Irrigation Efficiency Study in Belmar

Situation

Magical Garden co-op garden in Belmar, NJ.

According to the United States Environmental Protection Agency, nationwide, landscape irrigation is estimated to account for almost one-third of all residential water use. Experts estimate that fifty percent (50%) of that water is wasted. It is quite possible for the most efficiently designed irrigation systems not to operate efficiently over time. Excess water waste and performance problems can be attributed to sprinkler heads that do not "pop-up properly," misaligned spray patterns, broken piping, high or low operating pressure, or missing sprinkler heads. To compensate for poor uniformity, people tend to set the system to operate longer, which in turn over-waters the landscape.

Action

In August 2009, New Jersey Water Savers, in partnership with the Middletown Sprinkler Company, conducted an irrigation audit of the Magical Garden in Belmar. The irrigation audit consisted of three main components: site inspection, performance, and testing.

The irrigation audit was conducted using a catch test to measure the amount of water that actually hits the various points within the garden to measure application uniformity. Similar to many irrigation systems, this system used different types and brands of sprinklers. The following procedure was used during the catch test:

- Turn on the irrigation system to locate and mark the sprinkler heads. The sprinkler heads were marked with a catch device.
- The catch devices were then placed in a grid pattern throughout the garden to get an accurate representation of the irrigation system performance.
- The irrigation system was turned on, allowing the water to fill in the catch devices, and the time was recorded.

Irrigation efficiency audit conducted at the Magical Garden co-op, Belmar, N.J.

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- After a measurable amount of water fell, the depth of water was measured in inches. The information then was recorded on a data sheet.
- Using the data recorded, the irrigation rates for each sprinkler in the system was determined.

Impact

The audit revealed that the existing irrigation system was inefficient with a Distribution Uniformity (DU_{LQ}) of 38.31%. By replacing the sprinkler heads with new MP Rotator nozzles, the Magical Garden now properly irrigates the garden on forty-two percent (42%) of the water that was required with the old nozzles.

This presents an opportunity to educate homeowners about the importance of operating an efficient irrigation system and when water supplies are limited how to use every drop of water to the fullest. Irrigation auditing is an effective tool for maximizing water use efficiency on home lawns and gardens, commercial properties, and sports fields. The key to efficiency is uniformity, which starts with the selection of the sprinkler head. In addition to saving money, a reduction in the stormwater generated at residences ultimately reduces nonpoint source pollution traveling to surface water bodies.

Belmar's Magical Garden Greenhouse and Community Garden is used by dozens of school children and community residents. Teachers use the Magical Garden as a living laboratory where science and other subjects come to life through horticulture projects. During Fall 2010, this outdoor classroom will become part of the Eco Green MP3 Tour. This self-guided tour will be available through downloadable podcasts and MP3 players for loan at no charge. This tour highlights Belmar as a sustainable community.

New Jersey Water Savers Partnership

New Jersey Water Savers is a partnership between the Rutgers Cooperative Extension Water Resources Program, the New Jersey Department of Environmental Protection, and the United States Environmental Protection Agency. This partnership was created to provide leadership to promote water conservation throughout New Jersey. For more information on our partnership efforts, visit us at *www.water.rutgers.edu*.

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