

Intelligent Water Usage for Landscaping

Introduction

On the 13th of November 2018, Rain Bird International, a corporate member of EmiratesGBC, delivered a Technical Workshop on smart irrigation practices. The workshop was facilitated by Rammi Khalil, Technical Specification Manager, and focused on methods to decrease the unnecessary water losses due to conventional and old irrigation practices.



Smart Irrigation

The UAE ranks as one of the most water stressed regions in the world with potable water being produced through energy-intensive desalination processes. Therefore, it becomes important to conserve water by increasing efficiencies. One method of increasing water efficiency is by using smart and efficient irrigation technology that is catered to the requirements of the plants as well as the irrigated space.

Irrigation systems consist of two basic elements: (1) the transport of water from its source to the field, and (2) the distribution of transported water to the crops in the field. A number of soil properties and qualities are important to the design, operation, and management of irrigation systems, including the plant water requirement, soil water holding capacity, soil intake characteristics, permeability, soil condition, organic matter, slope, water table depth, soil erodibility, chemical properties, salinity, sodicity, and pH.

A good way of evaluating the efficiency of an irrigation system is by looking at the Distribution Uniformity (DU) for Sprayers and Sprinklers, which is a measure of how evenly water is applied across a field during irrigation. Conventional spray nozzles have a DU of 50 to 55%, which means that they need to operate for longer durations in order to make up for the efficiency losses. They also usually operate with non-pressure regulated conventional devices, which end up delivering high-pressure water to the spray nozzle or sprinkler, which results in a fine water spray “Misting effect” that evaporates due to environmental conditions and thus causes higher water losses. This has a cumulative effect that irrigation operators increase the duration of irrigation of each water cycle resulting in significant losses throughout the year. In contrast, High Efficiency spray nozzles combined with pressure regulated devices have a higher DU of up to 70-75%, which means they have a higher efficiency and result in shorter irrigation cycles.

An efficient method of irrigation is using root watering systems. Those systems use the technology of subsurface bubbler irrigation, where the environmental effects on the water are eliminated by targeting the roots directly. That way, water absorption is more efficient, and only the required amount of water is used.

Another type of smart and efficient irrigation is weather-based Irrigation. Rather than letting the sprinklers supply the same amount of water throughout the year, the system tracks the weather and adjusts the water consumption based on the environmental factors.

Lastly, the control systems of irrigation systems can greatly reduce water losses as it can learn the regular flow patterns and monitor flow abnormalities; smart leak detection systems can identify and isolate potential leaks in the network, thus contributing to saving hundreds of cubic meters of water in potential losses.

For the full workshop presentation, please click [here](#).
