

Table D.2.1 ADMINISTRATION CONCERNED AND POPULATION IN THE STUDY AREA

Region	Sub-Region	Unit	No. of Village	Actual		Projected	
				1979	1980	1985	1990
1.	AMMAN		46	11,569	12,177	13,745	15,001
	1.1	Madaba	46	11,569	12,177	13,745	15,001
		(1) Aljeezeh	11	1,046	1,434	1,584	1,750
		(2) Ummleih	5	3,462	3,531	3,899	4,035
		(3) Jmail	14	2,372	2,419	2,912	3,244
		(4) Dhiban	16	4,689	4,793	5,350	5,972
2.	KARAK		112	81,030	83,162	96,310	109,280
	2.1	Karak	39	30,853	31,706	37,838	43,218
		(1) Karak	19	22,793	23,451	27,046	31,102
		(2) Abdalia	10	5,035	5,158	6,306	7,073
		(3) Zahoum	10	3,025	3,097	4,486	5,043
	2.2	Al-qaser	22	15,909	16,291	18,439	20,652
		(1) Al-qaser	9	7,268	7,442	8,378	9,378
		(2) Faqu'a	7	5,587	5,721	6,542	7,331
		(3) Jad'a	6	3,054	3,128	3,519	3,943
	2.3	Mazal Janobi	42	22,729	23,350	26,729	30,503
		(1) M. Janobi	7	9,140	9,435	11,062	12,950
		(2) Taybeh	12	3,488	3,570	4,021	4,504
		(3) Hosaynia	23	10,101	10,345	11,646	13,049
	2.4	Ayy					
		(1) Ayy	6	9,159	9,378	10,560	11,832
	2.5	Qatraneh					
		(1) Qatraneh	3	2,380	2,437	2,744	3,075
3.	TAFILA		36	31,921	32,770	37,371	42,508
	3.1	Tafila					
		(1) Tafila	26	24,622	25,295	28,955	33,078
	3.2	Bosarah					
		(1) Bosarah	10	7,299	7,475	8,416	9,430
Total Study Area			194	124,520	128,109	147,426	166,789

Source: National Village Survey 1984.

Table D.2.2 REGION'S PRESENT POSITION IN JORDAN

Aspects	Unit	Figure		Share of Study Area (%)
		Whole Country	Study Area	
1. Land Area and Population				
1) Land area	(km ²)	89,200 *1	8,100	9.1
2) Population	(1,000)	2,700	143	5.3
3) Population density	(P/km ²)	30	18	-
4) Annual growth rate	(%)	4.0	2.8	-
5) Urban pop. ratio *2	(%)	70	24	-
3. Employment (1,000)				
1) Agriculture sector		39.2	4.8	12.2
2) Mining & manuf'g sector		53.1	3.4	6.4
3) Other productive sector		60.8	2.9	4.8
4) Services sector		114.6	3.3	2.9
5) Public services sector		234.7	14.4	6.1
(Total)		(502.4)	(28.8)	(5.7)
4. GDP/GRDP				
1) GDP/GRDP by industry (Million JD)				
- Agriculture sector		114.5	9.3	8.1
- Mining & manuf'g sector		291.2	47.2	16.2
- Other productive sector		151.8	5.6	3.7
- Services sector		622.0	15.0	2.4
- Public services sector		426.4	21.1	4.9
(Total)		(1,605.9)	(98.2)	(6.1)
2) Per capita GDP/GRDP (JD)		595	687	-
(Excluding mining sector contribution)			381	-
3) Per capita household income (1980)	(JD)	641	495 *3	-
5. Total Planned Investment 1986-1990 (Million JD)				
		2,706	227	8.4
6. Infrastructure				
1) School enrollment ratio (%)		30	30	-
2) Hospital beds (Nos.)		n.a.	190	-
3) Number of physician per 10,000		11.3	5.6	-
4) Electrification ratio (%)		90.8	87.1	-
5) Electric power consumption (GWh/yr)		2,151	175 *4	8.1
7. Water (MCM/yr)				
1) Municipal water supply		68	3.5	5.1
2) Industrial water supply		41	10.1	24.6
3) Irrigation water supply		409	11.0	2.7
8. Agriculture				
1) Arable land (1,000ha)		684 *5	125	18.3
2) Irrigated land (1,000ha)		57	3.2	5.6
3) Farm household (1,000)		58	13	22.4
4) Wheat production (1,000t)		163 *6	11.7 *7	7.2
5) Yield of cereal (t/ha)		1.1 *6	0.9 *7	-
6) Number of sheep (1,000)		283 *6	19.7 *7	7.0
7) Number of goats (1,000)		56.7 *6	13.7 *7	24.2

Note: Basic data year 1985 *1 Land area of the East Bank.

*2 Population ratio who live in urban with more than 5,000 persons.

*3 Old Karak governorate.

*4 Karak, Tafila and Shaubak areas.

*5 Normally used for agriculture.

*6 1988 *7 Karak and Tafila (1988)

Source: (1) The Study on Integrated Regional Development Master Plan for the Karak-Tafila Development Region, 1988, JICA.

(2) Statistical Yearbook 1988, Department of Statistics.

TABLE D.3.1 TREES PLANTED UNDER IRRIGATION
IN JORDAN VALLEY AND DESERT AREA

(+ : suitable - : unsuitable)

Species	Wood production in Jordan Valley	Windbreak in Jordan Valley	Windbreak in Desert Area
Acacia arabica	+	+	-
Albizzia lebbek	+	-	-
Cassia siamea	+	+	-
Casuarina equisetifolia	-	+	+
Cupressus arizonica	-	-	+
Cupressus sempervirens	-	-	+
Dalbergia sissoo	+	-	-
Eucalyptus camaldulensis	+	-	+
Eucalyptus gomphocephala	+	-	-
Eucalyptus microtheca	+	-	-
Populus alba	+	+	+
Populus nigra	+	+	+
Tamarix articulata	-	+	+

Source: Department of Forest and Soil Conservation

TABLE D.3.2 TREES PLANTED WITHOUT IRRIGATION IN MOUNTAIN AREAS

(+ : suitable - : unsuitable)

Species	Wood produc- tion under rainfall over 500mm	Windbreak under rainfall 300-500mm	Forest under rainfall 300-500mm	Soil conserva- tion under rainfall 150-300mm
<i>Acacia cyanophylla</i>	-	+	+	+
<i>Cupressus arizonica</i>	-	+	+	-
<i>Cupressus sempervirens</i>	+	+	+	-
<i>Eucalyptus brockway</i>	-	-	+	-
<i>Eucalyptus camaldulensis</i>	+	-	-	-
<i>Eucalyptus campespe</i>	-	-	+	-
<i>Eucalyptus cladocalyx</i>	+	-	-	-
<i>Eucalyptus dundasi</i>	-	-	+	-
<i>Eucalyptus gomphocephala</i>	+	-	-	-
<i>Eucalyptus lesoueffii</i>	+	-	-	-
<i>Juniperus phoenicia</i>	-	-	+	+
<i>Pinus brutia</i>	+	-	-	-
<i>Pinus halepensis</i>	+	+	+	+
<i>Pistacia atlantica</i>	-	-	+	+
<i>Prosopis chilensis</i>	-	-	+	+
<i>Quercus aegilops</i>	-	-	+	-
<i>Ziziphus spina-christi</i>	-	-	+	+

Source: Department of Forest and Soil Conservation

TABLE D.3.3 SUITABLE TREES AND SHRUBS TO DIFFERENT AREAS

(+ : suitable - : unsuitable)

Species	Jordan Valley	Mountain Area	Desert Area	Aqaba Area
Acacia cyanophylla	+	+	-	+
Acacia pycnatha	+	+	-	+
Albizzia lebbek	+	+	+	+
Araucaria araucaria	-	+	-	-
Araucaria excelsa	-	+	-	-
Bougainvillea spp.	+	+	+	+
Cassia fistula	+	+	+	+
Cassia nodosa	+	+	+	+
Casuarina equisetifolia	+	-	+	+
Casuarina glauca	+	-	-	+
Ceratonia siliqua	-	+	+	-
Cupressus arizonica	-	+	+	-
Cupressus atlantica	-	+	-	-
Cupressus macrocarpa	-	+	-	-
Cupressus sempervirens	+	+	+	-
Dalbergia sissoo	+	+	+	+
Dodonea viscosa	+	+	+	+
Ficus benjamina	+	+	-	+
Hybiscus syriacus	+	+	+	+
Jasminum azorisum	-	+	+	-
Jacaranda mimosaifolia	+	-	-	+
Juniperus virginiana	-	+	+	-
Melia azedarach	+	+	-	+
Nerium oleander	+	+	+	+
Parkinsonia aculeata	+	+	-	-
Phoenix dactylifera	+	-	-	+
Robinia pseudoacacia	-	+	+	-
Shinus molle	+	+	+	+
Tamarix articulata	+	-	+	+
Tamaryndius indicus	+	-	-	+

Source: Department of Forest and Soil Conservation

Table D.5.1 (1/3) AREA OF CROPS CULTIVATED (AMMAN GOVERNORATE)

(Unit: Dunum)

	1981	1982	1983	1984	1985	1986	1987	Average 1981-1987
Field Crops	459,304	458,305	564,000	256,716	372,367	165,951	600,192	410,976
Wheat (grain)	256,944	236,152	319,160	128,826	200,550	96,600	330,060	224,042
Barley (grain)	114,380	135,950	152,470	65,000	101,825	28,070	204,750	114,635
Lentils	30,870	25,100	21,450	10,500	17,450	12,705	32,615	21,527
Vetch	12,310	15,800	18,950	11,715	13,107	5,720	10,860	12,637
Chick pea	4,201	5,223	5,320	5,760	7,788	5,984	4,375	5,522
Rice	-	-	-	-	-	-	-	-
Others	40,599	40,080	46,650	34,915	31,647	16,872	17,532	32,614
Tree Crops	54,531	57,503	59,263	60,051	65,926	78,160	88,152	66,227
Olive (green)	25,030	25,450	26,490	26,606	31,580	40,134	48,389	31,954
Grape	21,780	23,650	23,975	24,273	24,734	26,866	27,861	24,734
Fig	907	975	1,005	1,022	1,086	1,735	2,025	1,251
Almond	1,481	1,505	1,590	1,620	1,730	2,000	2,043	1,710
Peach	2,150	2,300	2,350	2,380	2,408	2,515	2,535	2,377
Plum and Prune	1,526	1,710	1,875	1,908	1,918	2,048	2,148	1,876
Apricot	165	181	185	198	209	219	230	198
Pomegranate	256	273	302	320	344	446	586	361
Apple	1,128	1,314	1,321	1,530	1,691	1,947	2,041	1,567
Pear	31	35	41	48	62	68	85	53
Banana	-	-	-	-	-	-	-	-
Citrus	20	70	76	86	93	94	94	76
Quince	-	-	-	-	-	-	2	-
Others	57	40	53	60	71	88	113	69
Vegetables	37,622	43,074	77,479	78,477	67,276	46,364	48,068	56,909
Tomatoes	10,260	9,670	17,265	15,058	12,423	5,253	5,340	10,753
Squash	2,526	2,760	4,753	6,455	3,323	3,933	2,383	3,733
Eggplant	630	1,030	2,981	3,184	1,948	1,055	1,566	1,771
Cucumber	1,360	1,517	5,655	4,785	2,531	2,374	1,058	2,754
Potatoes	150	1,190	-	600	328	578	2,481	761
Cabbages	225	450	4,265	6,410	4,367	2,770	1,961	2,921
Cauliflower	810	1,033	4,445	3,640	5,070	4,181	2,002	3,026
Sweet Pepper	1,197	1,490	6,440	6,410	1,261	1,032	1,325	2,736
Okra	2,739	3,275	3,630	3,345	4,672	2,874	2,393	3,275
Lettuce	-	80	295	600	490	2,344	1,705	788
Water Melon	3,445	2,412	8,532	7,385	7,842	5,210	6,876	5,957
Onion	3,210	4,340	3,598	3,625	2,225	1,915	1,896	2,973
Snake Cucumber	4,707	4,740	4,690	4,075	5,163	2,543	1,871	3,970
Carrot	-	-	109	130	330	158	390	160
Sweet Melon	3,170	2,540	5,110	4,710	5,379	1,624	1,736	3,467
Peas	280	1,469	1,472	1,630	2,622	1,807	2,547	1,690
Mulukhiye	-	-	-	-	-	-	-	-
Garlic	90	220	390	200	670	1,478	2,192	749
Others	2,823	4,858	3,849	6,235	6,632	5,235	8,346	5,425
Total	551,457	558,882	700,742	395,244	505,569	290,475	736,412	534,112

Source: Ministry of Agriculture

Table D.5.1 (2/3) AREA OF CROPS CULTIVATED (KARAK GOVERNORATE)

(Unit: Dunum)

	1981	1982	1983	1984	1985	1986	1987	Average 1981-1987
Field Crops	236,537	200,894	240,646	87,763	171,402	76,528	198,876	173,235
Wheat (grain)	152,940	134,900	160,240	62,200	122,200	52,540	138,770	117,684
Barley (grain)	53,600	43,100	51,410	23,031	35,600	15,190	51,470	39,057
Lentils	18,895	10,330	13,040	1,260	1,820	2,115	4,170	7,376
Vetch	1,420	4,520	5,190	410	560	1,760	2,020	2,269
Chick pea	2,737	3,215	4,740	790	4,875	1,432	1,282	2,724
Rice	-	-	-	-	-	-	-	-
Others	6,945	4,829	6,026	72	6,347	3,491	1,164	4,125
Tree Crops	17,778	19,272	20,182	20,768	21,202	23,971	27,878	21,579
Olive (green)	6,160	7,088	7,757	8,097	8,249	10,478	13,996	8,832
Grape	11,009	11,460	11,657	11,817	11,977	12,384	12,549	11,836
Fig	104	127	138	148	157	175	270	160
Almond	104	118	127	141	160	176	185	144
Peach	20	22	24	25	32	46	57	32
Plum and Prune	41	51	55	63	75	84	98	67
Apricot	95	108	111	117	141	160	183	131
Pomegranate	149	168	171	180	191	208	266	190
Apple	-	-	-	-	-	8	12	3
Pear	-	-	-	-	-	-	-	-
Banana	-	-	-	-	-	-	-	-
Citrus	96	100	102	118	139	156	163	125
Quince	-	30	40	62	81	96	99	58
Others	-	-	-	-	-	-	-	-
Vegetables	6,882	2,950	3,770	3,199	4,697	4,869	3,201	4,224
Tomatoes	5,601	2,227	2,297	2,040	2,545	2,187	1,687	2,655
Squash	38	81	148	96	328	430	305	204
Eggplant	20	92	10	60	60	69	22	48
Cucumber	590	226	270	255	328	194	151	288
Potatoes	-	-	-	-	-	1	66	10
Cabbages	4	6	6	12	15	25	14	12
Cauliflower	-	-	-	-	-	-	-	-
Sweet Pepper	-	8	15	16	10	23	6	11
Okra	22	17	83	-	88	609	51	124
Lettuce	-	-	-	-	-	-	-	-
Water Melon	38	45	188	170	483	343	211	211
Onion	68	89	113	43	114	507	197	162
Snake Cucumber	83	66	224	-	182	181	130	124
Carrot	-	-	-	-	-	-	-	-
Sweet Melon	2	6	63	10	106	145	234	81
Peas	7	-	-	-	-	-	1	1
Mulukhiye	-	-	-	-	-	-	-	-
Garlic	-	-	-	-	-	-	1	-
Others	409	87	353	497	438	155	125	295
Total	261,197	223,116	264,598	111,730	197,301	105,368	229,955	199,038

Source: Ministry of Agriculture

Table D.5.1 (3/3) AREA OF CROPS CULTIVATED (TAFILA GOVERNORATE)

(Unit: Dunum)

	1981	1982	1983	1984	1985	1986	1987	Average 1981-1987
Field Crops	59,321	20,636	65,115	10,550	63,615	129,575	16,550	52,195
Wheat (grain)	40,000	10,000	35,000	6,000	36,000	88,000	14,500	32,786
Barley (grain)	13,700	4,300	20,000	3,500	20,000	32,000	700	13,457
Lentils	4,550	1,800	5,000	500	1,500	7,400	300	3,007
Vetch	-	-	-	-	-	-	-	-
Chick pea	1,050	4,500	5,000	520	6,000	2,100	1,000	2,881
Rice	-	-	-	-	-	-	-	-
Others	21	36	115	30	115	75	50	63
Tree Crops	6,628	7,008	7,405	7,608	8,285	9,642	11,382	8,280
Olive (green)	3,989	4,120	4,412	4,445	4,910	5,640	6,895	4,916
Grape	1,425	1,510	1,526	1,563	1,595	1,835	1,970	1,632
Fig	105	117	120	137	150	174	218	146
Almond	166	195	205	226	241	259	285	225
Peach	143	167	176	190	210	233	264	198
Plum and Prune	187	207	128	227	254	291	333	232
Apricot	250	275	294	299	328	359	421	318
Pomegranate	138	145	162	171	182	188	289	182
Apple	149	183	195	212	261	288	386	239
Pear	34	44	46	51	48	65	84	53
Banana	-	-	-	-	-	-	-	-
Citrus	6	10	11	25	25	47	59	26
Quince	36	35	40	62	81	96	99	64
Others	0	0	90	0	0	167	79	48
Vegetables	935	850	2,638	2,170	2,013	1,621	1,319	1,649
Tomatoes	551	605	984	800	769	626	620	708
Squash	100	80	245	186	130	169	58	138
Eggplant	0	25	90	130	70	14	64	56
Cucumber	104	75	430	330	233	153	181	215
Potatoes	-	-	-	10	115	15	10	21
Cabbages	-	-	-	-	-	16	-	2
Cauliflower	-	-	-	20	5	16	14	8
Sweet Pepper	2	-	12	50	23	38	15	20
Okra	-	-	-	-	25	7	-	5
Lettuce	-	-	-	-	-	-	-	-
Water Melon	3	-	110	240	324	285	171	162
Onion	136	55	300	145	94	50	16	114
Snake Cucumber	-	-	450	160	175	27	-	116
Carrot	-	-	-	-	-	-	-	-
Sweet Melon	-	-	-	-	-	158	140	43
Peas	-	-	-	5	-	-	-	1
Mulukhiye	-	-	-	-	-	-	-	-
Garlic	-	-	-	-	-	-	-	-
Others	39	10	17	94	50	47	21	40
Total	66,884	28,494	75,158	20,328	73,913	140,838	29,251	62,124

Source: Ministry of Agriculture

Table D.5.2 (1/3) CROP PRODUCTION (AMMAN GOVERNORATE)

(Unit: ton)

	1981	1982	1983	1984	1985	1986	1987	Average 1981-1987
Field Crops								
Wheat (grain)	15,696	8,967	35,377	12,252	11,086	8,105	30,007	17,356
Barley (grain)	4,574	1,947	11,918	1,035	3,707	1,854	13,214	5,464
Lentils	1,630	1,092	1,514	418	1,286	667	2,434	1,292
Vetch	772	617	1,337	341	823	250	721	694
Chick pea	274	106	110	175	313	271	367	231
Rice	-	-	-	-	-	-	-	-
Tree Crops								
Olive (green)	1,807	2,654	2,589	3,547	2,230	4,425	1,322	2,653
Grape	12,465	13,452	13,922	6,753	9,813	9,254	16,588	11,750
Fig	640	700	710	750	800	915	1,227	820
Almond	385	320	360	412	480	680	164	400
Peach	401	930	955	960	1,040	1,140	213	806
Plum and Prune	351	830	808	825	840	1,015	189	694
Apricot	85	75	51	54	60	66	22	59
Pomegranate	140	150	155	160	165	224	338	190
Apple	380	420	450	370	522	124	108	339
Pear	3	3	4	14	18	3	9	8
Banana	-	-	-	-	-	-	-	-
Citrus	142	144	150	111	134	26	37	106
Quince	-	-	-	-	-	-	2	-
Vegetables								
Tomatoes	6,692	5,921	14,452	29,905	20,079	11,634	10,994	14,240
Squash	1,732	1,866	3,982	8,909	6,241	6,403	3,826	4,708
Eggplant	1,260	992	3,436	7,341	2,468	1,267	4,023	2,970
Cucumber	1,445	1,415	5,527	12,377	4,657	10,657	7,994	6,296
Potatoes	150	272	-	2,400	503	1,520	5,033	1,411
Cabbages	325	322	6,377	15,460	8,134	7,705	3,063	5,912
Cauliflower	2,435	1,275	6,045	11,230	9,909	13,809	5,243	7,135
Sweet Pepper	954	1,134	5,152	8,974	2,049	1,881	2,308	3,207
Okra	669	845	1,172	1,015	1,246	837	775	937
Lettuce	-	64	295	600	490	10,843	4,762	2,436
Water Melon	2,593	1,702	12,353	16,285	24,213	22,381	26,589	15,159
Onion	1,293	10,915	1,710	2,707	890	1,149	1,730	2,913
Snake Cucumber	2,786	2,866	3,047	4,072	1,505	709	646	2,233
Carrot	-	-	178	104	264	316	423	184
Sweet Melon	2,183	1,959	4,981	11,050	8,101	6,149	6,466	5,841
Peas	84	774	637	1,185	791	636	1,187	756
Mulukhiye	-	-	-	-	-	-	-	-
Garlic	36	160	132	75	335	426	788	279

Source: Ministry of Agriculture

Table D.5.2 (2/3) CROP PRODUCTION (KARAK GOVERNORATE)

(Unit: ton)

	1981	1982	1983	1984	1985	1986	1987	Average 1981-1987
Field Crops								
Wheat (grain)	9,594	7,728	14,464	1,694	9,825	3,091	8,995	7,913
Barley (grain)	2,827	1,768	3,950	123	2,451	782	3,292	2,170
Lentils	1,197	479	925	14	151	117	214	442
Vetch	92	275	417	-	37	119	83	146
Chick pea	139	168	46	-	294	51	64	109
Rice	-	-	-	-	-	-	-	-
Tree Crops								
Olive (green)	913	745	1,150	554	590	1,339	353	806
Grape	3,943	3,226	4,080	3,409	2,682	4,448	4,389	3,740
Fig	34	41	40	49	62	57	54	48
Almond	12	28	32	38	48	45	30	33
Peach	5	26	8	7	8	14	8	11
Plum and Prune	18	22	17	19	22	14	13	18
Apricot	40	52	38	41	42	26	29	38
Pomegranate	71	76	76	32	38	47	51	56
Apple	-	-	-	-	-	8	2	1
Pear	-	-	-	-	-	-	-	-
Banana	-	-	-	-	-	-	-	-
Citrus	112	97	90	100	105	139	153	114
Quince	-	-	-	-	-	2	2	1
Vegetables								
Tomatoes	4,895	2,993	2,905	2,274	3,863	5,091	4,098	3,731
Squash	19	75	76	92	280	322	289	165
Eggplant	12	89	8	56	51	85	54	51
Cucumber	485	96	274	255	346	522	176	308
Potatoes	-	-	-	-	-	-	134	19
Cabbages	2	4	3	10	30	15	40	15
Cauliflower	-	-	-	-	-	-	-	-
Sweet Pepper	-	5	3	16	3	2	5	5
Okra	9	9	32	-	36	158	17	37
Lettuce	-	-	-	-	-	-	-	-
Water Melon	38	17	165	65	693	90	154	175
Onion	40	103	120	43	119	212	200	120
Snake Cucumber	99	29	133	-	112	44	79	71
Carrot	-	-	-	-	-	-	-	-
Sweet Melon	1	6	30	10	85	-	171	43
Peas	3	-	-	-	-	-	-	-
Mulukhiye	-	-	-	-	-	-	-	-
Garlic	-	-	-	-	-	-	1	-

Source: Ministry of Agriculture

Table D.5.2 (3/3) CROP PRODUCTION (TARIFA GOVERNORATE)

(Unit: ton)

	1981	1982	1983	1984	1985	1986	1987	Average 1981-1987
Field Crops								
Wheat (grain)	2,660	592	2,100	180	2,304	9,600	435	2,553
Barley (grain)	851	171	1,000	89	1,500	3,040	-	950
Lentils	337	36	295	15	165	926	18	256
Vetch	-	-	-	-	-	-	-	-
Chick pea	84	63	205	-	360	168	51	133
Rice	-	-	-	-	-	-	-	-
Tree Crops								
Olive (green)	2,148	1,779	1,085	941	800	3,197	15	1,424
Grape	3,000	156	5,480	2,000	1,500	2,115	1,970	2,317
Fig	28	33	29	22	18	20	153	43
Almond	18	55	62	71	80	28	6	46
Peach	2	54	52	57	60	8	122	51
Plum and Prune	62	68	57	60	68	20	252	84
Apricot	98	112	87	85	100	13	322	117
Pomegranate	43	52	46	38	42	51	233	72
Apple	22	57	62	100	87	22	194	78
Pear	4	3	2	9	9	5	35	10
Banana	-	-	-	-	-	-	-	-
Citrus	10	15	12	15	15	39	17	18
Quince	12	10	12	19	23	14	123	30
Vegetables								
Tomatoes	221	198	1,560	1,305	2,146	1,638	1,412	1,211
Squash	74	64	530	186	143	193	93	183
Eggplant	-	2	200	130	105	27	122	84
Cucumber	55	78	646	330	235	155	210	244
Potatoes	-	-	-	20	230	30	20	43
Cabbages	-	-	-	-	-	12	-	2
Cauliflower	-	-	-	60	12	16	23	16
Sweet Pepper	1	-	12	30	14	22	10	13
Okra	-	-	-	-	20	2	-	3
Lettuce	-	-	-	-	-	-	-	-
Water Melon	3	-	220	720	984	854	487	467
Onion	16	53	344	142	93	31	28	101
Snake Cucumber	-	-	680	160	125	10	-	139
Carrot	-	-	-	-	-	-	-	-
Sweet Melon	-	-	-	-	-	457	279	105
Peas	-	-	-	5	-	-	-	1
Mulukhiye	-	-	-	-	-	-	-	-
Garlic	-	-	-	-	-	-	-	-

Source: Ministry of Agriculture

Table D.5.3(1/3) AVERAGE UNIT YIELD (AKMAN GOVERNORATE)

(Unit: kg/dunum)

	1981	1982	1983	1984	1985	1986	1987	Average 1981-1987
Field Crops								
Wheat (grain)	61	38	111	95	55	84	91	77
Barley (grain)	40	14	78	16	36	66	65	48
Lentils	53	44	71	40	74	52	75	60
Vetch	63	39	71	29	63	44	66	55
Chick pea	65	20	21	30	40	45	84	42
Rice	-	-	-	-	-	-	-	-
Tree Crops								
Olive (green)	72	104	98	133	71	110	27	83
Grape	572	569	581	278	397	344	595	475
Fig	706	718	706	734	737	527	606	656
Almond	260	213	226	254	277	340	80	234
Peach	187	404	406	403	432	453	84	339
Plum and Prune	230	485	430	432	438	496	88	370
Apricot	515	414	276	273	287	301	96	298
Pomegranate	547	549	513	500	480	502	577	527
Apple	337	320	341	242	309	64	53	216
Pear	97	86	98	292	290	44	106	146
Banana	-	-	-	-	-	-	-	-
Citrus	7,100	2,057	1,974	1,291	1,441	277	394	1,396
Quince	-	-	-	-	-	-	1,000	-
Vegetables								
Tomatoes	652	612	837	1,986	1,616	2,215	2,059	1,324
Squash	686	676	838	1,380	1,378	1,628	1,606	1,261
Eggplant	2,000	963	1,153	2,306	1,267	1,201	2,569	1,677
Cucumber	1,063	933	977	2,587	1,840	4,489	7,556	2,286
Potatoes	1,000	229	-	4,000	1,534	2,630	2,029	1,854
Cabbages	1,444	716	1,495	2,412	1,863	2,782	1,562	2,024
Cauliflower	3,006	1,234	1,360	3,085	1,954	3,303	2,619	2,358
Sweet Pepper	797	761	800	1,400	1,625	1,823	1,742	1,172
Okra	244	258	323	303	267	291	324	286
Lettuce	-	800	1,000	1,000	1,000	4,626	2,793	3,093
Water Melon	753	706	1,448	2,205	3,088	4,296	3,867	2,545
Onion	403	2,515	475	747	400	600	912	980
Snake Cucumber	592	605	650	999	291	279	345	562
Carrot	-	-	1,633	800	800	2,000	1,085	1,150
Sweet Melon	689	771	975	2,346	1,506	3,786	3,725	1,685
Peas	300	527	433	727	302	352	466	448
Mulukhiye	-	-	-	-	-	-	-	-
Garlic	400	727	338	375	500	288	359	373

Source: Ministry of Agriculture

Table D.5.3 (2/3) AVERAGE UNIT YIELD (KARAK GOVERNORATE)

(Unit: kg/dunum)

	1981	1982	1983	1984	1985	1986	1987	Average 1981-1987
Field Crops								
Wheat (grain)	63	57	90	27	80	59	65	67
Barley (grain)	53	41	77	5	69	51	64	56
Lentils	63	46	71	11	83	55	51	60
Vetch	65	61	80	-	66	68	41	64
Chick pea	51	52	10	-	60	36	50	40
Rice	-	-	-	-	-	-	-	-
Tree Crops								
Olive (green)	148	105	148	68	72	128	25	91
Grape	358	282	350	288	224	359	350	316
Fig	327	323	290	331	395	326	200	301
Almond	115	237	252	270	300	256	162	230
Peach	250	1,182	333	280	250	304	140	336
Plum and Prune	439	431	309	302	293	167	133	268
Apricot	421	481	342	350	298	163	158	293
Pomegranate	477	452	444	178	199	226	192	293
Apple	-	-	-	-	-	1,000	167	500
Pear	-	-	-	-	-	-	-	-
Banana	-	-	-	-	-	-	-	-
Citrus	1,167	970	882	847	755	891	939	911
Quince	-	-	-	-	-	21	20	10
Vegetables								
Tomatoes	874	1,344	1,265	1,115	1,518	2,328	2,429	1,405
Squash	500	926	514	958	854	749	948	809
Eggplant	600	967	800	933	850	1,232	2,455	1,066
Cucumber	822	425	1,015	1,000	1,055	2,691	1,166	1,070
Potatoes	-	-	-	-	-	-	2,030	2,000
Cabbages	500	667	500	833	2,000	600	2,857	1,268
Cauliflower	-	-	-	-	-	-	-	-
Sweet Pepper	-	625	200	1,000	300	87	833	436
Okra	409	529	386	-	409	259	333	300
Lettuce	-	-	-	-	-	-	-	-
Water Melon	1,000	378	878	382	1,435	262	730	827
Onion	588	1,157	1,062	1,000	1,044	418	1,015	740
Snake Cucumber	1,193	439	594	-	615	243	608	573
Carrot	-	-	-	-	-	-	-	-
Sweet Melon	500	1,000	476	1,000	802	-	731	535
Peas	429	-	-	-	-	-	-	-
Mulukhiye	-	-	-	-	-	-	-	-
Garlic	-	-	-	-	-	-	1,000	-

Source: Ministry of Agriculture

Table D.5.3 (3/3) AVERAGE UNIT YIELD (TAFILA GOVERNORATE)

(Unit: kg/dunum)

	1981	1982	1983	1984	1985	1986	1987	Average 1981-1987
Field Crops								
Wheat (grain)	67	59	60	30	64	109	30	78
Barley (grain)	62	40	50	25	75	95	-	71
Lentils	74	20	59	30	110	125	60	85
Vetch	-	-	-	-	-	-	-	-
Chick pea	80	14	41	-	60	80	51	46
Rice	-	-	-	-	-	-	-	-
Tree Crops								
Olive (green)	538	432	246	212	163	567	2	290
Grape	2,105	103	3,591	1,280	940	1,153	1,000	1,420
Fig	267	282	242	161	120	115	702	297
Almond	108	282	302	314	332	108	21	203
Peach	14	323	295	300	286	34	462	257
Plum and Prune	332	329	445	264	268	69	757	361
Apricot	392	407	296	284	305	36	765	367
Pomegranate	312	359	284	222	231	271	806	396
Apple	148	311	318	472	333	76	503	325
Pear	118	68	43	176	188	77	417	180
Banana	-	-	-	-	-	-	-	-
Citrus	1,667	1,500	1,091	600	600	830	288	672
Quince	333	286	300	306	284	146	1,242	474
Vegetables								
Tomatoes	401	327	1,585	1,631	2,791	2,617	2,277	1,711
Squash	740	800	2,163	1,000	1,100	1,142	1,603	1,325
Eggplant	-	80	2,222	1,000	1,500	1,929	1,906	1,491
Cucumber	529	1,040	1,502	1,000	1,009	1,013	1,160	1,135
Potatoes	-	-	-	2,000	2,000	2,000	2,000	2,000
Cabbages	-	-	-	-	-	750	-	750
Cauliflower	-	-	-	3,000	2,400	1,000	1,643	2,018
Sweet Pepper	500	-	1,000	600	609	579	667	636
Okra	-	-	-	-	800	286	-	688
Lettuce	-	-	-	-	-	-	-	-
Water Melon	1,000	-	2,000	3,000	3,037	2,996	2,848	2,884
Onion	118	964	1,147	979	989	620	1,750	888
Snake Cucumber	-	-	1,511	1,000	714	370	-	1,201
Carrot	-	-	-	-	-	-	-	-
Sweet Melon	-	-	-	-	-	2,892	1,993	2,470
Peas	-	-	-	1,000	-	-	-	1,000
Mulukhiye	-	-	-	-	-	-	-	-
Garlic	-	-	-	-	-	-	-	-

Source: Ministry of Agriculture

Table D.5.4 ESTIMATION OF PRESENT CROP YIELDS
IN THE PRIORITY AREAS
(DHIBAN, ABYAD AND TAFILA)

	Average Yields of Karak and Tafila Governorates *1 (ton/dunum)	Farm Interview Survey *2 (ton/dunum)	Estimated Yields in the Priority Areas*4 (ton/dunum)
Wheat	0.07	0.06	0.06
Barley	0.06	0.06	0.06
Lentil	0.07	0.06	0.06
Chick pea	0.04	0.05	0.04 *3
Olive (green)	0.16	0.20	0.20
Grape	0.45	0.24	0.45 *3
Apricot	0.35	0.30	0.35 *3
Apple	0.33	0.50	0.33 *3
Peach	0.27	0.23	0.27 *3
Fig	0.30	-	0.30
Pear	0.18	0.06	0.18 *3
Tomatoes	1.47	0.70	0.70
Water melon	1.72	-	1.72
Squash	1.02	0.36	1.02 *3
Cabbages	1.18	1.33	1.18 *3
Cucumber	1.10	0.50	1.10 *3
Potatoes	2.00	0.89	2.00 *3
Cauliflower	2.02	4.50	2.02 *3

*1 Average from 1981 to 1987

Excluding Ghour area.

Source: Ministry of Agriculture

The governorate of Amman was excluded from this analysis because the yields in the Dhiban area are similar as that in Karak and Tafila Governorates.

*2 Farm interview survey was carried out by JICA study team in December 1989.

*3 Apply the yields of Karak and Tafila Governorate to the project area because of a few samples for analysis.

*4 These figures indicate an average in three areas of Dhibab, Abyad and Tafila, though the crop yields vary place to place according the rainfall pattern.

Table D.5.5 (1/3) RESULTS OF FARM INTERVIEW SURVEY
- CULTIVATION AREA IN TAFILA

(Unit: dunum)

Sample No.	Field Crops			Tree Crops		Vegetables	Total
	Wheat	Barley	Others	Olives	Others		
1 DC- 2	90	-	-	20	-	-	110
2 DC- 3	50	-	-	-	50	-	100
3 DC- 4	71	-	-	8	8	-	87
4 DC- 5	160	-	-	-	-	-	160
5 DC- 6	150	-	-	-	-	-	150
6 DC- 7	60	-	-	2	-	-	62
7 DC- 8	400	30	10	10	-	-	450
8 DC- 9	300	-	-	-	20	-	320
9 DC-10	67	-	-	-	-	-	67
10 DC-11	105	-	-	20	-	-	125
11 DC-12	100	-	-	-	-	-	100
12 DC-13	100	-	-	-	-	-	100
13 DC-14	90	-	16	-	-	8	114
14 DC-16	30	-	30	-	-	30	90
15 DC-17	100	50	20	-	-	-	170
16 DC-18	25	-	25	-	-	-	50
17 DC-19	70	-	-	-	-	70	140
18 DC-20	40	-	-	-	-	-	40
19 DC- 1	3	-	-	-	1	10	14
20 DF- 1	50	-	-	5	-	-	55
21 DF- 2	-	-	-	12.8	5.7	-	18.5
22 DF- 3	12	-	-	8	-	18	38
23 DF- 5	-	-	-	-	-	17	17
24 DF- 6	-	-	-	6	-	15	21
25 DF- 7	-	-	-	11	-	-	11
26 DF- 8	12	-	-	30	-	-	42
27 DF- 9	-	-	-	50	-	-	50
28 DF-10	-	-	-	31	-	31	62
29 DF-11	28	-	-	4	2	-	34
30 DF-12	66	-	-	-	-	16	82
31 DF-13	-	-	-	-	-	7	7
32 DF-15	-	-	-	10	2	-	12
33 DF-16	-	-	-	-	-	19	19
34 DF-17	30	-	-	-	-	52	82
35 DF-18	-	-	-	-	-	10	10
36 DF-19	-	-	-	2	-	4	6
37 DF-20	-	-	-	13	6.4	-	19.2
n = 37	2,209	80	101	243	95	307	3,035
Average*1	60	2	3	6	3	8	82

*1 Average area per one farmer

Table D.5.5 (2/3) RESULTS OF FARM INTERVIEW SURVEY
- CULTIVATION AREA IN TAFILA

(Unit: dunum)

Sample No.	Field Crops			Tree Crops		Vegetables	Total
	Wheat	Barley	Others	Olives	Others		
1 KC- 1	70	30	20	-	-	-	120
2 KC- 2	350	500	-	-	-	-	850
3 KC- 3	300	50	50	-	-	-	400
4 KC- 4	150	50	10	-	-	-	210
5 KC- 5	170	20	-	-	-	-	190
6 KC- 6	60	-	-	-	-	-	60
7 KC- 7	200	300	50	-	-	-	550
8 KC- 8	500	300	-	-	-	-	800
9 KC- 9	100	100	-	-	-	-	200
10 KC-10	300	200	-	-	-	-	500
11 KC-11	200	100	-	-	-	-	300
12 KC-12	350	-	-	-	-	-	350
13 KC-13	350	-	-	-	-	-	350
14 KC-14	1,300	500	-	-	-	-	1,800
15 KC-15	150	-	-	-	40	-	190
16 KC-16	200	30	-	-	35	-	265
17 KC-17	40	20	-	-	-	-	60
18 KC-18	250	100	-	-	-	-	350
19 KC-19	300	150	-	-	-	-	450
20 KC-20	300	200	-	-	-	-	500
21 KF- 1	-	-	-	-	22	-	22
22 KF- 2	-	-	-	-	5	-	5
23 KF- 3 *2	-	-	-	-	-	-	0
24 KF- 4 *2	-	-	-	-	-	-	0
25 KF- 5	300	-	-	-	-	-	300
26 KF- 6	-	-	-	13	-	-	13
27 KF- 7	25	-	-	3	-	-	28
28 KF- 8	45	-	-	-	11	-	56
29 KF- 9	100	-	-	8	-	-	108
30 KF-10	-	-	-	8	-	-	8
31 KF-11	600	-	-	5	5	15	625
32 KF-12	50	-	-	6	-	-	56
33 KF-13	30	-	-	3	-	-	33
34 KF-14	54	-	-	6	-	-	60
35 KF-15	-	-	-	2	2	-	4
36 KF-16	40	-	-	2	2	-	44
37 KF-17	30	-	-	2	2	-	34
38 KF-18	-	-	-	5	-	-	5
39 KF-19 *2	-	-	-	-	-	-	0
40 KF-20	-	-	-	-	110	-	110
n = 40	6,914	2,650	130	63	234	15	10,006
Average*1	173	66	3	2	6	0	250

*1 Average area per one farmer *2 Tenant farmers

Table D.5.5 (3/3) RESULTS OF FARM INTERVIEW SURVEY
- CULTIVATION AREA IN TAFILA

(Unit: dunum)

Sample No.	Field Crops			Tree Crops		Vegetables	Total
	Wheat	Barley	Others	Olives	Others		
1 TA- 2	25	20	5	-	-	-	50
2 TA- 3	200	100	25	75	-	-	400
3 TA- 4	30	60	10	30	-	-	130
4 TA- 5	14	10	-	13	-	-	37
5 TA- 6	150	50	50	-	-	-	250
6 TA- 7	500	200	-	-	-	-	700
7 TA- 9	-	-	-	9	-	-	9
8 TA-10	200	1,000	-	-	-	-	1,200
9 TA-11	-	-	-	60	-	-	60
10 TA-12	30	50	10	-	-	-	90
11 TA-18	-	300	-	-	-	-	300
12 TC- 1	50	50	-	-	-	-	100
13 TC- 2	60	80	10	-	-	-	150
14 TC- 3	150	50	20	-	-	-	220
15 TC- 7	200	300	-	-	-	-	500
16 TC- 8	-	-	-	-	8	-	8
17 TC- 9	-	-	-	12	-	-	12
18 TC-12	80	-	-	23	3	-	106
19 TC-13	120	62	-	-	-	-	182
20 TC-14	100	50	-	-	-	-	150
21 TC-15	15	10	-	-	-	-	25
22 TC-16	100	100	-	-	-	-	200
23 TC-17	40	30	-	-	-	-	70
24 TC-18	50	50	-	-	-	-	100
25 TC-19	100	100	-	15	-	-	215
26 TF- 1	-	-	-	-	6.3	-	6.3
27 TF- 2	-	-	-	-	7	-	7
28 TF- 3	-	-	-	20.5	-	-	20.5
29 TF- 4	-	-	-	1	4	-	5
30 TF- 6	-	-	-	-	11	-	11
31 TF- 7	-	-	-	8	4	-	12
32 TF- 8	-	-	-	3	15	-	18
33 TF- 9	-	-	-	-	-	52	52
34 TF-10	-	-	-	-	-	7	7
35 TF-12	200	300	-	24	-	-	524
36 TF-13	-	-	-	20	5	-	25
37 TF-15	60	25	-	-	10	-	95
38 TF-16	100	50	-	-	25	25	200
39 TF-17	25	25	-	-	10	-	60
40 TF-18	-	-	-	5	40	-	45
41 TF-19	-	-	-	-	16	32	48
n = 41	2,599	3,072	130	319	164	116	6,400
Average*1	63	75	3	8	4	3	156

*1 Average area per one farmer

Table D.5.6 AVERAGE UNIT YIELD (KARAK AND TAPILA GOVERNORATE)

(Unit: kg/dunum)

	1981	1982	1983	1984	1985	1986	1987	Average 1981-1987
Field Crops								
Wheat (grain)	64	57	85	27	77	90	62	70
Barley (grain)	55	41	69	8	71	81	63	59
Lentils	65	42	68	16	95	110	52	67
Vetch	65	61	80	-	66	68	41	64
Chick pea	59	30	26	-	60	62	50	43
Tree Crops								
Olive (green)	302	225	184	119	106	281	18	162
Grape	558	261	725	404	308	462	438	450
Fig	297	303	267	249	261	221	424	299
Almond	111	265	283	297	319	168	77	214
Peach	43	423	300	298	281	79	405	268
Plum and Prune	351	349	404	272	274	91	615	340
Apricot	400	428	309	303	303	75	581	345
Pomegranate	397	409	366	199	214	247	512	344
Apple	148	311	318	472	333	101	492	327
Pear	118	68	43	176	188	77	417	180
Citrus	1,196	1,018	903	804	732	877	766	869
Quince	333	154	150	153	142	83	631	253
Vegetables								
Tomatoes	832	1,127	1,361	1,260	1,813	2,392	2,388	1,470
Squash	674	863	1,542	986	924	860	1,052	1,018
Eggplant	600	778	2,080	979	1,200	1,349	2,047	1,296
Cucumber	778	578	1,314	1,000	1,036	1,951	1,163	1,097
Potatoes	-	-	-	2,000	2,000	1,875	2,026	2,000
Cabbages	500	667	500	833	2,000	659	2,857	1,184
Cauliflower	-	-	-	3,000	2,400	1,000	1,643	2,018
Sweet Pepper	500	625	556	697	515	393	714	564
Okra	409	529	386	-	496	260	333	314
Water Melon	1,000	378	1,292	1,915	2,078	1,503	1,678	1,720
Onion	275	1,083	1,123	984	1,019	436	1,070	801
Snake Cucumber	1,193	439	1,206	1,000	664	260	608	877
Sweet Melon	500	1,000	476	1,000	802	1,508	1,203	1,203
Peas	429	-	-	1,000	-	-	-	615
Garlic	-	-	-	-	-	-	1,000	1,000

Remark: Excluding Ghour area.

Source: Ministry of Agriculture

Table D.5.7 (1/4) RESULTS OF FARM INTERVIEW SURVEY FOR CROP PRODUCTION

No.	Crops	Irrigation (Y/N)	Planted Area (du)	Har. Area (du)	Total Production (kg)	Unit Yield (kg/du)	Crop Damage					Cropping Pattern		
							*1 Dro	*2 Flo	*3 Dra	*4 Pes	*5 Bir	Rat	Seeding/Planting	Harvesting
DC- 2	Wheat	N	90	90	4,500	50	1						10-12	6/7
DC- 3	Wheat	N	50	50	6,000	120	1						11	7
DC- 4	Wheat	N	71	71	6,000	85	1						11	7
DC- 5	Wheat	N	160	160	12,000	75	1						11	7
DC- 6	Wheat	N	150	150	1,500	10	1						11-1	7
DC- 7	Wheat	N	60	30	2,250	75	1						11-1	7
DC- 8	Wheat	N	400	300	8,000	27	1						11-1	7
DC-11	Wheat	N	105	105	4,000	38	1						12	7
DC-14	Wheat	N	90	90	8,000	89	1						12	7
DC-16	Wheat	N	30	30	500	17		1					11	7
DC-17	Wheat	N	100	100	6,000	60	1						11-1	7
KC- 1	Wheat	N	70	70	9,100	130	1							
KC- 2	Wheat	N	350	350	20,000	57	1						12	7
KC- 3	Wheat	N	300	250	15,000	60	1						12	7
KC- 4	Wheat	N	150	100	8,000	80	1						12	7
KC- 5	Wheat	N	170	150	9,000	60	1						12	7
KC- 6	Wheat	N	60	60	6,000	100	1						1	7
KC- 7	Wheat	N	200	150	16,000	107	1						12	6
KC- 9	Wheat	N	100	100	5,000	50	1							
KC-10	Wheat	N	300	300	20,000	67	1							
KC-11	Wheat	N	200	200	10,000	50	1						11-12	6
KC-12	Wheat	N	350	350	52,500	150	1						11	7
KC-13	Wheat	N	350	350	52,500	150	1						11	7
KC-14	Wheat	N	1,300	1,300	40,000	31	1						12	6
KC-15	Wheat	N	150	100	15,000	150	1						12	7
KC-16	Wheat	N	200	180	18,000	100	1						12	6
KC-17	Wheat	N	40	40	3,000	75								
KC-18	Wheat	N	250	250	20,000	80	1							
KC-19	Wheat	N	300	300	12,000	40	1						12	6
KC-20	Wheat	N	300	300	10,000	33								
KF- 5	Wheat	N	300	300	15,000	50							12-1	5-6
KF- 9	Wheat	N	100	100	7,000	70	1						11-1	6
KF-11	Wheat	N	600	600	20,000	33							12	7
KF-13	Wheat	N	30	30	2,000	67		1					1	7
TA- 2	Wheat	N	25	25	500	20	1						11	6
TA- 3	Wheat	N	200	100	5,000	50	1						1-3	7
TA-10	Wheat	N	200	100	2,000	20	1						11-12	5-6
TA-12	Wheat	N	30	30	1,000	33	1						10-11	6-7
TC- 1	Wheat	N	50	50	5,000	100							11	5
TC- 2	Wheat	N	60	60	8,000	133	1						11	5
TC- 7	Wheat	N	200	200	3,000	15							12	5
TC-12	Wheat	N	80	80	1,500	19	1						11	
TC-13	Wheat	N	120	120	1,500	13	1						12	6
TC-14	Wheat	N	100	100	3,000	30	1							
TC-15	Wheat	N	15	15	100	7	1						11	6
TC-16	Wheat	N	100	100	1,000	10	1						12	7
TC-17	Wheat	N	40	40	1,250	31	1						12	5
TC-18	Wheat	N	50	50	4,000	80								
TC-19	Wheat	N	100	80	3,000	38	1						12	7
TF-12	Wheat	N	200	120	3,000	25	1						12	7
TF-15	Wheat	N	60	60	7,000	117	1						12	6-7
TF-16	Wheat	N	100	100	2,000	20	1						12	6-7
Total/Average			9,206	8,536	495,700	58								
*1 Drought		*2 Flood		*3 Drangage		* Pests and diseases			*5 Bird					

Table D.5.7 (2/4) RESULTS OF FARM INTERVIEW SURVBY FOR CROP PRODUCTION

No.	Crops	Irrigation (Y/N)	Planted Area (du)	Har. Area (du)	Total Production (kg)	Unit Yield (kg/du)	Crop Damage					Cropping Pattern		
							*1 Dro	*2 Flo	*3 Dra	*4 Pes	*5 Bir	Rat	Seeding/Planting	Harvesting
DC- 8	Barley	N	50	20	3,000	150	1				1		11	7
DC-17	Barley	N	30	30	2,000	67	1							
KC- 2	Barley	N	500	500	50,000	100	1						11	6
KC- 1	Barley	N	30	30	3,600	120	1							
KC- 3	Barley	N	50	40	3,000	75	1						1	6
KC- 4	Barley	N	50	40	2,000	50	1			1			11	7
KC- 5	Barley	N	20	15	2,000	133	1						11	6
KC- 7	Barley	N	300	200	10,000	50	1			1			9	5
KC- 9	Barley	N	100	100	3,000	30	1							
KC-10	Barley	N	200	200	10,000	50	1							
KC-11	Barley	N	100	100	8,000	80	1						11-12	5
KC-14	Barley	N	500	500	30,000	60	1			1			11	5
KC-16	Barley	N	30	25	2,000	80	1						11	5
KC-17	Barley	N	20	20	2,000	100								
KC-18	Barley	N	100	100	8,000	80	1							
KC-19	Barley	N	150	150	6,000	40	1						10-11	6
KC-20	Barley	N	200	200	5,000	25								
TA- 2	Barley	N	20	20	500	25	1						11	6
TA- 3	Barley	N	100	50	2,500	50	1			1	1		1-3	7
TA-10	Barley	N	1000	200	4,000	20	1			1			11-12	5-6
TA-12	Barley	N	50	50	2,000	40	1						10-11	6-7
TC- 1	Barley	N	50	50	5,000	100							11	5
TC- 2	Barley	N	80	80	8,000	100	1						11	5
TC- 3	Barley	N	50	50	1,000	20	1	1					10	6
TC- 7	Barley	N	300	50	5,000	100							11	5
TC-13	Barley	N	62	62	500	8	1						12	6
TC-14	Barley	N	50	50	2,000	40	1							
TC-15	Barley		10	10	100	10	1			1			11	6
TC-16	Barley	N	100	100	1,000	10	1			1			10	7
TC-17	Barley	N	30	30	1,000	33	1						12	5
TC-18	Barley	N	50	50	3,000	60								
TC-19	Barley	N	100	80	3,000	38	1			1			10	6
TF-12	Barley	N	300	200	2,000	10	1						10	6
TF-16	Barley	N	50	50	1,500	30	1						11	5
Total/Average			4,832	3,452	191,700	56								
DC- 8	Lentil	N	10	10	500	50	1			1			11	6
DC-14	Lentil	N	16	16	2,000	125	1						1	5
DC-16	Lentil	N	30	30	500	17		1					11	5
DC-17	Lentil	N	20	20	1,000	50	1							
KC- 1	Lentil	N	10	10	800	80	1							
KC- 3	Lentil	N	50	40	3,000	75	1						2	5
KC- 7	Lentil	N	50	50	3,000	60	1			1				
TA- 2	Lentil	N	5	5	50	10	1						11	6
TA-12	Lentil	N	10	10	200	20	1						10-11	6-7
TC- 2	Lentil	N	10	10	500	50	1						11	5
Total/Average			211	201	11,550	57								
*1 Drought														
*2 Flood														
*3 Dranage														
* Pests and diseases														
*5 Bird														

Table D.5.7 (3/4) RESULTS OF FARM INTERVIEW SURVEY FOR CROP PRODUCTION

No.	Crops	Irri- gation (Y/N)	Planted Area (du)	Har. Area (du)	Total Produc- tion (kg)	Unit Yield (kg/du)	Crop Damage					Cropping Pattern		
							*1 Dro	*2 Flo	*3 Dra	*4 Pes	*5 Bir	Rat	Seeding/ Planting	Harves- ting
KC- 1	Chick peas	N	10	10	800	80	1							
KC- 4	Chick peas	N	10	10	1,000	100	1			1		2	9	
TC- 3	Chick peas	N	20	20	300	15	1	1				3	8	
Total/Average			40	40	2,100	53								
TA- 3	Vetch	N	25	25	500	20	1			1	1	1-3	7	
DC- 1	Olive	Y	3	3	1,500	500				1				
DC- 7	Olive		2	2	1,000	500	1			1	1	4	11	
DC- 8	Olive	Y	10	10	6,000	600								
DC-11	Olive	Y	20	20	13,000	650	1			1	1	3		
DF- 3	Olive	Y	8	8	900	113	1			1				
DF- 6	Olive	Y	6	6	600	100				1				
KF- 7	Olive	Y	3	3	70	23	1			1		3	9	
KF- 9	Olive	Y	8	8	3,000	375	1			1		3	10	
KF-10	Olive	Y	8	8	960	120	1			1		3	10	
KF-11	Olive	Y	5	5	600	120								
KF-12	Olive	Y	6	6	3,000	500								
KF-13	Olive	Y	3	3	300	100								
KF-14	Olive	Y	6	6	400	67	1			1				
KF-15	Olive	Y	2	2	20	10				1				
KF-16	Olive	Y	2	2	75	38	1			1				
KF-17	Olive	Y	2	2	100	50	1			1				
KF-18	Olive	Y	5	5	3,000	600	1			1			9-10	
TC- 9	Olive	Y	12	12	400	33	1					12-2	11	
TC-11	Olive	N	23	23	874	38						3		
TF- 7	Olive	N	8	8	400	50	1							
TF- 8	Olive	N	3	3	40	13	1			1	1			
TF-13	Olive	N	20	20	2,000	100				1	1	11		
TF-18	Olive	Y	5	5	1,500	300	1			1	1	3	7	
TF-20	Olive	N	50	50	5,000	100	1			1		12	11	
Total/Average			220	220	44,739	203	5			4	3			
DC- 1	Grape	Y	1	1	100	100				1				
DF-11	Grape	N	2	2	200	100	1			1				
KF- 2	Grape	N	2	2	500	250				1		12-1	4-5	
KF-11	Grape	Y	5	5	1,000	200								
KF-20	Grape	N	110	110	25,000	227	1			1		1-2	8-9	
TA- 9	Grape	Y	9	9	900	100	1			1	1			
TC- 8	Grape	Y	3	3	5,000	1,667							10	
TF- 7	Grape	N	4	4	700	175	1							
TF- 8	Grape	Y	5	5	600	120	1			1	1			
Total/Average			141	141	34,000	241								
*1 Drought	*2 Flood	*3 Dranage	* Pests and diseases	*5 Bird										

Table D.5.7(4/4) RESULTS OF FARM INTERVIEW SURVEY FOR CROP PRODUCTION

No.	Crops	Irri- gation (Y/N)	Planted Area (du)	Har. Area (du)	Total Produc- tion (kg)	Unit Yield (kg/du)	Crop Damage					Cropping Pattern		
							*1 Dro	*2 Flo	*3 Dra	*4 Pes	*5 Bir	Rat	Seeding/ Planting	Harves- ting
KP- 2	Peach	N	1	1	500	500				1			12-1	4-5
KP-17	Peach	Y	2	2	200	100	1			1				
Total/Average			3	3	700	233	1	0	0	2	0	0		
KP- 2	Apricot	N	1	1	500	500				1			12-1	4-5
TP- 1	Apricot	N	1	1	100	100	1							
Total/Average			2	2	600	300	1	0	0	2	0	0		
KP- 2	Apples	N	1	1	500	500				1			12-1	4-5
TP- 1	Plumes	N	2.4	2.4	650	271	1							
TP- 1	Pears	N	1.6	1.6	100	63	1							
TP- 1	Prunes	N	1.3	1.3	100	77	1							
TP-13	Almonds	N	5	5	500	100				1	1		9-10	
DP- 5	Tomatoes	Y	5	5	2,000	400				1				
DP-13	Tomatoes	Y	7	7	5,000	714							7	10
DP-16	Tomatoes		4	4	6,000	1,500	1			1			3-7	6-9
DP-18	Tomatoes	Y	2	2	1,000	500				1			3	6
TP-10	Tomatoes	Y	7	7	3,500	500	1		1				5	11
Total/Average			25	25	17,500	700				1				
DP- 5	Squash	Y	7	7	2,000	286				1				
DP-18	Squash	Y	4	4	2,000	500				1			3	6
Total/Average			11	11	4,000	364	0	0	0	2	0	0		
DC- 1	Cabbages	Y	10	10	10,000	1,000				1			7	1
DP- 5	Cabbages	Y	5	5	10,000	2,000				1				
Total/Average			15	15	20,000	1,333				1				
DP-16	Potatoes		8	8	7,200	900	1			1			3/6/9	6-9
DP-18	Potatoes	Y	2	2	1,000	500				1			3	6
TP-19	Potatoes	Y	16	16	15,000	938	1			1	1		6	8
Total/Average			26	26	23,200	892				1				
DP-19	Cauliflower	Y	4	4	18,000	4,500				1			6	10
DP-18	Cucumber	Y	2	2	1,000	500				1			3	6
*1	Drought													
*2	Flood													
*3	Drainage													
*	Pests and diseases													
*5	Bird													

Table D.5.8(1/3) CROP BUDGET - PRESENT CONDITION

		Wheat	Barley	Lentils	Chick pea	Tomatoes
I. Gross Income						
- Unit yield	(t/du)	0.06	0.06	0.06	0.04	1.47
- Unit price	(JD/t)	140.0	90.0	150	250	100
- Gross income	(JD/du)	8.40	5.40	9.00	10.00	147.0
II. Production Cost						
	Unit Price (JD)	Q'ty Amount (JD/du)	Q'ty Amount (JD/du)	Q'ty Amount (JD/du)	Q'ty Amount (JD/du)	Q'ty Amount (JD/du)
1) Seeds and Seedlings						
- Seeds	(kg)	7 0.98	7 0.63	8 2.16	8 3.20	- -
- Seedlings						
Fruit tree #1	0.50	- -	- -	- -	- -	- -
Vegetables #2	2.50	- -	- -	- -	- -	1,000 12.50
2) Fertilizers						
- Urea	(kg) 0.11	- -	- -	- -	- -	15 1.65
- T.S.P.	(kg) 0.16	- -	- -	- -	- -	15 2.40
- Compound	(kg) 0.16	- -	- -	- -	- -	- -
- Organic fertilizer	(kg) 0.015	- -	- -	- -	- -	- -
3) Agro-chemicals						
- Herbicides	(lit.) 3.50	- -	- -	- -	- -	- -
- Pesticides & Fungicides	(lit.) 10.00	- -	- -	- -	- -	1.05 10.50
4) Laborers (man-day)						
- Seeding	5.00	0.1 0.50	0.1 0.50	0.1 0.50	0.1 0.50	- -
- Planting	5.00	- -	- -	- -	- -	1.0 5.00
- Application of fertilizer	5.00	- -	- -	- -	- -	0.9 4.50
- Weeding	5.00	0.6 3.00	0.6 3.00	0.5 2.50	0.5 2.50	1.0 5.00
- Spraying #3	5.00	- -	- -	- -	- -	0.4 2.00
- Harvesting #4	5.00	1.1 5.50	1.1 5.50	1.0 5.00	1.2 6.00	12.0 60.00
5) Farm machinery						
- Plowing	{dunum} 1.00	1.0 1.00	1.0 1.00	1.0 1.00	1.0 1.00	3 3.00
- Covering	{dunum} 1.00	1.0 1.00	1.0 1.00	1.0 1.00	1.0 1.00	- -
- Spraying	{dunum} 1.00	- -	- -	- -	- -	- -
- Harvesting	{dunum} 1.25	- -	- -	- -	- -	- -
6) Animals #5 (day)						
- Animals	8.00	- -	- -	- -	- -	- -
7) Materials						
- Bags #6	0.45	0.5 0.23	0.5 0.23	0.5 0.23	0.4 0.18	- -
- Boxes #7	0.25	- -	- -	- -	- -	123 30.75
8) Transportation #8						
- Transportation		0.18	0.18	0.18	0.12	14.70
9) Miscellaneous #9						
- Miscellaneous		0.62	0.60	0.63	0.73	7.60
Total		13.01	12.64	13.20	15.23	159.60
III. Net Income (JD/du.)						
- Excluding family labor cost #10		(4.61)	(7.24)	(4.20)	(5.23)	(12.60)
- Including family labor cost		3.11	0.48	2.63	2.33	48.82

- *1 One year seedling
 *2 One tray = 200 seedlings = 2.5 JD
 *3 Spraying by knapsack type sprayer.
 *4 Including works for threshing, packing, etc.
 *5 Plowing by horses.
 *6 Weight of one bag: 110kg
 *7 Weight of one box: 12 kg
 *8 Average transportation cost from project area to Amman. 10 JD/ton
 *9 Including minor farm tools and equipment, etc. (5% of total cost)
 *10 Assuming that about 30 % of harvesting are done by hired laborers.
 Source: Farm interview survey by the study team (December 1983).

Table D.5.8 (2/3) CROP BUDGET - PRESENT CONDITION

		Cauliflower		Water Melon		Cabbages		Olive (Green)		Grape		
		Q'ty	Amount (JD/du)	Q'ty	Amount (JD/du)	Q'ty	Amount (JD/du)	Q'ty	Amount (JD/du)	Q'ty	Amount (JD/du)	
I. Gross Income												
- Unit yield	(t/du)		2.02		1.72		1.18		0.17		0.45	
- Unit price	(JD/t)		80		60		70		300		150	
- Gross income	(JD/du)		161.6		103.2		82.60		51.00		67.50	
II. Production Cost												
1) Seeds and Seedlings												
- Seeds	(kg)	-	-	0.2	2.30	-	-	-	-	-	-	
- Seedlings												
Fruit tree #1	0.50	-	-	-	-	-	-	-	-	-	-	
Vegetables #2	2.50	1,000	12.50	-	-	1,000	12.50	-	-	-	-	
2) Fertilizers												
- Urea	(kg)	0.11	-	-	-	-	-	-	-	-	-	
- T.S.P.	(kg)	0.16	-	-	-	-	-	-	-	-	-	
- Compound	(kg)	0.16	20	3.20	40	6.40	20	3.20	-	-	-	
- Organic fertilizer	(kg)	0.015	500	7.50	-	-	500	7.50	60	0.90	60	0.90
3) Agro-chemicals												
- Herbicides(lit.)	3.50	0.25	0.88	-	-	0.25	0.88	-	-	-	-	
- Pesticides & Fungicid(lit.)	10.00	1.2	12.00	0.4kg	10.00	1.2	12.00	1.0	10.00	1.7	17.00	
4) Laborers (man-day)												
- Seeding	5.00	-	-	1.2	6.00	-	-	-	-	-	-	
- Planting	5.00	1.0	5.00	-	-	1.0	5.00	-	-	-	-	
- Application of fertilizer	5.00	1.1	5.50	0.4	2.00	1.1	5.50	0.4	2.00	0.4	2.00	
- Weeding	5.00	1.0	5.00	-	-	1.0	5.00	1.2	6.00	0.8	4.00	
- Spraying #3	5.00	0.4	2.00	0.4	2.00	0.4	2.00	-	-	-	-	
- Harvesting #4	5.00	12.0	60.00	8.6	43.00	2.0	10.00	2.7	13.50	2.7	13.50	
5) Farm machinery												
- Plowing (dunum)	1.00	3	3.00	3	3.00	3.0	3.00	-	-	-	-	
- Covering (dunum)	1.00	-	-	-	-	-	-	-	-	-	-	
- Spraying (dunum)	1.00	-	-	-	-	-	-	2.0	2.00	2.6	2.60	
- Harvesting (dunum)	1.25	-	-	-	-	-	-	-	-	-	-	
6) Animals #5 (day)	8.00	-	-	-	-	-	-	-	-	-	-	
7) Materials												
- Bags #6	0.45	-	-	-	-	-	-	3	1.35	-	-	
- Boxes #7	0.25	168	42.00	-	-	98	24.50	-	-	38	9.50	
8) Transportation #8			20.20		17.20		11.80		1.70		4.50	
9) Miscellaneous #9			8.94		4.60		5.14		1.87		2.70	
Total			187.72		96.50		108.02		39.32		56.70	
III. Net Income (JD/du.)												
- Excluding family labor cost #10			(26.12)		6.70		(25.42)		11.68		10.80	
- Including family labor cost			36.36		48.81		0.31		30.00		27.02	

- *1 One year seedling
 *2 One tray = 200 seedlings = 2.5 JD
 *3 Spraying by knapsack type sprayer.
 *4 Including works for threshing, packing, etc.
 *5 Plowing by horses.
 *6 Weight of one bag: 110kg
 *7 Weight of one box: 12 kg
 *8 Average transportation cost from project area to Amman. 10 JD/ton
 *9 Including minor farm tools and equipment, etc. (5% of total cost)
 *10 Assuming that about 30 % of harvesting are done by hired laborers.
 Source: Farm interview survey by the study team (December 1983).

Table D.5.8 (3/3) CROP BUDGET - PRESENT CONDITION

		Apricot		Apple		Peach		Fig	
		Q'ty	Amount (JD/du)	Q'ty	Amount (JD/du)	Q'ty	Amount (JD/du)	Q'ty	Amount (JD/du)
I. Gross Income									
- Unit yield	(t/du)		0.30		0.31		0.27		0.29
- Unit price	(JD/t)		330		280		400		250
- Gross income	(JD/du)		99.00		86.80		108.00		72.50
II. Production Cost									
1) Seeds and Seedlings									
- Seeds (kg)		-	-	-	-	-	-	-	-
- Seedlings									
Fruit tree #1	0.50	-	-	-	-	-	-	-	-
Vegetables #2	2.50	-	-	-	-	-	-	-	-
2) Fertilizers									
- Urea (kg)	0.11	-	-	-	-	-	-	-	-
- T.S.P. (kg)	0.16	-	-	-	-	-	-	-	-
- Compound (kg)	0.16	-	-	-	-	-	-	-	-
- Organic fertilizer (kg)	0.015	47	0.71	20	0.30	20	0.30	72	1.08
3) Agro-chemicals									
- Herbicides (lit.)	3.50	-	-	-	-	-	-	-	-
- Pesticides & Fungicide (lit.)	10.00	1.0	10.00	0.5	5.00	0.5	5.00	0.4	4.00
4) Laborers (man-day)									
- Seeding	5.00	-	-	-	-	-	-	-	-
- Planting	5.00	-	-	-	-	-	-	-	-
- Application of fertilizer	5.00	0.2	1.00	0.1	0.50	0.1	0.50	0.1	0.50
- Weeding	5.00	1.4	7.00	0.5	2.50	0.5	2.50	1.2	6.00
- Spraying #3	5.00	-	-	0.5	2.50	0.5	2.50	0.2	1.00
- Harvesting #4	5.00	3.3	16.50	2.0	10.00	2.0	10.00	1.2	6.00
5) Farm machinery									
- Plowing (dunum)	1.00	-	-	-	-	-	-	-	-
- Covering (dunum)	1.00	-	-	-	-	-	-	-	-
- Spraying (dunum)	1.00	2.7	2.70	-	-	-	-	-	-
- Harvesting (dunum)	1.25	-	-	-	-	-	-	-	-
6) Animals #5 (day)	8.00	-	-	-	-	-	-	-	-
7) Materials									
- Bags #6	0.45	-	-	-	-	-	-	-	-
- Boxes #7	0.25	25	6.25	26	6.50	23	5.75	24	6.00
8) Transportation #8			3.00		3.10		2.70		2.90
9) Miscellaneous #9			2.36		1.52		1.46		1.37
Total			49.52		31.92		30.71		28.85
III. Net Income (JD/du.)									
- Excluding family labor cost #10			49.49		54.88		77.29		43.65
- Including family labor cost			70.01		68.00		90.41		55.93

- *1 One year seedling
 *2 One tray = 200 seedlings = 2.5 JD
 *3 Spraying by knapsack type sprayer.
 *4 Including works for threshing, packing, etc.
 *5 Plowing by horses.
 *6 Weight of one bag: 110kg
 *7 Weight of one box: 12 kg
 *8 Average transportation cost from project area to Amman. 10 JD/ton
 *9 Including minor farm tools and equipment, etc. (5% of total cost)
 *10 Assuming that about 30 % of harvesting are done by hired laborers.
 Source: Farm interview survey by the study team (December 1983).

Table D.5.9 1/3) RESULTS OF FARM INTERVIEW SURVEY - NUMBER OF LIVESTOCK IN DHIBAN ARBA

Sample No.	Number of Livestock						Purchasing Cost for Feed											
	Horse	Sheep	Goats	Cow	Camel	Chicken	Barley			Bran			Sorghum			Others		
							Q'ty (t)	U.P. (JD/t)	Amount (JD)	Q'ty (t)	U.P. (JD/t)	Amount (JD)	Q'ty (t)	U.P. (JD/t)	Amount (JD)	Kind	Q'ty (t)	U.P. (JD/t)
1 DA- 1		25	6	2			12.0	60	720	15.0	45	675	15.0	55	825			
2 DA- 2		135		6			7.0	60	420	7.0	45	315	6.0	55	330			
3 DA- 3		60																
4 DA- 4		30	15				12.0	60	720	1.5	40	60	1.5	55	83			
5 DA- 5				6			10.3	60	618	10.3	40	412	10.3	75	773			
6 DA- 6			1,000				24.0	60	1,440	24.0	40	960	24.0	55	1,320			
7 DA- 7		100	30				8.5	60	510	8.5	50	425	8.5	50	425			
8 DA- 8	5	500					1.5	60	90	1.5	40	60	0.2	55	11			
9 DA- 9			175				6.0	60	360	6.0	40	240	6.0	55	330			
10 DA-10		150																
11 DA-11		200	50	10			3.0	60	180	3.0	45	135	3.0	55	165			
12 DA-12		80	10				7.0	60	420	7.0	40	280	5.0	55	275			
13 DA-13		50								60.0								
14 DA-14		150	20				7.0	60	420	7.0	40	280	6.0	55	330			
15 DA-15			710		22		72.0	60	4,320	0.6	40	24	9.0	60	540			
16 DA-16		50	20	2			12.0	60	720	12.0	40	480	12.0	55	660			
17 DA-17	1	30	70				3.5	60	210	1.0	40	40	3.5	60	210			
18 DA-18		100	15				5.5	60	330	3.6	40	144	6.0	55	330			
19 DA-19		85	15				24.0	60	1,440	1.5	55	83	1.5	40	60			
20 DA-20	1	400					1.0	60	60	1.0	40	40	1.0	50	50			
21 DC- 1																		
22 DC- 2				2														
23 DC- 3				2						0.5	40	20	1.0	55	55			
24 DC- 4																		
(DC-5)*1						(10,000)*1												
25 DC- 6																		
26 DC- 7																		
27 DC- 8																		
28 DC- 9																		
29 DC-10																		
30 DC-11		1	12	4														
31 DC-12		4	30															
32 DC-13			60	30														
33 DC-14		1		10	6		4.0	60	240	4.0	40	160						
34 DC-15																		
35 DC-16																		
36 DC-17		10	10															
37 DC-18																		
38 DC-19																		
39 DC-20				1														
40 DF- 1																		
41 DF- 2																		
42 DF- 3																		
43 DF- 4																		
44 DF- 5																		
45 DF- 6																		
46 DF- 7			6	3														
47 DF- 8		1			2		2.7	60	162	4.0	40	160						
48 DF- 9		2	18	20														
49 DF-10																		
50 DF-11																		
51 DF-12																		
52 DF-13				20														
{DF-14}*1		18	5			(6,000)*{1.0}	60	{60}				{1.0}	55	{55}	Straw	{1.0}	40	{40}
53 DF-15																		
54 DF-16																		
55 DF-17			65				3.0	60	180	3.0	40	120	3.0	55	165			
56 DF-18																		
57 DF-19				5														
58 DF-20																		
Total		16	2,299	2,308	39	22	0	226	13,560	182	5,113	123	6,936	0	0	0	0	0
Average*2		0.3	39.6	39.8	0.7	0.4	0	3.9	233.8	3.1	88.1	2.1	119.6	0	0	0	0	0

*1 Excluding broiler

*2 Average per one farmer

Table D.5.9 RESULTS OF FARM INTERVIEW DURVBY - NUMBER OF LIVESTOCK IN ABYAD AREA

Sample No.	Number of Livestock						Purchasing Cost for Feed												
	Horse	Sheep	Goats	Cow	Camel	Chicken	Barley			Bran			Sorghum			Others			
							Q'ty (t)	Price (JD/t)	Amount (JD)	Q'ty (t)	Price (JD/t)	Amount (JD)	Q'ty (t)	Price (JD/t)	Amount (JD)	Kind	Q'ty (t)	Price (JD/t)	Amount (JD)
1 KA-1			250				24.0	60	1,440	18.0	40	720	18.0	55	990				
2 KA-2		230	20				24.0	60	1,440	18.0	40	720	18.0	55	990	Vetch	12.0	185	2,220
3 KA-3		50	10				6.0	60	360	6.0	40	240	6.0	55	330				
4 KA-4		90	10				12.0	60	720	1.0	40	40	1.0	55	55				
5 KA-5		50	5																
6 KA-6		110	30				2.0	60	120	2.0	40	80	2.0	55	110				
7 KA-7		170					2.0	40	80	2.0	60	120	2.0	2	4				
8 KA-8		50	200				2.5	62	155	2.5	42	105	2.5	57	143				
9 KA-9		75	15				6.0	60	360	6.0	40	240	6.0	55	330				
10 KA-10		50	50				8.0	60	480	8.0	40	320	8.0	55	440				
11 KA-11		300	10				3.0	60	180	3.0	55	165	3.0	40	120				
12 KA-12		80	7				6.0	60	360	6.0	40	240	6.0	55	330				
13 KA-13		100	10				12.0	60	720	12.0	40	480	12.0	55	660				
14 KA-14		43	7				6.0	60	360	6.0	40	240	6.0	55	330				
15 KA-15		267	80			20	20.0	60	1,200	20.0	40	800	20.0	55	1,100				
16 KA-16		180	20				24.0	60	1,440	18.0	40	720	12.0	55	660				
17 KA-17		70					6.0	60	360	6.0	55	330	6.0	40	240				
18 KA-18		70	30				6.0	60	360	6.0	40	240	6.0	55	330				
19 KA-19	1	70	15				6.0	62	372	6.0	42	252	6.0	57	342				
20 KA-20		250	50				3.0	60	180	3.0	40	120	3.0	55	165				
21 KC-1																			
22 KC-2																			
23 KC-3																			
24 KC-4			20				1.0	60	60	0.5	40	20	0.5	55	28	straw	2.0	100	200
25 KC-5		150					15.0	60	900	10.0	40	400	10.0	55	550	Straw	20.0	40	800
26 KC-6																			
27 KC-7		120					10.0	60	600	10.0	40	400	10.0	55	550	Straw	15.0	120	1,800
28 KC-8		500	50				50.0	62	3,100	20.0	45	900	30.0	55	1,650	Straw	25.0	40	1,000
29 KC-9																			
30 KC-10																			
(KC-11)*1									(20,000)*1										
31 KC-12																			
32 KC-13																			
33 KC-14																			
34 KC-15			25				2.0	60	120	3.0	40	120				Straw	4.0	10	40
35 KC-16																			
36 KC-17			5			50													
37 KC-18																			
38 KC-19																			
39 KC-20		150				50													
40 KP-1																			
41 KP-2																			
42 KP-3																			
43 KP-4																			
44 KP-5		120																	
45 KP-6		60																	
46 KP-7		10																	
47 KP-8																			
48 KP-9				4															
49 KP-10																			
50 KP-11																			
51 KP-12																			
52 KP-13																			
53 KP-14																			
54 KP-15																			
55 KP-16																			
56 KP-17																			
57 KP-18		20	5																
58 KP-19																			
59 KP-20																			
Total		1 3,435	924	4	0	120	257		15,467	193		8,012	194		10,446		78		6,060
Average#2		0 58.2	15.7	0.1	0	2.0	4.3		262.2	3.3		135.8	3.3		177.1		1.3		102.7

*1 Excluding broiler

#2 Average per one farmer

Table D.5.9 (3/3) RESULTS OF FARM INTERVIEW SURVEY - NUMBER OF LIVESTOCK IN TAFILA ARBA

Sample No.	Number of Livestock						Purchasing Cost for Feed												
	Horse	Sheep	Goats	Cow	Camel	Chicken	Barley			Bran			Sorghum			Kind	Others		
							Q'ty (t)	Price (JD/t)	Amount (JD)	Q'ty (t)	Price (JD/t)	Amount (JD)	Q'ty (t)	Price (JD/t)	Amount (JD)		Q'ty (t)	Price (JD/t)	Amount (JD)
1 TA-1		42	2				20.0	40	800	20.0	60	1,200							
2 TA-2			19			6													
3 TA-3	1	30	20																
4 TA-4	1	120	15			50	12.0	55	660	7.0	38	266	55.0	55	3,025				
5 TA-5		80	30				8.0	55	440	5.0	38	190	3.0	55	165				
6 TA-6		200	20				15.0	55	825	10.0	38	380	5.0	55	275				
7 TA-7		350	50				30.0	55	1,650	20.0	38	760	10.0	55	550				
8 TA-8		72	38				3.0	60	180	2.0	40	80							
9 TA-9	1	60					6.0	60	360	6.0	40	240	6.0	55	330				
10 TA-10		200	40				30.0	60	1,800	30.0	40	1,200							
11 TA-11	1	150																	
12 TA-12			70			20													
13 TA-13		400	20				60.0	60	3,600	10.0	40	400	60.0	55	3,300				
14 TA-14		283	17				25.0	60	1,500	25.0	40	1,000	10.0	55	550				
15 TA-15	2	200	10				2.0	60	120	5.0	40	200	2.0	50	100				
16 TA-16	2	200	20				15.0	60	900	15.0	40	600	3.0	55	165				
17 TA-17			200				7.0	60	420	7.0	40	280	7.0	55	385				
18 TA-18		200	16				24.0	60	1,440	12.0	40	480	24.0	50	1,200				
19 TA-19		74	246			46	15.0	60	900	15.0	40	600	15.0	55	825				
20 TA-20		55	257				10.0	35	350	10.0	40	400	10.0	55	550				
21 TC-1																			
22 TC-2		30					3.0	60	180	3.0	50	150	3.0	55	165				
23 TC-3																			
24 TC-4		250	50																
25 TC-5																			
26 TC-6																			
27 TC-7		200																	
28 TC-8																			
29 TC-9	1		10			15													
30 TC-10																			
31 TC-11			7																
32 TC-12																			
33 TC-13			27			10													
34 TC-14		10																	
35 TC-15	2	54	9				0.3	80	24	0.3	45	14			Straw	0.5	50	25	
36 TC-16		10	1																
37 TC-17																			
38 TC-18		50					3.0	100	300	2.0	40	80	6.0	55	330				
39 TC-19		200					7.0	60	420	4.0	40	160	3.0	55	165				
40 TC-20			5				1.0	30	30	2.0	20	40							
41 TF-1																			
42 TF-2																			
43 TF-3																			
44 TF-4																			
45 TF-5		30	30																
46 TF-6																			
47 TF-7			6				1.5	60	90	1.5	60	90							
48 TF-8																			
49 TF-9																			
50 TF-10		40																	
51 TF-11																			
52 TF-12			20				3.0	60	180	3.0	40	120							
53 TF-13																			
54 TF-14																			
55 TF-15	1	50	20				7.0	60	420	4.0	45	180							
56 TF-16																			
57 TF-17	1	70	50				6.0	55	330	6.0	45	270							
58 TF-18			5				1.0	55	55	1.0	20	20	1.0	20	20				
59 TF-19							1.7	60	102	2.3	30	69							
60 TF-20		20					2.0	60	120	2.0	40	80	2.0	45	90				
Total	13	3,730	1,330	0	46	101	319	18,196	230	9,549	225	12,850			1				25
Average*2	0.2	62.2	22.2	0	0.8	1.7	5.3	303.3	3.8	159.1	3.8	214.2			0				0.4
G. Total#	30	9,464	4,562	43	68	221	801	47,223	605	22,673	542	30,232			79				6,085
Average*2	0.2	53.5	25.8	0.2	0.4	1.2	4.5	267	3.4	128	3.1	171			0.4				34
Feed consumption per head (sheep + goats)(kg)							57			43		39							0.01

*1 Total sample: 177 farmers excluding broiler. *2 Average per one farmer

Table D.5.10 NET INCOME OF LIVESTOCK RAISING
- PRESENT CONDITION

		Products	Unit Price (JD)	Amount (JD)	

1 flock: 100 heads					

I. Gross Income					
-	Selling of sheep and goats *1				
	100 heads x 13% (head)	13	35	455	
-	Lamb and kid *2	47	30	1,410	
-	Wool	85	0.7	60	
-	Milk	1,848			
	Dry yorgult *3	277	2	554	
	Milk oil *3	111	5	555	
	Total			3,034	
		Q'ty	Unit Price (JD)	Amount (JD)	

II. Production Cost					
1)	Labor	(person)	1.3	960	1,248
2)	Feeds				
	- Sorghum	(ton)	3.9	55	215
	- Barley	(ton)	5.7	60	342
	- Bran	(ton)	4.3	40	172
3)	Vaccines: 3 times/year	(head)	100	0.27	27
4)	Others *4				200
	Total				2,204
III. Net Income				830	

*1 Farmers sale about 13% of total raising head.

*2 Delivering rate: 56% of total raising head

Mortality: 9%

100 heads x 56% - (100 heads x 9%) = 47 heads

*3 Conversion factors:

Dry yorgult: 15% of milk

Milk oil: 6% of milk

*4 Including grazing fee, water charge, etc.

Table D.8.1 DEMAND AND SUPPLY FORECASTS OF AGRICULTURAL PRODUCTS

(Unit: 1,000 t)

	Demand			Supply			Balance			Marketability
	1995	2000	2005	1995	2000	2005	1995	2000	2005	
FIELD CROPS										
1 Wheat (grain)	456	552	648	81	81	81	-375	-471	-567	A
2 Lentils	4.9	5.5	5.9	3.1	3.1	3.1	-1.8	-2.4	-2.8	A
3 Vetch	3.0	3.0	3.0	1.3	1.2	1.1	-1.7	-1.8	-1.9	A
4 Chick pea	17	22	27	1	1	1	-16	-21	-26	A
5 Rice	90	110	140	-	-	-	-90	-110	-140	A
TREE CROPS										
6 Olive (green)	76	92	108	74	88	100	-2	-4	-8	A
7 Grape	80	97	113	72	81	87	-8	-16	-26	A
8 Fig	2.6	2.8	3.0	2.3	2.3	2.2	-0.3	-0.5	-0.8	B
9 Almond	4.9	6.0	7.0	1.0	1.0	0.9	-3.9	-5.0	-6.1	A
10 Peach	3.0	4.7	4.3	4.9	6.3	7.6	1.9	1.6	3.3	C
11 Plum and Prune	2.1	0.8	0.0	4.8	4.8	4.7	2.7	4.0	4.7	C
12 Apricot	2.7	3.2	3.8	0.6	0.5	0.5	-2.1	-2.7	-3.3	A
13 Pomegranate	1.3	1.4	1.5	2.4	2.0	1.9	1.1	0.6	0.4	B
14 Apple	42	51	59	5	5	6	-37	-46	-53	A
15 Pear	2.9	3.5	4.1	0.3	0.3	0.3	-2.6	-3.2	-3.8	A
16 Banana	46	58	70	55	74	88	9	16	18	C
17 Citrus	103	92	70	285	315	346	182	223	276	C
18 Quince	0.10	0.12	0.14	0.07	0.07	0.07	-0.03	-0.05	-0.07	B
VEGETABLES										
19 Tomato	277	336	394	459	520	586	182	184	192	C
20 Squash	57	74	92	83	95	107	26	21	15	C
21 Eggplant	80	97	113	127	144	160	47	47	47	C
22 Cucumber	87	110	135	176	212	260	89	102	125	C
23 Potato	61	74	86	74	97	120	13	23	34	C
24 Cabbage	24	29	34	30	34	36	6	5	2	C
25 Cauliflower	33	40	46	30	30	30	-3	-10	-16	A
26 Sweet Pepper	9	11	12	50	67	76	41	56	64	C
27 Okra	3.4	4.1	4.9	3.8	4.0	4.1	0.4	-0.1	-0.8	B
28 Lettuce	14	17	19	18	18	18	4	1	-1	A
29 Water Melon	99	120	140	118	131	146	19	11	6	C
30 Onion (green & dry)	65	92	124	52	69	88	-13	-23	-36	A
31 Snake Cuc.	8	10	12	5	5	5	-3	-5	-7	A
32 Carrot	4.2	5.1	5.9	0.7	0.7	0.7	-3.5	-4.4	-5.2	A
33 Sweet Melon	46	60	70	65	80	95	19	20	25	C
34 Peas	9	12	15	5	5	5	-4	-7	-10	A
35 Mulukhiye	37	47	58	36	42	49	-1	-5	-9	A
36 Garlic	3.0	4.0	4.0	1.3	1.5	1.7	-1.7	-2.5	-2.3	A
LIVESTOCK PRODUCTS										
37 Red Meat	74	95	117	8	8	8	-66	-87	-109	A
38 Broiler	87	110	135	87	105	122	0	-5	-13	A
39 Eggs (Million eggs)	650	830	1,030	550	580	610	-100	-250	-420	A

Remarks: A: High B: Moderate C: Low

Table D.8.2 (1/2) CALCULATION OF WATER REQUIREMENT

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total(annual)
Swaga(lati.:31.5,alti.:920m)													
Average air temperature(degree c.)	9	10.4	13	17.1	20.3	23.3	24.2	23.7	22.5	19.3	14.7	10.2	
Average relative humidity(%)	73	70	65	55	49	46	50	53	61	63	68	74	
Average wind run(km/day)	2.6	2.8	3.4	3.2	2.7	3.2	3	2.4	2.6	2.5	2.2	2.5	
Radiation(cal/cm2/day)	350	475	596	710	807	862	868	830	729	576	406	309	
Saturated vapor pressure(mm Hg)	8	9	11	15	18	21	22	22	21	17	13	8	
f(t)	12.6	12.8	13.3	14.4	14.7	15.3	15.5	15.3	15.1	14.4	13.5	12.7	
Mean daily maximum sunshine hour	10.3	11.1	12	12.9	13.7	14.1	14	13.3	12.4	11.5	10.5	10.1	
Bright sunshine hours	6.9	8	7.8	9.2	10.1	10.2	11.5	11.6	10	9.4	8.2	6.6	
Temperature-related weighting factor	0.57	0.58	0.63	0.68	0.71	0.74	0.75	0.75	0.74	0.7	0.65	0.58	
Net radiation(mm/day)	2.5	4	5.7	7	8.1	8.9	8.8	8.3	7.3	5.2	3.1	2	
Wind-related function	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	
Saturation vapour pressure deficit(mbar)	2.9	3.6	5.1	9	12.2	15.1	14.6	13.8	10.9	8.4	5.5	2.8	
Adjustment factor	0.98	1.06	1.11	1.14	1.16	1.17	1.18	1.17	1.14	1.11	1.02	0.95	
Reference crop evapotranspiration(mm/day)	1.7	2.9	4.6	6.3	7.8	9	9	8.4	7.1	4.8	2.5	1.4	
Crop factor													
wheat	0.5	0.8	1.1	1.1	1.1	0.7	0.3				0.5	0.8	
summer vegetables(tomato)				0.3	0.7	1	1	0.4					
summer field crop(lentil)	0.5	0.8	1.1	1.1	0.3								
winter vegetables(onion)	0.7	0.9	0.9	0.9	0.8	0.4						0.3	
winter forage crop(bean)		0.4	0.7	1.1	1.1	0.3							
perennial forage crop(alfalfa)	1	1	1	1	1	1	1	1	1	1	1	1	1
fruit crop(apple)				0.4	0.6	0.9	1	1	1	0.7			
(citrus)	0.55	0.55	0.5	0.5	0.5	0.45	0.45	0.45	0.45	0.45	0.5	0.5	0.5
(grapes)					0.45	0.7	0.85	0.9	0.85	0.7			
Consumptive water requirement(mm/day)													
wheat	0.85	2.32	5.06	6.93	5.46	2.7	0	0	0	0	1.3	1.12	780.1
summer vegetables	0	0	0	1.89	5.46	9	9	3.36	0	0	0	0	879.1
summer field crop	0.85	2.32	5.06	6.93	2.34	0	0	0	0	0	0	0	528.6
winter vegetables	1.19	2.61	4.14	5.67	6.24	3.6	0	0	0	0	0	0.42	722.9
winter forage crop	0	1.16	3.22	6.93	8.58	2.7	0	0	0	0	0	0	687.2
perennial forage crop	1.7	2.9	4.6	6.3	7.8	9	9	8.4	7.1	4.8	2.6	1.4	1999.9
fruit crop(apple)	0	0	0	2.52	4.68	8.1	9	8.4	7.1	3.36	0	0	1320.2
(citrus)	0.935	1.595	2.3	3.15	3.9	4.05	4.05	3.78	3.195	2.16	1.3	0.7	948.1
(grapes)	0	0	0	0	3.51	6.3	7.65	7.56	6.035	3.36	0	0	1054.5

Table D.8.2 (2/2) CALCULATION OF WATER REQUIREMENT

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total(annual)
Rabah(Lati.:31, alti.:920m)													
Average air temperature(degree c.)	7.9	8.8	11.2	15	18.8	21.8	23.3	23.3	21.8	19.1	14.2	9.4	9.4
Average relative humidity(%)	59	66	60	50	42	41	43	46	50	49	58	67	67
Average wind run(km/day)	189	198.4	196.9	189.9	171.7	198.8	221.9	203.8	187.5	137.1	139.6	147.4	147.4
Radiation(cal/cm2/day)	288	353	450	550	615	686	673	642	559	449	339	273	273
f(t)	12.4	12.5	12.9	13.7	14.4	15	15.3	15.3	15	14.4	13.5	12.6	12.6
Mean daily maximum sunshine hour	10.3	11.1	12	12.9	13.7	14.1	14	13.3	12.4	11.5	10.5	10.1	10.1
Saturated vapor pressure(mm Hg)	8	9	10	13	17	20	21	21	20	17	12	9	9
Bright sunshine hours	6	6.2	7.1	8.6	10.2	11.8	11.8	11.2	10.1	8.8	7.4	5.8	5.8
Temperature-related weighting factor	0.55	0.57	0.6	0.65	0.7	0.73	0.74	0.74	0.73	0.7	0.64	0.57	0.57
Net radiation(mm/day)	2.1	2.9	4	5.1	5.9	6.8	6.8	6.6	5.7	4.4	2.9	2.1	2.1
Wind-related function	0.78	0.81	0.8	0.78	0.73	0.81	0.87	0.82	0.72	0.64	0.65	0.67	0.67
Saturation vapour pressure deficit(mbar)	5.1	5.7	6.9	9.1	11.1	11.8	11.6	11	10	9.8	7.5	5.5	5.5
Adjustment factor	0.94	0.98	1.08	1.1	1.12	1.14	1.13	1.13	1.11	1.08	0.97	0.93	0.93
Reference crop evapotranspiration(mm/day)	2.8	3.6	5	6.4	7.3	8.6	8.7	8.2	6.8	5.4	3.5	2.6	2.6
Crop factor													
wheat	0.5	0.8	1.1	1.1	0.7	0.7	0.3						
summer vegetables				0.3	0.7	1	1	0.4					
summer field crop	0.5	0.8	1.1	1.1	0.3								
winter vegetables	0.7	0.9	0.9	0.9	0.8	0.4						0.3	
winter forage crop		0.4	0.7	1.1	1.1	0.3							
perennial forage crop	1	1	1	1	1	1	1	1	1	1	1	1	1
fruit crop(apple)				0.4	0.6	0.9	1	1	1	0.7			
(citrus)	0.55	0.55	0.5	0.5	0.5	0.45	0.45	0.45	0.45	0.45	0.5	0.5	0.5
(grapes)				0.45	0.7	0.85	0.85	0.9	0.85	0.7			
Consumptive water requirement(mm/day)													
wheat	1.4	2.88	5.5	7.04	5.11	2.58	0	0	0	0	0	0	741.6
summer vegetables	0	0	0	1.92	5.11	8.6	8.7	3.28	0	0	0	0	845.4
summer field crop	1.4	2.88	5.5	7.04	2.19	0	0	0	0	0	0	0	573.6
winter vegetables	1.96	3.24	4.5	5.76	5.84	3.44	0	0	0	0	0	0	772.2
winter forage crop	0	1.44	3.5	7.04	8.03	2.58	0	0	0	0	0	0	686.4
perennial forage crop	2.8	3.6	5	6.4	7.3	8.6	8.7	8.2	6.8	5.4	3.5	2.6	2099.8
fruit crop(apple)	0	0	0	2.56	4.38	7.74	8.7	8.2	6.8	3.78	0	0	1289.9
(citrus)	1.54	1.98	2.5	3.2	3.65	3.87	3.915	3.59	3.06	2.43	1.75	1.3	1001.6
(grapes)	0	0	0	0	3.285	6.02	7.395	7.38	5.78	3.78	0	0	1031

Table 0.8.3 PLANTING DENSITY AND IRRIGABLE AREA

(Planting Density)	Olives			Grapes			Apples		
	100-150	150-200	200-250	100-150	150-200	200-250	100-150	150-200	200-250
Crop water requirement(mm)	948	948	948	1055	1055	1055	1320	1320	1320
Common planting density(plants/ha)	100	100	100	1100	1100	1100	100	100	100
Crop water requirement(ton/plant)	95	95	95	10	10	10	132	132	132
Annual rainfall(mm)	125	175	225	125	175	225	125	175	225
average rainfall(mm)	35	35	35	35	35	35	35	35	35
Runoff coefficient(%)	437.5	612.5	787.5	437.5	612.5	787.5	437.5	612.5	787.5
Available water(ton/ha)	5	6	8	44	61	79	3	5	6
Optimum planting density(plants/ha)	8	8	8	10	10	10	96	96	96

(Irrigable Area by Winter Irrigation)

Site	J1	E1	D2	Abiad
Water Supply(return period of 2 year of low water*0.3), tons	45000	30000	102000	370000
Crop Water Requirement, tons	780			
Effective Rainfall, mm	204*0.85	227*0.85	219*0.85	172*0.85
Irrigation Water Requirement, ton/ha	12130	11740	11880	12680
Irrigable Area with 5 % Allowance, ha	4	2	8	20

Table D.8.5 CROP BUDGET - FUTURE CONDITION (GRAPES BY WATER HARVESTING)

Grapes

	Unit	Year																							
		1	2	3	4	5	6	7	8	9	10	11	12	13-15											
Unit Price (JD)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)									
I. Income/plant	(kg)	0	0.0	0.0	0.0	2.1	46.2	3.1	68.2	3.5	77.0	3.7	81.4	3.8	83.6	4	88.0	4.3	94.6	4.6	101.2	4.7	103.4		
II. Production Cost																									
1) Seedlings	(piece)	44	22.0																						
2) Fertilizers/plant																									
- N	(kg)	0.01	0.1	0.03	0.3	0.04	0.4	0.08	0.8	0.12	1.3	0.13	1.4	0.14	1.5	0.14	1.5	0.15	1.6	0.16	1.7	0.16	1.7	0.16	1.7
- P2O5	(kg)	0.02	0.2	0.03	0.3	0.04	0.4	0.07	0.7	0.09	1.0	0.1	1.1	0.11	1.2	0.12	1.3	0.13	1.4	0.14	1.5	0.14	1.5	0.14	1.5
3) Plowing	(hrs)	7	16.8																						
4) Labor(man-day/ha)																									
- Hoeing&planting		18	90.0	2.2	11.0	2.2	11.0	2.2	11.0	2.2	11.0	2.2	11.0	2.2	11.0	2.2	11.0	2.2	11.0	2.2	11.0	2.2	11.0	2.2	11.0
- Harvesting		5	0	0	0	0	0	0.0	0.252	1.3	0.481	2.4	0.710	3.6	0.802	4.0	0.847	4.2	0.870	4.4	0.916	4.6	0.985	4.9	1.054
5) Materials																									
- Chemicals	(litre)	10	0.01	0.1	0.01	0.1	0.02	0.2	0.02	0.2	0.02	0.2	0.02	0.2	0.03	0.3	0.03	0.3	0.03	0.3	0.04	0.4	0.04	0.4	0.04
- Fence	(m)	1.5	352	528.0																					
- Box(12kg)	(no.)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- Water	(ton)	0.1	21.12	2.1	21.12	2.1																			
6) Transportation(kg)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total			659.3	13.9	15.5	18.7	21.4	22.7	23.3	23.8	24.6	25.3	26.1	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3	26.3
7) Misc. cost,5% of the above			33.0	0.7	0.8	0.9	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Total			692.29	14.54	16.3	19.6	22.4	23.8	24.4	24.9	25.8	26.5	27.38	27.65	27.65	27.65	27.65	27.65	27.65	27.65	27.65	27.65	27.65	27.65	27.65
III. Net Income	(JD/ha.)		-692.0	-15.0	-13.0	8.0	27.0	46.0	53.0	57.0	62.0	68.0	74.0	76.0	76.0	76.0	76.0	76.0	76.0	76.0	76.0	76.0	76.0	76.0	76.0

Table D.8.6 CROP BUDGET - FUTURE CONDITION (APRICOTS BY WATER HARVESTING)

		Apricots																							
		Year																							
		1	2	3	4	5	6	7	8	9	10	11	12	13-20											
Unit	Unit Price (JD)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)										
I. Income/plant	(kg)	0.33	0	0.0	0.0	0.0	6.8	6.7	11.9	11.8	15.2	15.0	18.6	18.4	22.3	22.1	26.2	25.9	29.2	28.9	31.5	31.2	32.4	32.1	
II. Production Cost																									
1) Seedlings	(piece)	0.50	3	1.5																					
2) Fertilizers/plant																									
- N	(kg)	0.24	0.16	0.1	0.24	0.2	0.3	0.47	0.3	0.5	0.4	0.53	0.4	0.57	0.4	0.6	0.4	0.63	0.5	0.53	0.4	0.63	0.5	0.63	0.5
- P205	(kg)	0.24	0.09	0.1	0.14	0.1	0.19	0.2	0.28	0.2	0.3	0.2	0.34	0.2	0.36	0.3	0.38	0.3	0.38	0.3	0.38	0.3	0.38	0.3	0.38
- K20	(kg)	0.40	0.13	0.2	0.19	0.2	0.25	0.3	0.32	0.4	0.38	0.5	0.45	0.5	0.48	0.6	0.5	0.6	0.5	0.6	0.5	0.6	0.5	0.6	0.5
3) Plowing	(hrs)	2.4	1	2.4																					
4) Labour (man-day/ha)																									
- Harvesting		5	0	0.0	0	0.0	0	0.040	0.2	0.071	0.4	0.091	0.5	0.111	0.6	0.133	0.7	0.157	0.8	0.175	0.9	0.189	0.9	0.194	
- Hoeing&planting		5.00	2	10.0	0.15	0.8	0.15	0.8	0.15	0.8	0.15	0.8	0.15	0.8	0.15	0.8	0.15	0.8	0.15	0.8	0.15	0.8	0.15	0.8	0.15
5) Materials																									
- Chemicals (litre)		10	0.005	0.1	0.005	0.1	0.005	0.1	0.005	0.1	0.005	0.1	0.005	0.1	0.005	0.1	0.005	0.1	0.005	0.1	0.005	0.1	0.005	0.1	0.005
- Fence (m)		1.5	24	36.0																					
- Boxes(12kg)	(no)	0.25	0	0.0	0	0.0	1.7	0.4	2.975	0.7	3.8	1.0	4.65	1.2	5.575	1.4	6.55	1.6	7.3	1.8	7.875	2.0	8.1	2.0	
- Water (ton)		0.1	1.44	0.1	1.44	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
6) Transportation(kg)		0.01	0	0.0	0	0.0	20.4	0.2	35.7	0.4	45.6	0.5	55.8	0.6	66.9	0.7	78.6	0.8	87.6	0.9	94.5	0.9	97.2	1.0	
Sub-total			50.4	1.4	1.5	1.6	2.6	3.3	3.8	4.3	4.8	5.3	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6	11.1	
7) Misc. cost, 5% of the above			2.5	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Total			52.951	1.512	1.543	1.72	2.76	3.47	3.98	4.47	5.03	5.59	5.91	6.279	6.398	6.498	6.598	6.698	6.798	6.898	6.998	7.098	7.198	7.298	
III. Net Income (JD/ha.)			-53.0	-2.0	-2.0	-2.0	4.0	8.0	11.0	14.0	17.0	20.0	23.0	25.0	28.0	31.0	34.0	37.0	40.0	43.0	46.0	49.0	52.0	55.0	

Table D.8.7 CROP BUDGET - FUTURE CONDITION (ATRIPLEX BY WATER HARVESTING)

		Atriplex													
		Year													
	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13-30	
	Unit Price (JD)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)	Q'ty (JD/ha)	Amt. (JD/ha)
I.	Income/ha	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
II.	Production Cost	313	156.5												
1)	Seedlings (piece)	0.50	313	156.5											
2)	Fertilizers/plant														
- N	(kg)	0.24													
- P205	(kg)	0.24	5	1.2	5	1.2	5	1.2	5	1.2	5	1.2	5	1.2	5
- K20	(kg)	0.40													
3)	Labour (man-day)														
- Pitting	5.00	15.7	78.5												
- Planting	5	6.3	31.5												
Sub-total		267.7	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
4)	Misc. cost, 5% of the above	13.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total		281.08	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26
III.	Net Income (JD/ha.)	-281.0	-1.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0

Table D.8.8 WHEAT BUDGET

		Irrigated		Rainfed	
I. Gross Income					
- Unit yield	(t/ha)	3.50		1.8	
- Unit price	(JD/t)	140.0		140	
- Gross income	(JD/ha)	490.00		252	
	Unit				
	Unit Price	Q'ty	Amount	Q'ty	Amount
	(JD)		(JD/ha)		(JD/ha)
II. Production Cost					
1) Seeds (kg)	0.14	80	11.2	80	11.2
2) Fertilizers					
- Compound, DAP (kg)	0.11	420	46.2	90	9.9
3) Agro-chemicals					
- Herbicides (lit.)	2.75	1	2.75	1	2.75
5) Farm machinery					
- Plowing (ha)	10.00	1.0	10	1	10
- Drilling (ha)	9.00	1.0	9	1	9
- Spraying (ha)	7.50	1.0	7.5	1	7.5
- Harvesting (ha)	12.50	1.0	12.5	1	12.5
7) Materials			0		0
- Bags (100kg, piece)	0.25	35	8.75	18	4.5
8) Transportation (kg)	0.01	3500	35	1800	18
Sub-total			142.9		85.35
9) Misc. 5% of the above			7.145		4.2675
Total			150.05		89.62
III. Net Income (JD/ha)					
			339.96		162.38

Table D.8.10 CROP BUDGET - FUTURE CONDITION (GRAPES BY CHECK DAM)

		Year																								
		1	2	3	4	5	6	7	8	9	10	11	12	13-15												
		Grapes																								
		Year																								
Unit	Q'ty	1	2	3	4	5	6	7	8	9	10	11	12	13-15												
Unit Price (JD)	Amt. (JD/ha)	Q'ty Amt. (JD/ha)	Q'ty Amt. (JD/ha)	Q'ty Amt. (JD/ha)	Q'ty Amt. (JD/ha)	Q'ty Amt. (JD/ha)	Q'ty Amt. (JD/ha)	Q'ty Amt. (JD/ha)	Q'ty Amt. (JD/ha)	Q'ty Amt. (JD/ha)	Q'ty Amt. (JD/ha)	Q'ty Amt. (JD/ha)	Q'ty Amt. (JD/ha)	Q'ty Amt. (JD/ha)												
I. Income/plant	(kg)	0.5	0	0	0	1.1	1375	2.1	2625	3.1	3875	3.5	4375	3.7	4625	3.8	4750	4	5000	4.3	5375	4.6	5750	4.7	5875	
II. Production Cost	(piece)	0.50	2500	1250																						
1) Seedlings																										
2) Fertilizers/plant																										
- N	(kg)	0.24	0.01	6	0.03	18	0.04	24	0.08	48	0.12	72	0.13	84	0.14	84	0.15	90	0.16	96	0.16	96	0.16	96	0.16	96
- P205	(kg)	0.24	0.02	12	0.03	18	0.04	24	0.07	42	0.09	54	0.1	60	0.11	66	0.12	72	0.13	78	0.14	84	0.14	84	0.14	84
3) Plowing	(hrs)	10	1	10																						
4) Labor (man-day)																										
- Hoeing&planting		5.00	5.72	29	20	100	20	100	20	100	20	100	20	100	20	100	20	100	20	100	20	100	20	100	20	100
- Harvesting		5	0	0	0	0	0	0	14.3	72	27.34	137	40.36	202	45.57	228	48.17	241	49.47	247	52.08	260	55.98	280	59.89	299
5) Materials																										
- Chemicals	(litre)	10	0.3	3	0.3	3	0.3	3	0.5	5	0.5	5	0.5	5	0.8	8	0.8	8	1	10	1	10	1	10	1	10
- Fence	(m)	1.5	1040	1560																						
- Box(12kg)	(no.)	0.25	0	0	0	0	0	0	14.3	72	27.34	137	40.36	202	45.57	228	48.17	241	49.47	247	52.08	260	55.98	280	59.89	299
- Water	(ton)	0.1	1200	120	1200	120																				
6) Transportation(kg)		0.01	0	0	0	0	0	0	2750	28	5250	53	7750	78	8750	88	9250	93	9500	95	10000	100	10750	108	11500	118
Sub-tota			2990	259	151	351	530	684	756	770	816	859	901	944	958											
7) Misc. cost.5% of the above			149	13	8	18	26	34	38	39	41	43	45	47	48											
Total			3139	272	159	369	556	718	793	809	857	902	946	991	1006											
III. Net Income	(JD/ha.)		-3139	-272	-159	1006	2069	3157	3582	3816	3893	4098	4429	4759	4869											

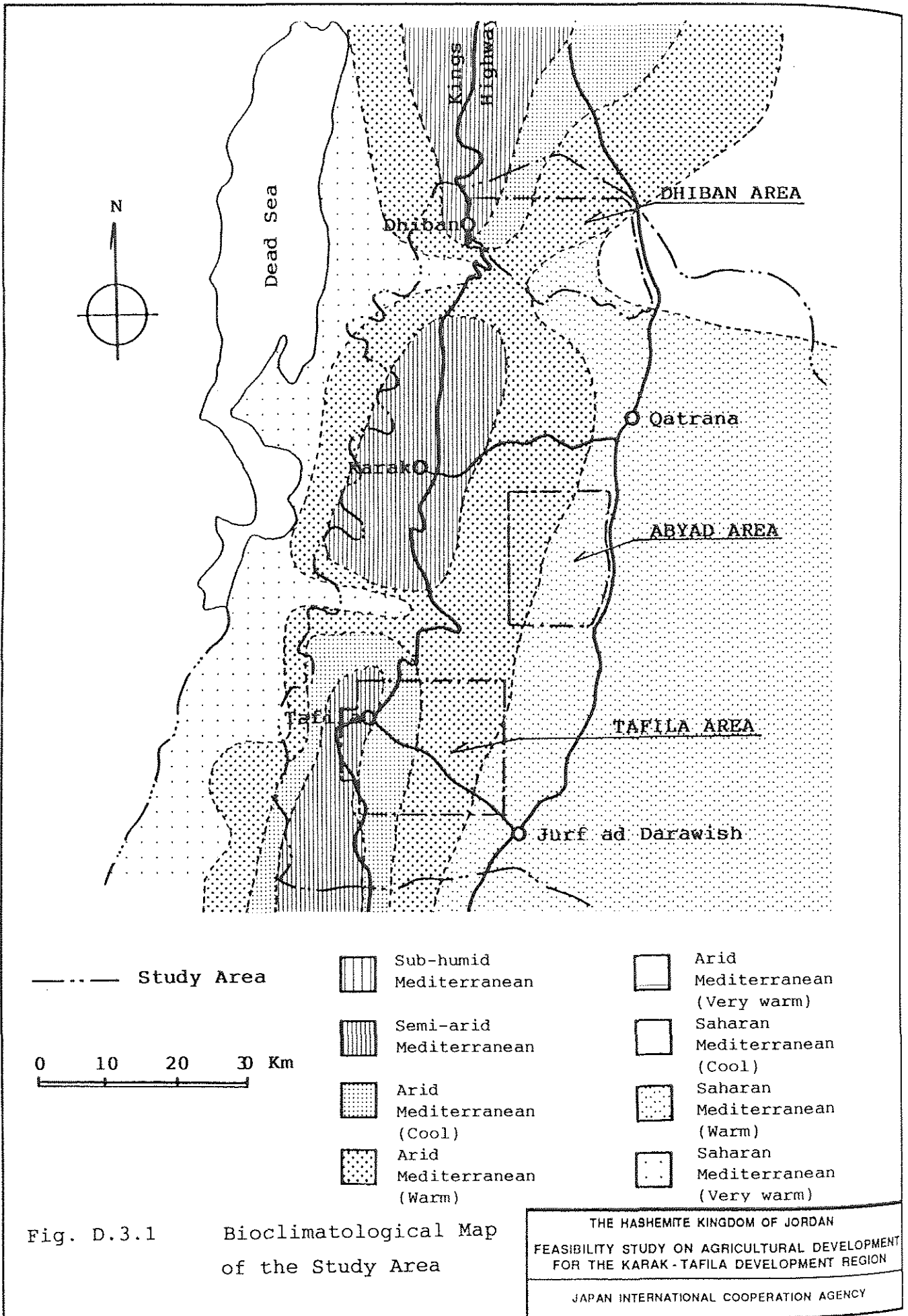


Fig. D.3.1 Bioclimatological Map of the Study Area

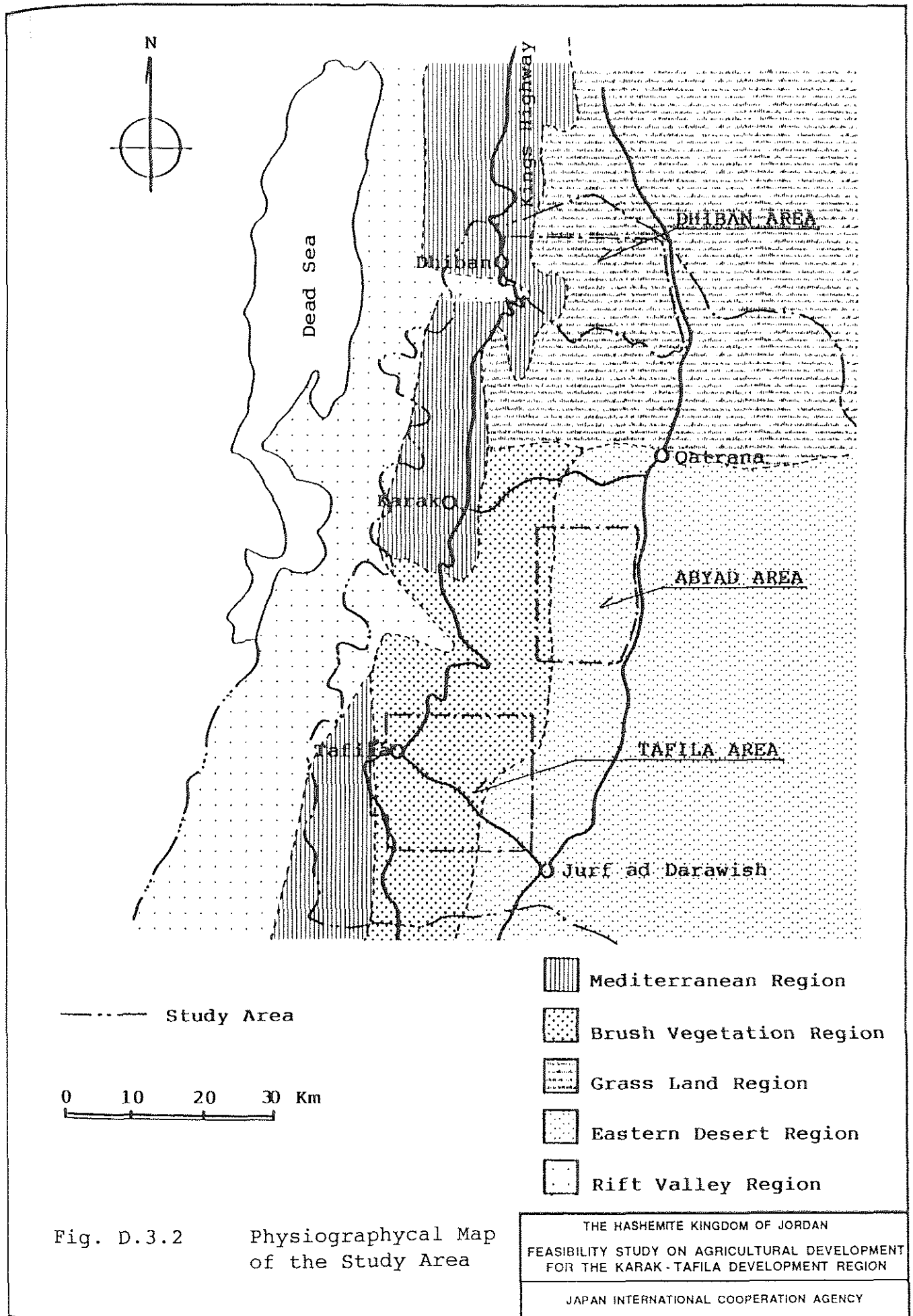


Fig. D.3.2 Physiographical Map of the Study Area

THE HASHEMITE KINGDOM OF JORDAN
 FEASIBILITY STUDY ON AGRICULTURAL DEVELOPMENT
 FOR THE KARAK - TAFILA DEVELOPMENT REGION
 JAPAN INTERNATIONAL COOPERATION AGENCY

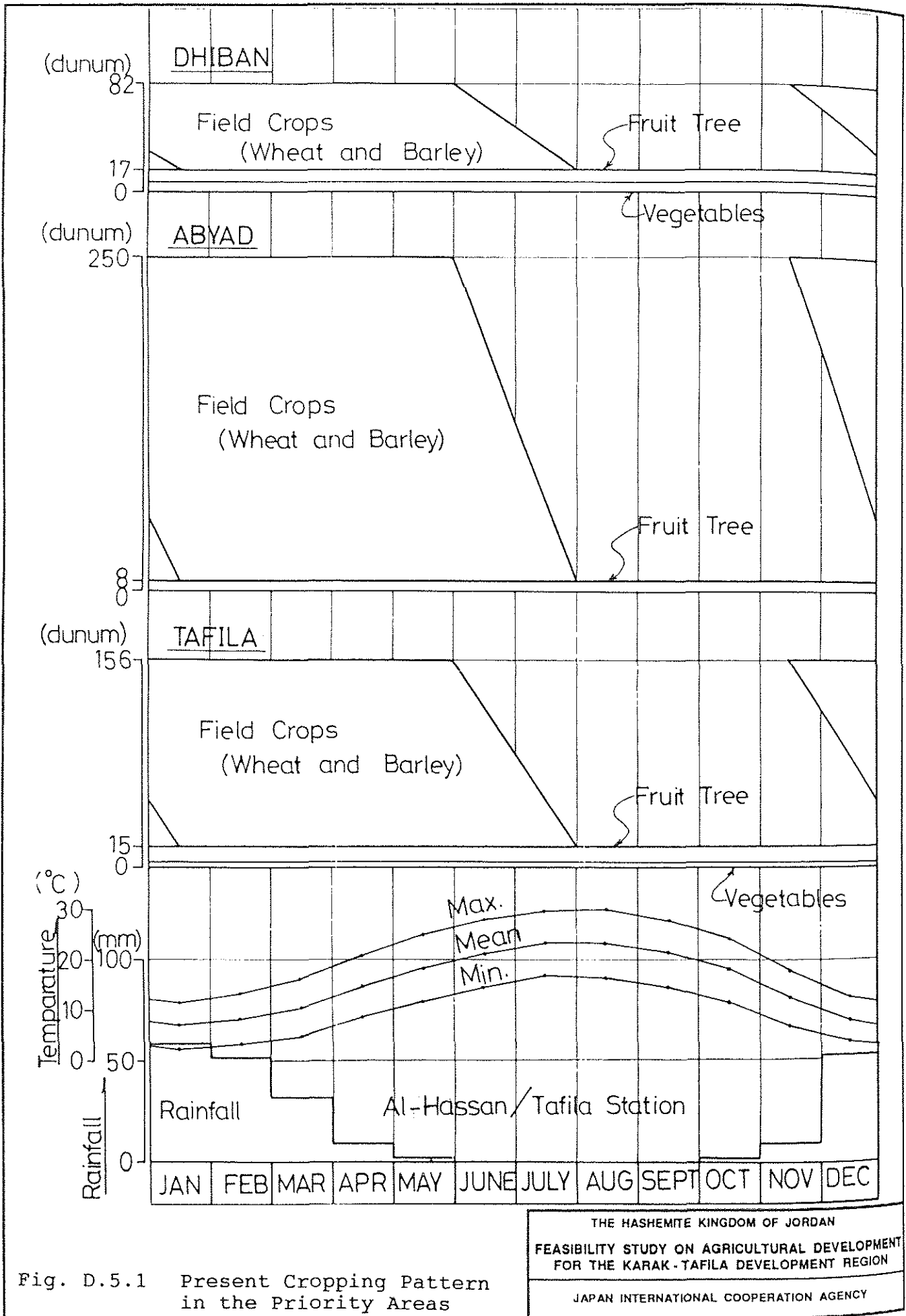


Fig. D.5.1 Present Cropping Pattern in the Priority Areas

THE HASHEMITE KINGDOM OF JORDAN
 FEASIBILITY STUDY ON AGRICULTURAL DEVELOPMENT
 FOR THE KARAK-TAFILA DEVELOPMENT REGION

JAPAN INTERNATIONAL COOPERATION AGENCY

Appendix D.1 Problem Census Report
(Mu'tah University)

Mu'tah University
Department of Academic Research

Problem Census Report

A handwritten signature in black ink, appearing to read "T. Antone". The signature is written in a cursive style with a large, looped initial "T".

Head of Team:
Professor T. A. Antone

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Part I

Proceedings of Interviews with a Number of Livestock Breeders and Cereal Farmers on 16 November 1989

Six livestock breeders and cereal farmers were interviewed. The holdings of the livestock breeders ranged between 300 and 500 head of sheep, and the area of unirrigated land under cereal crops ranged between 100 and 500 dunums, excluding the land irrigated by the drip method. From the interviews it was clear that they are suffering from problems related to feed; product marketing; water supply for their livestock and land; diseases affecting livestock, grazing areas, and workers; and problems connected with financial loans.

The problems will be treated in detail as follows.

1. Feed

The individuals interviewed in this sample are suffering from the small quantities of feed allocated per head of livestock per month (i.e. 5 kg barley, 3 kg bran, 7 kg maize), which they believe are not sufficient for more than one week. For the other three weeks they feed their livestock from other sources.

They also complain of the lack of alternatives, especially green fodder, such as clover, vetch, and alfalfa. Even seed is not available to those who wish to raise these crops.

2. Product Marketing

Marketing constitutes a serious problem for farmers because of the glut on the red meat market; when they send their products to market the prices fall in accordance with the law of supply and demand. These farmers demand a review of the red meat import policy, especially during their productive months, so that they will be enabled to sell their products at a higher profit and thus to continue in business.

The farmers complain that a limited number of merchants have a monopoly of

the export market, and that they are being seriously exploited by middle-men.

3. Diseases of Livestock and Methods of Treatment

a. The farmers assert that the most serious diseases affecting their livestock are the following:

- i. animal fever (al-humma al-`ajamiy)
- ii. brucellosis (also affects humans)
- iii. cowpox
- iv. kidney worms
- v. worms (al-diidaan al-`awiyyah)
- vi. udder infection
- vii. fleas, lice and food poisoning

b. The farmers believe that in situ treatment of cowpox has negative effects, such as a rise in the percentage of miscarriages among livestock, a higher degree of mortality in newborns, and pain in the joints and limbs. The farmers demand an improvement in the quality of treatment, which should be carried out by experienced veterinarians.

c. The farmers believe that the price of treatment is high and the degree of expertise among veterinarians in the Kerak area is very low. This causes them grave losses. They also complain that veterinarians do not always cooperate fully with farmers, and that locally produced vaccine has caused many cases of miscarriage among livestock. When farmers were asked about the best solutions for their problems they suggested the following.

- i. Setting up mobile centres for the treatment of livestock.
- ii. Providing such centres with the necessary expertise in the treatment of well known and widespread diseases.
- iii. Setting up centres where livestock can be dipped to rid them of fleas and the various fungal diseases.

4. Workers

Most of these farmers need one or two workers to take care of their livestock. Cereal farming, however, can be carried out by machines for ploughing, harvesting, and threshing. It has been noted that the members of the farmers' families participate in the work. The only costs are those of machine hire and the wages of a shepherd (JD 80 to 100 per month). Most livestock workers are Syrians.

5. Grazing Areas

Farmers believe that the public grazing areas and the degree of profit from them is related to the percentage of rainfall, which in a good season exceeds 400 mm. In a good season the farmer will rely on the public grazing area for more than six months, but if the rainfall falls below 200 mm the average

period on which the farmer can depend on the public grazing area will be three to four months. The calculated average dependency on the public grazing area ranges between four and five months; the rest of the year the farmer will supply his livestock with feed.

The farmers believe that it is necessary to open the restricted areas to grazing, especially in autumn, as this will reduce their need for feed. They also complain that those restricted areas which have been opened to grazing have not been distributed fairly. The farmers suggest allocating specific areas to each livestock breeder for grazing and sowing feed, particularly as water sources are available in these restricted areas.

6. Water

Water is a serious problem for livestock breeders, especially in summer. The cost of water per head of livestock ranges between one hundred and fifty and two hundred fils. The farmers use water trailers, which cost JD 6 to refill if the water is supplied by the government. The cost is higher, however, if the water is not supplied by the government, and in addition, the farmer pays the cost of transportation from the water source to the flock.

The Farmers' Requirements

1. Artesian bore-holes should be opened for drinking water in the public grazing areas.
2. The price of water used for watering livestock should be reduced.
3. Dams should be used to collect water, especially in spring.
4. Wells should be cleaned of sand and silt in order to obtain a greater quantity of water, especially those located in grazing areas (e.g. Birkat Al-Mudhaibiyah).
5. The digging of ponds to collect water should be encouraged.
6. Water should be made available in the public grazing areas, especially in summer.

The farmers depend, for part of their water needs, on their own collecting ponds.

7. Loans

Farmers have two sources available from which to obtain loans. The first is the Agricultural Loans Institution (Mu'assasat al-iqraadh al-ziraa'iy), which gives loans for six months at an interest of 4%. The second is the Cooperative Bank (Al-bank al-ta'awuniy), through the cooperative societies, which offer loans for one year at an interest of 7%. These loans can be obtained by the farmer in not more than a week.

There exists a belief that the agricultural loans are not used for the purposes for which they are intended. All of these loans are in cash, and there are no loans of commodities. The farmers like to extend the period of repayment of the loans.

8. Storage

The farmers do not store any of their products because of their need for capital or for immediate consumption. This obliges them to sell their products as rapidly as possible and at very low prices. Only grain or hay is stored for feeding their livestock that year. The profits from the products are used to pay expenses incurred by the farmers and to take care of the farmers' families.

9. The Middle-Man

The farmers feel that the middle-men exploit them, especially in matters of marketing and export. Thus they have formed societies which fill the role of the middle-man in marketing and export.

10. Factories

The farmers complain that there is no milk-product plant in the area between Wadi Al-Mujib and Wadi Al-Hasa. When they were reminded that there was a milk-products plant which failed because it was not accepted by farmers and consumers, they answered that they had boycotted the plant out of a lack of understanding of the plant's role, and from envy of the owners.

11. Information Media

The farmers believe that the farming program on the radio damages their interests by concentrating on the disease of brucellosis and flagrantly exploiting public concern in order to hit at their products without considering the damage to the farmers' interests.

When we asked the farmers about the kind of milk products they produce they replied that they produced only solid yoghurt (laban jamiid) and clarified butter (saman baladiy). They do not deal with thickened yoghurt (labana) or cheese (jubna) because the farming program has not left them any opportunity to do so.

12. Cereal Farming

Five of the six members of the sample are concerned with unirrigated agriculture. The sixth is concerned with irrigated agriculture using the drip method over an area of 100 dunums. Cereal farming suffers from the lack of water in seasons in which the rainfall is less than 200 mm. Most of their land will support cereal crops, and vegetable crops if water is available.

- a. Loans. No loans are available for cereal farmers.
- b. Chemicals for treating plant diseases are available at high prices.
- c. Seeds of barley and wheat are available, but seeds of green feed plants are not.
- d. Problems:
 - i. Lack of agricultural machinery such as tractors, sprayers, harvesters, threshers.
 - ii. Lack, and high prices, of improved seed.
 - iii. High cost of water for irrigation.
 - iv. High price of seed, fertiliser, and water.

Dr. Tahseen Al-Tarawneh
Administration Department

Part II

Interviews with a Group of Farmers from Al-Karak Governorate

On Thursday 16 November 1989 eight crop farmers were interviewed in the office of the Chairman of the Administration Department in order to study the problems these farmers face. This meeting was in continuation of an earlier meeting conducted by the research team concerned with agricultural development in the southern region, held on 11 November 1989.

The farmers gave their opinions on the following topics.

1. The availability of seed.
2. The availability of water.
3. Arable land.
4. Workers.
5. Loans and financial facilities.
6. Product marketing.
7. Administrative and governmental obstacles.

The following is a summary of the proceedings of the meeting.

1. Seed, seedlings, and chemical fertilisers.

- a. Seed.

Seed is available but the farmers complain that it is sometimes distributed unsystematically, especially at the time when they need it.

Sometimes the quality of the seed is not first class.

There are insufficient seed distribution centres.

b. Chemical fertilisers.

Chemical fertilisers are often unavailable.

The quantity of fertiliser allotted depends on size of the landholding, whereas it ought to depend on the basic need of the farmer.

The farmers do not know how and when to use insecticide sprays; this causes considerable losses.

The quality of the available fertilisers is poor, which renders the fertiliser largely ineffective. This is caused by the fact that the farmers do not store the fertiliser properly.

Special insecticide sprays for leguminous crops are unavailable.

There is no correlation between the timing of fertiliser distribution and the time it is required by the farmers.

c. Prices.

There have been tremendous and continual rises in the prices of fertilisers despite the fact that they are produced in this country.

The prices of machines used for applying insecticide sprays have risen.

2. Water

Crop farmers depend mainly on rain water for irrigating their crops, but this source is insufficient and unpredictable.

Underground water is not used, despite its availability in this area.

There are no dams which could facilitate the use of surface water.

There is no water available during the summer to irrigate the summer crops.

3. Arable Land

Landholdings are inconveniently fragmented.

Productive land is limited in extent and is shrinking due to building and soil erosion.

Land conservation is poorly managed because of the lack of competent advice and the farmers' lack of knowledge concerning new methods of land conservation:

The government only weakly fulfils its role in helping the farmers and encouraging them to use their land in the most appropriate way.

4. Workers and Machines

Workers, especially Jordanians, are not available at times of sowing and harvesting.

There has been a sharp rise in the cost of agricultural labour.

The number of available migrant workers is unpredictable.

Modern agricultural machinery is unavailable, and the machinery used at present is inefficient.

It is difficult for farmers to own agricultural machinery by themselves because of the high cost of maintenance and spare parts.

Workers in both private and public sectors are not competent in the use of agricultural machinery.

There are absolutely no machines available for harvesting legumes.

5. Financial facilities and loans.

Loans to farmers are poorly distributed.

Patronage and favouritism (waasta) are factors which influence the granting of loans.

Administrative difficulties and conditions for obtaining loans are as follows.

a. A large landholding is required in order to obtain a loan; this deprives small landholders of the chance to obtain an adequate loan.

b. Loans are conditional on a monthly salary or other permanent financial source. This prevents farmers who depend mainly on agriculture from obtaining loans.

The rate of interest required by lending institutions is very high.

The time the loan is granted often fails to correspond to that of the farmer's need.

There is no correspondence between the time given for repaying the loan and the quality of the season's harvest.

6. Agricultural Product Marketing

Patronage and favouritism are important factors in the calculation of the price and quality of the product.

The number of centres for receiving agricultural products is insufficient, as there is only one centre in this governorate.

7. Administrative and Governmental Obstacles

The government is behindhand in its role in advising and directing farmers.

There is no law to prevent the misappropriation of arable land.

The role of the media in advising and directing farmers is very weak.

Governmental leadership in modernising and completely mechanising agriculture is very weak.

Dr. Sultan Abu Tayih
Dr. Fayiz Al-Zireigat

Part III

Interviews with Five Farmers

The following represent the results of interviews with five farmers from the Kerak governorate on Thursday 16 November 1989.

Number	Farmer's Name	Village	Size of Landholding in Dunums	Number of Sheep	Maximum Loan in JD	Number of Workers		Total
						Jordanian	Syrian	
1.	Aziz Al-Biqā`een	Ader	1000	300	400	0	2	2
2.	Za`al Al-Mahadeen	`Ainon	500	500	0	1	4	5
3.	Mohammed Al-Tarawneh	Al-Huseiniyyeh	1000	250	0	0	2	2
4.	Mahmoud Al-Ma`aitah	Ader	500	250	700	1	1	2
5.	Shahir Al-Kawareet	Ader	400 ¹	250	5600	1	0	1

1. From the table above it will be noted that all these farmers are engaged both in cultivating arable land and in breeding livestock.

2. Agricultural land and its equivalent in the table above is used for raising crops such as wheat, barley, and beans, thus, all this land is suitable for agriculture.

3. Raising crops depends on rain water; therefore the production from this land fluctuates according to the amount of rain water. Thus all five of these farmers are unhappy with their profit from the land.

4. The area of land owned by each of these farmers ranges between 400 and 1000 dunums.

5. Water for livestock can be obtained from the Water Authority or from the

land of farmers where wells are available. The water costs 600 fils per cubic meter. One of the farmers asserted that he could not obtain water from either of these sources and therefore uses piped water, which is very costly, especially when its price rises because of consumption. Water obtained from the Water Authority or from other farms is stored in ponds constructed for the purpose. The water is later pumped using small gasoline engines.

6. All but the last of these five farmers use Syrian labour for their livestock.

7. The total number of workers in the survey is twelve, nine of whom (75%) are Syrian.

8. Three of these farmers have obtained loans ranging between JD 400 and 5600.

9. The loans can be obtained from

- a. The Agricultural Loan Institution (Mu'assasat al-iqraadh al-ziraa'iy).
- b. The cooperative societies to which the farmers belong.

All the loans granted by the Agricultural Loan Institution are in cash, but the cooperative societies give commodities. The rate of interest on these loans is 7.5%.

10. The farmers believe that the conditions for obtaining their loans were easy.

11. These farmers prefer to obtain long-term loans and prefer make repayments seasonally.

12. The crops of these farmers can be sold to the Ministry of Supply at a reasonable price.

13. They do not harvest the crop during drought years, but leave it for the livestock to graze.

14. Lambs are sold in local (i.e. Jordanian) markets and the government does not permit them to be exported.

15. Lambs can be transported to the local markets in specially prepared trucks.

16. Farmers prefer to sell milk products to friends and acquaintances rather than to markets because the market prices are relatively low. Thus one of the farmers sells his milk products to the cheese maker directly.

17. Transportation for the products is available and presents no problems.

18. It would be possible to store crops, but there is no surplus available

for storage.

19. Each of the farmers owns a tractor for ploughing, which is also used for pulling water trailers. Any mechanic is able to maintain the tractor; spare parts are available, but at a high price.

20. All the farmers of the sample suffer from the following problems:

a. Lack of water. Water is available in some areas, but the government will not permit its exploitation.

b. Rising costs (ploughing, seed, fertilisers, insecticide sprays).

c. Unavailability of experienced workers, and the rising cost of wages over the prices commanded by their products.

d. Unavailability of feed. Little or none is available.

e. Unavailability of veterinarians or veterinary treatment for the livestock.

f. Lack of milk product plants.

g. Lack of organisation in the process of importing and exporting lambs.

Mr. Sa`ud Al-Tayyib
Administration Department

Part IV

Proceedings of a Meeting with Chicken Farmers

The following is the proceedings of the meeting between Dr. Adel Keraki and Dr. Jameel Al-Jalludi with a number of chicken farmers from the Kerak area on Thursday 16 November 1989.

During the discussion it became clear that the farmers are suffering from the following problems.

1. Workers

a. All the farmers interviewed maintained that foreign workers do not constitute a financial problem for them; on the contrary, they are very happy with the presence of the foreign workers because they accept lower wages than Jordanian workers. They rely chiefly on Egyptians, who form a large proportion of the foreign workers. Unskilled workers who are interested in training as well as in performing their tasks are trained on the farms by the owners themselves.

b. The farmers asserted that they have no real difficulties concerning agricultural machines, maintenance, and availability of spare parts. Though it was clear from the discussion that local spare parts can be used instead of foreign ones, they added that because of current economic conditions, they had suffered from the rise in prices of units and machines used in their farms.

2. Financial Facilities and Loans

a. Chicken farmers face many problems in obtaining loans. This is because financial sources are restricted to the Agricultural Loan Institution and the cooperative societies.

b. One of the conditions for obtaining a loan from these institutions is that the farmer should not be in debt to the institution or have repayments due. Otherwise he will not be able to obtain a new loan.

c. The interest on these loans is very high in comparison with that charged by the commercial banks (7% plus 2% commission, total 9%, to be paid by the farmer when he obtains the loan).

d. Because of the rise in prices of products the farmers experience difficulties in making repayments when they fall due.

The farmers expressed a preference for cash loans rather than loans in commodities.

3. Marketing

The possibility of marketing crops inside and outside Jordan.

The farmers are suffering from an overcrowded market both in eggs and in chickens for cooking, as well as from competition with big farmers. The government, too, has brought large quantities of imported frozen chickens on to the market. In addition, they have no opportunity to sell their products outside the country or to compete with other exporting countries for these markets. All these problems are caused by the high cost of products in Jordan. In conditions of market overcrowding, or glut, small farmers do not have any means, such as freezing or canning, of keeping the surplus products for an extended period. They are also discontented with the role of the middle-men, by whom they feel exploited.

4. Administrative and Governmental Obstacles

a. The farmers complained that the government is continuing to license chicken farms, which is causing the market to be swamped with chicken and eggs and consequently affects the prices of these commodities.

b. The farmers claim that small farmers are not provided with suitable conditions for chicken farming projects in the Kingdom. This would involve making feed available at prices which would render it possible for small farmers to continue in business. At present, feed is monopolised by large companies which ask prices which are beyond the ability of small farmers to pay. Thus the farmers have requested the government to purchase the feed and resell it to them at a fair price. To sum up, the obstacles which farmers face are the following:

- i. Rises in the cost of products such as feed and medications.
- ii. Overcrowded markets in both eggs and chicken for cooking.
- iii. The lack of modern slaughterhouses in the governorate.
- iv. The lack of centres for frozen storage.
- v. The continued importation of frozen chicken despite the glut on the local market.

The farmers' recommendations with regard to chicken production can be summarized as follows:

1. Slaughterhouses should be constructed with a suitable production capacity. Frozen storage centres should be established to solve the problem of the overcrowded market in the governorate. At least one slaughterhouse should be built for the governorate.

2. Refrigerated egg storage centres should be built.

3. The cost of production requirements such as medication, electricity and oil should be reduced.

Dr. Adel Keraki

Dr. Jameel Al-Jalludi

Part V

Report of the Committee on Vegetables and Fruit Trees

On Thursday 16 November 1989 the following held interviews with vegetable and fruit farmers and the Japanese delegation:

1. Professor Sami Abdilla
2. Dr. Ahmad Al-Majali
3. Mr. Midhat Al-Tarawneh

The following farmers took part:

1. Khalid Al-Habashneh
2. Bakhit Mohammad Bakhit
3. Khalaf Miz`il al-`Oneh
4. Mamduh Fayadh Al-Tarawneh
5. Mahmoud Ibrahim Al-Tarawneh
6. Ibrahim Khleif Al-Tarawneh
7. Muhammad Jamil Al-Qatawneh
8. Radhi `Ogleh Al-Btoosh
9. Khalid Za`al Al-Mahadeen
10. `Ata Al-Hajran
11. Ishaq Mdanat

From our discussion with these people we conclude that their problems are as follows:

1. Availability of seed, seedlings, chemical fertilisers, from the following technical aspects:

a. Quantity.

i. The required quantity is available in the private sector, but not at all times. Particular kinds of seed, such as tomato and okra, are prone to scarcity at times of increased demand.

ii. The private sector sometimes hoards some kinds of improved seed

in order to raise the price.

iii. These seeds may be available in the public sector, but generally in insufficient quantity and quality.

iv. Cooperative societies exist, but they do not provide improved seed for their members because these societies depend on the private sector.

v. Seedlings are available in particular areas in the private and public sectors, but those in the public sector are not of the same quality as those in the private sector (i.e. they are not always improved or appropriate for the climate or soil of the area).

vi. Fertilisers are available in the private sector in huge quantities and various qualities, but the prices are high.

b. The Quality of Seeds, Seedlings, and Fertilisers

i. There is general ignorance among peasants regarding the quality of seeds. This ignorance is diminishing, with time, repeated use, and personal efforts among the peasants. There is, however, no scientific agency responsible for testing seeds and judging their suitability and productivity.

ii. The farmers at the meeting agreed that there was a lack of competent and specialised agricultural advisers in their areas. They stressed the importance of technical supervision and follow-up from specialized scientific agencies such as Jordan University, the Royal Scientific Society, and the Ministry of Agriculture.

iii. The peasants stressed that it was important to have types of seeds available that are suitable for the various climates and soil types in their areas. They also stressed the importance of correct transplantation of seedlings from the beginning of their cultivation.

c. Prices

i. The farmers complained of the high prices of seed, improved seedlings and chemical fertilisers in the private sector, especially in recent days, when the prices have risen proportionally more than is justified by the fall in value of the Jordanian Dinar.

ii. There is agreement among the peasants that the private sector is monopolizing and manipulating the prices of these commodities in the absence of any governmental supervision in this sector.

iii. The cooperative societies sometimes sell these commodities at prices higher than those of the private sector.

iv. The farmers suggest that the solution for this problem may be the direct intervention of the government by limiting prices, controlling them, or producing the goods locally. On the other hand, cooperative societies might be allowed to import the goods directly.

v. The government has stopped the import of seedlings, and what is now available is not suitable for all farming areas. This has also raised the prices of available improved seedlings in the private sector.

vi. All the farmers agreed that the cost of fertilisers, especially chemical fertilisers, is now so high as to prevent their use by small farmers. These fertilisers are not available in the public sector at all.

vii. As a result of the rise in prices of chemical fertilisers, the prices of natural fertilisers have risen also, despite the fact that the government has stopped use of natural fertiliser in Al-Aghwar in particular, unless it has been treated to render it harmless.

2. The Water Problem

a. Water Sources

i. Water is available in Al-Aghwar but it is not sufficient to water all plants. The drip method of irrigation is used in these areas.

ii. Hilly areas depend on rainfall, but farmers in these areas complain of the lack of availability of water, especially in summer. In addition, they use trucks for transporting water from the Water Authority, which involves them in a great deal of administrative complication despite the fact that they pay for the water.

iii. The farmers complain that the water authority has stopped the use of water for agricultural purposes, and permitted its use only for watering livestock.

iv. A limited number of artesian wells exist but the owners of the wells do not sell water according to demand, and in any case, the price is double that of water supplied by the Water Authority.

b. Water Quality and its Suitability for Irrigation

The farmers agreed that there is no study whatsoever which judges the suitability of this water for the purposes of irrigation. The farmer cannot know this without the help of the government.

c. The farmers suggested using dams to enclose water and save it during the winter months in order to solve the problem of lack of water during

the summer.

d. Means of Water Transportation

Water is transported from its sources in hilly areas by Water Authority tankers and the farmers' private tankers which are very limited in number.

3. The Problem of Availability of Agricultural Land

The farmers provided the following facts and information.

- a. There is a huge area of agricultural land.
- b. The farmers suffer from the fact that this agricultural land is common land.
- c. No scientific study has yet been made of the suitability of this land for agriculture in general.

4.a. The Problem of Workers

The farmers agreed on the following:

- i. There is a scarcity of labour on the local market.
 - ii. The cost of local labour is high in comparison with that of migrant labour.
 - iii. In general, farmers depend on migrant labour.
 - iv. The cost of migrant labour is reasonable nowadays in comparison with that of local labour
 - v. The farmers are currently training migrant workers in the various jobs involved in agriculture, as workers these days are not as efficient as they were in the past.
 - vi. Small farmers depend to some extent on the members of their family to perform agricultural labour. This situation will not last long, however, as the younger generation is not interested in agricultural work.
- b. Agricultural Machines: Maintenance and the Availability of Spare Parts
- i. Available in the private sector, but at a high price.
 - ii. Agricultural machines are not available in the public sector, or, if available, then the quantities and types are not commensurate with the demand.

iii. In both public and private sectors, advanced agricultural equipment such as the tomato harvester, or small tractors for various types of trees are unavailable.

iv. Maintenance is available, but not with any great degree of skill.

v. Spare parts are not available for some agricultural machines.

vi. The farmers regard it as important that the government and the co-operative societies should have advanced agricultural machines for rent at a reasonable price.

5. Loans and Financial Facilities

The farmers stressed the following:

i. Various sources of loans, such as the Agricultural Loan Institution, and specialized and commercial banks, but they require substantial security to support these loans. This security is not compatible with the situation of small farmers.

ii. When farmers ask for a loan the financing agency will ask the farmer to cover thirty percent of the cost of the project. This constitutes a financial problem for small farmers.

iii. The interest on loans is in general very high, and is estimated at approximately 7%.

iv. The lending agency requires the farmer to make the repayments despite any unforeseen circumstances which may face the farmer during the agricultural season or the cycle of production, such as frost or blight, which may lead to a shortfall in produce.

v. For a solution to this problem the farmer would prefer to resort to government financing or guarantees, while requesting a reduction in interest.

vi. The farmers request that the process of obtaining loans from the various sources of financing be made easier.

6. Marketing

The farmers stressed the following:

i. Marketing their agricultural products is the most important and serious problem that faces them.

ii. There is a lack of marketing studies, such as might be undertaken by the government to find out the degree of demand for the different types of agricultural products, whether in local markets or abroad.

iii. The farmers are suffering from the measures and procedures for marketing which are used by the Agricultural Marketing Institution (Mu'assasat al-taswiiq al-ziraa'iy), for example those of sorting and packing the vegetables. Everything is done through this institution.

iv. The pricing policy laid down by the Agricultural Marketing Institution for agricultural products does not reflect the actual cost of production, and does not leave the farmer a sufficient profit margin.

v. The farmers complain about the lack of suitable places for storage and refrigeration of various agricultural products. When these are available they are very expensive.

vi. In warehouses there is a lack of technicians competent in regulating the temperature according to the needs of the different types of vegetables.

vii. During the marketing of produce abroad the farmers suffer from transportation problems, especially at borders, and from the lack of coordination between governments concerning export procedures.

viii. The farmers suggested conducting a study of the cost of seasonal agricultural products and selling these products to the Agricultural Marketing Institution or to the private sector while maintaining a satisfactory profit margin for the farmer.

7. Administrative and Governmental Obstacles

i. The routine measures adopted by the government in dealing with farmers.

ii. The farmers' feeling that they are disregarded by the government.

iii. The lack of specialized agricultural advice.

iv. The imposition of huge taxes on farmers by local authorities.

v. The imposition of special kinds of seeds and seedlings.

vi. The imposition of special kinds of container which are very expensive.

vii. The imposition of special kinds of plant treatment which do not suit the concerns of farmers and are very costly.

viii. No study has been made by loan agencies of unforeseen circumstances which may face the farmer. The farmers therefore requested insurance against disaster.

ix. The imposition of various taxes on agricultural requisites.

x. The lack of dams.

Professor Sami Abdilla
Dr. Ahmad Al-Majali
Mr. Midhat Al-Tarawneh

Appendix D.2 General Recommendations proposed by the
Development Council for Agriculture sector
in Southern Area of Jordan

Recommendations of the Development Council for Agriculture Sector
in Southern Area (Karak, Tafila and Ma'an)

- (1) Government should give the right to the people in Tafila area to own their land in southern Ghor area.
- (2) Government should give the right to the people in southern area to own a part of the government land.
- (3) Government should establish development and management program of the grazing area to prevent the decertification of the area.
- (4) Government should establish the land use program to prevent the invasion of urban area into arable land.
- (5) Government should reduce the prices of fuel, electricity and water for agriculture use.
- (6) Government should make necessary arrangement for the maintenance of wells and springs and also the construction of the road between crop field and spring.
- (7) The public sector should participate in the importation of agricultural materials such as fertilizers and pesticides to compete with the private sector, consequently the materials will be supplied to the farmers with cheaper prices.
- (8) Government should control the prices of agricultural products in order to make even distribution of the profit to the producers, the traders and the merchants.
- (9) Vocational school and agriculture school should have practical training courses of agriculture as a part of their education system.
- (10) Ministry of agriculture should establish an unit for agricultural education to train agricultural engineers and technicians.
- (11) Agricultural loans for the construction of agricultural roads should be increased.
- (12) Government should promote the university's research activities and local extension activities and increase the number of extension people and veterinarians.
- (13) Government should develop existing agricultural machinery service stations by providing new machineries and establish new stations.

- (14) Government should establish new poultry processing factories with suitable capacity and cold storage facilities of the products.
- (15) Egg size sorting equipment and cold storage of eggs are also needed.
- (16) Several farmers' union should be organized to establish a system of agricultural insurance fund.
- (17) Veterinary service centers should be redistributed by considering the necessity of the center specially in the remote area.
- (18) Newly developed species of goats and sheep should be substituted to the old ones for the better production.
- (19) Migration rate from rural area to urban area should be reduced and reverse migration should be accelerated by providing the farmers with facilities and incentives such as low living cost and more job opportunities.
- (20) Agricultural cooperative society should encourage women to participate in the agricultural production.
- (21) Government should invest in the agricultural development in less development area and remote area.
- (22) Fodder crop production should be promoted by introducing fodder crops in the cropping cycle in irrigated area.
- (23) Agriculture cooperatives should make use of the governmental land which is distributed in the east side of the desert highway.

Appendix D.3 Questionnaires for Farm Interview

General Questionnaire

Survey Date : _____
 The respondent name : _____
 Village : _____
 Sub-district : _____
 District : _____
 Enumerator's Name : _____ Signature : _____ Date _____

A. Family information

1. Sex a. Male b. Female
2. Age
3. a. Number of family working outside farming
 b. Number of family working for farming
 c. Number of schooling family
 d. Number of ill/aged family
 e. Number of others
4. Major work
 a. Farming only (Cereals, Vegetables, Fruit trees)
 b. Animal husbandry only
 c. Non-farming but working
 d. Not-working
5. Annual farming days (days)
6. Educational career
 a. Primary school
 b. Secondary/high school
 c. Collage/university
 d. No schooling

B. Holdings of the Respondent

Dunum	Owned		Rented		Leased		Jointly owned	
	Rain	Irri	Rain	Irri	Rain	Irri	Rain	Irri

1. Field crop
2. Grass land
3. Fruit tree lands
4. Green house
5. Forest land

6. Number of animals

1. Horse
2. Sheep
3. Goats
4. Cow
5. Camel
6. Chicken

7. Number of deep wells

8. Capacity of water tanks and their number

9. From where do you get agricultural machines mainly?

- a. Rent from cooperatives
- b. Rent from private sector
- c. Personal properties
- d. Group owned
- e. Others (specify)

10. In case you don't use agricultural machines, what are the reasons?
- High price
 - High rental charge
 - Lack of experience in operation
 - Others (specify)
11. For what work do you use machinery?
- Land preparation
 - Harrowing
 - Planting
 - Harvesting
 - Spraying
 - Transporting
 - Weeding
- C. Employment of labourers (permanent and casual)
- D. Agricultural Credit and Marketing
- Do you get any agricultural loans from any source
 - yes
 - no
 source :
 If answer is "yes" go to 3
 - Reasons of not getting agricultural loans
 - religious reason
 - no ability for repayment
 - high interest rate
 - no need
 - others (specify)
 - Do you think the following factors delay the process of getting loans?
 - loan amount is restricted by the holding size
 - yes
 - no
 - continuous finance source like salary and pension is necessary for borrower
 - yes
 - no
 - high interest rate
 - yes
 - no
 - insufficiency in loan amount
 - yes
 - no
 - favoritism (waasta)
 - yes
 - no
 - dued repayment time is not coincide with marketing time
 - yes
 - no
 - difficulty of submitting the necessary guarantee
 - yes
 - no
 - short repayment period
 - yes
 - no
 - Do you have any of the following problems in marketing?
 - favoritism (waasta) in calculation of products
 - yes
 - no
 - government marketing center is limited
 - yes
 - no
 - intermediary exploitation
 - yes
 - no
 - decrease of price in production period

- a. yes b. no
- (5) high competition among farmers
 - a. yes b. no
- (6) competition with imported products
 - a. yes b. no
- (7) difficulty of transportation
 - a. yes b. no
- (8) high cost of transportation
 - a. yes b. no
- (9) insufficient storage facilities
 - a. yes b. no
- (10) high cost of storage facilities
 - a. yes b. no

5. Do you have any of the following problems in exporting?

- (1) restriction by the government
 - a. yes b. no
- (2) unavailability of necessary facilities
 - a. yes b. no
- (3) low price of the product outside the country
 - a. yes b. no
- (4) high export cost
 - a. yes b. no
- (5) export licence is given to limited merchant
 - a. yes b. no
- (6) others
 - a. yes b. no

E. Please answer the following questions on the Highland Development Project being promoted by the Ministry of Agriculture

1. Did you join the project?

- a. yes b. no

If answer is "a" please go to question number 4

2. To those who selected 1.b.

Select the most appropriate reason for that (only one)

- a. You didn't know the project
- b. you have no right to decide. Land owners, tenants, laborers, or joint owners have the right to decide
- c. You have no land which meets requirements for the application in respect to land slopes, rainfall, water sources or areal extends etc.
- d. Time consuming or complicated procedures for the application
- e. No merits in the project
- f. The application was rejected
- g. Other reasons. Specify.....

3. To those who selected 1.b.

Select the persons who have the right to decide

- a. Landowner
- b. Tenant
- c. Laborers
- d. Joint/and owners
- e. Other persons. Specify

4. To those who select 1.a.

Select the most appropriate reason for the participation (only one)

- a. You can get stone walls, seedlings etc. with free of charges
 - b. Tenant wanted
 - c. Landowner wanted
 - d. You would like to conserve the soils more effectively and to improve the productivity of fruit growing
 - e. Other reasons. Specify
5. To those who selected 1.a.
Is the project effective?
- a. yes
 - b. no
 - c. not understandable
6. To those who selected 5.a.
Select the most effective techniques of the project for the improvement in the productivity (only one)
- a. Stone walls
 - b. Contour furrows
 - c. Wind breaker
 - d. Fence
 - e. Terrace
 - f. Not understandable
7. What will you do if your land (owned or borrowed) would be covered by a land reclamation project such as ponds, dams, contour furrows, terraces. Select your answer from the following:
- a. Object unconditionally
 - b. Accept conditionally
8. To those who selected 7.a.
Select the most appropriate reason for that (only one)
- a. You can't trust government projects
 - b. You like to be statusquo
 - c. Landowner is objective to that
 - d. Tenant is objective to that
 - e. Joint landowner is objective to that
 - f. There is no possibility for the land reclamation project to become economically viable
 - g. Others. Specify
9. To those who selected 7.b.
Select the most appropriate reason for that
- a. You have to consult with landowner
 - b. You have to consult with tenant
 - c. You have to consult with joint landowner
 - d. you have to study details of the project
 - e. Others. Specify
10. To those who selected 9.a, 9.b, or 9.c
Select the most probable results (only one)
- a. Absolutely impossible to get acceptance
 - b. Possible to be accepted conditionally
 - c. Others. Specify
11. To those who selected 9.d.
Select the most promising project (only one)
- a. Pond for storing water
 - b. Contour furrows
 - c. Check dams, in which reservoirs can be planted with crops when dry
 - d. Water tank like sistern.
 - e. Terrace
 - f. Stone walls

g. Others. Specify

Questionnaire For Cereal, Fruit and Vegetable Production Farmers

1. Seeds are obtained from:
 - a. Government distribution Center
 - b. Private Sector
 - c. Last year's product
 - d. Others (specify) _____
2. Number of Government seed distribution center
 - a. Sufficient b. Insufficient
3. Quantity of seeds from distribution center
 - a. Sufficient b. Insufficient
4. Is it difficult to obtain seeds from distribution center?
 - a. yes b. no c. sometimes
5. Reason of difficulties to obtain seeds from distribution center.
 - a. Long waiting time
 - b. Complicated procedure
 - c. Others (specify) _____
6. Are seeds distributed on time?
 - a. yes b. no c. sometimes
7. Quality of seeds from distribution center
 - a. high b. medium c. low
8. Are seeds available in private Sector?
 - a. yes b. no c. sometimes
9. Is it easier to obtain seeds from private sector than from distribution center?
 - a. yes b. no
10. Quality of seeds from private sector
 - a. High b. medium c. low
11. Do you use fertilizer?
 - a. yes b. no c. sometimesif answer is "no" go to 17
12. Why don't you use fertilizer?

(1) not necessary	a. yes	b. no
(2) high price	a. yes	b. no
(3) not effective	a. yes	b. no
13. From where do you get fertilizers?
 - a. Government center
 - b. Private sector
 - c. Cooperative society
14. Is fertilizer distribution based on area size?
 - a. yes b. no
15. Your knowledge level about fertilization practice

- a. high b. medium c. low
16. Do you use pesticide?
a. yes b. no c. sometimes
17. Why don't you use pesticide?
a. not necessary
b. High price
c. not effective
d. others (specify) _____
18. From where do you get pesticide?
a. Government center
b. private Sector
c. Cooperative society
19. Kind of problems.
(1) Don't you know how to use pesticide?
a. I don't know. b. I know.
(2) Are pesticides not available?
a. not available b. available
(3) Are pesticides expensive?
a. yes b. no
(4) Are pesticides not effective?
a. not effective b. effective
20. Main water sources
a. Rainfall
b. Surface water
c. Underground water
21. Do you utilize wells for crop production?
a. yes b. no
22. Why don't you use wells
a. Water is not suitable for irrigation
b. Prohibited by government
c. Prohibited by owner of well
d. High cost
e. No well
23. Do you have any surface water sources(dam, spring etc.)?
a. yes b. no
24. Do you utilize these surface water?
a. yes b. no.
25. Why don't you utilize these surface water?
a. not necessary
b. High cost for equipment
c. Quantity is not enough
d. others (specify) _____
26. Do you have fallow land?
a. yes b. no
27. Why don't you cultivate these land
a. Joint ownership (musha'a)
b. not suitable for agriculture
c. High cost of production i.e low productivity
d. Far away from house

- e. Others (specify) _____
28. Do you have undivided land (musha'a land) ?
a. yes b. no
29. Why you don't divide the land?
a. many partners
b. high cost of dividing the land
c. Government regulations
d. Others (specify) _____
30. Arable land is decreasing because of ;-
a. urbanization
b. divided into small holdings
c. unavailability of water
31. Reason of land degradations (becoming infertile)
a. Erosion
b. less experience in modern cultivation method
c. availability of water
d. others (specify) _____
32. Do you watch or listen to Agricultural programs on TV or Radio?
a. yes b. no c. sometimes
33. Do you need extension services
a. yes b. no
34. Is extension service available?
a. yes b. no
35. Are such services useful?
a. yes b. no c. sometimes
36. Reasons of ineffective extension services
a. unavailability of extension staff.
b. visit of extension staff is limited.
c. Advice is not useful
d. Others (specify) _____
37. Extension workers are promoting the following technology package for higher wheat production
- deep plowing
- herbicide usage
- seed drilling prior to the onset of the rain
- time cultivation
- fertilizer application
Are you following this recommendation
a. yes b. no
38. To those selected b. in above mentioned question
Select the most suitable reason for that (only one)
a. You don't know the technology
b. Too much investment like this package is too risky to follow because of insufficient and unpredictable rainfall
c. That technology package is not effective
d. Landowner doesn't like that package
e. Tenant doesn't like that package
f. There is no enough money to apply that package

- g. There are no agricultural machinery for the package
- h. There are no timely supply of farm inputs
- i. Others (specify) _____

Questionnaire For Animal Husbandry Farmers

A. Feed

- 1. Feed under use
 - a. Hey and grains from your land
 - b. Green fodder
 - c. Public grazing
 - d. Unharvested product
 - e. Others (specify) _____
- 2. Main feed (specify) _____
- 3. Do you buy feed from Government center?
 - a. yes b. no
 - If answer is "no" please go to question 5
- 4. Reasons of difficulties to buy feed from Government center
 - a. Long waiting time
 - b. Irregular distribution
 - c. Complicated procedure
 - d. Others (specify) _____
- 5. Do you use green fodder?
 - a. yes b. no
 - If answer is "yes" please go to question 7
- 6. Why don't you use green fodder?
 - a. No land to grow fodder
 - b. No seeds of fodder
 - c. High cost for seeds
 - d. Unavailability of water
 - e. Others (specify) _____

B. Grazing

- 7. Do you have public grazing area near your farm?
 - a. yes b. no
- 8. It is useful to utilize grazing area far from your farm?
 - a. yes b. no
 - If answer is "no" please go to question 13
- 9. Sufficient water supply in far grazing area?
 - a. yes b. no
- 10. Water source in far grazing area
 - a. dam b. pools c. wells
 - d. spring e. others (specify) _____
- 11. Do you transport water by tanker to grazing area?
 - a. yes b. no
 - If answer is "no" please go to question 13
- 12. Cost of water transportation
 - a. high b. medium c. low

C. Water

13. Water source for animals
a. well b. cistern c. pipe
d. tank e. pool f. natural spring
g. dams h. others (specify) _____
14. Main source of water (specify) _____
15. Do you face shortage of water?
a. yes b. no
16. Do you have wells near the farm?
a. yes b. no
If answer is "no" please go to question 20
17. Do you need wells
a. yes b. no
If answer is "no" please go to question 19
18. Are you utilizing wells?
a. yes b. no
If answer is "no" please go to question 20
19. Why don't you utilize wells?
a. Prohibited by government
b. Water quality is not suitable
c. Prohibited by owner of well
d. Water level is low (Insufficient water amount)
e. Others (specify) _____

D. Diseases

20. In case of animal diseases:
a. Go to veterinary center
b. Treat by yourself
c. No treatment
d. Others (specify) _____
21. Are there any veterinary center in your area?
a. Yes b. no
If answer is "no" please go to question 24
22. Is it difficult to get medication?
a. Yes b. no
23. Facilities available at veterinary center
(1) Veterinary doctors a. yes b. no
(2) Free medication a. yes b. no
24. Are medical facilities available in private sector?
a. yes b. no

E. Marketing

25. You sell your dairy products to:
a. Friends
b. Whole seller
c. Retailer

- d. Middle man
26. You sell your meat products to:
- a. Friends
 - b. Whole seller
 - c. Retailer
 - d. Middle man
27. You sell your wool products to:
- a. Friends
 - b. Whole seller
 - c. Retailer
 - d. Middle man
- F. Processing
28. Do you process your products?
- a. yes b. no
- If answer is "no" please go to question 30
29. Where do you process your products?
- a. factory b. farm c. others
30. Is there any factories to process your products?
- a. yes b. no
- If answer is "no" please go to question 32
31. Is number of factory sufficient?
- a. yes b. no
- G. Supporting System
32. Usefulness of agricultural education by Mass Media
- a. high b. medium c. low
- If answer is "high" please go to question 34
33. Reason of low usefulness
- a. Programs are not followed by farmers
 - b. Time is not suitable
 - c. Program is not dealing with actual problems
 - d. Others (specify) _____
34. Do you need the help of extension staff?
- a. yes b. no
- If answer is "no" please go to question 38
35. Do you get any extension services?
- a. yes b. no
- If answer is "no" please go to question 38
36. Do you feel extension services are helpful?
- a. yes b. no
- If answer is "yes" please go to question 38
37. Why is extension services not useful?
- a. Extension staff is not available
 - b. Visit of extension staff is limited
 - c. Advises are not useful
 - d. Others (specify) _____
38. Are these questions covering all your problems?

a. yes b. no
If answer is "no" specify the problems : _____

Appendix D.4 Results of Farm Interview

Abbreviations

D	:	Dhiban
K	:	Karak
T	:	Tafila
A	:	Animal husbandry farmers
C	:	Cereal production farmers
F	:	Fruit production farmers
N.A.	:	No Answer

				A. family Information																		
	Village	Sub-District	District	1. Sex		3.					4.				5.	6.						
				a.	b.	a.	b.	c.	d.	e.	a.	b.	c.	d.		a.	b.	c.	d.			
DA- 1	Muleh	Madaba	Amman	1		56	3	3	4				1	1		N.A.						1
DA- 2	Muleh	Madaba	Amman	1		54	8	3	3				1	1		300						1
DA- 3	Aliah	Madaba	Amman	1		32	1	1	9				1	1		365	1					
DA- 4	Al-Wala	Madaba	Amman	1		29	1	1	1				1	1		365		1				
DA- 5	Thiban	Madaba	Amman	1		48	13	1	10				1	1		120		1				
DA- 6	Thiban	Madaba	Amman	1		47	4	1					1	1		300						1
DA- 7	Thiban	Madaba	Amman	1		90	4	6	4				1	1		300						1
DA- 8	Thiban	Madaba	Amman	1		50	3	2	5				1	1		365						1
DA- 9	Alhidan	Madaba	Amman	1		45		3					1	1		300						1
DA-10	Al-Wala	Madaba	Amman	1		40	1	4	6				1	1		365						1
DA-11	Al-Wala	Madaba	Amman	1		60		3	4				1	1		365						1
DA-12	Aliah	Madaba	Amman	1		50	1	3	1				1	1		300						1
DA-13	Thiban	Madaba	Amman	1		50		1	6				1	1		365						1
DA-14	Al-Wala	Madaba	Amman	1		50	5	2	4				1	1		300						1
DA-15	Thiban	Madaba	Amman	1		35	5	5					1	1		365						1
DA-16	Thiban	Madaba	Amman	1		42	9	1	4	1			1	1		365	1					
DA-17	Thiban	Madaba	Amman	1		35	1	1	3				1	1		N.A.	1					
DA-18	Mathloth	Madaba	Amman	1		50	1	2	3				1	1		365	1					
DA-19	Muleh	Madaba	Amman	1		60	7	4	1				1	1		365						1
DA-20	Thiban	Madaba	Amman	1		40	1	1	4				1	1		365	1					
KA- 1	That-Ras	S.Mazar	Karak	1		57	5	2	5				1	1		365						1
KA- 2	That-Ras	S.Mazar	Karak	1		38	1	1	5				1	1		N.A.	1					
KA- 3	That-Ras	Mazar	Karak	1		60	3	2	1				1	1		360						1
KA- 4	E. Shuqara	Mazar	Karak	1		35	1	1	3				1	1		365	1					
KA- 5	E. Shuqara	Mazar	Karak	1		55	1	1	2				1	1		365						1
KA- 6	Muhy	Mazar	Karak	1		40	2	2	1				1	1		365	1					
KA- 7	Muhy	Mazar	Karak	1		N.A.		4	6				1	1		365						1
KA- 8	Hamidiah	Mazar	Karak	1		60		4					1	1		365		1				
KA- 9	Muhy	Mazar	Karak	1		40	8	2	5				1	1		300	1					
KA-10	Muhy	Mazar	Karak	1		77	6	2	2				1	1		350						1
KA-11	That-Ras	Mazar	Karak	1		65	2	15	7				1	1		365						1
KA-12	Muhy	Mazar	Karak	1		70	3	2	2				1	1		350						1
KA-13	Muhy	Mazar	Karak	1		38	12	1	9				1	1		350						1
KA-14	Muhy	Mazar	Karak	1		49	1	2					1	1		350						1
KA-15	Muhy	Mazar	Karak	1		53	5	2	1				1	1		350						N.A.
KA-16	Muhy	Mazar	Karak	1		60		8					1	1		350						1
KA-17	Muhy	Mazar	Karak	1		60	2	1	7				1	1		365						1
KA-18	Muhy	Mazar	Karak	1		40		2	2				1	1		365	1					
KA-19	That-Ras	Mazar	Karak	1		48	1	2	8				1	1		365						1
KA-20	That-Ras	Mazar	Karak	1		N.A.	1	1	5				1	1		365			1			
TA- 1	UM El Adam		Tafila	1		49		4					1	1		300	1					
TA- 2	Sinifha	Tafila	Tafila	1		46		1	5	1			1	1		240	1					
TA- 3	Ruweim	Tafila	Tafila	1		53	2	1	14				1	1		365	1					
TA- 4	Jurffa		Tafila	1		63	2	3	4	2			1	1		250						1
TA- 5	Jurffa		Tafila	1		N.A.		2	8				1	1		250	1					
TA- 6	Abrrer	Tafila	Tafila	1		45		2	8				1	1		200						1
TA- 7	Apoor	Tafila	Tafila	1		23		2	4				1	1		360	1					
TA- 8	Sinifha		Tafila	1		55		3	5	1			1	1		365						1
TA- 9	Um Sarab	Tafila		1		55	1	3	5				1	1		180						1
TA-10	Ain Beida	Tafila		1		45	7	5	5				1	1		120	1					
TA-11	Um Sarab		Tafila	1		62	21	2	19				1	1		150	1					
TA-12	Ruweim	Tafila	Tafila	1		52		5					1	1		90	1					
TA-13	Majadi	Tafila	Tafila	1		62	1	1	3				1	1		365	1					
TA-14	Abu bana		Tafila	1		39	1	1	9				1	1		360	1					
TA-15	Abu bana		Tafila	1		62	2	2	1				1	1		365						1
TA-16	Abu bana		Tafila	1		47		4	3				1	1		365						1
TA-17	Luba'an		Tafila	1		45	1	1	3				1	1		360		1				
TA-18	El aiss		Tafila	1		38	9	1	6				1	1		300	1					
TA-19			Tafila	1		34	1	1	2				1	1		365						1
TA-20	Luba'an		Tafila	1		40	1	1	1				1	1		300						1
Average/ % (animal)				1		50	3	3	4	0	0		0	1	0	0	322	35	7	2	56	
DC- 1	Dalha		Madaba	1		58	2	2	5				1	1		300	1					
DC- 2	Barza	Thiban	Madaba	1		58		1	8		7		1	1		180	1					
DC- 3	Thiban		Thiban	1		34	1	1	2				1	1		360		1				
DC- 4	Thiban		Thiban	1		47	1	1	6	1			1	1		300	1					
DC- 5	Thiban		Thiban	1		42	1	1	6				1	1		360		1				
DC- 6	Thiban	Madaba		1		72	3	2	3		2		1	1		30						1
DC- 7	Vabena	Madaba	Amman	1		51		5	6				1	1		365	1					
DC- 8	Thiban		Thiban	1		45		5	6	1			1	1	1	30	1					
DC- 9	Thiban	Madaba	Amman	1		61	1	1					1	1		180						1
DC-10	Malih		Amman	1		66		6	3				1	1	1	365						1
DC-11	Malih	Madaba	Amman	1		62	2	1	1	1			1	1		N.A.	1					1
DC-12	Thiban	Madaba	Amman	1		45		4	5				1	1		90	1					

DC-13	Thiban	Madaba	Amman	1	52	1	1	5	1	1	30		1		
DC-14	Thiban	Thiban		1	45	1	1	7	1		360	1			
DC-15	Thiban	Madaba	Amman	1	58	1	1	4	1		240	1			
DC-16	Al manshia	Thiban		1	32		3	2	1		50	1			
DC-17	Thiban	Madaba	Amman	1	70		1	4	2	1	120		1		
DC-18	Al manshia	Madaba	Amman	1	65		1	1	3	1	60		1		
DC-19	Thiban	Madaba	Amman	1	50		1	4	9	1	240	1			
DC-20	Thiban	Madaba	Amman	1	53		1		9	1	30		1		

KC- 1	Mazar	south Maza	Karak	1	50	1	1	5	4	1	60	1			
KC- 2	Amria		Karak	1	52	9	1	8	1		60	1			
KC- 3	Husienia		Karak	1	40		6	6		1	60	1			
KC- 4	Husienia		Karak	1	60	5	6	8		1	90	1			
KC- 5	Husienia		Karak	1	70	5	3	1		1	360		1		
KC- 6	Mazar	Mazar	Karak	1	55	2	1	3		1	N.A.	1			
KC- 7	Husienia		Karak	1	58	3	2	5	1	1	360	1			
KC- 8	Muhy	South Maza	Karak	1	41		1	4	6	1	200	1			
KC- 9	Kahledia	South Maza	Karak	1	55	1	1	2	4	1	90		1		
KC-10	Kahledia	South Maza	Karak	1	60	7	1	1	2	1	90	1			
KC-11	Kahledia	Mazar	Karak	1	70	4	1	7		1	260	1			
KC-12	Mazar	Mazar	Karak	1	60	1	1	7		1	90	1			
KC-13	Mazar	Mazar	Karak	1	64	4	1	1		1	90	1			
KC-14	Amria		Karak	1	41	1	1	3		1	90		1		
KC-15	Husienia		Karak	1	50	1	3	6		1	60	1			
KC-16	Husienia		Karak	1	58	9	1	6		1	90		1		
KC-17	Mazar	South Maza	Karak	1	55	1	2	4	6	1	60	1			
KC-18	Mazar	Mazar	Karak	1	75	2	1		2	1	90		1		
KC-19	Kahledia	Mazar	Karak	1	65		1	6	1	1	10	1			
KC-20	Kahledia	south Maza	Karak	1	50	1	3	7	2	1	90	1			

TC- 1	Alair	Tafila		1	39		2	4		1	170	1			
TC- 2	Tafila	Tafila		1	70	5	1	1		1	150		1		
TC- 3	Tafila	Tafila		1	74	4	1		1	1	N.A.	1			
TC- 4	Tafila	Tafila		1	39		5			1	250		1		
TC- 5	Alia	Tafila		1	38		2	6		1	300		1		
TC- 6	Tafila	Tafila		1	42		3	7		1	300	1			
TC- 7	AL Aiss	Tafila		1	33		2	3		1	360	1			
TC- 8	Um Sarab	Tafila		1	52	1	1	5		1	240		1		
TC- 9	Um Sarab	Tafila		1	42	10	1	7		1	365	1			
TC-10	Ain Beida	Tafila		1	50		9	6		1	365	1			
TC-11	Ain Beida	Tafila		1	50	5	1	5		1	180	1			
TC-12	Sinifha	Tafila		1	64	5	1	7		1	365	1			
TC-13	Ruweim	Tafila		1	43		10	4		1	90	1			
TC-14	Ain Beida	Tafila		1	50		4	5		1	240		1		
TC-15	AL Aiss	Tafila		1	64	7	6	4		1	300		1		
TC-16	Al Aiss	Tafila		1	71	14	1	4		1	300	1			
TC-17	Al Aiss	Tafila		1	55	3	1	5		1	3		1		
TC-18	Abu Bana	Tafila		1	65		2			1	60		1		
TC-19	Luba'an	Tafila		1	60	3	2			1	120	1			
TC-20	Ruweim	Tafila	Tafila	1	60	2	1	2	1		30	1			

Average/ %	(cereal)			1	54	2	2	4	0	1	170	51	15	2	32

DF- 1	Hidan	Thiban	Amman	1	60	4	1	3		1	60			1	
DF- 2	Thiban	Madaba	Madaba	1	35		1			1	90		1		
DF- 3	Wala	Thiban	Madaba	1	60	1	4			1	365			1	
DF- 4	Wala	Madaba	Amman	1	52	11	4	5		1	360		1		
DF- 5	Hedan	Madaba	Amman	1	62	9	1	5	1	1	360			1	
DF- 6	Wala	Thiban	Amman	1	50	5	1	1		1	360	1			
DF- 7	Alia	Madaba	Amman	1	N.A.	5	5	4		1	365	1			
DF- 8	Hedan	Madaba	Amman	1	55	2	1			1	360	N.A.			
DF- 9	Alia	Madaba	Amman	1	75	2	3	2		1	365	1			
DF-10	Wala	Madaba	Amman	1	51		3	10		1	365	1			
DF-11	Alia	Thiban	Amman	1	59	9	2	5		1	30			1	
DF-12	Wala	Madaba	Amman	1	59	1	1	3	1	1	24	N.A.			
DF-13	Mujib	Madaba	Amman	1	41		2	1		1	N.A.			1	
DF-14	Alia	Madaba	Amman	1	50	1	1	1		1	360		1		
DF-15	Wala	Madaba	Amman	1	53	1	1	5		1	120			1	
DF-16	Wala	Madaba	Amman	1	35	3	1	1		1	N.A.		1		
DF-17	Wala	Madaba	Amman	1	65	2	4	5		1	365	N.A.			
DF-18	Wala	Madaba	Amman	1	60	2	1	3		1	240			1	
DF-19	Wala	Madaba	Amman	1	55	1	1	7		1	120			1	
DF-20	Thiban	Madaba	Amman	1	48	1	1	5		1	N.A.	1			

KF- 1	Huseinia	Mazar	Karak	1	60	5	2	1	1	1	180	N.A.			
KF- 2	Rass	Karak	Karak	1	63	1	1			1	240	1			
KF- 3	Rass	Karak	Karak	1	75	1	1	1		1	240			1	
KF- 4	Rass	Karak	Karak	1	67	1	1	5		1	N.A.			1	
KF- 5	Rass	Karak	Karak	1	61	1	1	5		1	N.A.			1	
KF- 6	Rass	Mazar	Karak	1	60	3	1	4		1	365	N.A.			
KF- 7	Rass	Mazar	Karak	1	N.A.	1	1	3		1	365	1			
KF- 8	Rass	Mazar	Karak	1	38	4	1	2		1	90		1		
KF- 9	Rass	Mazar	Karak	1	23	1	1			1	365		1		
KF-10	Rass	Mazar	Karak	1	38	6	1	2		1	365		1		
KF-11	Rass	Mazar	Karak	1	48	9	2	7	1	1	90		1		
KF-12	Rass	Mazar	Karak	1	42	13	1	5	2	1	180	1			

KF-13	Rass	Mazar	Karak	1	60	11	1	6		1		180	1							
KF-14	Rass	Mazar	Karak	1	80	5	1	1		1		N.A.								
KF-15	Rass	Mazar	Karak	1	N.A.		1	12	1	1		200	1	1						
KF-16	Rass	Mazar	Karak	1	60	3	1		1	1		365	1							
KF-17	Rass	Mazar	Karak	1	60	1	1	1		1		200		1						
KF-18	Rass	Mazar	Karak	1	60	2	1	8	1	1	1	365		1						
KF-19	Huseinia	Mazar	Karak	1	52	8	5	8	1	1		200	1	1						
KF-20	Mahmoudia	Karak	Karak	1	78	6	1			1		240	1							

TF- 1	Juffa	Tafila		1	61		6	1	4	1		210		1						
TF- 2	Um badir	Tafila		1	34	3	5	3	1	1		365	1							
TF- 3	Mansora	Tafila		1	45		2	6		1		300	1							
TF- 4	Mansora	Tafila		1	60	1	1	3		1		360		1						
TF- 5	Ainma	Tafila		1	48	1	1	5		1	1	360	1							
TF- 6	Ain Beida	Tafila		1	48		1	7		1		240	1							
TF- 7	Ruwiem	Tafila	Tafila	1	50	7	3	4	1	2		20	1							
TF- 8	Um Sarab	Tafila		1	42	4	3	4	1	1		200	1							
TF- 9	Zebda	Tafila		1	54	1	1	1		1		240		1						
TF-10	Abour	Tafila		1	31	7	2			1		240	1							
TF-11	AL Aiss	Tafila		1	53	2	1	3	1	1	1	180	1							
TF-12	Al Aiss	Tafila		1	33			6	3	1		210	1							
TF-13	Sumiea	Tafila	Tafila	1	63	1	1	2		1		200	1							
TF-14	Al Aiss	Tafila		1	60	1	1			1		20		1						
TF-15	Affra	Tafila	Tafila	1	45	1	1	5		1		365		1						
TF-16	Affra	Tafila	Tafila	1	56	2	3	4		1		360	1							
TF-17	Affra	Tafila		1	50	2		3		1		365		1						
TF-18	Ain Beida	Tafila	Tafila	1	45	1	1			1	1	365	1							
TF-19	Um Sarab	Tafila	Tafila	1	42		3	4		1		365	1							
TF-20	Ain Beida	Tafila	Tafila	1	45	3	1	5	1	1	1	180		1						

Average/ % (fruit)				1	0	53	3	2	3	0	0	1	0	0	0	253	48	9	7	36

		Owned		Rented		Leased		Jointly owned	
		Rain	Irri	Rain	Irri	Rain	Irri	Rain	Irri
DA- 1	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	24							
DA- 2	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land			300	50				
DA- 3	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	30							
DA- 4	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50							
DA- 5	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	30							
DA- 6	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	N.A.							
DA- 7	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	100							
DA- 8	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	150							
DA- 9	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	No. Land							
DA-10	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	150							
DA-11	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50							
DA-12	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	30							
DA-13	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land			100					
DA-14	1. Field crop	45							

	2. Grass land 3. Fruit lands 4. Green house 5. Forest land				
DA-15	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	No Land			
DA-16	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	150			
DA-17	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50			
DA-18	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	No Land			
DA-19	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	No Land			
DA-20	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	300			
KA- 1	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	100			
KA- 2	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	60		300	
KA- 3	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50			
KA- 4	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50			
KA- 5	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50 50			
KA- 6	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		300		
KA- 7	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land				250
KA- 8	1. Field crop 2. Grass land 3. Fruit lands	No Land			

	4. Green house 5. Forest land				
KA- 9	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		400		
KA-10	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	100	400		
KA-11	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	500			
KA-12	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	No Land			
KA-13	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		80		
KA-14	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		60		
KA-15	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	7			200
KA-16	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50		50	
KA-17	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50			
KA-18	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	150			
KA-19	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	500			
KA-20	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	500			
TA- 1	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	N.A.			
TA- 2	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50 20 5			

TA- 3	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land					400
TA- 4	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	100	30			
TA- 5	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	24	13			
TA- 6	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	200	5			
TA- 7	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	350		500		350
TA- 8	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	No Land				
TA- 9	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	9				
TA-10	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		5			2000 5
TA-11	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	40	20			
TA-12	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	24	16			
TA-13	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	No Land				
TA-14	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	N.A.				
TA-15	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50		100		
TA-16	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	30				
TA-17	1. Field crop	N.A.				

	2. Grass land							
	3. Fruit lands							
	4. Green house							
	5. Forest land							
TA-18	1. Field crop	N.A.						
	2. Grass land							
	3. Fruit lands							
	4. Green house							
	5. Forest land							
TA-19	1. Field crop	No Land						
	2. Grass land							
	3. Fruit lands							
	4. Green house							
	5. Forest land							
TA-20	1. Field crop	N.A.						
	2. Grass land							
	3. Fruit lands							
	4. Green house							
	5. Forest land							
Total)	1. Field crop	4294	73	2240	50	350	0	3200
	2. Grass land	4194	20	2240	50	350		5
	3. Fruit lands	70						
	4. Green house	30	53					
	5. Forest land							
Average)	1. Field crop	4294	73	2240	50	350		3200
	2. Grass land	79	1	42	1	7		60
	3. Fruit lands	1						
	4. Green house		1					
	5. Forest land							
		80	2	42	1	7		60

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		Owned		Rented		Leased		Jointly owned	
		Rain	Irri	Rain	Irri	Rain	Irri	Rain	Irri
DC- 1	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50							
			5 10						
DC- 2	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	20						160	
DC- 3	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land							200 50	
DC- 4	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land							71 16	
DC- 5	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	180	10						
DC- 6	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	150							
DC- 7	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land							100 40	
DC- 8	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land							490 10	
DC- 9	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	300							20
DC-10	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	17		50					
			4						
DC-11	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	100						27	
			20						
DC-12	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	100							
DC-13	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	200							
DC-14	1. Field crop	106		40					20

	2. Grass land 3. Fruit lands 4. Green house 5. Forest land				
DC-15	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land				30
DC-16	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land				30
DC-17	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	150			
DC-18	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		50		
DC-19	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	70	80		
DC-20	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50			
KC- 1	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land				200
KC- 2	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	400			1000
KC- 3	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land				400
KC- 4	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50 25			150
KC- 5	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	60			200
KC- 6	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	60			
KC- 7	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	40			600
KC- 8	1. Field crop 2. Grass land 3. Fruit lands	2000			

	4. Green house 5. Forest land				
KC- 9	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	400			
KC-10	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land				1000
KC-11	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	300		300	
KC-12	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	350			
KC-13	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	350			
KC-14	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land				2000
KC-15	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land				200 40
KC-16	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land				280 35
KC-17	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	110			
KC-18	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	350			
KC-19	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	55			400
KC-20	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		300		1000
TC- 1	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	117			
TC- 2	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		150		

TC- 3	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		3		220		170
TC- 4	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	150		1000			15
TC- 5	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	100	20				
TC- 6	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50					
TC- 7	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land			200	200		500
TC- 8	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		17				
TC- 9	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	6	6	100			
TC-10	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	280	20				
		16	3				
TC-11	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	23					
TC-12	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	100					
			3				
TC-13	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50		120			12
		9					
TC-14	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	100				11	
TC-15	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	N.A.					
TC-16	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	N.A.					
TC-17	1. Field crop	N.A.					

	2. Grass land								
	3. Fruit lands								
	4. Green house								
	5. Forest land								
TC-18	1. Field crop	80		40					
	2. Grass land								
	3. Fruit lands								
	4. Green house								
	5. Forest land								
TC-19	1. Field crop						2000	300	
	2. Grass land								
	3. Fruit lands								
	4. Green house								
	5. Forest land								
TC-20	1. Field crop	30							
	2. Grass land								
	3. Fruit lands	8							
	4. Green house								
	5. Forest land								
Total(cereal)		7267	518	1710	40	731	0	11226	540
	1. Field crop	7061	153	1710	40	720		11008	540
	2. Grass land								
	3. Fruit lands	206	355			11		218	
	4. Green house		10						
	5. Forest land								
Average									
	1. Field crop	124	3	30	1	13	0	193	10
	2. Grass land	0	0	0	0	0	0	0	0
	3. Fruit lands	4	6	0	0	0	0	4	0
	4. Green house	0	0	0	0	0	0	0	0
	5. Forest land	0	0	0	0	0	0	0	0
		124	9	30	1	13	0	193	10

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		Owned		Rented		Leased		Jointly owned	
		Rain	Irri	Rain	Irri	Rain	Irri	Rain	Irri
DF- 1	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50							
DF- 2	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		5					10	
DF- 3	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	18	8						
DF- 4	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	40	700 14						
DF- 5	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		35 10						
DF- 6	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		24 6						
DF- 7	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	11							
DF- 8	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	11							
DF- 9	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	12	30						
DF-10	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	200 50							
DF-11	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		56						
DF-12	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	28 6							
DF-13	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	66	16						
DF-14	1. Field crop				12				

	2. Grass land				
	3. Fruit lands				
	4. Green house				
	5. Forest land				
DF-15	1. Field crop	150			
	2. Grass land				
	3. Fruit lands	30			
	4. Green house				
	5. Forest land				
DF-16	1. Field crop				
	2. Grass land				
	3. Fruit lands	10			
	4. Green house				
	5. Forest land				
DF-17	1. Field crop				
	2. Grass land				
	3. Fruit lands		50		
	4. Green house				
	5. Forest land				
DF-18	1. Field crop		16		30
	2. Grass land				
	3. Fruit lands		1		52
	4. Green house				
	5. Forest land				
DF-19	1. Field crop		4		
	2. Grass land				
	3. Fruit lands		2		
	4. Green house				
	5. Forest land				
DF-20	1. Field crop	50		50	
	2. Grass land				
	3. Fruit lands		20		
	4. Green house				
	5. Forest land				
KF- 1	1. Field crop				69
	2. Grass land				
	3. Fruit lands				22
	4. Green house				
	5. Forest land				
KF- 2	1. Field crop				
	2. Grass land				
	3. Fruit lands	6	3		
	4. Green house				
	5. Forest land				
KF- 3	1. Field crop	20			
	2. Grass land				
	3. Fruit lands	3			
	4. Green house				
	5. Forest land				
KF- 4	1. Field crop				
	2. Grass land				
	3. Fruit lands	3			
	4. Green house				
	5. Forest land				
KF- 5	1. Field crop				
	2. Grass land				
	3. Fruit lands	2	2		
	4. Green house				
	5. Forest land				
KF- 6	1. Field crop	60			
	2. Grass land				
	3. Fruit lands	3			
	4. Green house				
	5. Forest land				
KF- 7	1. Field crop	25			
	2. Grass land				
	3. Fruit lands		3		
	4. Green house				
	5. Forest land				
KF- 8	1. Field crop	20			25
	2. Grass land				
	3. Fruit lands		6		5

	4. Green house 5. Forest land				
KF- 9	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	200	5		
KF-10	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land		8		
KF-11	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	1000	100 15		
KF-12	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	50 4	6		
KF-13	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	30	3		
KF-14	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	54	6		
KF-15	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	2	2		
KF-16	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	40 2	2		
KF-17	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	30 2	2		
KF-18	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	80	5		
KF-19	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	350 30			1200
KF-20	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	30 147		17	
TF- 1	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	25			
TF- 2	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	56			

TF- 3	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	20	50				
TF- 4	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	79	5	4			
TF- 5	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land					1000	12
TF- 6	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	11					
TF- 7	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	30					
TF- 8	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	10	16				
TF- 9	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land			50	50		
TF-10	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land			7			
TF-11	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land					40	35
TF-12	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land					500	24 4
TF-13	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	15	15				
TF-14	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land			40			
TF-15	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land	55		25	10		
TF-16	1. Field crop 2. Grass land 3. Fruit lands 4. Green house 5. Forest land					150	50
TF-17	1. Field crop			50	10		

	2. Grass land								
	3. Fruit lands								
	4. Green house								
	5. Forest land								
TF-18	1. Field crop								
	2. Grass land	40	5						
	3. Fruit lands								
	4. Green house								
	5. Forest land								
TF-19	1. Field crop	17							
	2. Grass land								
	3. Fruit lands		16						
	4. Green house								
	5. Forest land								
TF-20	1. Field crop	290							
	2. Grass land								
	3. Fruit lands	56	6						
	4. Green house								
	5. Forest land								
Total(fruit)		3629	1278	215	93	17	0	3045	183
	1. Field crop	2965	195	215	79	17		2944	30
	2. Grass land								
	3. Fruit lands	664	1069		14			101	153
	4. Green house		14						
	5. Forest land								
Average									
	1. Field crop	49	3	4	1	0	0	49	1
	2. Grass land	0	0	0	0	0	0	0	0
	3. Fruit lands	11	18	0	0	0	0	2	3
	4. Green house	0	0	0	0	0	0	0	0
	5. Forest land	0	0	0	0	0	0	0	0
		60	21	4	1	0	0	51	4

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KF-17		0				1				1		1		1									
KF-18	20	5				1				1			1	1									
KF-19		0			12	1				1		1	1	1									
KF-20		0				1				1	1		1	1									

TF- 1		0			40	1				1	1			1									
TF- 2		0				1				1	1			1									
TF- 3		0						1	1														
TF- 4		0																					
TF- 5	30	30				1					1												
TF- 6		0								1	1		1	1									
TF- 7		6									1		1	1									
TF- 8		0									1		1	1									
TF- 9		0					1		N.A														
TF-10	40					1								1									
TF-11		0												1									
TF-12		20			12						1												
TF-13		0			10	1					1			1									
TF-14		0									1												
TF-15	1	50	20								1	1	1	1									
TF-16		0									1	1	1	1									
TF-17	1	70	50								1	1	1	1									
TF-18		5			25						1	1	1	1									
TF-19		0									1		1	1									
TF-20	20										1		1	1									

Ave./%	0	10	4	0	0	100	0	0	9	10	81	9	0	40	60	0	36	88	24	19	50	67	5
										58								168					

	C.	D1.		D2.					D3.																
		a.	b.	a.	b.	c.	d.	e.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)									
									a. b.	a. b.	a. b.	a. b.	a. b.	a. b.	a. b.	a. b.									
DA- 1	N.A	1							1	1	1	1	1	1	1	1									
DA- 2	6		1				1																		
DA- 3	N.A		1		1	1				1	1	1		1	1	1									
DA- 4	2		1		1	1	1		1	1	1	1	1	1	1	1									
DA- 5	1	1							1	1	1	1	1	1	1	1									
DA- 6	1		1		1								1	1	1	1									
DA- 7	2		1		1																				
DA- 8	6	1							1	1	1	1	1	1	1	1									
DA- 9	N.A		1																						
DA-10	1	1							1	1	1	1		1	1	1									
DA-11	1		1			1				1	1	1	1	1	1	1									
DA-12	0		1		1																				
DA-13	1	1							1	1	1	1	1	1	1	1									
DA-14	1		1		1																				
DA-15	N.A		1		1	1			1	1	1	1	1	1	1	1									
DA-16	1		1		1	1	1		1	1	1	1	1	1	1	1									
DA-17	1	1							1	1	1	1	1	1	1	1									
DA-18	1		1		1	1			1	1	1	1	1	1	1	1									
DA-19	N.A		1		1	1	1		1	1	1	1	1	1	1	1									
DA-20	5		1			1																			
KA- 1	N.A		1		1	1	1		1	1	1	1	1	1	1	1									
KA- 2	1		1		1	1	1		1	1	1	1	1	1	1	1									
KA- 3	N.A		1		1	1	1		1	1	1	1	1	1	1	1									
KA- 4	N.A	1							1	1	1	1	1	1	1	1									
KA- 5	2		1		1	1			1	1	1	1	1	1	1	1									
KA- 6	1		1		1	1			1	1	1	1	1	1	1	1									
KA- 7	1		1		1	1			1	1	1	1	1	1	1	1									
KA- 8	4		1		1	1			1	1	1	1	1	1	1	1									
KA- 9	1		1			1																			
KA-10	1		1		1																				
KA-11	7		1		1	1			1	1	1	1	1	1	1	1									
KA-12	0		1		1																				
KA-13	1		1			1																			
KA-14	1		1		1																				
KA-15	0		1		1																				
KA-16	0		1		1																				
KA-17	N.A		1		1	1	1		1	1	1	1	1	1	1	1									
KA-18	N.A		1		1	1	1		1	1	1	1	1	1	1	1									
KA-19	N.A		1		1	1	1		1	1	1	1	1	1	1	1									
KA-20	1		1		1	1			1	1	1	1	1	1	1	1									
TA- 1	1	1							1	1	1	1	1	1	1	1									
TA- 2	0		1				1																		
TA- 3	2	1							1	1	1	1	1	1	1	1									
TA- 4	2	1							1	1	1	1	1	1	1	1									
TA- 5	N.A		1			1			1	1	1	1	1	1	1	1									
TA- 6	1		1						1	1	1	1	1	1	1	1									
TA- 7	5	1							1	1	1	1	1	1	1	1									
TA- 8	2		1		1																				
TA- 9	2		1		1	1																			
TA-10	6	1							1	1	1	1	1	1	1	1									
TA-11	N.A		1		1																				
TA-12	5		1		1																				
TA-13	1		1		1																				
TA-14	3		1		1				1	1	1	1	1	1	1	1									
TA-15	1		1		1	1			1	1	1	1	1	1	1	1									
TA-16	0	1							1	1	1	1	1	1	1	1									
TA-17	2		1			1																			
TA-18	1	1							1	1	1	1	1	1	1	1									
TA-19	0		1		1																				
TA-20	1		1				1		1	1	1	1	1	1	1	1									
Average																									
%distr.1.8		23	77	42	14	26	18	0	94	7	92	8	95	5	89	11	29	71	95	5	97	3	95	5	
DC- 1	2.5		1		1	1																			
DC- 2	N.A	1								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DC- 3	4		1		1	1	1																		
DC- 4	1		1		1	1																			
DC- 5	2		1		1			1																	
DC- 6	N.A	1																							
DC- 7	2	1							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DC- 8	3		1				1																		
DC- 9	3		1			1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DC-10	N.A		1			1																			
DC-11	N.A		1			1																			
DC-12	4		1		1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

DC-13	5	1	1	1	1	1	1	1	1	1	1	1	1	1
DC-14	0	1	1	1	1	1	1	1	1	1	1	1	1	1
DC-15	5	1	1	1	1	1	1	1	1	1	1	1	1	1
DC-16	3	1	1	1	1	1	1	1	1	1	1	1	1	1
DC-17	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DC-18	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DC-19	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DC-20	0	1	1	1	1	1	1	1	1	1	1	1	1	1

KC- 1	2	1	1	1	1	1	1	1	1	1	1	1	1	1
KC- 2	7	1	1	1	1	1	1	1	1	1	1	1	1	1
KC- 3	10	1	1	1	1	1	1	1	1	1	1	1	1	1
KC- 4	6	1	1	1	1	1	1	1	1	1	1	1	1	1
KC- 5	5	1	1	1	1	1	1	1	1	1	1	1	1	1
KC- 6	0	1	1	1	1	1	1	1	1	1	1	1	1	1
KC- 7	9	1	1	1	1	1	1	1	1	1	1	1	1	1
KC- 8	2	1	1	1	1	1	1	1	1	1	1	1	1	1
KC- 9	2	1	1	1	1	1	1	1	1	1	1	1	1	1
KC-10	2	1	1	1	1	1	1	1	1	1	1	1	1	1
KC-11	8	1	1	1	1	1	1	1	1	1	1	1	1	1
KC-12	10	1	1	1	1	1	1	1	1	1	1	1	1	1
KC-13	10	1	1	1	1	1	1	1	1	1	1	1	1	1
KC-14	3	1	1	1	1	1	1	1	1	1	1	1	1	1
KC-15	5	1	1	1	1	1	1	1	1	1	1	1	1	1
KC-16	6	1	1	1	1	1	1	1	1	1	1	1	1	1
KC-17	1	1	1	1	1	1	1	1	1	1	1	1	1	1
KC-18	1	1	1	1	1	1	1	1	1	1	1	1	1	1
KC-19	4.5	1	1	1	1	1	1	1	1	1	1	1	1	1
KC-20	2	1	1	1	1	1	1	1	1	1	1	1	1	1

TC- 1	3	1	1	1	1	1	1	1	1	1	1	1	1	1
TC- 2	0	1	1	1	1	1	1	1	1	1	1	1	1	1
TC- 3	0	1	1	1	1	1	1	1	1	1	1	1	1	1
TC- 4	201	1	1	1	1	1	1	1	1	1	1	1	1	1
TC- 5	2	1	1	1	1	1	1	1	1	1	1	1	1	1
TC- 6	2	1	1	1	1	1	1	1	1	1	1	1	1	1
TC- 7	6	1	1	1	1	1	1	1	1	1	1	1	1	1
TC- 8	2	1	1	1	1	1	1	1	1	1	1	1	1	1
TC- 9	4.5	1	1	1	1	1	1	1	1	1	1	1	1	1
TC-10	N.A	1	1	1	1	1	1	1	1	1	1	1	1	1
TC-11	N.A	1	1	1	1	1	1	1	1	1	1	1	1	1
TC-12	N.A	1	1	1	1	1	1	1	1	1	1	1	1	1
TC-13	N.A	1	1	1	1	1	1	1	1	1	1	1	1	1
TC-14	0	1	1	1	1	1	1	1	1	1	1	1	1	1
TC-15	2	1	1	1	1	1	1	1	1	1	1	1	1	1
TC-16	3	1	1	1	1	1	1	1	1	1	1	1	1	1
TC-17	N.A	1	1	1	1	1	1	1	1	1	1	1	1	1
TC-18	0	1	1	1	1	1	1	1	1	1	1	1	1	1
TC-19	4	1	1	1	1	1	1	1	1	1	1	1	1	1
TC-20	0	1	1	1	1	1	1	1	1	1	1	1	1	1

Average %distr.3.2 22 78 27 27 21 25 0 73 27 96 4 96 4 76 24 81 19 100 0 93 7 92 8

DF- 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DF- 2	3.5	1	1	1	1	1	1	1	1	1	1	1	1	1
DF- 3	3	1	1	1	1	1	1	1	1	1	1	1	1	1
DF- 4	10	1	1	1	1	1	1	1	1	1	1	1	1	1
DF- 5	3	1	1	1	1	1	1	1	1	1	1	1	1	1
DF- 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DF- 7	N.A	1	1	1	1	1	1	1	1	1	1	1	1	1
DF- 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DF- 9	10	1	1	1	1	1	1	1	1	1	1	1	1	1
DF-10	2	1	1	1	1	1	1	1	1	1	1	1	1	1
DF-11	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DF-12	0	1	1	1	1	1	1	1	1	1	1	1	1	1
DF-13	2	1	1	1	1	1	1	1	1	1	1	1	1	1
DF-14	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DF-15	N.A	1	1	1	1	1	1	1	1	1	1	1	1	1
DF-16	3	1	1	1	1	1	1	1	1	1	1	1	1	1
DF-17	2	1	1	1	1	1	1	1	1	1	1	1	1	1
DF-18	3	1	1	1	1	1	1	1	1	1	1	1	1	1
DF-19	N.A	1	1	1	1	1	1	1	1	1	1	1	1	1
DF-20	2	1	1	1	1	1	1	1	1	1	1	1	1	1

KF- 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
KF- 2	4	1	1	1	1	1	1	1	1	1	1	1	1	1
KF- 3	0	1	1	1	1	1	1	1	1	1	1	1	1	1
KF- 4	0	1	1	1	1	1	1	1	1	1	1	1	1	1
KF- 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1
KF- 6	2.5	1	1	1	1	1	1	1	1	1	1	1	1	1
KF- 7	0	1	1	1	1	1	1	1	1	1	1	1	1	1
KF- 8	0	1	1	1	1	1	1	1	1	1	1	1	1	1
KF- 9	0	1	1	1	1	1	1	1	1	1	1	1	1	1
KF-10	3	1	1	1	1	1	1	1	1	1	1	1	1	1
KF-11	2	1	1	1	1	1	1	1	1	1	1	1	1	1
KF-12	4	1	1	1	1	1	1	1	1	1	1	1	1	1

KF-13	1		1	1																
KF-14	2		1	1		1		1	1	1	1		1	1		1				
KF-15	1		1			1		1												
KF-16	1		1	1		1		1				1		1	1		1			
KF-17	1		1	1		1														
KF-18	0		1	1																
KF-19	0	1						1	1	1	1	1	1	1	1	1	1	1	1	1
KF-20	2	1						1	1	1	1	1	1	1	1	1	1	1	1	1

TF- 1	3		1			1														
TF- 2	5		1	1		1														
TF- 3	2		1	1		1		1	1	1	1		1	1	1	1	1	1	1	1
TF- 4	201	1						1	1	1	1		1	1	1	1	1	1	1	1
TF- 5	2	1						1	1	1	1	1	1	1	1	1	1	1	1	1
TF- 6	2		1	1																
TF- 7	6		1	1				1		1	1									
TF- 8	2		1	1				1												
TF- 9	4.5		1					1												
TF-10	0	1						1	1	1	1	1		1	1	1	1	1	1	1
TF-11	10	1						1		1	1	1	1	1	1	1	1	1	1	1
TF-12	6	1						1	1	1	1	1	1	1	1	1	1	1	1	1
TF-13	2.5	1						1	1	1	1	1	1	1	1	1	1	1	1	1
TF-14	3		1	1																
TF-15	2		1			1														
TF-16	3		1	1				1	1	1	1	1	1	1	1	1	1	1	1	1
TF-17	3		1	1																
TF-18	2		1	1				1	1	1	1	1	1	1	1	1	1	1	1	1
TF-19	4		1	1				1	1	1	1	1	1	1	1	1	1	1	1	1
TF-20	3		1	1				1	1	1	1	1	1	1	1	1	1	1	1	1

Average
%distr.2.4 33 67 48 12 21 12 7 80 20 70 30 90 10 89 11 62 38 85 15 82 18 81 19

*Too big figures like 201 were omitted in the calculation of averages.

	D4.										D5.																										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(1)	(2)	(3)	(4)	(5)	(6)																					
	a. b.	a. b.	a. b.	a. b.	a. b.	a. b.	a. b.	a. b.	a. b.	a. b.	a. b.	a. b.	a. b.	a. b.	a. b.	a. b.																					
DA- 1	1	1	1	1	1	1	1	1	1	1																											
DA- 2	1	1	1	1	1	1	1	1	1	1																											
DA- 3		1	1	1	1	1	1	1	1	1																											
DA- 4	1	1	1	1	1	1	1	1	1	1																											
DA- 5	1	1	1	1	1	1	1	1	1	1																											
DA- 6	1	1	1	1	1	1	1	1	1	1																											
DA- 7	1	1	1	1	1	1	1	1	1	1																											
DA- 8	1	1	1	1	1	1	1	1	1	1																											
DA- 9	1	1	1	1	1	1	1	1	1	1																											
DA-10		1	1	1	1	1	1	1	1	1																											
DA-11		1	1	1	1	1	1	1	1	1																											
DA-12	1	1	1	1	1	1	1	1	1	1																											
DA-13	1	1	1	1	1	1	1	1	1	1																											
DA-14	1	1	1	1	1	1	1	1	1	1																											
DA-15	1	1	1	1	1	1	1	1	1	1																											
DA-16	1	1	1	1	1	1	1	1	1	1																											
DA-17	1	1	1	1	1	1	1	1	1	1																											
DA-18	1	1	1	1	1	1	1	1	1	1																											
DA-19	1	1	1	1	1	1	1	1	1	1																											
DA-20	1	1	1	1	1	1	1	1	1	1																											
KA- 1	1	1	1	1	1	1	1	1	1	1																											
KA- 2	1	1	1	1	1	1	1	1	1	1																											
KA- 3	1	1	1	1	1	1	1	1	1	1																											
KA- 4	1	1	1	1	1	1	1	1	1	1																											
KA- 5		1	1	1	1	1	1	1	1	1																											
KA- 6	1	1	1	1	1	1	1	1	1	1																											
KA- 7	1	1	1	1	1	1	1	1	1	1																											
KA- 8	1	1	1	1	1	1	1	1	1	1																											
KA- 9	1	1	1	1	1	1	1	1	1	1																											
KA-10	1	1	1	1	1	1	1	1	1	1																											
KA-11		1	1	1	1	1	1	1	1	1																											
KA-12	1	1	1	1	1	1	1	1	1	1																											
KA-13	1	1	1	1	1	1	1	1	1	1																											
KA-14	1	1	1	1	1	1	1	1	1	1																											
KA-15	1	1	1	1	1	1	1	1	1	1																											
KA-16	1	1	1	1	1	1	1	1	1	1																											
KA-17	1	1	1	1	1	1	1	1	1	1																											
KA-18	1	1	1	1	1	1	1	1	1	1																											
KA-19	1	1	1	1	1	1	1	1	1	1																											
KA-20		1	1	1	1	1	1	1	1	1																											
TA- 1	1	1	1	1	1	1	1	1	1	1																											
TA- 2	1	1	1	1	1	1	1	1	1	1																											
TA- 3	1	1	1	1	1	1	1	1	1	1																											
TA- 4	1	1	1	1	1	1	1	1	1	1																											
TA- 5	1	1	1	1	1	1	1	1	1	1																											
TA- 6	1	1	1	1	1	1	1	1	1	1																											
TA- 7	1	1	1	1	1	1	1	1	1	1																											
TA- 8	1	1	1	1	1	1	1	1	1	1																											
TA- 9	1	1	1	1	1	1	1	1	1	1																											
TA-10	1	1	1	1	1	1	1	1	1	1																											
TA-11	1	1	1	1	1	1	1	1	1	1																											
TA-12																																					
TA-13	1	1	1	1	1	1	1	1	1	1																											
TA-14	1	1	1	1	1	1	1	1	1	1																											
TA-15	1	1	1	1	1	1	1	1	1	1																											
TA-16	1	1	1	1	1	1	1	1	1	1																											
TA-17	1	1	1	1	1	1	1	1	1	1																											
TA-18		1	1	1	1	1	1	1	1	1																											
TA-19	1	1	1	1	1	1	1	1	1	1																											
TA-20	1	1	1	1	1	1	1	1	1	1																											
%distr	33	67	62	38	36	64	79	21	55	45	69	31	67	33	74	26	44	59	41	59	77	23	85	15	67	33	91	9	89	11	0	100					
DC- 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
DC- 2		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
DC- 3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DC- 4		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DC- 5		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DC- 6																																					
DC- 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DC- 8		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DC- 9		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DC-10		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DC-11		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DC-12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

KF-13	1	1	1	1	1	1	1	1	1	1									
KF-14	1	1	1	1	1	1	1	1	1	1	1								
KF-15	1	1	1	1	1	1	1	1	1	1	1								
KF-16	1	1	1	1	1	1	1	1	1	1	1								
KF-17																			
KF-18	1	1	1	1	1	1	1	1	1	1	1								
KF-19	1	1	1	1	1	1	1	1	1	1	1	1							
KF-20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

TF- 1																			
TF- 2																			
TF- 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF- 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF- 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF- 6																			
TF- 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF- 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF- 9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF-10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF-11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF-12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF-13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF-14																			
TF-15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF-16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF-17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF-18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF-19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TF-20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

%distr.32 68 56 44 55 45 86 14 47 53 53 47 54 46 69 31 39 61 39 61 79 21 100 0 77 23 100 0 92 8 100 0

	E1.		E2.					E3.					E4.					E5.			E6.							
	a.	b.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	a.	b.	c.	d.	e.	a.	b.	c.	a.	b.	c.	d.	e.	f.
DA- 1	1		1							1																		
DA- 2	1			1																								
DA- 3	1				1																							
DA- 4	1			1																								
DA- 5	1		1							1																		
DA- 7	1																											
DA- 8																												
DA-10	1													1		1					1							
DA-11		1			1																							
DA-12		1			1																							
DA-13		1			1																							
DA-14		1		1						1																		
DA-16		1			1	1																						
DA-17		1		1						1																		
DA-18		1			1																							
DA-20		1				1																						
KA- 1		1				1																						
KA- 2		1		1						1																		
KA- 3		1				1																						
KA- 4		1				1																						
KA- 5		1		1		1																						
KA- 6		1				1	1																					
KA- 7		1			1																							
KA- 8		1																										
KA- 9		1		1																								
KA-10		1		1																								
KA-11		1		1																								
KA-12		1				1																						
KA-13		1			1																							
KA-14		1			1																							
KA-15		1		1																								
KA-16		1		1																								
KA-17		1					1																					
KA-18		1					1																					
KA-19		1					1																					
KA-20		1		1																								
TA- 3		1																										
TA- 4	1														1	1				1							1	
TA- 5	1														1	1					1							
TA- 6		1																										
TA- 7		1					1																					
TA- 8		1					1																					
TA- 9		1					1																					
TA-10	1														1		1			1					1			
TA-11		1																										
TA-12		1													1		1											
TA-16		1				1																						
TA-17																												
TA-18		1		1																								
%distr	9	91	20	15	30	30	5	0	0	100				40	20	10	30			50	25	25	50			50		
DC- 1		1		1	1	1																						
DC- 2	1															1					1							
DC- 3		1			1																							
DC- 4		1			1																							
DC- 5		1																								1		
DC- 6		1			1																					1		
DC- 7		1			1																							
DC- 8		1					1																				1	
DC- 9		1				1																						
DC-10		1			1	1																						
DC-11		1				1																						
DC-12		1				1																						
DC-13		1					1						1															
DC-14		1					1																			1		
DC-15		1		1																								
DC-16		1																									1	
DC-17		1					1																					
DC-18		1		1																								
DC-19		1				1																				1		
DC-20		1				1																						
KC- 1		1				1																						
KC- 2		1		1																								
KC- 3		1				1																						
KC- 4	1														1		1				1					1		
KC- 5		1		1		1																						

	E7.		E8.					E9.				E10.			E11.									
	a.	b.	a.	b.	c.	d.	e.	f.	g.	a.	b.	c.	d.	e.	a.	b.	c.	a.	b.	c.	d.	e.	f.	g.
DA- 1		1										1					1							
DA- 2	1			1																				
DA- 3		1																						
DA- 4		1										1					1							
DA- 5		1										1						1		1				
DA- 7	1			1																				
DA- 8	1				1			1																
DA-10		1										1					1		1	1				
DA-11	1							1																
DA-12	1				1																			
DA-13		1										1					1		1					
DA-14	1			1																				
DA-16		1										1					1							
DA-17		1										1					1							
DA-18																								
DA-20		1										1											1	
KA- 1		1										1											1	
KA- 2		1										1					1							
KA- 3		1										1										1		
KA- 4		1										1										1		
KA- 5	1			1																				
KA- 6		1																						
KA- 7																								
KA- 8																								
KA- 9		1																						
KA-10		1																						
KA-11	1			1																				
KA-12																								
KA-13		1																						
KA-14																								
KA-15	1				1																			
KA-16	1				1																			
KA-17		1										1					1							
KA-18		1										1					1							
KA-19		1										1					1							
KA-20		1										1					1							
TA- 3		1										1							1	1	1			
TA- 4		1										1			1									
TA- 5		1										1					1							
TA- 6		1									1	1	1			1								
TA- 7	1			1																				
TA- 8		1																						
TA- 9	1			1																				
TA-10		1																						
TA-11		1																						
TA-12		1									1													
TA-16		1																						
TA-17		1									1				1									
TA-18		1									1	1	1				1		1	1				
%distr.	27	73	31	54			15			15	11	74			33	67	50		18	29			3	
DC- 1	1			1																				
DC- 2	1			1																				
DC- 3		1										1				1								
DC- 4		1									1	1				1								
DC- 5		1										1				1								
DC- 6	1			1																				
DC- 7		1										1	1			1						1		
DC- 8		1									1	1	1			1		1		1	1	1	1	
DC- 9	1			1																				
DC-10	1			1																				
DC-11	1			1																				
DC-12		1										1								1				
DC-13	1			1																				
DC-14		1									1	1				1								
DC-15		1																						
DC-16		1										1	1				1				1			
DC-17	1			1																				
DC-18	1			1																				
DC-19	1			1																				
DC-20	1			1																				
KC- 1		1											1											
KC- 2		1										1				1								
KC- 3		1									1													
KC- 4		1										1				1								
KC- 5		1										1	1			1								1

TF- 7	1					1			1	1							
TF- 8																	
TF- 9	1					1			1								
TF-10	1					1			1								
TF-11	1																
TF-12	1			1			1										
TF-13	1																
TF-14	1																
TF-15	1																
TF-16	1			1			1	1	1								
TF-18	1		1				1	1	1	1							
TF-19	1				1		1	1	1	1							
TF-20	1					1			1								
distr.	18	82	69	8	23	26	3	19	52	5	95	14	6	14	47	3	17

CEREAL PRODUCTION FARMERS

	1.				2.	3.	4.			5.		6.	7.	8.			9.		
	a.	b.	c.	d.	a. b.	a. b.	a.	b.	c.	a.	b.	c.	a.	b.	c.	a.	b.	c.	
DC- 1			1		1	1		1				1			1			1	1
DC- 2	1				1	1		1		1			1		1			1	1
DC- 3	1		1		1	1			1		1		1		1			1	1
DC- 4	1				1	1		1				1		1			1	1	1
DC- 5	1				1	1		1				1		1			1	1	1
DC- 6	1				1	1			1		1		1		1			1	1
DC- 7	1	1	1		1	1		1				1		1			1	1	1
DC- 8	1		1		1	1		1				1		1			1	1	1
DC- 9	1				1	1			1		1		1		1			1	1
DC-10	1		1			1		1				1		1				1	1
DC-11			1											1					1
DC-12	1				1	1			1			1			1			1	1
DC-13	1				1	1			1		No Seeds	1		1		1		1	1
DC-14	1		1		1	1		1			No Seeds		1	1		1		1	1
DC-15	1				1	1		1				1		1		1		1	1
DC-16		1	1		1	1		1		1		1		1		1		1	1
DC-17			1																1
DC-18			1																1
DC-19		1			1	1		1		1	1		1		1			1	1
DC-20	1				1	1		1		1	1		1		1			1	1

KC- 1	1				1	1		1				1		1			1	1	1
KC- 2			1		1	1		1		1			1		1		1	1	1
KC- 3	1	1	1		1	1			1		1		1		1		1	1	1
KC- 4	1		1		1	1		1		1	1		1		1		1	1	1
KC- 5	1		1		1	1			1		1		1		1		1	1	1
KC- 6	1				1	1		1				1		1		1		1	1
KC- 7	1		1		1	1		1		1		1		1		1		1	1
KC- 8			1																1
KC- 9	1				1	1		1		1	1		1		1		1	1	1
KC-10	1				1	1		1				1		1		1		1	1
KC-11	1				1	1		1		1		1		1		1		1	1
KC-12	1				1	1		1				1		1		1		1	1
KC-13	1				1	1		1				1		1		1		1	1
KC-14	1				1	1		1			No difficults	1		1		1		1	1
KC-15	1				1	1		1		1		1		1		1		1	1
KC-16	1		1		1	1		1		1		1		1		1		1	1
KC-17			1																1
KC-18			1																1
KC-19	1				1	1		1				1		1			1	1	1
KC-20			1		1	1		1		1				1				1	1

TC- 1	1				1	1		1		1		1		1			1	1	1
TC- 2			1		1	1		1				1		1		1		1	1
TC- 3	1				1	1		1				1		1		1		1	1
TC- 4																			1
TC- 5		1	1		1	1		1		1	1		1		1		1	1	1
TC- 6	1				1	1		1		1		1		1		1		1	1
TC- 7		1			1	1		1		1		1		1		1		1	1
TC- 8		1			1	1		1			they have not c	1		1		1		1	1
TC- 9	1				1	1		1				1		1		1		1	1
TC-10			1																1
TC-11		1			1	1		1		1		1		1		1		1	1
TC-12	1				1	1		1		1		1		1		1		1	1
TC-13	1				1	1		1				1		1		1		1	1
TC-14	1				1	1		1				1		1		1		1	1
TC-15		1	1		1	1		1				1		1		1		1	1
TC-16	1				1	1		1				1		1		1		1	1
TC-17			1																1
TC-18			1		1	1		1				1		1		1		1	1
TC-19			1		1	1		1				1		1		1		1	1
TC-20			1		1	1		1				1		1		1		1	1

*distr 150 14 36

38 62 51 49 34 48 18 43 57

57 18 25 74 26

50 29 21 52 48

CEREAL PRODUCTION FARMERS

	10.		11.			12.			13.			14.		15.			16.			17.			18.		
	b.	c.	a.	b.	(1)	(2)	(3)	a.	b.	c.	a.	b.	a.	b.	c.	a.	b.	c.	a.	b.	c.	a.	b.	c.	
DC- 1	1		1		:	:				1		1		1		1							1		
DC- 2	1		1	1	:	1	:					1			1		1			1			1	1	
DC- 3		1		1	:	:	:			1	1		1	1		1							1	1	
DC- 4		1		1	:	1	:					1		1		1							1	1	
DC- 5		1		1	:	1	:					1			1		1			1			1	1	
DC- 6				1	:	1	:								1		1						1	1	
DC- 7	1			1	:	1	:								1		1					1	1		
DC- 8		1		1	:	1	:			1	1		1			1			1			1	1		
DC- 9				1	:	1	:									1			1			1	1		
DC-10				1	:	:	:			1			1		1		1							1	
DC-11				1	:	1	:								1		1			1				1	
DC-12	1		1		:	:	:			1		1		1		1							1	1	
DC-13				1	:	1	:				1		1		1		1			1			1	1	
DC-14	1				:	1	:					1		1		1			1			1	1		
DC-15	1		1		:	:	:			1		1		1		1			1			1	1		
DC-16	1		1		:	1	:					1			1		1			1			1	1	
DC-17				1	:	1	:								1		1		1	1				1	
DC-18				1	:	1	:								1		1		1	1				1	
DC-19	1		1		:	:	:			1				1		1							1	1	
DC-20	1		1		:	1	:							1		1			1					1	

KC- 1		1		1	:	:	:				1		1		1		1							1	
KC- 2	1			1	:	1	:					1		1		1							1	1	
KC- 3	1			1	:	:	:			1				1		1							1	1	
KC- 4	1			1	:	1	:							1		1							1	1	
KC- 5				1	:	1	:							1		1							1	1	
KC- 6		1		1	:	:	:				1		1			1			1					1	
KC- 7	1			1	:	1	:					1		1				1	1	1				1	
KC- 8				1	:	1	:								1			1						1	
KC- 9				1	:	1	:								1								1	1	
KC-10				1	:	1	:				1		1		1		1						1	1	
KC-11	1		1		:	:	:				1		1		1		1			1				1	
KC-12	1		1		:	:	:			1	1		1		1		1						1	1	
KC-13				1	:	:	:			1			1		1		1					1		1	
KC-14	1		1		1	:	1	:				1		1		1							1	1	
KC-15	1		1		1	:	1	:				1		1		1		1					1	1	
KC-16	1		1		1	:	1	:		1		1		1		1		1					1	1	
KC-17				1	:	1	:								1		1						1	1	
KC-18				1	:	1	:								1		1						1	1	
KC-19				1	:	1	:	1							1		1			1				1	
KC-20		1		1	:	1	:						1		1		1			1				1	

TC- 1	1			1	:	1	:			1		1		1		1		1		1			1	1	
TC- 2	1			1	:	1	:							1		1			1		1		1	1	
TC- 3				1	:	1	:								1				1		1			1	
TC- 4					:	:	:																	1	
TC- 5	1			1	:	1	:				1		1		1		1			1		1	1	1	
TC- 6	1		1		1	:	1	:	1		1		1		1		1			1		1	1	1	
TC- 7		1		1	:	1	:	1				1		1		1							1	1	
TC- 8	1			1	:	:	:			1				1		1							1	1	
TC- 9	1			1	:	:	:			1				1		1							1	1	
TC-10				1	:	:	:				1		1		1		1						1	1	
TC-11		1		1	:	:	:			1		1		1		1			1				1	1	
TC-12	1			1	:	:	:										1						1	1	
TC-13	1		1		:	:	:			1				1		1								1	
TC-14	1			1	:	:	:				1		1		1		1						1	1	
TC-15				1	:	1	:							1		1							1	1	
TC-16				1	:	1	:							1		1		1		1	1			1	
TC-17	1			1	:	:	:								1		1			1				1	
TC-18				1	:	:	:			1		1		1		1								1	
TC-19	1			1	:	:	:				1		1		1		1						1	1	
TC-20				1	:	1	:	1				1		1		1							1	1	

%distr. 74 26 35 65 80 20 100 75 25 14 41 45 60 40 14 55 31 51 37 12 36 68 4 13 61 26

CEREAL PRODUCTION FARMERS

	19.				20.			21.		22.					23.		24.		25.						
	(1) a. b.	(2) a. b.	(3) a. b.	(4) a. b.	a.	b.	c.	a.	b.	a.	b.	c.	d.	e.	a.	b.	a.	b.	a.	b.	c.	d.			
DC-1	1	:	1	:	1	:	1	:	1						1	1	1								
DC-2		:	1	:	1	:	1	:	1						1	1	1								
DC-3		1	:	1	:	1	:	1				1			1	1	1								
DC-4	1	:	1	:	1	:	1	:	1						1	1	1								
DC-5		1	:	1	:	1	:	1							1	1	1								
DC-6		:	1	:	1	:	1	:	1						1	1	1								
DC-7		:	:	:	:	:	:	:	1			1			1	1	1								
DC-8	1	:	1	:	1	:	1	:	1						1	1	1								
DC-9	1	:	:	:	1	:	1	:	1						1	1	1								
DC-10	1	:	1	:	1	:	1	:	1			1			1	1	1								
DC-11		:	:	:	:	:	:	:	1						1	1	1								
DC-12		1	:	1	:	1	:	1							1	1	1								
DC-13		:	:	:	1	:	1	:	1			1			1	1	1								
DC-14		:	:	:	:	:	1	:	1			1			1	1	1								
DC-15	1	:	1	:	1	:	1	:	1			1			1	1	1								
DC-16		:	:	:	:	:	1	:	1						1	1	1								
DC-17		:	:	:	:	:	1	:	1						1	1	1								
DC-18		:	:	:	:	:	1	:	1						1	1	1								
DC-19		:	:	1	:	:	1	1	1						1	1	1				1	1			
DC-20		:	:	1	:	:	1	1	1						1	1	1								

KC-1	1	:	1	:	1	:	1	:	1						1	1						No springs			
KC-2	1	:	1	:	1	:	1	:	1						1	1									
KC-3	1	:	1	:	1	:	1	:	1						1	1									
KC-4	1	:	1	:	1	:	1	:	1						1	1									
KC-5	1	:	1	:	1	:	1	:	1			1			1	1									
KC-6		:	:	:	:	:	1	:	1						1	1									
KC-7	1	:	:	1	:	:	1	:	1						1	1									
KC-8		:	:	:	:	:	1	:	1						1	1									
KC-9	1	:	:	:	:	:	1	:	1						1	1									
KC-10	1	:	:	1	:	:	1	:	1						1	1						No dams			
KC-11		:	:	:	:	:	1	:	1						1	1									
KC-12	1	:	1	:	1	:	1	:	1						1	1					1				
KC-13		1	:	1	:	1	:	1	1						1	1									
KC-14		1	:	1	:	1	:	1	1						1	1									
KC-15		1	:	1	:	1	:	1	1						1	1									
KC-16	1	:	1	:	1	:	1	:	1						1	1									
KC-17		:	:	1	:	:	1	:	1						1	1									
KC-18		:	:	1	:	:	1	:	1						1	1									
KC-19		:	:	:	:	:	1	:	1						1	1									
KC-20		1	:	1	:	1	:	1	1						1	1									

TC-1		:	:	1	:	:	1	:	1			1			1	1									
TC-2		:	:	:	:	:	1	:	1			1			1	1									
TC-3		:	:	:	:	:	1	:	1						1	1					1				
TC-4		:	:	:	:	:	1	:	1						1	1									
TC-5	1	:	1	:	1	:	1	:	1			1	1		1	1									
TC-6		:	1	:	1	:	1	:	1			1	1		1	1									
TC-7		:	:	:	:	:	1	:	1			1			1	1					1				
TC-8	1	:	1	:	1	:	1	:	1			1			1	1						Gov. Stopped			
TC-9		1	:	1	:	1	:	1	1			1			1	1									
TC-10	1	:	1	:	1	:	1	:	1						1	1									
TC-11		:	:	:	:	:	1	:	1						1	1					1				
TC-12	1	:	1	:	1	:	1	:	1			1			1	1									
TC-13		:	:	:	:	:	1	:	1						1	1						1			
TC-14		1	:	1	:	1	:	1	1						1	1									
TC-15		1	:	:	:	:	1	:	1						1	1									
TC-16		:	:	:	:	:	1	:	1						1	1									
TC-17		:	:	:	:	:	1	:	1						1	1									
TC-18		:	:	:	:	:	1	:	1						1	1									
TC-19		1	:	1	:	1	:	1	1						1	1									
TC-20	1	:	1	:	1	:	1	:	1						1	1					1				

distr.	63	37	59	41	97	3	21	79	77	19	4	5	95	15	4	6	75	40	60	72	28	14	29	43	14

CEREAL PRODUCTION FARMERS

	26.		27.			28.		29.				30.			31.				32.					
	a.	b.	a.	b.	c.	d.	e.	a.	b.	a.	b.	c.	d.	a.	b.	c.	a.	b.	c.	d.	a.	b.	c.	
DC- 1		1							1						1		1						1	
DC- 2		1							1		1	1			1	1		1					1	
DC- 3		1							1		1				1		1		1				1	
DC- 4		1							1		1				1		1		1				1	
DC- 5		1							1		1				1		1		1				1	
DC- 6		1						N.A.							1		1		1				1	
DC- 7	1				1				1		1	1			1	1		1					1	
DC- 8		1							1		1	1			1		1		1				1	
DC- 9	1		1						1		1	1			1	1		1					1	
DC-10	1				1				1		1				1	1	1		1	1			1	
DC-11		1							1		1				1	1	1		1	1			1	
DC-12		1						N.A.							1		1		1				1	
DC-13		1							1		1				1		1		1				1	
DC-14	1				1	1			1		1				1		1		1				1	
DC-15	1								1		1				1		1		1				1	
DC-16	1	1			N.A.				1		1				1		1		1				1	
DC-17	1		1						1		1	1			1		1		1				1	
DC-18		1							1		1				1		1		1				1	
DC-19	1				1				1		1	1			1	1	1		1				1	
DC-20		1							1		1				1	1	1		1				1	
KC- 1		1							1		1	1	1		1	1	1		1				1	
KC- 2	1					1			1		1				1	1	1		1	1	1		1	
KC- 3	1				1	1			1		1		1		1	1	1		1	1	1		1	
KC- 4	1				1	1	1		1		1	1			1	1	1		1				1	
KC- 5	1				1	1	1		1		1	1	1		1	1	1		1				1	
KC- 6		1							1		1				1		1		1				1	
KC- 7	1				1				1		1	1			1	1		1					1	
KC- 8	1				1				1		1	1	1		1		1		1				1	
KC- 9	1				1				1		1				1		1		1				1	
KC-10	1					1			1		1	1			1		1		1				1	
KC-11	1				1				1		1				1	1	1		1	1			1	
KC-12	1				1				1		1				1		1		1				1	
KC-13		1							1		1		1		1	1	1		1				1	
KC-14	1				1				1		1	1			1	1	1		1				1	
KC-15	1				1				1		1	1			1	1	1		1				1	
KC-16	1				1	1			1		1	1			1	1	1		1				1	
KC-17		1							1		1				1		1		1				1	
KC-18		1							1		1				1	1	1		1				1	
KC-19		1							1		1	1	1		1	1	1		1				1	
KC-20	1				1				1		1	1			1		1		1				1	
TC- 1		1							1		1				1		1		1				1	
TC- 2		1							1		1				1		1		1				1	
TC- 3	1				1	1			1		1	1	1		1	1	1		1	not plowing and			1	
TC- 4		1							1		1	1			1		1		1				1	
TC- 5	1				1				1		1	1			1		1		1				1	
TC- 6		1							1		1				1	1	1		1				1	
TC- 7	1				1				1		1				N.A.		1		1				1	
TC- 8	1				1				1		1				1		1		1				1	
TC- 9		1							1		1	1	1		1		1		1				1	
TC-10	1				1	1	No Agr.Road		1		1	1	1		1	1	1		1				1	
TC-11		1							1		1				1		1		1				1	
TC-12	1				1				1		1	1	1		1		1		1				1	
TC-13	1				1				1		1				1		1		1				1	
TC-14	1				1	1			1		1				1	1	1		1				1	
TC-15	1				N.A.				N.A.		N.A.				N.A.		1		1				1	
TC-16	1					1			1		1				1	1	1		1				1	
TC-17		1							1		1				1		1		1				1	
TC-18	1				1				1		1				1		1		1				1	
TC-19	1				1				1		1				1		1		1				1	
TC-20		1							1		1				1		1		1				1	

%distri. 56 44 21 21 44 14 70 30 28 42 30 22 26 52 19 21 60 66 14 20

FRUIT PRODUCTION FARMERS

	11.			12.			13.	14.	15.	16.	17.	18.										
	a.	b.	c.	(1) a. b.:	(2) a. b.:	(3) a. b.	a. b. c.	a. b.	a. b. c.	a. b. c.	a. b. c.	a. b. c.										
DF- 1	1			1	:	:		1	1	1	1	1										
DF- 2	1			:	:	:		1	1	1		1										
DF- 3	1			:	:	:	1	1	1	1		1										
DF- 4	1			:	:	:	1	1	1	1		1										
DF- 5	1			:	:	:	1	1	1	1		1										
DF- 6	1			:	:	:	1	1	1	1		1										
DF- 7	1			:	:	:	1	N.A.	1	1		1										
DF- 8	1			:	:	:	1	1	1	1		1										
DF- 9	1			:	:	:	1	1	1	1		1										
DF-10	1			:	:	:	1	1	1	1		1										
DF-11	1	1		:	1	:		1		1	1											
DF-12	1			:	:	:	1	1	1	1		1										
DF-13	1			:	:	:	1	1	1	1		1										
DF-14	1			:	:	:	1	N.A.	1	1		1										
DF-15	1			:	:	:	1	1	1	1		1										
DF-16	1			:	:	:	1	N.A.	1	1		1										
DF-17				1	:	1		1	1	1		1										
DF-18	1			:	:	:	1	1	1	1		1										
DF-19	1			:	:	:	1	1	1	1		1										
DF-20	1			:	:	:	1	N.A.	1	1		1										

KF- 1	1			:	:	:	1	1	1	1		1										
KF- 2	1			:	:	:		1	1	1		1										
KF- 3	1			:	:	:		1	1	1		1										
KF- 4	1			:	:	:		1	1	1		1										
KF- 5	1			:	:	:		1	1	1		1										
KF- 6	1			:	:	:	1	1	1	1	1	1										
KF- 7	1			:	:	:		1	1	1		1										
KF- 8	1			:	:	:		1	1	1		1										
KF- 9	1			:	:	:	1	1	1	1		1										
KF-10	1			:	:	:		1	1	1		1										
KF-11	1			:	:	:	1	1	1	1		1										
KF-12	1			:	:	:		1	1	1	1	1										
KF-13	1			:	:	:		1	1	1		1										
KF-14	1			:	:	:		N.A.	1	1		1										
KF-15	1			:	:	:	N.A.	N.A.	N.A.	1		1										
KF-16	1	1		:	1	:	N.A.	N.A.	1	1	1	1										
KF-17	1			:	:	:	1	1	1	1		1										
KF-18	1			:	:	:		1	1	1		1										
KF-19	1			:	:	:	1	1	1	1		1										
KF-20	1			:	:	:	1	1	1	1		1										

TF- 1	1			:	:	:	1	N.A.	1	1		1										
TF- 2	1			:	:	:	1	1	1	1		1										
TF- 3	1	1		:	1	1		1	1	1	1	1										
TF- 4	1			:	:	:	1	1	1	1	1	1										
TF- 5	1	1		:	1	:	1	1	1	1	1	1										
TF- 6	1			:	:	:	1	1	1	1		1										
TF- 7	1			:	:	:	1	N.A.	1	1		1										
TF- 8	1			:	:	:	1	1	1	1		1										
TF- 9	1			:	:	:	1	1	1	1		1										
TF-10	1			:	:	:	1	1	1	1		1										
TF-11	1	1		:	:	:	N.A.	N.A.	1	1		1										
TF-12	1	1		:	1	:		1	1	1	1	1										
TF-13	1			:	:	:	1	N.A.	1	1		1										
TF-14	1	1		:	1	:	N.A.	N.A.	1	1	N.A.	1										
TF-15	1			:	:	:	1	1	1	1		1										
TF-16	1			:	:	:	1	1	1	1		1										
TF-17	1			:	:	:	1	N.A.	1	1		1										
TF-18	1			:	:	:	1	1	1	1		1										
TF-19	1			:	:	:	1	1	1	1		1										
TF-20	1			:	1	:		N.A.	1	1		1										

%distr.	85	10	5	100	100	100	8	58	34	46	54	28	60	12	78	15	7	9	91	15	54	31

FRUIT PRODUCTION FARMERS

	19.				20.	21.	22.		23.	24.	25.	
	(1) a. b.	(2) : a. b.	(3) : a. b.	(4) : a. b.	a. b. c.	a. b.	a. b. c. d.	e.	a. b.	a. b.	a. b. c.	d.
DF- 1	1	: 1	: 1	: 1		1			1	1		
DF- 2	1	: 1	: 1	: 1	1	1		1	1			
DF- 3		1 : 1	: 1	: 1	1	1	1		1	1		
DF- 4		1 : 1	: 1	: 1	1	1	1		1	1		
DF- 5		1 : 1	: 1	: 1	1	1	1		1	1		
DF- 6		1 :	1 : 1	: 1	1	1	1		1	1		
DF- 7		1 :	1 : 1	: 1	1	1	N.A.		1	1		
DF- 8	1	: 1	: 1	: 1	1	1	1		1	1		
DF- 9	1	: 1	: 1	: 1	1	1	N.A.		1	1		
DF-10		1 :	1 : 1	: 1	1	1	N.A.		1	1		
DF-11		1 :	1 : 1	: 1	1	1	1		1	1		1
DF-12	1	:	1 : 1	: 1	1	1	1		1	1		
DF-13	1	: 1	:	1 :	1	1	1		1	1		
DF-14	1	: 1	: 1	: 1	1	1	1		1	1		1
DF-15	1	:	1 : 1	: 1	1	1	1		1	1		
DF-16		1 : 1	: 1	: 1	1	1	1		1	1		
DF-17		1 : 1	: 1	: 1	1	1	1 1		1	1		1
DF-18		1 : 1	: 1	: 1	1	1	1		1	1		
DF-19	1	:	1 : 1	: 1	1	1	1		1	1		
DF-20	1	: 1	: 1	: 1	1	1	1		1	1		

KF- 1		1 : 1	: 1	: 1	1	1	1		1	1		
KF- 2	1	: 1	: 1	: 1	1	1	N.A.		1	1		
KF- 3	1	: 1	: 1	: 1	1	1	N.A.		1	1		
KF- 4	1	: 1	: 1	: 1	1	1	N.A.		1	1		
KF- 5	1	: 1	: 1	: 1	1	1	N.A.		1	1		
KF- 6		1 : 1	: 1	: 1	1	1	N.A.		1	1		
KF- 7	1	: 1	: 1	: 1	1	1			1	1		
KF- 8	N.A.	: N.A.	: N.A.	: N.A.	1	1			1	1		
KF- 9		1 :	1 : 1	: 1	1	1			1	1		
KF-10		1 :	1 : 1	: 1	1	1			1	1		
KF-11	1	:	1 : 1	: 1	1	1	1 1		1	1		
KF-12	N.A.	: N.A.	: N.A.	: N.A.	1	1			1	1		
KF-13		1 : 1	: 1	: 1	1	1	N.A.		1	1		
KF-14		1 :	1 : 1	: 1	1	1			1	1		
KF-15		1 :	1 : 1	: 1	1	1			1	1		
KF-16		1 : 1	: 1	: 1	1	1			1	1		
KF-17		1 : 1	: 1	: 1	1	1			1	1		
KF-18	1	:	1 : 1	: 1	1	1	N.A.		1	1		
KF-19	1	: 1	: 1	: 1	1	1			1	1		
KF-20	1	: 1	: 1	: 1	1	1			1	1		

TF- 1	1	: 1	: 1	: 1	1	1	1		1	1		1
TF- 2		1 : 1	: 1	: 1	1	1		1	1	1		
TF- 3	N.A.	: 1	: 1	: 1	1	1	1 1		1	1		
TF- 4	1	:	1 : 1	: 1	1	1			1	1		
TF- 5		1 :	1 : 1	: 1	1	1	1		1	1		
TF- 6	1	: 1	: 1	: 1	1	1	1		1	1		
TF- 7		1 : 1	: 1	: 1	1	1			1	1		
TF- 8		1 : 1	: 1	: 1	1	1			1	1		
TF- 9		1 : 1	: 1	: 1	1	1	1		1	1		
TF-10		1 :	1 : 1	: 1	1	1			1	1		
TF-11	1	: 1	: 1	: 1	1	1			1	1		
TF-12	1	: 1	: 1	: 1	1	1			1	1		
TF-13		1 : 1	: 1	: 1	1	1			1	1		
TF-14	N.A.	: N.A.	: N.A.	: N.A.	1	1			1	1		
TF-15		1 : 1	: 1	: 1	1	1			1	1		
TF-16	1	:	1 : 1	: 1	1	1			1	1		
TF-17		1 :	1 : 1	: 1	1	1			1	1		
TF-18	1	: 1	: 1	: 1	1	1	N.A.		1	1		
TF-19		1 : 1	: 1	: 1	1	1	N.A.		1	1		
TF-20	1	: 1	: 1	: 1	1	1	N.A.		1	1		

50 50 71 29 96 4 34 66 46 50 4 7 93 2 30 6 9 53 67 33 93 7 33 33 34

FRUIT PRODUCTION FARMERS

	26.		27.			28.		29.				30.			31.						
	a.	b.	a.	b.	c.	d.	e.	a.	b.	a.	b.	c.	d.	a.	b.	c.	a.	b.	c.	d.	
DF- 1	1							1		1				1	1				1		
DF- 2	1							1	1					1		1			1		
DF- 3	1							1	1					1		1			1		
DF- 4	1			1				1		1				1		1			1		
DF- 5	1		1					1		1	1			1		1			1		
DF- 6	1							1		1				1		1			1		
DF- 7	1		1	1				1		1				1	1	1			1	1	
DF- 8	1			1				1		1				1	1	1			1	1	
DF- 9	1			1				1		1				1		1			1		
DF-10	1			1	1			1		1				1	1	1			1	1	
DF-11	1							1	1	1	1	family problems		1	1	1			1	1	
DF-12	1							1	1	1				1	1	1			1	1	
DF-13	1							1		1				1		1			1		
DF-14	1							1		1				1	1	1			1		
DF-15	1			1				1		1				1		1			1		
DF-16	1	1						1	1	1				1		1			1	1	
DF-17	1		1	1				1		1				1	1	1			1		
DF-18	1							1		1				1		1			1		
DF-19	1							1		1				1		1			1		
DF-20	1							1	1	1	1			1		1			1		
KF- 1	1		1	1				1	1	1				1	1	1			1	1	1
KF- 2	1			1				1		1				1		1			1		
KF- 3	1			1				1		1	1			1		1			1		
KF- 4	1			1				1		1				1		1			1		
KF- 5	1			1				1		1				1		1			1		
KF- 6	1		1	1	1			1		1				1	1	1			1	1	
KF- 7	1			1				1		1	1	1		1	1	1			1	1	
KF- 8	1		1	1	1			1		1	1	1		1	1	1			1	1	farmers ignoran
KF- 9	1			1	1			1		1				1	1	1			1	1	
KF-10	1			N.A.				1		1				1	1	1			1	1	
KF-11	1	1						1		1				1	1	1			1	1	
KF-12	1		1					1		1	1			1	1	1			1	1	
KF-13	1		1					1		1				1		1			1	1	
KF-14	1	1						1		1				1		1			1	1	
KF-15	1		1					1		1	1			1		1			1	1	
KF-16	1			1				1		1	1			1		1			1	1	
KF-17	1		1					1		1	1			1		1			1	1	
KF-18	1		1					1		1	1			1		1			1	1	
KF-19	1		1	1				1		1	1			1		1			1	1	
KF-20	1		1	1				1		1	1			1	1	1			1	1	
TF- 1	1	1						1						1	1	1			1	1	1
TF- 2	1			1				1						Increased		1			1	1	1
TF- 3	1	1						1						Increased		1			1	1	1
TF- 4	1			1				1		1	1			1		1			1	1	1
TF- 5	1		1					1						Increased		1			1	1	1
TF- 6	1	1						1		1				1	1	1			1	1	1
TF- 7	1							1		1				1	1	1			1	1	1
TF- 8	1							1		1				1		1			1	1	1
TF- 9	1		1					1		1				1		1			1	1	1
TF-10	1			N.A.				1		1				Increased		1			1	1	1
TF-11	1	1						1		1				1		1			1	1	1
TF-12	1			1				1		1		1		1		1			1	1	1
TF-13	1		1	1				1	1	1				1		1			1	1	1
TF-14	1			1		No water		1		1				1		1			1	1	1
TF-15	1			1				1		1				1	1	1			1	1	1
TF-16	1			1		No road		1		1	1	1		1		1			1	1	1
TF-17	1	1						1		1				N.A.		1			1	1	1
TF-18	1							1		1				1		1			1	1	1
TF-19	1		1	1	1			1		1	1	1		1	1	1			1	1	1
TF-20	1		1					1		1				1	1	1			1	1	1
	63	37	6	31	49	14		54	45	38	44	18		28	34	38	16	33	51		

FRUIT PRODUCTION FARMERS

	32.			33.		34.		35.			36.			
	a.	b.	c.	a.	b.	a.	b.	a.	b.	c.	a.	b.	c.	d.
DF- 1	1			1		1		1			1	1		
DF- 2	1			1		1		1			1	1		
DF- 3	1			1		1		1			1			
DF- 4	1			1		1		1			1			
DF- 5	1			1		1		1					1	
DF- 6		1		1		1		1						
DF- 7	1			1		1		1			1	1		
DF- 8	1			1	1	1		1			1	1		
DF- 9	1			1		1		1			1			
DF-10		1		1		1		1					N.A.	
DF-11		1		1		1		1			1			
DF-12	1			1		1		1			1	1		
DF-13			1	1		1		1						
DF-14	1			1		1		1			1	1		
DF-15	1			1		1		1						
DF-16		1		1	1	1		1					N.A.	
DF-17	1			1		1		1						
DF-18	1			1		1		1						
DF-19	1			1		1		1						
DF-20		1		1		1		1						

KF- 1	1			1		1		1			1			
KF- 2	1			1		1		1			1			
KF- 3	1			1		1		1			1			
KF- 4		1		1		1		1			1			
KF- 5		1		1		1		1			1			
KF- 6	1			1		1		1			1			
KF- 7				1		1		N.A.			1			
KF- 8	1			1		1		N.A.			N.A.			
KF- 9			1	1		1		N.A.			1			
KF-10		1		1		1		N.A.			1			
KF-11	1			1		1		1						
KF-12	1			1		1		1			1	1		
KF-13	1			1		1		1			1			
KF-14	1			1		1			1			1		
KF-15			1	1		1		1				1		
KF-16	1			1		1		1				1		
KF-17	1			1		1			1		1			
KF-18	1			1		1		1			1	1		
KF-19	1			1		1		1			1			
KF-20	1			1		1		1						

TF- 1	1			1		1		1						
TF- 2	1			1		1		1			1		1	
TF- 3	1			1	1	1			1		1	1		
TF- 4	1			1		1		1					1	
TF- 5	1			1		1			1		1			
TF- 6	1			1		1		1			1			
TF- 7			1	1		1		1			1	1		
TF- 8	1			1		1		1						
TF- 9	1			1	1	1			1				1	
TF-10			1	1		1		1						
TF-11	1			1		1		1			1	1	1	
TF-12	1			1		1		1				1		
TF-13	1			1		1		N.A.			N.A.			
TF-14	1			1		1		N.A.			1			
TF-15	1			1		1		1						
TF-16	1			1		1			1					
TF-17	1			N.A.		1		1			1			
TF-18	1			1		1		1						
TF-19	1			1		1		1			1	1		
TF-20	1			1		1		1						

	78	14	8	90	10	47	53	29	58	13	36	53	11	

ANIMAL HUSBANDRY FARMERS

	12.			13.					14.	15.	16.	17.	18.	19.					20.						
	a.	b.	c.	a.	b.	c.	d.	e.						f.	g.	h.	a.	b.	c.	d.	e.	a.	b.	c.	d.
DA- 1							1		Water Tank	1	1	1	1	1			1				1				
DA- 2	1						1		Water Tank	1	1	1	1	1							1				
DA- 3							1	1	Water Tank	1	1	1	1	1							1				
DA- 4							1	1	Water Pipe	1	1	1	1	1							1				
DA- 5							1	1	Water Pipe	1	1	1	1	1							1				
DA- 6							1	1	Water Tank	1	1	1	1	1							1				
DA- 7							1	1	Water Tank	1	1	1	1	1							1				
DA- 8							1	1	Water Tanks	1	1	1	1	1			1	1			1				
DA- 9	1							1	Springs	1	1	1	1	1							1				
DA-10							1		Tanks	1	1	1	1	1			1	1			1				
DA-11							1		Sistern	1	1	1	1	1			1	1			1				
DA-12							1		Sistern	1	1	1	1	1			1	1			1				
DA-13	1						1	1	Well	1	1	1	1	1			1	1			1				
DA-14	1						1	1	Spring	1	1	1	1	1			1	1			1				
DA-15	1						1	1	Tanks	1	1	1	1	1			1	1			1				
DA-16							1	1	Water Pipe	1	1	1	1	1			1	1			1				
DA-17							1	1	Tanks	1	1	1	1	1										1	
DA-18							1	1	Sistern	1	1	1	1	1							1				
DA-19							1	1	Tanks	1	1	1	1	1							1				
DA-20	1						1		N.A.	1	1	1	1	1							1				
KA- 1							1	1	Tanks	1	1	1	1	1							1				
KA- 2							1	1	Tanks	1	1	1	1	1							1				
KA- 3							1	1	Tanks	1	1	1	1	1							1				
KA- 4							1	1	Pipes	1	1	1	1	1							1				
KA- 5							N.A.		Pipes	1	1	1	1	1							1				
KA- 6							1	1	Pipe&Tanks	1	1	1	1	1			1	1			1				
KA- 7							1	1	Pipe	1	1	1	1	1							1				
KA- 8							1	1	Water pipes	1	1	1	1	1			1	1			1				
KA- 9	N.A.						1	1	Sistern	1	1	1	1	1							1				
KA-10	N.A.						1	1	Sistern	1	1	1	1	1							1				
KA-11							1	1	Water Tanks	1	1	1	1	1							1				
KA-12							1	1	Water Pipes	1	1	1	1	1							1				
KA-13	1						1	1	Sistern	1	1	1	1	1							1				
KA-14							1	1	Water Pipes	1	1	1	1	1							1				
KA-15	1						1	1	Water Pipes	1	1	1	1	1							1				
KA-16	1						1	1	Water Pipes	1	1	1	1	1							1				
KA-17							1	1	Water Pipes	1	1	1	1	1							1				
KA-18							1	1	Water Pipes	1	1	1	1	1							1			1	
KA-19							1	1	Water Pipes	1	1	1	1	1							1				
KA-20							1	1	Well	1	1	1	1	1							1				
TA- 1							1		Well	1	1	1	1	1							1				
TA- 2								1	Springs	1	1	1	1	1							1				
TA- 3	N.A.						1	1	Water Pipes	1	1	1	1	1							1		1		
TA- 4								1	Water Tanks	1	1	1	1	1							1				
TA- 5	1						1	1	Tanks	1	1	1	1	1							1				
TA- 6								1	Water Tanks	1	1	1	1	1							1				
TA- 7							1	1	Tanks	1	1	1	1	1										1	
TA- 8								1	Pools & Spr	1	1	1	1	1							1				
TA- 9							1	1	Spring	1	1	1	1	1							1				
TA-10	1						1	1	Sistern	1	1	1	1	1							1		1		
TA-11								1	Spring	1	1	1	1	1							1			1	
TA-12								1	Sistern	1	1	1	1	1							1				
TA-13	1						1	1	Spring-Tanks	1	1	1	1	1							1				
TA-14							1	1	Tanks	1	1	1	1	1							1				
TA-15	1							1	Tanks	1	1	1	1	1							1				
TA-16	1							1	Tanks-Spring	1	1	1	1	1							1				
TA-17	1	1						1	Spring	1	1	1	1	1							1				
TA-18	1						1	1	Tanks	1	1	1	1	1							1		1		
TA-19								1	Spring	1	1	1	1	1							1				
TA-20	1							1	Tanks	1	1	1	1	1							1				

%distr. 71 29

7 17 26 34 2 15

75 25

31 69

95 5

39 61 84

8 8

90 5 5

ANIMAL HUSBANDRY FARMERS

	21.		22.		23. (1) : (2)		24.		25.				26.				27.				28.	
	a.	b.	a.	b.	a.	b.	a.	b.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.
DA- 1	1		1		1	:	1	1	1	1			N.A.			1					1	
DA- 2	1		1	1	1	:	1	1		1			N.A.			N.A.					1	
DA- 3	1		1		1	:	1	1	1	1				1							1	
DA- 4	1		1		1	:	1	1		1			N.A.			1					1	
DA- 5		1				:		1	1	1			No Sell			No Sell						1
DA- 6	1		1		1	:	1	1		1			N.A.			1					1	
DA- 7	1		1		1	:	1	1	1	1			N.A.			1					1	1
DA- 8		1				:		1	1	1			1			1	1				1	
DA- 9	1		1		1	:	1	1	1	1			N.A.			1					1	
DA-10	1		1		1	:	1	1	1	1	1		1	1				1	1		1	
DA-11	1		1		1	:	1	1	1	1	1		1	1	1				1		1	
DA-12	1		1		1	:	1	1	1	1			1			1					1	
DA-13		1				:		1	1	1			1			1	1				1	
DA-14	1		1		1	:	1	1		1			N.A.			1					1	
DA-15	1		1		1	:	1	1	1	1			N.A.			N.A.						1
DA-16	1		1		1	:	1	1	1	1	1		N.A.			1					1	
DA-17	1		1		1	:	1	1	1	1	1		N.A.			1					1	
DA-18	1		1		1	:	1	1		N.A.			N.A.			1	1				1	
DA-19		1				:		1	1	N.A.			N.A.			1					1	
DA-20	1		1		1	:	1	1	1	1	1		1			1	1				1	
KA- 1	1		1		1	:	1	1	1	1			1	1		N.A.					1	
KA- 2	1		1		1	:	1	1		N.A.			1	1	1						1	
KA- 3	1		1		1	:	1	1	1	1			1	1	1						1	
KA- 4	1		1		1	:	1	N.A.		N.A.			1	1	1		N.A.				1	
KA- 5	1		1		1	:	1	1	1	1	1		1			1			1		1	
KA- 6		1				:		1	1	1	1		1			1					1	
KA- 7		1				:		1	1	1			1			1					1	
KA- 8		1				:		1	1	1			1			N.A.					1	
KA- 9		1				:		1	1	1			1			1					1	
KA-10		1				:		1	1	1			1			1					1	
KA-11	1		1		1	:	1	1	1	1	1					1			1		1	
KA-12		1				:		1	1	1			1			1					1	
KA-13		1				:		1	1	1			1			1					1	
KA-14		1				:		1	1	1			1			1					1	
KA-15		1				:		1	1	1			1			1					1	
KA-16		1				:		1	1	1			1			1					1	
KA-17		1				:		N.A.	1	1			1			1	1				1	
KA-18		1	N.A.		N.A.	:	N.A.	1	1	1			N.A.			1					1	
KA-19	1		1		1	:	1	1	1	1	1					1					1	
KA-20	1		1		1	:	1	1	1	1	1					1					1	
TA- 1	1		1		1	:	1	1		No Sell				1		No Sell					1	
TA- 2	1		1		1	:	1	1	1	1			1			1					1	
TA- 3	1		1		1	:	1	1	1	1			1	1	1		1	1	1	1	1	
TA- 4	1		1		1	:	1	1	1	1	1					1					1	
TA- 5		1			N.A.	:	N.A.	1	1	1	1										1	
TA- 6	1		1		1	:	1	1	1	1						1					1	
TA- 7	1		1		1	:	1	1	1	1				1							1	
TA- 8	1		1		1	:	1	1	1	1			1			1					1	
TA- 9	1		1		1	:	1	1	1	1	1		1			1					1	
TA-10	1		1		1	:	1	1	1	1			1			1					1	
TA-11	1		1		1	:	1	1	1	1			1			1					1	
TA-12	1		1		1	:	1	1	1	1			1			1					1	
TA-13	1		1		1	:	1	1	1	1			1			1					1	
TA-14	1		1		1	:	1	1	1	1			1			1					1	
TA-15	1		1		1	:	1	1	1	1			1			1					1	
TA-16	1		1		1	:	1	1	1	1	1		1	1	1		1	1	1		1	
TA-17	1		1		1	:	1	1	1	1	1		1	1	1		1	1			1	
TA-18	1		1		1	:	1	1	1	1			1			1					1	
TA-19		1				:		1	1	1			1			1					1	
TA-20		1				:		1	1	1			1			1					1	

%distr. 68 32 88 12 73 27 27 73 59 41 47 30 20 2 22 33 29 16 48 25 19 8 86 14

ANIMAL HUSBANDRY FARMERS

	29.			30.		31.		32.			33.				34.		35.		36.		37.				38.	
	a.	b.	c.	a.	b.	a.	b.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	a.	b.	a.	b.	c.	d.	a.	b.	
DA- 1	1			1				1		1	1	1			1		1		1		1	1			1	
DA- 2		1		1				1							1		1		1						1	
DA- 3	1			1					1						1		1		1		1	1	1		1	
DA- 4	1			1		N.A.			1			1			1		1		1		1	1		1		
DA- 5	N.A.			1				1			N.A.		N.A.		N.A.		N.A.		N.A.		No Answer			N.A.		
DA- 6	1			1				1	1	1	1				1		1		1		No Answer			1		
DA- 7	N.A.			1		N.A.		1			N.A.				1		1		1		1			1		
DA- 8				1					1		1	1			1		1							1		
DA- 9	1		1			1		1			N.A.				1		1		N.A.		No Answer			N.A.		
DA-10	N.A.			1		N.A.			1			1			1		N.A.		N.A.		No Answer			1		
DA-11	1			1				1				1			1									1		
DA-12		1		1		N.A.		1				N.A.			1						No Answer			1		
DA-13	1			1					1			1			1									1		
DA-14	1			1					1	1					1						No Answer			1		
DA-15	N.A.			1					1		1	1			1		1		1		1	1		1		
DA-16	1			1					1		1	1			1		1		1		1	1		1		
DA-17	1			1				1		1	1				1		1		1		1	1		1		
DA-18	1			1		1			1		1	1			1		1		1		1	1		1		
DA-19	1			1		N.A.			1		1	1			1		1				No Answer			1		
DA-20	N.A.			1		N.A.			1			1			1		1							N.A.		
KA- 1	1			1		N.A.		1		1	1				1		1		N.A.		No Answer			1		
KA- 2	1			1		N.A.		1			1				1		1		N.A.					1		
KA- 3	1			1		N.A.		1		1					1		1							1		
KA- 4				1		N.A.		1		1	1				1		1							1		
KA- 5	1			1					1		1				1		1							1		
KA- 6	1			1		N.A.			1		1				1		1							1		
KA- 7	1			1					1			N.A.			1									1		
KA- 8	1			1					1		1				1		1							1		
KA- 9		1		1		N.A.			1		1				1		1							1		
KA-10		1		1		N.A.			1		1				1		1							1		
KA-11	1			1					1		1				1		1							1		
KA-12				1					1	1					1		1							1		
KA-13		1		1				1							1		1							1		
KA-14				1				1							1									1		
KA-15		1		1					1		1				1		1							1		
KA-16		1		1					1		1				1		1							1		
KA-17	1			1					1		1				1		1							1		
KA-18	1			1		N.A.			1		1				1		1							1		
KA-19	1			1					1		1				1		1				No Answer			1		
KA-20	1			1					1		1				1		1							1		
TA- 1	1			1					1	1					1		1			1				1		
TA- 2	1			1					1		1				1		1							1		
TA- 3	1			1				1							1		1			1		1		1		
TA- 4	1			1					1		1	1			1		1							1		
TA- 5	1			1				1							1									1		
TA- 6				1					1						1		1							1		
TA- 7				1					1						1		1							1		
TA- 8				1				1							1		1							1		
TA- 9	1			1					1						1		1							1		
TA-10	1		1			1			1		1				1		1			1				1		
TA-11				1					1						1		1							1		
TA-12	1			1					1						1		1							1		
TA-13	1			1					1						1		1							1		
TA-14				1					1		1				1		1							1		
TA-15	1			1					1		1				1		1							1		
TA-16	1			1					1		1				1		1							1		
TA-17	1			1					1		1				1		1			1				1		
TA-18	1			1					1		1				1		1			1				1		
TA-19	1			1					1		1				1		1			1				1		
TA-20	1			1					1		1				1		1			1				1		
%distr.	85	15		3	97	66	43	14	30	56	11	27	59	3	93	7	43	57	52	48	11	42	47	96	4	

