

Research in Review

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'PET' Project Could Reduce East Texas Cities' Water Woes



WEATHER SENSORS

Indre Pemberton, research associate with the Texas Agricultural Experiment Station, holds two of the sensors used on an automated weather station to calculate potential evapotranspiration or PET. The station is located at The Texas A&M University System Agricultural Research and Extension Center at Overton.

OVERTON—The National Oceanic and Atmospheric Administration's long range forecast is for below-average precipitation for East Texas in coming months.

But even if the prediction proves false, being water conscious when irrigating lawns still makes sense, both economically and environmentally, said a research associate with the Texas Agricultural Experiment Station.

"And it's almost a no-brainer, now that we have the right tools," said **Indre Pemberton**, who is based at The Texas A&M University System Agricultural Research and Extension Center at Overton.

Pemberton maintains the center's automated weather station and the associated Web site at <http://etweather.tamu.edu/>. Part of the Web site is dedicated to help irrigators calculate potential evapotranspiration.

The term is a mouthful, and usually abbreviated as "PET," she said. The concept is straight-forward, though.

"PET is an estimation of the combined loss of water through a plant's vascular system combined with evaporation of water from the soil surface," Pemberton said.

Both factors are influenced by temperature, humidity, sunlight and wind, all of which are measured every 15 seconds, 24 hours a day, by the center's weather station. The data are averaged to calculate the potential evapotranspiration.

Though the formulas behind the PET indexes are complex, using the information to determine how much water to put on home landscapes takes only two simple steps, Pemberton said.

First, take an audit of your irrigation system. Set out some flat-bottom containers around the yard and irrigate for 10 minutes. The more cans, the better, but a half dozen will do. Use a ruler to measure the amount of water in the containers.

"Write the numbers down on a piece of paper, add them up and divide the sum by the number of cans you had—to get an average number," Pemberton said. "This lets you know how much water was delivered in 10 minutes. Multiply by six, and this gives you the amount of water delivered in one hour."

After determining the amount of water supplied by your irrigation system in an hour, go to Pemberton's Web site and click on "PET." The evapotranspiration data are calculated and posted daily. To figure how much water to apply, simply add up the numbers, using either the Overton or the TxEt column for all the days of the month since the last irrigation was applied.

For example, if you're watering on April 7, and the last time you watered was on April 1, add up the numbers April 1 through April 6. The total is the amount of water you need to apply.

"That's for people who irrigate once a week. Some people irrigate every other day, so they would add up the PET numbers for the two previous days," Pemberton said.

To simplify things further, Pemberton has supplied an online calculator at the Web site.

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Why two different calculation columns?

"It's just two different ways of calculating PET," Pemberton said. "We provide both for comparison. Either one should be fine for home landscapes."

Pemberton noted that for homeowners, the difference in the two calculations are fractions of an inch—small enough not to worry about.

"Also, if it rains, subtract the amount the rainfall from your PET value," she said. "Because the rain has replaced that amount of water for you."

On the average, most householders over-water 30 percent to 50 percent, said **Dr. Jim McAfee**, Texas Cooperative Extension turfgrass specialist. Not only does over-watering waste resources, it also promotes many turfgrass diseases, he said.

"I was talking to a professional lawn-care business owner in Tyler, and he said they're already seeing brown patch," said McAfee, who is based in Dallas.

McAfee noted that brown patch is associated with cooler temperatures as well as over-watering.

For more information on brown patch in home lawns, see <http://aggieturf.tamu.edu/answers4you/disease/brownpatch.html>.

McAfee said there a number of ways being considered by the Texas legislature to deal with the problem. One way might be to mandate the installation of automated home irrigation controls that use sensors to record local temperature and humidity. Microprocessors in the devices calculate potential evapotranspiration for the home lawn, then disperse water accordingly.

"They're amazingly accurate, giving results that are with 90 percent of those by the (professional) PET stations," he said.

Until those units are commercially available, homeowners' best bet is to take advantage of PET data like that supplied by Pemberton, he said.

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