APPENDIX C

IRRIGATION AND DRAINAGE

Appendix C

Irrigation and Drainage

Contents

APPENDIX C-1 Water Quality Investigation

In order to know the quality of irrigation water to be applied and groundwater in Wadi El Arish, samples were collected and investigated during this Study. For the irrigation water, places where the samples were collected are intake of El Salam canal, Serw and Hadous drains. For the groundwater in Wadi El Arish, a review of previous reports was done, and samples from existing wells were collected and investigated.

(1) Irrigation Water Quality

The tests had been carried out in May and September of 1996, and the results are shown below with values of different water quality parameters such as pH, electric conductivity (EC), dissolved oxygen (DO), temperature (T), and total dissolved solids (TDS).

Water Quality at Intake of El Salam and Drains

Site	pH	EC(mS/cm)	DO(mg/l)	Temp.(℃)	TDS(ppm)	Remarks
Intake	7.77	0.598	2.88	26.1	200	May 13 '96
	7.72	0.601	3.00	26.1	200	May 13 '96
	7.98	0.594	5.64	28.8	200	May 17 '96
	8.40	0.761	6.63	28.1	300	Sep 21 '96
	7.68	0.594	1.78	28.8	200	Sep 21 '96
	7.63	0.590	3.83	29.8	200	Sep 22 '96
	7.64	0.590	3.68	30.7	200	Sep 22 '96
Average	7.83	0.618	3.92	28.3	210	
Serw	7.54	1.45	1.55	24.0	600	May 13 '96
	7.55	1.47	1.87	24.2	600	May 13 '96
	7.52	2.17	1.67	24.7	1000	May 17 '96
	7.52	1.99	2.01	26.0	900	Sep 21 '96
	7.46	1.99	1.80	26.0	900	Sep 22 '96
	7.47	2.02	1.88	25.4	900	Sep 22 '96
Average	7.51	1.85	1.80	25.0	820	
Hadous	7.75	3.11	3.55	26.4	1500	May 13 '96
	7.66	3.16	2.84	25.0	1500	May 17 '96
	7.74	2.30	4.59	26.5	1100	Sep 21 '96
	7.54	2.62	1.69	26.3	1200	Sep 22 '96
	7.59	2.59	1.89	26.2	1200	Sep 22 '96
Average	7.66	2.76	2.91	26.1	1300	

The values of pH mostly range between 7.0 and 8.0, and no noticeable difference is found among the samples. EC of Nile water is about 0.6 mS/cm, while drainage waters show 1.85 mS/cm for Serw and 2.76 mS/cm for Hadous in average respectively, suggesting higher salinity level of drainage waters than those of Nile water. Nile water's DO is about 3.9 mg/l which is about 1.0 mg/l higher than those of drainage water. Temperature varies widely from 24℃ to 31℃, depending upon the location and season tested.

The TDS reveals that the salinity of Nile water is low which is only about 200 ppm to 300 ppm. On the othe hand, water of two drains showed a high salinity ranging from 600 ppm to 1500 ppm with the

highest count in Hadous drain water. Although the data is not enough to assure, the TDS after mixing the Nile water with the drainage waters (1:1) will be less than 1000 ppm which was designed for this Project.

(2) Groundwater Quality at Wadi El Arish

(a) Review of Past Studies

According to the information collected during the field surveys and from the review of existing reports, the use of groundwater from sand, gravel and Kurkar aquifers in this area as a precious water source started as early as 1920s. Up until 1970s the rate of well installation was not so rapid. However, in 1980s the installation increased sharply and number of wells reaches about 200 scattering in EL Arish area. The main purpose of these wells is to serve as source for domestic (except for drinking) and irrigation water.

There are two (2) previous studies; namely, Sinai Development Study (SDS) and Groundwater Management Study in Arish-Rafah Plain area (GMS) that have data on groundwater quality. In 1985, SDS compiled available data on water quality for the whole Sinai area, and GMS for the Coastal Plain from EL-Arish to Rafah in 1988.

The data were derived from exploratory wells, test wells, Piezometers and some production wells. The analysis of samples reveals that concentration of major ions expressed as total dissolved solids (TDS) is generally high and is the prevailing problem in the El Arish area. However, TDS values vary over a wide range depending on the location. For example, the TDS value ranges between 900-2000 in the western side of El Arish, whereas it is between 1500-6500 in the eastern side. Relatively lower TDS values were observed in the well fields in the south of El Arish Airport. Figure C-1 shows the average value of TDS at El Arish area which was studied by GMS in 1988.

From the high values of TDS, it can be concluded that salinity is a prevailing problem in the area and its origin is the major concern. In general, there are two (2) possible causes that influence the high salinity of the groundwater; namely, intrusion of the sea water and up coming of deep-born old groundwater due to over extraction. The analysis of Requ values and the ratio of Na/Cl reveals that a heavy influence of sea-water salinity in the groundwater is unlikely. Consequently, the present salinization hazard in El Arish may be caused due to up-welling of deep-born and highly mineralized old groundwater in the areas inflicted by over-pumping.

According to the study made by SDS, the total amount of groundwater use was estimated at 51,000 cum/day in El Arish. Considering the size of well fields, the overall discharge was estimated to be 350 mm/year. On the other hand, estimated recharge rate varied from 94 mm/year to 876 mm/year. This may suggest that there is seepage from old aquifers into the Quaternary aquifers depending on the hydrology and the pumping rate.

The above mentioned high discharge rate has caused the remarkable increase in TDS values and also

caused the lowering of water level. In 1962, water level of the well fields in El Arish was in a range between two (2) to four (4) m MSL. However, it has lowered greatly in 1980s and is now reported to be about zero (0) m or lower than the MSL. Quoting the results of GMS, table below shows the change in TDS values from 1962 to 1988 and Figure C-2 shows the change in water levels between 1962 and 1988.

Comparison of Water Quality between 1962 and 1988

Grid No.	TDS in 1962	TDS in 1988	Difference	Extraction cum/day
4-3	1200 ppm	2000 ppm	800 ppm	2000
5-2	1300	2000	700	105
7-2	2000	3000	1000	624
7-4	1700	2600	900	3600
7-6	2100	2700	600	1000
8-6	2200	3100	900	800
9-3	3200	3900	700	2550
9-4	2300	3900	600	880
9-5	2700	4900	2200	1270
9-6	2000	3700	1700	1610
9-6	2000	2700	700	NA
9-6	2800	5100	2300	NA

Note: Grid number is referred to in Figure C-1.

(b) Investigation of Groundwater Quality

As it was mentioned in the previous paragraphs that there are about 200 wells in El Arish area and those are mostly serving as a precious source of irrigation water. The depth of the wells is about 60 m and the yield ranges 30 to 40 cum/hour, commanding 20 to 80 feddans. In order to know the existing quality of the groundwater, 20 representative wells scattered over the area were selected for the water quality investigation (see Figure C-3).

The results of the 20 wells are shown below. Values of pH are mostly between 7.0 and 8.0, showing no noticeable difference among the samples. DOs vary widely from 3 mg/l to 12 mg/l depending on the location tested, but fall into relatively high range. Temperature shows little difference with the average of about 24 .

On the basis of EC and TDS values, the table reveals that the wells may be divided into three (3) groups; namely, wells in the south of El Arish Airport belong to first group (Well No. 1 to 6), wells between the Airport and El Arish city but eastern side of the Wadi (Well No. 7 to 15) belong to the second group, and the last group of the wells are located in the same area as the second but western side of the Wadi (Well No. 16 to 20).

The TDS results of first group is moderate and ranges between 1300 ppm to 2700 ppm with the average of 1850 ppm. Farmers in this area can grow melons and tomatoes without any problem of salinity. The second group, wells in the eastern side of the Wadi, has the highest count of salinity. Farmers reported that sometimes salt had accumulated on the surface of the ground and crops other than olive are difficult to grow. The TDS ranges between 2300 ppm to 5500 ppm with the average of

3250 ppm. The water quality of third group were found to be almost same as those of first group but slightly less in the salinity concentration expressed as TDS. The TDS ranges from 1400 ppm to 1700 ppm. Apart from olives, the crops that grow in this area are melon and courgette.

Water Quality of Groundwater in Wadi El Arish

Well No.	pH	EC(mS/cm)	DO(mg/l)	Temp.(℃)	TDS(ppm)	Remarks
No.1	7.55	4.30	9.14	24.5	2200	at pond
No.2	7.68	4.22	12.01	25.5	2100	at pond
No.3	7.32	3.08	6.53	24.4	1500	
No.4	7.78	2.74	10.23	24.7	1300	at pond
No.5	7.76	2.81	10.61	24.2	1300	at pond
No.6	7.40	5.32	3.04	24.3	2700	
Avg	7.58	3.75	8.59	24.6	1850	
No.7	7.28	5.51	4.91	27.7	2800	
No.8	7.26	5.83	5.68	23.3	3100	
No.9	7.40	6.90	4.60	26.0	3800	
No.10	7.23	9.90	6.39	23.7	5500	
No.11	7.44	6.25	4.01	25.5	3300	
No.12	7.48	4.55	5.61	23.0	2300	
No.13	7.22	5.66	4.93	23.0	2900	
No.14	7.26	4.84	6.08	22.8	2500	
No.15	7.29	5.69	4.61	23.8	3000	
Avg	7.32	6.13	5.20	24.3	3240	
No.16	7.67	3.14	6.05	24.8	1500	domestic
No.17	7.15	3.39	5.01	22.9	1700	
No.18	7.42	3.28	7.28	23.4	1600	at pond
No.19	8.71	2.91	14.38	23.1	1400	at pond
No.20	7.64	3.19	7.11	24.8	1600	
Avg	7.72	3.18	7.97	23.8	1560	

Note: The test was carried out on May 15 & 16, 1996.
The water was sampled from the pipe connected to the well pump or farm pond located beside the well as remarked "at pond".

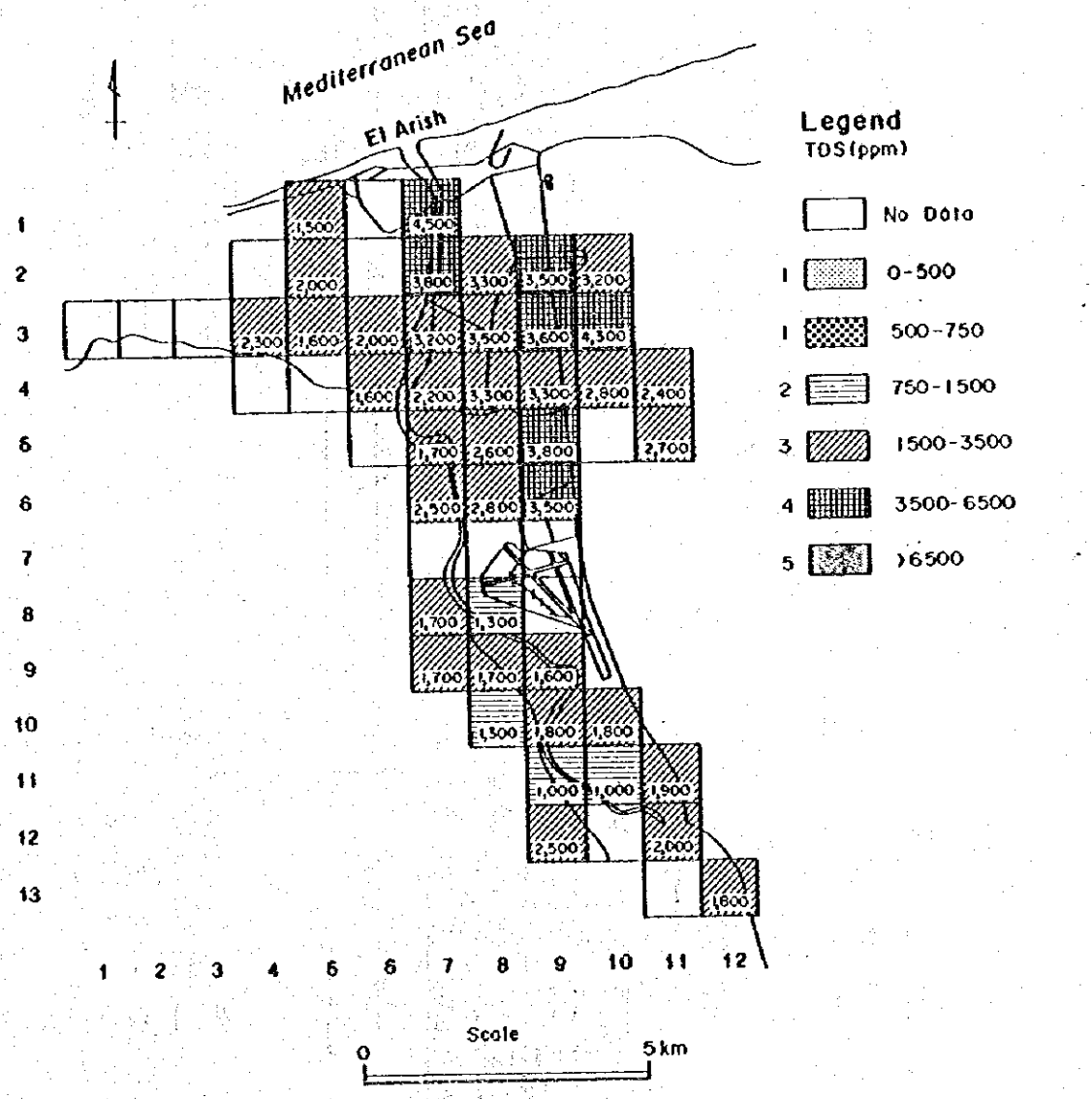

Figure C-1 Average TDS Value of Existing Wells (1988)
Source: Groundwater Management Study, 1988

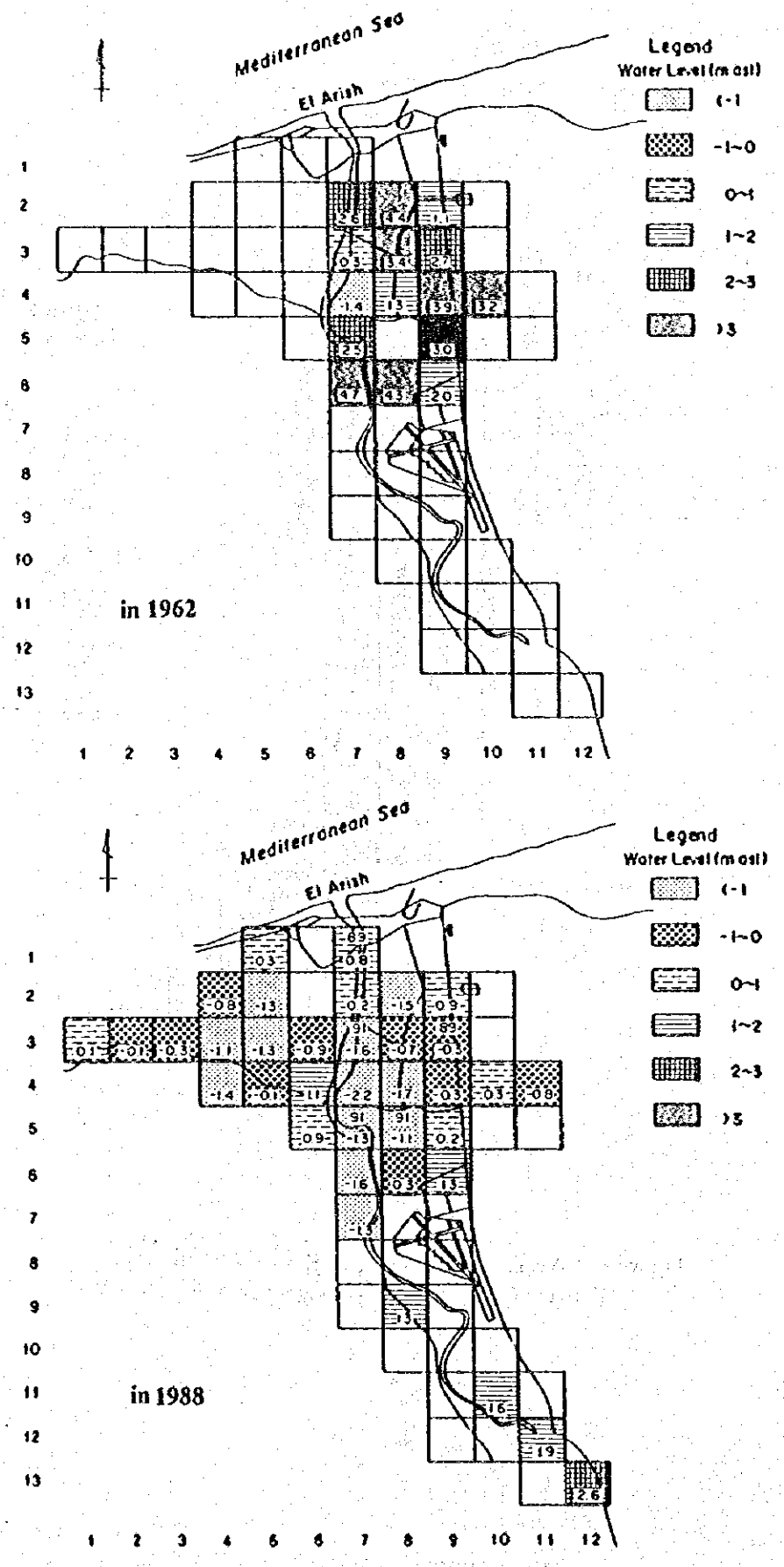

Figure C-2 Change in Water Levels between 1962 and 1988
Source: Groundwater Management Study, 1988

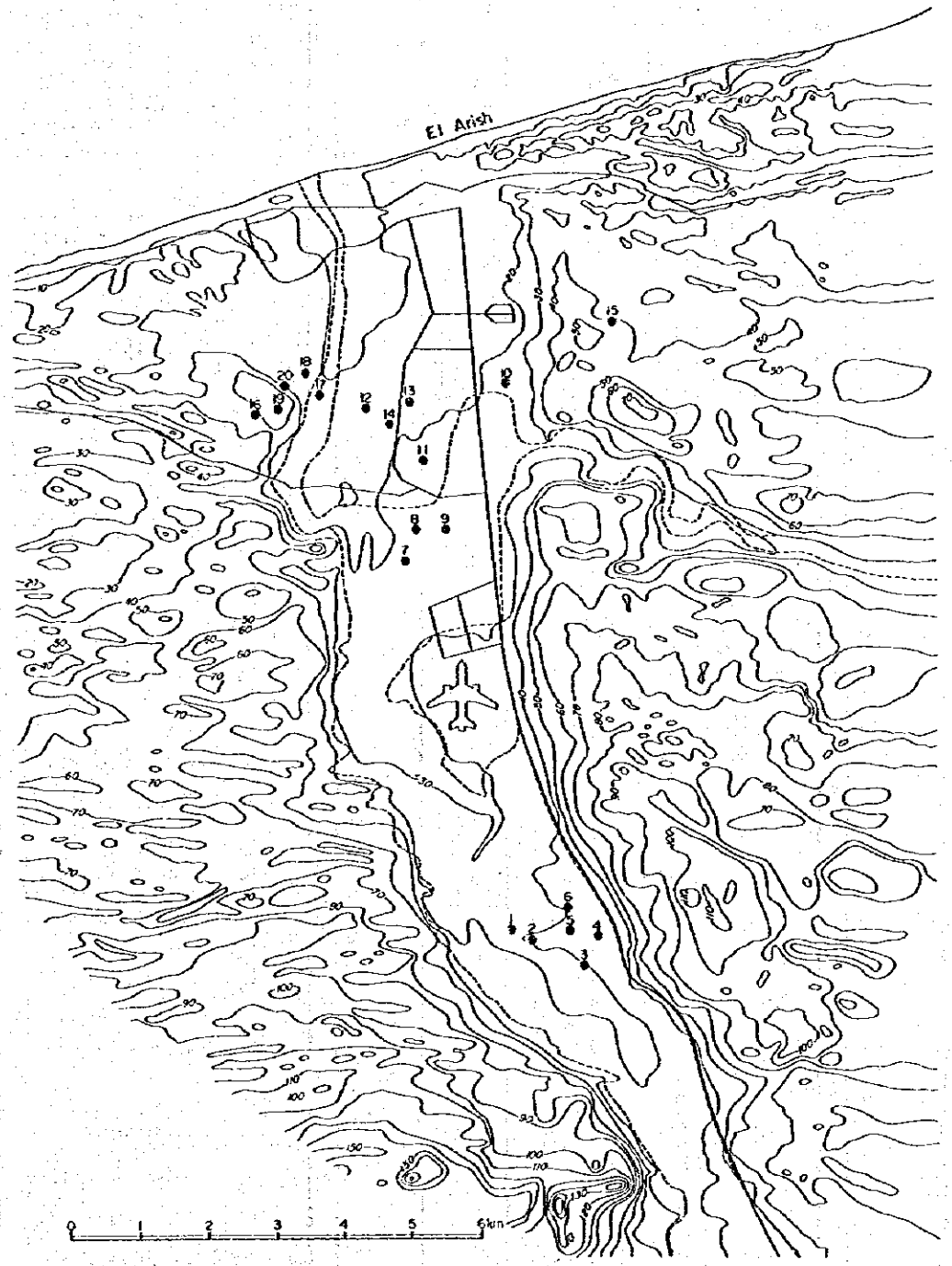

Figure C-3 Location of the Wells Investigated by the Team

APPENDIX C-2 Meteorological Data in El Arish Station

Table C-1 Monthly Precipitation Record between 1986 and 1995 at El Arish Station, mm

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
1986	11.0	5.6	Tr	21.5	0.9	0.0	0.0	0.0	0.0	1.0	27.4	10.9	78.3
1987	1.6	5.3	15.8	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	17.1	45.5
1988	45.5	13.3	12.4	6.8	0.0	0.0	0.0	0.0	0.0	1.0	6.0	27.6	112.6
1989	148.3	35.5	26.5	0.0	Tr	0.0	0.0	0.0	0.0	0.0	6.5	8.7	225.5
1990	39.6	15.3	31.6	14.3	2.4	0.0	0.0	0.0	0.0	2.3	0.2	0.0	105.7
1991	61.1	18.0	55.0	1.2	0.0	0.0	0.0	0.0	0.0	1.5	1.2	5.3	143.3
1992	37.4	37.3	11.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	5.3	66.3	158.0
1993	50.8	88.5	8.6	0.0	1.4	1.0	0.0	0.0	0.0	4.2	27.1	23.7	205.3
1994	39.5	5.9	25.9	0.3	0.1	0.0	0.0	0.0	0.0	0.7	61.7	44.8	178.9
1995	0.1	11.9	4.8	3.6	Tr	0.0	0.0	0.0	0.0	0.0	7.4	3.6	31.4
Sum	434.9	236.6	191.9	47.9	5.0	1.0	0.0	0.0	0.0	16.4	142.8	208.0	1,284.5
Average	43.5	23.7	21.3	4.8	0.6	0.1	0.0	0.0	0.0	1.6	14.3	20.8	128.5
Sample No	10	10	9	10	8	10	10	10	10	10	10	10	10

Tr:Trace

Table C-2 Monthly Mean Evaporation Record between 1986 and 1995 at El Arish Station, mm/day

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
1986	4.22	4.72	6.02	7.69	8.66	10.81	10.77	10.34	9.15	6.31	4.02	3.59	2,624.96
1987	3.75	4.86	6.58	7.83	8.50	9.20	10.13	10.23	8.99	6.87	4.33	4.06	2,595.45
1988	3.59	5.00	5.86	6.84	11.26	11.05	10.78	10.40	7.90	6.37	4.13	3.74	2,643.82
1989	2.91	3.80	5.58	8.14	9.91	10.97	9.81	9.31	8.27	6.96	5.40	4.63	2,606.40
1990	5.04	5.90	5.73	7.07	8.05	9.93	10.77	10.89	10.47	7.53	6.28	4.90	2,815.37
1991	5.48	5.14	6.20	7.61	8.03	10.25	10.18	9.44	8.17	5.41	4.05	4.95	2,582.68
1992	3.79	4.74	5.79	6.54	8.64	9.88	10.52	9.51	9.17	6.48	5.04	4.58	2,575.68
1993	3.83	4.65	6.76	8.28	7.91	9.98	10.66	9.60	8.79	6.58	5.06	3.68	2,609.14
1994	4.09	5.10	5.50	8.16	8.44	9.39	10.05	8.92	7.91	6.84	4.54	2.88	2,488.69
1995	2.79	3.54	5.16	6.73	7.73	9.73	9.63	6.90	7.39	5.72	4.61	2.35	2,198.52
Sum	39.49	47.45	59.18	74.89	87.13	101.19	103.30	95.54	86.21	65.07	47.46	39.36	25,740.71
Average	3.95	4.75	5.92	7.49	8.71	10.12	10.33	9.55	8.62	6.51	4.75	3.94	2,574.07
Sample No	10	10	10	10	10	10	10	10	10	10	10	10	10

Table C-3 Monthly Mean Temperature Record between 1986 and 1995 at El Arish Station, °C

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Average
1986	13.4	14.0	15.6	19.5	19.7	24.7	25.8	26.0	25.7	22.6	16.6	14.0	19.8
1987	14.3	15.8	14.0	16.8	20.0	22.9	25.4	26.4	24.3	21.3	16.4	14.7	19.4
1988	13.0	13.2	14.7	17.7	22.0	24.5	26.7	26.3	25.0	20.8	15.0	13.0	19.3
1989	10.8	12.2	14.8	19.5	21.5	23.0	25.7	25.7	24.7	21.6	18.0	10.6	19.0
1990	12.8	13.6	15.4	18.2	19.8	23.6	26.0	25.5	24.4	22.8	19.8	16.1	19.8
1991	13.4	14.6	17.0	19.6	20.6	23.5	24.9	26.0	24.9	23.4	17.2	12.0	19.8
1992	11.1	11.3	14.3	17.1	20.3	21.0	25.6	26.0	24.5	22.1	18.3	12.6	18.7
1993	11.3	11.7	14.7	18.7	20.3	25.2	26.4	26.4	25.0	23.9	18.5	15.6	19.8
1994	14.3	13.9	14.9	20.1	18.5	21.6	23.8	24.0	24.0	24.9	17.6	11.9	19.1
1995	11.9	13.0	15.4	16.9	19.9	24.8	26.6	26.6	25.1	21.6	16.6	12.8	19.3
Sum	126.3	133.3	150.8	184.1	202.6	234.8	256.9	258.9	247.6	225.0	174.0	133.3	194.0
Average	12.6	13.3	15.1	18.4	20.3	23.5	25.7	25.9	24.8	22.5	17.4	13.3	19.4
Sample No	10	10	10	10	10	10	10	10	10	10	10	10	10

Table C-4 Monthly Maximum Temperature Record between 1986 and 1995 at El Arish Station, °C

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Average
1986	20.1	21.2	21.8	26.3	25.7	31.0	31.7	31.9	31.6	28.1	22.5	19.2	25.9
1987	20.8	22.3	19.6	23.2	27.2	29.2	31.5	31.9	29.7	26.9	24.2	20.3	25.6
1988	18.8	19.2	21.2	25.2	29.3	31.8	33.0	32.0	30.9	26.8	22.4	19.8	25.9
1989	15.8	18.1	20.5	27.8	27.8	29.3	30.8	31.2	30.1	27.9	24.8	20.2	25.4
1990	17.8	19.0	20.8	25.0	25.7	29.3	31.9	30.9	29.5	29.1	27.5	23.6	25.8
1991	19.2	20.4	22.5	26.3	26.6	29.0	29.8	30.6	29.7	29.2	23.4	17.3	25.3
1992	16.1	16.1	19.3	22.7	26.2	31.3	31.1	32.1	29.0	28.3	24.6	18.1	24.6
1993	17.0	17.7	20.5	26.0	26.6	30.3	31.5	32.0	30.5	31.0	25.0	21.6	25.8
1994	20.4	20.5	20.8	27.4	28.1	30.2	32.3	32.4	32.0	31.8	23.5	18.7	26.5
1995	19.3	19.7	22.6	24.4	26.8	32.0	32.6	32.4	30.8	27.5	23.7	20.3	26.0
Sum	185.3	194.2	209.6	254.3	270.0	303.4	316.2	317.4	303.8	286.6	241.6	199.1	256.8
Average	18.5	19.4	21.0	25.4	27.0	30.3	31.6	31.7	30.4	28.7	24.2	19.9	25.7
Sample No	10	10	10	10	10	10	10	10	10	10	10	10	10

Table C-5 Monthly Minimum Temperature Record between 1986 and 1995 at El Arish Station, ℃

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Average
1986	7.8	8.1	9.8	14.0	14.0	18.6	20.2	20.6	20.5	17.1	10.7	8.8	14.2
1987	7.7	9.2	8.3	10.5	13.1	16.8	19.6	21.0	19.0	16.2	10.4	10.1	13.5
1988	8.6	8.5	9.4	11.7	14.7	17.7	21.1	20.9	19.2	15.3	8.9	7.6	13.6
1989	6.8	7.2	9.9	12.6	15.3	17.6	20.8	20.5	19.6	16.1	12.6	9.0	14.0
1990	9.1	9.0	10.7	12.4	14.3	17.6	20.4	20.2	19.6	17.3	13.9	10.1	14.6
1991	8.6	9.8	12.4	14.0	14.7	18.0	19.7	21.4	19.7	18.0	11.9	7.5	14.6
1992	6.9	7.8	9.3	10.9	14.4	19.1	20.5	22.0	19.2	16.4	12.5	8.1	13.9
1993	5.5	5.7	8.9	11.4	14.0	17.9	20.1	20.7	19.0	17.1	12.6	10.2	13.6
1994	8.9	7.8	9.7	13.3	14.5	18.2	20.4	20.6	21.3	19.2	13.5	7.3	14.6
1995	6.9	7.6	9.4	10.1	13.9	18.2	21.7	21.6	19.7	15.8	10.3	6.9	13.5
Sum	76.8	80.7	97.8	120.9	142.9	179.7	204.5	209.5	196.8	168.5	117.3	85.6	140.1
Average	7.7	8.1	9.8	12.1	14.3	18.0	20.5	21.0	19.7	16.9	11.7	8.6	14.0
Sample No	10	10	10	10	10	10	10	10	10	10	10	10	10

Table C-6 Monthly Mean Relative Humidity Record between 1986 and 1995 at El Arish Station, %

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Average
1986	72	73	72	73	74	69	73	74	72	76	79	73	73
1987	70	71	74	67	67	74	76	68	77	71	68	72	71
1988	74	66	60	72	65	64	78	77	78	74	74	74	71
1989	81	71	76	65	68	68	74	72	71	72	78	73	72
1990	70	69	77	66	70	63	72	77	71	72	63	60	69
1991	67	66	71	68	69	71	75	76	74	78	81	70	72
1992	78	76	69	68	65	64	72	78	71	76	68	74	72
1993	77	74	72	67	72	75	74	86	72	70	70	79	74
1994	68	63	72	62	67	69	69	72	74	69	70	73	69
1995	71	76	68	66	71	68	70	72	71	68	60	75	70
Sum	728	705	711	674	688	685	733	752	731	726	711	723	714
Average	73	71	71	67	69	69	73	75	73	73	71	72	71
Sample No	10	10	10	10	10	10	10	10	10	10	10	10	10

Table C-7 Monthly Maximum Relative Humidity Record between 1986 and 1995 at El Arish Station, %

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Average
1986	82	85	85	86	90	86	90	92	88	87	88	84	87
1987	79	80	80	82	83	89	93	83	93	85	77	82	84
1988	83	79	72	84	84	83	94	96	95	90	88	85	86
1989	90	83	88	82	86	85	91	89	86	87	90	83	87
1990	79	80	87	79	86	77	91	94	85	84	74	68	82
1991	76	76	81	81	85	85	90	89	86	91	93	83	85
1992	87	84	81	82	80	79	88	94	85	90	78	86	85
1993	77	73	72	78	79	89	92	92	88	84	84	89	83
1994	75	74	86	77	84	86	84	84	85	84	79	84	82
1995	82	87	84	80	87	84	83	86	86	84	70	85	83
Sum	810	801	816	811	844	843	896	899	877	866	821	829	843
Average	81	80	82	81	84	84	90	90	88	87	82	83	84
Sample No	10	10	10	10	10	10	10	10	10	10	10	10	10

Table C-8 Monthly Minimum Relative Humidity Record between 1986 and 1995 at El Arish Station, %

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Average
1986	51	50	54	56	54	52	56	56	56	60	60	53	55
1987	47	55	56	50	51	56	58	50	59	56	48	54	53
1988	54	46	43	50	47	43	56	55	58	57	52	52	51
1989	64	53	57	44	51	51	58	55	54	55	58	53	54
1990	54	51	59	50	51	49	54	59	57	58	48	58	54
1991	51	49	55	54	52	57	62	62	62	61	62	53	57
1992	60	64	51	51	50	50	55	61	54	59	55	58	56
1993	62	61	57	54	59	59	55	58	55	52	52	62	57
1994	49	41	53	43	48	50	53	56	60	52	54	50	51
1995	50	56	46	48	53	48	55	56	57	53	43	55	52
Sum	542	526	531	500	516	515	562	568	572	563	532	548	540
Average	54	53	53	50	52	52	56	57	57	56	53	55	54
Sample No	10	10	10	10	10	10	10	10	10	10	10	10	10

Table C-9 Monthly Mean Sunshine Record between 1986 and 1995 at El Arish Station, hrs/day

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Average
1986	8.2	7.9	8.5	9.2	11.4	12.1	12.0	11.7	10.2	9.2	8.7	9.1	9.9
1987	7.6	8.4	7.9	10.3	10.8	12.1	11.9	11.5	10.6	8.5	8.1	5.8	9.5
1988	6.9	6.8	7.7	8.3	11.2	12.1	12.1	11.7	-	9.6	8.1	6.7	9.2
1989	5.9	8.3	8.8	10.6	11.1	12.5	11.6	11.5	10.5	9.5	8.7	7.2	9.7
1990	6.6	8.2	8.4	9.1	11.3	12.3	12.1	11.9	10.2	9.3	8.5	7.9	9.7
1991	7.4	8.4	7.9	8.4	10.0	12.1	12.1	11.4	10.3	9.3	8.3	6.3	9.3
1992	6.8	6.2	8.1	9.2	9.8	11.5	12.0	11.6	10.2	9.4	7.7	6.1	9.1
1993	6.8	7.2	8.7	10.4	9.5	12.2	12.1	11.3	10.6	9.6	7.5	6.5	9.4
1994	7.7	8.6	8.2	9.7	11.7	12.1	12.4	11.5	10.2	9.0	7.4	7.5	9.7
1995	8.4	8.2	9.2	9.6	11.5	12.4	12.4	11.8	10.7	9.2	8.6	7.4	10.0
Sum	72.3	78.2	83.4	94.8	108.3	121.4	120.7	115.9	93.5	92.6	81.6	70.5	95.2
Average	7.2	7.8	8.3	9.5	10.8	12.1	12.1	11.6	10.4	9.3	8.2	7.1	9.5
Sample No	10	10	10	10	10	10	10	10	9	10	10	10	10

Table C-10 Monthly Wind Velocity Record between 1986 and 1995 at El Arish Station, Km/hour

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Average
1986	11.11	9.26	9.26	9.26	9.26	7.41	7.41	7.41	5.56	5.56	7.41	11.11	8.33
1987	12.96	11.11	12.96	11.11	9.26	9.26	9.26	7.41	9.26	11.11	7.41	12.96	10.34
1988	9.26	12.96	12.96	9.26	9.26	7.41	7.41	5.56	7.41	9.26	7.41	7.41	8.80
1989	7.41	5.56	5.56	3.70	3.70	3.70	3.70	1.85	1.85	9.26	7.41	7.41	5.09
1990	7.41	11.11	9.26	9.26	9.26	9.26	7.41	5.56	7.41	5.56	5.56	5.56	7.72
1991	9.26	9.26	9.26	9.26	7.41	5.56	5.56	5.56	5.56	5.56	5.56	11.11	7.41
1992	9.26	16.67	9.26	7.41	7.41	7.41	7.41	5.56	7.41	3.70	7.41	11.11	8.33
1993	9.26	9.26	9.26	7.41	9.26	7.41	7.41	5.56	7.41	7.41	7.41	5.56	7.72
1994	9.26	9.26	11.11	11.11	9.26	9.26	9.26	7.41	7.41	7.41	11.11	11.11	9.41
1995	7.41	9.26	7.41	9.26	7.41	5.56	7.41	7.41	7.41	7.41	9.26	5.56	7.56
Sum	92.60	103.71	96.30	87.04	81.49	72.23	72.23	59.26	66.67	72.23	75.93	88.90	80.72
Average	9.26	10.37	9.63	8.70	8.15	7.22	7.22	5.93	6.67	7.22	7.59	8.89	8.07
Sample No	10	10	10	10	10	10	10	10	10	10	10	10	10

Table C-11 Summary of Meteorological Condition to be Required in Calculating ETo

Item	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
Mean Max. Temperature, C	18.5	19.4	21.0	25.4	27.0	30.3	31.6	31.7	30.4	28.7	24.2	19.9	25.7
Mean Min. Temperature, C	7.7	8.1	9.8	12.1	14.3	18.0	20.5	21.0	19.7	16.9	11.7	8.6	14.0
Mean Temperature, C	13.1	13.8	15.4	18.8	20.7	24.2	26.1	26.4	25.1	22.8	18.0	14.3	19.9
Max. Relative Humidity, %	81.0	80.0	82.0	81.0	84.0	84.0	90.0	90.0	88.0	87.0	82.0	83.0	84.3
Min. Relative Humidity, %	54.0	53.0	53.0	50.0	52.0	52.0	56.0	57.0	57.0	56.0	53.0	55.0	54.0
Mean Relative Humidity, %	67.5	66.5	67.5	65.5	68.0	68.0	73.0	73.5	72.5	71.5	67.5	69.0	69.2
Mean Wind Speed, Km/h	9.3	10.4	9.6	8.7	8.2	7.2	7.2	5.9	6.7	7.2	7.6	8.9	8.1
Mean Sunshine, hours	7.2	7.8	8.3	9.5	10.8	12.1	12.1	11.6	10.4	9.3	8.2	7.1	9.5
Mean Evaporation, mm/day	4.0	4.8	5.9	7.5	8.7	10.1	10.3	9.6	8.6	6.5	4.8	3.9	2574.5
Monthly Precipitation, mm	43.5	23.7	21.3	4.8	0.6	0.1	0.0	0.0	0.0	1.6	14.3	20.8	130.7

Table C-12 Calculation of Reference Crop Evapotranspiration, mm/day

Item	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Remarks
ea, mbar	15.11	15.88	17.48	21.72	24.45	30.18	33.81	34.44	31.89	27.76	20.60	16.37	
ed, mbar	10.20	10.56	11.80	14.23	16.63	20.52	24.68	25.31	23.12	19.85	13.91	11.30	
(ea-ed), mbar	4.91	5.32	5.68	7.49	7.82	9.66	9.13	9.13	8.77	7.91	6.70	5.07	
Wind function f(u)	0.87	0.94	0.89	0.83	0.80	0.74	0.74	0.65	0.70	0.74	0.76	0.85	
Weighting Factor (1-w)	0.40	0.39	0.37	0.33	0.31	0.27	0.25	0.25	0.26	0.28	0.34	0.39	
Weighting Factor w	0.60	0.61	0.63	0.68	0.70	0.73	0.75	0.76	0.74	0.72	0.66	0.62	
Max. Possible Sunshine N	10.34	11.08	11.98	12.94	13.68	14.10	13.98	13.26	12.40	11.46	10.54	10.12	
Actual (n)/N	0.70	0.70	0.69	0.73	0.79	0.86	0.87	0.87	0.84	0.81	0.78	0.70	
Radiation Ra	8.55	10.45	12.95	15.10	16.50	17.00	16.80	15.70	13.75	11.40	9.25	8.05	
Radiation Rs	5.11	6.29	7.72	9.32	10.64	11.54	11.47	10.79	9.20	7.48	5.91	4.84	
Net Shortwave Radiation Rns	3.84	4.72	5.79	6.99	7.98	8.66	8.60	8.09	6.90	5.61	4.43	3.63	
f(T)	13.32	13.46	13.71	14.36	14.74	15.45	15.92	15.98	15.68	15.16	14.20	13.55	
f(ed)	0.20	0.20	0.19	0.17	0.16	0.14	0.12	0.12	0.13	0.14	0.18	0.19	
f(n/N)	0.73	0.73	0.72	0.76	0.81	0.87	0.88	0.89	0.85	0.83	0.80	0.73	
Net Longwave Radiation Rnl	1.93	1.95	1.87	1.90	1.92	1.90	1.70	1.68	1.72	1.81	2.00	1.90	
Net Radiation Rn=Rns-Rnl	1.90	2.77	3.92	5.09	6.06	6.76	6.90	6.41	5.18	3.79	2.43	1.72	
Adjustment Factor (c)	0.99	1.03	1.09	1.14	1.18	1.19	1.21	1.18	1.14	1.09	0.99	0.99	Ud/Un=3
Reference ETo, mm/day	2.84	3.75	4.74	6.27	7.25	8.14	8.30	7.43	6.22	4.77	3.32	2.69	
Reference ETo, mm/month	87.97	104.94	146.98	188.16	224.73	244.30	257.45	230.25	186.49	147.88	99.56	83.45	2002

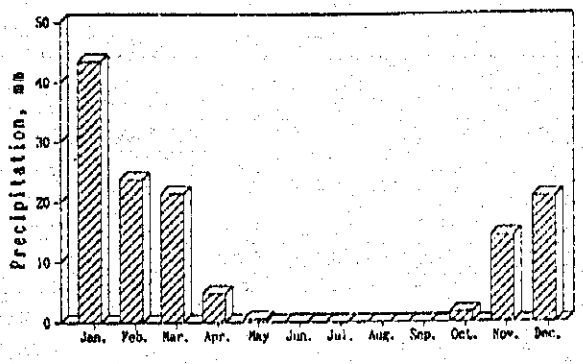

Figure C-1 Mean Monthly Rainfall

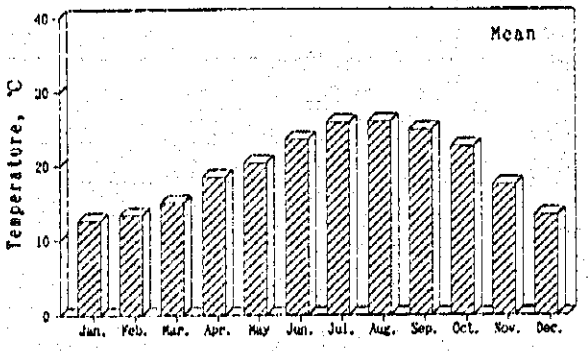

Figure C-2 Mean Monthly temperature

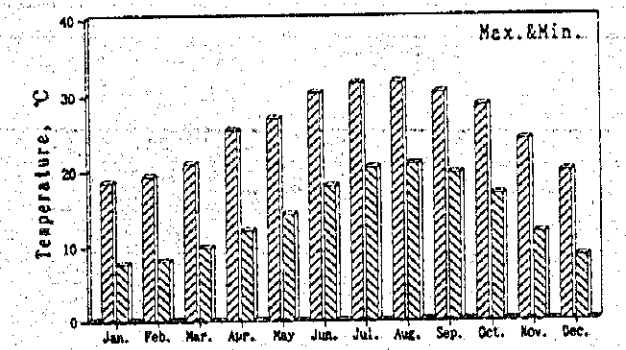

Figure C-3 Max. and Min. Temperature

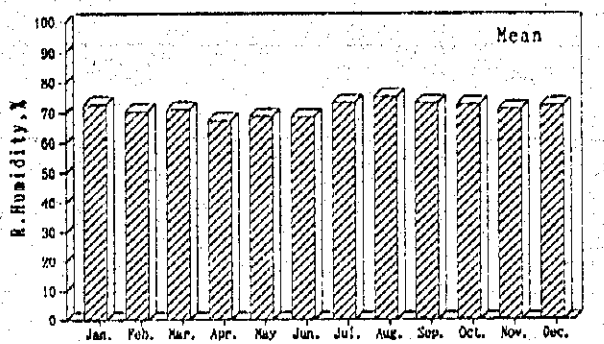

Figure C-4 Mean Relative Humidity

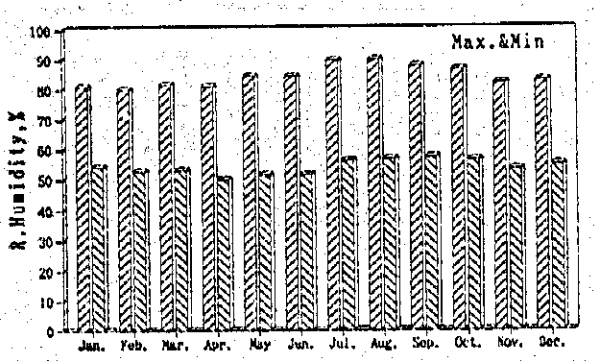

Figure C-5 Max. and Min. Humidity

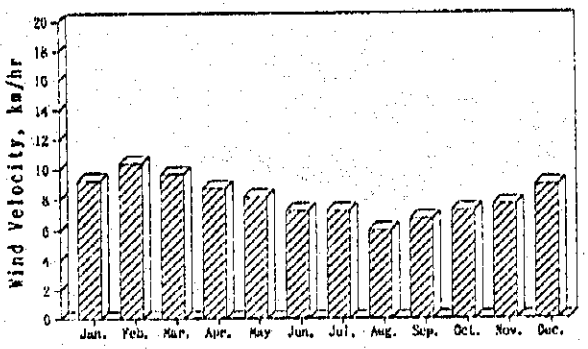

Figure C-6 Wind Speed in km/hr

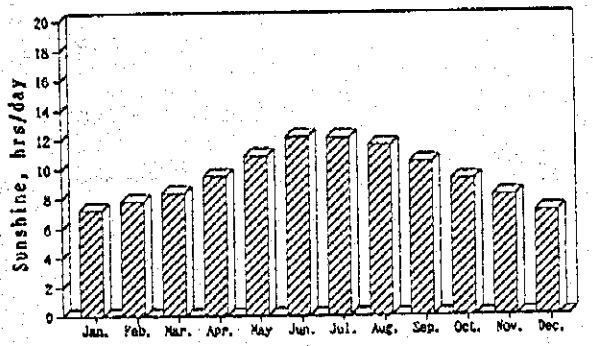

Figure C-7 Sunshine Hours

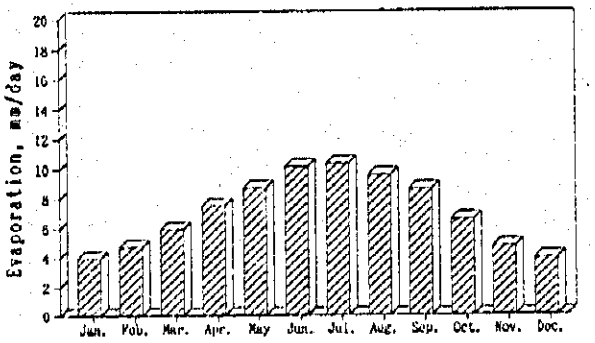

Figure C-8 Evaporation in mm/day

APPENDIX C-3 Calculation of Water Requirement

Table C-13 Weighted Mean Crop Coefficient and Crop Evapotranspiration (Small Scale Farmers)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Reference Eto, mm/month		87.97	104.94	145.98	188.16	224.73	241.30	257.45	230.25	185.49	147.88	99.56	83.45	2002
1.Sorghum	Planted %					100								
	Cropped %					25	100	100	100	75				
CF=1.00	Kc					0.30	0.80	1.05	0.60	0.30				
	ETc mm					16.85	195.44	270.32	138.15	41.95				663
2.Water Melon	Planted %				Nursery	100								
	Cropped %				5	75	100	100	100	25				
CF=1.00	Kc				0.40	0.40	0.75	0.95	0.85	0.10				
	ETc mm				3.76	67.42	183.22	244.57	195.71	4.66				699
3.Tomato	Planted %		Nursery	100										
	Cropped %		5	75	100	100	63	37						
CF=1.00	Kc		0.50	0.70	1.05	1.05	0.80	0.30						
	ETc mm		2.62	77.17	197.57	235.97	123.13	28.58						665
4.Cantaloup	Planted %			Nursery	100									
	Cropped %			5	25	100	100	100	75					
CF=1.00	Kc			0.40	0.75	0.95	0.95	0.95	0.65					
	ETc mm			2.94	35.28	213.50	232.08	244.57	112.25					841
5.Berseem	Planted %										100			
	Cropped %	100	75								75	100	100	
CF=1.00	Kc	0.75	0.75								0.50	0.75	0.75	
	ETc mm	65.97	59.03								55.45	74.67	62.58	318
6.Green Pepper	Planted %								100					
	Cropped %								75	100	100	25		
CF=1.00	Kc								0.50	0.80	0.95	0.20		
	ETc mm								86.34	149.19	140.48	4.98		381
7.Medical Plant	Planted %										100			
	Cropped %	100	100	75							25	100	100	
CF=1.00	Kc	1.00	0.70	0.30							0.40	0.80	1.00	
	ETc mm	87.97	73.46	33.07							14.79	79.65	83.45	372
8.Broad Bean	Planted %											100		
	Cropped %	100	100	100	25							25	100	
CF=1.00	Kc	1.15	1.15	0.70	0.20							0.24	0.86	
	ETc mm	101.16	120.68	102.69	9.41							5.97	71.76	412
9.Wheat	Planted %											100		
	Cropped %	100	100	100	100	95						25	100	
CF=1.00	Kc	0.90	1.05	1.05	1.05	0.20						0.40	0.70	
	ETc mm	79.17	110.19	154.33	197.57	42.70						9.96	58.41	652

Note: "CF" means correction factor for ground cover under drip system in percent

Table C-14 Field Water Requirement for Each Crop on 10 feddans Small Scale Farmers

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.Sorghum	ETc mm	0.0	0.0	0.0	0.0	16.9	195.4	270.3	138.2	42.0	0.0	0.0	0.0	663
Cropped Area	feddan	0.0	0.0	0.0	0.0	0.6	2.5	2.5	2.5	1.9	0.0	0.0	0.0	
Water Requirement	cum	0.0	0.0	0.0	0.0	44.2	2052.1	2838.4	1450.6	330.4	0.0	0.0	0.0	6715
Field Requirement	(/.75)	0.0	0.0	0.0	0.0	59.0	2736.1	3784.5	1934.1	440.6	0.0	0.0	0.0	8954
2.Water Melon	ETc mm	0.0	0.0	0.0	3.8	67.4	183.2	244.6	195.7	4.7	0.0	0.0	0.0	699
Cropped Area	feddan	0.0	0.0	0.0	0.1	1.9	2.5	2.5	2.5	0.6	0.0	0.0	0.0	
Water Requirement	cum	0.0	0.0	0.0	2.0	530.9	1923.8	2568.0	2055.0	12.2	0.0	0.0	0.0	7092
Field Requirement	(/.90)	0.0	0.0	0.0	2.2	589.9	2137.6	2853.4	2283.3	13.6	0.0	0.0	0.0	7880
3.Tomato	ETc mm	0.0	2.6	77.2	197.6	236.0	123.1	28.6	0.0	0.0	0.0	0.0	0.0	665
Cropped Area	feddan	0.0	0.1	1.9	2.5	2.5	1.6	0.9	0.0	0.0	0.0	0.0	0.0	
Water Requirement	cum	0.0	1.4	607.7	2074.5	2477.7	814.5	111.0	0.0	0.0	0.0	0.0	0.0	6087
Field Requirement	(/.90)	0.0	1.5	675.2	2305.0	2753.0	905.0	123.4	0.0	0.0	0.0	0.0	0.0	6763
4.Cantaloup	ETc mm	0.0	0.0	2.9	35.3	213.5	232.1	244.6	112.2	0.0	0.0	0.0	0.0	841
Cropped Area	feddan	0.0	0.0	0.1	0.6	2.5	2.5	2.5	1.9	0.0	0.0	0.0	0.0	
Water Requirement	cum	0.0	0.0	1.5	92.6	2241.7	2436.9	2568.0	884.0	0.0	0.0	0.0	0.0	8225
Field Requirement	(/.90)	0.0	0.0	1.7	102.9	2490.8	2707.6	2853.4	982.2	0.0	0.0	0.0	0.0	9139
5.Berseem	ETc mm	66.0	59.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.5	74.7	62.6	318
Cropped Area	feddan	1.5	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.5	1.5	
Water Requirement	cum	415.6	278.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	262.0	470.4	394.3	1821
Field Requirement	(/.75)	554.2	371.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	349.4	627.2	525.7	2428
6.Green Pepper	ETc mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	86.3	149.2	140.5	5.0	0.0	381
Cropped Area	feddan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	2.5	2.5	0.6	0.0	
Water Requirement	cum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	680.0	1566.5	1475.1	13.1	0.0	3735
Field Requirement	(/.75)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	906.6	2088.6	1966.7	17.4	0.0	4979
7.Medical Plant	ETc mm	88.0	73.5	33.1	0.0	0.0	0.0	0.0	0.0	0.0	14.8	79.6	83.4	372
Cropped Area	feddan	2.5	2.5	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.5	2.5	
Water Requirement	cum	923.6	771.3	260.4	0.0	0.0	0.0	0.0	0.0	0.0	38.8	836.3	876.2	3707
Field Requirement	(/.75)	1231.5	1028.4	347.2	0.0	0.0	0.0	0.0	0.0	0.0	51.8	1115.1	1168.2	4942
8.Broad Bean	ETc mm	101.2	120.7	102.9	9.4	0.0	0.0	0.0	0.0	0.0	0.0	6.0	71.8	412
Cropped Area	feddan	2.5	2.5	2.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.5	
Water Requirement	cum	1062.2	1267.2	1080.3	24.7	0.0	0.0	0.0	0.0	0.0	0.0	15.7	753.5	4204
Field Requirement	(/.75)	1416.2	1689.6	1440.4	32.9	0.0	0.0	0.0	0.0	0.0	0.0	20.9	1004.7	5605
9.Wheat	ETc mm	79.2	110.2	154.3	197.6	42.7	0.0	0.0	0.0	0.0	0.0	10.0	58.4	652
Cropped Area	feddan	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	
Water Requirement	cum	332.5	462.8	648.2	829.8	170.4	0.0	0.0	0.0	0.0	0.0	10.3	245.3	2699
Field Requirement	(/.75)	443.3	617.1	864.3	1106.4	227.2	0.0	0.0	0.0	0.0	0.0	13.9	327.1	3599

Table C-15 Summary of Field, Mesqa and Canal Water Requirement for Small Scale Farmers

Items	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
10 feds Field Requirement	3645	3708	3329	3549	6120	8486	9615	6106	2543	2368	1795	3026	54290
10 feds Mesqa Req. (/.95)	3837	3904	3504	3736	6442	8933	10121	6428	2677	2492	1889	3185	57147
10 feds Canal Req. (/.90)	4264	4337	3893	4151	7158	9926	11245	7142	2974	2769	2099	3539	63497
Field Req. in cum/fed/month	365	371	333	355	612	849	951	611	254	237	179	303	5429
in cum/fed/day	12	13	11	12	20	28	31	20	8	8	6	10	178
in lit/fed/sec	0.14	0.15	0.12	0.14	0.23	0.33	0.36	0.23	0.10	0.09	0.07	0.11	2.06
Mesqa Req. in cum/fed/month	384	390	350	374	644	893	1012	643	268	249	189	318	5715
in cum/fed/day	12	14	11	12	21	30	33	21	9	8	6	10	188
in lit/fed/sec	0.14	0.16	0.13	0.14	0.24	0.34	0.38	0.24	0.10	0.09	0.07	0.12	2.17
Canal Req. in cum/fed/month	426	434	389	415	716	993	1125	714	297	277	210	354	6350
in cum/fed/day	14	15	13	14	23	33	36	23	10	9	7	11	208
in lit/fed/sec	0.16	0.18	0.15	0.16	0.27	0.38	0.42	0.27	0.11	0.10	0.08	0.13	2.41
Field Req. in mcm/Net.A/mnh	5.06	5.15	4.62	4.92	8.49	11.77	13.34	8.47	3.53	3.29	2.49	4.20	75.33
in mcm/Net.A/day	0.16	0.18	0.15	0.16	0.27	0.39	0.43	0.27	0.12	0.11	0.08	0.14	2.47
in lit/Net.A/sec	1888	2127	1724	1900	3170	4543	4981	3163	1361	1227	951	1567	28613
Mesqa Req. in mcm/Net.A/mnh	5.32	5.42	4.86	5.18	8.94	12.39	14.04	8.92	3.71	3.46	2.62	4.42	79.29
in mcm/Net.A/day	0.17	0.19	0.16	0.17	0.29	0.41	0.45	0.29	0.12	0.11	0.09	0.14	2.60
in lit/Net.A/sec	1983	2239	1815	2000	3337	4782	5243	3330	1433	1291	1011	1650	30119
Canal Req. in mcm/Net.A/mnh	5.92	6.02	5.40	5.76	9.93	13.77	15.60	9.91	4.13	3.84	2.91	4.91	88.10
in mcm/Net.A/day	0.19	0.21	0.17	0.19	0.32	0.46	0.50	0.32	0.14	0.12	0.10	0.16	2.89
in lit/Net.A/sec	2209	2488	2017	2222	3708	5313	5825	3700	1592	1435	1124	1833	33455

Table C-16 Weighted Mean Crop Coefficient and Crop Evapotranspiration (Graduate Farmers:Vegetables+Fruit)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Reference ETo, mm/month		87.97	104.94	146.98	188.16	224.73	244.30	257.45	230.25	186.49	147.88	99.56	83.45	2002
1.Squash	Planted %				Nursery	100								
	Cropped %				5	25	100	100	100	75				
CF=1.00	Kc				0.30	0.50	0.75	0.80	0.90	0.50				
	ETc mm				2.82	28.09	183.22	205.96	207.23	69.93				697
2.Tomato	Planted %		Nursery	100										
	Cropped %		5	75	100	100	63	37						
CF=1.00	Kc		0.50	0.70	1.05	1.05	0.80	0.30						
	ETc mm		2.62	77.17	197.57	235.97	123.13	28.58						665
3.Cantaloup	Planted %			Nursery	100	50	50							
	Cropped %			5	25	100	100	100	75					
CF=1.00	Kc			0.40	0.75	0.95	0.95	0.95	0.65					
	ETc mm			2.94	35.28	213.50	232.08	244.57	112.25					841
4.Medical Plant	Planted %										100			
	Cropped %	100	100	75							25	100	100	
CF=1.00	Kc	1.00	0.70	0.30							0.40	0.80	1.00	
	ETc mm	87.97	73.45	33.07							14.79	79.65	83.45	372
5.Green Pepper	Planted %								100					
	Cropped %								75	100	100	25		
CF=1.00	Kc								0.50	0.80	0.95	0.20		
	ETc mm								86.34	149.19	140.48	4.98		381
6.Broad Bean	Planted %											100		
	Cropped %	100	100	100	25							25	100	
CF=1.00	Kc	1.15	1.15	0.70	0.20							0.24	0.86	
	ETc mm	101.16	120.68	102.83	9.41							5.97	71.75	412
7.Peach	Planted %	100												
	Cropped %	100	100	100	100	100	100	100	100	100	100	100	100	
CF=0.80	Kc	0.00	0.00	0.65	0.75	0.75	0.80	0.80	0.70	0.70	0.65	0.55	0.00	
	ETc mm	0.00	0.00	76.43	112.90	134.84	156.35	164.77	128.94	104.43	76.90	43.81	0.00	999

Note: 'CF' means correction factor for ground cover under drip system in percent

Table C-17 Field Water Requirement for Each Crop on 10 feddans Graduate Farmers (Vegetables+Fruit)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.Squash	ETc mm	0.0	0.0	0.0	2.8	28.1	183.2	206.0	207.2	69.9	0.0	0.0	0.0	697
Cropped Area	feddan	0.0	0.0	0.0	0.1	0.6	2.5	2.5	2.5	1.9	0.0	0.0	0.0	
Water Requirement	cum	0.0	0.0	0.0	1.5	73.7	1923.8	2162.6	2175.9	550.7	0.0	0.0	0.0	6888
Field Requirement	(/.90)	0.0	0.0	0.0	1.6	81.9	2137.6	2402.8	2417.6	611.9	0.0	0.0	0.0	7654
2.Tomato	ETc mm	0.0	2.6	77.2	197.6	236.0	123.1	28.6	0.0	0.0	0.0	0.0	0.0	665
Cropped Area	feddan	0.0	0.3	3.8	5.0	5.0	3.2	1.9	0.0	0.0	0.0	0.0	0.0	
Water Requirement	cum	0.0	2.8	1215.4	4149.0	4955.4	1629.0	222.0	0.0	0.0	0.0	0.0	0.0	12173
Field Requirement	(/.90)	0.0	3.1	1350.4	4610.0	5506.0	1810.0	246.7	0.0	0.0	0.0	0.0	0.0	13526
3.Cunteroup	ETc mm	0.0	0.0	2.9	35.3	213.5	232.1	244.6	112.2	0.0	0.0	0.0	0.0	841
Cropped Area	feddan	0.0	0.0	0.1	0.6	2.5	2.5	2.5	1.9	0.0	0.0	0.0	0.0	
Water Requirement	cum	0.0	0.0	1.5	92.6	2241.7	2436.9	2568.0	884.0	0.0	0.0	0.0	0.0	8225
Field Requirement	(/.90)	0.0	0.0	1.7	102.9	2490.8	2707.6	2853.4	982.2	0.0	0.0	0.0	0.0	9139
4.Medical Plant	ETc mm	88.0	73.5	33.1	0.0	0.0	0.0	0.0	0.0	0.0	14.8	79.6	83.4	372
Cropped Area	feddan	2.5	2.5	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.5	2.5	
Water Requirement	cum	923.6	771.3	260.4	0.0	0.0	0.0	0.0	0.0	0.0	38.8	836.3	876.2	3707
Field Requirement	(/.75)	1231.5	1028.4	347.2	0.0	0.0	0.0	0.0	0.0	0.0	51.8	1115.1	1168.2	4942
5.Green Pepper	ETc mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	88.3	143.2	140.5	5.0	0.0	381
Cropped Area	feddan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	5.0	5.0	1.3	0.0	
Water Requirement	cum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1359.9	3133.0	2950.1	26.1	0.0	7469
Field Requirement	(/.75)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1813.2	4177.3	3933.5	34.8	0.0	9959
6.Broad Bean	ETc mm	101.2	120.7	102.9	9.4	0.0	0.0	0.0	0.0	0.0	0.0	6.0	71.8	412
Cropped Area	feddan	5.0	5.0	5.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	1.3	5.0	
Water Requirement	cum	2124.4	2534.4	2160.7	49.4	0.0	0.0	0.0	0.0	0.0	0.0	31.4	1507.0	8407
Field Requirement	(/.75)	2832.5	3379.1	2880.9	65.9	0.0	0.0	0.0	0.0	0.0	0.0	41.8	2009.4	11210
7.Peach	ETc mm	0.0	0.0	76.4	112.9	134.8	156.4	164.8	128.9	104.4	76.9	43.8	0.0	999
Cropped Area	feddan	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Water Requirement	cum	0.0	0.0	802.5	1185.4	1415.8	1641.7	1730.0	1353.9	1096.5	807.4	460.0	0.0	10493
Field Requirement	(/.90)	0.0	0.0	891.7	1317.1	1573.1	1824.1	1922.3	1504.3	1218.4	897.1	511.1	0.0	11659
														0
														0
														0

Table C-18 Summary of Field, Mesqa and Canal Water Requirement for Graduate Farmers (Vegetables+Fruit)

Items	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
10 feds Field Requirement	4064	4411	5472	6093	9632	8479	7425	6717	6008	4932	1703	3178	68088
10 feds Mesqa Req. (/.95)	4278	4643	5760	6414	10160	8926	7816	7071	6324	5139	1792	3345	71672
10 feds Canal Req. (/.90)	4753	5159	6400	7132	11289	9917	8684	7857	7026	5710	1992	3716	79635
Field Req. in cum/fed/month	406	441	547	610	965	848	743	672	601	488	170	318	6809
in cum/fed/day	13	16	18	20	31	28	24	22	20	16	6	10	224
in lit/fed/sec	0.15	0.18	0.20	0.24	0.36	0.33	0.28	0.25	0.23	0.18	0.07	0.12	2.59
Mesqa Req. in cum/fed/month	428	464	576	642	1016	893	782	707	632	514	179	334	7167
in cum/fed/day	14	17	19	21	33	30	25	23	21	17	6	11	235
in lit/fed/sec	0.16	0.19	0.22	0.25	0.38	0.34	0.29	0.26	0.24	0.19	0.07	0.12	2.72
Canal Req. in cum/fed/month	475	516	640	713	1129	992	868	786	703	571	199	372	7964
in cum/fed/day	15	18	21	24	36	33	28	25	23	18	7	12	261
in lit/fed/sec	0.18	0.21	0.24	0.28	0.42	0.38	0.32	0.29	0.27	0.21	0.08	0.14	3.03
Field Req. in mcm/Net.A/month	2.82	3.06	3.80	4.23	6.70	5.88	5.15	4.66	4.17	3.39	1.18	2.20	47.24
in mcm/Net.A/day	0.09	0.11	0.12	0.14	0.22	0.20	0.17	0.15	0.14	0.11	0.04	0.07	1.55
in lit/Net.A/sec	1053	1265	1417	1632	2500	2269	1923	1740	1608	1265	456	823	17951
Mesqa Req. in mcm/Net.A/month	2.97	3.22	4.00	4.45	7.05	6.19	5.42	4.91	4.39	3.57	1.24	2.32	49.72
in mcm/Net.A/day	0.10	0.12	0.13	0.15	0.23	0.21	0.17	0.16	0.15	0.12	0.04	0.07	1.63
in lit/Net.A/sec	1108	1331	1492	1718	2632	2389	2024	1831	1693	1331	480	866	18895
Canal Req. in mcm/Net.A/month	3.30	3.58	4.44	4.95	7.83	6.88	6.02	5.45	4.87	3.96	1.38	2.58	55.25
in mcm/Net.A/day	0.11	0.13	0.14	0.16	0.25	0.23	0.19	0.18	0.16	0.13	0.05	0.08	1.81
in lit/Net.A/sec	1231	1479	1658	1909	2924	2654	2249	2035	1881	1479	533	963	20995

Table C-19 Weighted Mean Crop Coefficient and Crop Evapotranspiration (Graduate Farmers:Vegetables+Livestock)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Reference ETo, mm/month		88	105	147	188	225	241	257	230	186	143	100	83	2002
1.Sorghum	Planted %					100								
	Cropped %					25	100	100	100	75				
CF=1.00	Kc					0.30	0.80	1.05	0.60	0.30				
	ETc mm					16.85	195.44	270.32	138.15	41.96				663
2.Squash	Planted %				Nursery	100								
	Cropped %				5	25	100	100	100	75				
CF=1.00	Kc				0.30	0.50	0.75	0.80	0.90	0.50				
	ETc mm				2.82	28.09	183.22	205.96	207.23	69.93				697
3.Tomato	Planted %		Nursery	100										
	Cropped %		5	75	100	100	63	37						
CF=1.00	Kc		0.50	0.70	1.05	1.05	0.80	0.30						
	ETc mm		2.62	77.17	197.57	235.97	123.13	28.58						665
4.Cantaloup	Planted %			Nursery	100									
	Cropped %			5	25	100	100	100	75					
CF=1.00	Kc			0.40	0.75	0.95	0.95	0.95	0.65					
	ETc mm			2.94	35.28	213.50	232.08	244.57	112.25					841
5.Berseem	Planted %										100			
	Cropped %	100	75								75	100	100	
CF=1.00	Kc	0.75	0.75								0.50	0.75	0.75	
	ETc mm	65.97	59.03								55.45	74.67	62.58	318
6.Green Pepper	Planted %								100					
	Cropped %								75	100	100	25		
CF=1.00	Kc								0.50	0.80	0.95	0.20		
	ETc mm								86.34	143.19	140.48	4.98		381
7.Medical Plant	Planted %										100			
	Cropped %	100	100	75							25	100	100	
CF=1.00	Kc	1.00	0.70	0.30							0.40	0.80	1.00	
	ETc mm	87.97	73.45	33.07							14.79	79.65	83.45	372
8.Broad Bean	Planted %											100		
	Cropped %	100	100	100	25							25	100	
CF=1.00	Kc	1.15	1.15	0.70	0.20							0.24	0.86	
	ETc mm	101.16	120.63	102.89	9.41							5.97	71.78	412

Note: 'CF' means correction factor for ground cover under drip system in percent

Table C-20 Field Water Requirement for Each Crop on 10 feddans Graduate Farmers (Vegetables+Livestock)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.Sorghum	ETc mm	0.0	0.0	0.0	0.0	16.9	195.4	270.3	138.2	42.0	0.0	0.0	0.0	663
	Cropped Area feddan	0.0	0.0	0.0	0.0	0.6	2.5	2.5	2.5	1.9	0.0	0.0	0.0	
	Water Requirement cum	0.0	0.0	0.0	0.0	44.2	2052.1	2838.4	1450.6	330.4	0.0	0.0	0.0	8716
	Field Requirement(/.75)	0.0	0.0	0.0	0.0	59.0	2736.1	3784.5	1934.1	440.6	0.0	0.0	0.0	8954
2.Squash	ETc mm	0.0	0.0	0.0	2.8	28.1	183.2	206.0	207.2	69.9	0.0	0.0	0.0	697
	Cropped Area feddan	0.0	0.0	0.0	0.1	0.6	2.5	2.5	2.5	1.9	0.0	0.0	0.0	
	Water Requirement cum	0.0	0.0	0.0	1.5	73.7	1923.8	2162.6	2175.9	550.7	0.0	0.0	0.0	6888
	Field Requirement(/.90)	0.0	0.0	0.0	1.6	81.9	2137.6	2402.8	2417.6	611.9	0.0	0.0	0.0	7654
3.Tomato	ETc mm	0.0	2.6	77.2	197.6	236.0	123.1	28.6	0.0	0.0	0.0	0.0	0.0	665
	Cropped Area feddan	0.0	0.1	1.9	2.5	2.5	1.6	0.9	0.0	0.0	0.0	0.0	0.0	
	Water Requirement cum	0.0	1.4	607.7	2074.5	2477.7	814.5	111.0	0.0	0.0	0.0	0.0	0.0	6087
	Field Requirement(/.90)	0.0	1.5	675.2	2305.0	2753.0	905.0	123.4	0.0	0.0	0.0	0.0	0.0	6763
4.Cantaloup	ETc mm	0.0	0.0	2.9	35.3	213.5	232.1	244.6	112.2	0.0	0.0	0.0	0.0	841
	Cropped Area feddan	0.0	0.0	0.1	0.6	2.5	2.5	2.5	1.9	0.0	0.0	0.0	0.0	
	Water Requirement cum	0.0	0.0	1.5	92.6	2241.7	2436.9	2568.0	884.0	0.0	0.0	0.0	0.0	8225
	Field Requirement(/.90)	0.0	0.0	1.7	102.9	2490.8	2707.6	2853.4	982.2	0.0	0.0	0.0	0.0	9139
5.Berseem	ETc mm	66.0	59.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.5	74.7	62.6	318
	Cropped Area feddan	2.5	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	2.5	2.5	
	Water Requirement cum	692.7	464.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	436.7	784.0	657.1	3035
	Field Requirement(/.75)	923.6	619.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	582.3	1045.4	876.2	4047
6.Green Pepper	ETc mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	86.3	143.2	140.5	5.0	0.0	381
	Cropped Area feddan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	2.5	2.5	0.6	0.0	
	Water Requirement cum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	680.0	1566.5	1475.1	13.1	0.0	3735
	Field Requirement(/.75)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	906.6	2088.6	1966.7	17.4	0.0	4979
7.Medical Plant	ETc mm	88.0	73.5	33.1	0.0	0.0	0.0	0.0	0.0	0.0	14.8	79.6	83.4	372
	Cropped Area feddan	2.5	2.5	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.5	2.5	
	Water Requirement cum	923.6	771.3	260.4	0.0	0.0	0.0	0.0	0.0	0.0	38.8	836.3	876.2	3707
	Field Requirement(/.75)	1231.5	1028.4	347.2	0.0	0.0	0.0	0.0	0.0	0.0	51.8	1115.1	1168.2	4942
8.Broad Bean	ETc mm	101.2	120.7	102.9	9.4	0.0	0.0	0.0	0.0	0.0	0.0	6.0	71.8	412
	Cropped Area feddan	2.5	2.5	2.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.5	
	Water Requirement cum	1062.2	1267.2	1080.3	24.7	0.0	0.0	0.0	0.0	0.0	0.0	15.7	753.5	4204
	Field Requirement(/.75)	1415.2	1689.6	1440.4	32.9	0.0	0.0	0.0	0.0	0.0	0.0	20.9	1004.7	5605

Table C-21 Summary of Field, Mesqa and Canal Water Requirement for Graduate Farmers (Vegetables+Livestock)

Items	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
0 feds Field Requirement	3571	3339	2465	2442	5385	8486	9164	6241	3141	2601	2199	3049	52083
0 feds Mesqa Req. (/.95)	3759	3515	2594	2571	5668	8933	9645	6569	3306	2738	2315	3210	54824
0 feds Canal Req. (/.90)	4177	3906	2883	2857	6298	9925	10718	7299	3674	3042	2572	3566	60916
ield Req. in cum/fed/month	357	334	246	244	538	849	916	624	314	260	220	305	5208
in cum/fed/day	12	12	8	8	17	28	30	20	10	8	7	10	171
in lit/fed/sec	0.13	0.14	0.09	0.09	0.20	0.33	0.34	0.23	0.12	0.10	0.08	0.11	1.98
esqa Req. in cum/fed/month	376	352	259	257	567	893	965	657	331	274	231	321	5482
in cum/fed/day	12	13	8	9	18	30	31	21	11	9	8	10	180
in lit/fed/sec	0.14	0.15	0.10	0.10	0.21	0.34	0.36	0.25	0.13	0.10	0.09	0.12	2.08
anal Req. in cum/fed/month	418	391	288	286	630	993	1072	730	367	304	257	357	6092
in cum/fed/day	13	14	9	10	20	33	35	24	12	10	9	12	200
in lit/fed/sec	0.16	0.16	0.11	0.11	0.24	0.38	0.40	0.27	0.14	0.11	0.10	0.13	2.31
ield Req. in mcm/Net.A/mnh	2.48	2.32	1.71	1.69	3.74	5.89	6.36	4.33	2.18	1.80	1.53	2.12	36.13
in mcm/Net.A/day	0.08	0.08	0.06	0.06	0.12	0.20	0.21	0.14	0.07	0.06	0.05	0.07	1.19
in lit/Net.A/sec	925	858	638	654	1395	2271	2374	1616	841	674	589	790	13724
esqa Req. in mcm/Net.A/mnh	2.61	2.44	1.80	1.78	3.93	6.20	6.69	4.56	2.29	1.90	1.61	2.23	38.03
in mcm/Net.A/day	0.08	0.09	0.06	0.06	0.13	0.21	0.22	0.15	0.08	0.06	0.05	0.07	1.25
in lit/Net.A/sec	974	1008	672	688	1468	2391	2499	1701	885	709	619	831	14446
anal Req. in mcm/Net.A/mnh	2.90	2.71	2.00	1.98	4.37	6.89	7.44	5.06	2.55	2.11	1.78	2.47	42.26
in mcm/Net.A/day	0.09	0.10	0.06	0.07	0.14	0.23	0.24	0.16	0.08	0.07	0.06	0.08	1.39
in lit/Net.A/sec	1082	1120	747	765	1631	2657	2776	1891	983	788	688	924	16051

Table C-22 Weighted Mean Crop Coefficient and Crop Evapotranspiration (100 feddans Small Scale Investors:Vegetables+Beef Cattle)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
eference ETo, mm/month		87.97	104.94	146.98	188.16	224.73	241.30	257.45	230.25	186.49	147.88	99.56	83.45	2002
1.Sorghum	Planted %						100							
	Cropped %						75	100	100	75				
CF=1.00	Kc						0.30	0.80	1.05	0.60				
	ETc mm						54.97	205.96	241.76	83.92				587
2.Potato	Planted %				100									
	Cropped %				25	100	100	100	25					
CF=1.00	Kc				0.30	0.80	1.05	0.80	0.70					
	ETc mm				14.11	179.79	256.51	205.96	40.29					697
3.Tomato	Planted %				Nursery	100								
	Cropped %				5	25	100	100	80	50	20			
CF=1.00	Kc				0.5	0.70	1.05	1.05	0.80	0.30	0.30			
	ETc mm				4.70	39.33	256.51	270.32	147.36	27.97	8.87			755
4.Soybean	Planted %						100							
	Cropped %						25	100	100	100	75			
CF=1.00	Kc						0.40	0.70	0.90	0.8	0.4			
	ETc mm						24.43	180.21	207.23	149.19	44.35			605
5.Berseem	Planted %										100			
	Cropped %	100	75								75	100	100	
CF=1.00	Kc	0.75	0.75								0.50	0.75	0.75	
	ETc mm	65.97	59.03								55.45	74.67	62.58	318
6.Barley	Planted %											100		
	Cropped %	100	100	100	100	25						25	100	
CF=1.00	Kc	1.00	1.00	1.00	0.50	0.30						0.33	0.90	
	ETc mm	87.97	104.94	146.98	94.08	16.85						8.21	75.10	534
7.Cabbage	Planted %										Nursery	100		
	Cropped %	100	100	75							5	75	100	
CF=1.00	Kc	0.95	1.00	0.50							0.30	0.50	0.70	
	ETc mm	83.57	104.94	55.12							2.22	37.34	58.41	342
8.Onion	Planted %										Nursery	100		
	Cropped %	100	100	100	25						5	25	100	
CF=1.00	Kc	0.75	0.95	0.90	0.40						0.30	0.50	0.60	
	ETc mm	65.97	99.70	132.28	18.82						2.22	12.45	50.07	382

Table C-23 Field Water Requirement for Each Crop on 100 feddans Small Scale Investors (Vegetables+Beef Cattle)

Crops	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.Sorghum ETc mm	0.0	0.0	0.0	0.0	0.0	55.0	206.0	241.8	83.9	0.0	0.0	0.0	587
Cropped Area feddan	0.0	0.0	0.0	0.0	0.0	18.8	25.0	25.0	18.8	0.0	0.0	0.0	
Water Requirement cum	0.0	0.0	0.0	0.0	0.0	4328.6	21625.5	25385.3	6608.6	0.0	0.0	0.0	57948
Field Requirement(/.80)	0.0	0.0	0.0	0.0	0.0	5410.8	27031.9	31731.7	8260.7	0.0	0.0	0.0	72435
2.Potato ETc mm	0.0	0.0	0.0	14.1	179.8	256.5	206.0	40.3	0.0	0.0	0.0	0.0	697
Cropped Area feddan	0.0	0.0	0.0	6.3	25.0	25.0	25.0	6.3	0.0	0.0	0.0	0.0	
Water Requirement cum	0.0	0.0	0.0	370.4	18877.6	26933.8	21625.5	1057.7	0.0	0.0	0.0	0.0	68865
Field Requirement(/.80)	0.0	0.0	0.0	463.1	23597.0	33667.3	27031.9	1322.2	0.0	0.0	0.0	0.0	86081
3.Tomato ETc mm	0.0	0.0	0.0	4.7	39.3	256.5	270.3	147.4	28.0	8.9	0.0	0.0	755
Cropped Area feddan	0.0	0.0	0.0	1.3	6.3	25.0	25.0	20.0	12.5	5.0	0.0	0.0	
Water Requirement cum	0.0	0.0	0.0	24.7	1032.4	26933.8	28383.5	12378.4	1468.6	186.3	0.0	0.0	70408
Field Requirement(/.90)	0.0	0.0	0.0	27.4	1147.1	29926.5	31537.2	13753.7	1631.7	207.0	0.0	0.0	78231
4.Soybean ETc mm	0.0	0.0	0.0	0.0	0.0	24.4	180.2	207.2	149.2	44.4	0.0	0.0	605
Cropped Area feddan	0.0	0.0	0.0	0.0	0.0	6.3	25.0	25.0	25.0	18.8	0.0	0.0	
Water Requirement cum	0.0	0.0	0.0	0.0	0.0	641.3	18922.3	21758.8	15664.8	3493.6	0.0	0.0	60481
Field Requirement(/.80)	0.0	0.0	0.0	0.0	0.0	801.6	23652.9	27198.6	19581.0	4367.0	0.0	0.0	75601
5.Berseem ETc mm	66.0	59.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.5	74.7	62.6	318
Cropped Area feddan	25.0	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.8	25.0	25.0	
Water Requirement cum	6927.3	4648.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5458.7	9800.6	8214.1	37943
Field Requirement(/.80)	8659.1	5810.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4367.0	7840.5	6571.3	30355
6.Barley ETc mm	88.0	104.9	147.0	94.1	16.9	0.0	0.0	0.0	0.0	0.0	8.2	75.1	534
Cropped Area feddan	25.0	25.0	25.0	25.0	6.3	0.0	0.0	0.0	0.0	0.0	6.3	25.0	
Water Requirement cum	9236.4	11018.9	15433.2	9878.5	442.4	0.0	0.0	0.0	0.0	0.0	215.6	7885.6	54111
Field Requirement(/.80)	11545.5	13773.7	19291.5	12348.1	553.1	0.0	0.0	0.0	0.0	0.0	269.5	9857.0	67638
7.Cabbage ETc mm	83.6	104.9	55.1	0.0	0.0	0.0	0.0	0.0	0.0	2.2	37.3	58.4	342
Cropped Area feddan	25.0	25.0	18.8	0.0	0.0	0.0	0.0	0.0	0.0	1.3	18.8	25.0	
Water Requirement cum	8774.6	11018.9	4340.6	0.0	0.0	0.0	0.0	0.0	0.0	11.6	2940.2	5133.2	33219
Field Requirement(/.90)	9749.5	12243.3	4822.9	0.0	0.0	0.0	0.0	0.0	0.0	12.9	3266.9	5814.7	36910
8.Onion ETc mm	66.0	99.7	132.3	18.8	0.0	0.0	0.0	0.0	0.0	2.2	12.4	50.1	382
Cropped Area feddan	25.0	25.0	25.0	6.3	0.0	0.0	0.0	0.0	0.0	1.3	6.3	25.0	
Water Requirement cum	6927.3	10468.0	13889.9	493.9	0.0	0.0	0.0	0.0	0.0	11.6	326.7	5257.0	37374
Field Requirement(/.90)	7697.0	11631.1	15433.2	548.8	0.0	0.0	0.0	0.0	0.0	12.9	363.0	5841.2	41527

Table C-24 Summary of Field, Mesqa and Canal Water Requirement for 100 feddans Small Scale Investors (Vegetables+Beef Cattle)

Items	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
100 feds Field Requirement	37651	43459	39548	13387	25297	69806	109254	74006	29473	10059	13700	30727	496367
100 feds Mesqa Req. (/.95)	39633	45746	41629	14092	26629	73480	115004	77901	31025	10588	14421	32344	522492
100 feds Canal Req. (/.90)	44036	50829	46255	15658	29587	81645	127782	86557	34472	11764	16023	35938	580547
Field Req. in cum/fed/month	377	435	395	134	253	698	1093	740	295	101	137	307	4964
in cum/fed/day	12	16	13	4	8	23	35	24	10	3	5	10	163
in lit/fed/sec	0.14	0.18	0.15	0.05	0.09	0.27	0.41	0.28	0.11	0.04	0.05	0.11	1.89
Mesqa Req. in cum/fed/month	396	457	416	141	266	735	1150	779	310	106	144	323	5225
in cum/fed/day	13	16	13	5	9	24	37	25	10	3	5	10	172
in lit/fed/sec	0.15	0.19	0.16	0.05	0.10	0.28	0.43	0.29	0.12	0.04	0.06	0.12	1.99
Canal Req. in cum/fed/month	440	508	463	157	296	816	1278	866	345	118	160	359	5805
in cum/fed/day	14	18	15	5	10	27	41	28	11	4	5	12	191
in lit/fed/sec	0.16	0.21	0.17	0.06	0.11	0.31	0.48	0.32	0.13	0.04	0.06	0.13	2.21
Field Req. in mcm/Net.A/month	3.13	3.62	3.29	1.11	2.11	5.81	9.10	6.16	2.45	0.84	1.14	2.56	41.32
in mcm/Net.A/day	0.10	0.13	0.11	0.04	0.07	0.19	0.29	0.20	0.08	0.03	0.04	0.08	1.36
in lit/Net.A/sec	1170	1496	1229	430	786	2242	3386	2300	947	313	440	955	15704
Mesqa Req. in mcm/Net.A/month	3.30	3.81	3.47	1.17	2.22	6.12	9.57	6.49	2.58	0.88	1.20	2.69	43.50
in mcm/Net.A/day	0.11	0.14	0.11	0.04	0.07	0.20	0.31	0.21	0.09	0.03	0.04	0.09	1.43
in lit/Net.A/sec	1232	1574	1294	453	828	2360	3575	2421	995	329	463	1005	16530
Canal Req. in mcm/Net.A/month	3.67	4.23	3.85	1.30	2.46	6.80	10.64	7.21	2.87	0.98	1.33	2.99	48.33
in mcm/Net.A/day	0.12	0.15	0.12	0.04	0.08	0.23	0.34	0.23	0.10	0.03	0.04	0.10	1.59
in lit/Net.A/sec	1369	1749	1438	503	920	2622	3972	2690	1107	366	515	1117	18367

Table C-25 Weighted Mean Crop Coefficient and Crop Evapotranspiration (100 feddans Small Scale Investors:Vegetables+Fruits)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Reference ETo, mm/month		87.97	104.94	146.98	188.16	224.73	244.30	257.45	230.25	188.49	147.68	99.56	83.45	2002
1.Tomato	Planted %				Nursery	100								
	Cropped %				5	25	100	100	90	50	10			
CF=1.00	Kc				0.5	0.70	1.05	1.05	0.80	0.30	0.30			
	ETc mm				4.70	39.33	256.51	270.32	165.78	27.97	4.44			769
2.Potato	Planted %					100								
	Cropped %					75	100	100	75					
CF=1.00	Kc					0.30	0.80	1.05	0.80					
	ETc mm					50.56	195.44	270.32	138.15					654
3.Sesame	Planted %						100							
	Cropped %						75	100	100	100	25			
CF=1.00	Kc						0.40	0.80	1.00	0.70	0.30			
	ETc mm						73.29	205.96	230.25	130.54	11.09			651
4.Soybean	Planted %						100							
	Cropped %						25	100	100	100	75			
CF=1.00	Kc						0.40	0.70	0.90	0.8	0.4			
	ETc mm						24.43	180.21	207.23	149.19	44.36			605
5.Onion	Planted %										Nursery	100		
	Cropped %	100	100	100	25						5	25	100	
CF=1.00	Kc	0.75	0.95	0.90	0.40						0.30	0.50	0.60	
	ETc mm	65.97	99.70	132.28	18.82						2.22	12.45	50.07	382
6.Cabbage	Planted %										Nuesery	100		
	Cropped %	100	100	25							5	75	100	
CF=1.00	Kc	0.95	1.00	0.50							0.30	0.50	0.70	
	ETc mm	83.57	104.94	18.37							2.22	37.34	58.41	305
7.Onion	Planted %										Nursery	100		
	Cropped %	100	100	100	75						5	25	100	
CF=1.00	Kc	0.75	0.95	0.90	0.40						0.30	0.50	0.60	
	ETc mm	65.97	99.70	132.28	56.45						2.22	12.45	50.07	419
8.Cagcage	Planted %										Nuesery	100		
	Cropped %	100	100	75							5	75	100	
CF=1.00	Kc	0.95	1.00	0.50							0.30	0.50	0.70	
	ETc mm	83.57	104.94	55.12							2.22	37.34	58.41	342
9.Grapes	Planted %	100												
	Cropped %	100	100	100	100	100	100	100	100	100	100	100	100	
CF=0.50	Kc	0.00	0.00	0.40	0.60	0.65	0.7	0.7	0.65	0.55	0.45	0.35	0.00	
	ETc mm	0.00	0.00	29.40	56.45	73.04	85.50	90.11	74.83	51.28	33.27	17.42	0.00	511
10.Olive	Planted %	100												
	Cropped %	100	100	100	100	100	100	100	100	100	100	100	100	
CF=0.80	Kc	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	
	ETc mm	42.22	50.37	70.55	90.32	107.87	117.26	123.57	110.52	89.51	70.98	47.79	40.05	961
11.Orange	Planted %	100												
	Cropped %	100	100	100	100	100	100	100	100	100	100	100	100	
CF=0.80	Kc	0.75	0.75	0.80	0.8	0.7	0.65	0.65	0.65	0.65	0.70	0.70	0.70	
	ETc mm	52.78	62.97	94.07	120.42	125.85	127.03	133.87	119.73	96.97	82.81	55.75	46.73	1119

Note: 'CF' means correction factor for ground cover under drip system in percent

Table C-26 Field Water Requirement for Each Crop on 100 feddans Small Scale Investors (Vegetables+Fruits)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.Tomato	ETc mm	0.0	0.0	0.0	4.7	39.3	256.5	270.3	165.8	28.0	4.4	0.0	0.0	769
Cropped Area	feddan	0.0	0.0	0.0	0.5	2.5	10.0	10.0	9.0	5.0	1.0	0.0	0.0	
Water Requirement	cum	0.0	0.0	0.0	9.9	412.9	10773.5	11353.4	6266.5	587.4	18.6	0.0	0.0	29422
Field Requirement	(/.90)	0.0	0.0	0.0	11.0	458.8	11970.6	12614.9	6962.8	652.7	20.7	0.0	0.0	32692
2.Potato	ETc mm	0.0	0.0	0.0	0.0	50.6	195.4	270.3	138.2	0.0	0.0	0.0	0.0	654
Cropped Area	feddan	0.0	0.0	0.0	0.0	7.5	10.0	10.0	7.5	0.0	0.0	0.0	0.0	
Water Requirement	cum	0.0	0.0	0.0	0.0	1592.8	8208.4	11353.4	4351.8	0.0	0.0	0.0	0.0	25506
Field Requirement	(/.80)	0.0	0.0	0.0	0.0	1991.0	10260.5	14191.8	5439.7	0.0	0.0	0.0	0.0	31883
3.Sesame	ETc mm	0.0	0.0	0.0	0.0	0.0	73.3	206.0	230.3	130.5	11.1	0.0	0.0	651
Cropped Area	feddan	0.0	0.0	0.0	0.0	0.0	7.5	10.0	10.0	10.0	2.5	0.0	0.0	
Water Requirement	cum	0.0	0.0	0.0	0.0	0.0	2308.6	8650.2	9670.6	5482.7	116.5	0.0	0.0	26229
Field Requirement	(/.80)	0.0	0.0	0.0	0.0	0.0	2885.8	10812.8	12088.2	6853.3	145.6	0.0	0.0	32785
4.Soybean	ETc mm	0.0	0.0	0.0	0.0	0.0	24.4	180.2	207.2	149.2	44.4	0.0	0.0	605
Cropped Area	feddan	0.0	0.0	0.0	0.0	0.0	2.5	10.0	10.0	10.0	7.5	0.0	0.0	
Water Requirement	cum	0.0	0.0	0.0	0.0	0.0	256.5	7568.9	8703.5	6265.9	1397.4	0.0	0.0	24192
Field Requirement	(/.80)	0.0	0.0	0.0	0.0	0.0	320.6	9461.2	10879.4	7832.4	1746.8	0.0	0.0	30240
5.Onion	ETc mm	66.0	99.7	132.3	18.8	0.0	0.0	0.0	0.0	0.0	2.2	12.4	50.1	382
Cropped Area	feddan	10.0	10.0	10.0	2.5	0.0	0.0	0.0	0.0	0.0	0.5	2.5	10.0	
Water Requirement	cum	2770.9	4187.2	5556.0	197.6	0.0	0.0	0.0	0.0	0.0	4.7	130.7	2102.8	14950
Field Requirement	(/.90)	3078.8	4652.4	6173.3	219.5	0.0	0.0	0.0	0.0	0.0	5.2	145.2	2336.5	16611
6.Cabbage	ETc mm	83.6	104.9	18.4	0.0	0.0	0.0	0.0	0.0	0.0	2.2	37.3	58.4	305
Cropped Area	feddan	10.0	10.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	7.5	10.0	
Water Requirement	cum	3509.8	4407.6	192.9	0.0	0.0	0.0	0.0	0.0	0.0	4.7	1176.1	2453.3	11744
Field Requirement	(/.90)	3899.8	4897.3	214.4	0.0	0.0	0.0	0.0	0.0	0.0	5.2	1306.7	2725.9	13049
7.Onion	ETc mm	66.0	99.7	132.3	56.4	0.0	0.0	0.0	0.0	0.0	2.2	12.4	50.1	419
Cropped Area	feddan	10.0	10.0	10.0	7.5	0.0	0.0	0.0	0.0	0.0	0.5	2.5	10.0	
Water Requirement	cum	2770.9	4187.2	5556.0	1778.1	0.0	0.0	0.0	0.0	0.0	4.7	130.7	2102.8	16530
Field Requirement	(/.90)	3078.8	4652.4	6173.3	1975.7	0.0	0.0	0.0	0.0	0.0	5.2	145.2	2336.5	18367
8.Cabbage	ETc mm	83.6	104.9	55.1	0.0	0.0	0.0	0.0	0.0	0.0	2.2	37.3	58.4	342
Cropped Area	feddan	10.0	10.0	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	7.5	10.0	
Water Requirement	cum	3509.8	4407.6	1736.2	0.0	0.0	0.0	0.0	0.0	0.0	4.7	1176.1	2453.3	13288
Field Requirement	(/.90)	3899.8	4897.3	1929.2	0.0	0.0	0.0	0.0	0.0	0.0	5.2	1306.7	2725.9	14764
9.Grape	ETc mm	0.0	0.0	29.4	56.4	73.0	85.5	90.1	74.8	51.3	33.3	17.4	0.0	511
Cropped Area	feddan	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Water Requirement	cum	0.0	0.0	2469.3	4741.7	6135.2	7182.4	7568.9	6285.9	4307.8	2794.9	1463.6	0.0	42950
Field Requirement	(/.90)	0.0	0.0	2743.7	5268.5	6816.9	7980.4	8409.9	6984.3	4786.5	3105.4	1626.2	0.0	47722
10.Olive	ETc mm	42.2	50.4	70.6	90.3	107.9	117.3	123.6	110.5	89.5	71.0	47.8	40.1	961
Cropped Area	feddan	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Water Requirement	cum	3546.8	4231.3	5926.4	7586.7	9061.2	9850.1	10380.3	9283.8	7519.1	5852.4	4014.3	3364.5	80727
Field Requirement	(/.90)	3940.9	4701.4	6584.8	8429.7	10068.0	10944.5	11533.6	10315.3	8354.6	6624.8	4460.4	3738.3	89696
11.Orange	ETc mm	52.8	63.0	91.1	120.4	125.9	127.0	133.9	119.7	97.0	82.8	55.8	46.7	1119
Cropped Area	feddan	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Water Requirement	cum	4433.5	5289.1	7901.8	10115.6	10571.4	10670.9	11245.3	10057.4	8145.7	6956.1	4683.4	3925.3	93995
Field Requirement	(/.90)	4926.1	5876.8	8779.8	11239.6	11746.0	11856.6	12494.8	11174.9	9050.8	7729.0	5203.7	4361.4	104439

Table C-27 Summary of Field, Mesqa and Canal Water Requirement for 100 feddans Small Scale Investors (Vegetables+Fruits)

Items	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
100 feds Field Requirement	22824	29678	32598	27144	31081	56219	79519	63845	37530	19393	14194	18224	432249
100 feds Mesqa Req. (/.95)	24025	31240	34314	28573	32717	59178	83704	67205	39506	20414	14941	19184	454999
100 feds Canal Req. (/.90)	26695	34711	38127	31747	36352	65753	93005	74672	43895	22682	16601	21315	505555
Field Req. in cum/fed/month	228	297	326	271	311	562	795	638	375	194	142	182	4322
in cum/fed/day	7	11	11	9	10	19	26	21	13	6	5	6	142
in lit/fed/sec	0.03	0.12	0.12	0.10	0.12	0.22	0.30	0.24	0.14	0.07	0.05	0.07	1.64
Mesqa Req. in cum/fed/month	240	312	343	286	327	592	837	672	395	204	149	192	4550
in cum/fed/day	8	11	11	10	11	20	27	22	13	7	5	6	149
in lit/fed/sec	0.09	0.13	0.13	0.11	0.12	0.23	0.31	0.25	0.15	0.08	0.06	0.07	1.73
Canal Req. in cum/fed/month	267	347	381	317	364	658	930	747	439	227	166	213	5056
in cum/fed/day	9	12	12	11	12	22	30	24	15	7	6	7	166
in lit/fed/sec	0.10	0.14	0.14	0.12	0.14	0.25	0.35	0.28	0.17	0.08	0.06	0.08	1.92
Field Req. in mcm/Net.A/mnh	1.90	2.47	2.71	2.26	2.59	4.68	6.62	5.32	3.12	1.61	1.18	1.52	35.98
in mcm/Net.A/day	0.06	0.09	0.09	0.08	0.08	0.16	0.21	0.17	0.10	0.05	0.04	0.05	1.18
in lit/Net.A/sec	709	1021	1013	872	966	1806	2472	1984	1205	603	456	566	13674
Mesqa Req. in mcm/Net.A/mnh	2.00	2.60	2.86	2.38	2.72	4.93	6.97	5.59	3.29	1.70	1.24	1.60	37.88
in mcm/Net.A/day	0.06	0.09	0.09	0.08	0.09	0.16	0.22	0.18	0.11	0.05	0.04	0.05	1.24
in lit/Net.A/sec	747	1075	1067	918	1017	1901	2602	2083	1269	634	480	596	14394
Canal Req. in mcm/Net.A/mnh	2.22	2.89	3.17	2.64	3.03	5.47	7.74	6.22	3.65	1.89	1.38	1.77	42.09
in mcm/Net.A/day	0.07	0.10	0.10	0.09	0.10	0.18	0.25	0.20	0.12	0.06	0.05	0.06	1.38
in lit/Net.A/sec	830	1194	1185	1020	1130	2112	2891	2321	1410	705	533	663	15993

Table C-28 Weighted Mean Crop Coefficient and Crop Evapotranspiration (720 feddans Large Scale Investors:Land Use Crops)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Reference ETo, mm/month		87.97	104.94	146.98	188.16	224.73	244.30	257.45	230.25	186.49	147.88	99.56	83.45	2002
1.Maize	Planted %						100							
	Cropped %						75	100	100	100	25			
CF=1.00	Kc						0.30	0.80	0.75	0.70	0.70			
	ETc mm						54.97	205.96	172.69	130.54	25.88			590
2.Soybean	Planted %						100							
	Cropped %						25	100	100	100	75			
CF=1.00	Kc						0.40	0.70	0.90	0.8	0.4			
	ETc mm						24.43	180.21	207.23	149.19	44.36			605
3.Potate	Planted %				100									
	Cropped %				25	100	100	100	25					
CF=1.00	Kc				0.30	0.80	1.05	0.80	0.70					
	ETc mm				14.11	179.79	256.51	205.96	40.29					697
4.Sesame	Planted %						100							
	Cropped %						75	100	100	100	25			
CF=1.00	Kc						0.40	0.80	1.00	0.70	0.30			
	ETc mm						73.29	205.96	230.25	130.54	11.09			651
5.Barley	Planted %											100		
	Cropped %	100	100	100	100	25						25	100	
CF=1.00	Kc	1.00	1.00	1.00	0.50	0.30						0.33	0.90	
	ETc mm	87.97	104.94	146.98	94.08	16.85						8.21	75.10	534
6.Onion	Planted %										Nursery	100		
	Cropped %	100	100	100	25						5	25	100	
CF=1.00	Kc	0.75	0.95	0.90	0.40						0.30	0.50	0.60	
	ETc mm	65.97	99.70	132.28	18.82						2.22	12.45	50.07	382
7.Cabbage	Planted %										Nuesery	100		
	Cropped %	100	100	25							5	75	100	
CF=1.00	Kc	0.95	1.00	0.50							0.30	0.50	0.70	
	ETc mm	83.57	104.94	18.37							2.22	37.34	58.41	305
8.Wheat	Planted %											100		
	Cropped %	100	100	100	100	75						25	100	
CF=1.00	Kc	0.90	1.05	1.05	1.05	0.2						0.40	0.70	
	ETc mm	79.17	110.19	154.33	197.57	33.71						9.96	58.41	643

Note: 'CF' means correction factor for ground cover under drip system in percent

Table C-29 Field Water Requirement for Each Crop on 720 feddans Large Scale Investors (Land Use Crops)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.Maize	ETc mm	0.0	0.0	0.0	0.0	0.0	55.0	206.0	172.7	130.5	25.9	0.0	0.0	590
Cropped Area	feddan	0.0	0.0	0.0	0.0	0.0	135.0	180.0	180.0	180.0	45.0	0.0	0.0	
Water Requirement	cum	0	0	0	0	0	31166	155704	130553	93683	4891	0	0	421002
Field Requirement	(/.80)	0	0	0	0	0	38958	194630	163191	123360	6114	0	0	526253
2.Soybean	ETc mm	0.0	0.0	0.0	0.0	0.0	24.4	180.2	207.2	149.2	44.4	0.0	0.0	605
Cropped Area	feddan	0.0	0.0	0.0	0.0	0.0	45.0	180.0	180.0	180.0	135.0	0.0	0.0	
Water Requirement	cum	0	0	0	0	0	4617	136241	156684	112786	25154	0	0	435482
Field Requirement	(/.80)	0	0	0	0	0	5772	170301	195830	140983	31442	0	0	544327
3.Potato	ETc mm	0.0	0.0	0.0	14.1	179.8	256.5	206.0	40.3	0.0	0.0	0.0	0.0	697
Cropped Area	feddan	0.0	0.0	0.0	45.0	180.0	180.0	180.0	45.0	0.0	0.0	0.0	0.0	
Water Requirement	cum	0	0	0	2687	135918	193924	155704	7816	0	0	0	0	496829
Field Requirement	(/.80)	0	0	0	3334	169898	242404	194630	9519	0	0	0	0	619786
4.Sesame	ETc mm	0.0	0.0	0.0	0.0	0.0	73.3	206.0	230.3	130.5	11.1	0.0	0.0	651
Cropped Area	feddan	0.0	0.0	0.0	0.0	0.0	135.0	180.0	180.0	180.0	45.0	0.0	0.0	
Water Requirement	cum	0	0	0	0	0	41555	155704	174971	98688	2096	0	0	472114
Field Requirement	(/.80)	0	0	0	0	0	51944	194630	217588	123360	2620	0	0	590143
5.Barley	ETc mm	88.0	104.9	147.0	94.1	16.9	0.0	0.0	0.0	0.0	0.0	8.2	75.1	534
Cropped Area	feddan	180.0	180.0	180.0	180.0	45.0	0.0	0.0	0.0	0.0	0.0	45.0	180.0	
Water Requirement	cum	66502	79336	111119	71125	3186	0	0	0	0	0	1552	56776	389597
Field Requirement	(/.80)	83127	99171	138899	88907	3982	0	0	0	0	0	1941	70970	486996
6.Onion	ETc mm	66.0	99.7	132.3	18.8	0.0	0.0	0.0	0.0	0.0	2.2	12.4	50.1	382
Cropped Area	feddan	180.0	180.0	180.0	45.0	0.0	0.0	0.0	0.0	0.0	9.0	45.0	180.0	
Water Requirement	cum	43876	75370	100007	3556	0	0	0	0	0	81	2352	37851	269096
Field Requirement	(/.90)	55418	83744	111119	3951	0	0	0	0	0	93	2613	42066	298996
7.Cabbage	ETc mm	83.6	104.9	18.4	0.0	0.0	0.0	0.0	0.0	0.0	2.2	37.3	58.4	305
Cropped Area	feddan	180.0	180.0	45.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	135.0	180.0	
Water Requirement	cum	63177	79336	3472	0	0	0	0	0	0	84	21169	44159	211393
Field Requirement	(/.90)	70197	88152	3858	0	0	0	0	0	0	93	23521	49065	234887
8.Wheat	ETc mm	79.2	110.2	154.3	197.6	33.7	0.0	0.0	0.0	0.0	0.0	10.0	58.4	643
Cropped Area	feddan	180.0	180.0	180.0	180.0	135.0	0.0	0.0	0.0	0.0	0.0	45.0	180.0	
Water Requirement	cum	59352	83303	116675	149363	19114	0	0	0	0	0	1882	44159	474348
Field Requirement	(/.80)	74815	104129	145844	186704	23892	0	0	0	0	0	2352	55199	592935

Table C-30 Summary of Field, Mesqa and Canal Water Requirement for 720 feddans Large Scale Investors (Land Use Crops)

Items		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
720 feds Field Requirement		283557	375195	399720	282896	197772	339078	754191	586129	387704	40362	30428	217231	3666501
720 feds Mesqa Req.	(/.95)	298481	394942	420758	297785	208181	356924	793885	616978	408109	42487	32029	228723	3227895
720 feds Canal Req.	(/.90)	331646	438825	467509	330873	231312	396582	882094	685531	453451	47207	35593	254142	3586551
Field Req.	in cum/fed/month	394	521	555	393	275	471	1047	814	538	56	42	302	4259
	in cum/fed/day	13	19	18	13	9	16	34	26	18	2	1	10	137
	in lit/fed/sec	0.15	0.22	0.21	0.15	0.10	0.18	0.39	0.30	0.21	0.02	0.02	0.11	1.59
Mesqa Req.	in cum/fed/month	415	549	584	414	289	496	1103	857	567	59	44	318	4133
	in cum/fed/day	13	20	19	14	9	17	36	28	19	2	1	10	145
	in lit/fed/sec	0.15	0.23	0.22	0.16	0.11	0.19	0.41	0.32	0.22	0.02	0.02	0.12	1.67
Canal Req.	in cum/fed/month	461	609	649	460	321	551	1225	952	630	66	49	353	4981
	in cum/fed/day	15	22	21	15	10	18	40	31	21	2	2	11	161
	in lit/fed/sec	0.17	0.25	0.24	0.18	0.12	0.21	0.45	0.36	0.24	0.02	0.02	0.13	1.86
Field Req.	in mcm/Net.A/month	6.56	8.68	9.24	6.54	4.57	7.84	17.44	13.55	8.97	0.93	0.70	5.02	70.91
	in mcm/Net.A/day	0.21	0.31	0.30	0.22	0.15	0.26	0.56	0.44	0.30	0.03	0.02	0.16	2.29
	in lit/Net.A/sec	2448	3385	3451	2524	1708	3025	6512	5061	3459	348	271	1876	26476
Mesqa Req.	in mcm/Net.A/month	6.90	9.13	9.73	6.89	4.81	8.25	18.36	14.27	9.41	0.98	0.74	5.29	74.65
	in mcm/Net.A/day	0.22	0.33	0.31	0.23	0.16	0.28	0.59	0.46	0.31	0.03	0.02	0.17	2.41
	in lit/Net.A/sec	2577	3775	3633	2657	1797	3184	6854	5327	3641	367	286	1975	27869
Canal Req.	in mcm/Net.A/month	7.67	10.15	10.81	7.65	5.35	9.17	20.40	15.85	10.49	1.09	0.82	5.88	82.94
	in mcm/Net.A/day	0.25	0.36	0.35	0.26	0.17	0.31	0.66	0.51	0.35	0.04	0.03	0.19	2.68
	in lit/Net.A/sec	2863	4195	4036	2952	1997	3538	7616	5919	4046	408	318	2194	30966

Table C-31 Weighted Mean Crop Coefficient and Crop Evapotranspiration (720 feddans Large Scale Investors:Dairy)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Reference ETo, mm/month		87.97	104.94	145.98	189.16	224.73	244.30	257.45	230.25	185.43	147.88	99.56	83.45	2002
1.Maize	Planted %					100								
	Cropped %					75	100	100	100	25				
CF=1.00	Kc					0.30	0.80	0.75	0.70	0.70				
	ETc mm					50.56	195.44	193.09	161.18	32.63				633
2.Sorghum	Planted %						100							
	Cropped %						25	100	100	100	75			
CF=1.00	Kc						0.30	0.80	1.05	0.60	0.60			
	ETc mm						18.32	205.96	241.76	111.89	66.54			644
3.Maize	Planted %					100								
	Cropped %					25	100	100	100	75				
CF=1.00	Kc					0.30	0.80	0.75	0.70	0.70				
	ETc mm					16.85	195.44	193.09	161.18	97.90				664
4.Sorghum	Planted %						100							
	Cropped %						75	100	100	100	25			
CF=1.00	Kc						0.30	0.80	1.05	0.60	0.60			
	ETc mm						54.97	205.96	241.76	111.89	22.18			637
5.Wheat	Planted %											100		
	Cropped %	100	100	100	100	75						25	100	
CF=1.00	Kc	0.90	1.05	1.05	1.05	0.2						0.40	0.70	
	ETc mm	79.17	110.19	154.33	197.57	33.71						9.98	58.41	643
6.Berseem	Planted %										100			
	Cropped %	100	100	75							25	100	100	
CF=1.00	Kc	0.75	0.75	0.75							0.50	0.75	0.75	
	ETc mm	65.97	78.71	82.68							18.43	74.67	62.58	383
7.Fodderbeat	Planted %										100			
	Cropped %	100	100	100	25						25	100	100	
CF=1.00	Kc	1.05	1.05	0.90	0.90						0.40	0.60	0.90	
	ETc mm	92.36	110.19	132.28	42.34						14.79	59.74	75.10	527
8.Barley	Planted %											100		
	Cropped %	100	100	100	100	25						25	100	
CF=1.00	Kc	1.00	1.00	1.00	0.50	0.30						0.33	0.90	
	ETc mm	87.97	104.94	145.98	94.08	16.85						8.21	75.10	534

Note: "CF" means correction factor for ground cover under drip system in percent

Table C-32 Field Water Requirement for Each Crop on 720 feddans Large Scale Investors (Dairy)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.Maize	ETc mm	0.0	0.0	0.0	0.0	50.6	195.4	193.1	161.2	32.6	0.0	0.0	0.0	633
Cropped Area	feddan	0.0	0.0	0.0	0.0	135.0	180.0	180.0	180.0	45.0	0.0	0.0	0.0	
Water Requirement	cum	0	0	0	0	28670	147751	145972	121850	6168	0	0	0	450411
Field Requirement	(/.80)	0	0	0	0	35838	184689	182465	152312	7710	0	0	0	563014
2.Sorghum	ETc mm	0.0	0.0	0.0	0.0	0.0	18.3	206.0	241.8	111.9	66.5	0.0	0.0	644
Cropped Area	feddan	0.0	0.0	0.0	0.0	0.0	45.0	180.0	180.0	180.0	135.0	0.0	0.0	
Water Requirement	cum	0	0	0	0	0	3463	155704	182774	84590	37731	0	0	464261
Field Requirement	(/.80)	0	0	0	0	0	4329	194630	228468	105737	47163	0	0	580327
3.Maize	ETc mm	0.0	0.0	0.0	0.0	16.9	195.4	193.1	161.2	97.9	0.0	0.0	0.0	664
Cropped Area	feddan	0.0	0.0	0.0	0.0	45.0	180.0	180.0	180.0	135.0	0.0	0.0	0.0	
Water Requirement	cum	0	0	0	0	3186	147751	145972	121850	55512	0	0	0	474271
Field Requirement	(/.80)	0	0	0	0	3982	184689	182465	152312	69390	0	0	0	592839
4.Sorghum	ETc mm	0.0	0.0	0.0	0.0	0.0	55.0	206.0	241.8	111.9	22.2	0.0	0.0	637
Cropped Area	feddan	0.0	0.0	0.0	0.0	0.0	135.0	180.0	180.0	180.0	45.0	0.0	0.0	
Water Requirement	cum	0	0	0	0	0	31166	155704	182774	84590	4192	0	0	458427
Field Requirement	(/.80)	0	0	0	0	0	38958	194630	228468	105737	5240	0	0	573033
5.Wheat	ETc mm	79.2	110.2	154.3	197.6	33.7	0.0	0.0	0.0	0.0	0.0	10.0	58.4	643
Cropped Area	feddan	180.0	180.0	180.0	180.0	135.0	0.0	0.0	0.0	0.0	0.0	45.0	180.0	
Water Requirement	cum	59852	83303	116675	149363	19114	0	0	0	0	0	1882	41159	474348
Field Requirement	(/.80)	74815	104129	145844	186704	23892	0	0	0	0	0	2352	51449	592935
6.Berseem	ETc mm	66.0	78.7	82.7	0.0	0.0	0.0	0.0	0.0	0.0	18.5	74.7	62.6	383
Cropped Area	feddan	180.0	180.0	135.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0	180.0	180.0	
Water Requirement	cum	49876	59502	46878	0	0	0	0	0	0	3494	56451	47313	263516
Field Requirement	(/.80)	62345	74378	58598	0	0	0	0	0	0	4367	70564	59142	329394
7.Fodderbeat	ETc mm	92.4	110.2	132.3	42.3	0.0	0.0	0.0	0.0	0.0	14.8	59.7	75.1	527
Cropped Area	feddan	180.0	180.0	180.0	45.0	0.0	0.0	0.0	0.0	0.0	45.0	180.0	180.0	
Water Requirement	cum	69827	83303	100007	8002	0	0	0	0	0	2795	45161	56776	365871
Field Requirement	(/.80)	87284	104129	125009	10002	0	0	0	0	0	3491	56451	70970	457339
8.Barley	ETc mm	88.0	104.9	147.0	94.1	16.9	0.0	0.0	0.0	0.0	0.0	8.2	75.1	534
Cropped Area	feddan	180.0	180.0	180.0	180.0	45.0	0.0	0.0	0.0	0.0	0.0	45.0	180.0	
Water Requirement	cum	66502	79336	111119	71125	3186	0	0	0	0	0	1552	56776	389597
Field Requirement	(/.80)	83127	99171	138899	88907	3982	0	0	0	0	0	1941	70970	486996

Table C-33 Summary of Field, Mesqa and Canal Water Requirement for 720 feddans Large Scale Investors (Dairy)

Items	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
720 feds Field Requirement	307572	381807	468350	285613	67694	412665	754191	761560	288575	60264	131308	236281	5231542
720 feds Mesqa Req. (/.95)	323760	401902	493000	300645	71257	434384	793885	801642	303763	63436	138219	269770	5401624
720 feds Canal Req. (/.90)	359733	446557	547778	334050	79174	482649	882094	890713	337514	70484	153577	299744	6779582
Field Req. in cum/fed/month	427	530	650	397	94	573	1047	1058	401	84	182	356	4488
in cum/fed/day	14	19	21	13	3	19	34	34	13	3	6	11	145
in lit/fed/sec	0.16	0.22	0.24	0.15	0.04	0.22	0.39	0.39	0.15	0.03	0.07	0.13	1.68
Mesqa Req. in cum/fed/month	450	558	685	418	99	603	1103	1113	422	88	192	375	4724
in cum/fed/day	15	20	22	14	3	20	36	36	14	3	6	12	152
in lit/fed/sec	0.17	0.23	0.26	0.16	0.04	0.23	0.41	0.42	0.16	0.03	0.07	0.14	1.76
Canal Req. in cum/fed/month	500	620	761	464	110	670	1225	1237	469	98	213	416	5249
in cum/fed/day	16	22	25	15	4	22	40	40	16	3	7	13	169
in lit/fed/sec	0.19	0.26	0.28	0.18	0.04	0.26	0.45	0.45	0.18	0.04	0.08	0.16	1.96
Field Req. in mcm/Net.A/month	7.11	8.83	10.83	6.60	1.57	9.54	17.44	17.61	6.67	1.39	3.04	5.93	74.73
in mcm/Net.A/day	0.23	0.32	0.35	0.22	0.05	0.32	0.56	0.57	0.22	0.04	0.10	0.19	2.41
in lit/Net.A/sec	2656	3650	4041	2548	584	3682	6512	6575	2575	520	1171	2213	27901
Mesqa Req. in mcm/Net.A/month	7.49	9.29	11.40	6.95	1.65	10.05	18.36	18.54	7.02	1.47	3.20	6.24	78.66
in mcm/Net.A/day	0.24	0.33	0.37	0.23	0.05	0.33	0.59	0.60	0.23	0.05	0.11	0.20	2.54
in lit/Net.A/sec	2795	3842	4257	2682	615	3875	6854	6921	2710	548	1233	2329	29369
Canal Req. in mcm/Net.A/month	8.32	10.33	12.67	7.72	1.83	11.16	20.40	20.60	7.81	1.63	3.55	6.93	87.40
in mcm/Net.A/day	0.27	0.37	0.41	0.26	0.06	0.37	0.66	0.66	0.26	0.05	0.12	0.22	2.82
in lit/Net.A/sec	3106	4269	4729	2980	684	4306	7616	7690	3011	609	1370	2588	32632

Table C-34 Weighted Mean Crop Coefficient and Crop Evapotranspiration (720 feddans Large Scale Investors:Beef Cattle)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Reference ETo, mm/month		87.97	104.94	145.98	183.16	224.73	244.30	257.45	230.25	186.49	147.88	99.56	83.45	2002
1.Maize	Planted %					100								
	Cropped %					25	100	100	100	75				
CF=1.00	Kc					0.30	0.80	0.75	0.70	0.70				
	ETc mm					16.85	195.44	193.09	161.18	97.90				664
2.Sorghum	Planted %						100							
	Cropped %						25	100	100	100	75			
CF=1.00	Kc						0.30	0.80	1.05	0.60	0.60			
	ETc mm						18.32	205.96	241.76	111.83	66.54			644
3.Sorghum	Planted %						100							
	Cropped %						75	100	100	100	25			
CF=1.00	Kc						0.30	0.80	1.05	0.60	0.60			
	ETc mm						54.97	205.96	241.76	111.89	22.18			637
4.Maize	Planted %					100								
	Cropped %					75	100	100	100	25				
CF=1.00	Kc					0.30	0.80	0.75	0.70	0.70				
	ETc mm					50.56	195.44	193.09	161.18	32.63				633
5.Berseem	Planted %										100			
	Cropped %	100	100	100	100	75					25	100	100	
CF=1.00	Kc	0.75	0.75	0.75	0.75	0.75					0.50	0.75	0.75	
	ETc mm	65.97	78.71	110.24	141.12	126.41					18.48	74.67	62.58	678
6.Wheat	Planted %											100		
	Cropped %	100	100	100	100	75						25	100	
CF=1.00	Kc	0.90	1.05	1.05	1.05	0.2						0.40	0.70	
	ETc mm	79.17	110.19	154.33	197.57	33.71						9.96	58.41	643
7.Barley	Planted %											100		
	Cropped %	100	100	100	100	25						25	100	
CF=1.00	Kc	1.00	1.00	1.00	0.50	0.30						0.33	0.90	
	ETc mm	87.97	104.94	145.98	94.08	16.85						8.21	75.10	534
8.Berseem	Planted %										100			
	Cropped %	100	100	75							25	100	100	
CF=1.00	Kc	0.75	0.75	0.75							0.50	0.75	0.75	
	ETc mm	65.97	78.71	82.68							18.48	74.67	62.58	383

Note: "CF" means correction factor for ground cover under drip system in percent

Table C-35 Field Water Requirement for Each Crop on 720 feddans Large Scale Investors (Beef Cattle)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.Maize	ETc mm	0.0	0.0	0.0	0.0	16.9	195.4	193.1	161.2	97.9	0.0	0.0	0.0	664
	Cropped Area feddan	0.0	0.0	0.0	0.0	45.0	180.0	180.0	180.0	135.0	0.0	0.0	0.0	
	Water Requirement cum	0	0	0	0	3185	147751	145972	121850	55512	0	0	0	474271
	Field Requirement(/.80)	0	0	0	0	3982	184689	182465	152312	69390	0	0	0	592839
2.Sorghum	ETc mm	0.0	0.0	0.0	0.0	0.0	18.3	206.0	241.8	111.9	65.5	0.0	0.0	644
	Cropped Area feddan	0.0	0.0	0.0	0.0	0.0	45.0	180.0	180.0	180.0	135.0	0.0	0.0	
	Water Requirement cum	0	0	0	0	0	3453	155704	182774	84590	37731	0	0	464261
	Field Requirement(/.80)	0	0	0	0	0	4329	194630	228468	105737	47163	0	0	580327
3.Sorghum	ETc mm	0.0	0.0	0.0	0.0	0.0	55.0	206.0	241.8	111.9	22.2	0.0	0.0	637
	Cropped Area feddan	0.0	0.0	0.0	0.0	0.0	135.0	180.0	180.0	180.0	45.0	0.0	0.0	
	Water Requirement cum	0	0	0	0	0	31166	155704	182774	84590	4192	0	0	458427
	Field Requirement(/.80)	0	0	0	0	0	38958	194630	228468	105737	5240	0	0	573033
4.Maize	ETc mm	0.0	0.0	0.0	0.0	50.6	195.4	193.1	161.2	32.6	0.0	0.0	0.0	633
	Cropped Area feddan	0.0	0.0	0.0	0.0	135.0	180.0	180.0	180.0	45.0	0.0	0.0	0.0	
	Water Requirement cum	0	0	0	0	28670	147751	145972	121850	6168	0	0	0	450411
	Field Requirement(/.80)	0	0	0	0	35838	184689	182465	152312	7710	0	0	0	563014
5.Berseem	ETc mm	65.0	78.7	110.2	141.1	128.4	0.0	0.0	0.0	0.0	18.5	74.7	62.6	678
	Cropped Area feddan	180.0	180.0	180.0	180.0	135.0	0.0	0.0	0.0	0.0	45.0	180.0	180.0	
	Water Requirement cum	49875	59502	83339	106688	71676	0	0	0	0	3494	56451	47313	478340
	Field Requirement(/.80)	62346	74378	104174	133360	89595	0	0	0	0	4367	70564	59142	597925
6.Wheat	ETc mm	79.2	110.2	154.3	197.6	33.7	0.0	0.0	0.0	0.0	0.0	10.0	58.4	643
	Cropped Area feddan	180.0	180.0	180.0	180.0	135.0	0.0	0.0	0.0	0.0	0.0	45.0	180.0	
	Water Requirement cum	59852	83303	116675	149363	19114	0	0	0	0	0	1882	44159	474348
	Field Requirement(/.80)	74815	104129	145844	186704	23892	0	0	0	0	0	2352	55199	592935
7.Barley	ETc mm	88.0	104.9	147.0	94.1	16.9	0.0	0.0	0.0	0.0	0.0	8.2	75.1	534
	Cropped Area feddan	180.0	180.0	180.0	180.0	45.0	0.0	0.0	0.0	0.0	0.0	45.0	180.0	
	Water Requirement cum	66502	79336	111119	71125	3186	0	0	0	0	0	1552	56776	389597
	Field Requirement(/.80)	83127	99171	138899	88907	3982	0	0	0	0	0	1941	70970	486998
8.Berseem	ETc mm	66.0	78.7	82.7	0.0	0.0	0.0	0.0	0.0	0.0	18.5	74.7	62.6	383
	Cropped Area feddan	180.0	180.0	135.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0	180.0	180.0	
	Water Requirement cum	49876	59502	46878	0	0	0	0	0	0	3494	56451	47313	263516
	Field Requirement(/.80)	62345	74378	58598	0	0	0	0	0	0	4367	70564	59142	329394

Table C-36 Summary of Field, Mesqa and Canal Water Requirement for 600 feddans Large Scale Investors (Beef Cattle)

Items		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
720 feds Field Requirement		282633	352055	447515	403971	157283	412655	754191	761560	288575	81137	145421	244453	5500073
720 feds Mesqa Req. (/.95)		297509	370585	471069	430495	165567	434384	793885	801642	303763	84355	153075	257319	5684288
720 feds Canal Req. (/.90)		330565	411761	523410	478328	183963	482649	882094	890713	337514	71506	170083	285910	6093653
Field Req.	in cum/fed/month	393	489	622	561	218	573	1047	1058	401	85	202	340	4861
	in cum/fed/day	13	17	20	19	7	19	34	34	13	3	7	11	157
	in lit/fed/sec	0.15	0.20	0.23	0.22	0.08	0.22	0.39	0.39	0.15	0.03	0.08	0.13	1.81
Mesqa Req.	in cum/fed/month	413	515	654	598	230	603	1103	1113	422	89	213	357	5117
	in cum/fed/day	13	18	21	20	7	20	36	36	14	3	7	12	165
	in lit/fed/sec	0.15	0.21	0.24	0.23	0.09	0.23	0.41	0.42	0.16	0.03	0.08	0.13	1.91
Canal Req.	in cum/fed/month	459	572	727	664	256	670	1225	1237	469	99	236	397	5686
	in cum/fed/day	15	20	23	22	8	22	40	40	16	3	8	13	183
	in lit/fed/sec	0.17	0.24	0.27	0.26	0.10	0.26	0.46	0.46	0.18	0.04	0.09	0.15	2.12
Field Req.	in mcm/Net.A/month	6.54	8.14	10.35	9.46	3.64	9.54	17.41	17.61	6.67	1.41	3.36	5.65	80.94
	in mcm/Net.A/day	0.21	0.23	0.33	0.32	0.12	0.32	0.56	0.57	0.22	0.05	0.11	0.18	2.61
	in lit/Net.A/sec	2440	3365	3864	3649	1358	3682	6512	6575	2575	528	1297	2111	30219
Mesqa Req.	in mcm/Net.A/month	6.88	8.57	10.89	9.96	3.83	10.05	18.36	18.54	7.02	1.49	3.54	5.95	85.20
	in mcm/Net.A/day	0.22	0.31	0.35	0.33	0.12	0.33	0.59	0.60	0.23	0.05	0.12	0.19	2.75
	in lit/Net.A/sec	2569	3542	4067	3841	1429	3875	6854	6921	2710	556	1366	2222	31810
Canal Req.	in mcm/Net.A/month	7.64	9.52	12.10	11.06	4.25	11.16	20.40	20.60	7.81	1.65	3.93	6.61	94.67
	in mcm/Net.A/day	0.25	0.34	0.39	0.37	0.14	0.37	0.66	0.66	0.26	0.05	0.13	0.21	3.05
	in lit/Net.A/sec	2854	3936	4519	4267	1588	4306	7616	7690	3011	617	1517	2469	35341

Table C-37 Weighted Mean Crop Coefficient and Crop Evapotranspiration (720 feddans Large Scale Investors:Fruits)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Reference ETo, mm/month		87.97	104.94	146.98	188.16	224.73	244.30	257.45	230.25	185.49	147.88	99.56	83.45	2002
1.Grape	Planted %	100												
	Cropped %	100	100	100	100	100	100	100	100	100	100	100	100	
CF=0.50	Kc	0.00	0.00	0.40	0.60	0.65	0.70	0.70	0.65	0.55	0.45	0.35	0.00	
	ETc mm	0.00	0.00	29.40	56.45	73.04	85.50	90.11	74.83	51.28	33.27	17.42	0.00	511
2.Olive	Planted %	100												
	Cropped %	100	100	100	100	100	100	100	100	100	100	100	100	
CF=0.80	Kc	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	
	ETc mm	42.22	50.37	70.55	90.32	107.87	117.26	123.57	110.52	89.51	70.98	47.79	40.05	961
3.Orange	Planted %	100												
	Cropped %	100	100	100	100	100	100	100	100	100	100	100	100	
CF=0.80	Kc	0.75	0.75	0.8	0.80	0.70	0.65	0.65	0.65	0.65	0.70	0.70	0.70	
	ETc mm	52.78	62.97	94.07	120.42	125.85	127.03	133.87	119.73	96.97	82.81	55.75	46.73	1119
4.Almond	Planted %	100												
	Cropped %	100	100	100	100	100	100	100	100	100	100	100	100	
CF=0.80	Kc	0.00	0.00	0.65	0.75	0.75	0.80	0.80	0.70	0.70	0.65	0.55	0.00	
	ETc mm	0.00	0.00	76.43	112.90	134.84	156.35	161.77	128.94	104.43	76.90	43.81	0.00	999

Note: 'CF' means correction factor for ground cover under drip system in percent

Table C-38 Field Water Requirement for Each Crop on 720 feddans Large Scale Investors (Fruits)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.Grape	ETc mm	0.0	0.0	29.4	56.4	73.0	85.5	90.1	74.8	51.3	33.3	17.4	0.0	511
Cropped Area	feddan	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	
Water Requirement	cum	0	0	22224	42675	55217	64641	68120	56573	38770	25154	13172	0	386517
Field Requirement	(/.90)	0	0	24693	47417	61352	71824	75689	62859	43078	27949	14636	0	429436
2.Olive	ETc mm	42.2	50.4	70.6	90.3	107.9	117.3	123.6	110.5	89.5	71.0	47.8	40.1	961
Cropped Area	feddan	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	
Water Requirement	cum	31921	38081	53337	68280	81551	88651	93422	83554	67672	53661	36129	30281	726541
Field Requirement	(/.90)	35468	42313	59264	75867	90612	98501	103803	92838	75191	59624	40143	33645	807267
3.Orange	ETc mm	52.8	63.0	94.1	120.4	125.9	127.0	133.9	119.7	97.0	82.8	55.8	46.7	1119
Cropped Area	feddan	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	
Water Requirement	cum	39901	47602	71116	91040	95143	96038	101208	90517	73311	62605	42150	35327	845959
Field Requirement	(/.90)	44335	52891	79018	101156	105714	106709	112453	100574	81457	69561	46834	39253	939954
4.Almond	ETc mm	0.0	0.0	76.4	112.9	134.8	156.4	161.8	128.9	104.4	76.9	43.8	0.0	999
Cropped Area	feddan	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	180.0	
Water Requirement	cum	0	0	57782	85350	101939	118201	124563	97480	78951	58133	33118	0	755517
Field Requirement	(/.90)	0	0	64202	94834	113265	131334	138403	108311	87723	64592	36798	0	839453

Table C-39 Summary of Field, Mesqa and Canal Water Requirement for 720 feddans Large Scale Investors (Fruits)

Items	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
720 feds Field Requirement	79802	95204	162975	288542	370944	408368	430349	364582	287449	221725	138410	72898	3016181
720 feds Mesqa Req. (/.95)	84002	100214	171552	303834	390468	429861	452998	383770	302578	233395	145695	76734	3174927
720 feds Canal Req. (/.90)	93336	111349	190614	337593	433853	477623	503331	426811	336198	259327	161884	85261	3527697
Field Req. in cum/fed/month	111	132	226	401	515	567	598	506	399	308	192	101	4189
in cum/fed/day	4	5	7	13	17	19	19	16	13	10	6	3	135
in lit/fed/sec	0.04	0.05	0.08	0.15	0.19	0.22	0.22	0.19	0.15	0.11	0.07	0.04	1.56
Mesqa Req. in cum/fed/month	117	139	238	422	542	597	629	533	420	324	202	107	4410
in cum/fed/day	4	5	8	14	17	20	20	17	14	10	7	3	142
in lit/fed/sec	0.04	0.06	0.09	0.16	0.20	0.23	0.23	0.20	0.15	0.12	0.08	0.04	1.65
Canal Req. in cum/fed/month	130	155	265	469	603	663	699	592	467	360	225	118	4900
in cum/fed/day	4	6	9	16	19	22	23	19	16	12	7	4	158
in lit/fed/sec	0.05	0.06	0.10	0.18	0.22	0.26	0.26	0.22	0.18	0.13	0.09	0.04	1.83
Field Req. in mcm/Net.A/mnh	1.85	2.20	3.77	6.67	8.58	9.44	9.95	8.43	6.65	5.13	3.20	1.69	69.75
in mcm/Net.A/day	0.06	0.08	0.12	0.22	0.28	0.31	0.32	0.27	0.22	0.17	0.11	0.05	2.25
in lit/Net.A/sec	683	910	1407	2575	3203	3643	3716	3148	2565	1914	1235	629	26041
Mesqa Req. in mcm/Net.A/mnh	1.94	2.32	3.97	7.03	9.03	9.94	10.48	8.87	7.00	5.40	3.37	1.77	73.42
in mcm/Net.A/day	0.06	0.08	0.13	0.23	0.29	0.33	0.34	0.29	0.23	0.17	0.11	0.06	2.37
in lit/Net.A/sec	725	958	1491	2711	3371	3835	3911	3313	2700	2015	1300	663	27412
Canal Req. in mcm/Net.A/mnh	2.16	2.57	4.41	7.81	10.03	11.05	11.64	9.86	7.77	6.00	3.74	1.97	81.58
in mcm/Net.A/day	0.07	0.09	0.14	0.26	0.32	0.37	0.38	0.32	0.26	0.19	0.12	0.06	2.63
in lit/Net.A/sec	806	1064	1645	3012	3746	4261	4346	3682	2999	2239	1444	736	30458

Table C-40 Summary of Each Category's Unit Water Requirement

Category	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Small Scale & Graduate													
Small Scale Farmers	Net Area	16650											
Field Req. cum/fed/day	11.76	13.24	10.74	11.83	19.74	28.23	31.01	19.70	8.43	7.64	5.98	9.76	178.17
Mesqa Req. cum/fed/day	12.38	13.94	11.30	12.45	20.78	29.78	32.65	20.73	8.92	8.04	6.30	10.27	187.55
Canal Req. cum/fed/day	13.75	15.49	12.56	13.84	23.09	33.09	36.27	23.04	9.91	8.93	7.00	11.42	208.39
Graduate Farmers(Veg+Fruit	Net Area	5550											
Field Req. cum/fed/day	13.11	15.75	17.65	20.33	31.13	28.26	23.95	21.67	20.03	15.75	5.68	10.25	223.56
Mesqa Req. cum/fed/day	13.80	16.58	18.58	21.39	32.77	29.75	25.21	22.81	21.08	16.53	5.97	10.79	235.33
Canal Req. cum/fed/day	15.33	18.42	20.64	23.77	36.42	33.06	28.01	25.34	23.42	18.42	6.64	11.59	261.47
Graduate Farmers(Veg+Live	Net Area	5550											
Field Req. cum/fed/day	11.52	11.93	7.95	8.14	17.37	28.29	29.56	20.13	10.47	8.39	7.33	9.84	170.91
Mesqa Req. cum/fed/day	12.13	12.55	8.37	8.57	18.28	29.78	31.12	21.19	11.02	8.83	7.72	10.35	179.91
Canal Req. cum/fed/day	13.47	13.95	9.30	9.52	20.32	33.09	34.57	23.54	12.25	9.81	8.57	11.50	199.90
Small Scale Investor													
Vegetable+Beef Cattle	Net Area	8325											
Field Req. cum/fed/day	12.15	15.52	12.76	4.46	8.16	23.27	35.24	23.87	9.82	3.24	4.57	9.91	162.98
Mesqa Req. cum/fed/day	12.78	16.34	13.43	4.70	8.59	24.49	37.10	25.13	10.34	3.42	4.81	10.43	171.56
Canal Req. cum/fed/day	14.21	18.15	14.92	5.22	9.54	27.21	41.22	27.92	11.49	3.79	5.34	11.59	190.62
Vegetable+Fruit	Net Area	8325											
Field Req. cum/fed/day	7.36	10.60	10.52	9.05	10.03	18.74	25.65	20.60	12.51	6.26	4.73	5.88	141.91
Mesqa Req. cum/fed/day	7.75	11.16	11.07	9.52	10.55	19.73	27.00	21.68	13.17	6.59	4.98	6.19	149.38
Canal Req. cum/fed/day	8.61	12.40	12.30	10.58	11.73	21.92	30.00	24.09	14.63	7.32	5.53	6.88	165.98
Large Scale Investor													
Land Use Crop	Net Area	16650											
Field Req. cum/fed/day	12.70	18.61	17.91	13.10	8.86	15.70	33.79	26.26	17.95	1.81	1.41	9.74	177.39
Mesqa Req. cum/fed/day	13.37	19.59	18.85	13.79	9.33	16.52	35.57	27.64	18.89	1.90	1.48	10.25	186.62
Canal Req. cum/fed/day	14.86	21.77	20.95	15.32	10.36	18.36	39.52	30.71	20.99	2.12	1.65	11.39	207.69
Dairy	Net Area	16650											
Field Req. cum/fed/day	13.78	18.94	20.98	13.22	3.03	19.10	33.79	34.12	13.36	2.70	6.08	11.48	194.78
Mesqa Req. cum/fed/day	14.51	19.94	22.09	13.92	3.19	20.11	35.57	35.92	14.06	2.84	6.40	12.09	202.40
Canal Req. cum/fed/day	16.12	22.15	24.54	15.47	3.55	22.34	39.52	39.91	15.63	3.16	7.11	13.43	219.34
Beef Cattle	Net Area	16650											
Field Req. cum/fed/day	12.66	17.46	20.05	18.93	7.05	19.10	33.79	34.12	13.36	2.74	6.73	10.95	196.81
Mesqa Req. cum/fed/day	13.33	18.38	21.11	19.93	7.42	20.11	35.57	35.92	14.06	2.88	7.09	11.53	205.07
Canal Req. cum/fed/day	14.81	20.42	23.45	22.14	8.24	22.34	39.52	39.91	15.63	3.20	7.87	12.81	229.41
Fruit	Net Area	16650											
Field Req. cum/fed/day	3.58	4.72	7.30	13.36	16.62	18.91	19.28	16.33	13.31	9.93	6.41	3.27	135.13
Mesqa Req. cum/fed/day	3.76	4.97	7.69	14.07	17.49	19.90	20.30	17.19	14.01	10.46	6.75	3.44	142.25
Canal Req. cum/fed/day	4.18	5.52	8.54	15.63	19.44	22.11	22.55	19.10	15.56	11.62	7.49	3.82	158.05

Table C-41 Summary of Each Category's Water Requirement and Project Water Requirement

Category	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Small Scale & Graduate	Net Area	27750											
Field Req. in cum/Net.A/day	332486	374139	320882	354932	597897	784856	813396	559953	310376	261149	171781	273388	6155685
Mesqa Req. in cum/Net.A/day	349985	393330	337770	373665	629365	826165	856206	589424	326712	274894	180822	288409	6427247
Canal Req. in cum/Net.A/day	388873	437589	375300	415183	699295	917951	951340	654916	363013	305438	200913	320454	6030274
Small Scale Investor	Net Area	16650											
Field Req. in cum/Net.A/day	162405	217451	193747	112475	151402	349720	506947	370186	185935	79092	77406	131458	2538233
Mesqa Req. in cum/Net.A/day	170953	228895	203944	118394	159370	368126	533628	389680	195721	83254	81480	138377	2671825
Canal Req. in cum/Net.A/day	189948	254328	226605	131549	177078	409029	592920	432978	217468	92505	90533	153752	2968694
Large Scale Investor	Net Area	66600											
Field Req. in cum/Net.A/day	711328	994590	1102958	975959	592073	1212347	2008832	1845397	965316	286070	343458	590003	9.6E+06
Mesqa Req. in cum/Net.A/day	743767	1045937	1161009	1027338	623235	1276155	2114560	1942523	1016122	301127	361535	621056	1.0E+07
Canal Req. in cum/Net.A/day	831963	1163264	1290010	1141484	692483	1417950	2349511	2158359	1129025	334585	401705	690062	1.1E+07
Grand Total	Net Area	111000											
Field Req. in cum/Net.A/day	1206220	1586180	1617587	1443425	1341372	2346924	3329174	2775547	1461628	626311	592645	995450	1.7E+07
Mesqa Req. in cum/Net.A/day	1263705	1668163	1702723	1519395	1411971	2470446	3504394	2921628	1538556	659275	623837	1047842	1.8E+07
Canal Req. in cum/Net.A/day	1410783	1855181	1891915	1688217	1568856	2744940	3893771	3246253	1709506	732528	693152	1164269	2.0E+07
Field Req. in cum/Net.A/mnh	3.7E+07	4.4E+07	5.0E+07	4.3E+07	4.2E+07	7.0E+07	1.0E+08	8.6E+07	4.4E+07	1.9E+07	1.8E+07	3.1E+07	5.9E+08
Mesqa Req. in cum/Net.A/mnh	3.9E+07	4.7E+07	5.3E+07	4.6E+07	4.4E+07	7.4E+07	1.1E+08	9.1E+07	4.6E+07	2.0E+07	1.9E+07	3.2E+07	6.2E+08
Canal Req. in cum/Net.A/mnh	4.4E+07	5.2E+07	5.9E+07	5.1E+07	4.9E+07	8.2E+07	1.2E+08	1.0E+08	5.1E+07	2.3E+07	2.1E+07	3.6E+07	6.9E+08
F. Req. in cum/day/111000	10.87	14.29	14.57	13.00	12.08	21.14	29.99	25.00	13.17	5.64	5.34	8.97	155.43
M. Req. in cum/day/111000	11.44	15.04	15.34	13.69	12.72	22.26	31.57	26.32	13.86	5.94	5.62	9.44	163.61
C. Req. in cum/day/111000	12.71	16.71	17.04	15.21	14.13	24.73	35.08	29.25	15.40	6.60	6.24	10.49	181.79
F. Req. in cum/day/135000	8.93	11.75	11.98	10.69	9.94	17.38	24.66	20.56	10.83	4.64	4.39	7.37	127.80
M. Req. in cum/day/135000	9.41	12.37	12.61	11.25	10.46	18.30	25.96	21.64	11.40	4.88	4.62	7.76	134.53
C. Req. in cum/day/135000	10.45	13.74	14.01	12.51	11.62	20.33	28.84	24.05	12.66	5.43	5.13	8.62	149.48

Table C-42 Leaching Requirement for Each Crop on 10 feddans Small Scale Farmers

Crops	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.Sorghum ETc mm	0.0	0.0	0.0	0.0	16.9	195.4	270.3	138.2	42.0	0.0	0.0	0.0	662.7
LR(ECe=6.8, LR=4.3%) mm	0.0	0.0	0.0	0.0	0.7	8.4	11.6	5.9	1.8	0.0	0.0	0.0	28.4
Leaching Requirem't cum	0.0	0.0	0.0	0.0	7.6	88.0	121.8	62.2	18.9	0.0	0.0	0.0	298.5
2.Water Melon ETc mm	0.0	0.0	0.0	3.8	67.4	183.2	244.6	195.7	4.7	0.0	0.0	0.0	699.4
LR(ECe=16., LR=4.4%) mm	0.0	0.0	0.0	0.2	3.0	8.1	10.8	8.6	0.2	0.0	0.0	0.0	30.8
Leaching Requirem't cum	0.0	0.0	0.0	1.7	31.1	84.6	113.0	90.4	2.2	0.0	0.0	0.0	323.1
3.Tomato ETc mm	0.0	2.6	77.2	197.6	236.0	123.1	28.6	0.0	0.0	0.0	0.0	0.0	665.0
LR(ECe=13., LR=5.4%) mm	0.0	0.1	4.2	10.7	12.7	6.6	1.5	0.0	0.0	0.0	0.0	0.0	35.9
Leaching Requirem't cum	0.0	1.5	43.8	112.0	133.8	69.8	16.2	0.0	0.0	0.0	0.0	0.0	377.1
4.Cantaloup ETc mm	0.0	0.0	2.9	35.3	213.5	232.1	241.6	112.2	0.0	0.0	0.0	0.0	840.6
LR(ECe=16., LR=4.4%) mm	0.0	0.0	0.1	1.6	9.4	10.2	10.8	4.9	0.0	0.0	0.0	0.0	37.0
Leaching Requirem't cum	0.0	0.0	1.4	16.3	98.6	107.2	113.0	51.9	0.0	0.0	0.0	0.0	388.4
5.Berseem ETc mm	66.0	59.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.5	74.7	62.6	317.7
LR(ECe=1.5, LR=23.%) mm	15.1	13.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7	17.1	14.3	72.8
Leaching Requirem't cum	95.2	85.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.0	107.7	90.3	458.4
6.Green Pepper ETc mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	86.3	149.2	140.5	5.0	0.0	381.0
LR(ECe=1.5, LR=23.%) mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.8	34.2	32.2	1.1	0.0	87.2
Leaching Requirem't cum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	207.6	358.7	337.8	12.0	0.0	916.1
7.Medical Plant ETc mm	88.0	73.5	33.1	0.0	0.0	0.0	0.0	0.0	0.0	14.8	79.6	83.4	372.4
LR(ECe=1.5, LR=23.%) mm	20.1	16.8	7.6	0.0	0.0	0.0	0.0	0.0	0.0	3.4	18.2	19.1	85.3
Leaching Requirem't cum	211.5	176.6	79.5	0.0	0.0	0.0	0.0	0.0	0.0	35.6	191.5	200.6	895.4
8.Broad Bean ETc mm	101.2	120.7	102.9	9.4	0.0	0.0	0.0	0.0	0.0	0.0	6.0	71.8	411.9
LR(ECe=1.5, LR=23.%) mm	23.2	27.6	23.6	2.2	0.0	0.0	0.0	0.0	0.0	0.0	1.4	16.4	94.3
Leaching Requirem't cum	243.2	290.2	247.4	22.6	0.0	0.0	0.0	0.0	0.0	0.0	14.4	172.6	990.4
9.Wheat Etc mm	79.2	110.2	154.3	197.6	42.7	0.0	0.0	0.0	0.0	0.0	10.0	58.4	652.3
LR(ECe=6.0, LR=4.9%) mm	3.9	5.4	7.6	9.7	2.1	0.0	0.0	0.0	0.0	0.0	0.5	2.9	32.0
Leaching Requirem't cum	16.3	22.7	31.8	40.7	8.8	0.0	0.0	0.0	0.0	0.0	2.0	12.0	134.2

Table C-43 Summary of Leaching Requirement on 10 feddans Small Scale and Graduate Farmers

Items	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
10 feds Field Requirement	566	576	404	193	289	350	364	412	380	453	328	476	4782
10 feds Canal Req. (/.90)	629	640	449	215	311	389	404	458	422	504	364	528	5313
Field Req. in cum/fed/month	57	58	40	19	28	35	36	41	38	45	33	48	478
in cum/fed/day	1.83	2.06	1.30	0.64	0.90	1.17	1.17	1.33	1.27	1.46	1.09	1.53	15.42
in lit/fed/sec	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.18
Canal Req. in cum/fed/month	63	64	45	21	31	39	40	45	42	50	36	53	531
in cum/fed/day	2.03	2.29	1.45	0.72	1.00	1.30	1.30	1.48	1.41	1.62	1.21	1.70	17.14
in lit/fed/sec	0.02	0.03	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.02	0.20
Field Req. in mcm/Net.A/month	0.94	0.96	0.67	0.32	0.47	0.58	0.61	0.69	0.63	0.75	0.55	0.79	7.96
in mcm/Net.A/day	0.03	0.03	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.26
in lit/Net.A/sec	352	397	251	124	174	225	226	256	244	282	210	296	2972
Canal Req. in mcm/Net.A/month	1.05	1.07	0.75	0.36	0.52	0.65	0.67	0.76	0.70	0.84	0.61	0.88	8.85
in mcm/Net.A/day	0.03	0.04	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.29
in lit/Net.A/sec	391	441	279	138	193	250	251	285	271	313	234	328	3303

Table C-44 Leaching Requirement for Each Crop on 10 feddans Graduate Farmers (Vegetables+Fruit)

Crops	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.Squash ETc mm	0.0	0.0	0.0	2.8	28.1	183.2	206.0	207.2	69.9	0.0	0.0	0.0	697.3
LR(ECe=15., LR=4.7%) mm	0.0	0.0	0.0	0.1	1.3	8.6	9.7	9.7	3.3	0.0	0.0	0.0	32.8
Leaching Requirem't cum	0.0	0.0	0.0	1.4	13.9	90.4	101.6	102.3	34.5	0.0	0.0	0.0	344.1
2.Tomato ETc mm	0.0	2.6	77.2	197.6	236.0	123.1	28.6	0.0	0.0	0.0	0.0	0.0	665.0
LR(ECe=13., LR=5.4%) mm	0.0	0.1	4.2	10.7	12.7	6.6	1.5	0.0	0.0	0.0	0.0	0.0	35.9
Leaching Requirem't cum	0.0	3.0	87.5	224.0	267.6	139.6	32.4	0.0	0.0	0.0	0.0	0.0	754.1
3.Cantaloup ETc mm	0.0	0.0	2.9	35.3	213.5	232.1	241.6	112.2	0.0	0.0	0.0	0.0	840.6
LR(ECe=16., LR=4.4%) mm	0.0	0.0	0.1	1.6	9.4	10.2	10.8	4.9	0.0	0.0	0.0	0.0	37.0
Leaching Requirem't cum	0.0	0.0	1.4	16.3	98.6	107.2	113.0	51.9	0.0	0.0	0.0	0.0	388.4
4.Medical Plant ETc mm	88.0	73.5	33.1	0.0	0.0	0.0	0.0	0.0	0.0	14.8	79.6	83.4	372.4
LR(ECe=1.5, LR=23.%) mm	20.1	16.8	7.6	0.0	0.0	0.0	0.0	0.0	0.0	3.4	18.2	19.1	85.3
Leaching Requirem't cum	211.5	176.6	79.5	0.0	0.0	0.0	0.0	0.0	0.0	35.6	191.5	200.6	895.4
5.Green Pepper ETc mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	85.3	149.2	140.5	5.0	0.0	381.0
LR(ECe=1.5, LR=23.%) mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.8	34.2	32.2	1.1	0.0	87.2
Leaching Requirem't cum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	415.2	717.4	675.6	23.9	0.0	1832.2
6.Broad Bean ETc mm	101.2	120.7	102.9	9.4	0.0	0.0	0.0	0.0	0.0	0.0	6.0	71.8	411.9
LR(ECe=1.5, LR=23.%) mm	23.2	27.6	23.6	2.2	0.0	0.0	0.0	0.0	0.0	0.0	1.4	16.4	94.3
Leaching Requirem't cum	486.5	580.4	494.8	45.2	0.0	0.0	0.0	0.0	0.0	0.0	28.7	345.1	1980.7
7.Peach ETc mm	0.0	0.0	76.4	112.9	134.8	156.4	164.8	128.9	104.4	76.9	43.8	0.0	999.4
LR(ECe=6.5, LR=11.%) mm	0.0	0.0	8.2	12.1	14.4	16.7	17.6	13.8	11.2	8.2	4.7	0.0	106.9
Leaching Requirem't cum	0.0	0.0	85.9	126.8	151.5	175.7	185.1	144.9	117.3	86.4	49.2	0.0	1122.8

Table C-45 Summary of Leaching Requirement on 10 feddans Small Scale and Graduate Farmers

Items	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
10 feds Field Requirement	693	760	749	414	532	513	432	714	869	798	293	545	7318
10 feds Canal Req. (/.90)	776	844	832	460	591	570	480	794	966	886	326	606	8131
Field Req. in cum/fed/month	70	76	75	41	53	51	43	71	87	80	29	55	732
in cum/fed/day	2.25	2.71	2.42	1.38	1.71	1.71	1.39	2.30	2.90	2.57	0.98	1.76	23.61
in lit/fed/sec	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.01	0.02	0.27
Canal Req. in cum/fed/month	78	84	83	46	59	57	48	79	97	89	33	61	813
in cum/fed/day	2.50	3.02	2.68	1.53	1.91	1.90	1.55	2.56	3.22	2.86	1.09	1.96	26.23
in lit/fed/sec	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.03	0.04	0.03	0.01	0.02	0.30
Field Req. in mcm/Net.A/month	0.39	0.42	0.42	0.23	0.30	0.28	0.24	0.40	0.48	0.44	0.16	0.30	4.06
in mcm/Net.A/day	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.13
in lit/Net.A/sec	145	174	155	89	110	110	90	148	186	165	63	113	1516
Canal Req. in mcm/Net.A/month	0.43	0.47	0.46	0.26	0.33	0.32	0.27	0.44	0.54	0.49	0.18	0.34	4.51
in mcm/Net.A/day	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.15
in lit/Net.A/sec	161	194	172	98	122	122	99	164	207	184	70	126	1685

Table C-46 Leaching Requirement for Each Crop on 10 feddans Graduate Farmers (Vegetables+Livestock)

Crops	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.Sorghum ETc mm	0.0	0.0	0.0	0.0	16.9	195.4	270.3	138.2	42.0	0.0	0.0	0.0	662.7
LR(ECe=6.8, LR=4.3%) mm	0.0	0.0	0.0	0.0	0.7	8.4	11.6	5.9	1.8	0.0	0.0	0.0	28.4
Leaching Requirem't cum	0.0	0.0	0.0	0.0	7.6	88.0	121.8	62.2	18.9	0.0	0.0	0.0	298.5
2.Squash ETc mm	0.0	0.0	0.0	2.8	28.1	183.2	206.0	207.2	69.9	0.0	0.0	0.0	697.3
LR(ECe=15., LR=4.7%) mm	0.0	0.0	0.0	0.1	1.3	8.6	9.7	9.7	3.3	0.0	0.0	0.0	32.8
Leaching Requirem't cum	0.0	0.0	0.0	1.4	13.9	90.4	101.6	102.3	34.5	0.0	0.0	0.0	344.1
3.Tomato ETc mm	0.0	2.6	77.2	197.6	236.0	123.1	28.6	0.0	0.0	0.0	0.0	0.0	665.0
LR(ECe=13., LR=5.4%) mm	0.0	0.1	4.2	10.7	12.7	6.6	1.5	0.0	0.0	0.0	0.0	0.0	35.9
Leaching Requirem't cum	0.0	1.5	43.8	112.0	133.8	69.8	16.2	0.0	0.0	0.0	0.0	0.0	377.1
4.Cantaloup ETc mm	0.0	0.0	2.9	35.3	213.5	232.1	241.6	112.2	0.0	0.0	0.0	0.0	840.6
LR(ECe=16., LR=4.4%) mm	0.0	0.0	0.1	1.6	9.4	10.2	10.8	4.9	0.0	0.0	0.0	0.0	37.0
Leaching Requirem't cum	0.0	0.0	1.4	16.3	98.6	107.2	113.0	51.9	0.0	0.0	0.0	0.0	388.4
5.Berseem ETc mm	66.0	59.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.5	74.7	62.6	317.7
LR(ECe=1.5, LR=23.%) mm	15.1	13.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7	17.1	14.3	72.8
Leaching Requirem't cum	158.6	141.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	133.3	179.5	150.5	763.9
6.Green Pepper ETc mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	86.3	149.2	140.5	5.0	0.0	381.0
LR(ECe=1.5, LR=23.%) mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.8	34.2	32.2	1.1	0.0	87.2
Leaching Requirem't cum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	207.6	358.7	337.8	12.0	0.0	916.1
7.Medical Plant ETc mm	88.0	73.5	33.1	0.0	0.0	0.0	0.0	0.0	0.0	14.8	79.6	83.4	372.4
LR(ECe=3.5, LR=23.%) mm	20.1	16.8	7.6	0.0	0.0	0.0	0.0	0.0	0.0	3.4	18.2	19.1	85.3
Leaching Requirem't cum	211.5	176.6	79.5	0.0	0.0	0.0	0.0	0.0	0.0	35.6	191.5	200.6	895.4
8.Broad Bean ETc mm	101.2	120.7	102.9	9.4	0.0	0.0	0.0	0.0	0.0	0.0	6.0	71.8	411.9
LR(ECe=1.5, LR=23.%) mm	23.2	27.6	23.6	2.2	0.0	0.0	0.0	0.0	0.0	0.0	1.4	16.4	94.3
Leaching Requirem't cum	243.2	290.2	247.4	22.6	0.0	0.0	0.0	0.0	0.0	0.0	14.4	172.6	990.4

Table C-47 Summary of Leaching Requirement on 10 feddans Small Scale and Graduate Farmers

Items	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
10 feds Field Requirement	613	610	372	152	254	355	353	424	412	507	397	524	4974
10 feds Canal Req. (/.90)	682	678	413	169	282	395	392	471	458	563	442	582	5526
Field Req. in cum/fed/month	61	61	37	15	25	36	35	42	41	51	40	52	497
in cum/fed/day	1.98	2.18	1.20	0.51	0.82	1.18	1.14	1.37	1.37	1.63	1.32	1.69	16.04
in lit/fed/sec	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.19
Canal Req. in cum/fed/month	68	68	41	17	28	39	39	47	46	56	44	58	553
in cum/fed/day	2.20	2.42	1.33	0.56	0.91	1.32	1.26	1.52	1.53	1.82	1.47	1.88	17.83
in lit/fed/sec	0.03	0.03	0.02	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.21
Field Req. in mcm/Net.A/month	0.34	0.34	0.21	0.08	0.14	0.20	0.20	0.24	0.23	0.28	0.22	0.29	2.76
in mcm/Net.A/day	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.09
in lit/Net.A/sec	127	140	77	33	53	76	73	88	88	105	85	109	1031
Canal Req. in mcm/Net.A/month	0.38	0.38	0.23	0.09	0.16	0.22	0.22	0.26	0.25	0.31	0.25	0.32	3.07
in mcm/Net.A/day	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.10
in lit/Net.A/sec	141	156	86	36	58	85	81	98	98	117	95	121	1145

Table C-48 Leaching Requirement for Each Crop on 100 feddans Small Scale Investors (Vegetable + Beef Cattle)

Crops		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1.Sorghum	ETc mm	0.0	0.0	0.0	0.0	0.0	55.0	206.0	241.8	83.9	0.0	0.0	0.0	586.6
	LR(ECe=6.8, LR=4.3%) mm	0.0	0.0	0.0	0.0	0.0	2.4	8.8	10.4	3.6	0.0	0.0	0.0	25.2
	Leaching Requirem't cum	0.0	0.0	0.0	0.0	0.0	247.6	927.7	1089.0	378.0	0.0	0.0	0.0	2642.4
2.Potato	ETc mm	0.0	0.0	0.0	14.1	179.8	256.5	206.0	40.3	0.0	0.0	0.0	0.0	696.7
	LR(ECe=1.7, LR=20.%) mm	0.0	0.0	0.0	2.8	35.4	50.5	40.6	7.9	0.0	0.0	0.0	0.0	137.2
	Leaching Requirem't cum	0.0	0.0	0.0	231.9	3718.9	5306.0	4260.2	833.5	0.0	0.0	0.0	0.0	14410.5
3.Tomato	ETc mm	0.0	0.0	0.0	4.7	39.3	256.5	270.3	147.4	28.0	8.9	0.0	0.0	755.1
	LR(ECe=13., LR=5.4%) mm	0.0	0.0	0.0	0.3	2.1	13.9	14.6	8.0	1.5	0.5	0.0	0.0	40.8
	Leaching Requirem't cum	0.0	0.0	0.0	26.7	223.0	1454.4	1532.7	835.5	158.6	50.3	0.0	0.0	4281.3
4.Soybean	ETc mm	0.0	0.0	0.0	0.0	0.0	24.4	180.2	207.2	149.2	44.4	0.0	0.0	605.4
	LR(ECe=5.0, LR=5.9%) mm	0.0	0.0	0.0	0.0	0.0	1.4	10.6	12.2	8.8	2.6	0.0	0.0	35.7
	Leaching Requirem't cum	0.0	0.0	0.0	0.0	0.0	151.3	1116.4	1283.8	924.2	274.8	0.0	0.0	3750.6
5.Berseem	ETc mm	66.0	59.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.5	74.7	62.6	317.7
	LR(ECe=1.5, LR=23.%) mm	15.1	13.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7	17.1	14.3	72.8
	Leaching Requirem't cum	1586.3	1419.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1333.4	1795.5	1504.8	7639.4
6.Barley	ETc mm	88.0	104.9	147.0	94.1	16.9	0.0	0.0	0.0	0.0	0.0	8.2	75.1	534.1
	LR(ECe=8.0, LR=3.6%) mm	3.2	3.8	5.3	3.4	0.6	0.0	0.0	0.0	0.0	0.0	0.3	2.7	19.2
	Leaching Requirem't cum	332.5	396.7	555.6	355.6	63.7	0.0	0.0	0.0	0.0	0.0	31.0	283.9	2019.1
7.Cabbege	ETc mm	83.6	104.9	55.1	0.0	0.0	0.0	0.0	0.0	0.0	2.2	37.3	58.4	341.6
	LR(ECe=12., LR=5.8%) mm	4.8	6.1	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.2	3.4	19.8
	Leaching Requirem't cum	508.9	639.1	335.7	0.0	0.0	0.0	0.0	0.0	0.0	13.5	227.4	355.7	2080.3
8.Onion	ETc mm	66.0	99.7	132.3	18.8	0.0	0.0	0.0	0.0	0.0	2.2	12.4	50.1	381.5
	LR(ECe=7.4, LR=9.5%) mm	6.3	9.5	12.6	1.8	0.0	0.0	0.0	0.0	0.0	0.2	1.2	4.8	36.2
	Leaching Requirem't cum	658.1	994.5	1319.5	187.7	0.0	0.0	0.0	0.0	0.0	22.1	124.1	499.4	3805.5