

## California Avocado Society 1997 Yearbook 81: 107-108

### SIX-PLUS METHODS TO INCREASE AVOCADO PRODUCTION

#### **H. Leonard Francis**

*Production research coordinator, California Avocado Society.*

- 1. Irrigation** is the Number One key to increased avocado production. Dr. Mary Lu Arpaia's irrigation trials in San Diego County at 130% ETc (36 inches acre inches) showed a 50% increase over a "good" irrigation program at 110% ETc (30 inches), and 100% increase over a "normal" program at 90% ETc (25 inches).
- 2. Avoid water stress** during the period of bloom through fruit set: April 1—June 30. Use tensiometers: know what is happening in the root zone. Keeping tensiometer readings under 20 centibars is best; avoid going over 40 centibars during this critical period.
- 3. Bees.** Have at least one hive per acre available to your grove. Two is better. Half of the bees set off the side of your grove are going away from your grove—even more if citrus is planted next door. Avocados have to be pollinated to set fruit.

### ADD THREE LONG-TERM PRACTICES FOR MAXIMUM PRODUCTION

- 4. Pollenizers.** Introduce avocado varieties that pollinate your Hass trees better than Hass pollinates itself. After 1987, many growers cut down or grafted to Hass their Zutano and Bacon trees because of poor income (low price). Fuerte trees suffered similar conversion. Dr. Dean Clegg (U.C.-Riverside) has proved that outcrossing by Zutano, Bacon, and Fuerte all improve production of Hass avocado trees, especially in southern California. Field observation of 2-4 year old topworked Zutanos confirms his findings.
- 5. Open the orchard to light.** Fifty to 60 percent of California's avocado groves are canopied. All the leaves and fruit are in the tops of the trees because shading has killed the sides of the trees. An orchard with only 50 trees per acre, where each tree has leaves on all sides—not just the top—has three times the fruiting surface of an orchard with 100 trees per acre and only a canopy of foliage. Remove alternate trees in the orchard or prune out selected branches to open the trees to light. Light available to the lower parts of the trees allows new foliage production which increases the fruiting surface. (Numerous variations exist of effective corrective and maintenance thinning/pruning practices.)
- 6. Phosphorus** has been shown to increase yield by 50% or more within six years. A six-year U.C. fertilization trial by Dr. Arpaia in the Valley Center area of San Diego County had this result. Phosphorus-nitrogen applications in October-November had similar results in Israel.

## **PLUS A QUICK Fix**

**7. Girdling** increases production—dramatically in some cases. Dr. Arpaia's trial revealed that November was better than girdling in February or April. It may be that October girdling is even better. Girdling induces flower development as well as strengthening the flowers so that they can overcome stress better than the flowers on non-girdled trees.

Longevity of the benefit of girdling is unknown, as is its effect on the health of the trees.

(Note: All on the research by Drs. Clegg and Arpaia discussed herein was funded by avocado growers' research dollars.)