Smart Controllers

Based on material from
Lori Palmquist, CID, CIC, CLWM, CLIA
loripalmquist@gmail.com

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Hose Draggers Unite!

Watering with a hose is said to be a very efficient way of watering gardens.

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Is this your soil?

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Or this?

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Why smart controllers?

I 

…saving water

…seeing a low water bill

…knowing my controller is automatically responding to weather conditions every day and adjusting its schedule

...knowing the plants are getting the amount of water they need

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Levels of involvement

- Set it and forget it
- Set it and turn it off for the winter
- Change the schedule with the seasons
- Change schedule monthly
- Change the schedule daily
- Any of the above with a rain sensor added

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Names for irrigation timers that vary the amount of water based on plant needs & weather

- Smart controllers
- ET controllers
- Weather-based irrigation controllers (WBIC)
- Soil sensors

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What is ET?

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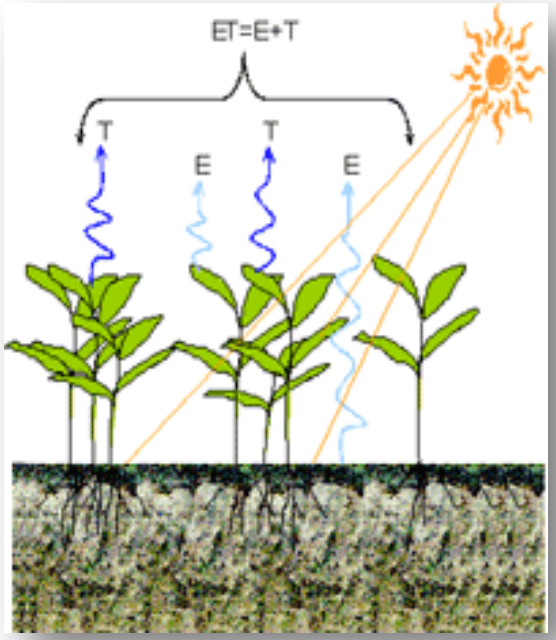
EvapoTranspiration

Water loss from landscape due to weather factors (sunlight, wind, humidity, temperature) which cause

- Evaporation from soil and plant surfaces
- Transpiration by plants (people sweat, plants transpire)

☼ IMPORTANT!

ET changes as weather changes



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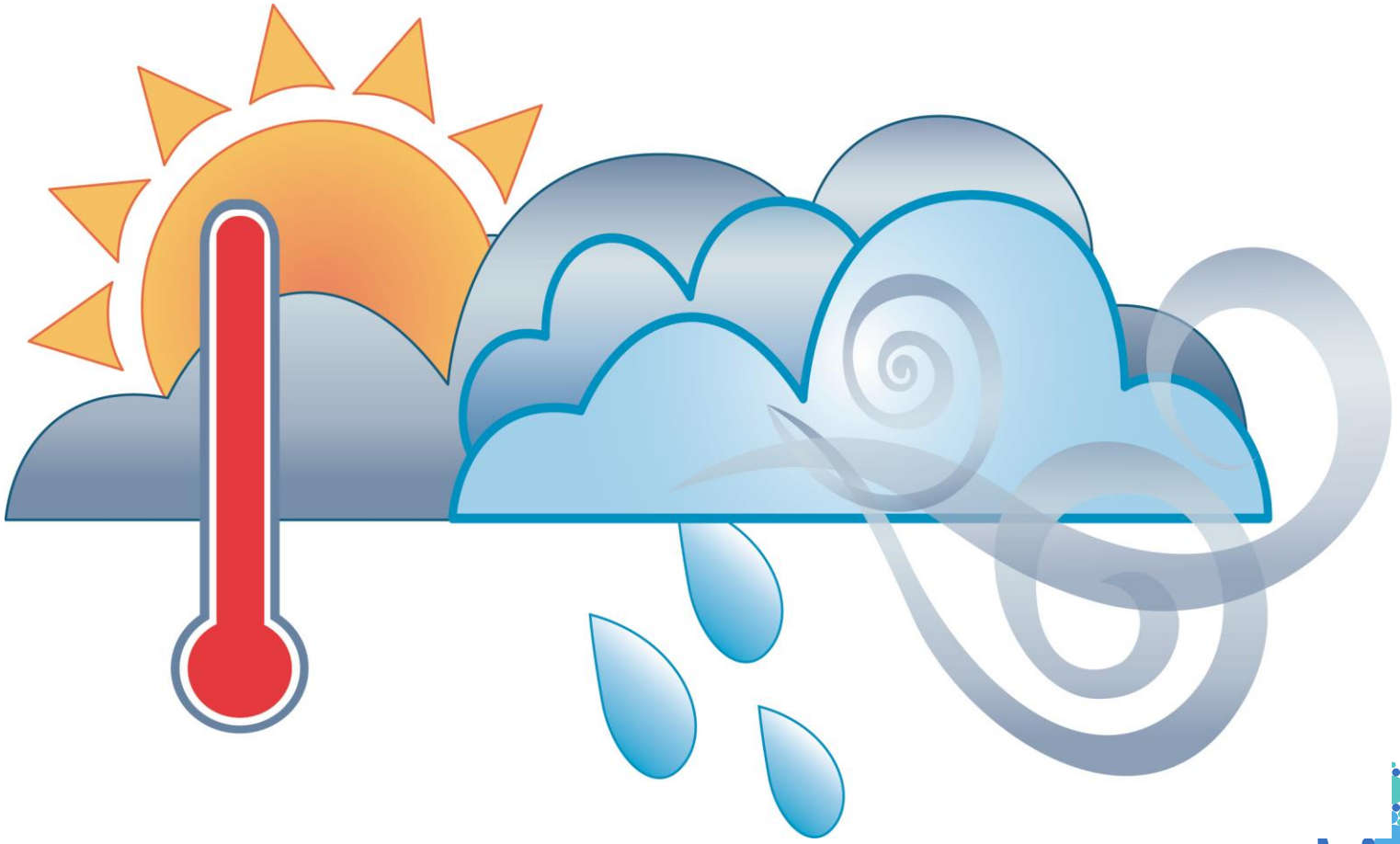
Weather factors



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Factors that affect plant water requirement

Sun

Wind

Air temperature

Relative humidity

Precipitation (rain, fog)

Topography (runoff)

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Penman-Monteith equation

$$\lambda_v E = \frac{\Delta(R_n - G) + \rho_a c_p (\delta e)\, g_a}{\Delta + \gamma\,(1 + g_a/g_s)} \iff ET_o = \frac{\Delta(R_n - G) + \rho_a c_p (\delta e)\, g_a}{(\Delta + \gamma\,(1 + g_a/g_s))\, L_v}$$

Energy flux rate

Volume flux rate

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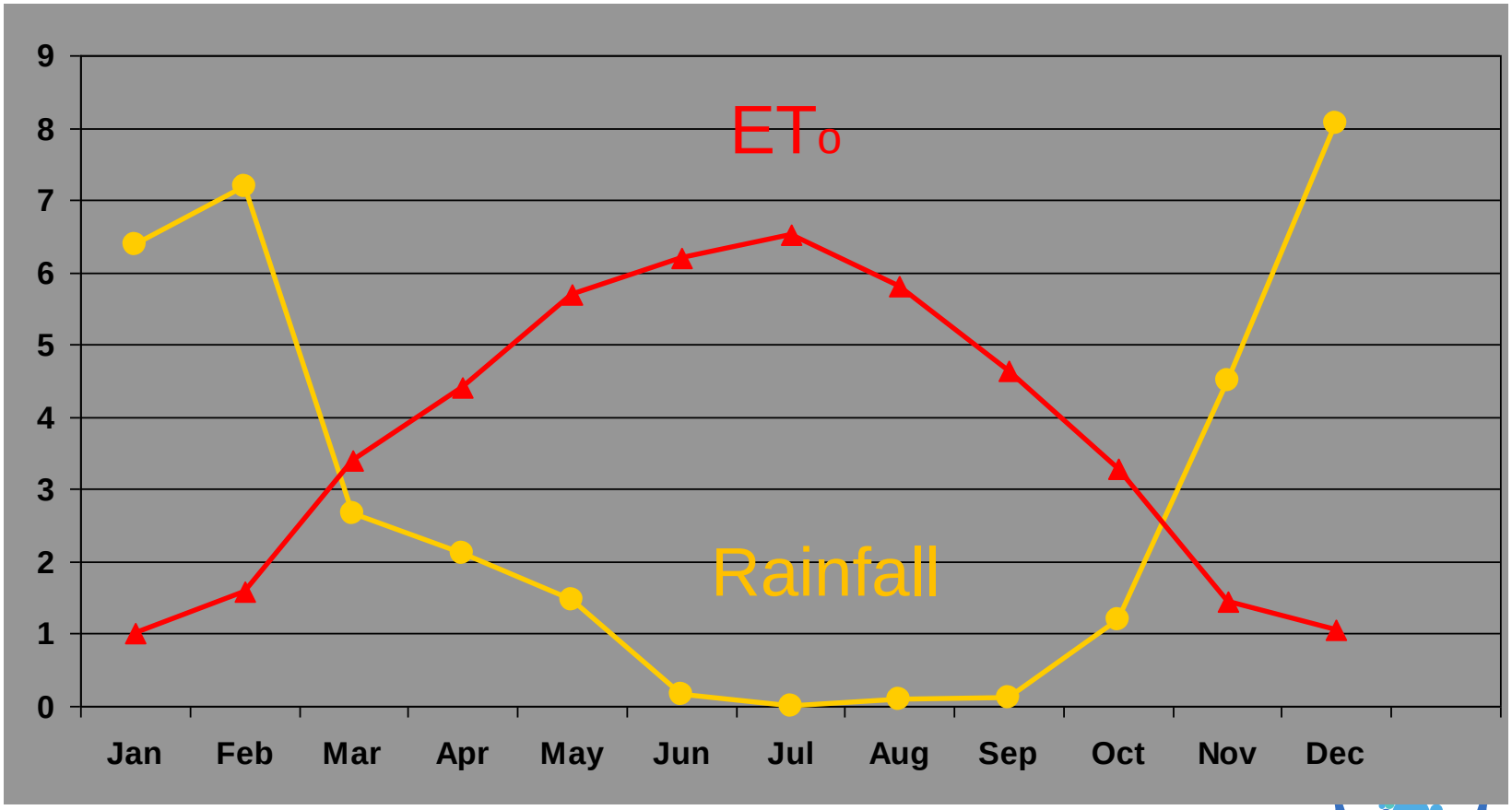
ET is up when Rainfall is down



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Not a magical fix for this

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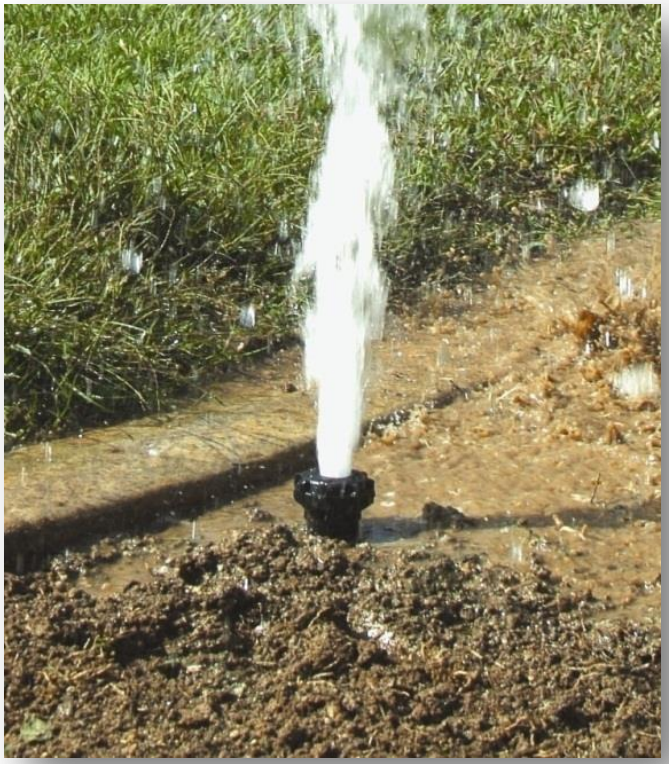
…or for this



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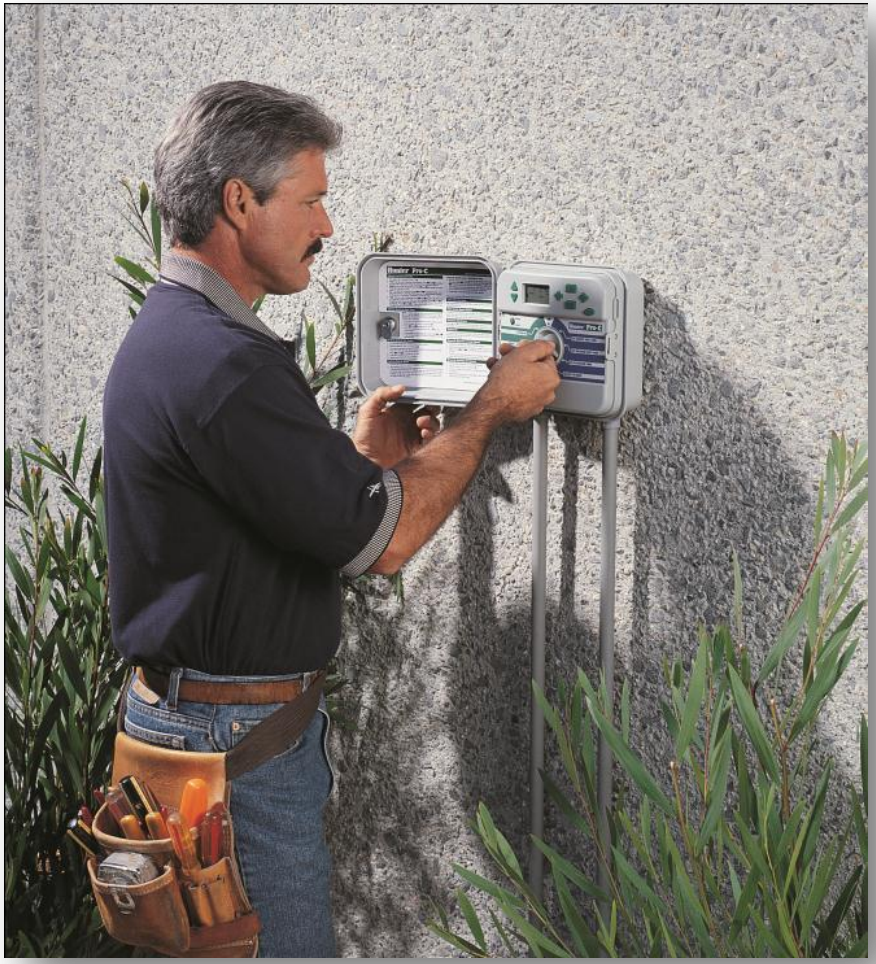
Get professional assistance



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Smart controller strategies

- On-site weather station-based Eto
- Data-download-based Eto from CIMIS

Automates irrigation scheduling calculations

☼ Manufacturers provide extensive programming support and training

CIMIS – California Irrigation Management Information System

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Starting with the basics

- Hunter Solar Sync:
- Wired: approx. $135, Wireless: approx. $210
- Pro C,

$ 140

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Commercial grade

- WeatherTRAK LC 18 station
- Approx. $1,874 plus annual fees

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On-site weather sensors

Hunter Solar Sync

Weathermatic SL 1600

Hunter ET System

Irritrol Climate Logic

Rain Bird ESP-SMT

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Download or cloud based weather data

OnPoint WaterSage (cloud)
(no Annual Fee

Rain Bird ET Manager

Annual Fee

Toro IntelliSense

Annual Fee

WeatherTRAK Etplus

Annual Fee

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Add-ons for your existing controller

Rain Bird ET Manager

ET Water Hermit Crab

Irrisoft Controller Link

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Internet access and control

ET Water SmartBox

OnPoint WaterSage

Cyber Rain

WeatherTRAK ETpro2 and LC

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Which controller to choose?

- There are currently over weather-based smart controllers from 18 manufacturers on the SCVWD list.
- Size of property
- Number of stations
- Budget
- Strength of cell phone or Wi-Fi signal

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Which controller to choose?

- Whether you want to access and control via the internet
- Whether you're willing to pay on-going data fees for weather data that is acquired from local weather stations
- Whether you would like to be able to install and/or program this controller yourself
- Which controller your landscaper is most comfortable with

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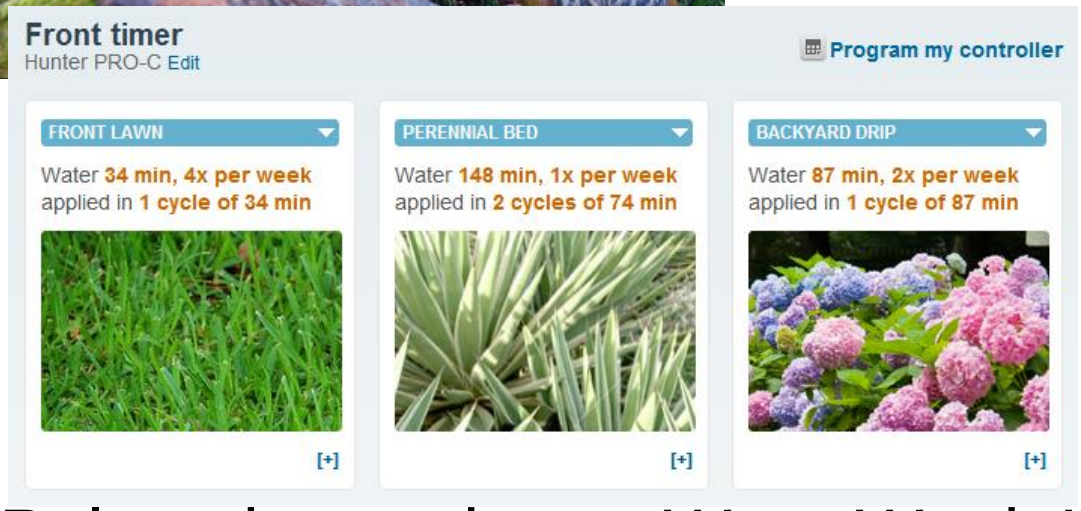
…and if all else fails

www.etwatergnome.com



Or, Lori Palmquists web app WaterWonk.US a WUCOLS tool

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Irrigation Technology

- Hunter PRO-C controller, with Solar-Sync weather station
- OnPoint Ecosystems web based controller using CIMIS data – 5th generation, web based
- New generation nozzles:
  - MP Rotators
  - Toro Precision nozzles
- PVC vs Blu-Lok distribution
- Tube & Emitters vs Netafim system
- Manifolds with Universal disconnect

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That’s all folks!

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