

# Irrigating Pistachio Trees

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**Roots do not grow to water  
They grow in water!!!!**

**Irrigate where the roots are!**



**7 m**

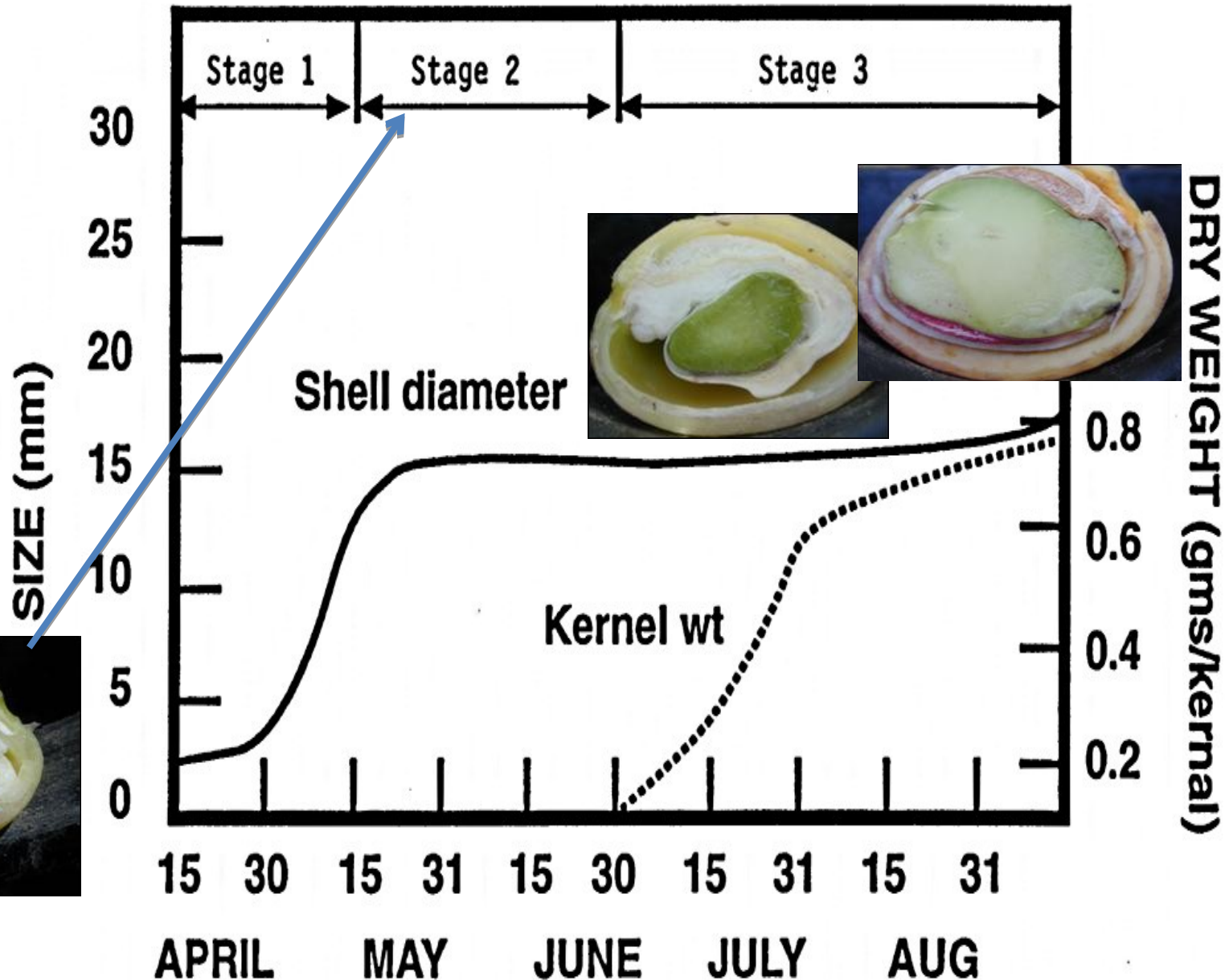






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# Timing of Pistachio Nut Development



# **Pistachio Irrigation Characteristics**

- **Pistachio trees are drought tolerant; live without irrigation.**
- **Produce more nuts with irrigation.**

# Pistachio Irrigation Characteristics

- % splits and nut weight are harmed by decreased water
- Irrigate more during shell growth and nut split.
- Irrigate less after shell growth and after harvest.

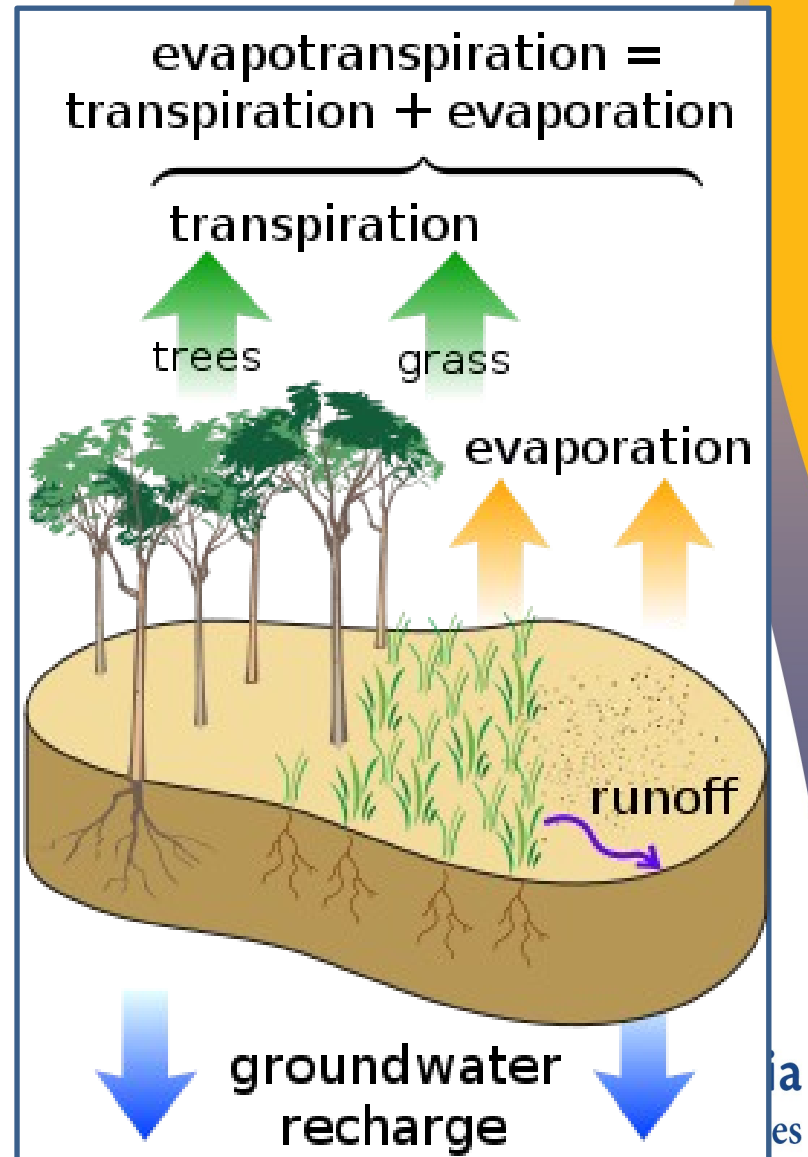


# Understanding How to Irrigate

- 1) Must understand where water goes.
- 2) Must understand soil ability to hold water.
- 3) Must know root depth.

# 1) Water Use in the Orchard

- Transpiration – plant use
- Evaporation – environmental
- Runoff/ Deep percolation –
  - Lost water



## 2) Soil Water Holding Capacity

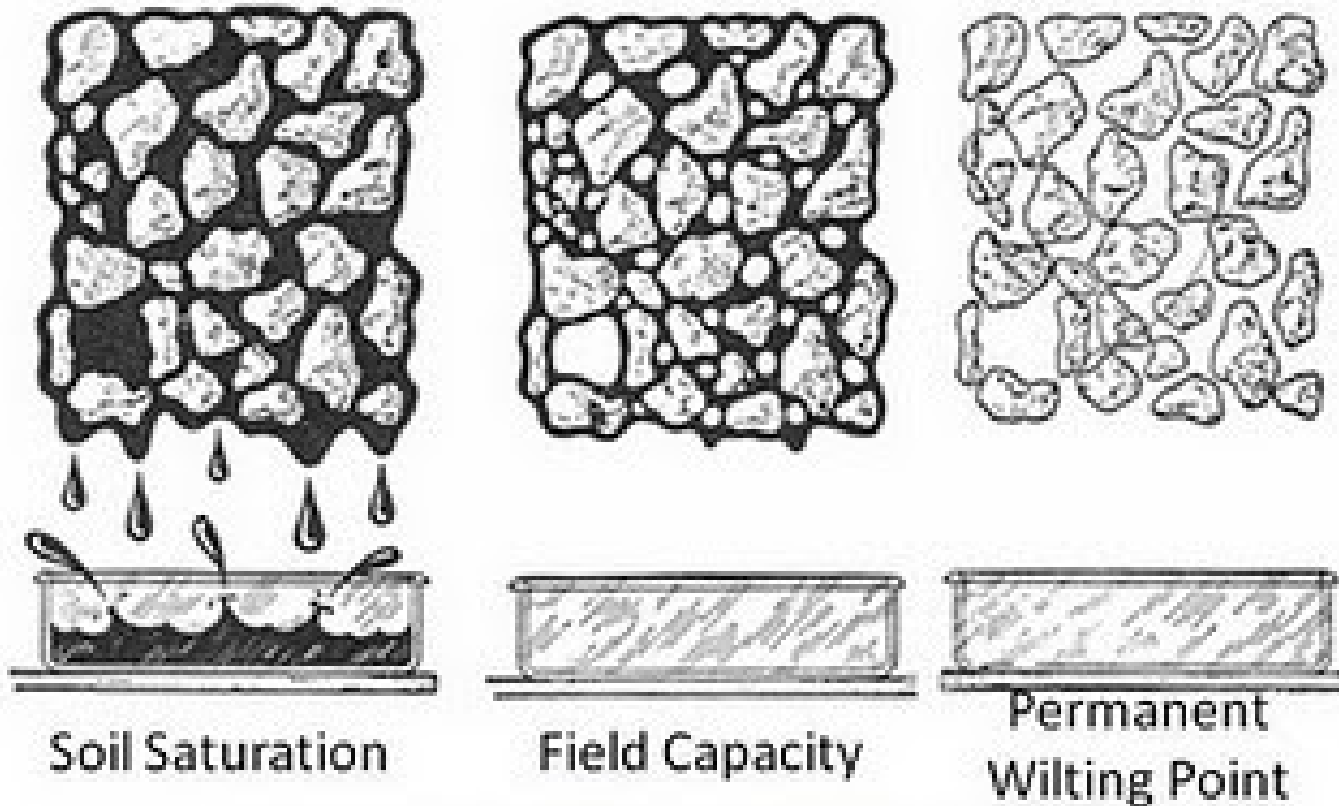
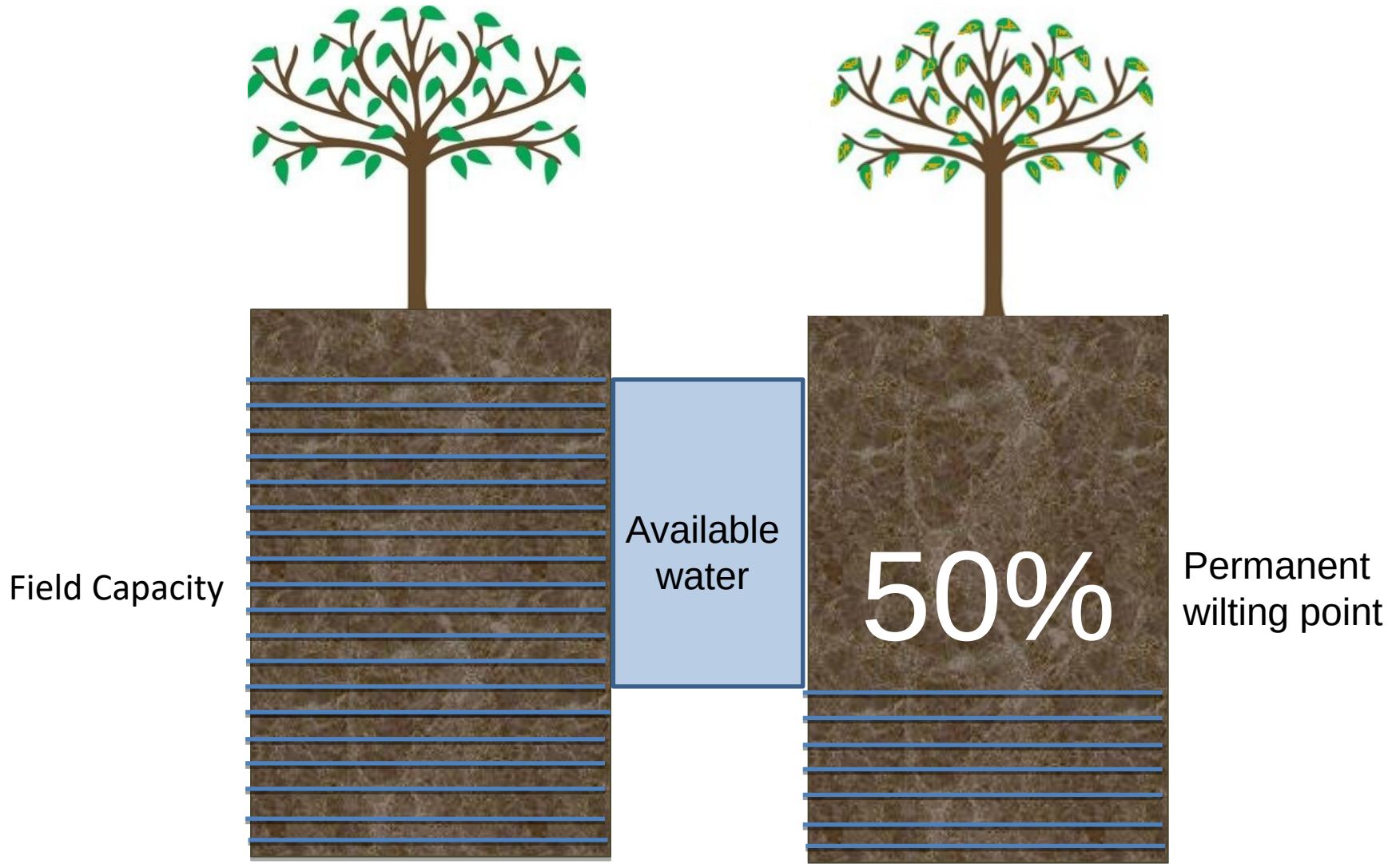


Diagram Provided by [http://www.biology.lsu.edu/~rbf/cellology/teach/plants/lecture\\_4.htm](http://www.biology.lsu.edu/~rbf/cellology/teach/plants/lecture_4.htm)

## 2) Soil Water Holding Capacity

- **Field capacity** = soil is full of water
- **Permanent wilting point** = water in soil plant cannot take
- **Available water: water plant can take**  
(Field capacity) - (permanent wilting point)  
**= how much available water**

# Soil Water Holding Capacity





1.5 M

# Irrigating

If know how much water soil holds..

If know root depth and width...

- you can calculate how much  
water is needed

# Soil Monitoring

- Water holding capacity of soil
  - Available water
  - Root zone



# Soil Monitoring: root depth and water



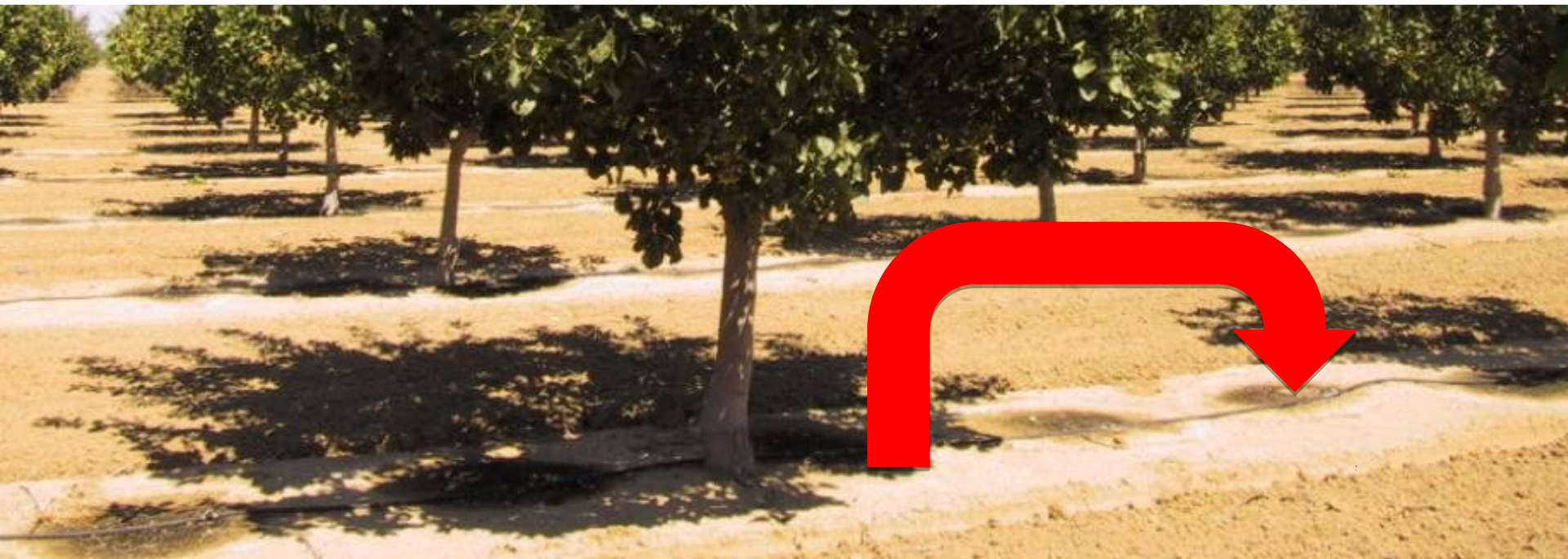
Wet medium-  
textured soil



Dry  
medium-  
textured  
soil



**30,000 Liters/Tree/Year**



## Irrigation System Parameters and Decisions

- Design to deliver 50/gallon/tree/day
  - ~200 liters/tree/day
- System Type:
  - Depends upon soil type and water quality
  - Furrow or flood:
    - Infrequent deep irrigations
  - Sprinkler or drip
    - Budget irrigation

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