

# Crop Coefficient of 40 Varieties

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Crop Coefficients (Kc) are crop specific evapotranspiration values generated by research used with reference evapotranspiration data to estimate the crop's evapotranspiration requirement (ETc). ETc is calculated by multiplying the crop coefficient (Kc) by the reference evapotranspiration value (ETo).

Crop coefficient (Kc) is important information that will be used to calculate the amount of crop water use (ET) because each area has different climate makes water usage of plants vary according to weather.

## Index

Rice(High Yield Variety)	Direct Sowing (Suphanburi 1 Variety)	Rice(Khao Dawk Mali 105)	Rice (Basmati)
Wheat	Maize	Sweet Corn	Sorghum
Soybean	Mungbean	Sesame	Sunflower
Cotton	Watermelon	Cauliflower	Chinese kale
Tomato	Onion	Shallot	Bitter gourd
Sugarcane	Castor bean	Asparagus	Taro
Jackfruit tree	Mango tree	Young Lemon tree(1-3 yrs.)	Lemon tree (3-5 yrs.)
Pomelo	Cultivated Banana	Banana	Zinnia
Jasmin	Rose	Curcuma(Siam Tulip)	Vetiver Grass
Ruzi grass	Dwarf Napier	Hedge Lucern	Cattail

Table 1 Crop Coefficient of Rice(High Yield Variety)

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.90	1.10	1.23	0.76	0.90	1.29	1.03
2	0.94	1.24	1.21	0.85	0.92	1.38	1.07
3	0.98	1.52	1.27	1.06	1.11	1.35	1.12
4	1.13	1.65	1.55	1.14	1.24	1.57	1.29
5	1.21	1.67	1.55	1.12	1.31	1.77	1.38
6	1.27	1.64	1.89	1.07	1.23	1.88	1.45
7	1.32	2.10	1.87	1.39	1.54	1.78	1.50
8	1.30	1.66	1.86	1.09	1.22	1.87	1.48
9	1.26	1.74	1.72	1.15	1.24	1.77	1.42
10	1.21	1.68	1.42	1.19	1.27	1.73	1.34
11	1.11	1.68	1.48	1.17	1.23	1.51	1.23
12	0.85	1.18	1.29	0.81	0.89	1.15	0.94
13	0.75	1.13	1.13	0.78	0.85	0.63	0.86
Average	1.09	1.54	1.49	1.05	1.15	1.53	1.24

Table 2 Crop Coefficient of Rice (Khao Dawk Mali 105)

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.60	0.93	0.76	0.75	0.68	0.78	0.66
2	0.70	1.23	0.80	0.84	0.82	1.02	0.79
3	0.86	1.37	1.13	0.92	0.90	1.17	0.97
4	1.05	1.54	1.26	1.26	1.18	1.45	1.18
5	1.20	1.62	1.33	1.07	1.10	1.74	1.35
6	1.30	1.75	1.22	1.13	1.24	1.83	1.51
7	1.39	2.34	1.73	1.61	1.52	1.96	1.61
8	1.42	2.12	1.58	1.76	1.74	1.85	1.64
9	1.40	2.06	1.84	1.75	1.59	1.83	1.62
10	1.36	1.75	1.93	1.19	1.33	1.80	1.60
11	1.32	1.88	1.49	1.32	1.32	1.75	1.55
12	1.24	1.91	1.35	1.38	1.37	1.76	1.46
13	1.10	1.53	1.26	3.13	1.08	1.49	1.28
14	0.92	1.15	0.97	0.82	0.89	1.31	1.08
Average	1.13	1.64	1.31	1.20	1.19	1.53	1.31

Table 3 Crop Coefficient of Rice (Basmati)

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	1.11	1.30	1.46	1.55	0.95	1.24	1.22
2	1.18	1.50	1.60	1.72	1.03	1.33	1.30
3	1.23	1.44	1.85	1.45	1.03	1.49	1.36
4	1.27	1.70	1.45	1.71	1.20	1.47	1.45
5	1.29	1.72	1.86	1.38	1.10	1.52	1.47
6	1.30	1.66	1.66	1.59	1.21	1.54	1.49
7	1.30	1.71	1.71	1.65	1.18	1.56	1.49
8	1.30	1.72	1.48	1.56	1.18	1.60	1.48
9	1.28	1.77	1.57	1.14	1.09	1.62	1.46
10	1.26	1.69	1.58	1.34	1.19	1.58	1.44
11	1.22	1.74	1.30	1.20	1.09	1.70	1.36
12	1.17	1.67	1.26	1.18	1.09	1.51	1.23
13	1.06	1.34	1.36	1.01	0.96	1.35	1.11
14	0.88	1.04	1.22	0.82	0.80	1.12	0.93
Average	1.22	1.58	1.50	1.33	1.08	1.48	1.34

Table 4 Crop Coefficient of Wheat

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.41	0.62	0.56	0.37	0.47	0.59	0.50
2	0.43	0.56	0.49	0.32	0.45	0.65	0.52
3	0.50	0.66	0.70	0.44	0.60	0.67	0.61
4	0.63	0.74	0.88	0.64	0.79	0.77	0.76
5	0.95	1.11	1.21	1.40	1.04	1.17	1.11
6	1.08	1.35	1.32	2.09	1.06	1.27	1.26
7	1.14	1.41	1.36	2.36	1.15	1.29	1.33
8	1.16	1.48	1.42	2.42	1.17	1.37	1.38
9	1.14	1.38	1.42	2.01	1.13	1.43	1.37
10	1.07	1.28	1.44	1.26	1.04	1.29	1.32
11	0.92	1.13	1.19	1.14	0.93	1.09	1.14
12	0.67	0.69	0.86	0.83	0.66	0.76	0.83
13	0.48	0.58	0.62	0.66	0.52	0.58	0.62
14	0.35	0.45	0.48	0.37	0.40	0.46	0.46
15	0.30	0.42	0.39	0.32	0.34	0.40	0.39
Average	0.75	0.90	0.94	0.87	0.78	0.90	0.91

Table 5 Crop Coefficient of Maize

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.50	0.67	0.62	0.53	0.67	0.58	0.63
2	0.57	0.80	0.74	0.48	0.67	0.71	0.72
3	0.68	0.93	0.98	0.50	0.69	0.85	0.86
4	0.89	1.12	1.05	1.03	1.10	0.99	1.13
5	1.12	1.39	1.24	1.48	1.37	1.29	1.35
6	1.26	1.56	1.46	1.77	1.56	1.45	1.52
7	1.33	1.70	1.52	1.55	1.49	1.57	1.61
8	1.35	1.81	1.77	1.43	1.53	1.63	1.63
9	1.34	1.80	1.55	1.42	1.52	1.61	1.58
10	1.30	1.71	1.56	1.07	1.20	1.66	1.50
11	1.20	1.62	1.22	1.07	1.25	1.54	1.38
12	1.00	1.31	1.07	1.06	1.13	1.26	1.15
13	0.77	1.04	0.66	0.63	0.74	1.07	0.90
14	0.58	0.79	0.61	0.71	0.68	0.72	0.67
Average	0.99	1.31	1.14	1.03	1.13	1.20	1.19

Table 6 Crop Coefficient of Sweet Corn

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.55	0.66	0.70	0.67	0.58	0.70	0.65
2	0.58	0.84	0.86	0.85	0.72	0.85	0.68
3	0.71	1.03	1.02	1.04	0.85	1.00	0.84
4	0.84	1.18	1.17	1.22	0.97	1.18	0.99
5	0.96	1.20	1.20	1.37	0.97	1.17	1.16
6	1.01	1.15	1.17	1.39	0.92	1.15	1.22
7	1.00	1.10	1.14	1.45	0.85	1.14	1.21
8	0.95	0.90	0.95	1.04	0.69	0.94	1.15
9	0.78	0.67	0.71	0.68	0.50	0.66	0.96
10	0.59	0.44	0.48	0.37	0.33	0.44	0.72
11	0.50	0.21	0.25	0.05	0.14	0.17	0.61
Average	0.77	0.85	0.88	0.92	0.68	0.85	0.93

Table 7 Crop Coefficient of Sorghum

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.49	0.66	0.69	0.53	0.59	0.59	0.54
2	0.52	0.71	0.72	0.54	0.63	0.63	0.57
3	0.59	0.80	0.68	0.55	0.62	0.74	0.68
4	0.73	1.05	0.95	0.72	0.90	0.90	0.84
5	0.91	1.25	1.09	0.90	1.03	1.13	1.05
6	1.05	1.46	1.40	1.00	1.17	1.28	1.21
7	1.12	1.61	1.28	0.86	0.96	1.49	1.23
8	1.15	1.65	1.56	1.37	1.39	1.39	1.26
9	1.14	1.67	1.52	1.53	1.59	1.34	1.25
10	1.09	1.64	1.68	1.25	1.36	1.36	1.20
11	0.99	1.44	1.46	1.23	1.30	1.19	1.12
12	0.83	1.20	1.08	0.84	0.94	1.03	0.94
13	0.69	0.95	1.00	0.78	0.79	0.81	0.78
14	0.61	0.87	0.92	0.79	0.89	0.70	0.69
15	0.57	0.79	0.90	0.79	0.81	0.62	0.65
16	0.55	0.71	0.74	0.70	0.73	0.61	0.62
Average	0.81	1.14	1.10	0.89	0.98	0.97	0.91



Table 8 Crop Coefficient of Soybean

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.57	0.85	0.65	0.53	0.68	0.72	0.64
2	0.62	0.84	0.70	0.66	0.65	0.74	0.69
3	0.73	1.06	0.89	0.81	0.95	0.89	0.81
4	0.91	1.28	1.08	0.75	0.86	1.15	1.01
5	1.13	1.59	1.30	0.99	1.05	1.48	1.23
6	1.22	1.77	1.32	1.23	1.31	1.51	1.32
7	1.25	1.82	1.64	1.05	1.22	1.22	1.35
8	1.23	1.65	1.58	1.51	1.31	1.43	1.34
9	1.16	1.55	1.41	1.24	1.13	1.42	1.27
10	1.00	1.35	1.45	1.05	1.20	1.17	1.09
11	0.78	1.05	1.13	0.76	0.85	0.92	0.85
12	0.68	0.86	0.74	0.81	0.80	0.74	0.74
13	0.64	0.82	0.83	0.65	0.62	0.75	0.74
14	0.62	0.78	0.85	0.67	0.60	0.78	0.72
Average	0.89	1.22	1.10	0.91	0.95	1.06	0.99

Table 9 Crop Coefficient of Mungbean

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.49	0.65	0.40	0.29	0.35	0.40	0.58
2	0.74	0.70	0.63	0.51	0.58	0.67	0.87
3	1.00	0.80	0.88	0.72	0.80	0.93	1.18
4	1.24	1.11	1.12	0.95	0.99	1.20	1.40
5	1.13	1.58	1.36	1.15	1.14	1.45	1.28
6	1.05	1.51	1.20	1.10	1.04	1.37	1.19
7	0.58	0.97	0.82	0.72	0.67	0.90	0.66
8	0.39	0.62	0.50	0.47	0.43	0.58	0.44
9	0.30	0.31	0.22	0.20	0.18	0.25	0.34
Average	0.77	0.92	0.79	0.68	0.69	0.86	0.88

Table 10 Crop Coefficient of Sesame

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.49	0.69	0.64	0.76	0.72	0.56	0.59
2	0.58	0.82	0.68	0.81	0.79	0.67	0.70
3	0.73	1.04	1.00	0.99	1.00	0.85	0.85
4	0.96	1.42	1.33	1.21	1.33	1.16	1.11
5	1.06	1.53	1.38	1.48	1.56	1.23	1.23
6	1.10	1.61	1.44	1.47	1.58	1.31	1.28
7	1.11	1.58	1.39	1.36	1.54	1.37	1.24
8	1.08	1.57	1.36	0.93	1.19	1.39	1.21
9	1.01	1.39	1.30	1.14	1.24	1.22	1.13
10	0.88	1.21	1.13	0.80	0.92	1.08	0.98
11	0.63	0.86	0.87	0.89	0.91	0.73	0.71
12	0.49	0.60	0.64	0.49	0.59	0.60	0.55
Average	0.84	1.17	1.09	1.03	1.11	0.99	0.97

Table 11 Crop Coefficient of Sunflower

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.56	0.60	0.72	0.62	0.58	0.56	0.68
2	0.60	0.66	0.89	0.61	0.55	0.66	0.73
3	0.62	0.68	0.88	0.77	0.71	0.66	0.75
4	0.64	0.64	0.93	0.78	0.68	0.65	0.78
5	0.66	0.81	0.94	0.69	0.72	0.76	0.81
6	0.69	0.91	0.93	0.60	0.69	0.82	0.85
7	0.73	0.82	0.92	0.82	0.85	0.82	0.90
8	0.77	0.84	0.97	0.88	0.91	0.85	0.95
9	0.83	0.95	1.21	1.14	0.95	0.95	0.97
10	0.90	1.17	1.22	0.80	0.92	1.09	1.06
11	0.94	1.05	1.14	1.09	1.20	1.04	1.10
12	0.98	1.14	1.16	1.09	1.14	1.12	1.03
13	0.80	0.81	0.92	0.98	0.96	0.87	0.92
14	0.70	0.74	0.80	0.90	0.79	0.78	0.80
15	0.63	0.78	0.74	0.72	0.71	0.75	0.72
Average	0.73	0.84	0.96	0.84	0.84	0.83	0.87

Table 12 Crop Coefficient of Watermelon

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.67	0.73	0.80	0.93	0.58	0.77	1.02
2	0.86	1.00	1.09	1.25	0.73	0.93	1.14
3	1.21	1.44	1.67	1.75	1.07	1.31	1.60
4	1.44	1.64	1.79	1.90	1.21	1.61	1.90
5	1.59	1.83	1.77	2.23	1.33	1.73	2.10
6	1.48	1.87	1.54	2.07	1.25	1.60	1.90
7	1.35	1.84	1.58	1.92	1.19	1.51	1.73
8	1.12	1.32	1.44	1.60	1.03	1.25	1.44
9	0.80	0.99	0.88	1.04	0.70	0.92	1.03
10	0.60	0.78	0.83	0.63	0.52	0.67	0.75
11	0.52	0.71	0.65	0.52	0.47	0.59	0.65
12	0.41	0.56	0.52	0.41	0.35	0.47	0.52
Average	1.01	1.20	1.18	1.21	0.84	1.08	1.32

Table 13 Crop Coefficient of Cauliflower

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.89	1.13	0.77	0.84	1.06	1.02	1.01
2	0.95	1.11	1.04	1.13	1.17	1.04	1.36
3	1.00	1.18	1.24	1.14	1.12	1.10	1.43
4	1.03	1.21	1.01	1.05	1.14	1.17	1.47
5	1.04	1.22	1.09	1.21	1.29	1.11	1.49
6	1.02	1.18	1.30	2.17	1.16	1.11	1.19
7	1.00	1.19	1.28	2.08	1.14	1.09	1.17
Average	0.99	1.18	1.09	1.27	1.15	1.09	1.30

Table 14 Crop Coefficient of Chinese kale

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.46	0.61	0.61	0.59	0.61	0.56	0.54
2	0.54	0.70	0.70	0.68	0.59	0.63	0.60
3	0.61	0.83	0.72	0.78	0.75	0.74	0.68
4	0.64	0.89	0.85	0.79	0.77	0.77	0.72
5	0.70	0.96	0.80	0.82	0.83	0.85	0.78
6	0.74	1.02	0.86	0.98	0.91	0.91	0.83
7	0.65	0.90	0.73	0.91	0.79	0.80	0.73
8	0.60	0.81	0.67	0.79	0.69	0.74	0.67
Average	0.61	0.84	0.74	0.79	0.74	0.75	0.69

Table 15 Crop Coefficient of Tomato

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.59	0.66	0.74	0.59	0.66	0.63	0.73
2	0.66	0.73	0.86	0.76	0.82	0.69	0.82
3	0.74	0.83	0.92	0.76	0.83	0.77	0.91
4	0.82	0.92	1.02	0.84	0.90	0.84	1.01
5	0.91	0.96	1.23	1.12	0.98	0.87	1.12
6	0.98	1.03	1.22	1.18	0.96	0.98	1.21
7	1.05	1.13	1.35	1.27	1.05	1.05	1.30
8	1.10	1.16	1.41	1.33	1.03	1.13	1.36
9	1.12	1.23	1.48	1.26	1.15	1.20	1.41
10	1.12	1.20	1.52	1.17	1.14	1.17	1.41
11	1.09	1.20	1.49	1.11	1.11	1.17	1.37
12	1.04	1.15	1.52	0.97	1.02	1.09	1.31
13	0.96	1.08	1.34	0.98	0.98	1.00	1.22
14	0.85	1.00	1.25	0.85	0.88	0.92	1.08
15	0.72	0.84	1.30	0.76	0.76	0.78	0.92
Average	0.92	1.00	1.23	0.97	0.95	0.95	1.15



Table 16 Crop Coefficient of Onion

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.59	0.79	0.73	0.49	0.64	0.76	0.75
2	0.60	0.76	0.65	0.60	0.74	0.70	0.76
3	0.64	0.75	0.84	0.69	0.73	0.69	0.80
4	0.71	0.82	0.86	0.84	0.84	0.73	0.88
5	0.81	0.92	0.97	1.02	1.02	0.83	1.01
6	0.90	1.03	1.11	1.08	0.98	0.92	1.12
7	0.96	1.09	1.18	1.02	1.00	1.02	1.21
8	1.04	1.15	1.39	1.15	1.06	1.08	1.32
9	1.07	1.21	1.24	1.16	1.11	1.11	1.38
10	1.08	1.30	1.88	1.08	1.10	1.24	1.41
11	1.09	1.38	1.51	0.96	1.09	1.23	1.40
12	1.07	1.28	1.37	1.21	1.15	1.13	1.37
13	1.04	1.31	1.17	1.06	1.02	1.17	1.33
14	1.01	1.20	1.27	1.20	1.12	1.08	1.29
15	0.95	1.21	1.18	0.97	1.00	1.11	1.22
Average	0.90	1.10	1.15	0.98	0.99	1.00	1.15

Table 17 Crop Coefficient of Shallot

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.59	0.73	0.76	0.64	0.62	0.65	0.72
2	0.67	0.80	1.07	0.76	0.70	0.70	0.82
3	0.77	0.96	0.99	0.91	0.87	0.87	0.94
4	0.85	1.05	1.18	1.14	1.00	0.87	1.05
5	0.93	1.12	1.06	1.31	1.03	0.93	1.15
6	0.97	1.10	1.23	1.44	1.02	0.99	1.20
7	0.97	1.07	1.20	1.40	0.97	0.99	1.20
8	0.93	1.03	1.21	1.38	0.95	0.95	1.15
9	0.84	0.90	1.17	0.90	0.79	0.86	1.08
10	0.72	0.79	0.90	0.77	0.70	0.75	0.92
11	0.60	0.69	0.83	0.66	0.63	0.60	0.77
12	0.52	0.57	0.66	0.58	0.53	0.53	0.67
Average	0.78	0.89	1.01	0.95	0.81	0.81	0.97

Table 18 Crop Coefficient of Bitter gourd

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.68	0.76	0.68	0.98	0.93	0.69	0.88
2	0.84	0.91	0.89	1.26	1.07	0.86	1.09
3	0.98	1.11	1.04	1.47	1.28	1.02	1.23
4	1.08	1.23	1.10	1.60	1.23	1.15	1.35
5	1.14	1.27	1.43	1.73	1.33	1.19	1.43
6	1.18	1.31	1.52	1.75	1.31	1.26	1.48
7	1.19	1.54	1.49	1.26	1.19	1.49	1.47
8	1.18	1.52	1.41	1.45	1.26	1.34	1.46
9	1.14	1.38	1.32	1.48	1.24	1.24	1.41
10	1.10	1.35	1.20	1.62	1.30	1.20	1.36
11	1.04	1.32	1.16	1.46	1.24	1.19	1.29
Average	1.05	1.23	1.18	1.46	1.22	1.13	1.31

Table 19 Crop Coefficient of Zinnia

Weekly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.25	0.22	0.36	0.36	0.27	0.24	0.36
2	0.42	0.36	0.55	0.50	0.44	0.38	0.58
3	0.56	0.49	0.73	0.61	0.59	0.52	0.77
4	0.68	0.62	0.90	0.71	0.72	0.64	0.93
5	0.79	0.74	1.05	0.80	0.84	0.76	1.07
6	0.88	0.86	1.18	0.87	0.95	0.87	1.18
7	0.95	0.97	1.30	0.92	1.03	0.97	1.27
8	1.01	1.07	1.40	0.97	1.11	1.06	1.33
9	1.05	1.17	1.50	1.01	1.18	1.15	1.38
Average	0.73	0.72	1.00	0.75	0.79	0.73	0.99

Table 20 Crop Coefficient of Cotton

Monthly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.71	0.81	0.76	1.13	0.74	0.71	0.88
2	1.03	1.20	1.11	1.96	1.03	1.01	1.19
3	1.08	1.22	1.20	1.26	1.08	1.12	1.34
4	0.98	1.15	1.04	1.18	0.98	1.05	1.15
5	0.75	0.96	0.99	0.77	0.72	0.88	0.85
6	0.55	0.70	0.63	0.54	0.55	0.66	0.62
Average	0.85	1.02	0.96	1.03	0.85	0.92	1.01

Table 21 Crop Coefficient of Sugarcane

Monthly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.47	0.56	0.56	0.56	0.60	0.53	0.65
2	0.68	0.83	0.84	0.71	0.83	0.80	0.86
3	0.85	1.04	0.94	0.88	1.00	1.04	1.13
4	1.03	1.28	1.27	1.06	1.16	1.21	1.35
5	1.20	1.54	1.73	1.18	1.35	1.41	1.56
6	1.00	1.17	1.50	1.14	1.19	1.06	1.29
7	0.86	0.98	1.23	0.80	1.16	0.96	1.20
8	0.65	0.68	0.74	0.93	0.88	0.63	0.93
9	0.50	0.57	0.48	0.53	0.55	0.53	0.63
10	0.42	0.53	0.45	0.44	0.48	0.48	0.52
Average	0.76	0.90	0.92	0.82	0.91	0.85	1.01

Table 22 Crop Coefficient of Castor bean

Monthly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.70	0.88	0.90	0.77	0.68	0.76	0.76
2	0.79	0.79	0.87	0.88	0.68	0.77	0.86
3	0.82	0.82	0.90	0.93	0.67	0.84	1.01
4	0.84	0.83	1.06	0.93	0.77	0.83	1.02
5	0.81	0.81	0.92	0.90	0.80	0.79	1.01
6	0.73	0.82	0.97	0.82	0.80	0.78	0.89
7	0.60	0.68	0.74	0.67	0.67	0.67	0.70
8	0.41	0.47	0.48	0.45	0.46	0.46	0.47
Average	0.71	0.74	0.82	0.76	0.68	0.72	0.84

Table 23 Crop Coefficient of Asparagus

Monthly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.62	0.88	0.85	0.66	0.72	0.77	0.68
2	1.00	1.48	1.32	1.14	1.20	1.23	1.10
3	1.27	1.82	1.76	1.37	1.44	1.56	1.42
4	1.31	1.82	1.60	1.55	1.60	1.55	1.48
5	1.07	1.30	1.23	1.49	1.30	1.14	1.29
6	0.88	1.08	1.06	1.01	1.01	0.98	1.08
7	0.71	0.97	0.92	0.99	0.90	0.81	0.83
8	0.56	0.81	0.69	0.80	0.78	0.65	0.66
9	0.47	0.67	0.60	0.64	0.69	0.55	0.55
10	0.54	0.75	0.64	0.58	0.65	0.65	0.61
11	0.66	0.87	0.77	0.59	0.67	0.83	0.76
12	0.66	0.89	0.84	0.66	0.77	0.81	0.74
Average	0.76	1.06	0.97	0.90	0.94	0.91	0.93



Table 24 Crop Coefficient of Taro

Monthly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.93	1.32	1.08	1.32	1.32	1.08	1.00
2	1.15	1.59	1.32	1.51	1.57	1.36	1.23
3	2.06	2.72	2.39	2.19	2.52	2.47	2.14
4	2.16	2.84	2.77	1.93	2.30	2.70	2.27
5	1.62	2.17	2.30	1.56	1.84	1.97	1.66
6	1.46	1.77	1.77	1.15	1.39	1.54	1.50
Average	1.52	2.03	1.83	1.63	1.83	1.78	1.63

Table 25 Crop Coefficient of Young Lemon tree (1-3 yrs.)

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
Mar	0.91	1.36	1.15	2.14	1.75	1.09	1.10
Apr	1.17	1.72	1.49	2.14	2.19	1.44	1.38
May	1.25	1.78	1.60	1.86	2.11	1.57	1.44
Jun	1.30	1.77	1.68	1.57	1.86	1.64	1.50
Jul	1.12	1.58	1.66	1.47	1.71	1.40	1.29
Aug	0.94	1.38	1.31	1.25	1.51	1.19	1.08
Sep	1.15	1.74	1.60	1.65	1.90	1.45	1.30
Oct	1.23	1.85	1.90	1.90	2.11	1.51	1.40
Nov	1.03	1.45	1.59	2.06	1.90	1.18	1.18
Dec	0.99	1.26	1.17	3.16	1.80	1.10	1.19
Jan	0.88	1.06	0.99	1.83	1.11	0.95	1.06
Feb	0.85	1.10	0.98	1.12	1.05	0.94	1.02
Average	1.07	1.49	1.39	1.74	1.71	1.28	1.25

Table 26 Crop Coefficient of Lemon tree (3-5 yrs.)

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
Mar	0.97	1.45	1.23	2.28	1.86	1.16	1.17
Apr	1.25	1.84	1.60	2.29	2.34	1.54	1.47
May	1.31	1.86	1.67	1.95	2.21	1.64	1.51
Jun	1.38	1.88	1.79	1.66	1.98	1.74	1.59
Jul	1.17	1.65	1.72	1.53	1.79	1.46	1.35
Aug	0.99	1.46	1.37	1.31	1.59	1.25	1.14
Sep	1.18	1.79	1.64	1.69	1.95	1.49	1.33
Oct	1.25	1.88	1.91	1.94	2.14	1.54	1.42
Nov	1.06	1.50	1.62	2.12	1.96	1.21	1.21
Dec	1.07	1.36	1.28	3.41	1.95	1.19	1.28
Jan	0.96	1.15	1.09	1.99	1.21	1.04	1.16
Feb	0.92	1.19	1.07	1.21	1.14	1.02	1.11
Average	1.12	1.57	1.47	1.84	1.80	1.35	1.31

Table 27 Crop Coefficient of Mango tree

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
Jun	1.84	2.35	2.21	1.63	1.51	2.35	2.10
Jul	2.06	2.62	2.28	1.76	1.70	2.62	2.46
Aug	2.33	3.13	3.10	2.28	2.00	2.95	2.53
Sep	2.07	2.78	2.64	2.35	2.07	2.46	2.28
Oct	2.12	2.75	2.85	2.48	2.21	2.42	2.29
Nov	2.29	2.54	2.63	2.68	2.13	2.35	2.50
Dec	1.54	1.63	1.76	1.79	1.32	1.58	1.90
Jan	1.44	1.60	1.89	1.65	1.37	1.48	1.69
Feb	1.29	1.52	1.55	1.52	1.37	1.34	1.61
Mar	1.04	1.32	1.44	1.20	1.23	1.14	1.27
Apr	1.06	1.35	1.36	1.23	1.25	1.23	1.24
May	1.04	1.34	1.27	1.22	1.24	1.24	1.19
Average	1.60	1.98	1.99	1.74	1.59	1.82	1.92

Table 28 Crop Coefficient of Pomelo tree

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
Dec	1.44	1.52	1.65	1.60	1.31	1.48	1.74
Jan	1.32	1.46	1.72	1.42	1.32	1.38	1.62
Feb	1.19	1.38	1.63	1.44	1.15	1.24	1.45
Mar	0.91	1.15	1.15	1.05	1.03	1.05	1.12
Apr	0.87	1.12	1.01	1.01	0.96	1.01	1.02
May	1.00	1.30	1.28	1.25	1.16	1.17	1.13
Jun	1.73	2.21	2.09	1.53	1.42	2.21	1.97
Jul	2.04	2.59	2.23	1.74	1.68	2.59	2.44
Aug	2.17	2.92	2.92	2.12	1.87	2.74	2.36
Sep	1.79	2.40	2.28	2.03	1.79	2.12	1.97
Oct	1.82	2.36	2.43	2.13	1.90	2.08	1.96
Nov	1.74	1.93	1.98	2.04	1.62	1.78	1.90
Average	1.44	1.76	1.77	1.56	1.41	1.64	1.72

Table 29 Crop Coefficient of Vetiver Grass

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
Dec	0.69	0.72	0.82	0.68	0.75	0.70	0.91
Jan	0.60	0.72	0.65	0.62	0.72	0.69	0.79
Feb	0.66	0.79	0.66	0.70	0.78	0.80	0.87
Mar	0.62	0.79	0.66	0.68	0.80	0.73	0.83
Apr	0.79	1.23	0.88	0.77	0.91	0.92	1.03
May	1.06	1.40	1.05	0.86	1.11	1.39	1.37
Jun	1.07	1.41	1.09	0.88	1.15	1.44	1.37
Jul	1.24	1.48	1.08	1.10	1.15	1.51	1.53
Aug	1.09	1.45	1.27	1.17	1.10	1.21	1.33
Sep	1.00	1.30	1.24	1.26	1.15	1.05	1.24
Oct	0.99	1.20	1.01	1.19	1.21	1.07	1.26
Nov	1.08	1.26	1.01	1.22	1.23	1.11	1.34
Average	0.88	1.10	0.92	0.89	0.99	1.01	1.13

Table 30 Crop Coefficient of Rose

Monthly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
1	0.70	0.96	0.92	0.66	0.72	0.72	0.89
2	0.78	1.05	0.90	0.68	0.72	1.05	0.95
3	1.21	1.28	1.58	1.00	1.05	1.43	1.46
4	1.25	1.47	1.53	1.08	1.11	1.49	1.49
5	0.93	1.19	1.21	0.87	0.88	0.99	1.16
6	1.04	1.23	1.44	1.02	1.02	1.00	1.33
7	1.60	1.47	2.17	1.59	1.52	1.32	2.07
8	1.37	1.24	1.74	1.43	1.25	1.09	1.79
9	1.66	1.35	2.43	1.82	1.53	1.31	2.17
10	1.76	1.55	2.65	1.79	1.58	1.48	2.25
11	1.39	1.40	1.94	1.59	1.24	1.42	1.73
12	1.44	1.35	2.05	1.45	1.41	1.25	1.90
Average	1.26	1.29	1.71	1.25	1.17	1.21	1.60

Table 31 Crop Coefficient of Ruzi grass

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
May	0.68	0.98	0.85	0.64	0.78	0.83	0.88
Jun	0.96	1.32	1.25	0.86	1.07	1.16	1.23
Jul	0.76	1.15	1.03	0.64	0.94	0.86	1.03
Aug	0.72	1.04	1.05	0.59	0.83	0.90	0.98
Sep	0.60	0.87	0.82	0.58	0.72	0.69	0.77
Oct	0.83	1.20	1.05	0.77	0.99	0.89	1.09
Nov	0.44	0.53	0.56	0.40	0.51	0.45	0.58
Dec	0.93	0.95	1.14	1.16	1.01	0.95	1.24
Jan	0.64	0.64	0.88	0.68	0.69	0.63	0.85
Feb	0.95	1.05	1.27	1.07	1.02	0.98	1.24
Mar	0.43	0.50	0.60	0.45	0.45	0.46	0.57
Apr	0.80	0.90	1.04	0.81	0.94	0.90	1.05
Average	0.73	0.93	0.96	0.72	0.83	0.81	0.96



Table 32 Crop Coefficient of Dwarf Napier

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
Sep	0.85	1.09	1.05	0.70	0.90	0.87	1.12
Oct	0.57	0.57	0.72	0.53	0.64	0.70	0.76
Nov	1.18	1.08	1.62	1.03	1.35	1.21	1.77
Dec	1.47	1.43	1.72	1.34	1.45	1.42	2.11
Jan	1.29	1.21	1.76	1.19	1.25	1.18	1.81
Feb	1.40	1.50	1.84	1.40	1.47	1.52	1.90
Mar	1.42	1.61	1.84	1.32	1.59	2.07	1.95
Apr	1.67	1.87	1.98	1.49	1.89	2.98	2.28
May	1.67	1.69	2.01	1.46	1.94	2.26	2.25
Jun	1.49	1.59	1.83	1.22	1.72	1.66	1.98
Jul	1.03	1.08	1.41	0.84	1.15	0.99	1.37
Aug	0.93	0.99	1.27	0.70	1.02	0.82	1.25
Average	1.25	1.31	1.59	1.10	1.36	1.47	1.71

Table 33 Crop Coefficient of Hedge Lucern

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
Jul	0.53	0.61	0.48	-	0.50	0.73	0.65
Aug	1.15	1.31	1.15	-	1.01	1.58	1.41
Sep	1.23	1.54	1.30	-	1.22	1.53	1.53
Oct	0.60	0.76	0.68	-	0.69	0.71	0.75
Nov	0.42	0.49	0.47	-	0.48	0.48	0.54
Dec	0.52	0.55	0.51	-	0.58	0.54	0.68
Jan	0.70	0.72	0.75	-	0.77	0.73	0.92
Feb	0.87	0.97	1.01	-	0.93	0.91	1.12
Mar	1.02	1.13	1.07	-	1.09	1.10	1.28
Average	0.78	0.90	0.82	-	0.81	0.92	0.99

Table 34 Crop Coefficient of Cultivated Banana

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
Nov	0.60	0.75	0.89	0.64	0.71	0.64	0.76
Dec	0.88	0.93	1.16	1.54	0.97	0.92	1.10
Jan	1.11	0.98	1.55	1.76	1.12	1.05	1.45
Feb	1.25	1.38	1.68	1.38	1.31	1.34	1.64
Mar	1.76	2.10	2.15	1.92	1.95	1.89	2.30
Apr	1.63	1.94	2.00	1.77	1.91	1.74	2.11
May	1.92	2.06	2.08	1.87	2.16	2.11	2.38
Jun	1.77	1.87	1.99	1.69	1.99	2.03	2.29
Jul	2.48	2.98	3.10	1.96	2.28	3.64	3.28
Aug	2.58	3.36	3.43	2.17	2.46	3.16	3.19
Sep	2.75	3.60	3.85	2.47	2.60	3.13	3.39
Oct	1.86	1.76	2.18	1.44	1.56	1.51	3.39
Nov	1.25	1.65	2.10	1.40	1.50	1.31	1.63
Average	1.68	1.93	2.17	1.74	1.80	1.85	2.15

Table 35 Crop Coefficient of Curcuma (Siam Tulip)

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
May	0.27	0.36	0.33	0.29	0.31	0.33	0.35
Jun	0.48	0.66	0.59	0.44	0.49	0.59	0.61
Jul	0.52	0.68	0.69	0.48	0.53	0.61	0.65
Aug	0.49	0.69	0.59	0.47	0.51	0.59	0.62
Sep	0.92	1.12	1.15	0.81	0.85	1.09	1.14
Oct	0.55	0.72	0.72	0.56	0.57	0.60	0.67
Nov	0.41	0.53	0.52	0.42	0.45	0.44	0.52
Dec	0.57	0.62	0.69	0.69	0.62	0.61	0.74
Average	0.51	0.66	0.64	0.51	0.53	0.59	0.64

Table 36 Crop Coefficient of Cattail

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
Mar	0.72	0.96	1.02	0.80	0.90	0.87	0.91
Apr	0.65	0.82	0.97	0.72	0.82	0.75	0.80
May	0.71	0.76	0.99	0.69	0.82	0.81	0.88
Jun	0.85	1.23	1.14	0.78	0.91	1.00	1.01
Jul	1.07	1.44	1.44	0.96	1.07	1.19	1.27
Aug	1.23	1.74	1.74	1.11	1.27	1.39	1.48
Sep	1.30	1.62	1.74	1.16	1.24	1.44	1.53
Oct	1.23	1.61	1.90	1.15	1.23	1.08	1.49
Nov	1.23	1.74	1.97	1.23	1.34	1.33	1.54
Dec	1.34	1.42	1.97	1.85	1.59	1.42	1.73
Jan	1.38	1.34	1.90	1.70	1.46	1.42	1.75
Feb	1.24	1.22	2.00	1.39	1.39	1.21	1.70
Average	1.02	1.25	1.47	1.05	1.13	1.12	1.27

Table 37 Crop Coefficient of Jackfruit tree

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
Oct	0.68	0.84	0.99	0.60	0.65	0.73	0.84
Nov	0.50	0.68	0.77	0.49	0.54	0.53	0.65
Dec	0.96	0.90	1.24	1.04	1.02	0.91	1.27
Jan	0.99	0.87	1.24	1.02	0.95	0.86	1.29
Feb	0.79	0.88	1.15	0.82	0.81	0.63	1.01
Mar	1.00	1.12	1.24	1.02	0.95	0.82	1.29
Apr	1.31	1.86	1.86	1.24	1.68	1.05	1.59
May	1.48	2.23	1.82	1.91	1.57	1.15	1.73
Jun	1.38	1.81	1.98	1.19	1.35	1.19	1.77
Jul	1.07	1.17	1.54	0.97	1.19	1.05	1.38
Aug	1.26	1.69	1.65	1.18	1.21	1.23	1.58
Sep	1.46	2.09	1.85	1.50	1.53	1.75	1.83
Average	1.07	1.35	1.44	1.08	1.12	0.99	1.35

Table 38 Crop Coefficient of Jasmin

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
Feb	1.02	1.05	1.09	0.91	1.07	1.04	1.35
Mar	1.14	1.19	1.22	1.05	1.17	1.20	1.49
Apr	0.82	0.86	0.96	0.77	0.89	0.87	1.08
May	1.40	1.49	1.59	1.17	1.39	1.50	1.84
Jun	1.11	1.16	1.34	0.94	1.14	1.17	1.46
Jul	0.70	0.67	0.87	0.55	0.68	0.73	0.90
Aug	1.34	1.32	1.53	1.08	1.29	1.41	1.74
Sep	1.69	2.21	2.15	1.45	1.71	1.99	2.18
Oct	1.80	2.50	2.27	1.61	1.97	2.04	2.32
Nov	1.68	1.80	1.51	1.52	1.93	1.80	2.19
Dec	1.93	1.79	1.65	1.76	2.14	2.00	2.56
Jan	1.82	2.11	1.70	1.57	1.75	1.89	2.35
Average	1.34	1.43	1.47	1.16	1.50	1.42	1.74

Table 39 Crop Coefficient of Direct Sowing (Suphanburi 1 Variety)

Monthly	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
After sowing							
1	0.82	0.85	1.18	0.86	0.98	0.85	0.80
2	0.84	0.91	1.09	0.95	1.02	0.89	1.05
3	1.09	1.29	1.27	1.16	1.28	1.18	1.25
4	1.05	1.11	1.25	1.13	1.23	1.10	1.40
5	0.95	0.99	1.24	0.98	1.17	1.00	1.50
6	1.42	1.44	1.75	1.45	1.64	1.49	1.55
7	1.36	1.63	1.66	1.38	1.58	1.45	1.60
8	1.07	1.27	1.70	1.04	1.34	1.10	1.63
9	1.04	1.19	1.36	1.07	1.22	1.10	1.68
10	1.11	1.50	1.55	1.05	1.32	1.15	1.60
11	1.09	1.41	1.36	1.01	1.21	1.16	1.50
12	1.20	1.62	1.56	1.15	1.36	1.26	1.36
13	0.86	1.12	1.25	0.81	0.92	1.02	1.08
14	0.87	1.06	0.89	0.70	0.79	1.06	0.65
Average	1.06	1.24	1.37	1.05	1.22	1.13	1.33



Table 40 Crop Coefficient of Banana

Month	Crop Coefficient ; Kc						
	Modified Penman	Blaney-Criddle	Pan Method	Thornthwaite	Hargreaves	Radiation	Penman-Monteith
Apr	1.57	2.23	2.01	1.67	1.56	1.78	1.94
May	1.40	2.01	1.74	1.49	1.47	1.61	1.74
Jun	1.46	1.76	1.71	1.35	1.36	1.69	1.78
Jul	1.61	1.94	1.83	1.46	1.47	1.87	1.96
Aug	1.68	2.31	1.99	1.71	1.64	1.91	2.07
Sep	1.80	2.12	2.08	1.66	1.57	2.06	2.18
Oct	1.84	2.30	2.23	1.88	1.70	1.94	2.18
Nov	1.50	1.93	1.82	1.82	1.70	1.54	1.88
Dec	1.50	1.92	1.71	1.67	1.58	1.52	1.86
Jan	1.78	2.13	2.23	1.83	1.79	1.92	2.21
Feb	1.60	1.78	2.13	1.76	1.68	1.75	2.02
Mar	1.82	2.64	2.31	1.98	1.82	2.01	2.22
Average	1.63	2.09	1.98	1.69	1.61	1.80	2.00