

Effectiveness of In-Line Drip Tubing on Turf Quality Based on Depth and Manufacturer

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Purpose

This paper discusses the methodology and results to date of 16 months of an initial 2 year drip line irrigation study commenced on February 14, 2012 in central Florida outside of the Orlando area on turf grass (St. Augustine 'Floratum'). The purpose of this study was/is to compare the turf show quality, health and vigor of three different subsurface drip burial depths utilizing three different manufacturer's products. Burial depths were surface, 2 inches and 4 inches. Manufacturers drip lines tested were Netafim Techline, Toro Drip In PC Brown and Rain Bird XF Drip line.

Methodology

The test area consists of four 15 x 15 foot plots irrigated in 5 foot x 15 foot sections, one for each manufacturer (Figure 1). The four plots are individually controlled with their own Irritrol 700-01 valve from a Rain ESP-LX controller communicating with a central control system. A rain shut off for the controller is within 300 feet. Each plot also includes a 200 mesh wye strainer and a 30 psi in line pressure regulator. The drip line is installed on 12 inch row spacing with a 12 inch emitter spacing. Each emitter is 0.9/1.0 gph depending on the manufacturer. ET calculations are provided by a Campbell Scientific weather station located approximately 30 feet from the plots installed on the same type turf grass.

The test plots consist of 2 plots (#1 and #2) with the drip installed at the surface, one with a 2 inch burial depth (#3) and the last (#4) with a 4 inch burial depth. The difference between plots #1 and #2 is in how the drip line is laid out. In plot #2 the drip line is installed 90 degrees opposite of plot #1 and the order of manufacturers is different to see if either will influence the results. The four plots are evaluated for turf quality each month based on the University of Florida protocol. Weather is tracked daily and reported monthly.

The plots are scheduled to irrigate four days per week with a landscape coefficient of 0.75 ($L_T=0.75$, $L_D=1.0$, $L_{MC}=1.0$) based on the Irrigation Associations Landscape Auditor references. Precipitation rate for each plot is programmed at 1.48 inches per hour. The water supply is tertiary treated reclaimed.

Initially, the St. Augustine turf was grown in for two weeks from sod with a single rotary sprinkler for each plot to supplement the drip line. Following the first two weeks, the drip lines were operated 30 minutes per day.

Data Recording and Reporting:

Beginning in June 2012, photos of each plot are taken monthly with a brief description of the observed quality of the turf. The turf quality rating for each plot is recorded each month as show in Table 1. The ratings range from 1 to 8 based on appearance (see attached).

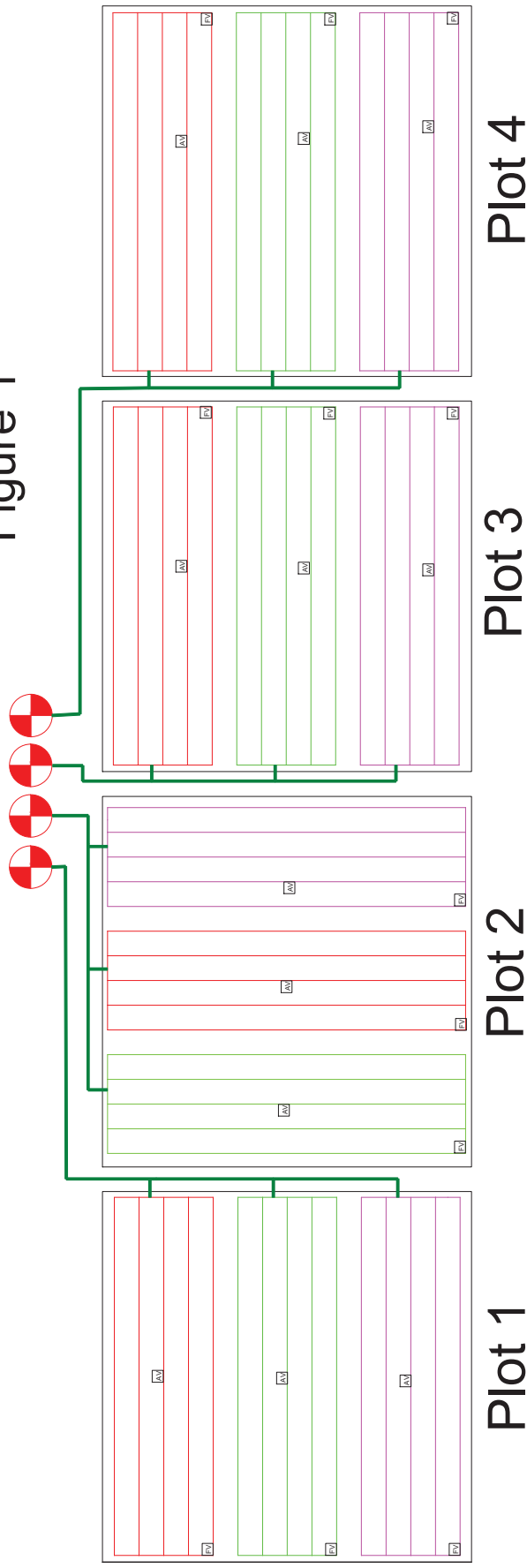
Table 1: Example Turf Quality Ratings

Plot #	Rating			Average bury rating
	Netafim	Toro	Rain Bird	
8-12 0" bury	7	7	7	7.00
8-13 0" bury	7	7	7	7.00
8-14 2" bury	6	6	6	6.00
8-15 4" bury	6	6	6	6.00
Average product rating	6.50	6.50	6.50	

Conclusions

Figure 2 shows the average turf quality trends over the length of the study to date for each plot. To date the study does not reflect any significant differences in either the product or the burial depth due to the amount of rainfall that has occurred during the test period to date.

Figure 1



All electric valves to have 200 mesh filtration and 30 psi regulator (low flow).

All piping between valve assembly and drip line manifolds to be 1/2" PVC

Red lines indicate Netafim Techline 12", .92gph

Green lines indicate Toro PC Brown Dripline 12", 1.0gph

Magenta lines indicate Rain Bird XF Dripline 12", .9gph

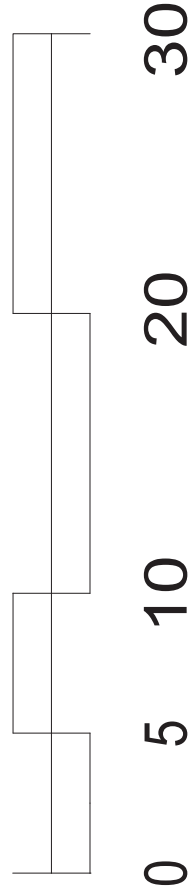
Each subassembly to have a air/vacuum valve and flush valve installed in a 6" round box in locations shown.

Plot 1 - Surface installed drip line

Plot 2 - Surface installed drip line

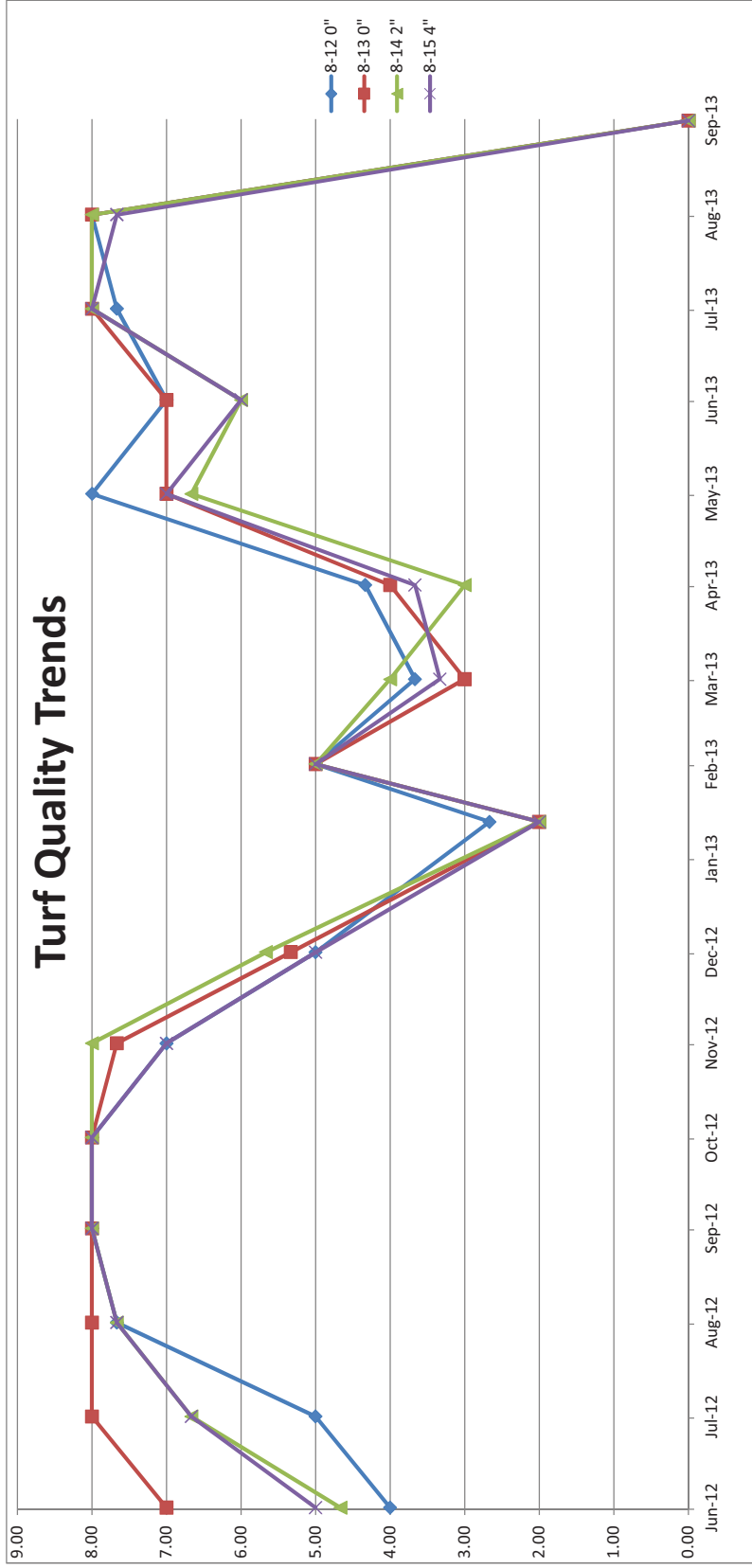
Plot 3 - Installed 2" below grade

Plot 4 - Installed 4" below grade



1" = 10'

Figure 2



Turfgrass Quality Reference Guide

GCREC ET Controller Study

1



2



3



4



5



6



7



8

