

Estimating water use example

Monthly Average Reference Evapotranspiration by ETo Zone (inches/month)

Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	0.93	1.40	2.48	3.30	4.03	4.50	4.65	4.03	3.30	2.48	1.20	0.62	33.0
2	1.24	1.68	3.10	3.90	4.65	5.10	4.96	4.65	3.90	2.79	1.80	1.24	39.0
3	1.86	2.24	3.72	4.80	5.27	5.70	5.58	5.27	4.20	3.41	2.40	1.86	46.3
4	1.86	2.24	3.41	4.50	5.27	5.70	5.89	5.58	4.50	3.41	2.40	1.86	46.6
5	0.93	1.68	2.79	4.20	5.58	6.30	6.51	5.89	4.50	3.10	1.50	0.93	43.9
6	1.86	2.24	3.41	4.80	5.58	6.30	6.51	6.20	4.80	3.72	2.40	1.86	49.7
7	0.62	1.40	2.48	3.90	5.27	6.30	7.44	6.51	4.80	2.79	1.20	0.62	43.4
8	1.24	1.68	3.41	4.80	6.20	6.90	7.44	6.51	5.10	3.41	1.80	0.93	49.4
9	2.17	2.80	4.03	5.10	5.89	6.60	7.44	6.82	5.70	4.03	2.70	1.86	55.1
10	0.93	1.68	3.10	4.50	5.89	7.20	8.06	7.13	5.10	3.10	1.50	0.93	49.1
11	1.55	2.24	3.10	4.50	5.89	7.20	8.06	7.44	5.70	3.72	2.10	1.55	53.0
12	1.24	1.96	3.41	5.10	6.82	7.80	8.06	7.13	5.40	3.72	1.80	0.93	53.3
13	1.24	1.96	3.10	4.80	6.51	7.80	8.99	7.75	5.70	3.72	1.80	0.93	54.3
14	1.55	2.24	3.72	5.10	6.82	7.80	8.68	7.75	5.70	4.03	2.10	1.55	57.0
15	1.24	2.24	3.72	5.70	7.44	8.10	8.68	7.75	5.70	4.03	2.10	1.24	57.9
16	1.55	2.52	4.03	5.70	7.75	8.70	9.30	8.37	6.30	4.34	2.40	1.55	62.5
17	1.86	2.80	4.65	6.00	8.06	9.00	9.92	8.68	6.60	4.34	2.70	1.86	66.5
18	2.48	3.36	5.27	6.90	8.68	9.60	9.61	8.68	6.90	4.96	3.00	2.17	71.6

This example is calculated for CIMIS ETo Zone 1, coastal region, for a 100 square foot vegetable garden watered by drip irrigation.

Published values for other regions, plant factors, and watering methods can be plugged into the formula to estimate any site's seasonal water needs.

In this example, a small 10' x 10' garden will need about 1297 gallons in a season.

Estimated Water Use

$$\begin{aligned}
 & \text{EWU} = (\text{ETo})(0.63) \left(\frac{\text{Plant Factor x Hydrozone Area (sq. ft)}}{\text{Irrigation Efficiency}} \right) \\
 & \quad \uparrow \text{Reference Evapotranspiration} \\
 & \quad \downarrow \text{Gallons in 1" rainfall per square foot} \\
 & = 4.65 \times .63 \left(\frac{.8 \times 100}{.9} \right) \\
 & \quad \text{Vegetables/Turf x 100 square feet} \\
 & \quad \text{Drip} \\
 & = 4.65 \times .63 \times 89 \\
 & = 261 \text{ gallons in July}
 \end{aligned}$$

Water needs by month expressed as a percent of July needs.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0%	0%	0%	45%	76%	96%	100%	86%	66%	28%	0%	0%

117 198 251 261 224 172 73

1297 gallons in a season



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