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Document Title:	IrriGreen Comments - Digital Sprinkler Head Technology uses 40-50% Less Water than Spray Sprinkler Bodies by printing water
Description:	IrriGreen Comments - Digital Sprinkler Head Technology uses 40-50% Less Water than Spray Sprinkler Bodies by printing water in exact shape of lawns
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Organization:	Ray Lamovec/IrriGreen
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Digital Sprinkler Head Technology uses 40-50% Less Water than Spray Sprinkler Bodies by "printing" water in exact shape of lawns

Spray sprinkler bodies, are based on decades-old mechanical technology, where multiple heads are installed all along the edges of a zone and spray water inward, depending on overlapping arcs to completely cover a zone, making angles and curves very difficult to cover properly.

These required overlapping arcs waste water because of the â€œ75/25â€ paradigm: 75% of every zone receives too much water to ensure the remaining 25% gets enough water (illustrated on CIT slide in the "IrriGreen Saves Water Summary" pdf attached

In addition to overlapping, 10-15% more water is commonly wasted due to over spray outside the zone shape, landing on sidewalks and buildings.

This inefficiency wastes up to 100,000 gallons of water, or more, per home, every year.

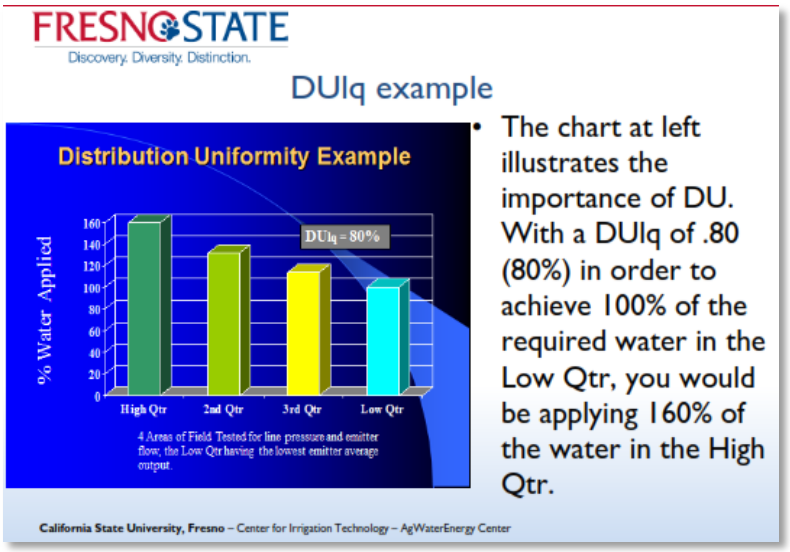
Digital sprinkler heads use software stops this waste by literally "printing" water, evenly, in the exact shape of any lawn, eliminating the 75% over watering that occurs with all of today's mechanical sprinkler systems.

This system has been tested by the Center for Irrigation Technology (CIT) at Fresno State, and there is an attachment that summarizes how digital heads use 40-50% less water.

Additional submitted attachment is included below.

IrriGreen CIT Test Shows 40% Water Savings

Today's irrigation systems are based on decades-old mechanical technology where multiple heads are installed on along the edges of a zone and spray water inward. These systems are dependent on overlapping arcs to completely cover a zone, making angles and curves very difficult to cover properly.



Their overlapping arcs waste water because of the "75/25" paradigm: **75% of every zone receives too much water to ensure the remaining 25% gets enough water,** as illustrated by this Center for Irrigation Technology slide.

In addition to overlapping, **10-15% more water is commonly wasted due to overspray** outside the zone shape, landing on sidewalks and buildings.

The IrriGreen Genius Sprinkler was tested by the Center for Irrigation Technology (CIT), Fresno State, in 2016 against mechanical sprinklers. CIT designed rectangular, square and circular shaped test plots and installed best-in-class mechanical sprinklers for each test using 6-9 mechanical sprinklers versus 1 IrriGreen sprinkler. CIT measured soil moisture (SMS) and catch can volume before and after each watering event, as well as the gallons used for each test.

The IrriGreen system used 42.2% less water on a 30' x 60' <u>rectangle</u>.

For the 30' x 60' rectangular test plot, go to the CIT Study, Table 1, columns CIT-2 and IRRG-2. 6 Hunter I-20 heads used 492 gallons to achieve a 11.4% increase in soil moisture. A single IrriGreen head used 284 gallons to achieve a 11.0% increase in soil moisture. Application efficiency per the CIT report was 70% for Hunter and 65% for IrriGreen as measured with SMS.

The IrriGreen system used 36.7% less water on a *30' <u>circle</u>*.

For the 30' circle test plot, go to the CIT Study, Table1, rows CIT-6 and IRRG-6. 8 Hunter Pro Adjustable sprays used 240 gallons to achieve a 9.6% increase in soil moisture. A single IrriGreen head used 152 gallons to achieve a 9.6% increase in soil moisture. Application efficiency per CIT was 60% for Hunter and 60% for IrriGreen as measured with SMS.

Why SMS measurements are used: In 2014, Dr. Brian Horgan, turf grass specialist at the University of Minnesota, made this conclusion after comparing IrriGreen with mechanical sprinklers: "The Catch Can method is not a suitable assessment of the IrriGreen system's wetting ability and uniformity."

Note: There was an SMS probe failure during the 30' x 30' square test plot measurements as noted in the report.

How does IrriGreen save water?

IrriGreen multi-stream nozzle applies water evenly everywhere in any shape zone using software to follow the exact lawn shape (curves, angles, corners) and calculate the surface area every 0.8 degrees of rotation. Software digitally controls the rotational speed and valve opening to deliver an equal amount of precipitation everywhere within the zone shape. It operates very similarly to an inkjet printer, evenly "printing water" in any shape.

There are 14 different size/volume streams of water designed to delivering a uniform amount of water from the head to the edge of the zone. Smaller streams spray close to the head and stream sizes increase proportionally (with the surface area) as the distance from the head increases. Water movement in the soil fills in the small gaps between the streams, much like a like drip irrigation system depends on water soaking into the soil between the drip lines.

The IrriGreen system and software evenly applies 0.05 inches of water per rotation. Users select how many inches of water per watering event (in increments of 0.05") and software calculates run times and inserts the time into the watering schedule. This precise application of water eliminates overwatering due to inaccurate calculation of application rate in mechanical systems.

In conclusion, IrriGreen eliminates water waste due to overwatering, overspray, and application rate inaccuracy by using software accuracy.