



(1) Day	(2) ET <sub>o</sub>	(3) Z <sub>r</sub>	(4) RAW	(5) D <sub>r,i</sub> start	(6) P-RO	(7) I	(8) K <sub>s</sub>	(9) K <sub>cb</sub>	(10) K <sub>e</sub>	(11) K <sub>c</sub>	(12) ET <sub>c</sub>	(13) DP	(14) D <sub>r,i</sub> end
	mm/d	m	mm	mm	mm	mm					mm	mm	mm
start	-	-	-	-	-	-	-	-	-	-	-	-	23
1	4.5	0.30	23	0	0	40	1	0.30	0.91	1.21	5.5	12	0
2	5.0	0.31	24	0	0	0	1	0.31	0.90	1.21	6.1	0	6
3	3.9	0.31	24	6	0	0	1	0.32	0.64	0.97	3.8	0	10
4	4.2	0.32	25	10	0	0	1	0.33	0.36	0.69	2.9	0	13
5	4.8	0.32	25	13	0	0	1	0.34	0.19	0.54	2.6	0	15
6	2.7	0.33	26	9	6	0	1	0.36	0.60	0.96	2.6	0	12
7	5.8	0.33	26	12	0	0	1	0.37	0.44	0.81	4.7	0	17
8	5.1	0.34	26	17	0	0	1	0.38	0.19	0.57	2.9	0	20
9	4.7	0.34	27	20	0	0	1	0.39	0.10	0.49	2.3	0	22
10	5.2	0.35	27	22	0	0	1	0.40	0.05	0.45	2.4	0	24
11	9.2	0.35	27	24	0	0	1	0.41	0.03	0.44	4.0	0	28
12	6.4	0.36	28	0	0	28	1	0.42	0.79	1.21	7.8	0	8

- (1) Day number.
- (2) From Example 35.
- (3) Z<sub>r</sub> is given (interpolated between 0.3 m on day 1 and 0.36 m on day 12).
- (4) Eq. 83.
- (5) D<sub>r,i start</sub> (root zone depletion at the beginning of the day)  
 If precipitation and irrigation occur early in the day then  

$$D_{r,i \text{ start}} = \text{Max}(D_{r,i-1 \text{ end}} - I - (P-RO), \text{ or } 0)$$
 If precipitation and irrigation occur late in the day, then  

$$D_{r,i \text{ start}} = D_{r,i-1 \text{ end}}$$
 where D<sub>r,i-1 end</sub> is taken from column 14 of previous day
- Since the depth of the root zone increases each day, the water content of the subsoil ( $\theta_{\text{sub}}$ ) has to be considered to update D<sub>r,i</sub>  

$$D_{r,i} = D_{r,i-1} + 1000 (\theta_{\text{FC}} - \theta_{\text{sub},i-1}) \Delta Z_{r,i}$$
 The example assumes that  $\theta_{\text{sub}}$  is at field capacity (due to prior overirrigation and excessive rainfall on previous days). Therefore, a combination of the equations for D<sub>r,i</sub> can be utilized.
- (6) From Example 35.
- (7) Irrigation is required when D<sub>r,i</sub> ≥ RAW.  
 On day 1, the irrigation depth (infiltrating the soil) is given from Example 35 as I = 40 mm.  
 On day 12, a second irrigation is required. An irrigation with a net depth of 28 mm refills the root zone and avoids water loss by deep percolation (DP = 0 mm).
- (8) Eq. 84, where K<sub>s</sub> = 1 for D<sub>r,i</sub> ≤ RAW.
- (9) From Example 35.
- (10) Day 1 to 10: From Example 35. Day 11: K<sub>r</sub> = 0.033 and K<sub>e</sub> = 0.033 (1.21 - 0.41) = 0.03  
 Day 12: Following the extra irrigation early in the day, the topsoil will be wet and K<sub>r</sub> is 1 and from Eq. 71: K<sub>e</sub> = 1.0 (1.21 - 0.42) = 0.79.
- (11) K<sub>c</sub> = K<sub>s</sub> K<sub>cb</sub> + K<sub>e</sub>.
- (12) Eq. 80.
- (13) Eq. 88, where D<sub>r,i-1</sub> is taken from column 14 of previous day. In this example, because P and I are assumed to occur early in the day, and DP and D<sub>r,i end</sub> are calculated for the end of the day, ET during the day reduces I and P to some extent so that contributions to DP are reduced. This differs from the assumption in Ex. 35 for the more shallow evaporation layer.
- (14) D<sub>r,i</sub> (root zone depletion at end of one day) is used as the starting D<sub>r,i</sub> at the beginning of the next day (see footnote 5). From Eq. 85, where D<sub>r,i-1</sub> is taken from column 14 of previous day.
- Note that values in some columns will change slightly if values for col. (9) and (10) are entered as printed in Example 35, rather than linked from the calculation spreadsheet from Example 35, due to exact internal calculations in the spreadsheet where values are not rounded.*

