

Table 1: Crop Coefficient by Crop and Growth Stage, Tigris-Euphrates Basin, Iraq										
Crops	Days to maturity	Planting Month	Growth Stage							
			1		2		3		4	
			Days in stage	Crop Coefficient	Days in stage	Crop Coefficient	days in stage	Crop Coefficient	days in stage	Crop Coefficient
Rice	180	May	30	1.05	30	1.10	80	1.20	40	0.90
Wheat	130	April	40	0.00	30	0.25	40	1.15	20	0.35
Cotton	180	April	30	0.00	50	0.25	55	1.15	45	0.60
Sunflower	130	April	25	0.00	35	0.25	45	1.15	25	0.35
Maize	140	January	25	0.00	40	0.25	45	1.20	30	0.50
Barley	120	November	15	0.00	25	0.25	50	1.15	30	0.25
Tomato	135	January	30	0.00	40	0.25	40	1.15	25	0.80
Lettuce	100	October	25	0.00	35	0.10	30	1.00	10	0.95
Onion	210	October	20	0.00	35	0.25	110	1.05	45	0.95

Table 2: Crop Evapotranspiration (ET) by Crop and Province, Lower Tigris-Euphrates Basin, Iraq, 2006 (mm depth per year)<sup>1</sup>

Province	Crops								
	Rice	Wheat	Cotton	Sunflower	Maize	Barley	Tomato	Lettuce	Onion
1-Mousil	3,080	1,190	1,804	1,292	702	291	706	168	952
2-Kurkuk	3,236	1,228	1,914	1,342	781	258	792	163	997
3-Salaheldeen	2,839	991	1,663	1,095	683	254	688	156	939
4-Deyala	2,962	1,082	1,732	1,181	662	307	669	244	1,013
5-Anbar	3,377	1,236	1,973	1,358	881	310	875	186	1,168
6-Baghdad	3,220	1,181	1,881	1,302	821	284	822	173	1,084
7-Babylon	3,248	1,187	1,861	1,301	818	299	825	180	1,094
8-Karbala	3,281	1,189	1,878	1,311	859	311	864	185	1,148
9-Qadeseeya	3,419	1,232	1,955	1,357	918	335	920	199	1,235
10-Muthana	3,438	1,226	1,958	1,351	934	358	934	213	1,282
11-Thieqar	3,558	1,277	2,031	1,406	903	305	908	194	1,186
12-Meesan	3,482	1,254	2,013	1,384	918	344	921	211	1,229
13-Basra	3,723	1,345	2,141	1,490	970	344	977	211	1,270

<sup>1</sup> Source for Data and Method (Allen, et al, 1998). ET was calculated as the product of ET for a base crop (ET<sub>0</sub>) and a crop coefficient unique to each crop (Kc)

Table 3: Average Price by Crop, Lower Tigris-Euphrates, Iraq, 2006 (\$US / ton)	
Crop	Price
1-Rice	985
2-Wheat	225
3-Cotton	906
4-Sunflower	415
5-Maize	180
6-Barley	175
7-Tomato	115
8-Lettuce	120
9-Onion	142

Table 4: Baseline Crop Yield by Province and Crop, Lower Tigris-Euphrates Basin, Iraq, 2006 (metric tons/ha)									
Province	Crop								
	1-Rice	2-Wheat	3-Cotton	4-Sunflower	5-Maize	6-Barley	7-Tomato	8-Lettuce	9-Onion
1-Mousil	2.76	1.39	2.32	1.32	2.07	0.90	13.68	20.70	6.51
2-Kurkuk	2.91	1.44	2.46	1.37	2.31	0.84	15.22	19.48	6.85
3-Salaheldeen	2.55	1.16	2.14	1.12	2.02	0.80	13.30	19.48	6.44
4-Deyala	2.66	1.26	2.23	1.21	1.96	1.00	12.91	29.22	6.92
5-Anbar	3.03	1.45	2.54	1.39	2.61	1.00	16.96	23.14	8.02
6-Baghdad	2.89	1.38	2.42	1.33	2.43	0.90	15.80	20.70	7.40
7-Babylon	2.92	1.39	2.39	1.33	2.43	0.96	15.80	21.92	7.47
8-Karbala	2.94	1.39	2.42	1.34	2.55	1.00	16.57	23.14	7.88
9-Qadeseeya	3.07	1.44	2.52	1.39	2.73	1.09	17.73	24.35	8.43
10-Muthana	3.09	1.44	2.52	1.38	2.76	1.16	17.92	25.57	8.77
11-Thieqar	3.20	1.50	2.61	1.44	2.67	0.96	17.53	23.14	8.15
12-Meesan	3.12	1.46	2.59	1.41	2.73	1.09	17.73	25.57	8.43
13-Basra	3.34	1.57	2.75	1.52	2.87	1.09	18.88	25.57	8.70

province	Crop								
	1-Rice	2-Wheat	3-Cotton	4-Sunflower	5-Maize	6-Barley	7-Tomato	8-Lettuce	9-Onion
1-Mousil	178	200	1286	220	67	100	58	80	68
2-Kurkuk	180	202	1305	222	69	98	59	79	69
3-Salaheldeen	175	192	1262	211	67	97	58	79	68
4-Deyala	176	196	1274	215	67	103	57	88	69
5-Anbar	182	203	1316	223	71	103	61	82	71
6-Baghdad	180	200	1300	220	70	100	60	80	70
7-Babylon	180	200	1297	220	70	102	60	81	70
8-Karbala	181	200	1300	220	71	103	61	82	71
9-Qadeseeya	183	202	1314	223	72	105	62	84	72
10-Muthana	183	202	1314	222	72	107	62	85	73
11-Thieqar	185	204	1326	225	72	102	62	82	72
12-Meesan	184	203	1322	223	72	105	62	85	72
13-Basra	187	207	1345	228	73	105	63	85	73

province	crop								
	1-Rice	2-Wheat	3-Cotton	4-Sunflower	5-Maize	6-Barley	7-Tomato	8-Lettuce	9-Onion
1-Mousil	2,545	113	813	328	306	58	1,515	2,404	856
2-Kurkuk	2,684	122	922	347	347	48	1,691	2,259	904
3-Salaheldeen	2,336	69	674	252	296	43	1,471	2,259	847
4-Deyala	2,440	88	744	286	285	72	1,427	3,419	914
5-Anbar	2,806	124	982	355	398	72	1,889	2,694	1,067
6-Baghdad	2,667	111	893	332	367	58	1,757	2,404	981
7-Babylon	2,693	113	873	332	367	67	1,757	2,549	990
8-Karbala	2,719	113	893	336	388	72	1,845	2,694	1,048
9-Qadeseeya	2,841	122	972	355	419	86	1,977	2,839	1,124
10-Muthana	2,858	122	972	351	424	95	1,999	2,984	1,172
11-Thieqar	2,962	133	1,042	374	408	67	1,955	2,694	1,086
12-Meesan	2,893	126	1,022	363	419	86	1,977	2,984	1,124
13-Basra	3,102	146	1,151	405	444	86	2,109	2,984	1,163

Table 7: Regional Farm Income by Water Sharing Arrangement, Water Supply, and Province, Lower Tigris-Euphrates Basin, Iraq, 2006 (\$US million/year)												
	Priority											
	1-ds_priority			2-us_priority			3-prop_sharing			4-free_market		
supply	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought
Province												
1-Mousil	85.2	0.0	0.0	85.2	85.2	85.2	85.2	80.0	54.9	85.2	79.9	75.0
2-Kurkuk	21.1	0.0	0.0	21.1	21.1	21.1	21.1	19.0	17.4	21.1	17.9	16.2
3-Salaheldeen	256.4	0.0	0.0	256.4	256.4	254.9	256.4	248.2	228.1	256.4	246.5	224.2
4-Deyala	91.6	0.0	0.0	91.6	91.6	0.0	91.6	85.3	80.0	91.6	82.2	69.4
5-Anbar	102.5	0.0	0.0	102.5	102.5	0.0	102.5	96.2	71.7	102.5	95.6	91.0
6-Baghdad	190.9	0.0	0.0	190.9	190.9	0.0	190.9	181.3	129.3	190.9	183.7	157.4
7-Babylon	156.5	149.4	0.0	156.5	118.5	0.0	156.5	137.9	95.2	156.5	148.1	71.0
8-Karbala	49.7	49.7	0.0	49.7	0.0	0.0	49.7	43.3	28.3	49.7	49.3	47.8
9-Qadeseeya	186.2	186.2	0.0	186.2	0.0	0.0	186.2	165.1	93.5	186.2	175.0	74.5
10-Muthana	34.6	34.6	0.0	34.6	0.0	0.0	34.6	28.5	14.1	34.6	33.0	17.4
11-Thieqar	90.3	90.3	88.2	90.3	0.0	0.0	90.3	83.1	71.8	90.3	82.1	74.9
12-Meesan	126.4	126.4	126.4	126.4	0.0	0.0	126.4	116.2	82.9	126.4	116.2	85.8
13-Basra	102.8	102.8	102.8	102.8	0.0	0.0	102.8	100.1	83.1	102.8	100.5	96.6
Total	1,494.1	739.3	317.5	1,494.1	866.3	361.2	1,494.1	1,384.4	1,050.3	1,494.1	1,410.0	1,101.1

Table 7: Regional Farm Income by Water Sharing Arrangement, Water Supply, and Province, Lower Tigris-Euphrates Basin, Iraq, 2006 (\$US million/year)												
	Priority											
	1-ds_priority			2-us_priority			3-prop_sharing			4-free_market		
supply	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought
Province												
1-Mousil	85.2	0.0	0.0	85.2	85.2	85.2	85.2	80.0	54.9	85.2	79.9	75.0
2-Kurkuk	21.1	0.0	0.0	21.1	21.1	21.1	21.1	19.0	17.4	21.1	17.9	16.2
3-Salaheldeen	256.4	0.0	0.0	256.4	256.4	254.9	256.4	248.2	228.1	256.4	246.5	224.2
4-Deyala	91.6	0.0	0.0	91.6	91.6	0.0	91.6	85.3	80.0	91.6	82.2	69.4
5-Anbar	102.5	0.0	0.0	102.5	102.5	0.0	102.5	96.2	71.7	102.5	95.6	91.0
6-Baghdad	190.9	0.0	0.0	190.9	190.9	0.0	190.9	181.3	129.3	190.9	183.7	157.4
7-Babylon	156.5	149.4	0.0	156.5	118.5	0.0	156.5	137.9	95.2	156.5	148.1	71.0
8-Karbala	49.7	49.7	0.0	49.7	0.0	0.0	49.7	43.3	28.3	49.7	49.3	47.8
9-Qadeseeya	186.2	186.2	0.0	186.2	0.0	0.0	186.2	165.1	93.5	186.2	175.0	74.5
10-Muthana	34.6	34.6	0.0	34.6	0.0	0.0	34.6	28.5	14.1	34.6	33.0	17.4
11-Thieqar	90.3	90.3	88.2	90.3	0.0	0.0	90.3	83.1	71.8	90.3	82.1	74.9
12-Meesan	126.4	126.4	126.4	126.4	0.0	0.0	126.4	116.2	82.9	126.4	116.2	85.8
13-Basra	102.8	102.8	102.8	102.8	0.0	0.0	102.8	100.1	83.1	102.8	100.5	96.6
Total	1,494.1	739.3	317.5	1,494.1	866.3	361.2	1,494.1	1,384.4	1,050.3	1,494.1	1,410.0	1,101.1



Table 8: Irrigated Land in Production, by Province, Crop, Shortage Sharing Arrangement, and Water Supply Scenario, Lower Tigris-Euphrates Basins, Iraq, 2006, (1000 hectares/year)

Supply Province	Priority											
	1-ds_priority			2-us_priority			3-prop_sharing			4-free_market		
	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought
1-Mousil	173	0	0	173	173	173	173	126	34	173	125	47
2-Kurkuk	39	0	0	39	39	39	39	22	10	39	13	9
3-Salaheldeen	331	0	0	331	331	308	331	212	120	331	186	115
4-Deyala	179	0	0	179	179	0	179	107	48	179	72	31
5-Anbar	123	0	0	123	123	0	123	72	36	123	68	54
6-Baghdad	197	0	0	197	197	0	197	118	63	197	132	79
7-Babylon	273	210	0	273	82	0	273	134	60	273	199	36
8-Karbala	34	34	0	34	0	0	34	20	12	34	31	24
9-Qadeseeya	241	241	0	241	0	0	241	72	47	241	149	40
10-Muthana	59	59	0	59	0	0	59	17	10	59	46	13
11-Thieqar	186	186	170	186	0	0	186	132	36	186	124	39
12-Meesan	213	213	213	213	0	0	213	132	45	213	132	48
13-Basra	61	61	61	61	0	0	61	43	29	61	45	36
Total	2107	1003	444	2107	1123	520	2107	1207	551	2107	1320	571

Table 9: Total Water Use Summed over Crops, by Province, Crop, Shortage Sharing Arrangement, and Water Supply Scenario, Lower Tigris-Euphrates Basins, Iraq, 2006, (million cubic meters/year)												
	Priority											
	1-ds_priority			2-us_priority			3-prop_sharing			4-free_market		
Supply	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought
Province												
1-Mousil	1,109	0	0	1,109	1,109	1,109	1,109	555	222	1,109	545	316
2-Kurkuk	417	0	0	417	417	417	417	209	83	417	96	58
3-Salaheldeen	2,366	0	0	2,366	2,366	2,138	2,366	1,183	473	2,366	925	430
4-Deyala	1,551	0	0	1,551	1,551	0	1,551	776	310	1,551	394	150
5-Anbar	1,267	0	0	1,267	1,267	0	1,267	633	253	1,267	578	465
6-Baghdad	1,703	0	0	1,703	1,703	0	1,703	851	341	1,703	927	472
7-Babylon	2,361	1,614	0	2,361	747	0	2,361	1,180	472	2,361	1,478	206
8-Karbala	245	245	0	245	0	0	245	123	49	245	211	172
9-Qadeseeya	2,877	2,877	0	2,877	0	0	2,877	1,439	575	2,877	1,748	347
10-Muthana	565	565	0	565	0	0	565	283	113	565	408	148
11-Thieqar	1,373	1,373	1,179	1,373	0	0	1,373	687	275	1,373	589	309
12-Meesan	2,019	2,019	2,019	2,019	0	0	2,019	1,010	404	2,019	1,007	436
13-Basra	466	466	466	466	0	0	466	233	93	466	253	156
Total	18,320	9,160	3,664	18,320	9,160	3,664	18,320	9,160	3,664	18,320	9,160	3,664

Table 10: Shadow Price of Water by Province, Crop, Shortage Sharing Arrangement, and Water Supply Scenario, Lower Tigris-Euphrates Basins, Iraq, 2006, (\$US per 1000 cubic meters)

	Priority											
	1-ds_priority			2-us_priority			3-prop_sharing			4-free_market		
supply province	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought	1-normal	2-dry	3-drought
1-Mousil	0	1414	1414	0	0	0	0	9	213	0	11	91
2-Kurkuk	0	1412	1412	0	0	0	0	10	48	0	11	91
3-Salaheldeen	0	1412	1412	0	0	7	0	7	90	0	11	91
4-Deyala	0	1424	1424	0	0	1424	0	8	43	0	11	91
5-Anbar	0	1418	1418	0	0	1418	0	10	91	0	11	91
6-Baghdad	0	1414	1414	0	0	1414	0	45	214	0	11	91
7-Babylon	0	9	1416	0	45	1416	0	45	91	0	11	91
8-Karbala	0	0	1418	0	1418	1418	0	91	215	0	11	91
9-Qadeseeya	0	0	1419	0	1419	1419	0	83	83	0	11	91
10-Muthana	0	0	1421	0	1421	1421	0	83	92	0	11	91
11-Thieqar	0	0	10	0	1418	1418	0	10	91	0	11	91
12-Meesan	0	0	0	0	1421	1421	0	10	91	0	11	91
13-Basra	0	0	0	0	1421	1421	0	46	215	0	11	91
Average	0	654	1091	0	659	1092	0	35	121	0	11	91