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Frequently Asked Questions about Evapotranspiration (ET) Irrigation Controllers[1]

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What is an evapotranspiration (ET) irrigation controller?

Evapotranspiration is the amount of water that is released into the atmosphere through evaporation and plant transpiration. An evapotranspiration irrigation controller is a device that uses data about the landscape, the type of irrigation system, and local weather conditions to determine when and how much to irrigate.

What are the benefits of an ET controller?

Research has shown that a properly calibrated ET controller can help homeowners irrigate more efficiently, potentially resulting in water and monetary savings. Using an ET controller in the landscape can help reduce errors that lead to over- or underestimating landscape water needs. Using an ET controller can also help reduce the work needed to maintain a healthy landscape.

How does an ET controller work?

After installation, the contractor or homeowner programs the ET controller with information about the landscape (soil type, plant type, slope, and sun and shade patterns) as well as information about the irrigation system itself (type of sprinkler, application rate, and efficiency). Local weather data helps the ET controller calculate the amount of evapotranspiration expected for the landscape. The weather data, combined with the landscape and irrigation information, determines when and for how long the irrigation system runs.

There are many different types of ET controllers. **Signal-based** Evapotranspiration (ET) controllers collect weather data from nearby weather stations via either phone or cellular communication. **Stand alone** or **on-site** ET controllers have a built-in, simplified weather station. An **add-on** ET controller is added onto an existing automatic timer. ET controllers may also vary based on the type of information that can be programmed into the system.

For more information on how ET controllers work, refer to *Operation of Evapotranspiration-Based Irrigation Controllers,* http://edis.ifas.ufl.edu/ae446, and for more information on programming an ET controller, refer to *Smart Irrigation Controllers: Programming Guidelines for Evapotranspiration-Based Irrigation Controllers,* http://edis.ifas.ufl.edu/ae445. Since there are many different models of ET controllers, always refer to the manual for the specific unit before altering the programming.

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Figure 1. An example of an evapotranspiration sensor mounted on a roof. Credits: Michael Gutierrez, UF/IFAS

Figure 2. An example of an evapotranspiration control panel. Credits: Michael Gutierrez, UF/IFAS

Frequently Asked Questions about the Operation of an ET controller

1. I am uncertain about adopting new technologies, how do I know this really works?

ET controllers have been used in commercial and agricultural settings for many years and are now becoming more widespread in home landscapes. Many years of research and development have gone into ensuring that the products available to homeowners are durable, effective, and easy to use.

2. When it has not been raining regularly, do I need to manually water or manually turn on the irrigation timer?

No, you do not need to manually water or manually set the timer. The ET controller will determine if the landscape needs to be irrigated during the next scheduled cycle based on the programming and the local weather data. Proper programming of the ET controller will ensure that the landscape's water needs are met even during dry periods.

3. Why will the system continue to irrigate if it is raining? Will it shut off if it starts raining?

If the controller has a rain shut off device or way to measure rainfall, it may shut off when the desired amount of rainfall has been reached. In some cases, the ET controller will not shut off during an irrigation cycle, but it may bypass a future cycle to prevent further watering if it has rained sufficiently. If, however, the rainfall threshold has not yet been reached, the ET controller will continue to irrigate during the next cycle even if it is raining.

4. Why will the system sometimes water one zone, but not another zone?

Some ET controllers allow each irrigation zone to be programmed according to the landscape specifications within that zone. Water needs may vary from zone to zone, which means some zones may be periodically skipped or have shorter irrigation cycles. For example, a sunny area may need more frequent irrigation than a shady area. Using this data, ET controllers determine how much water is needed for each zone.

5. Should I change the settings on a seasonal basis?

No, the ET controller does not need to be reprogrammed seasonally. Since the controller collects up-to-date weather information, it will make automatic adjustments according to the plants' needs and the seasonal variations.

6. When should I change the settings?

Once an ET controller has been programmed properly, the settings do not need to be changed unless significant changes are made to the landscape. However, it is not unusual to make small tweaks when the system is first installed.

7. Will the system skip an irrigation day?

If the ET controller determines the landscape does not need to be irrigated when the scheduled irrigation day arrives, it will skip the cycle until the next scheduled irrigation day.

8. Why will my irrigation system not run for long periods of time (a week or two)?

It is possible to have long periods when the ET controller does not run. This is most common if it has been raining

and evapotranspiration is low. While it may be concerning to have periods without irrigation, a properly programmed ET controller will ensure the landscape's water needs are being met.

9. Why does my system sometimes water for longer than it did before I got the ET controller?

There are two possible reasons for an irrigation system to water longer with an ET controller. If the controller is programmed incorrectly, it could be applying more water than the plants need. In this case, the programming can be adjusted to apply less water.

If, however, the weather has been dry when plants are in need of water, the programmed irrigation may be accurately determining the plant needs and applying more water than observed previously.

An ET controller is designed to provide optimum growing conditions, which could result in more or less water, depending upon how the previous system was calibrated. In some cases, plants may be able to still remain healthy with less than optimum irrigation.

10. Will the ET controller irrigate each zone more than one time during a day?

It is possible that the ET controller will divide a watering cycle into sections. For example, if a zone is programmed to have heavier soil or a steeper slope, the cycle may run for multiple shorter periods in order to reduce the chance of runoff.

11. What should I do if I think the system is underwatering or overwatering?

Many ET controllers allow the user to make fine adjustments to either increase or decrease the amount of irrigation. If, after making these adjustments, the system is still over- or underwatering, consult the manual or the company's support system or contact an irrigation contractor trained in the operation of an ET controller to check the programming and system design.

12. What if I have different types of plants in a single irrigation zone?

It is recommended that plants with the same water needs be planted in a single irrigation zone. However, if that is not the case, the landscape settings on an ET controller should be set according to the plant most sensitive to dry conditions in the zone. This will ensure that underwatering does not occur.

13. Will an ET controller run for different amounts of time during each cycle?

It is possible that different cycles may have different run times. Some models of ET controllers will change the run times based on the irrigation needs that it has calculated from the most recent weather data. Other models will irrigate for the same durations for each cycle.

14. What is the best way to reprogram the controller if it gets deactivated?

Some ET controllers retain entered data in their memory, while others do not. In some cases, the programming will need to be re-entered by following the manufacturer's manual.

15. How do I know the settings are programmed correctly?

An error light indicates a problem on the controller that should be addressed by a contractor trained in ET controller maintenance. However, if there is no error light, the landscape looks healthy, and the system typically does not run when it has recently rained, it is likely that the settings are correct.

16. What if I notice brown spots in my yard?

Brown spots may appear for many different reasons: underwatering, overwatering, fungus, root rot, insect damage, or disease. Because brown spots may be a result of overwatering, improper diagnosis and a subsequent increase in irrigation could make the problem worse. For this reason, it is best to consult with a professional before altering the ET controller. A county Extension agent (http://sfyl.ifas.ufl.edu/map/index.shtml) can provide assistance in diagnosing and addressing the specific issue. The University of Florida's Plant Diagnostic Center (http://plantpath.ifas.ufl.edu/extension/plant-diagnostic-center/) is a useful resource for identifying plant diseases.

17. Will I be able to maintain my lawn to the quality that is expected by my homeowners association (HOA)?

Yes. Research has shown that correctly installed and calibrated ET controllers are effective at maintaining high quality turf (Shedd, Dukes, & Miller 2007). ET controllers can also help to avoid unsightly turf decline caused by over- or underwatering.

18. Should I water manually if I install new sod or landscaping plants?

Some ET controllers have an establishment feature. In this case, the controller can be programmed to water more frequently for a 4-week establishment period. At the end of this period, the controller will return to its regular program. If the ET controller does not have this feature, it can

either be reprogrammed at the beginning and end of the establishment period or shut off while you manually water the new landscaping. After a manual watering period, the ET controller will need to be turned back on to resume the programmed irrigation cycles.

19. Do the landscape settings have to be changed as my plants mature?

No. ET controllers determine the amount of irrigation needed based on the water needs of plants at maturity.

20. How can I change the run time so it does not wake me up in the morning?

Adjusting the start time on the timer can ensure that the system will not operate at an inconvenient time. Irrigation should be in the early morning to avoid loss of water through evaporation. Many water management districts will allow watering any time before 10am, but be sure to check your local rules. Spray heads should also be directed away from buildings, windows, driveways, and sidewalks.

21. What should I do when watering after fertilizer applications?

After fertilizing, a manual cycle may be used to water-in the fertilizer. (No more than ¼ inch of water should be applied.) After this manual cycle, the controller should be turned back to automatic mode to resume the regularly scheduled irrigation cycles. The ET controller does not need to be recalibrated. Fertilizer should never be applied before a heavy rain is predicted because fertilizer runoff can pollute local waterways.

22. How can I make sure that I am following the watering restrictions?

All jurisdictions in Florida have watering restrictions that dictate which days or times irrigation can occur. Properly setting the timer ensures that these restrictions are followed and watering will not occur on the restricted days. If it has recently rained and the ET controller determines that the rainfall was sufficient, the system will not irrigate on the allowed watering day and will instead wait until the next scheduled watering day. For example, in areas where irrigation is restricted to one day a week, the ET controller will bypass the irrigation cycle on that day if it determines that a sufficient amount of rain has fallen recently to maintain the landscape. While it may be concerning to skip a day of watering, a properly calibrated ET controller will ensure that the soil will have enough consistent moisture to maintain the landscape even when it skips days.

Refer to the appropriate water management district for information on watering restrictions. A list of districts may be found at http://www.dep.state.fl.us/secretary/watman/.

23. Who is qualified to program and fix my irrigation system?

Licensed irrigation contractors are the most qualified individuals to fix your system. Both the Florida Irrigation Society (http://fisstate.org/) and the Irrigation Association (http://www.irrigation.org/) maintain a list of contractors. Ask if the individual has received training in ET controllers. Homeowners who feel comfortable following the ET controller instruction manual can also make adjustments on their own. Many companies who make ET controllers have mechanisms in place to assist with troubleshooting. Consult the owner's manual for more information such as technical assistance websites and telephone numbers.

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