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Conserving water through lawn watering assessments

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Abstract:

South Dakota State University is deploying an ET network to support lawn watering in the city of Sioux Falls, SD, a growing city of about 150,000 people. Managing landscape irrigation using the ET network with an evapotranspiration (ET)-based controller can save water by responding to plant water use instead of applying water based on time only. But any irrigation systems can be managed well only if the actual performance of the system is known. The landscape irrigation audit procedure developed by the Irrigation Association was used to measure the uniformity of 26 irrigation systems in Sioux Falls. Results show that there is potential for water savings by improving the uniformity of the irrigation systems. Measured system-wide distribution uniformity (sometimes called low-quarter uniformity) values were as low as 30%.

Running the simulated time-based irrigation systems from May through August and assuming applications of one inch per week results in about 18 inches of applied water. If water were applied to just meet turf ET estimates and use measured rainfall amounts to reduce the irrigation applications, an average of 12.7 inches would be applied. This is a potential savings of 5.3 inches. The volume saved will depend on the size of the irrigated area. The saved water amount may be less if the time-based irrigation system uses an appropriate rain sensor. It should be noted that warm, dry summers such as 2006 may result in increased water applications when using ET-based control.

Impact Statement:

Two impacts we have found in the first year of the project:

- Most lawn watering systems have low uniformity and likely require overwatering to cover the lawn sufficiently.
- Using ET based measurements could save an average of 5.3' of water per year on watered lawns in Sioux Falls, SD.

Category: Conservation and Resource Management

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