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Efficient Landscapes

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General Water Issues

Water supply and water quality are concerns in every part of the country. Drought and population growth stress the overall water supply. Water runoff, particularly from urban landscapes, help create water pollution levels that impact human and ecosystem health.

Public agencies are responsible for (1) protecting water supplies, (2) advising, directing, training and/or providing water use efficiency techniques to water users. Public agencies are also moving toward "enforcing" water use efficiency. Enforcements may include water allocations and incentive water pricing.

Landscape Water

In a community, landscape water accounts for a significant portion of the overall water use. In wet or cool areas (Georgia, Oregon), landscape water may account for 35% of the total water use. In hot and dry areas (Utah, Texas) landscape water may account for as much as 70% of the total local water use. In times of drought, landscape water need rises while the ability to supply the water decreases.

Landscape water, specifically over-water use, appears to be a major contributor to non-point source water pollution. Water that runs off of landscapes can take toxins (pesticides, herbicides, etc.), nutrients (Nitrates) and bacteria (animal waste) into water ways that impact human health and local ecosystems.

How can we know we are using landscape water efficiently? Can we change cultural practices and landscape styles to increase landscape water efficiency? Can we reduce chemical use, reduce costs, save water and have attractive landscapes at the same time? Yes, yes, yes and yes!

One Communities Example

In the Irvine Ranch Water District (*IRWD is located in Southern California, population 150,000*), commercial landscape water use has been reduced 54% since 1991. (There are no cactus and rock landscapes.) This has been achieved with the following methods:

- Set water budget allocations based on weather (evapotanspiration, or ET)
- Link site water budgets (meter by meter) with incentive or conservation pricing (tiered rate structure)
- Establish a weather station system to provide ET in different microclimates
- Provide ongoing customer (landscape contractor and property manager) education
- Provide site audits, soil probes and landscape educational workshops
- Provide financial assistance to customers to upgrade their irrigation systems and change landscape style
- Conduct studies that yield practical information on cultural practices, irrigation scheduling and water runoff

Despite the obvious success of the science-based water budgeting system, landscape over-watering and water runoff continue, although at a reduced level. While poor irrigation systems contribute to inefficient water use, it is believed that inaccurate irrigation scheduling is the largest factor with regards to landscape over-watering.

To determine if efficient irrigation scheduling, based on local weather, could be automated, the IRWD undertook a study of ET signal controllers in home and commercial landscapes. The results include:

- A 16%-25% reduction in home landscape water use
- A 30% reduction on city landscape sites
- Turfgrass typically improved in appearance
- Other plant materials maintained good health and appearance
- Customers liked the convenience of “never having to set or change” irrigation controller times
- Runoff of landscape water from test homes appeared to be reduced

To test the impacts of efficient, automated, weather-based irrigation scheduling on reducing runoff, the IRWD and the US EPA are conducting a larger study with ET signal controllers on homes and commercial landscapes. To date, the potential of ET signal controllers to reduce landscape runoff looks very promising (final study data will be available in early 2003 @ irwd.com).

Other landscape water efficiency techniques are:

- Use organic mulch to cover the soil in non-turf areas
- Grasscycle in turf areas
- Use slow-release organic type fertilizer products
- Consistently use a soil probe to monitor soil moisture levels
- Retrofit plants and/or irrigation systems to gain greater efficiency, reduce runoff and erosion

Conclusion

A significant amount of water can be saved in the landscape. Other benefits accrue if landscape water is used efficiently, including reduced water runoff. However, using water efficiently in landscapes takes a constant effort. To assist landscape managers, studies with ET signal controllers show great promise to automate the tracking of weather and the application of the right amount of water based on the site specific conditions.

Water agency studies show that 20%- 50% water savings could be achieved in home and commercial landscapes. The latest trend is to test and distribute ET signal controllers that will automate efficient irrigation scheduling without people.

ET controllers won't fix a poor irrigation system or landscape design. Retrofitting landscapes can be cost effective in terms of water, green waste and labor savings. These landscape styles are more energy efficient, require less chemicals, less water and provide more wildlife habitat.

Resources:

- Soil Probes: www.waterright-soilprobe.com (714) 556-9280
- Et signal controller: Weather Track, (707) 769-9696
- Irrigation Association: www.IA.com
- California weather stations: www.DWR.org
- Water Runoff: US Environmental Protection Agency
- Local University Extension office