

A scenic view of a river winding through a lush, green landscape. The river flows from the foreground towards the background, curving to the right. The banks are lined with dense green trees and vegetation. In the distance, rolling hills are visible under a clear blue sky. The overall scene is bright and natural.

Water Management
Larry A. Stein
Texas A & M AgriLife
Extension Service

Soil berms



- Prevents water from collecting around root ball of tree.
- It is ideal to allow berms to settle over winter before planting







- The vast majority of olives grown worldwide are not irrigated
- The olive has evolved under harsh and dry Mediterranean climate conditions.
- Thick and leathery leaves; waxy cuticle.
- Olive water use is directly related to crop load.
- The olive is tolerant to poor water quality



The Mediterranean climate is characterized by dry summers and mild, wet winters



Water Supply

- In most irrigation systems delivery rate is 10 gallons per minute per acre.
 - Thus a 250 GPM well would be capable of irrigating 25 acres of orchard in one set.
- A 3 or 4 set system is optimal, more than 4 sets can create difficulty in meeting water demands during summer months and heavy cropping.

**Maximum water demand is in
spring and early summer; April
to July and September.
Water will be needed in the
winter months**



Why do we Irrigate Oil Olives?

- Most growers ask how often and how much should I irrigate my olives.
- Very few growers understand why they irrigate olives for oil and when it is important.
- Water demand varies considerably during different stages in crop development and by crop load.



- **The olive is an alternate bearing plant in that crop yields fluctuate between “on” and “off” years.**
- **A significant factor in alternate bearing is the crops demand for water and nutrients thus limiting the trees ability to produce regrowth.**
- **If regrowth is limited there will not be sufficient fruit buds to support a consistent crop from year to year.**

Goal: Sustainable fruit yield

- Fruit production is optimized when tree is provided with adequate moisture and nutrition at key development stages

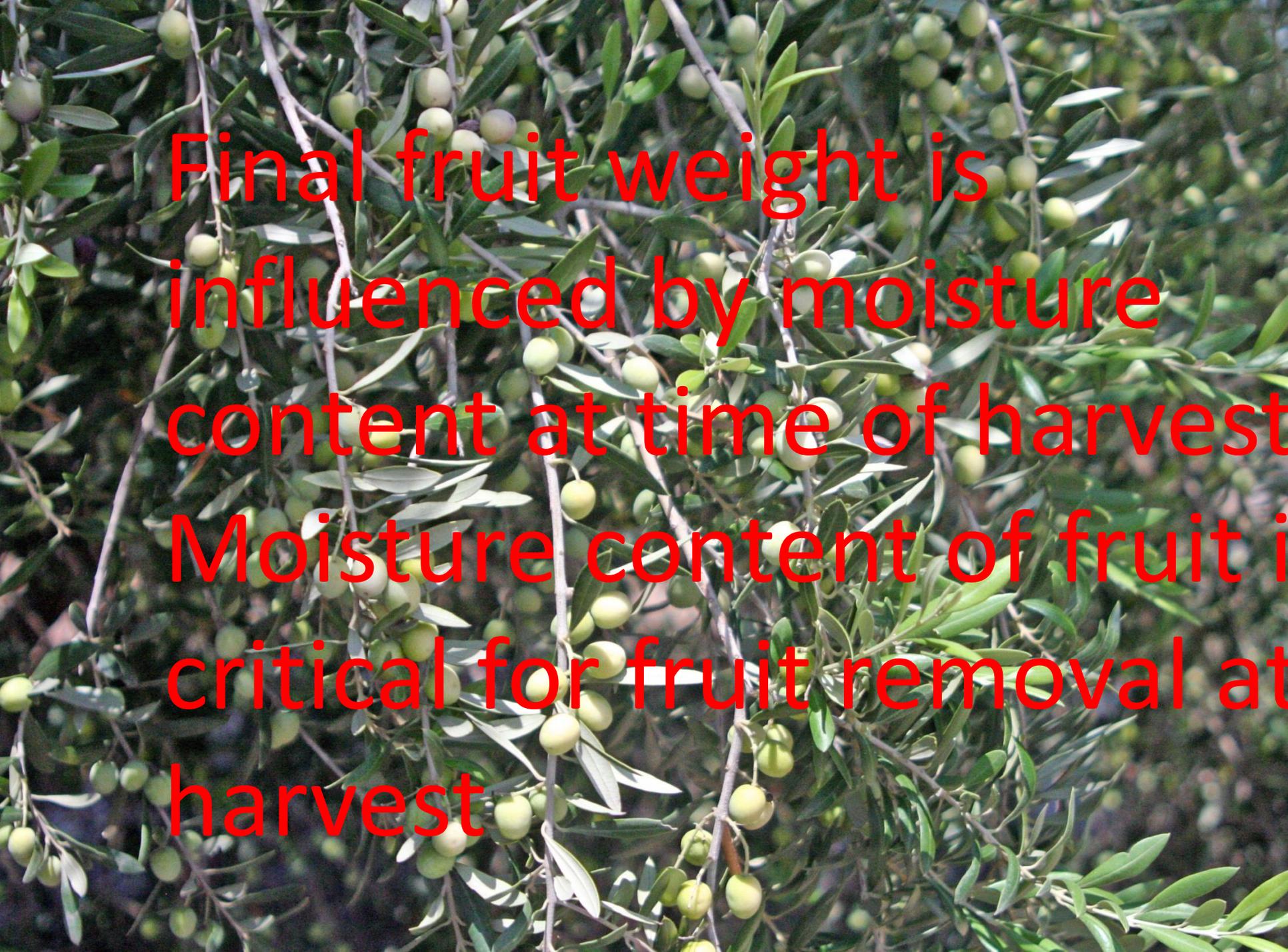


A close-up photograph of olive branches. The branches are covered with small, light green olives and have several long, narrow, green leaves. The background is a soft-focus green, suggesting more foliage.

Bloom period is
sensitive to dry soil
conditions; especially
if hot

A close-up photograph of olive tree branches. The branches are covered with small, elongated, silvery-green leaves and numerous small, round, green olives. The olives are in various stages of growth, some appearing slightly larger and greener than others. The background is a dense, out-of-focus thicket of similar olive branches.

Olive shoot growth in
June and July is
critical so one can
read their trees.

A close-up photograph of olive branches with numerous small, green olives. The olives are in various stages of ripening, with some appearing slightly more yellowish-green. The leaves are small, dark green, and have a silvery underside. The background is a soft-focus view of more olive branches.

Final fruit weight is
influenced by moisture
content at time of harvest
Moisture content of fruit is
critical for fruit removal at
harvest

Goal: maximize oil content

- Oil begins to accumulate in fruit after pit hardening.
- After pit hardening the fruit becomes the tree's priority for allocation of both water and nutrients.
- Managed irrigation after pit hardening to minimally maintain fruit can increase oil content and hasten maturity.



1. Physical inspection

- Always the first and last determinant in irrigation timing and duration.
- Check soil depth from 0 to 20"
- Check area immediately under emitter and at edge of wetted area.

2. The wetted area

- The olive is a relatively shallow rooted tree.
- Roots will grow and retract as the wetted area changes.
- Volume of the wetted area can be managed by;
 - Emitter spacing
 - Emitter flow rate
 - Multiple hoses
 - Irrigation duration and frequency
- Wetting pattern varies by soil type and infiltration rates.
- Short frequent irrigations often create small root mass





3. Irrigation duration

- The length of time water is applied can be determined using several factors;
 - Rate of application in terms of gallons per hour
 - Relative soil moisture holding capacity
 - Infiltration rate of water into soil considering any infiltration issues
 - Depth of roots
 - Hard pan, water table, salt intrusion or other physical limiting factors
- Applied irrigation should saturate soil to a minimum depth of 24"









