values determined from the Corona Foothill Properties irrigation trial (Table 2) and utilizing Temecula CIMIS data and our own E-pan and atmometer equipment on site. We anticipate that this trial will continue through the harvest of 1998.

We have installed a weather station at the site. It includes a Class A US Weather Bureau evaporation pan (E-pan), a hydrothermograph, rain gauge and an atmometer. We hope to take the weather data from the site and compare to the Temecula and Escondido CIMIS sites. The experimental site was thinned in 1991 and 1992. After the completion of thinning, the record trees were topped to approximately 18 feet and whitewashed to prevent sunburn (July 1992). Irrigation efficiency (average 94%) and distribution uniformity have also been measured. We are in the process of purchasing and installing transducer equipped tensiometers in the grove. This will allow us to map the water depletion within the soil profile in detail.

We are taking soil samples twice a year (Fall and Spring) to determine soil pH and electrical conductivity (an indication of salinity), sodium, chloride and potassium. This will help us to monitor the effect of the irrigation treatments on any salinity buildup in the

soil profile. The soil sample is broken into 4 subsamples: 0 to 6 inches, 6 to 12 inches, 12 to 24 inches and 24 to 48 inches. Water samples are taken quarterly to monitor water quality. Leaf samples were taken in Fall of both 1992 and 1993. No significant difference between the treatments has been detected. The trees are being maintained within the optimal UC guidelines.

In Fall 1992 we established a 3 year girdling project on an adjacent block of trees. Single branches per tree are being girdled either in November, February or Full Bloom. We have replicated each treatment 15 times in a randomized complete block design. We will collect the first yield data from this project in Spring 1994.

*A word of acknowledgment:*

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Table 1. Irrigation treatments at the Covey Lane site.

<b>Irrigation Rate (% ETc)</b>	<b>Irrigation Frequency (times per week)</b>
90	1
90	2
90	7
110	1
110	2
110	7
130	1
130	2
130	7

Table 2. Crop Coefficients being used at the Covey Lane Irrigation Project. These are based on the data generated from the Corona Irrigation Project (1987-1992).

<b>Month</b>	<b>Kc</b>
January	0.40
February	0.50
March	0.55
April	0.55
May	0.60
June	0.65
July	0.65
August	0.60
September	0.55
October	0.55
November	0.55
December	0.50