Example 10.2: Determine the irrigation modulus of the following project for the given conditions. The area is located at 34°N latitude, types and percent areal distribution of the crops are; cotton (30%), corn (30%), and potatoes (40%). Irrigation will be performed during summer. The overall irrigation efficiency is estimated to be 50%. Mean monthly temperatures are given in the table below. Mean effective precipitation is 10 mm/month throughout the irrigation season.

Solution:

The solution is presented in the table below in which u_c, CIR, and TDR values are all expressed in mm/month. The weighted crop irrigation requirement is computed from

$$\Sigma CIR = 0.3*(u_c(cotton) - P_{eff}) + 0.3*(u_c(corn) - P_{eff}) + 0.4*(u_c(pot) - P_{eff})$$

M	T(°C)	P	f	u_c (cot.)	u_c (cor.)	u_c (pot.)	ΣCIR	TDR
June	26	9.70	7.64	94.6	71.4	101.9	80.6	161.2
July	27	9.88	7.96	131.4	236.2	120.3	148.4	296.8
Aug.	28	9.33	7.69	165.1	253.1	191.4	192.0	384

$$q_{max} = \frac{TDR_{max} * 10000}{31 * 86400} = \frac{384 * 10000}{31 * 86400} = 1.43 \text{ lt/s/ha}$$