

Intelligent Irrigation

GREG SNAITH, CREATIVE IRRIGATION SOLUTIONS INC., EXPLAINS EVAPOTRANSPIRATION



Intelligent irrigation is about applying the right amount of water at the right time based on plant water requirements. Over-irrigation can be just as detrimental to the health of plant material as is under-irrigation. The key is to schedule irrigation to match the water required by the turf, otherwise called the evapotranspiration rate of the turf.

What is evapotranspiration (ET)? Simply defined, it is the sum of both the evaporation of moisture from the surface of the soil and the transpiration of moisture from the foliage or leaf of a plant. The main weather factors contributing to a high ET are temperature, humidity, wind speed and solar radiation. ET varies throughout the day and irrigation should be applied during the early morning when the weather factors contribute to a lower ET.

Water budgeting takes into account changing ET rates throughout the week and month (Figure 1). Every irrigation controller should be specified to include a "water budget" feature which allows the irrigation manager to quickly adjust all run times with one macro setting. Adjusting the run times to correspond to the changing ET is a must for water savings and healthy turf. Leaving the same run time throughout the season simply means that water is applied unnecessarily.

On a very hot summer day, the ET for sports field turf can rise as high as 35 mm (1.4 inches) per week. On a standard soccer field this equates to about 238 mega litres (63,000 gallons) per week. Saving

even a conservative 20% of this amount is worth the gain in water costs.

Checklist

In the sidebar to the right is a quick checklist to see how well your irrigation system measures up to the typical standards endorsed by the irrigation industry.

Results

If you scored a ten, congratulations! Your sports field should become an industry standard and given honourable mention in the next irrigation article in *Sports Turf Manager*. A score of seven or more means you are well on your way to setting irrigation standards. A score below six means it is time to hire an irrigation specialist.

An irrigation specialist is trained to identify maximum irrigation efficiencies, thus assisting in the development of a healthy sports turf while preserving a valuable water resource. At the end of the day, every drop counts. ♦

About the author. Gregory Snaith, P.Eng., C.I.D. is an Irrigation Consultant with Creative Irrigation Solutions Inc. Greg can be reached at 519-465-0278 (cell), 888-654-3637 (toll free) or via email at gsnaith@creativeirrigation.on.ca.

IRRIGATION CHECKLIST

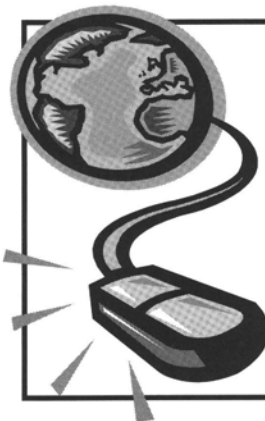
1. Rain or moisture sensor (turns system off during a rain)
2. Controller has "Water Budget" feature (0-200 per cent adjustment)
3. Irrigate during the night or early morning (when ET is lowest)
4. Head to head coverage (rotors throw water to next rotor)
5. Rotors operate at designed water pressure
6. Nozzle sizes are conducive to match precipitation rates
7. Improved efficiency sprinkler nozzles (provides uniform coverage)
8. Rotor zones run parallel with playing field (better management control)
9. Hired an irrigation certified water auditor to make recommendations
10. Controller is compatible for upgrade to Central Control

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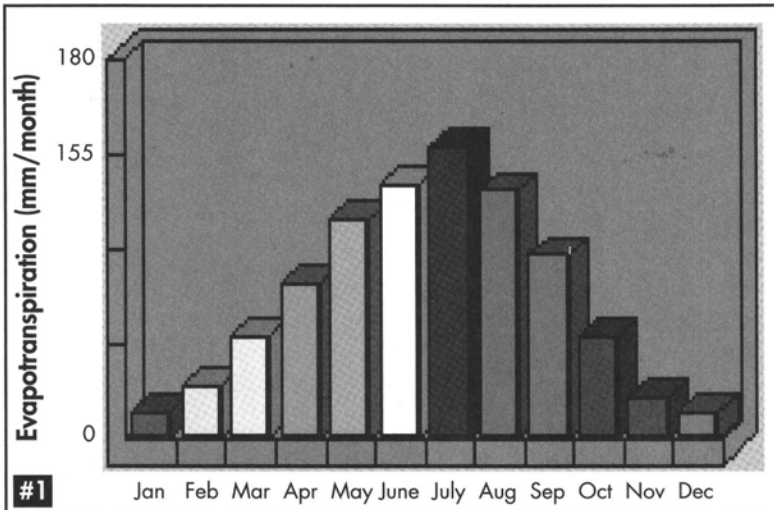


New Web Feature...

"The Supervisor's Guide to Hiring Summer Students"

Log-on to our new site at www.sportsturfassociation.com to check out Jane Arnett-Rivers straight talk on the yearly rites of hiring students for the turf care industry.

VISUALIZING IRRIGATION PRINCIPLES...

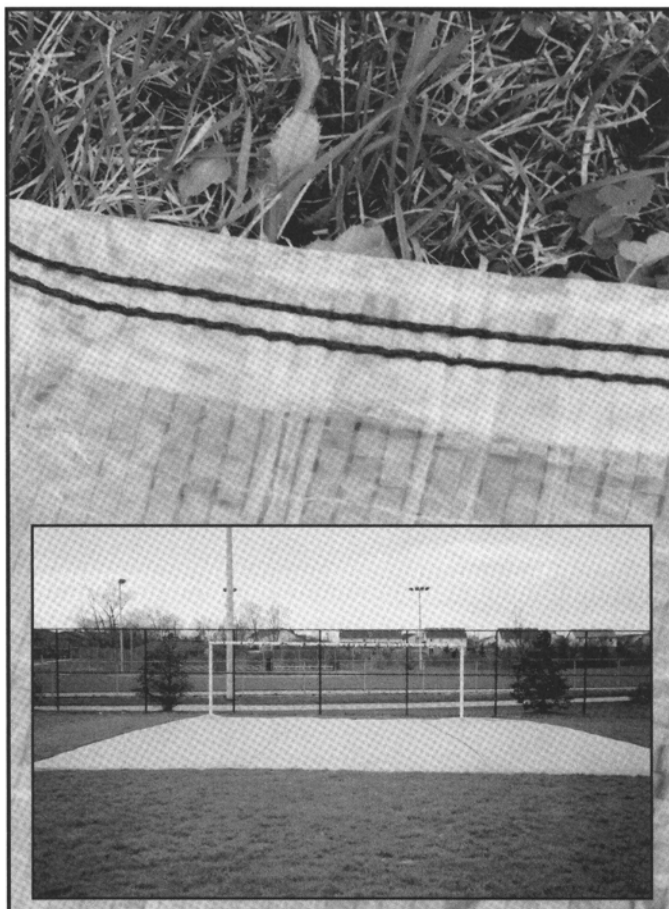
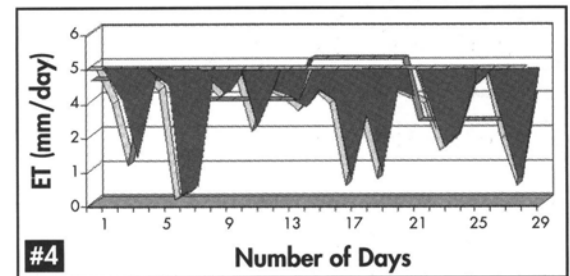
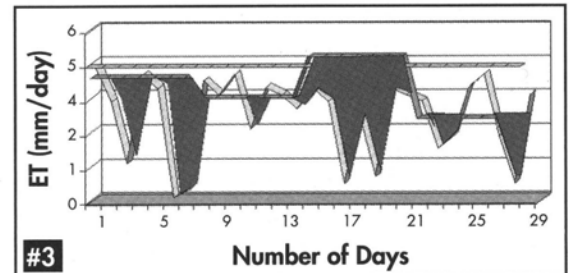
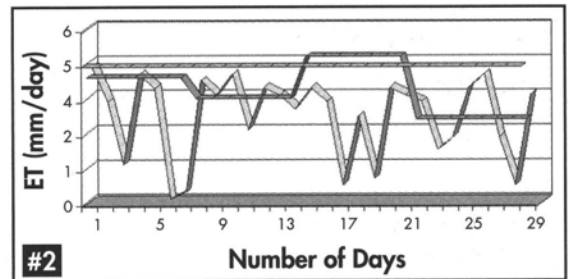


Graph #1 indicates that seasonal ET rates peak during July or August.

Graph #2. The top line indicates amount of irrigation water added with monthly adjustment. The middle line indicates a weekly adjustment corresponding to weather. The bottom line indicates actual daily ET rates.

Graph #3 indicates the amount of overwatering with weekly adjustments.

Graph #4 indicates the amount of overwatering with monthly adjustments.



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