Irrigation Basics and Breakthroughs

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Presentation at: http://ucanr.org/schwankl
We are currently at about 45% of normal

2012 rainfall = 3.4”
Normal thru Feb. = 7.9”
Snowpack = around 30% of normal
What can you do in your landscape to save water?

1. Irrigate the landscape you have as efficiently as you can.
   - When you start paying attention, you will do better.
What can you do in your landscape to save water?

1. Irrigate the landscape you have as efficiently as you can.
   - When you start paying attention, you will do better.

2. Change your landscape - change plant selection & irrigation system to be more water efficient.
Look for “Targets of Opportunity” to Save Water

1. Sprinklers are often good candidates - a lot of water can be lost to runoff down the gutter.
Look for “Targets of Opportunity” to Save Water

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2. Turf & deciduous trees are often big water users.
   - Turf is large user and is sprinkler irrigated.
Look for “Targets of Opportunity” to Save Water

1. Sprinklers are often good candidates - a lot of water can be lost to runoff.

2. Turf & deciduous trees are often big water users.
   - Turf is large user and is sprinkler irrigated.
     - Water use reduced by being more efficient or getting rid of turf area.
Turfgrass Irrigation - Saving water:

- Don’t irrigate so entire lawn is green & lush.
  - Back off on irrigation until see stressed areas in lawn.
    Irrigate those periodically by hand.
Turfgrass Irrigation - Saving water:

- Don’t irrigate so entire lawn is green & lush.
- Reduce the water lost to runoff.
  - Time when runoff starts = station run time.
  - If need more irrigation time, cycle on and off
    - Wait at least 1 hour between irrigations.
Turfgrass Irrigation - Saving water:

- Don’t irrigate so entire lawn is green & lush.
- Reduce the water lost to runoff.
  - Time when runoff starts = station run time.
  - If need more irrigation time, cycle on and off
    - Wait at least 1 hour between irrigations.
  - Adjust the sprinklers so don’t water sidewalks & driveways.
Turfgrass Irrigation - Saving water:

- Don’t irrigate so entire lawn is green & lush.
- Reduce the water lost to runoff.
- Irrigate in the early morning.

Reduce evaporation
Turfgrass Irrigation - Saving water:

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Reduce evaporation
Visually check for problems
Turfgrass Irrigation - Saving water:

- Don’t irrigate so entire lawn is green & lush.
- Reduce the water lost to runoff.
- Irrigate in the early morning.
- Adjust your controller for changing water needs.
Smart Controllers

- Biggest thing happening in landscape irrigation now.
Smart Controllers

- An irrigation controller which *automatically* adjusts the irrigation run times based on *environmental conditions*. 
Smart Controllers

- An irrigation controller which automatically adjusts the irrigation run times based on environmental conditions.

What environmental conditions?
Smart Controllers

- An irrigation controller which automatically adjusts the irrigation run times based on environmental conditions.

What environmental conditions?
- Soil moisture conditions
- Weather conditions
Smart Controller with Soil Moisture Feedback?

Types of soil moisture feedback:

1. You set the irrigation schedule & soil moisture feedback cancels the programmed irrigation if “irrigation is not needed”
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1. You set the irrigation schedule & soil moisture feedback cancels the programmed irrigation if “irrigation is not needed”.

2. Soil moisture feedback controls the irrigations. Turns it on when needed.
Smart Controller with Soil Moisture Feedback?

Weakness: Where do you place the soil moisture sensor?
Is it representative of the whole landscape?
ET = Evapotranspiration = Plant Water Use
Smart Controller with Weather Conditions Feedback?

1. Historical ET info. in controller so that irrigation runtimes change as ET has changed historically. “Average” year.
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2. Historical ET with adjustment from an on-site weather station.
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2. Historical ET with adjustment from an on-site weather station.
3. Controller uses on-site weather station to determine irrigation run times.
Smart Controller with Weather Conditions Feedback?

1. Historical ET info. in controller so that irrigation runtimes change as ET has changed historically. “Average” year.
2. Historical ET with adjustment from an on-site weather station.
3. Controller uses on-site weather station to determine irrigation run times.
4. Controller hooked into a wireless system which “beams” info. to controller.
   - Some hooked in so you can input / access data via the internet.
   - Initial costs + annual subscription
Smart Controller with Weather Conditions Feedback?

Weakness: Is the weather info. the decisions are based on representative of what your landscape is experiencing?

- Weather station citing.
- Measurement instrument accuracy / reliability.
- Conversion of weather info. to landscape plant ET.
Smart Controller: Use them?

- For turf, they should be beneficial.
- For mixed landscapes, difficult to use.
Turfgrass Irrigation Management:

- How long to run the sprinklers?
  - Depends on:
    1. Time of year.
    2. Sprinkler application rate.
Turfgrass Irrigation Management:

- How long to run the sprinklers?

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<th>Region 5: San Joaquin Valley</th>
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Turfgrass Irrigation Management:

- Sprinkler application rate:
  - Set out some “catch cans” to determine your application rate.

5-foot catch can spacing
15 min run time
Turfgrass Irrigation Management:

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  - Set out some “catch cans” to determine your application rate.

Measure the amount of water collected
Turfgrass Irrigation Management:

Catch can test

Inches per hour

Average = 0.52 in/hr
Turfgrass Irrigation Management:

- Sprinkler application = 0.52 in/hr

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- Don’t irrigate so entire lawn is green & lush.
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- Irrigate in the early morning.
- Adjust your controller for changing water needs.
- Try to avoid daily irrigations.
  - Odd/even watering requirements.
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- Try to avoid daily irrigations.
- Make sure sprinklers pop up above the grass.
Drip Irrigation:
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- Break the watering areas into “hydrozones”.
  - Areas / plants of similar watering needs.
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- Break the watering areas into “hydrozones”.
  - Areas / plants of similar watering needs.
- Plan ahead!!!
  - More zones are better (valves & controller).
  - You’ll always want more zones / stations in the future.
  - New systems - don’t skimp on underground pipe - harder to add later.
Drip Irrigation:

- Drip emitters for smaller, stand-alone plants.
  - 0.5 gph, 1 gph, 2 gph emitters available.
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- Sprayers / microsprinklers for larger plants (e.g. trees).
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- Drip emitters for smaller, stand-alone plants.
- Sprayers / microsprinklers for larger plants (e.g. large trees).
- Narrow plantings, vegetable gardens.
Misc. Drip Irrigation Hints:

- Always use a filter.
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  And CLEAN IT when it’s dirty.
Misc. Drip Irrigation Hints:

- Always use a filter.
- Drip emitters shouldn’t be buried.
  - OK to put them under a mulch
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- Put drip line (without emitters) below ground when you can.
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- You can put quite a few (e.g. 200) drip emitters on a drip line.
Misc. Drip Irrigation Hints:

- Always use a filter.
- Drip tubing / fittings come in different sizes.
- Use pressure reducers to lower the pressure.
- Drip emitters shouldn’t be buried.
- Put drip line (without emitters) below ground when you can.
- You can put quite a few (e.g. 200) drip emitters on a drip line.
- **Slow application rate with drip irrigation = may require long station run times.**
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- Daily irrigations are not preferred (usually) - water deep
  - Check the soil if in doubt
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- **Plant symptoms for under-watering & over-watering often look similar.**
  - Check the soil
Questions?

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