

Irrigation Uniformity: Looking Like A Million \$\$

by Mike Huck

USGA Green Section - Western Region

You are preparing to approach your course officials about replacing that antiquated irrigation system with a new state-of-the-art, computer-controlled model. You are going to ask them to put up a million plus dollars for this system, but what will happen once the system is in the ground? Think about it for a moment. After spending a seven figures they will expect the course to reflect it. Pardon the pun, but they will think the place should immediately look like a million bucks. It is possible that your golfers' expectations may exceed the mechanical limitations of the new system's coverage. If this happens, it could cost you your job!

The unfortunate fact is that even the most efficient irrigation systems are not that great. Based on results of field irrigation audits conducted throughout California by the California State Polytechnic University Irrigation Training and Research Center, a distribution uniformity (DU) of 85% is considered excellent. This means that even the best of systems begin with between 15-20% inefficiency. As age, wear and tear take place, things only get worse. Now, imagine how bad it can get if corners are cut during the initial design!

Even an excellent design can produce poor end results if the application profile of the sprinkler is not good. Each sprinkler model and nozzle possesses a different and unique application profile pattern. In turn, some profiles perform better than others. A good way to avoid disaster is to

analyze sprinkler and nozzle application patterns before you make a final product selection. In other words, know what you are buying.

How does one analyze a profile? Profile analysis can be accomplished at the laboratory of the Center For Irrigation Technology (CIT), California State University Fresno, (209)-278-2066. After the profile data are collected, CIT's computer allows irrigation coverage to be simulated in a two dimensional graphic called a densogram. In the process you learn which sprinkler and/or nozzle combination will deliver the most uniform coverage at your specified spacings.

Visualizing what the accumulation of water will look like when profiles are overlapped can be difficult. This is where the densogram enters the picture. The densogram demonstrates wet and dry areas of an overlapped profile by light and dark areas in the pattern.

In addition to the graphics, the software also calculates a scheduling coefficient (SC). The SC is a run time multiplier that compares the driest 5% area of the overlapped patterns. On a golf course no one wants a swamp, so we end up living with dry spots instead.

Therefore, if you want the finished product to look like a million bucks, it would be wise to test several sprinkler brands and nozzle combinations before you purchase. This can give you greater confidence that your golfers are getting the best possible system that money can buy and that you get to keep your job after it is operational.

Relative System Performance and Distribution Uniformity (%)

Excellent	85% or greater
Very Good	80%
Good	75%
Fair	70%
Poor	65% or less

Mike Huck is an agronomist in the USGA's Western Region office. He provides turf advisory surfaces for Colorado, Nevada, Arizona, Utah and parts of California. He earned a degree in Ornamental Horticulture with a specialty in turfgrass from the California State Polytechnic University.