2021 Case Study: Water use on newly sodded 'Tahoma 31' Bermudagrass lawn in SW Denver compared with Kentucky bluegrass.

Background.

346 sq. ft of Tahoma 31 hybrid Bermudagrass sod installed on lawn June 17, 2021. Prior to sodding, a commercially available subsurface drip irrigation system was installed with a quality flow meter to track every gallon of water applied to the turfgrass zones. Irrigation applied as needed to avoid drought stress.

Evapotranspiration (ET) is measure of water use requirements for a given type of crop. In most urban areas of Colorado, daily ET rates are calculated and reported at many available online weather stations, and are calculated using the crop coefficient for Kentucky bluegrass, as it is the predominate lawn species in Colorado at this time.

Throughout the recorded 2021 irrigation season, daily online ET rates were collected from a local weather site, as was daily precipitation and gallons of irrigation water used on test plot (346 sq. ft). By converting gallons used per sq. ft. to cubic feet of water, we can determine how many inches of irrigation was applied to the study lawn.

X inches irr = gal/sq. ft. x.134 cu. ft/gal x 12

Comparing this value to the locally reported accumulated ET, which uses a bluegrass crop coefficient, is a way to compare water use of the installed Bermudagrass sod to what could be the expected water use of Kentucky bluegrass on the same site, same time period.

Results.

Comparative analysis is from June 17, 2021 to October 31, 2021 and roughly represents the turfgrass irrigation season in the Denver area when the vast majority of irrigation water is used on both Kentucky bluegrasses and bermudagrasses. If April and May data were included in the comparison, Kentucky bluegrass would be expected to use more water in those months because it will break winter dormancy earlier than Bermudagrass and has a higher water use rate (WUR) than Bermudagrass. Most overhead irrigation systems in the Denver area are typically shut down and winterized before October 31.

Case study: Actual Bermudagrass water use compared with same projected Kentucky bluegrass water use. Comparison period: June 17-October 31, 2021. 346 sq. ft. of sod. Southwest Denver, CO. USA

Sod type:	Reported ET (inches)	Total gallons of irrigation	Irrigation (gal/sq. ft)	Inches of irrigation	% of projected bluegrass water use (ET)	Precipitation (inches)	Precip plus irrigation (inches)
'Tahoma 31" hybrid Bermudagrass (actual)[1]	n/a	2,400	6.94	11.15	46.9%	8.41	19.56
Kentucky bluegrass (projected)[2]	23.75	5,124	14.81	23.75	100%	8.41	32.16

1-Actual data collected from test site during test period (6-17 to 10-31, 2021)

2-Kentucky bluegrass data projected from actual reported local ET rates during test period.

Comments:

Under the time and conditions of the 4 ½ month test period, newly lain 'Tahoma 31' hybrid Bermudagrass used 46% of the projected required irrigation water that would be expected for the same sized established Kentucky bluegrass lawn during the same time period. This is right in line research at Kansas State University that reported 44% comparative irrigation requirement (Bermudagrass:bluegrass).

Evapotranspiration rates of four major turfgrass species, and the minimum irrigation amounts required to maintain season-long quality in 2001 and 2002[A].

Year	Species	ET Daily (inches)	ET -June, July, Aug. (Inches)	Minimum Water Required- June, July Aug. (inches)	Water required for acceptable turfgrass relative to Kentucky bluegrass (June, July, Aug.)
2001	Kentucky bluegrass	.22	21.7	21.7	100%
	Tall fescue	.23	22.1	13.2	60%
	Bermudagrass	.16	16.0	9.6	44%
	Zoysiagrass	.15	15.3	12.2	56%

A – 2004 *Minimum Water Requirements of Four Turfgrasses in the Transition Zone*. Jinmin Fu, Jack Fry and Bingru Huang. Kansas State University. Units converted to inches. Kentucky bluegrass not evaluated in 2002 in this study.