WHY IS IRRIGATION IMPORTANT?

- Avocados are native to the humid sub-tropical and tropical regions of central and northern South America where rainfall is abundant
- In California avocados are grown in an arid Mediterranean climate with a low rainfall
- For best growth and yields avocado trees need a minimum amount of water each year, approximately 40-50 inches of rain
- A lack of water can reduce yields
- Irrigation can be the greatest cost of production so needs to be used as efficiently as possible
- The exact amount of water differs for each grove due to differences in soil type, micro-climate tree size and health, and the aspect of the grove
- The avocado tree does not search for water therefore water needs to be provided to the trees at the right times
- Moist soils are needed to support the large numbers of roots needed for healthy trees
- Most of the avocado roots are in only the top six inches of soil and are under the canopy out to the drip line
- The soil where the roots are is prone to drying out

WHEN TO IRRIGATE:

- Before the trees become water stressed
- At key phenological times like flowering and fruit set followed by the rapid fruit growth phase
- Deciding when to irrigate can be done using weather-based methods, soil-based schedules or a fixed frequency every so many days
- Often the depth of irrigation matches the location of the avocado roots
- To calculate the amount of water and the best irrigation schedule for your grove, the CIMIS system can be used to calculate the daily water use
- Access CIMIS through the website: wwwcimis.water.ca.gov/cimis/welcome.jsp
- To further refine the amount of irrigation water needed for your grove measure the soil moisture directly then make adjustments to the CIMIS calculations

- Properly maintained 12” and 24” tensiometers can be a used for direct soil measurement to refine when to start irrigating and to see if you are over irrigating
- Depending on the soil type irrigation can generally start when 12” tensiometers read 25-30 centibars, earlier if the soil is very sandy and later if the soil has high clay content
Irrigating Avocados

**HOW MUCH WATER TO USE:**

- Over irrigation often occurs in California avocado orchards which wastes growers money and can be harmful to tree health
- Avocado roots are sensitive to water logging where they can drown
- Different soils need different amounts of water as sandy soils hold less water and have less lateral movement of water than clay based soils

<table>
<thead>
<tr>
<th>Tree age (years)</th>
<th>Approximate Irrigation Water Needs in Gallons per Tree per Day</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>(add extra water for leaching, inefficiency and very hot weather)</td>
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<tr>
<td>1</td>
<td>1 1 2 3 4 5 6 5 4 2 1 1</td>
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<tr>
<td>8</td>
<td>8 8 16 24 30 38 46 40 28 18 10 8</td>
</tr>
<tr>
<td>Month</td>
<td>Jan</td>
</tr>
</tbody>
</table>


- Use less water on sick or defoliated trees as they have smaller root systems than healthy trees
- Take care not to irrigate for too long on slopes or there is a risk of washing soil away
- Large and small trees require different amounts of water, enough water for a large tree with a good layer of mulch can be less than for a small tree

**HOW TO APPLY THE WATER:**

- The efficiency of the irrigation system is important, aim for about 80% efficiency with a high distribution uniformity
- Most California growers use under tree individual low-volume sprinklers for high distribution uniformity and to minimize over-wetting the soil potentially spreading root rot
- Many growers irrigate in 24 hour increments
- The design of an irrigation system is a job for a professional, seek advice when deciding what irrigation system to install

**SAVING WATER:**

- Cap off sprinklers to diseased and damaged trees
- Stump canopied trees
- Thin crowded groves before they canopy over
- Top-work over from an undesirable to a desirable variety
- Apply mulch and remove weeds
- Keep skirts low on the trees
- Check and recheck your irrigation system for leaks and measure the sprinkler output as meeting design specifications

**FURTHER READING:**
