E.5 AGRICULTURAL DEVELOPMENT PLAN

E.5.1 The Project Area

As for the Project formulation, preliminary technical and economic evaluation is made for 153 Oases as discussed in Chapter 4 of the Main Report, and shown in Table E.5.1.1 and E.5.1.2. The results from assessment of 153 Oases (23,435 ha) are classified to four (4) ranks for the proposed irrigation/ drainage and agricultural development plans. The total number, area and ranking of the Oasis are shown below ;

Governorate / Delegation	Project Oasis No	Project Oasis Area (ha)	Ranking A	Ranking B	Ranking C	Ranking D
			(No. of Oasis)			
Gafsa Governorate :	8	3,467	1	6	1	0
Gafsa Sud	2	1,401	0	2	0	0
El Guetar	1	450	0	1	0	0
Ksar	2	1,278	0	2	0	0
Metolaoui	2	121	0	1	1	0
Redeyef	1	217	1	0	0	0
Tozeur Governorate :	30	5,622	5	5	11	9
Tozeur	10	1,860	1	3	5	1
Nefta	5	1,602	1	0	1	3
Hazoua	4	436	2	0	2	0
Degache	6	1,519	1	2	3	0
Tamerza	5	205	0	0	0	5
Kebili Governorate :	67	7,213	14	23	23	7
Souk Lahad	14	1,824	4	7	3	0
Kebili Nord	12	1,306	1	7	4	0
Kebili Sud	18	1,987	8	2	8	0
Douz	13	1,265	1	2	4	6
Faoaur	10	831	0	5	4	1
Gabes Governorate :	48	7,133	5	18	21	4
Gabes Est	5	750	0	2	3	0
Gabes Ouest	5	1,096	2	2	1	0
Ghahhouch	5	1,085	1	3	1	0
Metouia	3	763	1	1	1	0
El Hamma	11	1,555	1	5	5	0
Mareth	17	1,794	0	5	10	2
Matmata	2	90	0	0	0	2
Total	153	23,435	25	52	56	20

E.5.2 Proposed Crops and Cropping Pattern

As stated Chapter E.4.2, no new crop would be introduced. And it is clarified that water supply is still lower than the water requirement of crops and it will be still less than 75 % of water requirement of crops. Therefore, it is very difficult to increase the planted area of field crops. In addition, almost of tree crops reach the maximum production stage and a part of trees increase their

fruit production, it is not practical to change tree crop area. Therefore, there is no difference in crops and planted area of crops between under with project condition.

The surface area of the project area is 23,435 ha, and cropping intensity can be computed 1.48. The planted area of crops by Oasis under with project is shown in Table E.5.2.1, and summarized below.

(Unit : ha)

Item	Gafsa Governorate	Tozeur Governorate	Kebili Governorate	Gabes Governorate	Total
Total Area :	3,467	5,622	7,213	7,133	23,435
Arboriculture	3,432	5,622	7,213	7,133	23,400
Fodder crops	886	311	2,850	1,620	5,667
Vegetables	1,031	568	2,067	1,485	5,161
Industrial crops	0	0	0	452	452
Total Planted area :	5,359	6,501	12,130	10,690	34,680
Cropping Intensity	1.55	1.16	1.68	1.50	1.48

Source: Resultas de l'enquete sur le suive de la campagne agricole 1993/94

E.5.3 Proposed Farming Practice and Farm Input

Farming practices in the project area are so extensive at present and the land is efficiently utilized. As already mentioned, since there is no big change in cropping pattern, cultural practice would be slightly changed. As the yield of crops increases with an increase of irrigation achievement, requirement of farm input would increase. Cropping season of field crops, maintenance of arbors and farming practice would not be changed. The farm input and labour requirement are shown in Table E 5.3.1. As seen in Table E 5.3.1, amount of fertilizer application increases at the rate of about 20 %, labour requirement for harvesting and post harvest treatment would increase and labour requirement for water management would decrease.

E.5.4 Crop Yield and Production

Present yield of crops in the project area remains at relatively low yield with some exception, due to unfavourable water supply. After the completion of project work, the yield of crops is proportionally increased with an increase of irrigation achievement. As stated in E.3.7, the yield of crops is presented by an exponential function of irrigation efficiency (y = ax^n). Referring many informations of research institutions in Tunisia and some countries on the relationship between crop yield and its limiting factors, above mentioned assumption could be correct. Therefore, the crop yield is estimated by computation applied by the relationship between the crop yield and irrigation

efficiency (y = ax^n). Constant "n" shows a contribution of irrigation efficiency to the crop yield and "a" shows a yield level of each crops in each governorate. There is very little difference in "n" among the crops and among the governorates. On the other hand, there is a big difference in "a" among the crops and among the governorates. Therefore, there is a big difference in yield increase with an increase of irrigation efficiency among the crops (Fig. E. 5.4.1.).

For example, when the irrigation efficiency increases from 47 % (average value at present) to 67 % (average value after completion of the project), changes of average value of crop yield (average value of 153 Oases) are shown below.

(Unit: tons/ha)

Item	Irrigation Efficiency (47%)	Irrigation Efficiency (67%)	Yield Increase
Date palm	5.9	6.5	0.6
Olive	6.1	6.7	0.6
Pomerranate	10.3	11.5	1.1
Apricot	11.8	12.9	1.1
Fig and others	4.2	4.6	0.4
Carrot/turnip	21.0	23.2	2.2
Onion	21.3	23.6	2.3
Kidney bean	10.4	11.5	1.1
Pepper	9.3	10.2	1.1
Tomato	21.0	23.2	2.2
Lucerne	54.9	61.2	6.4

Source: JICA study team estimation

In larger part of Oases, there is a problem on salts accumulation in soil surface due to unfavorable drainage system. It can be easily assumed that the crop yield will decrease by accumulation of salts in soil surface, under no improvement of unfavorable condition. The good drainage system is highly required for the Oases with unfavourable drainage system and salinity prone. The yield decreasing rate varies with salts accumulation in soil surface and requirement of improvement of drainage canal. It can be estimated that the yield decreasing rate in each Oasis is estimated by the grade of soil accumulation in soil surface. The electric conductivity of soil solution (Ec) increases with an increase of salts accumulation. There is a definite relationship between crop yield and Ec (FAO 1976). It could be estimated that Ec of Oases with high accumulation of salts in soil surface becomes 2 to 2.5 times of present condition in year of 2022 (25 years after implementation of construction) and yield decreasing rate is estimated as 15 %. It could be also estimated that Ec of Oases, with relatively high, relatively low acumulation of

salts in soil surface becomes 1.5 to 2 times, 1.2 to 1.5 times and 1.2 times of present condition, respectively and yield decreasing rate becomes 10 %, 5 % and 2.5 % of the present yield, respectively.

The target yield of crops grown under With Project and the estimated yield of crops under Without Project by Oasis are shown in Table E 5.4.1 and Table E 5.4.2, and summarized below.

(Unit: tons/ha)

Crops	Witout Project	With Project	Increment
1. Arboriculture :			
- Date Palm	5.7	6.5	0.8
- Olive	6.0	6.7	0.7
- Pomegranate	10.0	11.5	1.5
- Apricot	11.6	12.9	1.3
- Fig and others	4.1	4.6	0.5
2. Vegetables :			
- Carrot/Turnip	20.4	23.2	2.8
- Onion	20.8	23.6	2.8
- Kidney Bean	10.3	11.5	1.2
- Pepper	9.1	10.2	1.1
- Tomato	20.8	23.2	2.4
3. Fodder Crops :			
- Lucerne	54.5	61.2	7.5
4. Industrial Crops :			
- Henna	1.4	1.7	0.3

Since there is no change in the planted area of each crop, the amount of crop production under With Project condition increases with proportionally increase of crop yield. On the other hand, the yield of crops grown under without project condition can be decreases with proportionally decrease of yield. Therefore, the difference in the crop production between With and Without Project would increase. The amount of production of crops grown under With and Without Project condition by Oasis are shown in Tables E 5.4.3 and E 5.4.4, and summarized below. The amount of production of crops increased by project is shown in Table E 5.4.5, and summarized below.

(Unit : tons)

Item	Gafsa Governorate	Tozeur Governorate	Kebili Governorate	Gabes Governorate	Total
1. Arboriculture :					
- Date	868	3,702	4,539	2,527	11,635
- Olive	1,798	73	113	1,002	2,986
- Pomegranate	122	48	62	3,338	3,569
- Apricot	198	17	13	221	448
- Fig et al	86	69	70	274	500
2. Vegetables :					
- Carrot/Turnip	504	208	722	1,570	3,004
- Onion	456	224	1,015	1,717	3,412
- Kidney bean	261	49	220	149	679
- Pepper	306	144	460	753	1,663
- Tomato	633	171	496	582	1,882
3. Fodder crops :					
- Luverne	5,185	3,103	16,396	12,875	37,559
4. Industrial Crops :					
- Henna				128	128

Source: JICA study team estimation

E.5.6 Future Crop Production Value

Crop production benefit could accrue from the optimum irrigation water use by improvement of field irrigation and drainage canals in Oasis area, organized irrigation activities by farmer associations, and improvement of farming practices and productivity. Financial crop production budgets per ha for irrigated conditions are prepared under without and with project conditions on the basis of farm input requirement, present and future yields, and financial farm gate prices of farm inputs and products. For the arboriculture, weighted average net production value (net return) for the whole useful life period (25 years) in each species is adopted evenly throughout the project life since replanting of trees will be taken place at any time as required. Financial net crop production value per ha under Without Project and With Project conditions for each crop are estimated as shown in Tables K.2.2.1 (1 to 7) in ANNEX-K and E.5.5.1, and summarized as follows :

(D. /ha)

Items	Without Project			With Project			Increment		
	GPV	PC	NPV	GPV	PC	NPV	GPV	PC	NPV
1. Arboriculture :									
- Date	4,662	583	4,079	5,305	790	4,515	643	207	436
- Olive	1,914	394	1,520	2,133	494	1,639	219	100	119
- Pomegranate	2,273	644	1,629	2,655	740	1,915	382	96	286
- Apricot	4,869	771	4,098	5,411	892	4,519	542	121	421
- Fig	1,296	553	743	1,450	692	758	154	139	15
2. Vegetables :									
- Turnip/ Carrot	4,020	758	3,262	4,523	866	3,657	502	108	394
- Onion	3,906	824	3,082	4,427	871	3,556	521	47	474
- Kidney Bean	3,848	642	3,206	4,329	880	3,449	481	238	243
- Pepper	8,041	1,465	6,576	9,002	1,526	7,476	961	61	900
- Tomato	6,479	1,025	5,454	7,254	1,133	6,121	775	108	667
3. Fodder Crops :									
- Lucerne	2,883	628	2,255	3,461	789	2,672	578	161	417
4. Industrial Crops :									
- Henna	2,575	680	1,895	3,126	871	2,255	552	191	361

Remarks : GPV ; Gross Production Value, PC ; Production Cost, NPV ; Net Production Value.

Applying the net production value per ha for each crop to those planted area, the total production value or net return to accrue from crop production will be calculated on the both the future Without and With Project conditions. Annual irrigation benefit at full development stage is estimated. Irrigation benefit for 153 Oases in four (4) Governorates are shown Tables E.5.5.2 and E.5.5.3, and summarized as below.

(Unit : '000)

Item	Gafsa Governorate	Tozeur Governorate	Kebili Governorate	Gabes Governorate	Total
1. Without Project Condition:					
Gross Prod. Value	25,400	33,420	53,250	44,990	157,060
Production Cost	3,230	4,030	8,000	6,770	22,030
Net Produ. Value	22,170	29,390	45,250	38,220	135,030
2. With Project Condition :					
Gross Prod. Value	28,200	37,730	59,840	51,600	177,370
Production Cost	3,920	5,240	10,090	8,300	27,550
Net Produ. Value	24,280	32,490	49,750	43,300	149,820
3. Increment :					
Gross Prod. Value	2,800	4,310	6,590	6,610	20,310
Production Cost	690	1,210	2,090	1,530	5,520
Irrigation Benefit	2,110	3,100	4,500	5,080	14,790
Irrigation Benefit per Ha : (D. /ha)	610	550	620	710	630

Remark : Produ. ; Production

Table E.2.3.1 Agricultural Land Use

Governorate	Total Land Area	Arable land ('000 ha)							Area Ratio of Cultivated Land to Total Area and Agricultural Area				
		Cultivated	Fallow Temporary	Fallow Permanent	Sub-total	Forest	Others	Total					
	(1)	(2)			(3)			(4)	(4/1)	(2/3)	(2/1)	(2/4)	(3/4)
Tunis	29	7	1	1	9	2		11	37%	80%	25%	69%	86%
Ariana	159	100	11		111	5	16	132	83%	90%	63%	76%	84%
Benarous	69	32	1	3	36	4	18	58	84%	89%	47%	55%	62%
Nabeul	284	165	2	13	180	22	45	247	87%	92%	58%	67%	73%
Bizerte	375	198	2	8	208	38	86	332	88%	95%	53%	60%	63%
Beja	389	236	7	10	253	90	15	358	92%	93%	61%	66%	71%
Jendouba	308	148	7	14	170	122	16	307	100%	87%	48%	48%	55%
Le Kef	508	263	12	85	360	43	72	475	93%	73%	52%	55%	76%
Siliana	464	216	48	45	310	71	43	424	91%	70%	47%	51%	73%
Zaghouan	283	143	39	8	190	71	26	287	101%	75%	51%	50%	66%
Nord Toatal	**2,867**	**1,509**	**130**	**187**	**1,826**	**467**	**336**	**2,629**	**92%**	**83%**	**53%**	**57%**	**69%**
Sousse	267	159	5	12	176	2	23	200	75%	90%	59%	79%	88%
Monastir	103	77	1	4	82	0	5	87	84%	94%	74%	88%	94%
Mahdia	287	232	3	14	248	3	1	252	88%	93%	81%	92%	99%
Sfax	701	462	11	48	521	3	118	642	92%	89%	66%	72%	81%
Kailouan	660	361	12	52	425	37	131	593	90%	85%	55%	61%	72%
Kasserine	825	230	25	95	350	121	296	767	93%	66%	28%	30%	46%
Sidi Bouid	738	346	22	83	450	8	251	709	96%	77%	47%	49%	63%
Gafsa	736	115	2	114	232	1	259	492	67%	50%	16%	23%	47%
Centre Total	**4,318**	**1,980**	**81**	**421**	**2,482**	**176**	**1,083**	**3,742**	**87%**	**80%**	**46%**	**53%**	**66%**
Gabes	751	75	2	81	158	1	384	543	72%	48%	10%	14%	29%
Medenine	933	219	3	3	225	3	607	835	89%	97%	23%	26%	27%
Tozeur	616	8		6	14		311	324	53%	56%	1%	2%	4%
Kebili	2,245	13		17	30	2	290	321	14%	43%	1%	4%	9%
Tataouine	3,827	37	22	18	78	1	93	171	4%	48%	1%	22%	45%
Sud Total	8,372	352	27	126	504	6	1,684	2,195	26%	70%	4%	16%	23%
Tunisie	**15,557**	**3,841**	**238**	**735**	**4,813**	**649**	**3,104**	**8,566**	**55%**	**80%**	**25%**	**45%**	**56%**

Source: Resultats de l'enquuete sur le suivi de la campagne agricole 1993/94

Table E.2.3.2 Planted Area of Major Crops (1993/94)

(Unit : '000 ha)

Governorate	Cereals	Fodder Crops	Legumi-nous	Veget-able	Arbori-culture	Industrial Crops	Other Crops	Total	Cropping Intensity
Tunis	1.9	1.4	0.1	0.4	3.6			7.5	1.02
Ariana	48.9	17.3	3.5	7.4	24.5	0.8	0.2	102.7	1.03
Benarous	10.1	4.3	0.6	1.6	15.6	0.2		32.2	1.00
Nabeul	40.6	19.8	14.0	33.3	56.7	2.0	3.5	169.9	1.03
Bizerte	91.9	50.6	28.5	10.3	22.3	3.0	0.2	206.8	1.04
Beja	131.8	37.1	22.1	5.4	26.9	7.1	0.6	231.0	0.98
Jendouba	85.5	8.3	16.8	7.5	18.1	5.7	1.6	143.5	0.97
Le Kef	207.7	22.4	0.3	4.8	31.0			266.3	1.01
Siliana	149.0	25.0	3.5	4.6	49.3			231.4	1.07
Zaghouan	82.1	21.2	1.9	2.1	36.7	0.1		144.1	1.01
Nord Total	**849.5**	**207.4**	**91.3**	**77.4**	**284.7**	**18.8**	**6.2**	**1,535.2**	**1.02**
Sousse	70.1	7.7	0.3	3.2	88.4			169.6	1.07
Monastir	5.2	0.7	0.7	4.7	66.7			78.0	1.02
Mahdia	51.1	6.3	2.8	7.7	174.6			242.5	1.05
Sfax	37.5	11.8	1.6	15.4	420.0		0.7	487.1	1.06
Kailouan	157.4	18.8	0.6	18.2	205.7	0.4	1.2	402.3	1.12
Kasserine	140.2	22.3	0.4	2.7	83.0			248.5	1.08
Sidi Bouid	79.9	17.0	2.2	11.6	279.3	0.1	0.2	390.2	1.13
Gafsa	18.5	24.8	2.0	2.2	73.0			120.5	1.05
Centre Total	**559.9**	**109.3**	**10.5**	**65.8**	**1390.6**	**0.5**	**2.1**	**2,138.8**	**1.08**
Gabes	12.5	3.8	0.5	5.4	74.6	0.8	0.6	98.2	1.31
Medenine	51.2	0.8	3.9	0.8	183.2	0.1	0.3	240.2	1.10
Tozeur		0.3		0.4	7.7			8.4	1.09
Kebili		4.2	0.0	3.0	12.9			20.1	1.57
Tataouine	32.4	0.0	0.0	0.7	28.9			62.1	1.67
Sud Total	**96.1**	**9.1**	**4.4**	**10.3**	**307.3**	**0.9**	**0.9**	**428.9**	**1.22**
Tunisia	**1505.5**	**325.8**	**106.2**	**153.5**	**1982.6**	**20.2**	**9.1**	**4,102.9**	**1.07**

Source : Resultats de l'enquete sur le suivi de la campagne agricole 1993/94

Table E.3.3.1 Demographic Condition of the Study Area and Tunisia

Governorate	No. of Delegation	No. of Imada	Total Area (km2)	Population 1984	Population (1994) Male	Female	Total	Growth Rate (1984 - 94)	Population Density (per km2)	Number of Family	Family Size
1. Tunis	21	159	288	774,364	453,092	434,711	887,803	1.4%	3,082.6	195,557	4.54
2. Ariana	12	83	1,592	374,192	291,855	277,439	569,294	4.3%	357.6	110,622	5.15
3. Ben Arous	12	75	687	246,193	189,757	181,988	371,745	4.2%	541.1	76,947	4.83
4. Nabeul	16	98	2,837	461,405	296,563	282,055	578,618	2.3%	204.0	118,041	4.90
5. Zaghouan	6	48	2,833	118,743	71,456	71,580	143,036	1.9%	50.5	26,888	5.32
6. Bizerte	14	102	3,751	394,670	245,812	237,274	483,086	2.0%	128.8	97,101	4.98
7. Beja	9	101	3,887	274,706	153,198	150,655	303,853	1.0%	78.2	59,973	5.07
8. Jendouba	8	91	3,075	359,429	202,144	202,639	404,783	1.2%	131.6	78,722	5.14
9. Le Kef	11	87	5,081	247,672	135,845	136,507	272,352	1.0%	53.6	54,021	5.04
10. Siliana	10	86	4,642	222,038	122,672	122,238	244,910	1.0%	52.8	44,196	5.54
11. Kairouan	11	114	6,603	421,607	269,161	263,548	532,709	2.4%	80.7	92,973	5.73
12. Kasserine	13	106	8,251	297,959	195,063	191,845	386,908	2.6%	46.9	68,498	5.65
13. Sidi Bouzid	12	111	7,379	288,528	190,440	186,703	377,143	2.7%	51.1	64,101	5.88
14. Dousse	14	103	2,669	322,491	220,430	213,279	433,709	3.0%	162.5	88,845	4.88
15. Monastir	13	77	1,033	278,478	185,382	178,519	363,901	2.7%	352.3	72,564	5.01
16. Mahdia	11	99	2,873	270,435	165,082	170,662	335,744	2.2%	116.9	62,918	5.34
17. Sfax	15	125	7,008	577,992	374,076	359,611	733,687	2.4%	104.7	150,436	4.88
18. Gafsa	11	74	7,360	235,723	155,241	152,272	307,513	2.7%	41.8	54,330	5.66
19. Tozeur	5	36	6,159	67,943	44,917	44,138	89,055	2.7%	14.5	16,590	5.37
20. Kebili	5	40	22,454	95,371	66,381	65,533	131,914	3.3%	5.9	21,316	6.19
21. Gabes	9	72	7,505	240,016	156,400	155,313	311,713	2.6%	41.5	56,431	5.52
22. Medenine	9	93	9,333	295,889	194,263	191,922	386,185	2.7%	41.4	70,443	5.48
23. Tataouine	7	64	38,266	100,329	68,111	67,592	135,703	3.1%	3.5	22,672	5.99
Total	254	2,044	155,566	6,966,173	4,447,341	4,338,023	8,785,364	2.3%	56.5	1,704,185	5.16
Study Area	30 11.8%	222 10.9%	43,478 27.9%	639,053 9.2%	422,939 9.5%	417,256 9.6%	840,195 9.6%	2.8%	19.3	148,667 8.7%	5.65

Sources : Annuaire Statistique de la Tunisie, Mai 1994, Institute National de la Statistique, Ministere du Planet du Development Regional
Recensement General de la Population (Population par division administrative), 1994

Table E.3.3.2 Population by Age Group in the Study Area, 1992

(Unit : '000 persons)

Age	Gafsa Governorate				Tozeur Governorate				Kebili Governorate				Gabes Governorate				Total Study Area					
	Male	Female	Total		Male	Female	Total		Male	Female	Total		Male	Female	Total		Male		Female		Total	
0 - 4	19.5	19.5	39.0	13.5%	5.4	4.9	10.3	13.0%	9.4	9.1	18.5	15.4%	19.6	19.5	39.1	13.6%	53.9	13.7%	53.0	13.8%	106.9	13.8%
5 - 9	21.6	19.6	41.2	14.2%	5.3	5.3	10.6	13.4%	9.4	8.8	18.2	15.1%	19.5	19.3	38.8	13.5%	55.8	14.2%	53.0	13.8%	108.8	14.0%
10 - 14	19.3	17.5	36.8	12.7%	4.9	4.6	9.5	12.0%	7.9	7.9	15.8	13.1%	19.0	16.9	35.9	12.5%	51.1	13.0%	46.9	12.2%	98.0	12.6%
15 - 19	16.6	15.4	32.0	11.1%	4.7	4.4	9.1	11.5%	7.4	6.5	13.9	11.5%	16.1	15.3	31.4	10.9%	44.8	11.4%	41.6	10.8%	86.4	11.1%
20 - 24	13.3	13.2	26.5	9.2%	3.7	3.8	7.5	9.5%	4.9	5.1	10.0	8.3%	13.2	12.8	26.0	9.1%	35.1	8.9%	34.9	9.1%	70.0	9.0%
25 - 29	11.9	12.4	24.3	8.4%	2.6	3.1	5.7	7.2%	3.5	4.4	7.9	6.6%	11.3	11.3	22.6	7.9%	29.3	7.5%	31.2	8.1%	60.5	7.8%
30 - 34	10.1	9.7	19.8	6.8%	2.6	2.7	5.3	6.7%	3.3	4.2	7.5	6.2%	8.8	9.3	18.1	6.3%	24.8	6.3%	25.9	6.7%	50.7	6.5%
35 - 39	6.8	7.1	13.9	4.8%	2.3	2.1	4.4	5.5%	2.4	3.2	5.6	4.6%	7.1	8.2	15.3	5.3%	18.6	4.7%	20.6	5.4%	39.2	5.1%
40 - 44	6.1	6.1	12.2	4.2%	1.2	1.7	2.9	3.7%	1.7	2.1	3.8	3.2%	5.6	6.0	11.6	4.0%	14.6	3.7%	15.9	4.1%	30.5	3.9%
45 - 49	4.7	4.9	9.6	3.3%	1.3	1.3	2.6	3.3%	1.3	1.7	3.0	2.5%	3.4	4.4	7.8	2.7%	10.7	2.7%	12.3	3.2%	23.0	3.0%
50 - 54	5.8	5.1	10.9	3.8%	1.2	1.4	2.6	3.3%	1.6	2.0	3.6	3.0%	4.5	4.6	9.1	3.2%	13.1	3.3%	13.1	3.4%	26.2	3.4%
55 - 59	4.1	3.4	7.5	2.6%	1.3	1.3	2.6	3.3%	1.9	1.9	3.8	3.2%	3.9	4.1	8.0	2.8%	11.2	2.9%	10.7	2.8%	21.9	2.8%
60 - 64	3.2	2.4	5.6	1.9%	1.3	1.0	2.3	2.9%	1.3	1.2	2.5	2.1%	4.1	4.1	8.2	2.9%	9.9	2.5%	8.7	2.3%	18.6	2.4%
65 - 69	2.0	1.7	3.7	1.3%	0.9	0.8	1.7	2.1%	1.3	1.3	2.6	2.2%	3.0	2.7	5.7	2.0%	7.2	1.8%	6.5	1.7%	13.7	1.8%
70 - 74	1.6	1.4	3.0	1.0%	0.6	0.5	1.1	1.4%	0.7	0.8	1.5	1.2%	2.3	1.7	4.0	1.4%	5.2	1.3%	4.4	1.1%	9.6	1.2%
75 - 79	1.1	1.0	2.1	0.7%	0.5	0.2	0.7	0.9%	0.8	0.6	1.4	1.2%	1.9	1.2	3.1	1.1%	4.3	1.1%	3.0	0.8%	7.3	0.9%
over 80	0.6	0.5	1.1	0.4%	0.2	0.2	0.4	0.5%	0.4	0.5	0.9	0.7%	1.4	1.0	2.4	0.8%	2.6	0.7%	2.2	0.6%	4.8	0.6%
Total	148.3	140.9	289.2	100%	40.0	39.3	79.3	100%	59.2	61.3	120.5	100%	144.7	142.4	287.1	100%	392.2	100%	383.9	100%	776.1	100%
Sex Ratio	51.3%	48.7%			50.4%	49.6%			49.1%	50.9%			50.4%	49.6%			50.5%		49.5%			
0 - 19	77.0	72.0	149.0	51.5%	20.3	19.2	39.5	49.8%	34.1	32.3	66.4	55.1%	74.2	71.0	145.2	50.6%	205.6	52.4%	194.5	50.7%	400.0	51.5%
20 - 54	58.7	58.5	117.2	40.5%	14.9	16.1	31.0	39.1%	18.7	22.7	41.4	34.4%	53.9	56.6	110.5	38.5%	146.2	37.3%	153.9	40.1%	300.1	38.7%
55 over	12.6	10.4	23.0	8.0%	4.8	4.0	8.8	11.1%	6.4	6.3	12.7	10.5%	16.6	14.8	31.4	10.9%	40.4	10.3%	35.5	9.2%	75.9	9.8%

Sources : Annuaire Statistique de la Tunisie, Mai 1994, Institute national de la Statisque,
Ministere du Planet du Development Regional

Table E.3.3.3 Population and Household in the Study Area

Governorate / Délégation	Population			Household	
	Urban (persons)	Rural (persons)	Total (persons)	Number (H.H.)	per Family (persons)
Gafsa Governorate					
1. Gafsa Sud	71,107	4,924	76,031	14,265	5.33
2. Guetar	14,053	7,297	21,350	3,777	5.65
3. Ksar	26,003	2,460	28,463	5,316	5.35
4. Metalaoui	38,086	1,989	40,075	7,323	5.47
5. Redeyef	26,944	1,834	28,778	4,508	6.38
Sub-total	176,193	18,504	194,697	35,189	5.53
Tozeur Governorate					
1. Tozeur	28,979	6,630	35,609	6,751	5.27
2. Nefta	18,993	213	19,206	3,643	5.27
3. Hazoua	0	3,467	3,467	528	6.57
4. Deguêche	13,370	11,932	25,302	4,706	5.38
5. Tamerza	1,951	3,520	5,471	962	5.69
Sub-total	63,293	25,762	89,055	16,590	5.37
Kebili Governorate					
1. Souk Lahad	18,726	8,597	27,323	4,550	6.01
2. Kebili Nord	10,518	17,280	27,798	4,920	5.65
3. Kebili Sud	11,846	14,333	26,179	4,242	6.17
4. Douz	31,108	7,140	38,248	5,648	6.77
5. Faouar	0	12,366	12,366	1,956	6.32
Sub-total	72,198	59,716	131,914	21,316	6.19
Gabes Governorate					
1. Gabes Est	89,787	408	90,195	17,870	5.05
2. Gabes Ouest	21,076	5,959	27,035	4,932	5.48
3. Ghannouch	19,232	0	19,232	2,891	6.65
4. Metouia	17,372	6,118	23,490	4,361	5.39
5. El Hamma	32,155	26,718	58,873	9,762	6.03
6. Mareth	13,848	43,450	57,298	10,025	5.72
7. Matmata	2,244	4,529	6,773	1,477	4.59
Sub-total	195,714	87,182	282,896	51,318	5.51
Total	507,398	191,164	698,562	124,413	5.61

Source de inform Reusement general de lu population et des logement, Mai 1994
Institut National de la Statistique, TUNIS

Table B.3.4.1 Number of Land Owner Farmers and Landholding Size of 153 Oases

Code No	Name of Oasis	Area (ha)	below 0.5 ha	0.6 - 1.0 ha	1.1 - 3.0 ha	above 3.1 ha	Total Owner	Average Size (ha per farmer)
Gafsa Governorate								
GF - 6	Oued Shili	56	0	0	0	18	18	3.11
GF - 8	Seguiouf	217	141	80	110	169	500	0.43
	Newly Developed Oasis (2)	273	141	80	110	187	518	0.53
			27%	15%	21%	36%	100%	
GF - 1	Kasba	698	140	210	195	115	660	1.06
GF - 2	Sud Ouest	703	3	4	30	100	137	5.13
GF - 3	El Guettar	450	958	1,430	7	5	2,400	0.19
GF - 4	Lalla	700	460	688	103	21	1,272	0.55
GF - 5	El Ksar	578	92	138	264	70	564	1.02
GF - 7	Thelja	65	20	40	5	0	65	1.00
	Traditional Oasis (6)	3,194	1,673	2,510	604	311	5,098	0.63
			33%	49%	12%	6%	100%	
	Sub-total (8)	3,467	1,814	2,590	714	498	5,616	0.62
			32%	46%	13%	9%	100%	
Tozeur Governorate								
TZ - 10	Ibn Chabbat 3	325	0	0	162	0	162	2.01
TZ - 12	Ghardaya	40	0	2	22	0	24	1.67
TZ - 13	Ibn Chabbat 1	240	0	0	120	0	120	2.00
TZ - 14	Ibn Chabbat 2	272	0	0	136	0	136	2.00
TZ - 17	Hazoua 2	48	0	5	50	0	55	0.87
TZ - 18	Hazoua 3	238	0	0	238	0	238	1.00
	Newly Developed Oasis (6)	1,163	0	7	728	0	735	1.58
			0%	1%	99%	0%	100%	
TZ - 1	Tozeur	929	225	166	221	60	672	1.38
TZ - 2	Kastilia	50	0	0	16	5	21	2.38
TZ - 3	Oued El Khocha	62	0	0	5	8	13	4.77
TZ - 4	Neffayette	72	0	0	54	0	54	1.33
TZ - 5	Chemsa	90	0	0	60	0	60	1.50
TZ - 6	Helba Est	75	15	13	10	4	42	1.79
TZ - 7	Helba Ouest	50	6	11	7	7	31	1.61
TZ - 8	Jbim 1	40	27	26	9	1	63	0.63
TZ - 9	Jbim 2	167	0	16	109	0	125	1.34
TZ - 11	Nefta	852	1,036	319	151	63	1,569	0.54
TZ - 15	Draa Sud	198	0	0	100	0	100	1.98
TZ - 16	Hazoua 1	72	0	4	48	0	52	1.38
TZ - 19	Oued Loghrissi	78	0	0	78	0	78	1.00
TZ - 20	Torrerit	48	0	0	96	0	96	0.50
TZ - 21	Cedada	55	95	29	16	0	140	0.39
TZ - 22	Dghoumes	104	43	2	168	0	213	0.49
TZ - 23	Degache	822	1,287	241	193	34	1,755	0.47
TZ - 24	Chakmou	90	0	0	60	0	60	1.50
TZ - 25	El Hamma	400	454	113	65	18	650	0.62
TZ - 26	Tamerza	80	200	20	12	3	235	0.34
TZ - 27	Chebika	23	55	6	8	0	69	0.33
TZ - 28	Feum El Khanga	48	37	19	11	3	70	0.69
TZ - 29	Mides	29	86	8	6	0	100	0.29
TZ - 30	Ain El Karma	25	32	20	5	0	57	0.44
	Traditional Oasis (24)	4,459	3,598	1,013	1,506	206	6,325	0.70
			57%	16%	24%	3%	100%	
	Sub-total (38)	5,622	3,598	1,020	2,236	206	7,060	0.80
			51%	14%	32%	3%	100%	
Kebili Governorate								
KB - 14	Chouchet Nagga	26	0	26	0	0	26	1.00
KB - 26	Saidane	30	0	30	0	0	30	1.00
KB - 44	Atilet	220	0	293	0	0	293	0.75
KB - 56	Dhorrana	45	0	90	0	0	90	0.50
KB - 57	Smida	64	0	67	24	0	91	0.70
KB - 62	Bochni	100	0	0	100	0	100	1.00
KB - 63	Dergine	72	0	54	0	0	54	1.33
KB - 65	Regim Madoug 1	104	0	100	0	0	100	1.04
KB - 66	Regim Madoug 2	96	0	100	0	0	100	0.96
KB - 67	Tarfaya Fima	52	106	56	0	0	162	0.32
	Newly Developed Oasis (10)	809	106	816	124	0	1,046	0.77
			10%	78%	12%	0%	100%	
KB - 1	Bechri	162	722	89	12	0	823	0.20
KB - 2	Bouabdallah	270	2,309	0	0	0	2,309	0.12
KB - 3	Fatnassa	205	721	81	10	0	812	0.25
KB - 4	El Glisa	94	550	33	8	1	592	0.16
KB - 5	Mechia	140	528	38	13	0	579	0.24
KB - 6	Nagga	181	835	27	3	0	865	0.21
KB - 7	Oum Somaa	162	310	43	11	2	366	0.44
KB - 8	Oued Zira	176	335	70	27	2	434	0.41
KB - 9	Ouled Touati	62	123	45	3	1	172	0.36
KB - 10	Tenchig	54	517	6	5	0	528	0.10
KB - 11	Zaouiet El Anca	125	864	27	5	0	896	0.14
KB - 12	Zaouiet El Hatch	81	476	41	15	1	533	0.15
KB - 13	Ziret Louhichi	86	515	28	4	0	547	0.16
KB - 15	Ouataya	150	559	73	10	0	642	0.23
KB - 16	Jedida	133	397	35	18	2	452	0.29
KB - 17	Mansoura	86	309	30	3	1	343	0.25
KB - 18	Rabta	162	733	35	0	0	768	0.21
KB - 19	Telmine	240	922	1	0	0	923	0.26
KB - 20	Tembib	118	757	17	0	0	774	0.15
KB - 21	Tombar	127	922	1	0	0	923	0.14
KB - 22	Limagues	57	216	24	4	0	244	0.23
KB - 23	Mazraa Nejl	66	14	20	44	0	78	0.85
KB - 24	Oum El Farth 1 et 2	55	27	16	0	0	43	1.28
KB - 25	Stiffimi	82	331	45	9	0	385	0.21
KB - 27	Barghouthia	52	176	26	4	0	206	0.25
KB - 28	Bazma	146	688	34	4	0	726	0.20
KB - 29	Bichelli	135	636	29	2	0	667	0.20
KB - 30	Blidette	75	404	30	1	0	435	0.17
KB - 31	Zarcine	70	595	3	0	0	598	0.12
KB - 32	Jemna	112	817	0	0	0	817	0.14
KB - 33	Mnourla	81	120	88	1	0	209	0.39
KB - 34	Masid	95	565	13	0	0	578	0.16
KB - 35	Rahmat	85	458	24	1	0	483	0.18
KB - 36	Ras El Ain	268	519	111	47	4	681	0.39
KB - 37	Souk El Baiez	65	166	28	8	1	203	0.32
KB - 38	Bou Zitoun 1 et 2	147	697	53	3	1	744	0.20
KB - 39	Bourzine	94	11	183	0	0	194	0.48
KB - 40	Ouchada	103	241	51	20	0	312	0.33
KB - 41	Kelwanes	47	159	24	1	0	184	0.26
KB - 42	Kibria	92	39	23	22	0	84	1.10
KB - 43	Sidi Hamed	100	0	100	0	0	100	1.00
KB - 45	Douz	280	1,692	51	13	0	1,756	0.16
KB - 46	El Ghoula	75	255	27	1	0	283	0.27
KB - 47	El Golaa	65	515	7	0	0	523	0.12
KB - 48	Graf	111	400	64	0	0	464	0.24
KB - 49	El Hezay	90	354	41	4	0	399	0.23
KB - 50	Nouiel	97	773	36	2	0	811	0.12
KB - 51	Zaafrane	101	611	2	0	0	613	0.16
KB - 52	Bouhamza	80	217	62	0	0	279	0.29
KB - 53	Ksar Ghilane	100	0	100	0	0	100	1.00
KB - 54	Sakkouma	60	149	91	0	0	240	0.33
KB - 55	Tarfaya	77	168	72	2	0	242	0.32
KB - 58	Ghidma	80	433	23	7	0	463	0.17
KB - 59	Sabria	60	403	0	0	0	403	0.15
KB - 60	El Faouar 1	87	689	2	1	0	692	0.13
KB - 61	El Faouar 2	80	609	2	0	0	611	0.13
KB - 64	Matrouha	100	0	0	78	0	78	1.28
	Traditional Oasis (57)	6,404	27,542	2,225	426	16	30,209	0.21
			91%	7%	1%	0%	100%	
	Sub-total (67)	7,213	27,648	3,841	554	16	31,255	0.23
			88%	10%	2%	0%	100%	
Gabes Governorate								
GB - 7	Limaoua 1 et 2	148	12	30	69	7	118	1.25
GB - 20	Cheschou 2	40	5	5	8	2	20	2.00
GB - 44	Sidi Sellam	120	15	11	28	8	62	1.94
GB - 46	Ghandri	30	14	15	15	0	44	0.68
GB - 47	Lazrath 1	35	32	9	14	1	56	0.63
GB - 48	Lagrath 3	55	6	24	16	4	52	1.06
	Newly Developed Oasis (6)	428	86	94	150	22	352	1.22
			24%	27%	43%	6%	100%	
GB - 1	Ain Zrig	140	123	58	24	5	210	0.67
GB - 2	Temoula 1	40	53	23	3	0	79	0.51
GB - 3	Temoula 2	20	1	11	3	2	17	1.18
GB - 4	Zrig Dakhlania	30	184	5	1	0	190	0.16
GB - 5	Teboulbou	520	508	299	184	24	1,012	0.51
GB - 6	Oasis de Gabes	734	2,424	69	7	0	2,500	0.29
GB - 8	M'dou	40	197	12	2	0	211	0.19
GB - 9	Chott El Ferik	31	112	6	1	1	120	0.26
GB - 10	Bouchamma	143	761	33	6	2	802	0.18
GB - 11	Mahjoub	374	238	289	51	0	578	0.65
GB - 12	Salem	99	116	50	4	0	170	0.58
GB - 13	Sboui	72	73	31	3	0	107	0.67
GB - 14	Fayeal	260	330	80	35	2	447	0.58
GB - 15	M'zirea Ghannouch	280	392	68	25	6	491	0.57
GB - 16	Metouia	268	1,777	70	30	1	1,878	0.14
GB - 17	Ouedhref	263	1,066	30	12	4	1,112	0.24
GB - 18	Aouinette	232	54	9	3	1	67	3.46
GB - 19	Cheschou 1	57	6	9	7	4	26	2.19
GB - 21	Tekouri	32	62	12	3	4	81	0.40
GB - 22	Hamma Oasis	400	2,313	140	43	4	2,500	0.16
GB - 23	Mizraa Hamma	80	185	21	4	2	212	0.38
GB - 24	Bechima 1	280	940	102	20	1	1,063	0.26
GB - 25	Bechima 2	290	775	90	29	1	895	0.32
GB - 26	Khebayet	96	137	25	4	1	167	0.57
GB - 27	Bou Ghilouf	180	137	43	19	1	200	0.90
GB - 28	Gilb Dokhane	70	0	81	0	0	81	0.86
GB - 29	Oued Nekhla	30	0	0	20	0	20	1.50
GB - 30	Arram	163	45	62	40	9	156	1.04
GB - 31	Mareth 1	100	200	31	17	2	250	0.40
GB - 32	Mareth 2	180	245	43	12	0	300	0.60
GB - 33	Mareth 3	30	170	33	14	3	220	0.14
GB - 34	Mareth 5	115	25	41	44	2	112	1.03
GB - 35	Mareth 6	88	17	24	36	2	79	1.11
GB - 36	Zarat 2	174	227	66	21	3	317	0.55
GB - 37	Zerkine 1 et 3	116	92	51	14	3	160	0.73
GB - 38	Zerkine 2	156	51	49	47	8	155	1.01
GB - 39	Ayoune Zerkine	30	20	20	2	0	42	0.71
GB - 40	Mahsia	58	65	11	5	0	81	0.72
GB - 41	Kettana 1	98	21	25	27	0	73	1.34
GB - 42	Kettana 3	140	70	27	16	2	115	1.22
GB - 43	Kettana 4	125	67	21	26	9	123	1.02
GB - 45	Zrig Bazagia	71	0	138	0	0	138	0.51
	Traditional Oasis (42)	6,705	14,279	2,306	861	109	17,557	0.38
			81%	13%	5%	1%	100%	
	Sub-total (48)	7,133	14,365	2,400	1,011	131	17,909	0.40
			80%	13%	6%	1%	100%	
Total (153)		23,435	47,425	9,053	4,511	851	61,840	0.38
			77%	15%	7%	1%	100%	

Sources : CRDA, CRA and AIC offices (Gafsa, Tozeur, Kebili and Gabes Governorate) and field survey by JICA Study team.

Remarks : Gafsa ; Number of farmer for below 0.5 ha and 0.5 - 1.0 ha size are estimated based on number of below 1.0 ha size farmers by JICA team.

Tozeur and Kebili ; These figure are estimated based on landholding size data by CRDA offices.

Gabes ; Landholding size data was not available. These figure are estimated based on number of farmer and number of perimetres (Stratification des exploitations).

Table E.3.5.1 Planted Area of Major Crops by Oasis (1993/94)

Code No	Name of Oasis	Area (ha)	Arbori-culture (ha)	Winter Veget. (ha)	Summer Veget. (ha)	Fodder Crops (ha)	Indus. Crops (ha)	Cropping Intensity
Gafsa Governorate								
GF - 1	Kasba	698	698	146	117	165		1.61
GF - 2	Sud Ouest	703	703	88	128	167		1.54
GF - 3	El Guettar	450	450	110	7	50		1.37
GF - 4	Lalla	700	699	62	133	230		1.61
GF - 5	El Ksar	578	579	68	142	230		1.76
GF - 6	Oued Shili	56	32	3		7		0.75
GF - 7	Thelja	65	54	7		7		1.05
GF - 8	Segdoud	217	217	15	15	30		1.28
	Sub-total	3,467	3,432	499	542	886		1.55
Tozeur Governorate								
TZ - 1	Tozeur	929	929	65	55	70		1.20
TZ - 2	Kastilia	50	50	4	4	6		1.28
TZ - 3	Oued El Rooche	62	62	2	2	3		1.11
TZ - 4	Neftayette	72	72	4	4	4		1.17
TZ - 5	Chemsa	90	90	4	4	5		1.14
TZ - 6	Helba Est	75	75	2	2	3		1.09
TZ - 7	Helba Ouest	50	50	3	3	4		1.20
TZ - 8	Jhim 1	40	40	3	3	5		1.28
TZ - 9	Jhim 2	167	167	2	2	4		1.05
TZ - 10	Ibn Chabbat 3	325	325	11	9	7		1.08
TZ - 11	Nefta	852	852	50	45	48		1.17
TZ - 12	Ghardgaya	40	40	4	2	3		1.23
TZ - 13	Ibn Chabbat 1	240	240	9	7	7		1.10
TZ - 14	Ibn Chabbat 2	272	272	9	9	9		1.10
TZ - 15	Draa Sod	198	198	10	8	6		1.12
TZ - 16	Hazoua 1	72	72	3	3	4		1.14
TZ - 17	Hazoua 2	48	48	2	2	3		1.15
TZ - 18	Hazoua 3	238	238	6	4	5		1.06
TZ - 19	Oued Loghrissi	78	78	2	2	4		1.10
TZ - 20	Tozeust	48	48	3	2	2		1.15
TZ - 21	Cedada	55	55	3	3	5		1.20
TZ - 22	Ogbourres	104	104	4	3	5		1.12
TZ - 23	Degache	822	822	63	54	62		1.22
TZ - 24	Chaknou	90	90	3	2	4		1.10
TZ - 25	El Hamma	400	400	25	22	22		1.17
TZ - 26	Tamerza	80	80	3	2	4		1.11
TZ - 27	Chebika	23	23	1	1	1		1.13
TZ - 28	Foum El Khanga	48	48	2	1	2		1.10
TZ - 29	Mides	29	29	2	1	2		1.17
TZ - 30	Ain El Karma	25	25	2	1	2		1.20
	Sub-total	5,622	5,622	366	261	311		1.16
Kebili Governorate								
KB - 1	Bechri	162	162	8	9	46		1.39
KB - 2	Bouabdallah	270	270	14	15	65		1.35
KB - 3	Fatnassa	205	205	7	10	50		1.33
KB - 4	El Olaa	94	94	11	13	36		1.64
KB - 5	Menchia	140	140	9	13	61		1.59
KB - 6	Nagga	181	181	3	4	36		1.24
KB - 7	Oum Somaa	162	162	9	15	23		1.29
KB - 8	Oued Zira	176	176	8	18	61		1.49
KB - 9	Ouled Touati	62	62	11	8	50		2.11
KB - 10	Tenchig	54	54	8	7	35		1.93
KB - 11	Zaouiet El Anes	125	125	7	6	34		1.38
KB - 12	Zaouiet El Harth	81	81	5	5	34		1.54
KB - 13	Ziret Louhichi	86	86	9	11	42		1.72
KB - 14	Chouchet Nagga	26	26	5	5	16		2.00
KB - 15	Guatayn	150	150	17	12	42		1.47
KB - 16	Jedida	133	133	21	5	55		1.61
KB - 17	Mansoura	86	86	7	8	37		1.60
KB - 18	Rabta	162	162	32	10	40		1.51
KB - 19	Telmine	240	240	101	14	40		1.65
KB - 20	Tembib	118	118	21	25	65		1.94
KB - 21	Tomber	127	127	25	15	55		1.75
KB - 22	Limagues	57	57	8	6	48		2.09
KB - 23	Mazraa Neji	66	66	6	6	34		1.70
KB - 24	Oum El Farth 1 et 2	55	55	11	8	35		1.98
KB - 25	Stiftimi	82	82	7	7	65		1.96
KB - 26	Saidane	30	30	4	10	20		2.13
KB - 27	Barghouthia	52	52	31	10	18		2.13
KB - 28	Bazma	146	146	3		25		1.19
KB - 29	B'chelli	135	135	31	10	40		1.60
KB - 30	Blidette	75	75	31	26	22		2.05
KB - 31	Zarcine	70	70	12		17		1.41
KB - 32	Jemna	112	112	34	15	77		2.13
KB - 33	Mtouria	81	81	34	15	40		2.10
KB - 34	Moaid	95	95	25	14	60		2.04
KB - 35	Rahmat	85	85	11	2	70		1.98
KB - 36	Ras El Ain	268	268	30	30	62		1.46
KB - 37	Sock El Balez	65	65	15	12	42		2.06
KB - 38	Ben Zitoun 1 et 2	147	147	71	55	43		2.15
KB - 39	Bourzine	94	94	51	10	54		2.22
Kebili Governorate								
KB - 40	Gueliada	103	103	40	36	50		2.22
KB - 41	Kelwanea	47	47		9	25		2.02
KB - 42	Kibbia	92	92	17	30	33		1.87
KB - 43	Sidi Hamed	100	100	13	9	30		1.52
KB - 44	Asiet	220	220	109	15	64		1.85
KB - 45	Douz	280	280	14	6	60		1.29
KB - 46	Ghoula	75	75	7	3	33		1.57
KB - 47	Golaa	65	65	7	3	34		1.68
KB - 48	Grad	111	111	12	9	50		1.64
KB - 49	Hsay	90	90	15	8	45		1.76
KB - 50	Noueil	97	97	15	8	45		1.70
KB - 51	Zafraane	101	101	11	7	41		1.58
KB - 52	Bouhamza	80	80	9	5	30		1.55
KB - 53	Ksar Ghilane	100	100					1.00
KB - 54	Sakkouma	80	80	7	3	31		1.51
KB - 55	Tarfaya	77	77	11	4	35		1.65
KB - 56	Dhoumrana	45	45	14	6	30		2.11
KB - 57	Smida	64	64	12	4	42		1.91
KB - 58	Ghidma	80	80	21	25	50		2.20
KB - 59	Sabria	60	60	15	19	34		2.13
KB - 60	Faouar 1	87	87	20	18	34		1.83
KB - 61	Faouar 2	80	80	33	35	50		2.48
KB - 62	Bechri	100	100	12	18	37		1.67
KB - 63	Dergine	72	72	17	9	52		2.08
KB - 64	Mairouha	100	100	13	10	50		1.73
KB - 65	Regim 1	104	104	20	16	80		2.12
KB - 66	Regim2	96	96	20	18	65		2.07
KB - 67	Tarfayet Elma	52	52	10	9	25		1.85
	Sub-total	7,213	7,213	1,261	806	2,850		1.68
Gabes Governorate								
GB - 1	Ain Zrig	140	140	10	8	22	11	1.36
GB - 2	Temoula 1	40	40	4	4	8	3	1.48
GB - 3	Temoula 2	20	20	2	2	2	3	1.45
GB - 4	Zrig dakhlania	30	30	2	1	8	2	1.43
GB - 5	Teboulbou	520	520	43	35	80	80	1.46
GB - 6	Oasis de Gabes	734	734	28	23	125	200	1.51
GB - 7	Limaoua 1 et 2	148	148	32	24	23	6	1.57
GB - 8	M'dou	40	40	2	2	9	8	1.53
GB - 9	Chott El Ferik	31	31	2	3	3	12	1.65
GB - 10	Bouchemma	143	143	6	5	33	11	1.24
GB - 11	Maljoub	374	374	106	85	95	19	1.82
GB - 12	Salem	99	99	22	18	20	5	1.66
GB - 13	Sbooi	72	72	21	17	19	4	1.85
GB - 14	Faycal	260	260	72	18	62	13	1.63
GB - 15	M'zirea Ghannouch	280	280	78	63	66	14	1.79
GB - 16	Metouia	268	268	72	18	62	13	1.62
GB - 17	Ouedhref	263	263	78	63	110	13	2.00
GB - 18	Aouinette	232	232	35	29	5		1.30
GB - 19	Chenchou 1	57	57	8	7	25		1.70
GB - 20	Chenchou 2	40	40	11	9	5		1.63
GB - 21	Tekouri	32	32	6	5	15		1.81
GB - 22	Hamma oasis	400	400	33	27	150		1.53
GB - 23	Mziraa hamma	80	80	6	5	35		1.58
GB - 24	Bechima 1	280	280	6	5	40		1.18
GB - 25	Bechima 2	290	290	11	9	70		1.31
GB - 26	Khebeyet	96	96	11	9	50		1.73
GB - 27	Ben Ghilouf	180	180	33	27	120		2.00
GB - 28	Gtib Dokhane	70	70	2	2	30		1.49
GB - 29	Oued Nekhla	30	30	3	3	5		1.37
GB - 30	Arram	163	163	13	10	10		1.20
GB - 31	Mareth 1	100	100	6	5	20		1.31
GB - 32	Mareth 2	180	180	13	10	80		1.57
GB - 33	Mareth 3	30	30	4	3	10		1.57
GB - 34	Mareth 5	115	115	11	9	45		1.57
GB - 35	Mareth 6	88	88	9	6	55		1.80
GB - 36	Zarat 2	174	174	14	10	60		1.48
GB - 37	Zerkine 1 et 3	116	116	7	6	25		1.33
GB - 38	Zerkine 2	156	156	2	3	10		1.10
GB - 39	Ayoune Zerkine	30	30	2	3	10		1.50
GB - 40	Medasia	58	58	4	3	5		1.21
GB - 41	Kettana 1	98	98	6	5			1.11
GB - 42	Kettana 3	140	140	2	1			1.02
GB - 43	Kettana 4	125	125	3	3		15	1.17
GB - 44	Sidi Sellam	120	120	12	10			1.19
GB - 45	Zrig Barrania	71	71	2	2	10	20	1.48
GB - 46	Ghandi	30	30					1.00
GB - 47	Lazradh 1	35	35	3	3	1		1.20
GB - 48	Lazradh 3	55	55	5	3	2		1.18
	Sub-total	7,133	7,133	864	621	1,620	452	1.50
	Total	23,435	23,400	2,930	2,231	5,667	452	1.48

Sources : Gafsa, Tozeur, Kebili and Gabes CRDA
Remarks : Veget. ; Vegetables, Indus. ; Industrial

Table E.3.5.2 Number of Tree Crops by Oasis (1993/94)

Code No	Name of Oasis	Date Palm	Olive	Pome-granate	Apricot	Fig and Others	Fruits Total
Gafsa Governorate							
GF - 1	Kasba	10,000	71,000	5,500	28,600	8,500	42,600
GF - 2	Sud Ouest	10,400	146,000	16,000	15,000	18,500	49,500
GF - 3	El Ouedar	48,000	19,000	5,500	1,200	11,000	17,700
GF - 4	Lalla	7,000	113,500	13,000	4,000	12,500	29,500
GF - 5	El Ksar	23,500	71,000	45,000	14,000	12,500	71,500
GF - 6	Oued Shifi	4,216					
GF - 7	Thelja	9,680	2,175				
GF - 8	Segdoud	21,723	2,820	2,820	1,000	4,230	8,050
	Sub-total	134,519	425,495	87,820	63,800	67,230	218,850
Tozeur Governorate							
TZ - 1	Tozeur	266,500	4,800	15,000	4,000	34,500	53,500
TZ - 2	Kastilia	6,500	400	1,250	400	2,700	4,350
TZ - 3	Oued El Koucha	6,800	200	500	200	930	1,630
TZ - 4	Neflayette	12,800	300	1,000	400	1,850	3,250
TZ - 5	Chemsa	13,000	400	1,000	500	2,100	3,600
TZ - 6	Helba Est	9,200	200	1,000	350	1,400	2,750
TZ - 7	Helba Ouest	7,700	400	1,000	500	1,850	3,350
TZ - 8	Jhim 1	9,300	500	1,000	800	2,100	3,900
TZ - 9	Jhim 2	22,900	500	2,000	800	3,300	6,100
TZ - 10	Ibn Chabbat 3	28,450	800	3,500	2,000	7,800	13,300
TZ - 11	Nefta	229,500	2,000	10,000	2,000	18,300	30,300
TZ - 12	Ghardgaya	6,900	300	1,000	400	2,800	4,200
TZ - 13	Ibn Chabbat 1	23,000	700	3,500	1,500	5,800	10,800
TZ - 14	Ibn Chabbat 2	28,800	500	4,000	2,000	8,000	14,000
TZ - 15	Draa Sud	18,700	500	3,500	1,500	6,300	11,300
TZ - 16	Hazoua 1	8,850	100	2,000	300	2,900	5,200
TZ - 17	Hazoua 2	5,300	100	1,000	200	1,750	2,950
TZ - 18	Hazoua 3	24,000	200	3,000	1,000	3,650	7,650
TZ - 19	Oued Loghriasi	8,300	100	1,000	200	1,800	3,000
TZ - 20	Tozrarit	4,610	500	500	200	1,300	2,000
TZ - 21	Oedada	12,000	800	800	300	1,450	2,550
TZ - 22	Dghoumes	10,750	500	1,500	500	2,100	4,100
TZ - 23	Degache	177,500	20,500	11,200	2,600	15,950	29,750
TZ - 24	Chakmou	9,700	500	1,000	500	1,700	3,200
TZ - 25	El Hamma	92,500	1,500	5,000	1,200	8,900	15,100
TZ - 26	Tamerza	28,700	900	2,500	800	3,550	6,850
TZ - 27	Chebika	4,400	200	300	50	920	1,270
TZ - 28	Foum El Khanga	6,250	300	900	300	1,750	2,950
TZ - 29	Mides	6,950	300	800	200	1,850	2,850
TZ - 30	Ain El Karma	5,350	300	500	200	1,100	1,800
	Sub-total	1,095,610	39,300	81,250	25,900	150,400	257,550
Kebili Governorate							
KB - 1	Bechri	28,170	100	1,100	250	1,015	2,365
KB - 2	Bouabdellah	47,700	150	1,100		500	1,600
KB - 3	Fatnassa	33,420	300	1,600	300	1,270	3,170
KB - 4	El Gliaa	18,350	1,400	600	550	1,560	2,710
KB - 5	Menchia	14,160	800	1,350	700	2,720	4,770
KB - 6	Nagga	28,650	65	350	150	825	1,325
KB - 7	Oum Somaa	28,000	3,200	1,300	500	1,395	3,195
KB - 8	Oued Zira	26,100	750	1,650	300	1,805	3,755
KB - 9	Ouled Touati	14,100	350	900	200	1,140	2,240
KB - 10	Tenchig	11,700	400	1,300	450	1,350	3,100
KB - 11	Zaouiet El Anes	25,350	1400	800	300	750	1,850
KB - 12	Zaouiet El Harth	27,260	1,400	500	300	750	1,550
KB - 13	Ziret Louhichi	22,500	1,300	1,100	200	1,695	2,995
KB - 14	Chouchet Nagga	3,125	10	450	150	250	850
KB - 15	Gustaya	13,270	250	600	450	2,050	3,100
KB - 16	Jedida	36,000	2,300	500	300	1,730	2,530
KB - 17	Mansoura	17,200	900	280	250	1,100	1,630
KB - 18	Raba	40,500		1,300	750	1,935	3,985
KB - 19	Telmine	45,000	1,500	8,000	550	8,100	16,650
KB - 20	Tembib	30,500	2,500	3,000	450	7,520	10,970
KB - 21	Tombar	33,000	2,000	4,000	300	5,050	9,350
KB - 22	Limegues	9,500	475	500	200	400	1,100
KB - 23	Mazraa Neji	9,800	250	900	100	650	1,650
KB - 24	Oum El Faith 1 et 2	10,000	300	400	100	525	1,025
KB - 25	Siffimi	16,800	800	800	200	1,250	2,250
KB - 26	Saidane	2,030	700	800	200	1,050	2,050
KB - 27	Barghoudhia	5,360	200	200	150	680	1,030
KB - 28	Bazma	24,350	4,000	6,500	500	3,450	10,450
KB - 29	B'chelli	14,300	150	850	250	2,650	3,750
KB - 30	Blidette	11,400	150	500	150	1,350	2,000
KB - 31	Zaouine	12,780		300	100	580	980
KB - 32	Jemna	13,940	330	500	150	950	1,600
KB - 33	Mdouria	10,610	150	350	250	11,360	11,960
KB - 34	Mraid	16,700	50	1,800	400	18,950	21,150
KB - 35	Rahmat	13,450	150	1,500	250	15,350	17,100
KB - 36	Ras El Ain	33,060	1,200	2,400	200	36,860	39,460
KB - 37	Sock El Balez	8,200	960	1,900	120	11,180	13,200
KB - 38	Ben Zitoun 1 et 2	24,320	220	1,150	300	25,990	27,440
KB - 39	Bourzine	8,500	90	900	200	9,690	10,790
KB - 40	Gueliada	14,215	50	650	300	1,200	2,150
KB - 41	Kelwanen	4,650		220	120	580	920
KB - 42	Khbia	16,200	500	1,200	450	1,300	2,950
KB - 43	Sidi Hamed	16,500		1,200	500	1,300	3,000
KB - 44	Atilet	18,100		1,800	450	3,735	5,985
KB - 45	Douz	47,100	2,000	3,250	2,000	8,200	13,450
KB - 46	Ghoula	8,250	350	1,000	650	1,800	3,450
KB - 47	Golaa	10,500	500	1,000	500	1,650	3,150
KB - 48	Grad	21,000	500	1,100	500	1,500	3,100
KB - 49	Hsay	17,000	1,000	3,000	1,200	4,000	8,200
KB - 50	Noueil	17,000	1,000	3,000	1,200	4,000	8,200
KB - 51	Zafraane	16,200	500	1,200	450	1,300	2,950
KB - 52	Bouhamza	12,000	400	800	400	1,500	2,700
KB - 53	Ksar Ghilane	8,000	50	300	50	230	580
KB - 54	Sakhouma	8,250	250	1,000	550	2,000	3,550
KB - 55	Tarfaya	11,700	400	1,300	450	1,350	3,100
KB - 56	Dhomrana	4,500		250	150	550	950
KB - 57	Smida	7,700		1,500	500	1,400	3,400
KB - 58	Ghidma	15,500		700	150	1,200	2,050
KB - 59	Sabria	10,750		800	360	950	2,110
KB - 60	Faouar 1	13,500		650	200	1,130	1,980
KB - 61	Faouar 2	18,600		800	260	2,000	3,060
KB - 62	Bechri	11,900		500	50	780	1,330
KB - 63	Dergine	7,350		500	200	1,000	1,700
KB - 64	Matrouha	15,000		900	900	1,400	3,200
KB - 65	Regim 1	10,600		700	200	1,000	1,900
KB - 66	Regim2	9,720		550	150	1,500	2,200
KB - 67	Tarfayet Elma	5,200		500	100	900	1,500
	Sub-total	1,166,140	38,750	84,400	24,210	236,880	345,490
Gabes Governorate							
GB - 1	Ain Zrig	9,000		10,000	750	4,150	14,900
GB - 2	Temoula 1		237	1,570	5,000	13,300	19,870
GB - 3	Temoula 2	800	179	3,300	2,000	4,700	10,000
GB - 4	Zrig dakhlania	1,500		5,000	250	1,400	6,650
GB - 5	Teboulbou	18,750	8,600	43,000	4,000	17,500	64,500
GB - 6	Oasis de Gabes	96,000	500	140,000	1,800	6,800	148,600
GB - 7	Linsiou 1 et 2	50	1,400	13,400	1,500	14,600	29,500
GB - 8	M'dou	3,000	500	5,000	1,000	7,500	13,500
GB - 9	Chott El Ferik	200		500	240	1,035	1,775
GB - 10	Bouchemma	38,000	2,500	16,100	1,000	9,400	26,500
GB - 11	Mahjoub	15,000	10,000	2,000	400	1,880	4,280
GB - 12	Salem	5,000	5,000	1,960	50	340	2,350
GB - 13	Sboui	4,000	4,000	2,000	50	290	2,340
GB - 14	Faycal	6,000	7,000	2,500	240	1,110	3,850
GB - 15	M'zirat Ghannouch	700	4,500	2,000	250	1,220	3,470
GB - 16	Metouia	25,000		17,000	500	1,000	18,500
GB - 17	Oued Beef	38,500	2,500	22,000	900	2,010	24,910
GB - 18	Acolinette	5,000	11,000			66	66
GB - 19	Cherichou 1		700	400	150	850	1,400
GB - 20	Cherichou 2		500	200		1,000	1,200
GB - 21	Tekouri	2,500		3,200	500	800	4,500
GB - 22	Hamma oasis	63,000		10,000	1,000	2,600	13,600
GB - 23	M'zirat hamma	8,000		8,000	1,500	2,500	12,000
GB - 24	Bechima 1	11,200	3,500	7,200	1,500	3,200	11,900
GB - 25	Bechima 2	13,530	4,700	8,200	1,300	2,950	12,450
GB - 26	Khebayet	3,000	2,400	3,000	150	1,950	5,100
GB - 27	Ben Ghilouf	18,000	7,500	10,000	1,200	9,500	20,700
GB - 28	Glib Dokhane	2,800	2,800		100	1,000	1,100
GB - 29	Oued Nekhla	2,100	1,200		50	350	400
GB - 30	Arram	4,200	6,700	10,000	500	2,650	13,150
GB - 31	Mareth 1	3,600	2,500	36,000	500	1,400	37,900
GB - 32	Mareth 2	8,000	3,000	70,000	2,000	4,150	76,150
GB - 33	Mareth 3	2,000	6,000	6,500	150	350	7,000
GB - 34	Mareth 5	250	3,000	15,000	1,500	2,425	18,925
GB - 35	Mareth 6	2,500	4,000	8,500	850	2,450	11,800
GB - 36	Zarat 2	5,000	6,000	65,000	2,500	4,850	72,350
GB - 37	Zerkine 1 et 3	1,500	3,000	35,000	750	2,500	38,250
GB - 38	Zerkine 2	4,500	2,600	30,000	250	750	31,000
GB - 39	Ayoune Zerkine	300	650	6,000		166	6,166
GB - 40	Medeia	850	1,500	12,000		1,650	13,050
GB - 41	Kettana 1	400	3,000	30,000	1,000	2,450	33,450
GB - 42	Kettana 3	1,300	5,000	40,000	2,500	4,500	47,000
GB - 43	Kettana 4	530	9,000	35,000	2,500	4,250	41,750
GB - 44	Sidi Sellam	400	1,500	1,500		700	2,200
GB - 45	Zrig Barrania		7,000	2,000		1,250	3,250
GB - 46	Ghandri		50			750	750
GB - 47	Laarabi 1		600	1,000			1,000
GB - 48	Laarabi 3	8	940	1,200			1,200
	Sub-total	415,968	147,256	742,230	42,380	151,642	936,252
	Total	2,812,237	650,881	995,700	156,290	606,152	1,758,142

Sources : Gafsa, Tozeur, Kebili and Gabes CRDA

Table E.3.5.3 Planted Area of Tree Crops by Oasis (1993/94)

(Unit : ha)

Code No	Name of Oasis	Date Palm	Olive	Pome-granate	Apricot	Fig and Other	Fruits Total
Gafsa Governorate							
GF - 1	Kasba	73	520	14	70	21	105
GF - 2	Sud Ouest	42	594	22	20	25	67
GF - 3	El Guettar	295	118	11	2	24	37
GF - 4	Lalla	38	610	23	7	22	52
GF - 5	El Ksar	115	347	73	23	20	116
GF - 6	Oued Shili	32					
GF - 7	Thelja	44	10				
GF - 8	Segdoud	173	22	7	3	12	22
	Sub-total	812	2,221	150	125	124	399
Tozeur Governorate							
TZ - 1	Tozeur	868	16	16	4	25	45
TZ - 2	Kastilia	39	2	3	1	5	9
TZ - 3	Oued El Koucha	57	2	1	1	1	3
TZ - 4	Neflayette	65	2	2	1	2	5
TZ - 5	Chemsa	81	2	2	1	4	7
TZ - 6	Helba Est	67	1	2	1	4	7
TZ - 7	Helba Ouest	42	2	2	1	3	6
TZ - 8	Jhim 1	34	2	1	1	2	4
TZ - 9	Jhim 2	150	3	4	2	8	14
TZ - 10	Ibn Chabbat 3	278	8	11	7	21	39
TZ - 11	Nefta	815	7	12	2	16	30
TZ - 12	Ghardgaya	33	1	2	1	3	6
TZ - 13	Ibn Chabbat 1	204	6	10	4	16	30
TZ - 14	Ibn Chabbat 2	233	4	11	5	19	35
TZ - 15	Draa Sud	164	4	10	4	16	30
TZ - 16	Hazoua 1	61	1	5	1	4	10
TZ - 17	Hazoua 2	41	1	2		4	6
TZ - 18	Hazoua 3	216	2	9	3	8	20
TZ - 19	Oued Loghrissi	70	1	3	1	3	7
TZ - 20	Tozarit	39	4	1	1	3	5
TZ - 21	Cedada	49	3	1		2	3
TZ - 22	Dghoumes	89	4	4	1	6	11
TZ - 23	Degache	707	82	15	3	15	33
TZ - 24	Chakmou	78	4	3	1	4	8
TZ - 25	El Hamma	376	6	7	2	9	18
TZ - 26	Tamerza	73	2	2	1	2	5
TZ - 27	Chebika	20	1			2	2
TZ - 28	Foum El Khanga	40	2	2	1	3	6
TZ - 29	Mides	25	1	1		2	3
TZ - 30	Ain El Karma	22	1	1		1	2
	Sub-total	5,036	177	145	51	213	499
Kebili Governorate							
KB - 1	Bechri	157	1	2		2	4
KB - 2	Bouabdallah	265	1	2		2	4
KB - 3	Faouassa	197	2	3	1	2	6
KB - 4	El Glaa	84	6	1	1	2	4
KB - 5	Menchia	120	7	4	2	7	13
KB - 6	Negga	178		1		2	3
KB - 7	Oum Soraa	141	16	2	1	2	5
KB - 8	Oued Zira	163	5	3	1	4	8
KB - 9	Ouled Touati	58	1	1		2	3
KB - 10	Teschig	48	2	2	1	1	4
KB - 11	Zaouiet El Anea	116	6	1		2	3
KB - 12	Zaouiet El Harth	76	4			1	1
KB - 13	Ziret Louhichi	78	5	1		2	3
KB - 14	Choochet Nagga	24		1		1	2
KB - 15	Gustaya	137	3	2	2	6	10
KB - 16	Jedida	122	8	1		2	3
KB - 17	Mansoura	79	4			3	3
KB - 18	Rabta	157		2	1	2	5
KB - 19	Telmine	207	7	12	1	13	26
KB - 20	Tembib	98	8	3		9	12
KB - 21	Tombar	110	7	4		6	10
KB - 22	Limagues	52	3	1		1	2
KB - 23	Mazraa Neji	61	2	2		1	3
KB - 24	Oum El Farh 1 et 2	51	2	1		1	2
KB - 25	Stiftimi	75	4	1		2	3
KB - 26	Saidane	18	6	2	1	3	6
KB - 27	Barghouthia	47	2	1		2	3
KB - 28	Bazma	112	18	10	1	5	16
KB - 29	B'chelli	123	1	2	1	8	11
KB - 30	Bidette	70	1	1		3	4
KB - 31	Zarcine	68		1		1	2
KB - 32	Jenna	105	2	1		4	5
KB - 33	Mtouria	76	1	1	1	2	4
KB - 34	Msaid	86		3	1	5	9
KB - 35	Rahmat	77	1	3		4	7
KB - 36	Ras El Ain	246	9	6		7	13
KB - 37	Souk El Baiez	52	6	4		3	7
KB - 38	Ben Zitoun 1 et 2	138	1	2	1	5	8
KB - 39	Bourzine	84	1	3	1	5	9
Kebili Governorate							
KB - 40	Guelada	98		1	1	3	5
KB - 41	Kelwamea	44		1		2	3
KB - 42	Kibia	84	3	2	1	2	5
KB - 43	Sidi Hamed	90		3	2	5	10
KB - 44	Atilet	198		7	2	13	22
KB - 45	Douz	246	10	6	3	15	24
KB - 46	Ghoela	63	3	3	2	4	9
KB - 47	Golaa	57	3	2	1	2	5
KB - 48	Grad	100	3	2	3	3	8
KB - 49	Hsay	74	4	4	2	6	12
KB - 50	Noueil	80	5	5	2	5	12
KB - 51	Zafraane	93	3	2	1	2	5
KB - 52	Bouhamza	72	2	2	1	3	6
KB - 53	Ksar Ghilane	97	1	1		1	2
KB - 54	Sakkouma	68	2	3	2	5	10
KB - 55	Tarfaya	69	2	3	1	2	6
KB - 56	Dhomrana	42		1		2	3
KB - 57	Smida	56		4	1	3	8
KB - 58	Ghidma	77		1		2	3
KB - 59	Sabria	56		1	1	2	4
KB - 60	Faouar 1	83		1		3	4
KB - 61	Faouar 2	76		1		3	4
KB - 62	Bechni	96		1		3	4
KB - 63	Dergine	67		2	1	2	5
KB - 64	Matrouha	90		3	3	4	10
KB - 65	Regim 1	98		2	1	3	6
KB - 66	Regim2	89		2		5	7
KB - 67	Tarfayet Elma	47		2		3	5
	Sub-total	6,566	194	161	49	243	453
Gabes Governorate							
GB - 1	Ain Zrig	92		34	3	11	48
GB - 2	Temoula 1		2	4	13	21	38
GB - 3	Temoula 2	4	1	6	4	5	15
GB - 4	Zrig dakhlania	12		14	1	3	18
GB - 5	Teboulbou	205	94	157	15	49	221
GB - 6	Oasis de Gabes	485	3	236	3	7	246
GB - 7	Limsoua 1 et 2	1	19	61	7	60	128
GB - 8	M'dou	16	3	9	2	10	21
GB - 9	Chott El Ferik	9		7	3	12	22
GB - 10	Bouchemma	111	7	16	1	8	25
GB - 11	Mahjoub	213	142	9	2	8	19
GB - 12	Salem	46	46	6		1	7
GB - 13	Sboui	33	33	5		1	6
GB - 14	Faycal	110	128	15	1	6	22
GB - 15	M' zirea Ghannouch	31	201	30	4	14	48
GB - 16	Metouia	216		49	1	2	52
GB - 17	Ouedhref	207	13	39	2	2	43
GB - 18	Aouinette	72	160				
GB - 19	Chenchou 1		36	7	3	11	21
GB - 20	Chenchou 2		22	3		15	18
GB - 21	Tekouri	21		9	1	1	11
GB - 22	Hamma oasis	375		20	2	3	25
GB - 23	Mzirea hamma	56		19	3	2	24
GB - 24	Bechima 1	173	54	37	8	8	53
GB - 25	Bechima 2	179	62	36	6	7	49
GB - 26	Khebayet	41	33	14	1	7	22
GB - 27	Ben Ghilouf	101	42	19	2	16	37
GB - 28	Ghb Dokhane	33	33			4	4
GB - 29	Oued Nekhla	18	11			1	1
GB - 30	Arram	45	72	36	2	8	46
GB - 31	Mareth 1	19	13	65	1	2	68
GB - 32	Mareth 2	40	15	118	3	4	125
GB - 33	Mareth 3	6	18	6			6
GB - 34	Mareth 5	3	38	63	6	5	74
GB - 35	Mareth 6	22	35	25	2	4	31
GB - 36	Zarat 2	25	30	110	4	5	119
GB - 37	Zerkine 1 et 3	10	20	80	2	4	86
GB - 38	Zerkine 2	40	23	90	1	2	93
GB - 39	Ayoune Zerkine	3	6	20		1	21
GB - 40	Medssia	7	13	35		3	38
GB - 41	Kettana 1	3	21	69	2	3	74
GB - 42	Kettana 3	9	33	88	6	4	98
GB - 43	Kettana 4	3	50	64	5	3	72
GB - 44	Sidi Sellam	18	68	23		11	34
GB - 45	Zrig Barrania		61	6		4	10
GB - 46	Ghandri		5			25	25
GB - 47	Laaradh 1		22	13			13
GB - 48	Laaradh 3		39	16			16
	Sub total	3,113	1,727	1,788	122	383	2,293
	Total	15,527	4,319	2,244	347	963	3,554

Sources : Gafsa, Tozeur, Kebili and Gabes CRDA

Table E.3.5.4 Oasis Type Classified by Cropping Pattern

Code No	Name of Oasis	Date Palm	Olive	Fruits	Field Crops	Oasis Type-1	Oasis Type-2
Gafsa Governorate							
GF - 1	Kasba	+	++++	++	**	T	O-2
GF - 2	Sud Ouest	+	++++	++	**	T	O-2
GF - 3	El Guettar	+++	+	++	**	T	DF-2
GF - 4	Lalla	+	++++	++	**	T	O-2
GF - 5	El Ksar	++	++	+++	**	T	FD-2
GF - 6	Oued Shili	++++	+	+	*	N	D-1
GF - 7	Thelja	++++	+	+	*	T	D-1
GF - 8	Segdoud	++++	+	++	**	N	D-4
Tozeur Governorate							
TZ - 1	Tozeur	++++	+	+	*	T	D-1
TZ - 2	Kastilia	+++	+	++	**	T	DF-2
TZ - 3	Oued El Koocha	++++	+	+	*	T	D-1
TZ - 4	Neflayette	++++	+	+	**	T	D-2
TZ - 5	Chemsa	++++	+	+	**	T	D-2
TZ - 6	Helba Est	++++	+	+	**	T	D-2
TZ - 7	Helba Ouest	+++	+	++	*	T	DF-1
TZ - 8	Jhim 1	+++	+	++	**	T	DF-2
TZ - 9	Jhim 2	+++	+	++	*	T	DF-1
TZ - 10	Ibn Chabbat 3	+++	+	++	*	N	DF-1
TZ - 11	Nefta	++++	+	+	*	T	D-1
TZ - 12	Ghardgaya	+++	+	++	**	N	DF-2
TZ - 13	Ibn Chabbat 1	+++	+	++	*	N	DF-1
TZ - 14	Ibn Chabbat 2	+++	+	++	*	N	DF-1
TZ - 15	Dra Sud	+++	+	++	*	T	DF-1
TZ - 16	Hazoua 1	+++	+	++	*	T	DF-1
TZ - 17	Hazoua 2	+++	+	++	*	N	DF-1
TZ - 18	Hazoua 3	+++	+	++	*	N	DF-1
TZ - 19	Oued Loghrissi	+++	+	++	*	T	DF-1
TZ - 20	Tozrart	+++	+	++	*	T	DF-1
TZ - 21	Cedada	++++	+	+	**	T	D-4
TZ - 22	Dghoumes	+++	+	++	*	T	DF-1
TZ - 23	Degache	++++	+	+	*	T	D-1
TZ - 24	Chakmou	++++	+	+	**	T	D-2
TZ - 25	El Hamma	++++	+	+	*	T	D-1
TZ - 26	Tamerza	++++	+	+	*	T	D-1
TZ - 27	Chebika	++++	+	+	**	T	D-2
TZ - 28	Foum El Khanga	++++	+	+	**	T	D-2
TZ - 29	Mides	++++	+	+	**	T	D-2
TZ - 30	Ain El Karma	++++	+	+	**	T	D-2
Kebili Governorate							
KB - 1	Bechri	++++	+	+	**	T	D-3
KB - 2	Bouabdallah	++++	+	+	**	T	D-3
KB - 3	Fatnassa	++++	+	+	**	T	D-3
KB - 4	El Glaa	++++	+	+	**	T	D-3
KB - 5	Menchia	++++	+	+	**	T	D-3
KB - 6	Nagga	++++	+	+	**	T	D-3
KB - 7	Oum Somas	++++	+	+	**	T	D-3
KB - 8	Oued Zira	++++	+	+	**	T	D-3
KB - 9	Ouled Toouzi	++++	+	+	**	T	D-3
KB - 10	Tenchig	++++	+	++	**	T	D-4
KB - 11	Zaouiet El Ares	++++	+	+	**	T	D-3
KB - 12	Zaouiet El Harth	++++	+	+	**	T	D-3
KB - 13	Ziret Louhichi	++++	+	+	**	T	D-3
KB - 14	Choochet Nagga	++++	+	++	**	N	D-4
KB - 15	Guaiaya	++++	+	+	**	T	D-3
KB - 16	Jedida	++++	+	+	**	T	D-3
KB - 17	Mansoura	++++	+	+	**	T	D-3
KB - 18	Rabta	++++	+	+	**	T	D-3
KB - 19	Telmine	++++	+	++	**	T	D-4
KB - 20	Tembib	++++	+	++	**	T	D-4
KB - 21	Tombar	++++	+	++	**	T	D-4
KB - 22	Limagues	++++	+	+	**	T	D-3
KB - 23	Mazraa Neji	++++	+	+	**	T	D-3
KB - 24	Oum El Farh 1 et 2	++++	+	+	**	T	D-3
KB - 25	Soffimi	++++	+	+	**	T	D-3
KB - 26	Saidane	++	+	+++	**	N	FD-2
KB - 27	Barghouthia	++++	+	++	*	T	D-3
KB - 28	Bazma	+++	+	++	**	T	DF-2
KB - 29	B'chelli	++++	+	++	**	T	D-4
KB - 30	Blidette	++++	+	+	**	T	D-3
KB - 31	Zarcine	++++	+	+	**	T	D-3
KB - 32	Jemna	++++	+	+	**	T	D-3
KB - 33	Mioufa	++++	+	+	**	T	D-3
KB - 34	Msaid	+++	+	++	**	T	DF-2
KB - 35	Rahmat	+++	+	++	**	T	DF-2
KB - 36	Ras El Ain	++++	+	+	**	T	D-3
KB - 37	Souk El Balez	+++	+	++	**	T	DF-2
KB - 38	Ben Zitoun 1 et 2	++++	+	+	**	T	D-3
KB - 39	Bouazine	++++	+	++	**	T	D-4
Kebili Governorate							
KB - 40	Gueliada	++++	+	++	**	T	D-4
KB - 41	Kelwamen	++++	+	++	**	T	D-4
KB - 42	Klibia	++++	+	+	**	T	D-3
KB - 43	Sidi Hamed	++++	+	++	**	T	D-4
KB - 44	Atilet	++++	+	++	**	N	D-4
KB - 45	Douz	++++	+	++	**	T	D-4
KB - 46	El Ghoufa	+++	+	++	**	T	DF-2
KB - 47	El Golaa	++++	+	++	**	T	D-4
KB - 48	Grad	++++	+	++	**	T	D-4
KB - 49	El Hsay	+++	+	++	**	T	DF-2
KB - 50	Nouiel	+++	+	++	**	T	DF-2
KB - 51	Zaafrane	++++	+	++	**	T	D-4
KB - 52	Bouhamza	++++	+	++	**	T	D-4
KB - 53	Ksar Ghilane	++++	+	+	*	T	D-1
KB - 54	Sakkouma	+++	+	++	**	T	DF-2
KB - 55	Tarfeya	+++	+	++	**	T	DF-2
KB - 56	Dhomiana	++++	+	++	**	N	D-4
KB - 57	Smida	+++	+	++	**	N	DF-2
KB - 58	Ghidma	++++	+	+	**	T	D-3
KB - 59	Ssbria	++++	+	+	**	T	D-3
KB - 60	El Faouar 1	++++	+	+	**	T	D-3
KB - 61	El Faouar 2	++++	+	+	**	T	D-3
KB - 62	Bechri	++++	+	+	**	N	D-3
KB - 63	Dergine	++++	+	+	**	N	D-3
KB - 64	Mairouha	++++	+	+	**	T	D-3
KB - 65	Regim Maatoug 1	++++	+	+	**	N	D-3
KB - 66	Regim Maatoug 2	++++	+	++	**	N	D-4
KB - 67	Tarfayet Elma	++++	+	++	**	N	D-4
Gabes Governorate							
GB - 1	Ain Zrig	++	+	+++	**	T	FD-2
GB - 2	Temoula 1	+	+	++++	**	T	F-2
GB - 3	Temoula 2	+	+	++++	**	T	F-2
GB - 4	Zrig Dakhlania	++	+	+++	**	T	FD-2
GB - 5	Teboulbou	++	++	+++	**	T	FD-2
GB - 6	Oasis de Gabes	++	+	+++	**	T	FD-2
GB - 7	Limacou 1 et 2	+	+	++++	**	N	F-2
GB - 8	M'dou	+	+	++++	**	T	F-2
GB - 9	Chott El Fenik	small	small	small	****	T	A
GB - 10	Bouchamma	+++	+	++	**	T	DF-2
GB - 11	Mahjoub	+++	++	++	**	T	DF-2
GB - 12	Salem	++	++	+++	**	T	FD-2
GB - 13	Sbeui	++	++	+++	**	T	FD-2
GB - 14	Faycal	small	small	small	****	T	A
GB - 15	M'zirea Ghanouch	small	small	small	****	T	A
GB - 16	Metouia	+++	++	++	**	T	DF-2
GB - 17	Ouedfref	+++	+	++	**	T	DF-2
GB - 18	Acuinette	+	++++	+	**	T	O-2
GB - 19	Chenchou 1	small	small	small	****	T	A
GB - 20	Chenchou 2	small	small	small	****	N	A
GB - 21	Tekouri	++	+	+++	**	T	FD-2
GB - 22	Hamma Oasis	++++	+	+	**	T	D-3
GB - 23	Mzirea Hamma	++	++	+++	**	T	FD-2
GB - 24	Bochima 1	++	+	+++	**	T	FD-2
GB - 25	Bochima 2	+++	+	++	**	T	DF-2
GB - 26	Khebayet	++	++	+++	**	T	FD-2
GB - 27	Ben Ghiloof	++	++	+++	**	T	FD-2
GB - 28	Glib Dokhane	++	++	++	**	T	FD-2
GB - 29	Oued Nekhla	+++	+	++	**	T	DF-2
GB - 30	Arram	++	++	+++	**	T	FD-2
GB - 31	Mareth 1	+	+	++++	**	T	F-2
GB - 32	Mareth 2	+	+	++++	**	T	F-2
GB - 33	Mareth 3	++	++	+++	**	T	FD-2
GB - 34	Mareth 5	+	+	++++	**	T	F-2
GB - 35	Mareth 6	+	+	++++	**	T	F-2
GB - 36	Zarat 2	+	+	++++	**	T	F-2
GB - 37	Zerkine 1 et 3	+	+	++++	**	T	F-2
GB - 38	Zerkine 2	+	+	++++	**	T	F-2
GB - 39	Ayoune Zerkine	+	+	++++	**	T	F-2
GB - 40	Machsia	+	+	++++	**	T	F-2
GB - 41	Kettana 1	+	++	++++	*	T	F-1
GB - 42	Kettana 3	+	++	++++	*	T	F-1
GB - 43	Kettana 4	+	++	++++	*	T	F-1
GB - 44	Sidi Sellam	+	++	++++	*	N	F-1
GB - 45	Zrig Barrania	+	++++	++	**	T	O-2
GB - 46	Ghandri	+	++	++++	*	N	F-1
GB - 47	Laarabi 1	+	++	++++	*	N	F-1
GB - 48	Laarabi 3	+	++	++++	*	N	F-1

Source : JICA study team estimation

Remarks : T ; Traditional oasis, N ; Newly developed oasis

++++: Predominant (<70%), +++: Leading (<50%), ++: Small (>50%), +: Very small (>20%)

****: large area is used for field crops, **: Relatively large (more than 20% of total area), *: Small (>20%)

Small : Plant density of all trees is less than 90 trunks per square metre

Table E.3.6.1 Present Farm Inputs and Labour Requirement

Description	Unit	Date Palm	Olive	Pomog-ranate	Apricot	Fig	Onion	Carrot	Beans	Pepper	Tomato	Lucern	Henna
Farm Inputs													
1. Seed / Seedling	kg/number	220	165	440	440	440	3	5	6	5	5	10	5
2. FYM / Compost	ton	1.7	1	1.7	1.7	1.7	2.5	2.5	2.5	2.5	2.5	1	1.0
3. Chemical fertilizer													
- Ammoniun nitrate	kg	150	75	100	150	100	100	100	50	100	125	75	75
- Super 45 (TSP)	kg	100	75	50	50	50	100	100	125	125	150	125	125
- Potassium sulfate							50	50	50				
4. Agro-chemicals													
- Fungicides	kg	4	0	4	4	4	4	4	4	4	4		4
- Insecticide	litre	2	2	2	2	2	2	2	2	2	2		2
5. Water	m3	7,500	4,630	6,050	6,050	6,050	2,500	2,500	2,500	2,500	2,500	7,500	7500
Labour requirement													
1. Land Preparation	man-day	25	20	25	25	25	50	50	50	50	50	20	20
2. Seeding / Nursery	man-day						5	5	20	5	5	2	
3. Transplanting	man-day	44*	42*	37*	37*	37*	20			15	15		20
4. Fertilizer application	man-day	7	8	8	8	8	10	10	5	5	5	5	2
5. Weeding	man-day	5	20	5	5	5	30	30	15	30	30		10
6. Trimming / Plant Protection	man-day	10	15	10	10	10	10	10	7	10	10		7
7. Pollination	man-day	8											
8. Water Management	man-day	30	30	30	30	30	40	40	40	40	40	40	40
9. Harvesting	man-day	30**	15**	40**	60**	40**	60	60	60	60	60	60	45
10. Post Harvest	man-day	10**	5**	10**	15**	10*	15	15	10	15	15	15	15
Sub-total	man-day	125	113	128	153	128	240	220	207	230	230	142	159
		(121)	(125)	(115)	(115)	(115)							

Source : JICA study team estimation

Remarks : * ; Only for planting year, ** ; Only for matured tree, Numerals in parenthesis is only for planting year

Table E.3.6.2 Present Cropping Schedule

Crop	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Date Palm			H H H H H			F F F F F F			P P P P P			
Olive		H H H H H			T T T T		F F F F F F					
Pomogranate		H H H H H			T T T T		F F F F F F					
Apricot				T T T T T			F F F F F F		H H H H H H			
Fig	H H H H H				T T T T T		F F F F F F					H H
Winter Vegetables	S S S S S S S				H H H H H H H H							
Summer Vegetables	H H							S S S S S S S			H H H H H H	
Lucern*	H S S S S					H H H H				H H H H		H H H
Hanna*	S S S S S						H H H H					H H

Source : JICA study team estimation

Remarks : *; Fertilizer is applied as basal and just after harvesting

H H H : Harvesting S S S : Seeding T T T : Trimming

P P P : Pollination F F F : Fertilizer Application

Table E.3.7.1 Yield of Major Crops by Oasis (1993/94)

(Unit : tons/ha)

Code No	Name of Oasis	Date Palm	Olive	Pome-granate	Apricot	Fig and Other	Winter Veget.	Summer Veget.	Fodder Crops	Indus. Crops
Gafsa Governorate										
GF - 1	Kasba	7.8	8.2	8.3	19.5	8.1	24.4	18.7	60.4	
GF - 2	Sud Ouest	7.5	7.9	8.0	18.8	7.8	23.1	17.0	58.2	
GF - 3	El Guettar	7.4	7.8	7.9	18.7	7.7	22.9	15.2	58.0	
GF - 4	Lalla	7.7	8.1	8.2	19.4	8.0	24.1	17.3	60.1	
GF - 5	El Ksar	7.8	8.2	8.3	19.6	8.1	24.8	19.7	60.7	
GF - 6	Oued Shili	6.5					13.4		45.1	
GF - 7	Thelja	7.9	7.9				20.6		61.5	
GF - 8	Segdoud	6.6	6.6	8.3	8.3	6.1	16.9	15.5	45.6	
	Average	7.3	8.0	8.2	19.2	7.7	23.5	18.0	59.3	
Tozeur Governorate										
TZ - 1	Tozeur	6.3	2.9	2.2	2.5	2.4	12.8	9.6	77.6	
TZ - 2	Kastilia	6.2	2.9	2.2	2.5	2.4	13.8	10.7	77.5	
TZ - 3	Oued El Kouche	6.4	3.0	2.3	2.6	2.5	14.2	10.9	79.5	
TZ - 4	Nefiayeche	6.4	3.0	2.3	2.6	2.5	14.1	10.9	78.9	
TZ - 5	Chemsa	6.5	3.0	2.3	2.6	2.5	14.4	11.1	80.9	
TZ - 6	Helba Est	6.0	2.8	2.1	2.4	2.3	13.3	10.2	74.5	
TZ - 7	Helba Ouest	6.5	3.0	2.3	2.6	2.5	11.9	12.4	80.4	
TZ - 8	Ihim 1	5.9	2.7	2.1	2.4	2.3	10.8	8.8	72.9	
TZ - 9	Ihim 2	6.4	3.0	2.3	2.6	2.5	14.1	10.9	79.2	
TZ - 10	Ibn Chabbat 3	4.9	2.2	2.5	2.8	2.7	13.4	10.5	87.1	
TZ - 11	Nefta	6.1	2.8	2.2	2.4	2.3	12.0	9.1	75.1	
TZ - 12	Ghardgaya	6.2	2.9	2.2	2.5	2.4	13.8	10.7	77.5	
TZ - 13	Ibn Chabbat 1	5.0	2.2	2.5	2.9	2.7	14.0	10.2	87.8	
TZ - 14	Ibn Chabbat 2	4.9	2.2	2.5	2.8	2.7	13.7	10.5	87.1	
TZ - 15	Draa Sud	4.8	2.1	2.4	2.8	2.7	13.6	10.6	84.9	
TZ - 16	Hazoua 1	6.2	2.9	2.2	2.5	2.4	13.5	9.3	77.0	
TZ - 17	Hazoua 2	4.6	2.0	2.3	2.6	2.5	14.4	11.1	80.7	
TZ - 18	Hazoua 3	4.6	2.0	2.3	2.6	2.5	13.0	9.1	80.7	
TZ - 19	Oued Loghrissi	4.4	2.0	2.3	2.6	2.5	14.0	10.8	78.6	
TZ - 20	Tozrait	4.4	2.0	2.3	2.6	2.5	13.8	10.8	78.6	
TZ - 21	Cedada	6.2	2.9	2.2	2.5	2.4	11.3	9.3	76.6	
TZ - 22	Dghoumes	6.3	2.9	2.3	2.6	2.5	12.0	9.5	78.6	
TZ - 23	Degache	5.9	2.8	2.2	2.4	2.3	11.7	9.0	74.8	
TZ - 24	Chakmou	6.2	2.9	2.2	2.5	2.4	11.3	10.5	76.3	
TZ - 25	El Hamma	6.1	2.8	2.2	2.4	2.3	12.0	9.3	75.1	
TZ - 26	Tameza	6.7	3.1	2.4	2.7	2.6	12.2	11.4	82.8	
TZ - 27	Chebika	6.7	3.1	2.4		2.6	14.0	7.2	82.8	
TZ - 28	Foum El Khanga	6.7	3.1	2.4	2.7	2.6	10.6	7.2	62.8	
TZ - 29	Mides	6.7	3.1	2.4	2.7	2.6	14.7	7.2	82.8	
TZ - 30	Ain El Khima	6.7	3.1	2.4	2.7	2.6	10.6	7.2	82.8	
	Average	5.8	2.7	2.3	2.6	2.5	12.5	9.6	77.6	
Kebili Governorate										
KB - 1	Bechi	5.9	4.7	3.2	2.5	2.7	12.4	10.3	49.9	
KB - 2	Bouahdallah	5.6	4.6	3.1		2.6	13.0	10.1	49.1	
KB - 3	Faloussa	6.0	4.8	3.3	2.6	2.8	13.5	10.2	51.1	
KB - 4	El Ghaa	5.8	4.7	3.2	2.5	2.7	12.2	9.2	49.5	
KB - 5	Menchia	5.6	4.5	3.0	2.4	2.6	12.1	8.8	47.5	
KB - 6	Nagga	5.8	4.6	3.1	2.5	2.7	11.6	9.3	49.2	
KB - 7	Oum Somaa	5.6	4.5	3.0	2.4	2.6	12.1	9.2	47.5	
KB - 8	Oued Zira	5.5	4.4	3.0	2.3	2.5	12.6	8.6	46.9	
KB - 9	Ouled Touati	5.2	4.1	2.8	2.2	2.4	10.8	8.4	44.1	
KB - 10	Tenchig	5.8	4.6	3.1	2.5	2.7	13.2	9.7	49.2	
KB - 11	Zaouiet El Anes	5.7	4.5	3.1	2.4	2.6	12.7	9.9	48.0	
KB - 12	Zaouiet El Harth	5.4	4.3	2.9	2.3	2.5	11.7	10.0	45.5	
KB - 13	Zaret Louhichi	5.9	4.7	3.2	2.5	2.7	12.7	9.7	49.9	
KB - 14	Chouchet Nagga	4.2	3.5	3.2	2.5	2.7	12.7	8.9	49.6	
KB - 15	Guataya	5.7	4.5	3.1	2.4	2.6	12.5	9.1	48.0	
KB - 16	Jedida	6.0	4.8	3.2	2.5	2.7	12.7	11.1	50.6	
KB - 17	Mansoura	5.4	4.3	2.9	2.3	2.5	12.0	9.8	45.5	
KB - 18	Rabta	5.9	4.7	3.2	2.5	2.7	12.3	10.9	49.6	
KB - 19	Telmine	5.8	4.6	3.1	2.5	2.7	14.3	10.4	49.2	
KB - 20	Tembib	6.0	4.8	3.2	2.5	2.7	12.7	9.9	50.6	
KB - 21	Tombar	5.7	4.6	3.1	2.4	2.6	12.4	10.0	48.4	
KB - 22	Limagues	5.8	4.7	3.2	2.5	2.7	12.3	10.2	49.5	
KB - 23	Mazraa Neji	6.0	4.8	3.3	2.5	2.8	13.2	10.5	51.0	
KB - 24	Oum El Farth 1 et 2	6.0	4.8	3.3		2.8	12.6	11.0	51.2	
KB - 25	Stifimi	6.1	4.8	3.3	2.6	2.8	13.6	10.1	51.3	
KB - 26	Saidane	4.1	3.4	3.1	2.5	2.7	12.0	8.8	49.1	
KB - 27	Barghouthia	5.8	4.6	3.1	2.5	2.7	12.4	9.8	49.2	
KB - 28	Bazma	6.0	4.8	3.3	2.5	2.8	12.1		51.0	
KB - 29	B'chelli	5.8	4.6	3.1	2.5	2.7	12.4	9.8	49.2	
KB - 30	Blidette	5.8	4.6	3.1	2.5	2.7	12.4	9.9	49.2	
KB - 31	Zaouine	5.4	4.3	2.9	2.3	2.5	11.5		46.0	
KB - 32	Jemna	6.1	4.9	3.3	2.6	2.8	13.5	10.8	52.1	
KB - 33	Mouria	5.7	4.5	3.1	2.4	2.6	11.6	9.9	48.0	
KB - 34	Msaid	5.7	4.5	3.1	2.4	2.6	11.7	9.5	48.0	
KB - 35	Rahmat	5.9	4.7	3.2	2.5	2.7	12.3	12.1	50.2	
KB - 36	Ras El Ain	5.9	4.7	3.2	2.5	2.7	12.3	10.3	49.9	
KB - 37	Souk El Baiez	5.9	4.7	3.2	2.5	2.7	12.8	10.3	50.1	
KB - 38	Ben Zaiyou 1 et 2	5.8	4.6	3.1	2.5	2.7	12.9	9.6	49.2	
KB - 39	Bourzine	6.1	4.8	3.3	2.6	2.8	13.0	10.3	51.3	
Kebili Governorate										
KB - 40	Guelada	5.8	4.6	3.1	2.5	2.7	12.2	10.2	49.2	
KB - 41	Kelwamen	5.9	4.7	3.2	2.5	2.7	12.1	10.3	49.9	
KB - 42	Klibia	6.1	4.8	3.3	2.6	2.8	13.4	10.6	51.5	
KB - 43	Sidi Hamed	5.8		3.1	2.5	2.7	12.4	10.2	49.2	
KB - 44	Atilet	4.0	3.4	3.1	2.4	2.6	11.9	9.9	48.1	
KB - 45	Douz	5.8	4.6	3.1	2.5	2.7	12.0	10.2	49.2	
KB - 46	Ghoula	6.4	5.1	3.5	2.7	2.9	14.4	11.3	54.6	
KB - 47	Golaa	6.4	5.1	3.5	2.7	2.9	14.4	11.3	54.6	
KB - 48	Grad	6.4	5.1	3.5	2.7	2.9	14.2	11.3	54.6	
KB - 49	Hsay	5.9	4.7	3.2	2.5	2.7	12.6	10.7	49.9	
KB - 50	Noueil	5.7	4.5	3.1	2.4	2.6	12.3	10.3	48.0	
KB - 51	Zafraane	6.3	5.0	3.4	2.7	2.9	13.0	10.5	53.1	
KB - 52	Bouhâmza	5.9	4.7	3.2	2.5	2.7	12.5	11.0	49.9	
KB - 53	Ksar Ghilane	5.9	4.7	3.2	2.5	2.7	12.5	11.0	49.9	
KB - 54	Sakkouma	6.4	5.1	3.5	2.7	2.9	14.4	11.3	54.6	
KB - 55	Tarfaya	6.4	5.1	3.5	2.7	2.9	13.4	10.4	54.6	
KB - 56	Dhaouraria	4.5	3.7	3.4	2.7	2.9	12.9	11.0	53.1	
KB - 57	Smida	4.3	3.6	3.3	2.5	2.8	12.7	9.7	51.0	
KB - 58	Ghidma	6.3	5.0	3.4	2.7	2.9	13.4	10.5	53.3	
KB - 59	Sabria	5.8	4.7	3.2	2.5	2.7	12.7	10.1	49.5	
KB - 60	Faouar 1	6.0	4.8	3.3	2.6	2.8	13.1	10.6	51.2	
KB - 61	Faouar 2	6.0	4.8	3.2	2.5	2.7	12.9	10.0	50.6	
KB - 62	Bechri	4.3	3.6	3.3	2.6	2.8	12.6	10.5	51.0	
KB - 63	Dergine	4.6	3.9	3.5	2.8	3.0	14.3	11.4	55.2	
KB - 64	Matrouha	5.9	4.7	3.2	2.5	2.7	12.5	10.0	49.9	
KB - 65	Region 1	4.4	3.7	3.4	2.6	2.8	13.5	10.0	52.8	
KB - 66	Region2	4.4	3.7	3.3	2.6	2.8	13.4	10.8	52.3	
KB - 67	Tarfayet Elma	4.3	3.6	3.3	2.6	2.8	13.2	10.6	51.4	
	Average	5.7	4.6	3.2	2.5	2.7	12.8	10.1	50.1	
Gabes Governorate										
GB - 1	Ain Zrig	6.0	4.0	12.1	12.1	5.0	18.0	15.7	60.3	1.5
GB - 2	Temoula 1	6.2	4.1	12.4	12.4	5.2	19.5	15.2	61.9	1.5
GB - 3	Temoula 2	6.2	4.1	12.3	12.3	5.1	30.1	17.0	61.7	1.5
GB - 4	Zrig dakhlania	6.1	4.1	12.2	12.2	5.1	29.6	13.2	60.8	1.5
GB - 5	Teboulbou	5.7	3.8	11.5	11.5	4.8	15.1	14.3	57.3	1.4
GB - 6	Oasis de Gabes	5.9	3.9	11.7	11.7	4.9	12.6	15.1	58.6	1.5
GB - 7	Limaoua 1 et 2	5.8	3.9	11.6	11.6	4.8	14.6	14.9	58.1	1.5
GB - 8	M'dou	5.9	4.0	11.9	11.9	5.0	29.0	16.4	59.5	1.5
GB - 9	Chott El Fenik	6.3	4.2	12.5	12.5	5.2	29.4	15.4	62.5	1.6
GB - 10	Boucherma	6.0	4.0	12.0	12.0	5.0	19.7	15.8	59.9	1.5
GB - 11	Mahjoub	5.9	3.9	11.8	11.8	4.9	15.1	15.1	59.0	1.5
GB - 12	Salem	5.9	4.0	11.9	11.9	4.9	17.6	15.2	59.3	1.5
GB - 13	Shoul	6.1	4.1	12.2	12.2	5.1	16.0	15.3	60.8	1.5
GB - 14	Faycal	6.0	4.0	12.0	12.0	5.0	17.8	15.3	59.9	1.5
GB - 15	M'zizaa Chaanouch	6.1	4.1	12.2	12.2	5.1	16.3	15.6	60.9	1.5
GB - 16	Metouia	6.0	4.0	12.0	12.0	5.0	17.8	15.3	59.8	1.5
GB - 17	Oueslhef	5.7	3.8	11.3	11.3	4.7	15.2	14.5	56.6	1.4
GB - 18	Aoulnette	6.0	4.0	12.0	12.0	5.0	16.9	15.5	60.1	
GB - 19	Chenchou 1	5.8	3.9	11.6	11.6	4.8	16.4	14.5	58.1	
GB - 20	Chenchou 2	6.2	4.1	12.3	12.3	5.1	19.9	15.8	61.6	
GB - 21	Tekouri	5.9	3.9	11.8	11.8	4.9	17.3	15.6	59.1	
GB - 22	Hamma oasis	5.9	4.0	11.9	11.9	5.0	15.0	15.2	59.5	
GB - 23	Mziraa hamma	6.1	4.0	12.1	12.1	5.0	17.8	16.0	60.5	
GB - 24	Bechima 1	6.1	4.1	12.2	12.2	5.1	18.0	16.1	61.2	
GB - 25	Bechima 2	5.8	3.9	11.6	11.6	4.8	17.2	14.9	58.1	
GB - 26	Khebayet	6.2	4.1	12.4	12.4	5.2	18.3	15.8	61.9	
GB - 27	Ben Gtiloul	6.3	4.2	12.6	12.6	5.2	15.9	16.1	63.0	
GB - 28	Gib Dokhane	6.1	4.1	12.2	12.2	5.1	29.8	16.8	61.0	
GB - 29	Oued Nekhla	6.1	4.1	12.2	12.2	5.1	30.1	18.0	61.2	
GB - 30	Arram	6.1	4.1	12.2	12.2	5.1	17.6	15.4	61.0	
GB - 31	Mareth 1	5.9	4.0	11.9	11.9	5.0	17.4	15.7	59.5	
GB - 32	Mareth 2	5.8	3.9	11.6	11.6	4.8	16.8	14.6	58.1	
GB - 33	Mareth 3	6.3	4.2	12.5	12.5	5.2	23.1	16.0	62.5	
GB - 34	Mareth 5	5.4	3.6	10.7	10.7	4.5	15.9	13.7	53.6	
GB - 35	Mareth 6	5.8	3.9	11.6	11.6	4.8	17.8	14.9	58.1	
GB - 36	Zarat 2	6.0	4.0	12.1	12.1	5.0	16.2	15.2	60.3	
GB - 37	Zerkine 1 et 3	6.1	4.1	12.3	12.3	5.1	19.8	15.7	61.4	
GB - 38	Zerkine 2	5.9	3.9	11.8	11.8	4.9	28.8	15.1	59.0	
GB - 39	Ayoune Zerkine	5.9	3.9	11.8	11.8	4.9	28.8	15.1	59.0	
GB - 40	Medssia	6.6	4.4	13.2	13.2	5.5	24.4	16.9	66.0	
GB - 41	Kettana 1	5.4	3.6	10.8	10.8	4.5	17.8	14.2	53.9	
GB - 42	Kettana 3	5.9	4.0	11.9	11.9	5.0	29.0	12.9	59.5	
GB - 43	Kettana 4	5.6	3.8	11.3	11.3	4.7	21.8	14.4	56.4	1.4
GB - 44	Sidi Sellam	6.1	4.1	12.2	12.2	5.1	18.5	15.7	61.2	
GB - 45	Zrig Barrania	6.0	4.0	12.0	12.0	5.0	29.2	16.5	59.9	1.5
GB - 46	Ghanchi	6.0	4.0	12.1	12.1	5.0	29.4	17.8	60.3	
GB - 47	Laaradh 1	6.0	4.0	12.1	12.1	5.0	29.7	15.4	60.3	
GB - 48	Laaradh 3	6.3	4.2	12.5	12.5	5.2	22.0	16.0	62.5	
	Average	5.9	4.0	11.8	11.8	5.0	28.1	15.2	59.4	1.5
	Average	**5.9**	**6.1**	**10.3**	**11.8**	**6.2**	**19.1**	**13.4**	**54.9**	**1.5**

Source : Gafsa, Tozeur, Kebili and Gabes CRDA

Remarks : Veget. ; Vegetables, Indus. ; Industrial

Table E₂3.7.2 Production of Major Crops by Oasis (1993/94)

(Unit : tons)

Code No	Name of Oasis	Date Palm	Olive	Pome-granate	Apricot	Fig and Others	Winter Veget.	Summer Veget.	Fodder Crops	Indus. Crops
Gafsa Governorate										
GF - 1	Kasba	566	4,243	118	1,368	169	3,565	2,185	5,019	
GF - 2	Sud Ouest	314	4,669	175	376	194	2,037	2,173	9,719	
GF - 3	El Oueltar	2,195	923	87	37	185	2,543	106	2,898	
GF - 4	Lalla	293	4,953	189	136	176	1,497	2,295	13,828	
GF - 5	El Ksar	895	2,842	605	451	162	1,683	2,700	13,952	
GF - 6	Oued Shili	208					40		316	
GF - 7	Thelja	347	79				145		431	
GF - 8	Segdoud	1,140	145	58	25	73	254	230	1,369	
	Sub-total	5,958	17,854	1,230	2,394	960	11,763	8,779	47,531	
Tozeur Governorate										
TZ - 1	Tozeur	5,425	47	36	10	61	831	528	5,430	
TZ - 2	Kastilia	244	6	7	3	12	55	43	465	
TZ - 3	Oued El Koucha	365	6	2	3	2	28	22	239	
TZ - 4	Nefta-cite	413	6	5	3	5	56	43	316	
TZ - 5	Chenna	529	6	5	3	10	58	45	405	
TZ - 6	Hefta Est	403	3	4	2	9	27	20	223	
TZ - 7	Hefta Ouest	272	6	5	3	8	36	37	321	
TZ - 8	Jhim 1	200	5	2	2	5	32	26	364	
TZ - 9	Jhim 2	959	9	9	5	20	28	22	317	
TZ - 10	Ibn Chabbat 3	1,368	17	28	20	57	147	95	609	
TZ - 11	Nefta	4,939	20	26	5	38	601	408	3,606	
TZ - 12	Ghandgaya	206	3	4	3	7	55	21	233	
TZ - 13	Ibn Chabbat 1	1,012	13	25	11	44	126	71	615	
TZ - 14	Ibn Chabbat 2	1,146	9	28	14	52	123	95	784	
TZ - 15	Oras Sud	787	8	24	11	42	136	85	509	
TZ - 16	Hazoua 1	379	3	11	3	10	40	28	308	
TZ - 17	Hazoua 2	187	2	5		10	29	22	242	
TZ - 18	Hazoua 3	995	4	21	8	20	78	36	403	
TZ - 19	Oued Leghrissi	311	2	7	3	7	28	22	314	
TZ - 20	Tozrarit	173	8	2	3	7	41	22	157	
TZ - 21	Colaïa	303	9	2		5	34	28	383	
TZ - 22	Dghoumes	564	12	9	3	15	48	29	393	
TZ - 23	Degache	4,200	226	32	7	35	738	488	4,638	
TZ - 24	Chakmou	480	11	7	2	10	34	24	305	
TZ - 25	El Hamma	2,279	17	15	5	21	304	205	1,653	
TZ - 26	Tameriza	487	6	5	3	5	37	23	331	
TZ - 27	Chebika	133	3			5	14	7	83	
TZ - 28	Foum El Khanga	267	6	5	3	8	21	7	166	
TZ - 29	Mides	187	3	2		5	29	7	166	
TZ - 30	Ain El Karma	147	3	2		3	21	7	166	
	Sub-total	29,329	480	334	135	537	3,833	2,514	24,143	
Kebili Governorate										
KB - 1	Bechri	923	5	6		5	99	93	2,294	
KB - 2	Bouchdallah	1,476	5	6		5	182	152	3,189	
KB - 3	Faïnana	1,186	10	10	3	6	94	102	2,553	
KB - 4	El Gitar	491	24	5	2	5	134	120	1,783	
KB - 5	Menchia	672	31	12	5	18	109	115	2,894	
KB - 6	Nagga	1,032		3		5	35	37	1,270	
KB - 7	Oum Soraa	790	71	6	2	5	109	138	1,091	
KB - 8	Oued Zira	901	22	9	2	10	101	156	2,850	
KB - 9	Oued Touati	302	4	3		5	119	67	2,206	
KB - 10	Tenchig	278	9	6	2	3	106	68	1,721	
KB - 11	Zaoulet El Arres	658	27	3		5	89	60	1,633	
KB - 12	Zaoulet El Harth	408	17			2	58	50	1,548	
KB - 13	Zirat Louhichi	459	23	3		5	114	107	2,095	
KB - 14	Chouchet Nagga	100		3		3	63	45	793	
KB - 15	Ouatya	777	14	6	5	16	212	110	2,018	
KB - 16	Jedida	728	38	3		5	266	56	2,784	
KB - 17	Mazaoura	424	17			7	84	78	1,685	
KB - 18	Rabta	918		6	2	5	395	109	1,984	
KB - 19	Telmine	1,201	32	38	2	34	1,445	146	1,956	
KB - 20	Tembib	585	38	10		25	266	248	3,290	
KB - 21	Toudar	628	32	12		16	310	150	2,664	
KB - 22	Limagues	304	14	3		3	99	61	2,377	
KB - 23	Mazraa Nejl	367	10	7		3	79	63	1,733	
KB - 24	Oum El Farth 1 et 2	308	10	3		3	138	88	1,791	
KB - 25	Sidi Ismi	455	19	3		6	95	71	3,337	
KB - 26	Saidane	74	21	6	2	8	48	88	982	
KB - 27	Barghouthia	273	9	3		5	384	98	885	
KB - 28	Bazma	674	86	33	3	14	36		1,275	
KB - 29	Bichelli	713	5	6	2	21	354	98	1,966	
KB - 30	Biskrine	406	5	3		8	384	258	1,062	
KB - 31	Zarcine	569		3		2	138		782	
KB - 32	Jemna	646	10	3		11	459	161	4,011	
KB - 33	Mtouia	431	5	3	2	5	396	149	1,922	
KB - 34	Mazid	458		9	2	13	294	133	2,882	
KB - 35	Bahrat	457	5	10		11	136	24	3,518	
KB - 36	Ras El Ain	1,446	42	19		19	368	309	3,092	
KB - 37	Souk El Balez	307	24	13		8	192	124	2,103	
KB - 38	Ben Zitoun 1 et 2	800	5	6	2	13	916	526	2,114	
KB - 39	Bourzine	509	5	10	3	14	664	103	2,772	
Kebili Governorate										
KB - 40	Goefida	568		3	2	6	439	366	2,458	
KB - 41	Kelwaiten	259		3		5	170	93	1,247	
KB - 42	Kibla	514	15	7	3	6	227	319	1,700	
KB - 43	Sidi Hamed	522		9	5	13	161	91	1,475	
KB - 44	Atlet	900		22	5	34	1,292	149	3,079	
KB - 45	Doez	1,427	46	19	7	40	168	61	2,950	
KB - 46	Ghoula	406	15	11	5	12	101	34	1,802	
KB - 47	Golaa	367	15	7	3	6	101	34	1,857	
KB - 48	Graat	644	15	7	8	9	171	102	2,731	
KB - 49	Hsey	435	19	13	5	16	191	86	2,244	
KB - 50	Noeil	454	23	15	5	13	184	83	2,152	
KB - 51	Zafzane	582	15	7	3	6	143	73	2,176	
KB - 52	Bouhamra	423	9	6	2	8	113	55	1,496	
KB - 53	Ksar Ghilane	570	5	3		3				
KB - 54	Sakhouna	438	10	11	5	15	101	34	1,693	
KB - 55	Tarfaya	444	10	11	3	6	147	42	1,911	
KB - 56	Dhomrana	187		3		6	181	66	1,592	
KB - 57	Sridia	240		13	3	8	153	39	2,140	
KB - 58	Ghidma	484		3		6	281	261	2,667	
KB - 59	Sabria	327		3	2	5	190	191	1,684	
KB - 60	Faouar 1	501		3		8	262	191	1,741	
KB - 61	Faouar 2	454		3		8	425	349	2,532	
KB - 62	Bochri	412		3		8	152	190	1,888	
KB - 63	Dergine	311		7	3	6	244	103	2,871	
KB - 64	Matrouha	529		10	7	11	163	100	2,494	
KB - 65	Regim 1	434		7	3	9	270	160	4,220	
KB - 66	Regim2	392		7		14	268	195	3,401	
KB - 67	Tarfayet Elma	203		7		8	132	96	1,284	
	Sub-total	37,289	698	517	114	654	14,083	8,128	142,936	
Gabes Governorate										
GB - 1	Ain Zrig	555		410	36	55	294	126	1,327	17
GB - 2	Teroula 1		8	49	161	108	107	61	495	5
GB - 3	Terroela 2	25	4	74	49	26	60	34	123	5
GB - 4	Zrig dakhlania	73		170	12	15	59	13	485	3
GB - 5	Teboulbou	1,175	359	1,798	172	234	1,166	502	4,580	114
GB - 6	Oasis de Gabes	2,842	12	2,764	35	34	772	347	7,320	292
GB - 7	Limaoua 1 et 2	6	74	709	81	290	882	357	1,356	9
GB - 8	M'dou	95	12	107	24	30	58	33	535	12
GB - 9	Chott El Ferik	56		88	38	63	59	46	188	19
GB - 10	Boochemma	665	28	192	12	40	175	79	779	17
GB - 11	Mahjoub	1,257	558	106	24	39	2,977	1,287	5,602	28
GB - 12	Salem	273	142	71		5	613	273	1,185	7
GB - 13	Shoal	201	134	61		5	597	260	1,155	6
GB - 14	Fayed	659	512	183	12	30	2,052	276	3,716	20
GB - 15	M'rina Ghannouch	189	816	365	49	71	2,256	981	4,017	21
GB - 16	Metoula	1,292		586	12	10	2,047	225	3,707	19
GB - 17	Oued Ksef	1,172	49	442	23	9	2,100	913	6,232	18
GB - 18	Aouinette	433	642				991	448	301	
GB - 19	Cherchou 1		139	81	35	53	214	102	1,453	
GB - 20	Cherchou 2		90	37		77	306	142	308	
GB - 21	Tekouri	124		106	12	5	160	78	886	
GB - 22	Hamma oasis	2,231		238	24	15	919	410	6,919	
GB - 23	Mzirat hamma	339		230	36	10	164	80	2,619	
GB - 24	Bochima 1	1,059	220	453	98	41	166	81	2,449	
GB - 25	Bochima 2	1,040	240	418	70	34	300	134	4,067	
GB - 26	Khelayet	254	136	173	12	36	319	142	3,094	
GB - 27	Ben Ghilouf	636	176	239	25	84	974	435	3,560	
GB - 28	Gib Dokhane	201	134			20	60	34	1,030	
GB - 29	Oued Nekhla	110	45			5	90	54	306	
GB - 30	Arram	275	293	439	24	41	374	154	610	
GB - 31	Mareth 1	113	51	773	12	10	161	78	1,189	
GB - 32	Mareth 2	232	58	1,371	35	19	357	146	4,648	
GB - 33	Mareth 3	38	75	95			122	48	625	
GB - 34	Mareth 5	16	136	676	64	22	277	123	2,414	
GB - 35	Mareth 6	128	135	291	23	19	243	89	3,196	
GB - 36	Zarat 2	151	121	1,327	48	25	399	152	3,619	
GB - 37	Zerkine 1 et 3	61	82	983	25	20	197	94	1,536	
GB - 38	Zerkine 2	236	90	1,062	12	10	58	45	590	
GB - 39	Ayoune Zerkine	18	24	236		5	58	45	590	
GB - 40	Medsia	46	57	462		17	129	51	330	
GB - 41	Ketana 1	16	76	745	22	14	158	71		
GB - 42	Ketana 3	54	131	1,046	71	20	58	13		
GB - 43	Ketana 4	17	188	722	56	14	110	43		21
GB - 44	Sidi Sellam	110	277	262		56	347	154		
GB - 45	Zrig Barranis		243	72		20	58	33	599	30
GB - 46	Ghardri		20			126				
GB - 47	Lazradh 1		88	157			89	46	60	
GB - 48	Lazradh 3		163	200			140	48	125	
	Sub-total	18,470	6,879	21,065	1,444	1,943	24,275	9,435	96,203	662
	Total	91,046	26,111	23,145	4,096	4,954	55,954	29,842	310,813	662

Source : Gafsa, Tozeur, Kebili and Gabes CRDA
Remarks : Veget. : Vegetables, Indus. : Industrial

Table B.3.8.1 Animal Population by Oasis (1993/94)

Code No.	Oasis	Cattle	Sheep	Goat	Camel	Equine
Gafsa Governorate						
GF - 1	Kasba *	970	20,000	4,000	250	800
GF - 2	Sud Ouest					
GF - 3	Elguettar	160	19,000	4,500	50	850
GF - 4	Lalla					
GF - 5	Ksar**	540	11,000	2,000	20	600
GF - 6	O.Shili***	150	23,000	1,500	300	350
GF - 7	Thelja					
GF - 8	Segdoud	50	11,000	2,500	120	350
	Sub-total	1,870	84,000	14,500	740	2,950
Tozeur Governorate						
TZ - 1	Tozeur	250	2,000	3,000		
TZ - 2	Kastilia	15	50	200		
TZ - 3	Oued Coucha	0				
TZ - 4	Neftayette	5	100	150		
TZ - 5	Chemsa	15	250	300		
TZ - 6	Helba Est	15	20	50		
TZ - 7	Helba-Ouest	20	1,000	500		
TZ - 8	Jhim 1	20	400	400		
TZ - 9	Jhim 2	25	400	400		
TZ - 10	Ibn Chabbat 3		800	700		
TZ - 11	Nefta	160	7,864	6,450		
TZ - 12	Gardgaya	1				
TZ - 13	Chabbat I					
TZ - 14	Chabbat II					
TZ - 15	Draa Sud		20			
TZ - 16	Hazoua 1	2	500	400		
TZ - 17	Hazoua 2		500	400		
TZ - 18	Hazoua 3		2,500	700		
TZ - 19	Oued Ghrissi		800	350		
TZ - 20	Tozrarit					
TZ - 21	Codada					
TZ - 22	Dghoumes	6	3,000	1,800		
TZ - 23	Degache	153	960	2,500		
TZ - 24	Chakmou	19	2,000	800		
TZ - 25	El Hamma	70	508	500		
TZ - 26	Tamerza		1,500	1,700		
TZ - 27	Chebika		5,000	2,500	500	
TZ - 28	Foum El Khanga		4,000	2,000		
TZ - 29	Mides					
TZ - 30	Alnkarma					
	Sub-total	776	34,172	25,800	500	
Kebili Governorate						
KB - 1	Bechri		2,000	2,300	20	
KB - 2	Bouabdellah	7	2,200	2,100	70	
KB - 3	Fatnassa		1,800	2,500	30	
KB - 4	Gleaa					
KB - 5	Menchia		2,200	2,600		
KB - 6	Negga	4	2,400	2,200	90	
KB - 7	Oum Somaa	1	2,000	2,200	40	
KB - 8	Oued Zira					
KB - 9	Ouled Touati					
KB - 10	Tenchig					
KB - 11	Zouaiet El Anes					
KB - 12	Zouaiet El Harth	3	1,400	1,100		
KB - 13	Ziret Louhichi					
KB - 14	Chouchet Negga					
KB - 15	Guetaya	26	300	800		
KB - 16	Jdida		500	600		
KB - 17	Mansoura					
KB - 18	Rabta		800	700		
KB - 19	Telmine		300	600		
KB - 20	Tembib	4	1,000	800		
KB - 21	Tombar		500	400		
KB - 22	Limaguess		1,300	1,000	500	
KB - 23	Mazraa Neji					
KB - 24	Oum El Farth 1 et 2					
KB - 25	Seftimi					
KB - 26	Saidane		2,500	2,200	1,400	
KB - 27	Barghouthia					
KB - 28	Bazma		1,750	1,700	50	
KB - 29	Bebelli		2,100	2,800		
KB - 30	Blidette					
KB - 31	Zarcine		1,850	2,100		
KB - 32	Jemna		1,050	800	250	
KB - 33	Mtouria					
KB - 34	Msaid					
KB - 35	Rahmat					
KB - 36	Ras El Ain	15	900	600	400	
KB - 37	Souk El baiez					
KB - 38	Ben Zitoun 1 et 2					
KB - 39	Bourzine					
Kebili Governorate						
KB - 40	Gueliada					
KB - 41	Kelwamen					
KB - 42	Klibia					
KB - 43	Sidi Hamed					
KB - 44	Atilet		750	950		
KB - 45	Douz	2	6,400	2,850	450	
KB - 46	Ghoula					
KB - 47	Golaa	14	3,100	1,200		
KB - 48	Grad					
KB - 49	Hsay	5	2,100	900		
KB - 50	Noueil		4,300	2,500	150	
KB - 51	Zafraane		3,400	1,800	400	
KB - 52	Bouhamza					
KB - 53	Ksar Ghilane					
KB - 54	Sakkouma					
KB - 55	Tarfaya	15	3,700	750	1,500	
KB - 56	Dhomrana					
KB - 57	Smida					
KB - 58	Ghidma		2,500	2,000	700	
KB - 59	Sabria		3,400	4,400	300	
KB - 60	Faouár 1	3	200	500	350	
KB - 61	Faouar 2					
KB - 62	Bechni		700	1,100		
KB - 63	Dergine					
KB - 64	Matrouba					
KB - 65	Regim 1		1,200	1,000	900	
KB - 66	Regim2					
KB - 67	Tarfayet Elma					
	Sub-total	99	60,600	50,050	7,600	
Gabes Governorate						
GB - 1	Ain Zrig	30				
GB - 2	Temoula 1	22	250	400		
GB - 3	Temoula 2	9	80	120		
GB - 4	Zrig dakhlania	20				
GB - 5	Teboulbou	728	1,200	2,600		
GB - 6	Oasis de Gabes	2,200	2,500	1,500		
GB - 7	Limacoua 1 et 2					
GB - 8	M'dou	2	400	1,500		
GB - 9	Chott El Ferik	30	20	50		
GB - 10	Boucheruma	270	2,500	1,800		
GB - 11	Mahjoub		1,000	1,800		
GB - 12	Salem	5	250	250		
GB - 13	Sboui	5	250	250		
GB - 14	Faycal	90	500	500		
GB - 15	M' ziraa Ghannouch					
GB - 16	Metouia	26	700	1,500		
GB - 17	Oueldhref	4	1,500	2,000		
GB - 18	Aouinette					
GB - 19	Chenchou 1					
GB - 20	Chenchou 2					
GB - 21	Tekouri					
GB - 22	Hamma oasis	100				
GB - 23	Mziraa hamma					
GB - 24	Bechima 1					
GB - 25	Bechima 2					
GB - 26	Khebayet					
GB - 27	Ben Ghilouf					
GB - 28	Glib Dokhane					
GB - 29	Oued Nekhla					
GB - 30	Arram					
GB - 31	Mareth 1					
GB - 32	Mareth 2	10	3,500	7,500		
GB - 33	Mareth 3			1,200		
GB - 34	Mareth 5					
GB - 35	Mareth 6					
GB - 36	Zarat 2	40	2,500	7,500		
GB - 37	Zerkine 1 et 3	38				
GB - 38	Zerkine 2	18				
GB - 39	Ayoune Zerkine					
GB - 40	Molssia					
GB - 41	Kettana 1	5	100	50		
GB - 42	Kettana 3		150	200		
GB - 43	Kettana 4	15	120	250		
GB - 44	Sidi Sellam		150	200		
GB - 45	Zrig Barrania		120	300		
GB - 46	Ghandri		100	500		
GB - 47	Laaradh 1	4	60	40		
GB - 48	Laaradh 3		80	50		
	Sub-total	3,671	18,030	32,060		
	Total	6,416	196,802	122,410	8,840	2,950

Sources : Gafsa, Tozeur, Kebili and Gabes CRDA
Remarks : ** : includes Sud Ouest, *** : includes Thelja

Table E.3.9.1 (1) Market Price of Major Crops in Tozeur Governorate

Crops	English	1994 Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	1995 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average
1. Arboriculture	Fruit																					
1.1 Palmiers dattiers	Date Palm	0.600	0.600	0.600				1.000	0.600	0.800	0.800	0.700	0.800	0.500	0.500	0.500					1.500	0.763
1.2 Oliviers à huile	Olive	0.300								0.300	0.350	0.350	0.350	0.400								
1.3 Grenadiers	Pomegranate									0.200	0.350	0.400	0.400									0.338
1.4 Abricotiers	Apricot				0.500	0.500	0.500										0.700	0.600	0.600			0.633
1.5 Figuiers	Fig							0.500	0.500											0.600	0.600	0.600
1.6 Pommiers	Apple	1.400	1.400	1.200	1.200	0.800	0.800	0.750	0.900	0.800	1.000	1.000	1.100	1.550	1.500	1.450	1.900	1.200	1.200	0.900	1.200	1.233
1.7 Peches	Peach					1.100	1.000	1.000										1.200	1.250		1.200	1.217
1.8 Amandiers	Almond					0.500	0.450	0.400										0.400	0.400	0.400		0.400
1.9 Pruniers	Plum					0.700	0.600											0.550	0.800			0.675
1.10 Autres (Banana)	Others	1.800	1.800	1.800	1.800		1.800					1.800	1.800	1.800	1.800	1.100	1.800	1.200	1.200	1.000	1.100	1.460
2. Mar. d'hiver + printemp	Vegetables																					
2.1 Carotte	Carrot	0.060	0.060	0.060	0.080	0.160	0.200	0.200	0.240	0.200	0.100	0.080	0.100	0.080	0.080	0.080	0.080	0.120	0.120	0.016		0.096
2.2 Navet	Turnip	0.150	0.160	0.160	0.250	0.400	0.500	0.500	0.600	0.500	0.300	0.200	0.250	0.200	0.200	0.200	0.300	0.350				0.278
2.3 Oignon	Onion	0.300	0.300	0.200	0.250	0.250	0.250	0.250	0.200	0.200	0.250	0.400	0.300	0.700	0.600	0.400	0.400	0.300	0.300	0.200	0.250	0.358
2.4 Fèves verts	Kidney Beans	0.800	0.500	0.400	0.350	0.350								0.850	0.500	0.400	0.300	0.400				0.490
2.5 Piments	Pepper	1.800	1.600	1.400	0.800	1.000	1.000	0.550	0.800	0.750	0.500	0.500	0.650	1.600	1.400	1.000	0.800	0.800	0.750	0.550	0.600	0.825
2.6 Tomates	Tomato	0.400	0.400	0.350	0.400	0.350	0.250	0.220	0.330	0.350	0.550	0.500	0.600	0.500	0.400	0.350	0.320	0.300	0.250	0.250	0.300	0.389
2.7 Petits pois verts	Greenpeas	0.750	0.700	0.750	0.820	0.800						1.000	1.000	1.400	1.200	1.200	0.850	0.900				1.079
2.8 Concombre	Cucumber	1.100	1.200	0.900	0.750	0.600	0.600	0.550	0.600	0.600	0.900	0.900	0.800	1.100	0.700	0.700	0.700	0.800	0.700	0.800	0.600	0.775
2.9 Pastèques de prim.	Watermelon					0.400	0.250	0.200	0.200									0.300	0.250	0.250	0.250	0.263
2.10 Melon de primeur	Melon		1.000	1.200	1.200	1.100	0.800	0.250	0.250	0.500	0.500				1.600	1.600	1.250	1.000	0.900	0.400	0.400	0.906
2.11 Pde terre de saison	Potato	0.400	0.350	0.350	0.350	0.350	0.350	0.350	0.370	0.370	0.450	0.350	0.330	0.350	0.450	0.450	0.450	0.370	0.370	0.400	0.400	0.395
2.12 Autres Cultures	Others	0.450	0.350	0.350	0.350	0.300	0.300	0.250	0.250	0.250	0.200	0.300	0.300	0.300	0.350	0.400	0.350	0.250	0.300	0.300	0.250	0.296
3. Fourr Annuels	Fodder																					
3.1 Luzerne	Lucern	0.040	0.040	0.040	0.040	0.050	0.050	0.050	0.060	0.060	0.050	0.050	0.050	0.050	0.050	0.050	0.060	0.070	0.070	0.060	0.060	0.057
3.2 Orge en vert	Barley																					
3.3 Sorgho	Sorghum																					
3.4 Avoine en grains	Oats																					
3.5 Autres fourr annuuuels	Others																					
4. Culture Industrielles	Industrial crops																					
4.1 Tabac	Tobacco																					
4.2 Henne	Henna																					
4.3 Autres	Others																					

Source : Arr. des Etudes et Statistiques Agricole, Division des Etudes et du Developement Agricole, Tozeur CRDA

Table E.3.9.1 (2) Market Price of Major Crops in Kebili Governorate

Crops	English	1994 Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	1995 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Average
1. Arboriculture	Fruit																						
1.1 Palmiers dattiers	Date Palm											1.250	1.250	1.250	1.250								1.250
1.2 Oliviers à huile	Olive																						
1.2 Palmiers dattiers	Date Palm											1.250	1.250	1.250	1.250								1.250
1.3 Grenadiers	Pomegranate										0.400												0.400
1.4 Abricotiers	Apricot																	0.825					0.825
1.5 Figuiers	Fig																				0.460		0.460
1.6 Pommiers	Apple									0.625	0.900	1.125	1.100	1.075	1.260	1.550	1.550		0.600	0.750	0.800	0.720	1.005
1.7 Peches	Peach																	1.200		1.100	1.150		1.150
1.8 Amandiers	Almond																	0.525	0.575				0.550
1.9 Pruniers	Plum									0.800	0.900							1.225	0.600				0.881
1.10 Autres Arbres	Others									0.775	0.965	0.700	1.125	1.110	1.065	0.610	0.610	0.950	0.775	0.975	1.000	0.800	0.882
2. Mar. d'hiver + printemp	Vegetables																						
2.1 Carotte	Carrot									0.016	0.130	0.090	0.082	0.098	0.106							0.118	0.091
2.2 Navet	Turnips										0.240	0.275	0.225	0.245	0.275	0.350	0.350					0.275	0.279
2.3 Oignon	Onion									0.200	0.240	0.300	0.225	0.190	0.200	0.225	0.225	0.250	0.225	0.175	0.185	0.250	0.222
2.4 Fèves verts	Kidney Beans												1.225	1.100	0.900	0.370	0.370	0.300					0.711
2.5 Piments	Pepper									0.800	0.665	0.400	1.250	1.225	1.500	1.200	1.200	0.700	0.925	0.625	0.600	0.625	0.901
2.6 Tomates	Tomato									0.290	0.340	0.350	0.675	0.625	0.575	0.475	0.475	0.250	0.200		0.225	0.275	0.396
2.7 Petits pois verts	Greenpeas										1.290	1.000	1.075	1.250	1.200	1.175	0.850						1.120
2.8 Concombre	Cucumber									0.425	0.525	0.650	0.600	0.860	1.300	0.750	0.750	0.500	0.450	0.350	0.275	0.350	0.599
2.9 Pastèques de prim.	Watermelon									0.175								0.560	0.290	0.220	0.210	0.300	0.293
2.10 Melon de primeur	Melon									0.385		1.000	1.000	0.600		1.400	1.400	0.825	0.800	0.510	0.375	0.475	0.797
2.11 Pde terre de saison	Potato									0.350	0.300	0.350	0.300	0.340	0.335	0.435	0.435	0.435	0.410	0.410	0.425	0.440	0.382
2.12 Autres Cultures	Others									0.600	0.475	0.450	0.375	0.450	0.550	0.585	0.275	0.275	0.350	0.375	0.275	0.250	0.407
3. Fourr Annuels	Fodder																						
3.1 Luzerne	Lucern																						
3.2 Orge en vert	Barley																						
3.3 Sorgho	Sorghum																						
3.4 Avoine en grains	Oats																						
3.5 Autres fourr annuuels	Others																						
4. Culture Industrielles	Industrial crops																						
4.1 Tabac	Tobacco																						
4.2 Henne	Henna																						
4.3 Autres	Others																						

Source : Arr. des Etudes et Statistiques Agricole, Division des Etudes et du Developement Agricole, Kebili CRDA

Table E.3.9.1 (3) Market Price of Major Crops in Gabes Governorate

Crops	English	1994 Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	1995 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average
1. Arboriculture	Fruit																					
1.1 Palmiers dattiers	Date Palm	0.338	0.357	0.325					0.436	0.320	0.313	0.387	0.377	0.445	0.470						0.410	0.380
(deglas)						1.254				1.375	1.139	1.035	0.887	1.306	1.723							1.246
1.2 Oliviers à huile	Olive																					
1.3 Grenadiers	Pomegranate									0.334	0.286	0.369	0.531									0.380
1.4 Abricotiers	Apricot				1.259	0.396	0.317	0.368									1.491	0.456	0.449	0.514		0.656
1.5 Figuiers	Fig					0.893	0.526	0.528	0.429									1.186	0.493	0.760	0.553	0.671
1.6 Pommiers	Apple	1.240	1.175	1.145	1.122	1.220	0.644	0.633	0.742	0.756	1.040	1.381	1.381	1.125	1.201	1.532	1.960		0.614	0.773	0.983	1.088
1.7 Peches	Peach					0.638	0.595	0.798	0.749	0.749								0.915	0.807	1.026	1.100	0.820
1.8 Amandiers, green	Almond				0.572	0.369	0.349	0.443											0.374	0.589		0.449
1.9 Pruniers	Plum					0.804	0.550	0.598	0.935	0.938								1.026	0.721	0.960		0.817
2. Mar. d'hiver + printemp	Vegetables																					
2.1 Carotte	Carrot	0.073	0.072	0.069	0.092	0.104	0.114	0.128	0.177	0.134	0.130	0.100	0.078	0.092	0.075	0.095	0.126	0.140	0.125	0.122	0.145	0.110
2.2 Navet	Turnips	0.164	0.192	0.177	0.205	0.217	0.214	0.277	0.367	0.330	0.335	0.324	0.223	0.203	0.177	0.214	0.270	0.352	0.359	0.308		0.258
2.3 Oignon	Onion	0.310	0.344	0.367	0.149	0.154	0.121	0.105	0.114	0.152	0.204	0.238	0.309	0.415	0.518	0.387	0.174	0.148	0.138	0.127		0.235
2.4 Fèves verts	Kidney Beans		0.733	0.316	0.266	0.334	0.319								0.570	0.361	0.305	0.268	0.445			0.392
2.5 Piments	Pepper	1.335	1.354	1.459	1.146	0.769	0.884	0.779	0.578	0.644	0.516	0.498	0.701	1.300	1.653	1.417	1.040	0.667	0.804	0.689		0.960
2.6 Tomates	Tomato	0.331	0.309	0.276	0.314	0.283	0.233	0.159	0.188	0.223	0.347	0.335	0.394	0.425	0.273	0.302	0.371	0.311	0.294	0.170		0.291
2.7. Petits pois verts	Greenpeas	0.686	0.661	0.454	0.664	0.642					1.431	0.923	1.212	1.227	1.036	0.940	1.029	0.861				0.905
2.8 Concombre	Cucumber	0.792	1.593	1.067	0.669	0.301	0.286	0.223	0.236	0.263	0.526	0.806	0.810	0.926	1.490	0.949	0.650	0.360	0.310	0.334		0.663
2.9 Pastèques de prim.	Watermelon			0.800	0.795	0.409	0.273	0.184	0.162	0.183	0.187							0.411	0.259	0.210		0.352
2.10 Melon de primeur	Melon	0.599	0.700	1.268	1.588	0.858	0.639	0.325	0.220	0.413	0.423	1.525	1.463	0.824	1.200	1.425	1.253	0.877	0.887			0.916
2.11 Pde terre de saison	Potato	0.238	0.279	0.337	0.286	0.296	0.300	0.339	0.352	0.367	0.392	0.331	0.246	0.310	0.326	0.410	0.459	0.459	0.305	0.348		0.336
2.12 Autres Cultures	Others	0.393	0.465	0.315	0.261	0.696	0.358	0.376	0.548	0.640	0.710	0.620	0.432	0.389	0.407	0.320	0.279	0.338	0.491	0.413		0.445
3. Fourr Annuels	Fodder																					
3.1 Luzerne	Lucern	0.050																			0.030	0.040
3.2 Orge en vert	Barley																					
3.3 Sorgho	Sorghum																					
3.4 Avoine en grains	Oats																					
3.5 Autres fourr annuuels	Others																					
4. Culture Industrielles	Industrial crops																					
4.1 Tabac	Tobacco																					
4.2 Henne	Henna							2.500	2.000	1.800										2.500	2.000	2.160
4.3 Autres	Others							0.600	0.497	0.602										0.762	0.759	0.644

Source : Arr. des Etudes et Statistiques Agricole, Division des Etudes et du Developement Agricole, Gabes CRDA

Table E.3.9.2 Market Price of Major Crops in the Study Area

(Unit : D./kg)

Crops	English	Gafsa	Tozeur	Kebili	Gabes	Average
1. Arboriculture	Fruit					
1.1 Palmiers dattiers	Date Palm		0.731		0.380	0.555
deglas		1.400	1.200	1.250	1.246	1.274
1.2 Oliviers à huile	Olive	0.450	0.500	0.400	0.500	0.463
1.3 Grenadiers	Pomegranate	0.250	0.338	0.400	0.380	0.342
1.4 Abricotiers	Apricot	0.300	0.567	0.825	0.656	0.587
1.5 Figuiers	Fig	0.150	0.550	0.460	0.671	0.458
1.6 Pommiers	Apple	0.400	1.163	1.005	1.088	0.914
1.7 Peches	Peach	0.450	1.125	1.150	0.820	0.886
1.8 Amandiers, green	Almond	2.000	0.425	0.550	0.449	0.856
1.9 Pruniers	Plum	0.250	0.663	0.881	0.817	0.653
1.10 Raisin	Grape				0.644	0.644
2. Mar. d'hiver + printemp	Vegetables					
2.1 Carotte	Carrot	0.120	0.111	0.091	0.110	0.108
2.2 Navet	Turnip	0.100	0.307	0.279	0.258	0.236
2.3 Oignon	Onion	0.100	0.315	0.222	0.235	0.218
2.4 Féves verts	Kidney Beans	0.150	0.485	0.711	0.392	0.434
2.5 Piments	Pepper	1.300	0.943	0.901	0.960	1.026
2.6 Tomates	Tomato	0.400	0.369	0.396	0.291	0.364
2.7 Petits pois verts	Greenpeas	0.200	0.948	1.120	0.905	0.793
2.8 Concombre	Cucumber	0.200	0.780	0.599	0.663	0.560
2.9 Pastèques de prim.	Watermelon	0.600	0.263	0.293	0.352	0.377
2.10 Melon de primeur	Melon	0.800	0.872	0.797	0.917	0.846
2.11 Pde terre de saison	Potato	0.300	0.381	0.382	0.336	0.350
3. Fourr Annuels	Fodder					
3.1 Luzerne	Lucern	0.030	0.057	0.080	0.080	0.062
3.2 Orge en vert	Barley	0.150				0.150
3.3 Sorgho	Sorghum	0.100				0.100
3.4 Avoine en grains	Oats	0.100				0.100
4. Culture Industrielles	Industrial crops					
4.1 Henne	Henna				2.160	2.160

Source : Arr. des Etudes et Statistiques Agricole, Division des Etudes et du Developement Agricole, Gafsa, Tozeur, Kebili and Gabes CRDA, Sept., 1995

Table E.3.9.3 (1) Market Price of Major Fruits at Tunis Wholesale Market (BIR KASSAA)

Crops	Unit	1994 Sep.	1994 Oct.	1994 Nov.	1994 Dec.	1995 Jan.	1995 Feb.	1995 Mar.	1995 Apr.	1995 May	1995 June	1995 July	1995 Aug.	Average	Total Amount
1. Arboriculture (Fruit)															
1.1 Palmiers dattiers (Date palm) (vertes, fresh)	Amount (kg)	51,230	32,669											41,950	83.9 /tons
	Value (D.)	14,404	10,207											12,306	24.6 D.'000
	Unit Price (D./kg)	0.281	0.312											0.293 *	(0.297) D./kg
(dry)	Amount (kg)		13,552	9,517	16,675	14,409	13,776	96						11,338	68.0 /tons
	Value (D.)		6,425	8,965	22,567	9,095	14,885	50						10,331	62.0 D.'000
	Unit Price (D./kg)		0.474	0.942	1.353	0.631	1.081	0.521						0.911 *	(0.834) D./kg
1.2 Oliviers à huile (Olive)	Amount (kg)	21,429	100,006	85,849	68,089	15,153	83							48,435	290.6 /tons
	Value (D.)	16,825	75,030	43,712	35,246	9,098	59							29,995	180.0 D.'000
	Unit Price (D./kg)	0.785	0.750	0.509	0.518	0.600	0.711							0.619 *	(0.646) D./kg
1.3 Grenadiers (Pomegranate)	Amount (kg)	207,277	3,102,079	3,037,641	339,631	51,274	16,789	277					568	844,442	6,755.5 /tons
	Value (D.)	54,967	799,211	741,735	108,407	18,660	8,348	79					268	216,459	1,731.7 D.'000
	Unit Price (D./kg)	0.265	0.258	0.244	0.319	0.364	0.497	0.285					0.472	0.256 *	(0.338) D./kg
1.4 Abricotiers (Apricot)	Amount (kg)								4,235	2,521,854	733,820	15,270		818,795	3,275.2 /tons
	Value (D.)								7,749	1,408,481	520,232	7,739		486,050	1,944.2 D.'000
	Unit Price (D./kg)								1.830	0.559	0.709	0.507		0.594 *	(0.901) D./kg
1.5 Figuiers (Fig)	Amount (kg)	105,025								82	500,075	431,814	570,580	321,515	1,607.6 /tons
	Value (D.)	113,584								200	271,768	357,969	484,039	245,512	1,227.6 D.'000
	Unit Price (D./kg)	1.081								2.439	0.543	0.829	0.848	0.764 *	(1.148) D./kg
1.6 Pommiers (Apple)	Amount (kg)	1,093,267	824,276	619,563	670,206	281,458	718,222	336,057	331,282	82,390	795,285	2,163,540	1,420,207	777,979	9,335.8 /tons
	Value (D.)	588,510	640,876	509,554	522,502	197,438	739,282	443,494	434,400	117,222	459,272	1,146,400	873,105	556,005	6,672.1 D.'000
	Unit Price (D./kg)	0.538	0.778	0.822	0.780	0.701	1.029	1.320	1.311	1.423	0.577	0.530	0.615	0.715 *	(0.869) D./kg
1.7 Peches (Peach)	Amount (kg)	84,882	2,036							451,681	2,496,503	1,624,546	711,875	895,254	5,371.5 /tons
	Value (D.)	114,604	3,522							344,003	1,501,983	1,535,393	915,510	735,836	4,415.0 D.'000
	Unit Price (D./kg)	1.350	1.730							0.762	0.602	0.945	1.286	0.822 *	(1.112) D./kg
1.8 Amandiers (Almond) (green)	Amount (kg)									607,073	1,432,581	396,534	10,897	611,771	2,447.1 /tons
	Value (D.)									264,387	646,828	262,968	8,498	295,670	1,182.7 D.'000
	Unit Price (D./kg)									0.436	0.452	0.663	0.780	0.483 *	(0.583) D./kg
1.9 Pruniers (Plum)	Amount (kg)	60,290	35,838	18,153	3,938					59,607	1,299,147	278,119	67,224	227,790	1,822.3 /tons
	Value (D.)	41,412	32,947	12,486	2,355					54,352	587,577	217,417	49,494	124,755	998.0 D.'000
	Unit Price (D./kg)	0.687	0.919	0.688	0.598					0.912	0.452	0.782	0.736	0.548 *	(0.722) D./kg
1.10 Raisin (Grape)	Amount (kg)	5,308,016	2,615,647	147,574	2,627	2,092	258				596	507,653	3,301,277	1,320,638	11,885.7 /tons
	Value (D.)	2,677,743	1,380,380	88,059	2,878	1,896	331				958	330,612	1,952,481	715,038	6,435.3 D.'000
	Unit Price (D./kg)	0.504	0.528	0.597	1.096	0.906	1.283				1.607	0.651	0.591	0.541 *	(0.863) D./kg

Source : Societe Tunisienne des Marches de Gros (SOTUMAG), Tunis
Remark : ( )* ; Weighted Average

Table E.3.9.3 (2) Market Price of Major Vegetables at Tunis Wholesale Market (BIR KASSAA)

Crops	Unit	1994 Sep.	1994 Oct.	1994 Nov.	1994 Dec.	1995 Jan.	1995 Feb.	1995 Mar.	1995 Apr.	1995 May	1995 June	1995 July	1995 Aug.	Average	Total Amount
2. Mar. d'hiver + printemp															
2.1 Carotte (Carrot)	Amount (kg)	664,098	1,353,707	1,807,808	1,857,500	1,801,760	974,682	1,262,738	1,026,566	683,465	714,872	555,811	543,383	1,103,866	13,246.4 /tons
	Value (D.)	214,274	404,702	307,301	247,285	246,879	133,427	165,533	188,492	128,973	126,799	100,534	118,597	198,566	2,382.8 D.'000
	Unit Price (D./kg)	0.323	0.299	0.170	0.133	0.137	0.137	0.131	0.184	0.189	0.177	0.181	0.218	0.180 *	(0.190) D./kg
2.2 Navet (Turnip)	Tunips	160,056	399,132	655,468	705,743	863,009	259,671	373,541	309,047	205,677	145,735	75,173	89,595	353,487	4,241.8 /tons
	Value (D.)	71,657	168,221	133,389	118,082	125,232	36,167	57,214	62,651	39,182	32,438	36,109	43,049	76,949	923.4 D.'000
	Unit Price (D./kg)	0.448	0.421	0.204	0.167	0.145	0.139	0.153	0.203	0.191	0.223	0.480	0.480	0.218 *	(0.271) D./kg
2.3 Oignon (Onion)	Amount (kg)	1,910,955	1,613,970	1,592,788	1,763,617	1,678,976	1,483,906	2,031,333	2,632,320	2,137,273	2,012,328	1,650,404	1,750,349	1,854,852	22,258.2 /tons
	Value (D.)	293,849	332,564	328,092	298,358	265,548	248,118	452,122	560,790	369,558	360,854	309,023	338,757	346,469	4,157.6 D.'000
	Unit Price (D./kg)	0.154	0.206	0.206	0.169	0.158	0.167	0.223	0.213	0.173	0.179	0.187	0.194	0.187 *	(0.186) D./kg
2.4 Féves verts (Kidney Bean)	Amount (kg)			2,703	22,607	50,058	147,242	802,707	2,787,394	1,724,061	13,141			693,739	5,549.9 /tons
	Value (D.)			3,087	23,063	52,203	84,877	347,204	763,370	385,616	5,627			208,131	1,665.0 D.'000
	Unit Price (D./kg)			1.142	1.020	1.043	0.576	0.433	0.274	0.224	0.428			0.300 *	(0.642) D./kg
2.5 Piments (Pepper) (Sweet pepper)	Amount (kg)	589,298	562,014	408,878	84,978	30,871	21,665	29,417	50,050	77,191	91,440	380,841	758,481	257,094	3,085.1 /tons
	Value (D.)	397,020	277,136	190,774	70,002	48,542	34,788	39,088	40,230	38,163	68,474	214,452	322,377	145,087	1,741.0 D.'000
	Unit Price (D./kg)	0.674	0.493	0.467	0.824	1.572	1.606	1.329	0.804	0.494	0.749	0.563	0.425	0.564 *	(0.833) D./kg
(Hot pepper)	Amount (kg)	1,600,269	1,767,791	1,448,872	1,493,910	749,271	711,003	726,318	1,228,306	1,778,664	1,367,614	1,869,539	1,858,194	1,383,313	16,599.8 /tons
	Value (D.)	891,171	623,416	530,717	737,134	823,594	1,011,074	880,701	913,352	854,797	1,072,254	860,004	783,989	831,850	9,982.2 D.'000
	Unit Price (D./kg)	0.557	0.353	0.366	0.493	1.099	1.422	1.213	0.744	0.481	0.784	0.460	0.422	0.601 *	(0.699) D./kg
2.6 Tomates (Tomato)	Amount (kg)	3,592,977	1,035,256	1,906,088	1,482,847	1,240,139	1,695,209	1,471,463	1,840,908	2,514,141	3,121,778	3,605,784	3,589,072	2,257,972	27,095.7 /tons
	Value (D.)	818,616	360,703	601,944	630,880	523,670	581,391	541,692	731,228	763,481	951,431	646,760	697,130	654,077	7,848.9 D.'000
	Unit Price (D./kg)	0.228	0.348	0.316	0.425	0.422	0.343	0.368	0.397	0.304	0.305	0.179	0.194	0.290 *	(0.319) D./kg
2.7 Petits pois verts (Greenpeas)	Amount (kg)	103	180,205	761,104	605,306	469,220	344,637	618,517	903,114	673,674	14,677			457,056	4,570.6 /tons
	Value (D.)	258	188,852	582,369	607,663	461,577	433,751	597,502	777,041	417,447	9,746			407,621	4,076.2 D.'000
	Unit Price (D./kg)	2.505	1.048	0.765	1.004	0.984	1.259	0.966	0.860	0.620	0.664			0.892 *	(1.067) D./kg
2.8 Concombre (Cucumber)	Amount (kg)	737,250	277,435	106,316	38,318	16,803	15,878	50,403	354,613	963,147	1,195,634	1,058,478	1,050,320	488,716	5,864.6 /tons
	Value (D.)	250,737	176,201	97,871	37,928	24,966	24,569	53,670	218,141	370,885	452,556	437,065	325,790	205,865	2,470.4 D.'000
	Unit Price (D./kg)	0.340	0.635	0.921	0.990	1.486	1.547	1.065	0.615	0.385	0.379	0.413	0.310	0.421 *	(0.757) D./kg
2.9 Pastètque de prim. (Water Melon)	Amount (kg)	762,190	53,449	220	1,070	895	5,083	6,988	37,102	278,474	4,128,533	6,702,295	2,287,045	1,188,612	14,263.3 /tons
	Value (D.)	152,080	12,105	214	2,450	2,145	8,328	9,755	46,368	169,527	1,161,247	1,291,531	537,085	282,736	3,392.8 D.'000
	Unit Price (D./kg)	0.200	0.226	0.973	2.290	2.397	1.638	1.396	1.250	0.609	0.281	0.193	0.235	0.238 *	(0.974) D./kg
2.10 Melon de primeur (Melon)	Amount (kg)	2,050,716	243,279	29,423	42,706	23,014	3,416	6,420	109,106	468,467	748,717	1,774,224	3,144,017	720,292	8,643.5 /tons
	Value (D.)	606,907	93,830	30,453	42,396	15,928	7,331	17,480	195,637	480,098	577,613	771,067	1,055,717	324,538	3,894.5 D.'000
	Unit Price (D./kg)	0.296	0.386	1.035	0.993	0.692	2.146	2.723	1.793	1.025	0.771	0.435	0.336	0.451 *	(1.053) D./kg

Source : Societe Tunisienne des Marches de Gros (SOTUMAG), Tunis
Remark : ( )* : Weighted Avarage

Table E.3.9.4 Market and Farmgate Price of Major Crops in the Study Area

(Unit : D./kg)

Crops	Gafsa			Tozeur			Kebili			Gabes			Average		
	Market Price 1994/95	Farmgate Price Sep. 1995	(%)	Market Price 1994/95	Farmgate Price Sep. 1995	(%)	Market Price 1994/95	Farmgate Price Sep. 1995	(%)	Market Price 1994/95	Farmgate Price Sep. 1995	(%)	Market Price 1994/95	Farmgate Price Sep. 1995	(%)
1. Arboriculture (Fruit)															
1.1 Palmiers dattiers (Date Palm, deglat)	1.400	1.200	0.86	1.200	0.900	0.75	1.250	0.900	0.72	1.246	1.100	0.88	1.274	1.025	0.80
1.2 Oliviers à huile (Olive)	0.450	0.400	0.89	0.500	0.400	0.80	0.400	0.350	0.88	0.500	0.450	0.90	0.463	0.400	0.86
1.3 Grenadies (Pomegranate)	0.250	0.200	0.80	0.338	0.250	0.74	0.400	0.300	0.75	0.380	0.350	0.92	0.342	0.287	0.84
1.4 Abricotiers (Apricot)	0.300	0.250	0.83	0.567	0.500	0.88	0.825	0.750	0.91	0.656	0.600	0.91	0.587	0.493	0.84
1.5 Figuiers (Fig)	0.150	0.130	0.87	0.550	0.500	0.91	0.460	0.400	0.87	0.671	0.600	0.89	0.458	0.385	0.84
		Average	0.83		Average	0.82		Average	0.82		Average	0.90		Average	0.84
2. Mar. d'hiver + printemp (Vegetables)															
2.1 Carrots (Carrot)	0.200	0.180	0.90	0.111	0.100	0.90	0.091	0.080	0.88	0.110	0.090	0.82	0.128	0.109	0.85
2.2 Navet (Turnip)	0.100	0.090	0.90	0.307	0.250	0.81	0.279	0.250	0.90	0.258	0.200	0.78	0.236	0.201	0.85
2.3 Oignon (Onion)	0.100	0.090	0.90	0.315	0.250	0.79	0.222	0.200	0.90	0.235	0.200	0.85	0.218	0.186	0.85
2.4 Féves verts (Kidney Bean)	0.150	0.130	0.87	0.485	0.400	0.82	0.711	0.650	0.91	0.392	0.350	0.89	0.435	0.370	0.85
2.5 Piments (Pepper)	1.300	1.200	0.92	0.943	0.750	0.80	0.901	0.800	0.89	0.960	0.850	0.89	1.026	0.874	0.85
2.6 Tomates (Tomato)	0.400	0.350	0.88	0.369	0.300	0.81	0.396	0.300	0.76	0.291	0.250	0.86	0.364	0.310	0.85
		Average	0.89		Average	0.82		Average	0.87		Average	0.85		Average	0.85
3. Fourr Annuels (Fodder)															
3.1 Luzerne (Lucern)	0.030	0.025	0.83	0.057	0.050	0.88	0.080	0.070	0.88	0.080	0.070	0.88	0.062	0.053	0.86
4. Culture Industrielles															
4.1 Henne (Henna)										2.160	1.900	0.88	2.160	19.000	0.88

Sources : Arr. des Etudes et Statistiques Agricole, Division des Etudes et du Developement Agricole, Gafsa, Tozeur, Kebili and Gabes CRDA
Farm Economy Survey by JICA Study Team, September 1995

Table E.3.9.5 Market and Farmgate Price of Farm Inputs in the Study Area

(Unit : D.)

Description	Unit	Market Price					Farmgate Price			
		Gafsa	Tozeur	Kebili	Gabes	Average	T.C.*	Total	Estimated Price	
						(a)	(b)	(a + b)		
A. SEEDLING / SEED							(10%)			
1. Arboriculture										
1.1 Date Palm	Seedling	1.500	1.200	1.000	1.500	1.300	0.130	1.430	1.500	
1.2 Olive	Seedling	1.500	2.000	2.500	1.200	1.800	0.180	1.980	2.000	
1.3 Pomegranate	Seedling	0.400	0.500	0.300	0.400	0.400	0.040	0.440	0.500	
1.4 Apricot	Seedling	0.850	0.700	0.750	0.520	0.705	0.071	0.776	0.800	
1.5 Fig	Seedling	0.400	0.300	0.800	0.350	0.463	0.046	0.509	0.500	
1.6 Apple	Seedling	1.200	2.000	1.100	1.200	1.375	0.138	1.513	1.500	
1.7 Grape	Seedling	1.500	0.500	0.500	1.200	0.925	0.093	1.018	1.000	
2. Vegetables	(Seed)						(5%)			
2.1 Carrot	Kg	24.000	25.800	18.000	24.000	22.950	1.148	24.098	24.100	
2.2 Turnip	Kg	13.000	12.600	14.000	12.000	12.900	0.645	13.545	13.500	
2.3 Onion	Kg	65.000	54.000	54.000	52.000	56.250	2.813	59.063	59.000	
2.4 Kidney Beans	Kg	1.600	1.450	1.000	1.600	1.413	0.071	1.483	1.500	
2.5 Pepper	Kg	120.000	145.000	105.000	225.000	148.750	7.438	156.188	156.200	
2.6 Tomato	Kg	54.000	75.000	80.000	67.000	69.000	3.450	72.450	72.500	
3. Fodder Crops	(Seeds)									
3.1 Lucern	Kg	4.200	4.560	3.500	4.000	4.065	0.203	4.268	4.300	
4. Industrial Crops	(Seed)									
4.1 Henna	Kg				2.000	2.000	0.100	2.100	2.100	
B. FARM INPUTS										
1. Fertilizers							(10%)			(per kg)
1.1 FYM / Compost	ton								10.000	
1.2 Ammonite	50 kg	10.500	10.700	10.500	10.000	10.425	1.043	11.468	11.500	0.230
1.3 Super 45 (TSP)	50 kg	10.500	11.000	11.000	10.500	10.750	1.075	11.825	11.900	0.238
1.4 Sulfate de Potash	50 kg	19.350	19.500	19.000	19.000	19.213	1.921	21.134	21.100	0.422
1.5 Nitrate de Potash	50 kg	38.000	39.000	45.000	38.000	40.000	4.000	44.000	44.000	0.880
2. Insecticides							(5%)			
2.1 DCES EC 25	lit	22.000	19.500	20.500	22.000	21.000	1.050	22.050	22.100	
2.2 THIODAN	lit		12.700	13.200		12.950	0.648	13.598	13.600	
2.3 FATEK	lit	7.200	6.600	8.000	6.500	7.075	0.354	7.429	7.500	
2.4 PERIMOR	lit	30.000	30.000	32.000	32.000	31.000	1.550	32.550	32.600	
								Estimated average		18.700
3. Fungicides							(5%)			
3.1 PELT 44	kg	18.000	6.900/ 0.3g	20.600	22.660	20.420	1.021	21.441	21.500	
3.2 CUIVOX 50	kg	4.300 / lit	4.070			4.070	0.204	4.274	4.300	
3.3 BENLATE	kg	45.930	10.800/ 0.3g	51.000	66.000	54.310	2.716	57.026	57.000	
3.4 MANEBE	kg	6.500	5.700	8.600	6.700	6.875	0.344	7.219	7.200	
								Estimated average		25.200
C. OTHERS										
1. Water Charge	m3	0.025	0.017	0.020	0.017	0.020			0.020	
	per ha	202.000	239.000	150.000	160.000	187.750			188.000	
2. Labor Charge										
2.1 Casual Worker	man-day	4.660	4.160	5.500	6.500	5.190			5.200	
2.2 Pollinisation (Date)	man-day	4.600	4.160	8.000	6.500	5.815			5.800	
2.3 Harvesting	man-day	4.600	8.000	8.000	6.500	6.775			6.800	

Sources : Arr. des Eudes et Statistiques Agricole, Division des Etudes et du Development Agricole,
Gafsa, Tozeur, Kebili and Gabes CRDA
Farm Economic Survey by JICA Study Team, September 1995

Remarks : T.C.* ; Transportation cost from market to farm including handling charge and other cost.

TABLE E.3.10.1 (1) Present Crop Budget per Ha in the Study Area

- PALMIERS DATTIERS -

Items	Unit	Year 1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total (10 years) (a)	Unit Price (b) (D.)	Amount 10 years (a x b) (D.)	Amount 25 years (D.)
GROSS INCOME															
Production	kg	0	0	0	0	1,100	3,500	4,600	5,860	5,860	5,860	26,780	1.025	27,450 (c)	117,542
Production Value	D.	0	0	0	0	1,128	3,588	4,715	6,007	6,007	6,007			(1,098)	(4,702)
PRODUCTION COST															
Farm Inputs															
1) Seeds	seedling	200	20	0	0	0	0	0	0	0	0	220	1.500	330	330
2) FYM/ Compost	ton	5	0	0	5	0	0	5	0	0	5	20	10.000	200	450
3) Chemical Fertilizers															
- Ammonium nitrate	kg	50	100	100	150	150	150	150	150	150	150	1,300	0.230	299	817
- Super 45 (TSP)	kg	50	75	75	100	100	100	100	100	100	100	900	0.238	214	571
- Potassium sulfate	kg	0	0	0	0	0	0	0	0	0	0	0	0.880	0	0
3) Agro-chemicals															
- Insecticides	lit	0	1	2	2	2	2	2	2	2	2	17	18.700	318	879
- Fungicides	kg	0	0	0	2	2	4	4	4	4	4	24.0	25.200	605	2,117
4) Water	m3	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	75,000	0.020	1,500	3,750
														3,465	8,912
														(139)	(357)
Labour Requirement															
1) Land preparation	man-day	45	30	25	25	25	25	25	25	25	25	275	5.200	1,430	1,430
2) Transport of seedling	man-day	10	2	0	0	0	0	0	0	0	0	12	5.200	62	62
3) Transplanting	man-day	10	2	0	0	0	0	0	0	0	0	12	5.200	62	62
4) Fertilizer application	man-day	10	5	5	10	5	5	10	5	5	10	70	5.200	364	884
5) Weeding	man-day	5	5	5	5	5	5	5	5	5	5	50	5.200	260	650
6) Cleaning of plant	man-day	0	3	5	10	10	12	12	15	15	15	97	5.200	504	1,674
7) Water management	man-day	30	30	30	30	30	30	30	30	30	30	300	5.200	1,560	3,900
8) Pollination	man-day	0	0	0	0	3	5	8	8	8	8	40	6.800	272	1,088
9) Harvesting	man-day	0	0	0	0	10	20	30	30	30	30	150	5.800	870	3,480
10) Post harvesting	man-day	0	0	0	0	5	7	10	10	10	10	52	5.200	270	1,050
Sub-total		110	77	70	80	93	109	130	128	128	133	1,058		5,656	14,282
												(106)		(226)	(571)
Miscellaneous (5 % of above production cost)		5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			456	1,160
														(18)	(46)
Total Production Cost	D.	1,150	672	622	800	830	980	1,158	1,095	1,095	1,175			9,578 (d)	24,355
														(383)	(974)
Net Return per Ha (c - d)	D.	-1,150	-672	-622	-800	298	2,608	3,557	4,912	4,912	4,832		Total (D./ha/year)	17,872	93,192
														(715)	(3,728)

- OLIVE -

Items	Unit	Year 1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total (10 years) (a)	Unit Price (b) (D.)	Amount 10 year (a x b) (D.)	Amount 25 years (D.)
GROSS INCOME															
Production	kg	0	0	0	0	1,200	3,600	4,800	6,050	6,050	6,050	27,750	0.400	11,100 (c)	47,400
Production Value	D.	0	0	0	0	480	1,440	1,920	2,420	2,420	2,420			(444)	(1,896)
PRODUCTION COST															
Farm Inputs															
1) Seeds	seedling	150	15	0	0	0	0	0	0	0	0	165	2.000	330	330
2) FYM/ Compost	ton	3	0	0	3	0	0	3	0	0	3	12	10.000	120	270
3) Chemical Fertilizers															
- Ammonium nitrate	kg	50	50	75	75	75	75	75	75	75	75	700	0.230	161	420
- Super 45 (TSP)	kg	50	50	75	75	75	75	75	75	75	75	700	0.238	167	434
- Potassium sulfate	kg	0	0	0	0	0	0	0	0	0	0	0	0.422	0	0
3) Agro-chemicals															
- Insecticides	lit	0	1	2	4	4	4	4	4	4	4	31	18.700	580	1,702
- Fungicides	kg	0	0	0	0	0	0	0	0	0	0	0	25.200	0	0
4) Water	m3	4,630	4,630	4,630	4,630	4,630	4,630	4,630	4,630	4,630	4,630	46,300	0.020	926	2,315
														2,283	5,471
														(91)	(219)
Labour Requirement															
1) Land preparation	man-day	50	30	20	20	20	20	20	20	20	20	240	5.200	1,248	1,248
2) Transport of seedling	man-day	5	1	0	0	0	0	0	0	0	0	6	5.200	31	31
3) Transplanting	man-day	5	1	0	0	0	0	0	0	0	0	6	5.200	31	31
4) Fertilizer application	man-day	10	7	7	10	7	7	10	7	7	10	82	5.200	426	1,050
5) Weeding	man-day	20	20	20	20	20	20	20	20	20	20	200	5.200	1,040	2,600
6) Trimming	man-day	0	3	5	10	15	15	15	15	15	15	108	5.800	626	1,931
7) Water management	man-day	30	30	30	30	30	30	30	30	30	30	300	5.200	1,560	3,900
8) Harvesting	man-day	0	0	0	0	5	10	15	15	15	15	75	5.800	435	1,740
9) Post harvesting	man-day	0	0	0	0	3	3	4	5	5	5	25	5.200	130	520
Sub-total		120	92	82	90	100	105	114	112	112	115	1,042		5,528	13,052
												(104)		(221)	(522)
Miscellaneous (5 % of above production cost)		5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			391	926
														(16)	(37)
Total Production Cost	D.	1,124	677	624	742	771	802	885	843	843	891			8,202 (d)	19,449
														(328)	(778)
Net Return per Ha (c - d)	D.	-1,124	-677	-624	-742	-291	638	1,035	1,577	1,577	1,529		Total (D./ha/year)	2,898	27,951
														(116)	(1,118)

Source : Farm economy survey by JICA Team, 1995

TABLE E.3.10.1 (2) Present Crop Budget per Ha in the Study Area

- POMEGRANATE -

Items	Unit	Year 1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total (10 years)	Unit Price	Amount 10 years	25 years
												(a)	(b) (D.)	(a x b) (D.)	(D.)
GROSS INCOME															
Production	kg	0	0	0	0	2,060	6,200	8,250	10,310	10,310	10,310	47,440	0.287	13,615 (c)	58,000
Production Value	D.	0	0	0	0	591	1,779	2,368	2,959	2,959	2,959			(545)	(2,320)
PRODUCTION COST															
Farm Inputs															
1) Seeds	seedling	400	40	0	0	0	0	0	0	0	0	440	0.500	220	220
2) FYM/ Compost	ton	5	0	0	5	0	0	5	0	0	5	20	10.000	200	450
3) Chemical Fertilizers															
- Ammonium nitrate	kg	50	50	75	100	100	100	100	100	100	100	875	0.230	201	546
- Super 45 (TSP)	kg	25	25	35	50	50	50	50	50	50	50	435	0.238	104	282
- Potassium sulfate	kg	50	50	75	100	100	100	100	100	100	100	875	0.880	770	2,090
3) Agro-chemicals															
- Insecticides	lit	0	1	2	2	2	2	2	2	2	2	17	18.700	318	879
- Fungicides	kg	0	1	2	4	4	4	4	4	4	4	31	25.200	781	2,293
4) Water	m3	6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	60,500	0.020	1,210	3,025
														3,804	9,785
														(152)	(391)
Labour Requirement															
1) Land preparation	man-day	45	30	25	25	25	25	25	25	25	25	275	5.200	1,430	1,430
2) Transport of seedling	man-day	5	1	0	0	0	0	0	0	0	0	6	5.200	31	31
3) Transplanting	man-day	10	1	0	0	0	0	0	0	0	0	11	5.200	57	57
4) Fertilizer application	man-day	10	7	7	10	7	7	10	7	7	10	82	5.200	426	1,050
5) Weeding	man-day	5	5	5	5	5	5	5	5	5	5	50	5.200	260	650
6) Trimming	man-day	0	3	5	10	10	10	10	10	10	10	78	5.800	452	1,322
7) Water management	man-day	30	30	30	30	30	30	30	30	30	30	300	5.200	1,560	3,900
8) Harvesting	man-day	0	0	0	0	10	20	30	40	40	40	180	6.800	1,224	5,304
9) Post harvesting	man-day	0	0	0	0	3	6	8	10	10	10	47	5.200	244	1,024
Sub-total		105	77	72	80	90	103	118	127	127	130	1,029		5,685	14,770
												(103)		(227)	(591)
Miscellaneous (5 % of above production cost)		5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			474	1,228
														(19)	(49)
Total Production Cost	D.	1,027	681	712	897	916	1,003	1,155	1,168	1,168	1,232			9,964 (d)	25,783
														(399)	(1,031)
Net Return per Ha (c - d)	D.	-1,027	-681	-712	-897	-325	776	1,213	1,791	1,791	1,722		Total (D./ha/year)	3,651	32,212
														(146)	(1,289)

- APLICOT -

Items	Unit	Year 1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total (10 years)	Unit Price	Amount 10 years	25 years
												(a)	(b) (D.)	(a x b) (D.)	(D.)
GROSS INCOME															
Production	kg	0	0	0	0	2,360	7,080	9,440	11,800	11,800	11,800	54,280	0.493	26,760 (c)	114,021
Production Value	D.	0	0	0	0	1,163	3,490	4,654	5,817	5,817	5,817			(1,070)	(4,561)
PRODUCTION COST															
Farm Inputs															
1) Seeds	seedling	400	40	0	0	0	0	0	0	0	0	440	0.800	352	352
2) FYM/Compost	ton	5	0	0	5	0	0	5	0	0	5	20	10.000	200	450
3) Chemical Fertilizers															
- Ammonium Nitrate	kg	50	50	75	150	150	150	150	150	150	150	1,225	0.230	282	799
- Super 45 (TSP)	kg	25	25	35	50	50	50	50	50	50	50	435	0.238	104	282
- Potassium Sulfate	kg	50	50	75	100	100	100	100	100	100	100	875	0.422	369	1,002
3) Agro-chemicals															
- Insecticides	lit	0	1	2	2	2	2	2	2	2	2	17	18.700	318	879
- Fungicides	kg	0	1	2	4	4	4	4	4	4	4	31	25.200	781	2293
4) Water	m3	6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	60,500	0.020	1,210	3,025
														3,616	9,083
														(145)	(363)
Labour Requirement															
1) Land preparation	man-day	45	30	25	25	25	25	25	25	25	25	275	5.200	1,430	1,430
2) Transport of seedling	man-day	5	1	0	0	0	0	0	0	0	0	6	5.200	31	31
3) Transplanting	man-day	10	1	0	0	0	0	0	0	0	0	11	5.200	57	57
4) Fertilizer application	man-day	10	7	7	10	7	7	10	7	7	10	82	5.200	426	1,050
5) Weeding	man-day	5	5	5	5	5	5	5	5	5	5	50	5.200	260	650
6) Trimming	man-day	0	3	5	10	10	10	10	10	10	10	78	6.800	530	1,550
7) Water management	man-day	30	30	30	30	30	30	30	30	30	30	300	5.200	1,560	3,900
8) Harvesting	man-day	0	0	0	0	10	30	50	60	60	60	270	6.800	1,836	7,956
9) Post harvesting	man-day	0	0	0	0	3	7	12	15	15	15	70	5.200	364	1,534
Sub-total		105	77	72	80	90	114	145	152	152	155	1,142		6,495	18,159
												(114)		(260)	(726)
Miscellaneous (5 % of above production cost)		5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			506	1,362
														(20)	(54)
Total Production Cost	D.	1,129	673	681	871	890	1,055	1,310	1,313	1,313	1,382			10,616 (d)	28,604
														(425)	(1,144)
Net Return per Ha (c - d)	D.	-1,129	-673	-681	-871	273	2,435	3,344	4,504	4,504	4,435		Total (D./ha/year)	16,144	85,417
														(646)	(3,417)

Source : Farm economy survey by JICA Team, 1995

TABLE E.3.10.1 (3) Present Crop Budget per Ha in the Study Area

- FIG -

Items	Unit	Year 1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total (10 years) (a)	Unit Price (b) (D.)	Amount 10 years (a x b) (D.)	Amount 25 years (D.)
GROSS INCOME															
Production	kg	0	0	0	0	840	2,530	3,370	4,210	4,210	4,210	19,370	0.355	7,457 (c)	31,770
Production Value	D.	0	0	0	0	323	974	1,297	1,621	1,621	1,621			(298)	(1,271)
PRODUCTION COST															
Farm Inputs															
1) Seeds	seedling	400	40	0	0	0	0	0	0	0	0	440	1.000	440	440
2) FYM/ Compost	ton	5	0	0	5	0	0	5	0	0	5	20	10.000	200	450
3) Chemical Fertilizers															
- Ammonium Nitrate	kg	50	50	75	100	100	100	100	100	100	100	875	0.230	201	546
- Super 45 (TSP)	kg	25	25	35	50	50	50	50	50	50	50	435	0.238	104	283
- Potassium Sulfate	kg	0	0	0	0	0	0	0	0	0	0	0	0.422	0	0
3) Agro-chemicals															
- Insecticides	lit	0	1	2	2	2	2	2	2	2	2	17	18.700	318	879
- Fungicides	kg	0	1	1	1	1	1	1	1	1	1	9	25.200	227	605
4) Water	m3	6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	60,500	0.020	1,210	3,025
														2,692	6,222
														(108)	(249)
Labour Requirement															
1) Land preparation	man-day	45	30	25	25	25	25	25	25	25	25	275	5.200	1,430	1,430
2) Transport of seedling	man-day	5	1	0	0	0	0	0	0	0	0	6	5.200	31	31
3) Transplanting	man-day	10	1	0	0	0	0	0	0	0	0	11	5.200	57	57
4) Fertilizer application	man-day	10	7	7	10	7	7	10	7	7	10	82	5.200	426	1,050
5) Weeding	man-day	5	5	5	5	5	5	5	5	5	5	50	5.200	260	650
6) Trimming	man-day	0	3	5	10	10	10	10	10	10	10	78	6.800	530	1,550
7) Water management	man-day	30	30	30	30	30	30	30	30	30	30	300	5.200	1,560	3,900
8 Harvesting	man-day	0	0	0	0	10	20	30	40	40	40	180	6.800	1,224	5,304
9 Post harvesting	man-day	0	0	0	0	3	6	8	10	10	10	47	5.200	244	1,024
Sub-total		105	77	72	80	90	103	118	127	127	130	1,029		5,764	14,998
												(103)		(231)	(600)
Miscellaneous (5 % of above production cost)		5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			852	1,385
														(34)	(55)
Total Production Cost	D.	1,191	659	621	736	754	842	993	1,007	1,007	1,076			9,315 (d)	22,610
														(373)	(904)
Net Return per Ha (c - d)	D.	-1,191	-659	-621	-736	-431	132	304	614	614	545		Total (D./ha/year)	-1,857	9,161
														-(74)	(366)

Items	Unit	LUCERN Unit Price (D.)	Quantity	Amount (D.)	CARROT Unit Price (D.)	Quantity	Amount (D.)	TURNIP Unit Price (D.)	Quantity	Amount (D.)	ONION Unit Price (D.)	Quantity	Amount (D.)
GROSS INCOME													
Production	kg	0.053	54,850	2,907	0.109	21,000	2,289	0.201	20,000	4,020	0.186	21,360	3,973
PRODUCTION COST													
Farm Inputs													
1. Seeds	kg	4.300	10.0	43	24.100	5.0	121	13.500	8.0	108	59.000	3.0	177
2. FYM/ Compost	ton	10.000	1.0	10	10.000	2.5	25	10.000	2.5	25	10.000	2.5	25
3. Chemical Fertilizer													
- Ammonium nitrate	kg	0.230	75	17	0.230	100	23	0.230	100	23	0.230	100	23
- Super 45 (TSP)	kg	0.238	125	30	0.238	100	24	0.238	125	30	0.238	100	24
- Potassium nitrate	kg	0.880	0	0	0.880	0	0	0.880	0	0	0.880	0	0
- Potassium sulfate	kg	0.422	0	0	0.422	50	21	0.422	0	0	0.422	50	21
4. Agro-chemicals													
- Insecticides	lit	18.700	0	0	18.700	2	37	18.700	2	37	18.700	2	37
- Fungicides	kg	25.200	0	0	25.200	4	101	25.200	4	101	25.200	4	101
5. Water	m3	0.020	7,500	150	0.020	2,500	50	0.020	2,500	50	0.020	2,500	50
Sub-total				250			381			374			437
Labor Requirement													
1. Land preparation	man-day	5.200	20.0	104	5.200	50.0	260	5.200	50.0	260	5.200	50.0	260
2. Nursery/ sowing	man-day	5.200	0.0	0	5.200	0.0	0	5.200	0.0	0	5.200	5.0	26
3. Transplanting/ Sowing	man-day	5.200	2.0	10	5.200	5.0	26	5.200	5.0	26	5.200	20.0	104
4. Fertilizer application	man-day	5.200	5.0	26	5.200	10.0	52	5.200	10.0	52	5.200	10.0	52
5. Plant protection	man-day	5.200	0.0	0	5.200	10.0	52	5.200	10.0	52	5.200	10.0	52
6. Hoeing / Weeding	man-day	5.200	0.0	0	5.200	30.0	156	5.200	30.0	156	5.200	30.0	156
7. Water management	man-day	5.200	40.0	208	5.200	40.0	208	5.200	40.0	208	5.200	40.0	208
8. Harvesting	man-day	5.200	60.0	312	5.200	60.0	312	5.200	60.0	312	5.200	60.0	312
9. Post harvesting	man-day	5.200	15.0	78	5.200	15.0	78	5.200	15.0	78	5.200	15.0	78
Total			142.0	738		220.0	1,144		220.0	1,144		240.0	1,248
Miscellaneous 5 % of above cost				49			76			76			84
Total Production Cost	D.			1,038			1,601			1,594			1,769
Net Return per Ha	D.			1,869			688			2,426			2,204

Source : Farm economic survey by JICA Team, 1995

Table E.3.10.1 (4) Present Crop Budget per Ha in the Study Area

Items	Unit	KIDNEY BEAN			PEPPER		
		Unit Price (D.)	Quantity	Amount (D.)	Unit Price (D.)	Quantity	Amount (D.)
GROSS INCOME							
Production	kg	0.370	10,430	3,859	0.874	9,290	8,119
PRODUCTION COST							
Farm Inputs							
1. Seeds	kg	1.500	20.0	30	156.200	2.5	391
2. FYM/ Compost	ton	10.000	5.0	50	10.000	5.0	50
3. Chemical Fertilizer							
- Ammonium Nitrate	kg	0.230	50	12	0.230	100	23
- Super 45 (TSP)	kg	0.238	125	30	0.238	125	30
- Potassium nitrate	kg	0.880	0	0	0.880	0	0
- Potassium sulfate	kg	0.422	50	21	0.422	0	0
4. Agro-chemicals							
- Insecticides	lit	18.700	2	37	18.700	2	37
- Fungicides	kg	25.200	4	101	25.200	4	101
5. Water	m3	0.020	2,500	50	0.020	2,500	50
Sub-total				309			681
Labor Requirement							
1. Land preparation	man-day	5.200	50.0	260	5.200	50.0	260
2. Nursery/ sowing	man-day	5.200	0.0	0	5.200	5.0	26
3. Transplanting/ Sowing	man-day	5.200	20.0	104	5.200	15.0	78
4. Fertilizer application	man-day	5.200	5.0	26	5.200	5.0	26
5. Plant protection	man-day	5.200	7.0	36	5.200	10.0	52
6. Hoeing / Weeding	man-day	5.200	15.0	78	5.200	30.0	156
7. Water management	man-day	5.200	40.0	208	5.200	40.0	208
8. Harvesting	man-day	5.200	60.0	312	5.200	60.0	312
9. Post harvesting	man-day	5.200	10.0	52	5.200	15.0	78
Total			207.0	1,076		230.0	1,196
Miscellaneous							
5 % of above cost				69			94
Total Production Cost	D.			1,455			1,971
Net Return per Ha	D.			2,404			6,148

Items	Unit	TOMATO			HENNA		
		Unit Price (D.)	Quantity	Amount (D.)	Unit Price (D.)	Quantity	Amount (D.)
GROSS INCOME							
Production	(kg)	0.310	21,100	6,541	1.839	1,470	2,703
PRODUCTION COST							
Farm Inputs							
1. Seeds	kg	72.500	1.5	109	2.100	5	11
2. FYM/ Compost	ton	10.000	5.0	50	10.000	2.5	25
3. Chemical Fertilizer							
- Ammonium nitrate	kg	0.230	100	23	0.230	75	17
- Super 45 (TSP)	kg	0.238	125	30	0.238	125	30
- Potassium nitrate	kg	0.880	0	0	0.880	0	0
- Potassium sulfate	kg	0.422	0	0	0.422	0	0
4. Agro-chemicals							
- Insecticides	lit	18.700	2	37	18.700	2	37
- Fungicides	kg	25.200	4	101	25.200	4	101
5. Water	m3	0.020	2,500	50	0.020	7,500	150
Sub-total				400			371
Labor Requirement							
1. Land preparation	man-day	5.200	50.0	260	5.200	20.0	104
2. Nursery	man-day	5.200	5.0	26	5.200	0.0	0
3. Transplanting/ Sowing	man-day	5.200	15.0	78	5.200	20.0	104
4. Fertilizer application	man-day	5.200	5.0	26	5.200	2.0	10
5. Plant protection	man-day	5.200	10.0	52	5.200	7.0	36
6. Hoeing / Weeding	man-day	5.200	30.0	156	5.200	10.0	52
7. Water management	man-day	5.200	40.0	208	5.200	40.0	208
8. Harvesting	man-day	5.200	60.0	312	5.200	45.0	234
9. Post harvesting	man-day	5.200	15.0	78	5.200	15.0	78
Total			230.0	1,196		159.0	827
Miscellaneous							
5 % of above cost				80			60
Total Production Cost	D.			1,675			1,257
Net Return per Ha	D.			4,866			1,446

Source : Farm economic survey by JICA Team, 1995

Table E.3.10.2 Production Cost and Net Return per Ha of Major Crops

(Unit : D./ha)

Description	Gross Income			Production Cost				Net Return
	Yield* (kg)	Unit Price (D./kg)	Amount (a)	Farm Inputs	Labor Cost	Others	Total (b)	(a - b)
1. Arboriculture								
1.1 Date Palm	5.86	1.025	4,702 *	357	571	46	974 *	3,728 *
1.2 Olive	6.05	0.400	1,896 *	219	522	37	778 *	1,118 *
1.3 Pomegranate	10.31	0.287	2,320 *	391	591	49	1,031 *	1,289 *
1.4 Apricot	11.80	0.493	4,561 *	363	726	55	1,144 *	3,417 *
1.5 Fig	4.21	0.385	1,271 *	249	600	56	905 *	366 *
2. Vegetables								
2.1 Carrot	21.00	0.109	2,289	381	1,144	76	1,601	688
2.2 Turnip	20.00	0.201	4,020	374	1,144	76	1,594	2,426
2.3 Onion	21.36	0.186	3,973	437	1,248	84	1,769	2,204
2.4 Kindey Beans	10.43	0.370	3,859	309	1,076	70	1,455	2,404
2.5 Pepper	9.29	0.874	8,119	681	1,196	94	1,971	6,148
2.6 Tomato	21.10	0.310	6,541	400	1,196	79	1,675	4,866
3. Fodder Crops								
3.1 Lucern	54.85	0.053	2,907	250	738	49	1,038	1,869
4. Industrial Crops								
4.1 Henna	1.47	1.839	2,703	371	827	59	1,257	1,446

Sources : Farm economic survey by JICA Team, 1995

Remark : (*); Figures of arboriculture crops are estimated average yield and annual cost of 25 years.

Ref. : Tables E.3.10.1 (1), (2), (3) and (4)

Table E.3.10.3 Present Crop Production and Gross Production Value

Description	Unit	Gafsa Governorate	Tozeur Governorate	Kebili Governorate	Gabes Governorate	Total
1. Arboriculture (Unit Prices)						
1.1 Date Palm 1.025	D./kg					
- Planted Area	(ha)	812	5,036	6,566	3,113	15,527
- Yield	(tons/ha)	7.34	5.82	5.68	5.93	5.86
- Production	(tons)	5,958	29,329	37,289	18,470	91,046
- Gross Production Value	(D., '000)	6,106.8	30,062.2	38,221.6	18,931.8	93,322.4
1.2 Olive 0.400	D./kg					
- Planted Area	(ha)	2,221	177	194	1,727	4,319
- Yield	(tons/ha)	8.04	2.71	4.63	3.98	6.05
- Production	(tons)	17,854	480	898	6,879	26,111
- Gross Production Value	(D., '000)	7,141.5	191.8	359.2	2,751.8	10,444.4
1.3 Pomegranate 0.287	D./kg					
- Planted Area	(ha)	150	145	161	1,788	2,244
- Yield	(tons/ha)	8.20	2.30	3.21	11.78	10.31
- Production	(tons)	1,230	334	517	21,065	23,145
- Gross Production Value	(D., '000)	353.0	95.9	148.3	6,045.6	6,642.7
1.4 Apricot 0.493	D./kg					
- Planted Area	(ha)	125	51	49	122	347
- Yield	(tons/ha)	19.15	2.64	2.52	11.83	11.80
- Production	(tons)	2,394	135	124	1,444	4,096
- Gross Production Value	(D., '000)	1,180.1	66.5	60.9	711.6	2,019.1
1.5 Fig / Others 0.385	D./kg					
- Planted Area	(ha)	124	213	243	383	963
- Yield	(tons/ha)	7.74	2.52	2.69	4.97	4.21
- Production	(tons)	960	537	654	1,903	4,054
- Gross Production Value	(D., '000)	369.6	206.8	251.9	732.5	1,560.8
2. Vegetables						
2.1 Turnip / Carrot 0.201	D./kg					
- Planted Area	(ha)	166	125	457	392	1,140
- Yield	(tons/ha)	29.43	13.15	13.49	28.23	20.84
- Production	(tons)	4,885	1,644	6,163	11,066	23,757
- Gross Production Value	(D., '000)	981.8	330.4	1,238.8	2,224.2	4,775.3
2.2 Onion 0.186	D./kg					
- Planted Area	(ha)	166	123	541	408	1,238
- Yield	(tons/ha)	26.69	14.58	14.94	29.73	21.36
- Production	(tons)	4,431	1,794	8,085	12,128	26,438
- Gross Production Value	(D., '000)	824.2	333.6	1,503.8	2,255.9	4,917.5
2.3 Kindey Beans 0.370	D./kg					
- Planted Area	(ha)	167	58	263	64	552
- Yield	(tons/ha)	14.66	6.82	6.98	16.89	10.43
- Production	(tons)	2,447	396	1,835	1,081	5,759
- Gross Production Value	(D., '000)	905.5	146.3	678.9	400.0	2,130.8
2.4 Pepper 0.874	D./kg					
- Planted Area	(ha)	319	168	558	413	1,458
- Yield	(tons/ha)	9.96	6.81	6.99	12.87	9.29
- Production	(tons)	3,176	1,144	3,903	5,315	13,538
- Gross Production Value	(D., '000)	2,776.2	999.5	3,411.3	4,645.4	11,832.4
2.5 Tomato 0.310	D./kg					
- Planted Area	(ha)	223	94	248	208	773
- Yield	(tons/ha)	29.61	14.58	17.00	19.81	21.10
- Production	(tons)	6,603	1,370	4,217	4,120	16,309
- Gross Production Value	(D., '000)	2,046.8	424.8	1,307.2	1,277.0	5,055.8
3. Fodder Crops						
3.1 Lucern 0.053	D./kg					
- Planted Area	(ha)	886	311	2,850	1,620	5,667
- Yield	(tons/ha)	53.65	77.63	50.15	59.38	54.85
- Production	(tons)	47,531	24,143	142,936	96,203	310,813
- Gross Production Value	(D., '000)	2,519.1	1,279.6	7,575.6	5,098.8	16,473.1
4. Industrial Crops						
4.1 Henna 1.839	D./kg					
- Planted Area	(ha)	0	0	0	452	452
- Yield	(tons/ha)				1.47	1.47
- Production	(tons)	0	0	0	662	662
- Gross Production Value	(D., '000)	0.0	0.0	0.0	1,218.0	1,218.0
Total Planted Area	(ha)	5,359	6,501	12,130	10,690	34,680
Total Gross Production Value	(D., '000)	25,204.8	34,137.4	54,757.5	46,292.4	160,392.2

Ref. : Tables E.3.10.1 and E.3.10.2

Table E.3.10.4 Present Production Cost and Net Production Value

Description	Unit	Gafsa Governorate	Tozeur Governorate	Kebili Governorate	Gabes Governorate	Total
1. Arboriculture	(Production Cost)					
1.1 Date Palm 974 D./ha						
- Planted Area	(ha)	812	5,036	6,566	3,113	15,527
- Gross Production Value	(D., '000)	6,106.8	30,062.2	38,221.6	18,931.8	93,322.4
- Production Cost	(D., '000)	790.9	4,905.1	6,395.3	3,032.1	15,123.4
- Net Production Value	(D., '000)	5,315.9	25,157.1	31,826.3	15,899.7	78,199.0
1.2 Olive 778 D./ha						
- Planted Area	(ha)	2,221	177	194	1,727	4,319
- Gross Production Value	(D., '000)	7,141.5	191.8	359.2	2,751.8	10,444.3
- Production Cost	(D., '000)	1,727.9	137.7	150.9	1,343.6	3,360.1
- Net Production Value	(D., '000)	5,413.6	54.1	208.3	1,408.2	7,084.2
1.3 Pomegranate 1,031 D./ha						
- Planted Area	(ha)	150	145	161	1,788	2,244
- Gross Production Value	(D., '000)	353.0	95.9	148.3	6,045.6	6,642.8
- Production Cost	(D., '000)	154.7	149.5	166.0	1,843.4	2,313.6
- Net Production Value	(D., '000)	198.3	-53.6 *	-17.7 *	4,202.2	4,329.2
1.4 Apricot 1,144 D./ha						
- Planted Area	(ha)	125	51	49	122	347
- Gross Production Value	(D., '000)	1,180.1	66.5	60.9	711.6	2,019.1
- Production Cost	(D., '000)	143.0	58.3	56.1	139.6	397.0
- Net Production Value	(D., '000)	1,037.1	8.2	4.8	572.0	1,622.1
1.5 Fig / Others 905 D./ha						
- Planted Area	(ha)	124	213	243	383	963
- Gross Production Value	(D., '000)	369.6	206.8	251.9	732.5	1,560.8
- Production Cost	(D., '000)	112.2	192.8	219.9	346.6	871.5
- Net Production Value	(D., '000)	257.4	14.0	32.0	385.9	689.3
2. Vegetables						
2.1 Turnip* / Carrot 1,594 D./ha						
- Planted Area	(ha)	166	125	457	392	1,140
- Gross Production Value	(D., '000)	981.8	330.4	1,238.8	2,224.2	4,775.2
- Production Cost	(D., '000)	264.6	199.3	728.5	624.8	1,817.2
- Net Production Value	(D., '000)	717.2	131.1	510.3	1,599.4	2,958.0
2.2 Onion 1,769 D./ha						
- Planted Area	(ha)	166	123	541	408	1,238
- Gross Production Value	(D., '000)	824.2	333.6	1,503.8	2,255.9	4,917.5
- Production Cost	(D., '000)	293.7	217.6	957.0	721.8	2,190.1
- Net Production Value	(D., '000)	530.5	116.0	546.8	1,534.1	2,727.4
2.3 Kidney Beans 1,455 D./ha						
- Planted Area	(ha)	167	58	263	64	552
- Gross Production Value	(D., '000)	905.5	146.3	678.9	400.0	2,130.7
- Production Cost	(D., '000)	243.0	84.4	382.7	93.1	803.2
- Net Production Value	(D., '000)	662.5	61.9	296.2	306.9	1,327.5
2.4 Pepper 1,971 D./ha						
- Planted Area	(ha)	319	168	558	413	1,458
- Gross Production Value	(D., '000)	2,776.2	999.5	3,411.3	4,645.4	11,832.4
- Production Cost	(D., '000)	628.7	331.1	1,099.8	814.0	2,873.6
- Net Production Value	(D., '000)	2,147.5	668.4	2,311.5	3,831.4	8,958.8
2.5 Tomato 1,675 D./ha						
- Planted Area	(ha)	223	94	248	208	773
- Gross Production Value	(D., '000)	2,046.8	424.8	1,307.2	1,277.0	5,055.8
- Production Cost	(D., '000)	373.5	157.5	415.4	348.4	1,294.8
- Net Production Value	(D., '000)	1,673.3	267.3	891.8	928.6	3,761.0
3. Fodder Crops						
3.1 Lucern 1,038 D./ha						
- Planted Area	(ha)	886	311	2,850	1,620	5,667
- Gross Production Value	(D., '000)	2,519.1	1,279.6	7,575.6	5,098.8	16,473.1
- Production Cost	(D., '000)	919.7	322.8	2,958.3	1,681.6	5,882.4
- Net Production Value	(D., '000)	1,599.4	956.8	4,617.3	3,417.2	10,590.7
4. Industrial Crops						
4.1 Henna 1,257 D./ha						
- Planted Area	(ha)	0	0	0	452	452
- Gross Production Value	(D., '000)	0.0	0.0	0.0	1,218.0	1,218.0
- Production Cost	(D., '000)	0.0	0.0	0.0	568.2	568.2
- Net Production Value	(D., '000)	0.0	0.0	0.0	649.8	649.8
Total : - Planted Area	(ha)	5,359	6,501	12,130	10,690	34,680
- Gross Production Value	(D., '000)	25,204.6	34,137.4	54,757.5	46,292.6	160,392.1
- Production Cost	(D., '000)	5,651.9	6,756.1	13,529.9	11,557.2	37,495.1
- Net Production Value	(D., '000)	19,552.7	27,381.3	41,227.6	34,735.4	122,897.0
153 Oasis Area	(ha)	3,467	5,622	7,213	7,133	23,435
Cropping Intensity		154.6%	115.6%	168.2%	149.9%	148.0%
- Net Production Value	(D./ha)	5,639.7	4,870.4	5,715.7	4,869.7	5,244.2

Ref. : Tables E.3.10.1, E.3.10.2, and E.3.10.3

Table E.3.11.1 Present Planted Area and Cropping Intensity of Typical Farm

Description	Kasba Oasis / Gafsa				Oued Shili Oasis / Gafsa				Tozeur Oasis / Tozeur				Drna Sud Oasis / Tozeur			
	Total Oasis Area		Land Holding Size		Total Oasis Area		Land Holding Size		Total Oasis Area		Land Holding Size		Total Oasis Area		Land Holding Size	
	Planted Area	Ratio	Planted Area	Ratio	Planted Area	Ratio	Planted Area	Ratio	Planted Area	Ratio	Planted Area	Ratio	Planted Area	Ratio	Planted Area	Ratio
A. Farm Land	698 ha		1.06 ha per farmer		56 ha		3.11 ha per farmer		929 ha		1.38 ha per farmer		198 ha		1.98 ha per farmer	
B. Planted Area	1.126 ha	161%	1.71 ha	161%	42 ha	75%	2.33 ha	75%	1.119 ha	120%	1.66 ha	120%	222 ha	112%	2.22 ha	112%
Arboriculture	(698)	(100%)	(1.06)	(100%)	(32)	(57%)	(1.78)	(57%)	(929)	(100%)	(1.38)	(100%)	(198)	(100%)	(1.98)	(100%)
- Date palm	73	10%	0.11	10%	32	57%	1.78	57%	868	93%	1.29	93%	164	83%	1.64	83%
- Olive	520	74%	0.79	74%					16	2%	0.02	2%	4	2%	0.04	2%
- Pomegranate	14	2%	0.02	2%					16	2%	0.02	2%	10	5%	0.10	5%
- Apricot	70	10%	0.11	10%					4	0%	0.01	0%	4	2%	0.04	2%
- Fig* and others	21	3%	0.03	3%					25	3%	0.04	3%	16	8%	0.16	8%
Fodder crops																
- Lucern	165	24%	0.25	24%	7	13%	0.39	13%	70	8%	0.10	8%	6	3%	0.06	3%
Winter vegetables	(146)	(21%)	(0.22)	(21%)	(3)	(5%)	(0.17)	(5%)	(65)	(7%)	(0.10)	(7%)	(10)	(5%)	(0.10)	(5%)
- Turnip* / Carrot	50	7%	0.08	7%					25	3%	0.04	3%	4	2%	0.04	2%
- Onion	50	7%	0.08	7%	1	2%	0.06	2%	30	3%	0.04	3%	4	2%	0.04	2%
- Kidney Beans	46	7%	0.07	7%	2	4%	0.11	4%	10	1%	0.01	1%	2	1%	0.02	1%
Summer vegetables	(117)	(17%)	(0.18)	(17%)					(55)	(6%)	(0.08)	(6%)	(8)	(4%)	(0.08)	(4%)
- Pepper	67	10%	0.10	10%					35	4%	0.05	4%	5	3%	0.05	3%
- Tomato	50	7%	0.08	7%					20	2%	0.03	2%	3	1%	0.03	1%
Industrial crops																
- Henna* / Tobacco																
C. Cropping Intensity	1.61		1.61		0.75		0.75		1.20		1.20		1.12		1.12	
Farm area utilization	1.45		1.45		0.75		0.75		1.15		1.15		1.08		1.08	

Description	Mansoura Oasis / Kebili				Atilet Oasis / Kebili				Oasis de Gabes / Gabes				Limaoua 1 et 2 Oasis / Gabes			
	Total Oasis Area		Land Holding Size		Total Oasis Area		Land Holding Size		Total Oasis Area		Land Holding Size		Total Oasis Area		Land Holding Size	
	Planted Area	Ratio	Planted Area	Ratio	Planted Area	Ratio	Planted Area	Ratio	Planted Area	Ratio	Planted Area	Ratio	Planted Area	Ratio	Planted Area	Ratio
A. Command Area	86 ha		0.25 ha per farmer		220 ha		0.75 ha per farmer		734 ha		0.29 ha per farmer		148 ha		1.25 ha per farmer	
B. Planted Area	138 ha	160%	0.40 ha	160%	408 ha	185%	1.39 ha	185%	1.110 ha	151%	0.44 ha	151%	233 ha	157%	1.97 ha	157%
Arboriculture	(86)	(100%)	(0.25)	(100%)	(220)	(100%)	(0.75)	(100%)	(734)	(100%)	(0.29)	(100%)	(148)	(100%)	(1.25)	(100%)
- Date palm	79	92%	0.23	92%	198	90%	0.68	90%	485	66%	0.19	66%	1	1%	0.01	1%
- Olive	4	5%	0.01	5%					3	0%	0.00	0%	19	13%	0.16	13%
- Pomegranate					7	3%	0.02	3%	236	32%	0.09	32%	61	41%	0.52	41%
- Apricot					2	1%	0.01	1%	3	0%	0.00	0%	7	5%	0.06	5%
- Fig* and others	3	3%	0.01	3%	13	6%	0.04	6%	7	1%	0.00	1%	60	41%	0.51	41%
Fodder crops																
- Lucern	37	43%	0.11	43%	64	29%	0.22	29%	125	17%	0.05	17%	23	16%	0.19	16%
Winter vegetables	(7)	(9%)	(0.02)	(9%)	(109)	(50%)	(0.37)	(50%)	(28)	(4%)	(0.01)	(4%)	(32)	(22%)	(0.27)	(22%)
- Turnip* / Carrot	3	3%	0.01	3%	40	18%	0.14	18%	16	2%	0.01	2%	16	11%	0.14	11%
- Onion	3	3%	0.01	3%	40	18%	0.14	18%	10	1%	0.00	1%	14	9%	0.12	9%
- Kidney Beans	1	2%	0.00	2%	29	13%	0.10	13%	2	0%	0.00	0%	2	1%	0.02	1%
Summer vegetables	(8)	(9%)	(0.02)	(9%)	(15)	(7%)	(0.05)	(7%)	(23)	(3%)	(0.01)	(3%)	(24)	(16%)	(0.20)	(16%)
- Pepper	5	6%	0.01	6%	10	5%	0.03	5%	15	2%	0.01	2%	16	11%	0.14	11%
- Tomato	3	3%	0.01	3%	5	2%	0.02	2%	8	1%	0.00	1%	8	5%	0.07	5%
Industrial crops																
- Henna* / Tobacco									200	27%	0.08	27%	6	4%	0.05	4%
C. Cropping Intensity	1.60		1.60		1.85		1.85		1.51		1.51		1.57		1.57	
Farm area utilization	1.52		1.52		1.79		1.79		1.48		1.48		1.41		1.41	

Table E.3.11.2 Annual Living Expenses per Person in the Study Area

Description	Average Family *		South Region		Rural Area		Farmers**	
	(D.)	(%)	(D.)	(%)	(D.)	(%)	(D.)	(%)
1. Food	285.7	39.8	268.7	47.2	215.9	46.9	261.1	45.5
1.1 Wheat	43.4	6.0	41.9	7.4	45.5	9.9	49.8	8.7
1.2 Dry Vegetables	10.5	1.5	10.3	1.8	8.8	1.9	11.1	1.9
1.3 Vegetable	49.4	6.9	46.5	8.2	39.8	8.7	44.7	7.8
1.4 Fruit	19.4	2.7	14.2	2.5	12.5	2.7	17.2	3.0
1.5 Meat	63.9	8.9	64.1	11.3	46.4	10.1	57.9	10.1
1.6 Fish	9.5	1.3	6.6	1.2	2.6	0.6	5.5	1.0
1.7 Milk / Eggs	31.1	4.3	27.4	4.8	16.3	3.5	20.7	3.6
1.8 Sugar	8.5	1.2	8.9	1.6	7.7	1.7	8.2	1.4
1.9 Olive / Vegetable Oil	16.9	2.4	22.6	4.0	16.1	3.5	22.0	3.8
1.10 Soft Drink / others	33.1	4.6	26.2	4.6	20.2	4.4	24.0	4.2
2. Housing	161.4	22.5	121.6	21.4	83.4	18.1	103.9	18.1
2.1 Rent cost	45.0	6.3	36.7	6.4	14.6	3.2	19.2	3.3
2.2 Power fee	32.0	4.5	29.3	5.1	18.5	4.0	20.2	3.5
2.3 O/M cost of house	43.0	6.0	35.0	6.1	28.9	6.3	35.4	6.2
2.4 Table and others	8.7	1.2	3.8	0.7	5.6	1.2	7.7	1.3
2.5 Internal machine	2.8	0.4	0.9	0.2	1.4	0.3	1.1	0.2
2.6 Kitchen	3.8	0.5	2.7	0.5	2.7	0.6	3.4	0.6
2.7 Cleaning of house	2.0	0.3	0.7	0.1	1.8	0.4	2.4	0.4
2.8 Others	24.1	3.4	12.5	2.2	9.9	2.2	14.5	2.5
3. Clothing	73.2	10.2	51.0	9.0	51.3	11.2	69.3	12.1
3.1 New clothes	27.0	3.8	20.6	3.6	19.8	4.3	26.0	4.5
3.2 Old clothes	1.7	0.2	2.1	0.4	3.1	0.7	4.2	0.7
3.3 Under wears	11.9	1.7	6.5	1.1	7.8	1.7	10.5	1.8
3.4 Clothes tissue	3.2	0.4	1.5	0.3	1.3	0.3	2.7	0.5
3.5 Footwear	21.3	3.0	14.0	2.5	13.8	3.0	18.0	3.1
3.6 Cover hear	0.8	0.1	0.5	0.1	1.1	0.2	1.6	0.3
3.7 Personal use	3.6	0.5	2.3	0.4	1.8	0.4	2.7	0.5
3.8 Jason clothes	1.2	0.2	0.4	0.1	0.5	0.1	0.8	0.1
3.9 Others	2.5	0.3	3.1	0.5	2.1	0.5	2.8	0.5
4. Hygienics	61.8	8.6	44.3	7.8	36.3	7.9	43.1	7.5
4.1 Medical health	32.3	4.5	19.2	3.4	20.3	4.4	23.5	4.1
4.2 Personal health	18.5	2.6	13.9	2.4	8.6	1.9	11.7	2.0
4.3 Hyginic product	11.0	1.5	11.2	2.0	7.4	1.6	7.9	1.4
5. Transportation / Communication	59.1	8.2	32.7	5.7	28.3	6.2	36.3	6.3
5.1 Private Transport	33.0	4.6	17.6	3.1	9.7	2.1	13.6	2.4
5.2 Common Transport	22.2	3.1	12.6	2.2	18.3	4.0	21.7	3.8
5.3 Telephone and others	3.9	0.5	2.5	0.4	0.3	0.1	1.0	0.2
6. Education, Culture	64.1	8.9	44.6	7.8	34.6	7.5	43.7	7.6
6.1 Tobacco	26.4	3.7	21.6	3.8	18.5	4.0	21.2	3.7
6.2 Cinema	2.9	0.4	1.7	0.3	0.9	0.2	1.9	0.3
6.3 Culture	4.7	0.7	3.2	0.6	2.5	0.5	2.9	0.5
6.4 Leisure	3.6	0.5	3.8	0.7	1.0	0.2	1.6	0.3
6.5 Education	19.4	2.7	10.4	1.8	9.1	2.0	12.2	2.1
6.6 Travel / vacation	7.1	1.0	3.9	0.7	2.6	0.6	3.9	0.7
7. Others	13.0	1.8	6.4	1.1	10.2	2.2	16.6	2.9
Total	718.3	100.0	569.3	100.0	460.0	100.0	574.0	100.0

Source : Enquete Nationale sur le Budget et la Consommation des Ménages, 1990

Remarks : (*) ; 5 to 7 persons per family size

(**) ; This figure is selected for typical farmer's living expenses in the Study area.

Table E.3.11.3 (1) Present Typical Farm Budget in the Study Area

Description	Kasba Oasis / Gafsa					Oued Sbiti Oasis / Gafsa					Tozeur Oasis / Tozeur					Drau Sud Oasis / Tozeur				
	Cropped Area	Estimated Yield	Production	Unit Price	Amount	Cropped Area	Estimated Yield	Production	Unit Price	Amount	Cropped Area	Estimated Yield	Production	Unit Price	Amount	Cropped Area	Estimated Yield	Production	Unit Price	Amount
	(ha)	(ton/ha)	(tons)	(D./kg)	(D.)	(ha)	(ton/ha)	(tons)	(D./kg)	(D.)	(ha)	(ton/ha)	(tons)	(D./kg)	(D.)	(ha)	(ton/ha)	(tons)	(D./kg)	(D.)
A. FARM LAND	1.06					2.11					1.28					1.98				
B. GROSS INCOME																				
Farm Income																				
Arboriculture :	1.06					1.78					1.28					1.98				
- Date	0.11	7.75	0.9	1.025	874	1.78	6.51	11.6	1.025	11,877	1.29	6.25	8.1	1.025	8,264	1.64	4.80	7.9	1.025	8,069
- Olive	0.79	8.16	6.4	0.400	2,579						0.02	2.91	0.1	0.400	23	0.04	2.12	0.1	0.400	34
- Pomegranate	0.02	8.26	0.2	0.287	47						0.02	2.23	0.0	0.287	13	0.10	2.44	0.2	0.287	70
- Apricots	0.11	19.54	2.1	0.493	1,060						0.01	2.52	0.0	0.493	12	0.04	2.76	0.1	0.493	54
- Fig* / Other Fruits	0.03	8.06	0.2	0.385	93						0.04	2.42	0.1	0.385	37	0.16	2.65	0.4	0.385	163
Fodder Crops																				
- Lucern	0.25	30.42	7.6	0.053	403	0.39	45.09	17.4	0.053	920	0.10	77.57	7.8	0.053	411	0.06	84.90	5.1	0.053	270
Winter Season Vegetables																				
- Turnip* / Carrot	0.08	30.21	2.4	0.201	486						0.04	13.09	0.5	0.201	105	0.04	14.33	0.6	0.201	115
- Onion	0.08	27.19	2.2	0.186	405	0.06	20.04	1.2	0.186	224	0.04	14.54	0.6	0.186	108	0.04	15.92	0.6	0.186	118
- Kidney beans	0.07	15.11	1.0	0.370	363	0.11	10.02	1.1	0.370	389	0.01	6.79	0.1	0.370	25	0.02	7.43	0.1	0.370	55
Summer Season Vegetables																				
- Pepper	0.10	10.07	1.0	0.874	836						0.05	6.79	0.4	0.874	320	0.05	7.43	0.4	0.874	325
- Tomato	0.08	30.21	2.3	0.310	702						0.03	14.54	0.5	0.310	153	0.03	15.92	0.5	0.310	148
Industrial Crops																				
- Henna* / Tobacco																				
Sub-total	1.71 ha	1.61	(Cropping Intensity)		7,848 (a)	2.22 ha	75%	(Cropping Intensity)		13,410 (a)	1.66 ha	120%	(Cropping Intensity)		9,471 (a)	2.22 ha	112%	(Cropping Intensity)		9,421 (a)
Off-farm Income					(b)					(b)					(b)					(b)
Total Gross Income				(a + b) =	7,848 (c)				(a + b) =	13,410 (c)				(a + b) =	9,471 (c)				(a + b) =	9,421 (c)
C. GROSS OUTGOING				Unit Production Cost (D./ha)	Amount (D.)				Unit Production Cost (D./ha)	Amount (D.)				Unit Production Cost (D./ha)	Amount (D.)				Unit Production Cost (D./ha)	Amount (D.)
Production Cost																				
Arboriculture :	1.06					1.78					1.28					1.98				
- Date	0.11			974	107	1.78			974	1,734	1.29			974	1,256	1.64			974	1,597
- Olive	0.79			778	615				778		0.02			778	16	0.04			778	31
- Pomegranate	0.02			1,031	21				1,031		0.02			1,031	21	0.10			1,031	103
- Apricots	0.11			1,144	126				1,144		0.01			1,144	11	0.04			1,144	46
- Fig* / Other Fruits	0.03			905	27				905		0.04			905	36	0.16			905	145
Fodder Crops																				
- Lucern	0.25			1,038	260	0.39			1,038	400	0.10			1,038	104	0.06			1,038	62
Winter Season Vegetables																				
- Turnip* / Carrot	0.08			1,594	128				1,594		0.04			1,594	64	0.04			1,594	64
- Onion	0.08			1,769	142	0.06			1,769	106	0.04			1,769	71	0.04			1,769	71
- Kidney beans	0.07			1,455	95	0.11			1,455	153	0.01			1,455	15	0.02			1,455	29
Summer Season Vegetables																				
- Pepper	0.10			1,971	187				1,971		0.05			1,971	106	0.05			1,971	99
- Tomato	0.08			1,675	126				1,675		0.03			1,675	57	0.03			1,675	50
Industrial Crops																				
- Henna / Tobacco				1,257					1,257					1,257					1,257	
Sub-total	1.71 ha				1,834 (d)	2.22 ha				2,393 (d)	1.66 ha				1,757 (d)	2.22 ha				2,297 (d)
Living Expenses**	One person per year (D.)			5.33 persons/family***		One person per year (D.)			5.47 persons/family***		One person per year (D.)			5.27 persons/family***		One person per year (D.)			5.27 persons/family***	
- Food		261	45.5%		1,392		261.1	45.5%		1,428		261.1	45.5%		1,376		261.1	45.5%		1,376
- Housing		104	18.1%		554		103.9	18.1%		568		103.9	18.1%		548		103.9	18.1%		548
- Clothing		69	12.1%		369		69.3	12.1%		379		69.3	12.1%		365		69.3	12.1%		365
- Hygienics		43	7.5%		230		43.1	7.5%		236		43.1	7.5%		227		43.1	7.5%		227
- Transportation / Communication		36	6.3%		193		36.3	6.3%		199		36.3	6.3%		191		36.3	6.3%		191
- Education / Culture		44	7.6%		233		43.7	7.6%		239		43.7	7.6%		230		43.7	7.6%		230
- Others		17	2.9%		88		16.6	2.9%		91		16.6	2.9%		87		16.6	2.9%		87
Subtotal		574	100.0%		3,059 (e)		574.0	100.0%		3,140 (e)		574.0	100.0%		3,024 (e)		574.0	100.0%		3,024 (e)
Total Gross Outgoing				(d + e) =	4,893 (f)				(d + e) =	5,533 (f)				(d + e) =	4,781 (f)				(d + e) =	5,321 (f)
D. NET RESERVE				(c - f) =	2,955				(c - f) =	7,877				(c - f) =	4,690				(c - f) =	4,100

Sources : Enquete National sur le Budget Consommation des Ménages, 1990
Farm economic survey by JICA Study team, 1995

Remarks : (*) ; These crops are calculated as representative crops for each season.
(**) ; Consumption by person per year are estimated based on south region farmers.
(***) ; Average family size are estimated based on average of Delegation of each Oasis area.

Referred Tables : T-E.3.10.1, E.3.11.1 and E.3.11.2

Table E.3.11.3 (2) Present Typical Farm Budget in the Study Area

Description	Mansoura Oasis / Kebili					Atlet Oasis / Kebili					Oasis de Gabes / Gabes					Limaous 1 et 2 / Gabes				
	Cropped Area	Estimated Yield	Production	Unit Price	Amount	Cropped Area	Estimated Yield	Production	Unit Price	Amount	Cropped Area	Estimated Yield	Production	Unit Price	Amount	Cropped Area	Estimated Yield	Production	Unit Price	Amount
	(ha)	(ton/ha)	(tons)	(D./kg)	(D.)	(ha)	(ton/ha)	(tons)	(D./kg)	(D.)	(ha)	(ton/ha)	(tons)	(D./kg)	(D.)	(ha)	(ton/ha)	(tons)	(D./kg)	(D.)
A. FARM LAND	0.25					0.75					0.29					1.25				
B. GROSS INCOME																				
Farm Income																				
Arboriculture :	0.25					0.75					0.29					1.25				
- Date	0.23	5.37	1.2	1.025	1,238	0.68	4.04	2.7	1.025	2,795	0.19	5.86	1.1	1.025	1,141	0.01	5.81	0.1	1.025	60
- Olive	0.01	4.28	0.0	0.400	9						0.01	3.90	0.0	0.400	8	0.16	3.87	0.6	0.400	248
- Pomegranate						0.02	3.08	0.1	0.287	18	0.09	11.71	1.0	0.287	286	0.52	11.62	6.0	0.287	1,734
- Apricots						0.01	2.41	0.0	0.493	12	0.01	11.71	0.1	0.493	29	0.06	11.62	0.6	0.493	315
- Fig* / Other Fruits	0.02	2.46	0.0	0.385	14	0.04	2.60	0.1	0.385	40	0.01	4.88	0.0	0.385	9	0.51	4.84	2.4	0.385	941
Fodder Crops																				
- Lucern	0.11	45.54	5.0	0.053	265	0.22	48.11	10.6	0.053	561	0.05	58.56	2.8	0.053	146	0.19	58.10	11.0	0.053	585
Winter Season Vegetables																				
- Turnip* / Carrot	0.01	12.30	0.1	0.201	25	0.14	12.99	1.8	0.201	366	0.01	27.84	0.1	0.201	28	0.14	27.62	3.9	0.201	777
- Onion	0.01	13.66	0.1	0.186	25	0.14	14.43	2.0	0.186	376	0.01	29.31	0.1	0.186	27	0.12	29.08	3.5	0.186	649
- Kidney beans	0.01	6.38	0.0	0.370	12	0.10	6.74	0.7	0.370	249	0.01	16.61	0.1	0.370	31	0.02	16.48	0.2	0.370	91
Summer Season Vegetables																				
- Pepper	0.01	6.38	0.0	0.874	28	0.03	6.74	0.2	0.874	159	0.01	12.70	0.1	0.874	55	0.14	12.60	1.8	0.874	1,542
- Tomato	0.01	15.48	0.1	0.310	24	0.02	16.36	0.2	0.310	76	0.01	19.54	0.1	0.310	30	0.07	19.38	1.3	0.310	391
Industrial Crops																				
- Henna* / Tobacco											0.08	1.46	0.1	1.839	201	0.05	1.45	0.1	1.839	120
Sub-total	0.39 ha	156%	(Cropping Intensity)		1,640 (a)	1.39 ha	185%	(Cropping Intensity)		4,652 (a)	0.44 ha	151%	(Cropping Intensity)		1,991 (a)	1.97 ha	157%	(Cropping Intensity)		7,453 (a)
Off-farm Income					2,500 (b)					1,000 (b)					2,000 (b)					(b)
Total Gross Income				(a + b) =	4,140 (c)				(a + b) =	5,652 (c)				(a + b) =	3,991 (c)				(a + b) =	7,453 (c)
C. GROSS OUTGOING				Unit Production Cost (D./ha)	Amount (D.)				Unit Production Cost (D./ha)	Amount (D.)				Unit Production Cost (D./ha)	Amount (D.)				Unit Production Cost (D./ha)	Amount (D.)
Production Cost																				
Arboriculture :	0.25					0.75					0.29					1.25				
- Date	0.23			974	219	0.68			974	657	0.19			974	185	0.01			974	10
- Olive	0.01			778	4						0.01			778	4	0.16			778	124
- Pomegranate						0.02			1,031	21	0.09			1,031	88	0.52			1,031	536
- Apricots						0.01			1,144	11	0.01			1,144	6	0.06			1,144	63
- Fig* / Other Fruits	0.02			905	14	0.04			905	36	0.01			905	5	0.51			905	457
Fodder Crops																				
- Lucern	0.11			1,038	114	0.22			1,038	228	0.05			1,038	49	0.19			1,038	197
Winter Season Vegetables																				
- Turnip* / Carrot	0.01			1,594	16	0.14			1,594	223	0.01			1,594	8	0.14			1,594	223
- Onion	0.01			1,769	18	0.14			1,769	248	0.01			1,769	9	0.12			1,769	212
- Kidney beans	0.01			1,455	7	0.10			1,455	146	0.01			1,455	7	0.02			1,455	22
Summer Season Vegetables																				
- Pepper	0.01			1,971	10	0.03			1,971	53	0.01			1,971	10	0.14			1,971	276
- Tomato	0.01			1,675	8	0.02			1,675	25	0.01			1,675	8	0.07			1,675	109
Industrial Crops																				
- Henna / Tobacco											0.08			1,257	94	0.05			1,257	57
Sub-total	0.39 ha				410 (d)	1.39 ha				1,648 (d)	0.44 ha				473 (d)	1.97 ha				2,286 (d)
Living Expenses**		One person per year (D.)		5.65 persons/family***			One person per year (D.)		6.17 persons/family***			One person per year (D.)		5.48 persons/family***			One person per year (D.)		5.48 persons/family***	
- Food		261.1	45.5%		1,475		261.1	45.5%		1,611		261.1	45.5%		1,431		261.1	45.5%		1,431
- Housing		103.9	18.1%		587		103.9	18.1%		641		103.9	18.1%		569		103.9	18.1%		569
- Clothing		69.3	12.1%		392		69.3	12.1%		428		69.3	12.1%		380		69.3	12.1%		380
- Hygienics		43.1	7.5%		244		43.1	7.5%		266		43.1	7.5%		236		43.1	7.5%		236
- Transportation / Communication		36.3	6.3%		205		36.3	6.3%		224		36.3	6.3%		199		36.3	6.3%		199
- Education / Culture		43.7	7.6%		247		43.7	7.6%		270		43.7	7.6%		239		43.7	7.6%		239
- Others		16.6	2.9%		94		16.6	2.9%		102		16.6	2.9%		91		16.6	2.9%		91
Sub-total		574.0	100.0%		3,244 (e)		574.0	100.0%		3,542 (e)		574.0	100.0%		3,145 (e)		574.0	100.0%		3,145 (e)
Total Gross Outgoing				(d + e) =	3,654 (f)				(d + e) =	5,190 (f)				(d + e) =	3,618 (f)				(d + e) =	5,431 (f)
D. NET RESERVE				(c - f) =	486				(c - f) =	462				(c - f) =	373				(c - f) =	2,022

Sources : Enquete National sur le Budget Consommation des Menages, 1990
Farm economic survey by JICA Study team, 1995

Remarks : (*) ; These crops are calculated as representative crops for each season.
(**) ; Consumption by person per year are estimated based on south region farmers.
(***) ; Average family size are estimated based on average of Delegation of each Oasis area.

Referred Tables : T-E3.10.1, E.3.11.1 and E.3.11.2

Table E.3.13.1 Present Staff of Extension Work in 153 Oases Area

Code No.	Name of Oasis	Delegation	Area (ha)	Name and No. of CRA	No of Staff	Name of CTV	Total Staff
Gafsa Governorate							
GF - 1	Kasba	Gafsa Sud	698	Gafsa Kasba	1	El Kasba	4
GF - 2	Sud Ouest	Gafsa Sud	203	Sud Ouest	1		
GF - 3	El Guettar	Guettar	450	El Guettar	1	El Guettar	3
GF - 4	Lalla	Ksar	200	Lalla	1		
GF - 5	El Ksar	Ksar	578	Ksar (El Kasba CTV)	1		
GF - 6	Oued Sbib	Metlaoui	56	Metlaoui	1	Seguiet	3
GF - 7	Thelja	Metlaoui	65				
GF - 8	Seguiet	Redeyef	217	Seguiet	1		
	Sub-total	5	3,467	7	7	3	10
Tozeur Governorate							
TZ - 1	Tozeur	Tozeur	929	Oasis Tozeur	1	Tozeur	8
TZ - 2	Kastilia	Tozeur	50	Nefleyette	1		
TZ - 3	Oued El Kouche	Tozeur	62	Oasis Degache	1		
TZ - 4	Nefleyette	Tozeur	72	Nefleyette	1		
TZ - 5	Chemia	Tozeur	90				
TZ - 6	Hebba Est	Tozeur	75				
TZ - 7	Hebba Ouest	Tozeur	50				
TZ - 8	Jbim 1	Tozeur	40	Jbim I, II	1		
TZ - 9	Jbim 2	Tozeur	167				
TZ - 10	Ibn Chabbat 3	Tozeur	325	Ibn Chabbat III	2		
TZ - 11	Nefta	Nefta	852	Nefta Ouest	1	Nefta	7
TZ - 12	Ghanigaya	Nefta	40	Société de mise en valeur	1		
TZ - 13	Ibn Chabbat 1	Nefta	240	Ibn Chabbat I	1		
TZ - 14	Ibn Chabbat 2	Nefta	272	Ibn Chabbat II	1		
TZ - 15	Draa Sud	Nefta	198	Draa Sud	1		
TZ - 16	Hazoua 1	Hazoua	72	Hazoua	1		
TZ - 17	Hazoua 2	Hazoua	48				
TZ - 18	Hazoua 3	Hazoua	238				
TZ - 19	Oued Leghrissi	Hazoua	78				
TZ - 20	Tamerit	Degache	48	Dghoumes	1	Tozeur	6
TZ - 21	Cebala	Degache	55	Mabessen Zhorab	1		
TZ - 22	Dghoumes	Degache	104 *	Dghoumes			
TZ - 23	Degache	Degache	822 *	Mabessen Zhorab			
TZ - 24	Chakmou	Degache	90 *	Dghoumes			
TZ - 25	El Hamma	Degache	400	El Hamma	1		
TZ - 26	Tameza	Tameza	80	Tameza	1		
TZ - 27	Chebika	Tameza	23	Chebika	1		
TZ - 28	Feum El Khanga	Tameza	48				
TZ - 29	Mides	Tameza	29 *	Tameza			
TZ - 30	Ain El Karma	Tameza	25				
	Sub-total	5	5,622	17	18	3	21
Kebili Governorate							
KB - 1	Bechri	Souk Lahad	162	Faraasa	1	Souk Lahad	5
KB - 2	Bouabdallah	Souk Lahad	270	Bouabdellah	1		
KB - 3	Faraasa	Souk Lahad	205 *	Faraasa			
KB - 4	El Ghar	Souk Lahad	94	Bouabdellah			
KB - 5	Menchia	Souk Lahad	140				
KB - 6	Nagga	Souk Lahad	181	Om Somaa	1		
KB - 7	Oum Somaa	Souk Lahad	162				
KB - 8	Oued Zera	Souk Lahad	176	Zera	1		
KB - 9	Oued Touati	Souk Lahad	62				
KB - 10	Tendeg	Souk Lahad	54 *	Faraasa			
KB - 11	Zaouiet El Arab	Souk Lahad	125				
KB - 12	Zaouiet El Hadi	Souk Lahad	81 *	Om Somaa			
KB - 13	Zirat Lehbichi	Souk Lahad	86 *	Zera			
KB - 14	Chouchet Nagga	Souk Lahad	26	Om Somaa			
KB - 15	Guettaya	Kebili Nord	150	Guetaya	1	Kebili Nord	6
KB - 16	Jedida	Kebili Nord	132	Mansoura	1		
KB - 17	Mansoura	Kebili Nord	86				
KB - 18	Rakia	Kebili Nord	162				
KB - 19	Telmine	Kebili Nord	240				
KB - 20	Tendeb	Kebili Nord	118				
KB - 21	Toudhar	Kebili Nord	127	Toudhar	1		
KB - 22	Limagues	Kebili Nord	57	Limagues	1		
KB - 23	Mazraa Nejl	Kebili Nord	66				
KB - 24	Oum El Farfa 1 et 2	Kebili Nord	55				
KB - 25	Sidhimi	Kebili Nord	82	Sidhimi	1		
KB - 26	Saidane	Kebili Nord	30 *	Limagues			
KB - 27	Bayahoudhia	Kebili Nord	52	Guetaya (Kebili Nord CTV)			
KB - 28	Bazma	Kebili Sud	146	Bazma	1	Kebili Sud	6
KB - 29	Bichelli	Kebili Sud	335 *	Guetaya (Kebili Nord CTV)			
KB - 30	Bibdette	Kebili Sud	75	Bibdet	1		
KB - 31	Zaouine	Kebili Sud	70	Zaouine	1		
KB - 32	Jemna	Kebili Sud	112	Jemna	1		
KB - 33	Musaria	Kebili Sud	81				
KB - 34	Maaid	Kebili Sud	95 *	Bazma			
KB - 35	Rahout	Kebili Sud	85				
KB - 36	Ras El Ain	Kebili Sud	268	Ras El Ain	1		
KB - 37	Souk El Baley	Kebili Sud	65				
KB - 38	Ben Zitoun 1 et 2	Kebili Sud	147 *	Bibdet			
KB - 39	Bouzine	Kebili Sud	94 *	Jemna			
KB - 40	Gudyata	Kebili Sud	103 *	Bibdet		Kebili Sud	
KB - 41	Kelwanen	Kebili Sud	47 *	Guetaya (Kebili Nord CTV)			
KB - 42	Kibria	Kebili Sud	92 *	Zaouine			
KB - 43	Sidi Hamed	Kebili Sud	100 *	Jemna			
KB - 44	Atilel	Kebili Sud	220				
KB - 45	Douz	Douz	280	Douz Centre	1	Douz	6
KB - 46	El Gheula	Douz	75	El Gelta	1		
KB - 47	El Gelta	Douz	65				
KB - 48	Grad	Douz	111				
KB - 49	El Hsay	Douz	90	El Hsay	1		
KB - 50	Noulet	Douz	97	Noulet	1		
KB - 51	Zaafrane	Douz	101	Zafrane	1		
KB - 52	Bouhamra	Douz	80 *	El Hsay			
KB - 53	Ksar Ghilane	Douz	100 *	Douz Centre			
KB - 54	Sakhouma	Douz	80 *	El Gelta			
KB - 55	Tarfaya	Douz	77 *	Zafrane			
KB - 56	Dhomrana	Douz	45 *	Douz Centre			
KB - 57	Smida	Douz	64 *	Zafrane			
KB - 58	Ghidma	Faouar	80	Saleria	1	Faouar	3
KB - 59	Saleria	Faouar	60				
KB - 60	El Faouar 1	Faouar	87	Faouar	1		
KB - 61	El Faouar 2	Faouar	80				
KB - 62	Bechal	Faouar	100 *	Sabria			
KB - 63	Dargine	Faouar	72 *	Faouar			
KB - 64	Matrocha	Faouar	100				
KB - 65	Region Mastoug 1	Faouar	104				
KB - 66	Region Mastoug 2	Faouar	96				
KB - 67	Tarfayet Elma	Faouar	52 *	Saleria			
	Sub-total	5	7,213	21	21	5	26
Gabes Governorate							
GB - 1	Ain Zrig	Gabes Est	140	non CRA	0	De Gabes	5
GB - 2	Teboulba 1	Gabes Est	40	Teboulbou	1		
GB - 3	Teboulba 2	Gabes Est	20				
GB - 4	Zrig Dahlania	Gabes Est	30	non CRA	0		
GB - 5	Teboulbou	Gabes Est	520 *	Teboulbou	0		
GB - 6	Oasis de Gabes	Gabes Ouest	734	Gabes	1		
GB - 7	Limaoua 1 et 2	Gabes Ouest	148	non CRA	0		
GB - 8	Mdou	Gabes Ouest	40	El Mdou	1		
GB - 9	Chott El Fedji	Gabes Ouest	31	Chenini	1		
GB - 10	Bouchamma	Gabes Ouest	143				
GB - 11	Mahjoub	Ghannouch	374	Ghannouch	1	Metloula	4
GB - 12	Salem	Ghannouch	99				
GB - 13	Sbeyl	Ghannouch	72				
GB - 14	Fayzal	Ghannouch	260				
GB - 15	M'Zira Ghannouch	Ghannouch	280				
GB - 16	Metloula	Metloula	268	Metloula	1		
GB - 17	Oueflief	Metloula	263				
GB - 18	Aouinette	Metloula	232	Amara	1		
GB - 19	Chenchou 1	El Hamma	57	Chenchou	1	El Hamma	5
GB - 20	Chenchou 2	El Hamma	40				
GB - 21	Tebouri	El Hamma	32	Hamma	1		
GB - 22	Hamma Oasis	El Hamma	400				
GB - 23	Mdina Hamma	El Hamma	80				
GB - 24	Bechina 1	El Hamma	280	Bechina	1		
GB - 25	Bechina 2	El Hamma	290				
GB - 26	Khebayet	El Hamma	96	Ben Ghilouf	1		
GB - 27	Ben Ghilouf	El Hamma	180				
GB - 28	Gbb Dekhane	El Hamma	70				
GB - 29	Oued Nebla	El Hamma	30				
GB - 30	Arram	Mareth	162	Arram	1	Mareth	4
GB - 31	Mareth 1	Mareth	100				
GB - 32	Mareth 2	Mareth	180	Zarat	0		
GB - 33	Mareth 3	Mareth	30 *	Arram			
GB - 34	Mareth 5	Mareth	115 *	Zarat			
GB - 35	Mareth 6	Mareth	88 *	Arram			
GB - 36	Zarat 2	Mareth	174 *	Zarat			
GB - 37	Zerkine 1 et 3	Mareth	116	Zerkine	1		
GB - 38	Zerkine 2	Mareth	156				
GB - 39	Ayoune Zerkine	Mareth	30				
GB - 40	Mahsia	Mareth	58				
GB - 41	Kettana 1	Mareth	98	Kettana + Sidi Salium	1		
GB - 42	Kettana 3	Mareth	140				
GB - 43	Kettana 4	Mareth	125				
GB - 44	Sidi Salium	Mareth	130				
GB - 45	Zrig Barnaia	Mareth	31				
GB - 46	Ghachi	Mareth	30				
GB - 47	Lagrab 1	Matmata	35	Matmata	0	Matmata	1
GB - 48	Lagrab 3	Matmata	55				
	Sub-total	7	3,133	15	14	5	19
	Total	22	23,435	60	60	16	76

Sources : Annuaire des Vulgarisateurs Mars 1994, Agence de la Vulgarisation et de la Formation Agricoles, MINISTERE DE L'AGRICULTURE
19 CTVs in Gafsa, Tozeur, Kebili and Gabes CRDAs.

Remarks : non CRA ; These CRAs are not exist a office building and facilities. (0) ; These CRAs are vacant a chief of CRA or staff.
(*) ; These CRAs are same as above CRAs.
CRDA ; Commissariat Regional de DEveloppement Agricole, CTV ; Celle Territorials Vulgarisation, CRA ; Cell de Rayonnement Agricol

Table E.5.1.1 Oasis Type and Evaluation of 153 Oases

Code No	Name of Oasis	Area (ha)	Oasis Type: Cropping Type	Evaluation: Irrigation Achiv. Canal (%)	Drainage	Tourism	EIRR	Ranking
	Gafsa Governorate							
GF - 1	Kasba	698	T O - 2	48 ×	○	×	21.2% ○	B
GF - 2	Sud Ouest	703	T O - 2	32 ×	○	×	24.6% ○	B
GF - 3	El Guettar	450	T DF - 2	21 ×	○	×	23.0% ○	B
GF - 4	Lalla	700	T O - 2	37 ×	○	×	18.8% ○	B
GF - 5	El Ksar	578	T FD - 2	49 ×	○	×	21.5% ○	B
GF - 6	Oued Shib	56	N D - 1	38 ×	○	×	20.8% ○	B
GF - 7	Thelja	65	T D - 1	52 ×	×	×	13.7% △	C
GF - 8	Segdood	217	N D - 4	50 ×	×	×	26.0% ○	A
	Sub-total / Average (8)	3,467		41			22.0%	
	Tozeur Governorate							
TZ - 1	Tozeur	929	T D - 1	44 ×	×	○	14.9% ○	B
TZ - 2	Kasalia	50	T DF - 2	44 ×	○	×	15.7% ○	B
TZ - 3	Oued El Koucha	62	T D - 1	49 ×	×	×	11.4% △	C
TZ - 4	Nefflayette	72	T D - 2	48 ×	○	○	13.0% △	C
TZ - 5	Chemsa	90	T D - 2	53 ×	×	×	9.3% △	C
TZ - 6	Helba Est	75	T D - 2	38 ×	×	×	13.8% △	C
TZ - 7	Helba Ouest	50	T DF - 1	51 ×	×	×	15.4% ○	B
TZ - 8	Jhim 1	40	T DF - 2	35 ×	×	×	23.2% ○	A
TZ - 9	Jhim 2	167	T DF - 1	48 ×	×	×	12.3% △	C
TZ - 10	Ibn Chabbat 3	325	N DF - 1	70 ○	○	×	xxx ×	D
TZ - 11	Nefta	852	T O - 1	39 ×	×	×	23.4% ○	A
TZ - 12	Ghardgaya	40	T DF - 2	44 ×	×	×	13.9% △	C
TZ - 13	Ibn Chabbat 1	240	N DF - 1	70 ○	○	×	4.5% ×	D
TZ - 14	Ibn Chabbat 2	272	N DF - 1	70 ○	○	×	4.5% ×	D
TZ - 15	Draa Sud	198	N DF - 1	64 ○	○	×	6.5% ×	D
TZ - 16	Hazoua 1	72	T DF - 1	43 ×	×	×	11.5% △	C
TZ - 17	Hazoua 2	48	N DF - 1	52 ×	×	×	20.6% ○	A
TZ - 18	Hazoua 3	238	N DF - 1	52 ×	×	×	20.2% ○	A
TZ - 19	Oued Loghrissi	78	T DF - 1	47 ×	×	×	10.7% △	C
TZ - 20	Tozrarit	48	T DF - 1	47 ×	×	×	11.6% △	C
TZ - 21	Cedada	55	T D - 4	42 ×	×	×	12.7% △	C
TZ - 22	Dghoumes	104	T DF - 1	47 ×	×	×	13.0% △	C
TZ - 23	Degache	822	T D - 1	38 ×	×	×	16.2% ○	B
TZ - 24	Chaluoi	90	T D - 2	42 ×	○	×	16.3% ○	B
TZ - 25	El Hamma	400	T D - 1	39 ×	×	×	21.6% ○	A
TZ - 26	Tamerza	80	T D - 1	58 ○	×	○	5.4% ×	D
TZ - 27	Chebika	23	T D - 2	58 ○	×	○	1.5% ×	D
TZ - 28	Foum El Khanga	48	T D - 2	58 ○	×	○	-0.3% ×	D
TZ - 29	Mides	29	T D - 2	58 ○	×	○	5.5% ×	D
TZ - 30	Ain El Kanna	25	T D - 2	58 ○	×	○	1.5% ×	D
	Sub-total / Average (30)	5,622		50			13.9%	
	Kebili Governorate							
KB - 1	Bechri	162	T D - 3	47 ×	×	×	12.1% △	C
KB - 2	Bouabdallah	270	T D - 3	44 ×	×	×	15.5% ○	B
KB - 3	Fatnassa	205	T D - 3	51 ×	×	×	9.8% △	C
KB - 4	El Gliaa	94	T D - 3	46 ×	×	×	14.0% ○	B
KB - 5	Menchia	140	T D - 3	36 ×	×	×	17.5% ○	B
KB - 6	Nagga	188	T D - 3	44 ×	×	×	18.4% ○	B
KB - 7	Oum Somaa	162	T D - 3	38 ×	×	×	16.0% ○	B
KB - 8	Oued Zira	176	T D - 3	36 ×	×	×	20.8% ○	A
KB - 9	Ouled Touati	62	T D - 3	29 ×	×	×	23.3% ○	A
KB - 10	Tenchig	54	T D - 4	44 ×	×	×	19.1% ○	B
KB - 11	Zaouiet El Anes	125	T D - 3	40 ×	×	×	21.7% ○	A
KB - 12	Zaouiet El Harth	81	T D - 3	33 ×	×	×	25.0% ○	A
KB - 13	Ziret Louhichi	86	T D - 3	47 ×	×	×	13.4% ○	C
KB - 14	Chouchet Nagga	26	N D - 4	46 ×	×	×	14.4% ○	B
KB - 15	Guataya	150	T D - 3	40 ×	×	×	26.6% ○	A
KB - 16	Jedida	133	T D - 3	50 ×	×	×	12.9% △	C
KB - 17	Mansoura	86	T D - 3	33 ×	×	×	17.6% ○	B
KB - 18	Raba	162	T D - 3	46 ×	×	×	15.0% ○	B
KB - 19	Telmine	240	T D - 4	44 ×	×	×	15.5% ○	B
KB - 20	Tembib	118	T D - 4	50 ×	×	×	12.1% △	C
KB - 21	Tombar	127	T D - 4	42 ×	×	×	12.3% △	C
KB - 22	Limagues	57	T D - 3	46 ×	×	×	14.3% ○	B
KB - 23	Mazraa Neji	66	T D - 3	51 ×	×	×	12.4% △	C
KB - 24	Oum El Farih 1 et 2	55	T D - 3	52 ×	○	×	22.8% ○	B
KB - 25	Stifimi	82	T D - 3	53 ×	○	×	11.8% △	B
KB - 26	Saidabe	30	N FD - 2	44 ×	×	×	16.3% ○	B
KB - 27	Burghoudhia	52	T D - 3	44 ×	×	×	23.6% ○	A
KB - 28	Bazma	146	T DF - 2	51 ×	×	×	11.6% △	C
KB - 29	B'chelli	135	T D - 4	4 ×	×	×	13.3% △	C
KB - 30	Bidette	75	T D - 3	44 ×	×	×	24.2% ○	A
KB - 31	Zarcine	30	T D - 3	34 ×	×	×	26.8% ○	A
KB - 32	Jemna	112	T D - 3	56 ○	○	×	15.1% ○	C
KB - 33	Mnouria	81	T D - 3	40 ×	×	×	22.0% ○	A
KB - 34	Msaid	95	T DF - 2	40 ×	×	×	23.0% ○	A
KB - 35	Rahman	85	T DF - 2	43 ×	×	×	12.5% △	C
KB - 36	Ras El Ain	268	T D - 3	47 ×	×	×	11.8% △	C
KB - 37	Souk El Balez	65	T DF - 2	48 ×	×	×	16.3% ○	B
KB - 38	Ben Zitoun 1 et 2	147	T D - 3	44 ×	×	×	21.6% ○	A
KB - 39	Bourzine	94	T D - 4	53 ×	×	×	12.6% △	C
KB - 40	Guelsada	103	T D - 4	44 ×	×	×	22.6% ○	A
KB - 41	Kelwamen	47	T D - 4	47 ×	×	×	15.4% ○	B
KB - 42	Klibia	92	T D - 3	33 ×	×	×	9.3% △	C
KB - 43	Sidi Hamed	100	T D - 4	44 ×	×	×	20.2% ○	A
KB - 44	Anfet	220	N D - 4	41 ×	×	×	13.1% △	C
KB - 45	Douz	280	T D - 4	44 ×	×	×	15.9% ○	B
KB - 46	El Choula	75	T DF - 2	67 ○	○	×	0.6% ×	D
KB - 47	El Golaa	65	T D - 4	67 ○	○	×	1.3% ×	D
KB - 48	Grad	111	T D - 4	67 ○	○	×	0.3% ×	D
KB - 49	El H'say	90	T DF - 2	47 ×	○	×	20.2% ○	B
KB - 50	Noulet	97	T DF - 2	40 ×	×	×	20.6% ○	A
KB - 51	Zaafrane	101	T D - 4	60 ○	○	×	-1.8% ×	D
KB - 52	Bouhamza	80	T D - 4	47 ×	×	×	13.4% △	C
KB - 53	Ksar Ghilane	100	T D - 1	47 ×	×	×	10.9% △	C
KB - 54	Saktouma	80	T DF - 2	67 ○	○	×	0.8% ×	D
KB - 55	Tarfaya	77	T DF - 2	67 ○	○	×	-3.0% ×	D
KB - 56	Dhomrana	45	N D - 4	60 ○	×	×	10.1% △	C
KB - 57	Smida	64	N DF - 2	51 ×	×	×	13.2% △	C
KB - 58	Ghidma	80	T D - 3	61 ○	×	×	21.3% ○	B
KB - 59	Sabria	60	T D - 3	46 ×	×	×	19.0% ○	B
KB - 60	El Faouar 1	87	T D - 3	52 ×	×	×	16.2% ○	B
KB - 61	El Faouar 2	80	T D - 3	50 ×	×	×	10.4% △	C
KB - 62	Bechni	100	N D - 3	51 ×	×	×	15.2% ○	B
KB - 63	Dergine	72	N D - 3	70 ○	○	×	xxx ×	D
KB - 64	Matrouha	100	T D - 3	47 ×	×	×	15.5% ○	B
KB - 65	Regim Maatoug 1	104	N D - 3	59 ○	×	×	8.5% △	C
KB - 66	Regim Maatoug 2	96	N D - 4	57 ○	×	×	9.9% △	C
KB - 67	Tarfayet Elma	52	N D - 4	53 ×	×	×	13.6% △	C
	Sub-total / Average (67)	7,213		48			14.5%	
	Gabes Governorate							
GB - 1	Ain Zrig	140	T FD - 2	47 ×	×	×	19.2% ○	B
GB - 2	Temoula 1	40	T F - 2	52 ×	×	×	10.7% △	C
GB - 3	Temoula 2	20	T F - 2	51 ×	×	×	9.9% △	C
GB - 4	Zrig Dakhlania	30	T FD - 2	48 ×	×	×	10.0% △	C
GB - 5	Teboulbou	520	T FD - 2	38 ×	×	×	16.0% ○	B
GB - 6	Oasis de Gabes	334	T FD - 2	42 ×	×	×	21.4% ○	A
GB - 7	Limaoua 1 et 2	148	N F - 2	40 ×	×	×	15.4% ○	B
GB - 8	M'dou	40	T F - 2	44 ×	×	×	12.2% △	C
GB - 9	Chott El Fenik	31	T A	47 ×	○	×	19.5% ○	B
GB - 10	Bouchamma	143	T DF - 2	46 ×	×	×	21.6% ○	A
GB - 11	Mahjoub	374	T DF - 2	43 ×	×	×	20.2% ○	A
GB - 12	Salem	99	T FD - 2	44 ×	×	×	15.3% ○	B
GB - 13	Sboul	72	T FD - 2	48 ×	×	×	16.7% ○	B
GB - 14	Fayed	260	T A	46 ×	×	×	14.6% ○	B
GB - 15	M'rira Ghannouch	280	T A	49 ×	×	×	12.5% △	C
GB - 16	Metouia	268	T DF - 2	45 ×	×	×	19.8% ○	B
GB - 17	Oued Ref	263	T DF - 2	36 ×	×	×	26.2% ○	A
GB - 18	Aouinette	232	T O - 2	46 ×	×	×	13.0% △	C
GB - 19	Chenchou 1	57	T A	40 ×	×	×	13.0% △	C
GB - 20	Chenchou 2	40	N A	51 ×	×	×	11.2% △	C
GB - 21	Tekouri	32	T FD - 2	43 ×	×	×	16.3% ○	B
GB - 22	Hamma Oasis	400	T D - 3	44 ×	×	×	22.6% ○	A
GB - 23	Mziraa Hamma	80	T FD - 2	48 ×	×	×	12.5% ○	B
GB - 24	Bechima 1	280	T FD - 2	50 ×	×	×	8.3% △	C
GB - 25	Bechima 2	290	T DF - 2	40 ×	×	×	16.5% ○	B
GB - 26	Khebayet	96	T FD - 2	52 ×	×	×	15.0% ○	B
GB - 27	Ben Ghilouf	180	T FD - 2	56 ○	○	×	18.3% ○	C
GB - 28	Gub Dakhane	70	T FD - 2	49 ×	○	×	9.5% △	C
GB - 29	Oued Nekhla	30	T DF - 2	50 ×	×	×	17.3% ○	B
GB - 30	Arram	163	T FD - 2	49 ×	×	×	9.1% △	C
GB - 31	Mareth 1	100	T F - 2	44 ×	×	×	11.1% △	C
GB - 32	Mareth 2	180	T F - 2	40 ×	×	×	14.4% ○	B
GB - 33	Mareth 3	30	T FD - 2	54 ×	×	×	8.5% △	C
GB - 34	Mareth 5	115	T F - 2	29 ×	×	×	14.1% ○	B
GB - 35	Mareth 6	88	T F - 2	40 ×	×	×	18.3% ○	B
GB - 36	Zarat 2	174	T F - 2	47 ×	×	×	9.5% △	C
GB - 37	Zerkine 1 et 3	116	T F - 2	50 ×	×	×	12.8% △	C
GB - 38	Zerkine 2	156	T F - 2	43 ×	×	×	8.6% △	C
GB - 39	Ayoune Zerkine	30	T F - 2	43 ×	○	×	13.0% △	C
GB - 40	Madsisa	58	T F - 2	67 ○	○	×	xxx ×	D
GB - 41	Kettana 1	98	T F - 1	30 ×	×	×	15.2% ○	B
GB - 42	Kettana 3	140	T F - 1	44 ×	×	×	10.5% △	C
GB - 43	Kettana 4	125	T F - 1	36 ×	×	×	13.3% △	C
GB - 44	Sidi Sellam	120	N F - 1	50 ×	×	×	18.5% ○	B
GB - 45	Zrig Barrania	71	T O - 2	46 ×	×	×	8.0% △	C
GB - 46	Ghandri	30	N F - 1	47 ×	×	×	xxx ×	D
GB - 47	Lazradh 1	35	N F - 1	67 ×	×	×	5.2% ×	D
GB - 48	Lazradh 3	55	N F - 1	54 ×	×	×	2.4% ×	D
	Sub-total / Average (48)	9,133		46			15.9%	
	Total (153)	23,435		47			15.7%	

Remarks:

Irrigation Facilities: ○ Satisfy the design criteria; ○ Mostly satisfy the design criteria; × Not satisfy the design criteria

Drainage Facilities: ○ Satisfy the design criteria; ○ Mostly satisfy the design criteria; × Not satisfy the design criteria

Tourism: ○ Very important for tourism; ○ Relatively important for tourism; × Unimportant for tourism.

T: Traditional Oasis; N: New Oasis; A: Annual Crops; O: Olive; D: Date Palm; F: Fruits Tree

Economic Evaluation (EIRR): ○: above 20%; ○: 20 - 14%; △: 14 - 7.5%; ×: below 7.5%

Ranking for Development: A: Higher; B: High; C: Medium; D: Low

Table E.5.1.2 Ranking of 153 Oases for Agricultural Development Plan

Description	Gafsa Governorate		Tozeur Governorate		Kebili Governorate		Gabes Governorate		Total			
	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.		Area (ha)	
153 Oases Area	8	3,467	30	5,622	67	7,213	48	7,133	153		23,435	
1. Irrigation Facilities												
1.1 ◎ : Satisfy the design criteria	0	0	3	837	6	480	1	58	10	6.5%	1,375	5.9%
1.2 ○ : Mostly satisfy the design criteria	0	0	6	403	5	538	1	180	12	7.8%	1,121	4.8%
1.3 × : Not satisfy the design criteria	8	3,467	21	4,382	56	6,195	46	6,895	131	85.6%	20,939	89.3%
2. Drainage Facilities												
2.1 ◎ : Satisfy the design criteria	6	3,185	3	338	4	348	2	128	15	9.8%	3,999	17.1%
2.2 ○ : Mostly satisfy the design criteria	0	0	4	909	7	572	2	238	13	8.5%	1,719	7.3%
2.3 × : Not satisfy the design criteria	2	282	23	4,375	56	6,293	44	6,767	125	81.7%	17,717	75.6%
3. Tourism												
3.1 ◎ : Very important for tourism	0	0	5	205	0	0	0	0	5	3.3%	205	0.9%
3.2 ○ : Relativery important for tourism	0	0	2	1,001	0	0	0	0	2	1.3%	1,001	4.3%
3.3 × : Unimportant for tourism	8	3,467	23	4,416	67	7,213	48	7,133	146	95.4%	22,229	94.9%
4. Economic Evaluation (EIRR)												
2.1 ◎ : above 20%	6	2,702	5	1,578	18	1,725	5	1,914	34	22.2%	7,919	33.8%
2.2 ○ : 20 - 14 %	1	700	5	1,941	20	2,353	19	2,847	45	29.4%	7,841	33.5%
2.3 △ : 14 - 7.5 %	1	65	11	863	22	2,554	20	2,194	54	35.3%	5,676	24.2%
2.4 × : below 7.5%	0	0	9	1,240	7	581	4	178	20	13.1%	1,999	8.5%
5. Ranking for Agricultural Development												
5.1 A : Higher ranking	1	217	5	1,578	14	1,414	5	1,914	25	16.3%	5,123	21.9%
5.2 B : High ranking	6	3,185	5	1,941	23	2,548	18	2,667	52	34.0%	10,341	44.1%
5.3 C : Medium ranking	1	65	11	863	23	2,670	21	2,374	56	36.6%	5,972	25.5%
5.4 D : Low ranking	0	0	9	1,240	7	581	4	178	20	13.1%	1,999	8.5%

Ref. : Table E.5.1.1

Table E.5.2.1 Future Planted Area of Major Crops by Oasis

(Unit: ha)

Code No.	Name of Oasis	Area	Date Palm	Olive	Pomegranate	Apricot	Fig/ other Fruit	Carrot	Tomato	Onion	Kidney Bean	Pepper	Tomato	Fodder Crops	Industrial Crops	CI
Gafsa Governorate																
GF - 1	Kasba	608	73	520	14	70	21	50	50	46	67	50	165			1.61
GF - 2	Sud Ouest	703	42	594	22	20	25	38	30	30	80	48	167			1.54
GF - 3	El Guetar	650	295	118	11	2	24	40	30	40	5	2	50			1.37
GF - 4	Lalla	700	38	610	23	7	22	20	22	20	85	48	230			1.61
GF - 5	El Ksar	578	115	347	73	23	20	23	25	20	75	67	230			1.76
GF - 6	Oued Sidi	56	32	0				0	1	2	0	0	7			0.75
GF - 7	Dorsa	65	44	10				0	3	4	8	0	7			1.05
GF - 8	Segdoud	247	133	22	7	3	12	5	5	5	3	8	30			1.28
	Sub-total	3,467	812	2,221	150	125	124	166	166	167	319	223	886			1.53
Tozeur Governorate																
TZ - 1	Tozeur	929	858	16	16	4	25	25	30	10	35	20	70			1.20
TZ - 2	Kastilia	50	39	2	3	1	5	2	2	0	2	2	6			1.28
TZ - 3	Oued El Kouche	62	57	2	1	1	1	1	1	0	1	1	3			1.11
TZ - 4	Nefleyette	72	65	2	2	1	2	2	2	0	2	2	4			1.17
TZ - 5	Chenini	90	81	2	2	1	4	2	2	0	2	2	5			1.14
TZ - 6	Hedba Est	75	67	1	2	1	4	1	1	0	1	1	3			1.09
TZ - 7	Hedba Ouest	50	42	2	2	1	3	1	1	1	1	2	4			1.20
TZ - 8	Ibim 1	40	34	2	1	1	2	1	1	1	2	1	5			1.28
TZ - 9	Ibim 2	167	150	3	4	2	8	1	1	0	1	1	4			1.05
TZ - 10	Ibn Chabbat 3	325	278	8	11	7	21	4	4	3	6	3	7			1.08
TZ - 11	Nefta	852	815	7	12	2	16	20	30	10	30	15	48			1.17
TZ - 12	Ghardaya	49	33	1	2	1	3	2	2	0	1	1	3			1.23
TZ - 13	Ibn Chabbat 1	240	204	6	10	4	16	3	4	2	5	2	7			1.10
TZ - 14	Ibn Chabbat 2	272	233	4	11	5	19	4	5	2	6	3	9			1.10
TZ - 15	Dras Sud	198	164	4	10	4	16	4	4	2	5	3	8			1.12
TZ - 16	Hazoua 1	72	61	1	5	1	4	2	1	0	2	1	4			1.14
TZ - 17	Hazoua 2	48	41	1	2		4	1	1	0	1	1	3			1.15
TZ - 18	Hazoua 3	238	216	2	9	3	8	3	2	1	3	1	5			1.06
TZ - 19	Oued Leghlaiel	78	70	1	3	1	3	1	1	0	1	1	4			1.10
TZ - 20	Tozeur	48	39	4	1	1	3	2	1	0	1	1	2			1.15
TZ - 21	Cebala	55	49	3	1	0	2	1	1	1	2	1	5			1.20
TZ - 22	Oghouaiss	104	89	4	4	1	6	2	1	1	2	1	5			1.12
TZ - 23	Degache	822	707	82	15	3	15	24	24	15	36	18	62			1.22
TZ - 24	Chebika	90	78	4	3	1	4	1	1	1	1	1	4			1.10
TZ - 25	El Hamma	400	376	6	7	2	9	10	10	5	14	8	22			1.17
TZ - 26	Tamerza	80	73	2	2	1	2	1	1	1	1	1	4			1.13
TZ - 27	Chebika	23	20	1		0	2	1	0	0	1	0	1			1.13
TZ - 28	Foum El Khanga	48	40	2	2	1	3	1	0	1	1	0	2			1.10
TZ - 29	Mides	29	25	1	1	0	2	1	1	0	1	0	2			1.17
TZ - 30	Ain El Karma	25	22	1	1	0	1	1	0	1	1	0	2			1.20
	Sub-total	5,622	5,036	177	145	51	213	135	123	58	168	94	314			1.14
Kebili Governorate																
KB - 1	Bechri	162	157	1	2		2	3	3	2	6	3	46			1.39
KB - 2	Bouchebka	270	265	1	2		2	6	6	2	10	5	65			1.35
KB - 3	Faouara	205	197	2	3	1	2	3	3	1	7	3	50			1.33
KB - 4	El Glaa	94	84	6	1	1	2	4	4	3	10	3	26			1.54
KB - 5	Menchia	141	120	7	4	2	6	3	4	2	10	3	61			1.59
KB - 6	Nagga	181	178		1		2	1	1	1	3	1	36			1.24
KB - 7	Oum Soussa	162	141	16	2	1	2	5	4	2	11	4	23			1.29
KB - 8	Oued Zea	176	163	5	3	1	4	3	4	1	14	4	61			1.49
KB - 9	Ouled Toueil	62	58	1	1		2	4	4	3	6	2	50			2.12
KB - 10	Telachg	55	48	2	2	1	2	3	4	1	5	2	33			1.91
KB - 11	Zaouiet El Arem	124	116	6	1		1	3	3	1	4	2	34			1.38
KB - 12	Zaouiet El Hatab	81	76	4			1	2	2	1	3	2	34			1.35
KB - 13	Zaouiet Lehchibi	86	78	5	1		2	3	4	2	8	3	42			1.32
KB - 14	Chouchet Naggar	26	24		1		1	2	2	1	4	1	16			2.01
KB - 15	Gorayat	151	137	3	2	2	7	3	2	3	9	3	42			1.47
KB - 16	Jedida	133	122	8	1		2	6	6	5	3	2	55			1.61
KB - 17	Manouara	45	39	4			2	3	3	1	5	3	37			1.61
KB - 18	Rabta	162	157		2	1	2	12	12	8	6	4	40			1.50
KB - 19	Telmine	230	207	7	12	1	12	8	89	4	9	5	40			1.65
KB - 20	Tembih	113	96	8	3		8	8	8	5	18	7	65			1.95
KB - 21	Tombar	127	110	7	4		6	10	10	5	10	5	55			1.75
KB - 22	Limagnes	57	52	3	1		1	3	3	2	4	2	48			2.09
KB - 23	Mazraa Neji	68	61	2	2		1	3	2	1	4	2	34			1.69
KB - 24	Oum El Farih 1 et 2	55	52	2	1		1	4	4	3	5	3	35			1.98
KB - 25	Sidi Bord	82	75	4	1		2	3	3	1	5	2	65			1.97
KB - 26	Saidane	30	18	6	2	1	3	2	1	1	6	2	20			2.13
KB - 27	Bargbourba	52	47	2	1		2	12	12	7	7	3	18			2.13
KB - 28	Bazma	146	112	18	10	1	5	1	1	1	0	0	25			1.19
KB - 29	Bibelli	135	123	1	2	1	8	12	12	7	7	3	40			1.60
KB - 30	Bédoune	75	70	1	1		3	12	12	7	19	8	22			2.06
KB - 31	Zaroine	70	58		1		1	4	5	3	0	0	17			1.41
KB - 32	Kenna	110	105	2	1		2	14	14	6	10	5	77			2.14
KB - 33	Mizeria	82	76	1	1	1	3	12	12	10	10	5	40			2.09
KB - 34	Mraid	95	86		3	1	5	9	9	7	10	4	60			2.04
KB - 35	Rahmat	85	77	1	3		4	4	4	3	1	1	70			1.97
KB - 36	Ras El Ain	267	246	9	6		6	11	11	8	20	10	62			1.46
KB - 37	Souk El Baiez	65	52	6	4		3	6	6	3	8	4	42			2.06
KB - 38	Ben Zelouna 1 et 2	147	138	1	2	1	5	30	30	11	40	13	43			2.15
KB - 39	Bourjine	94	84	1	3	1	5	20	20	11	7	3	54			2.22
KB - 40	Oued Beda	103	98		1	1	3	15	15	10	24	12	50			2.23
KB - 41	Kebili ancien	47	44		1		2	5	5	4	6	3	25			2.02
KB - 42	Kibria	92	84	3	2	1	2	7	7	3	20	10	33			1.87
KB - 43	Sidi Nameed	100	90		3	2	5	5	5	3	6	3	30			1.52
KB - 44	Adiet	221	198	0	7	2	14	40	40	29	10	5	64			1.85
KB - 45	Doua	279	248	10	6	3	14	5	5	4	4	2	60			1.29
KB - 46	Ghoale	76	63	3	3	2	5	3	3	1	2	1	33			1.57
KB - 47	Golaa	66	57	3	2	1	3	3	3	1	2	1	34			1.67
KB - 48	Grad	111	100	3	2	3	3	5	5	2	6	3	50			1.64
KB - 49	Hsay	90	74	4	4	2	6	6	6	3	5	3	45			1.76
KB - 50	Nouail	98	80	5	5	2	6	6	6	3	5	3	45			1.69
KB - 51	Zafrane	101	93	3	2	1	2	4	4	3	5	2	41			1.58
KB - 52	Boukhanza	80	72	2	2	1	3	4	3	2	3	2	30			1.55
KB - 53	Ksar Ghilane	100	97	1	1		1									1.90
KB - 54	Sakhouma	81	68	2	3	2	6	3	3	1	2	1	31			1.51
KB - 55	Tarfaya	78	69	2	3	1	3	4	4	3	3	1	35			1.54
KB - 56	Obeyrata	45	42	0	1		2	5	5	4	4	2	30			2.12
KB - 57	Souida	64	56	0	4	1	3	4	5	3	3	1	42			1.90
KB - 58	Ghidma	80	77	0	1		2	8	8	5	18	7	50			2.20
KB - 59	Sabria	60	56	0	1	1	2	6	6	3	13	6	34			2.14
KB - 60	Faouar 1	86	83	0	1		2	8	8	4	12	6	34			1.83
KB - 61	Faouar 2	80	76	0	1		3	13	13	7	25	10	50			2.48
KB - 62	Bechri	99	96	0	1		2	5	4	3	12	6	37			1.58
KB - 63	Deirjine	73	67	0	2	1	3	7	7	3	6	3	52			2.07
KB - 64	Matrouha	100	90	0	3	3	4	5	5	3	2	3	50			1.73
KB - 65	Regim 1	104	98	0	2	1	3	8	8	4	12	4	80			2.12
KB - 66	Regim 2	96	89	0	2		5	8	8	4	12	6	65			2.07
KB - 67	Tarfayet Fera	52	47	0	2		3	4	4	2	6	3	25			1.85
	Sub-total	7,213	6,566	194	161	49	243	457	541	263	550	248	2,050			1.68
Gabes Governorate																
GB - 1	Ain Zrig	140	92		34	3	11	5	5	0	5	3	22	11		1.36
GB - 2	Teboulba 1	40		2	4	13	21	2	1	1	3	1	8	3		1.48
GB - 3	Teboulba 2	20	4	1	6	4	5	1	1	0	1	1	2	3		1.45
GB - 4	Zrig dakhlania	30	12		14	1	3	1	1	0	1		1	2		1.43
GB - 5	Teboulbou	520	205	94	157	15	49	20	20	3	25	10	80	80		1.86
GB - 6	Oasis de Gabes	334	485	3	236	3	7	16	10	2	15	8	125	200		1.51
GB - 7	Limawan 1 et 2	148	1	19	62	7	50	16	14	2	16	8	23	6		1.53
GB - 8	Mdou	40	16	3	9	2	10	1	1	0	1	1	9	1		1.53
GB - 9	Chott El Ferik	31	9		7	3	12	1	1	0	2	1	3	12		1.65
GB - 10	Bouchemma	143	114	7	16	1	8	3	3	0	3	2	13	11		1.24
GB - 11	Mahjoub	378	213	142	9	2	8	50	50	6	56	29	95	19		1.82
GB - 12	Salem	99	46	46	6		1	9	11	2	12	6	20	5		1.56
GB - 13	Shed	72	33	33	5		1	10	9	2	12	5	19	4		1.85
GB - 14	Fayed	260	110	128	15	1	6	28	30	5	12	6	62	13		1.63
GB - 15	M'rina Gharmouch	280	31	201	30	4	14	35	38	5	42	21	66	14		1.79
GB - 16	Metouia	268	216		49	1	2	28	30	5	12	6	62	13		1.62
GB - 17	Oued Jeref	263	207	13	39	2	2	35	38	5	42	21	110	13		2.00
GB - 18	Antonette	232	72	160				15	13	3	19	10	5	0		1.30
GB - 19	Chenchou 1	59	0	36	7	3	11	4	3	1	5	2	25	0		1.70
GB - 20	Chenchou 2	40		22	3		15	4	5	2	6	3	5	0		1.63
GB - 21	Telmet	32	21		9	1	1	3	2	1	3	2	15	0		1.81
GB - 22	Hamma oasis	400	375		20	2	3	16	14	3	10	9	150	0		1.53
GB - 23	Mzirou hamma	80	56		19	3	2	3	2	1	3	2	35	0		1.58
GB - 24	Bechima 1	280	173	54	37	8	6	3	2	1	3	2	40	0		1.18
GB - 25	Bechima 2	290	179	62	36	6	7	5	5	1	6	3	70	0		1.31
GB - 26	Khebayet	96	41	33	14	1	7	5	5	1	6	3	50	0		1.73
GB - 27	Ben Gilloul	180	101	42	19	2	16	16	14	3	18	9	120	0		2.00
GB - 28	Gab Dakhane	70	33	33			4	1	1	0	1	1	30	0		1.49
GB - 29	Oued Nekila	30	18	11			1	1	2	0	1	2	5	0		1.37
GB - 30	Arram	163	45	72	36	2	8	6	6	1	2	3	30	0		1.20
GB - 31	Mareth 1	100	19	13	65	1	2	3	2	1	3	2	20	0		1.31
GB - 32	Mareth 2	180	40	15	118	3	4	6	6	1	3	3	80	0		1.57
GB - 33	Mareth 3	30	6	18	6			2	2	0	2	1	10	0		1.57
GB - 34	Mareth 5	115	3	34	63	6	5	5	5	1	6	3	45	0		1.57
GB - 35	Mareth 6	88	22	35	25	2	4	4	4	1	4	2	55	0		1.80
GB - 36	Zarat 2	174	25	30	110	4	5	7	6	1	7	3	60	0		1.48
GB - 37	Zerkine 1 et 3	116	30	30	80	2	4	3	3	1	4	2	25	0		1.33
GB - 38	Zerkine 2	156	40	23	90	1	2	1	1	0	2	1	10	0		1.10
GB - 39	Ayoune Zerkine	30	3	6	20		1	1	1	0	2	1	10	0		1.50
GB - 40	Medrin	58	7	13	35		3	3	2	0	2	1	5	0		1.21
GB - 41	Ketana 1	90	3	21	69	2	3	3	3	0	3	2	0	0		1.11
GB - 42	Ketana 3	140	9	33	88	6	4	1	1	0	1		0	0		1.02
GB - 43	Ketana 4	115	3	50	64	5	3	2	2	0	2	1	0	15		1.17
GB - 44	Sidi Salem	120	16	48	23		11	5	6	1	7	3	0	0		1.19
GB - 45	Zrig Bamania	71		61	6		4	1	1	0	1	1	10	20		1.48
GB - 46	Ghadri	30		5			25									1.00
GB - 47	Lazrath 1	35		22	13			1	2	0	2	1	1	0		1.20
GB - 48	Lazrath 3	55		39	16			2	2	1	2	1	2	0		1.18
	Sub-total	7,133	3,113	1,727	1,788	122	363	391	408	64	413	208	1,620	452		1.50
	Total	23,635	15,527	4,312	2,244	342	862	1,138	1,238	552	1,458	773	5,467	452		1.48

Source: CRDA, Gafsa, Tozeur, Kebili and Gabes

Remark: CI : Cropping Intensity

Table E.5.3.1 Future Farm Inputs and Labour Requirement under With Project Condition

Description	Unit	Date Palm	Olive	Pomog-ranate	Apricot	Fig	Onion	Carrot	Beans	Pepper	Tomato	Lucern	Henna
Farm Inputs													
1. Seed / Seedling	kg/number	220	165	440	440	440	3	5	6	5	5	10	5
2. FYM / Compost	ton	1.7	1	1.7	1.7	1.7	3	3	3	3	3	1.3	1.3
3. Chemical Fertilizer													
- Ammonium nitrate	kg	180	100	125	180	125	125	125	75	125	125	75	75
- Super 45 (TSP)	kg	120	100	75	75	75	125	125	150	150	150	150	150
- Potassium sulfate	kg	60	50	125	125	125	75	50	75	50	50	50	50
- Potassium nitrate	kg						50						
4. Agro-chemicals													
- Fungicides	kg	4	0	4	4	4	4	4	4	4	4		4
- Insecticide	litre	2	2	2	2	2	2	2	2	2	2		2
5. Water	m3	11,700	5,820	8,250	8,250	8,250	3,900	3,900	3,900	3,900	3,900	11,700	11,700
Labour Requirement													
1. Land Preparation	man-day	25	25	25	25	25	50	50	50	50	50	20	20
2. Seeding / Nursery	man-day						5	5	20	5	5	2	
3. Transplanting	man-day	44*	42*	37*	37*	37*	20			15	15		20
4. Fertilizer Application	man-day	8	9	9	9	9	10	10	5	5	5	5	5
5. Weeding	man-day	5	20	5	5	5	30	30	15	30	30		10
6. Trimming / Plant Protection	man-day	15	15	10	10	10	12	12	7	12	12		7
7. Pollination	man-day	8											
8. Water Management	man-day	20	20	20	20	20	40	40	40	40	40	40	30
9. Harvesting	man-day	45**	18**	45**	70**	45**	60	70	80	70	70	70	60
10. Post Harvest	man-day	12**	5**	12**	16**	12*	20	20	12	18	18	18	18
Sub-total	man-day	138	112	126	155	126	247	237	229	245	245	155	170
		(125)	(131)	(106)	(106)	(106)							

Source : JICA study team estimation

Remarks : *: Only for planting year, **; Only for matured tree, Numerals in parenthesis is only for planting year

Table E.5.4.1 Yield of Major Crops by Oasis under With Project Condition

(Unit : kms/ha)

Code No.	Name of Oasis	Date Palm	Olive	Pomegranate	Apricot	Fig/ other Fruit	Carrot	Turnip	Onion	Kindney Bean	Pepper	Tomato	Fodder Crops	Industrial Crops
Gafsa Governorate														
GF - 1	Kasba	8.4	8.8	9.0	21.0	8.7	32.8		29.5	16.4	11.0	32.8	65.5	
GF - 2	Sud Oueu	8.4	8.9	9.0	21.0	8.5	32.8		29.5	16.4	11.0	32.8	65.7	
GF - 3	El Ouettar	8.4	8.9	9.0	21.0	8.4	32.8		29.6	16.4	11.0	32.8	65.7	
GF - 4	Lalla	8.4	8.9	9.0	21.0	8.7	32.8		29.5	16.4	11.0	32.8	65.7	
GF - 5	El Ksar	8.4	8.9	9.0	21.0	8.8	34.2		29.5	16.4	11.0	32.8	65.6	
GF - 6	Oued Sbih	8.0							22.1	11.1			49.7	
GF - 7	Thelja	8.5	8.5						29.9	16.6			66.4	
GF - 8	Segdoud	8.0	7.2	9.1	8.1	6.6	22.1		22.1	11.1	11.0	22.1	49.8	
	Average	8.3	8.9	9.0	20.7	8.4	32.7		29.3	16.2	11.0	32.4	65.0	
Tozeur Governorate														
TZ - 1	Tozeur	6.9	3.2	2.5	2.8	2.7	14.5		16.1	7.5	7.5	16.1	86.1	
TZ - 2	Rastifia	6.9	4.0	2.5	3.0	2.8	14.5		16.1		7.5	16.1	86.1	
TZ - 3	Oued El Kouscha	6.9	3.2	2.5	2.8	2.7	14.5		16.1		7.5	16.1	86.1	
TZ - 4	Nefleyene	6.9	3.2	2.5	2.8	2.7	14.5		16.1		7.5	16.1	86.1	
TZ - 5	Chemsa	6.9	3.2	2.5	2.8	2.7	14.5		16.1		7.5	16.1	86.1	
TZ - 6	Hefna Est	6.9	3.2	2.5	2.8	2.7	14.5		16.1		7.5	16.1	86.1	
TZ - 7	Hefna Ouest	6.9	3.2	2.5	2.8	2.7	14.5		16.1	7.5	7.5	16.1	86.1	
TZ - 8	Jbim 1	6.9	3.2	2.5	2.8	2.7	14.5		16.1	7.5	7.5	16.1	86.1	
TZ - 9	Jbim 2	6.9	3.2	2.5	2.8	2.7	14.5		16.1		7.5	16.1	86.1	
TZ - 10	Ibn Chabbat 3	5.1	2.2	2.5	2.9	2.8	14.9		16.5	7.7	7.7	16.5	88.0	
TZ - 11	Nefta	6.9	3.2	2.5	2.8	2.7	14.5		16.1	7.5	7.5	16.1	86.1	
TZ - 12	Ghardgaya	6.9	3.2	2.5	2.8	2.7	14.5		16.1	7.5	7.5	16.1	86.1	
TZ - 13	Ibn Chabbat 1	5.1	2.2	2.6	2.9	2.8	15.0		16.6	7.8	7.8	16.6	88.8	
TZ - 14	Ibn Chabbat 2	5.1	2.2	2.5	2.9	2.8	14.9		16.5	7.7	7.7	16.5	88.0	
TZ - 15	Oued Sod	5.0	2.2	2.5	2.8	2.8	14.7		16.3	7.6	7.6	16.3	87.0	
TZ - 16	Hazoua 1	6.9	3.2	2.5	2.8	2.7	13.8		15.3		7.2	15.3	81.8	
TZ - 17	Hazoua 2	5.6	3.1	3.4		3.6	14.7		16.3		7.6	16.3	87.0	
TZ - 18	Hazoua 3	5.5	3.1	3.4	3.2	3.6	14.7		16.3	7.6	7.6	16.3	87.0	
TZ - 19	Oued Loghiesi	5.0	2.2	2.5	2.8	2.7	14.4		15.8		8.0	15.8	79.7	
TZ - 20	Tozerit	5.0	2.2	2.5	2.8	2.7	14.4		15.8		8.0	15.8	79.7	
TZ - 21	Cebada	6.9	3.2	2.5		2.7	14.5		16.1	7.5	7.5	16.1	86.1	
TZ - 22	Dghoumes	6.9	3.2	2.5	2.8	2.7	14.4		15.8	8.0	8.0	15.8	79.7	
TZ - 23	Degache	6.7	3.2	2.5	2.8	2.7	14.5		16.1	7.5	7.5	16.1	86.1	
TZ - 24	Chakmou	6.9	3.2	2.5	2.8	2.7	14.5		16.1	7.5	7.5	16.1	86.1	
TZ - 25	El Hamma	6.8	3.2	2.2	2.8	2.7	14.5		16.1	7.5	7.5	16.1	86.1	
TZ - 26	Tamerza	6.9	3.2	2.4	2.8	2.7	14.5		16.1	7.5	7.5	16.1	86.1	
TZ - 27	Chebika	6.9	3.2			2.7	14.5		16.1		7.5		86.1	
TZ - 28	Foum El Khanga	6.9	3.2	2.4	2.8	2.7	14.5		16.1	7.5	7.5		85.1	
TZ - 29	Mides	6.9	3.2	2.4	2.8	2.7	14.5		16.1		7.5		86.1	
TZ - 30	Ain El Karma	6.9	3.2	2.4	2.8	2.7	14.5		16.1	7.5	7.5		86.1	
	Average	6.4	3.1	2.6	2.9	2.8	14.5		16.1	7.5	7.5	16.1	86.0	
Kebili Governorate														
KB - 1	Bechri	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 2	Bouabdallah	6.2	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 3	Faouara	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 4	El Ghisa	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 5	Merchia	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 6	Nagga	6.4		3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 7	Oum Seouan	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 8	Oued Zira	6.5	5.1	3.5	2.7	3.0	14.1		15.6	7.3	7.3	17.7	53.1	
KB - 9	Ouled Touati	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 10	Tenchig	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 11	Zaouiet El Ances	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 12	Zaouiet El Hath	6.5	5.5	4.1		3.7	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 13	Ziret Loubichi	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 14	Chouchet Nagga	4.8		3.5		3.0	14.9		16.6	7.7	7.7	18.8	55.2	
KB - 15	Guataya	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 16	Jedida	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 17	Mansoura	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 18	Rabta	6.4		3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 19	Telmine	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 20	Toubib	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 21	Tombar	6.4	5.1	3.5		2.9	14.2		15.7	7.9	7.9	17.6	49.6	
KB - 22	Limagues	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 23	Mazraa Neji	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 24	Oum El Farch 1 et 2	6.5	5.1	3.5		3.0	14.8		16.4	7.6	7.6	18.6	54.6	
KB - 25	Stiftimi	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 26	Saidane	4.6	3.9	3.5	2.8	3.0	14.9		16.6	7.7	7.7	18.8	55.2	
KB - 27	Barghouthia	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 28	Baroua	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	19.3	54.6	
KB - 29	B'cheffi	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 30	B'Ridette	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 31	Zaouiae	6.4		3.5		3.0	14.8		16.4	7.6			54.6	
KB - 32	Jemna	6.4	5.1	3.5		3.0	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 33	Mouaria	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 34	Msaad	6.4		3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 35	Rahmat	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 36	Ras El Ain	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 37	Souk El Baiea	6.4	5.1	3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 38	Ben Zitoun 1 et 2	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 39	Bourdoe	6.4	5.1	3.5	2.7	2.9	14.8		16.4	7.6	7.6	18.6	54.6	
KB - 40	Ouefiada	6.4		3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 41	Kelwanen	6.4		3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 42	Kibria	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 43	Sidi Rached	6.4		3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 44	Adiles	4.6		3.5	2.8	3.0	14.9		16.6	7.7	7.7	18.8	55.2	
KB - 45	Douz	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 46	Ghoufa	6.5	5.2	3.5	2.8	3.0	14.9		16.5	7.7	7.7	18.7	55.1	
KB - 47	Golaa	6.5	5.2	3.5	2.8	3.0	14.9		16.5	7.7	7.7	18.7	55.1	
KB - 48	Grad	6.5	5.2	3.5	2.8	3.0	14.9		16.5	7.7	7.7	18.7	55.1	
KB - 49	Hezy	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 50	Noueil	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 51	Zafrane	6.5	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 52	Bouhamra	6.4	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 53	Ksar Ghilane	6.4	5.1	3.5		2.9								
KB - 54	Sakkouma	6.5	5.2	3.5	2.8	3.0	14.9		16.5	7.7	7.7	18.7	55.1	
KB - 55	Tarfaya	6.5	5.2	3.5	2.8	3.0	14.9		16.5	7.7	7.7	18.7	55.1	
KB - 56	Dhomrana	4.8		3.5		2.8	14.9		16.6	7.7	7.7	18.8	55.2	
KB - 57	Smida	4.8		3.5	2.7	2.9	14.9		16.6	7.7	7.7	18.8	55.2	
KB - 58	Ghidma	6.4		3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 59	Sabria	6.4		3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 60	Faouar 1	6.4		3.5		2.8	14.8		16.4	7.6	7.6	18.6	54.6	
KB - 61	Faouar 2	6.4		3.5		2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 62	Bechri	4.6		3.5		2.9	14.9		16.6	7.7	7.7	18.8	55.2	
KB - 63	Dorgine	4.7		3.5	2.8	3.0	15.1		16.7	7.8	7.8	19.0	55.8	
KB - 64	Mairouha	6.4		3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.6	
KB - 65	Regim 1	4.7		3.5	2.6	2.8	14.9		16.6	7.7	7.7	18.8	55.2	
KB - 66	Regim 2	4.7		3.5		2.9	15.2		16.8	8.4	8.4	18.8	53.4	
KB - 67	Tarfayet Elma	4.7		3.5		2.8	14.9		16.6	7.7	7.7	18.8	55.2	
	Average	6.3	5.1	3.5	2.7	2.9	14.7		16.4	7.6	7.6	18.6	54.5	
Gabes Governorate														
GB - 1	Ain Zrig	6.6		13.2	13.2	5.5	31.4		33.0		14.3	22.0	66.0	1.7
GB - 2	Temoulta 1		4.4	13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.1	1.7
GB - 3	Temoulta 2	6.6	4.4	13.2	13.2	5.5	31.4		33.0		14.3	22.0	66.0	1.7
GB - 4	Zrig dakhlania	6.6		13.2	13.2	5.5	31.4		33.1		14.3		66.1	1.7
GB - 5	Tebouibou	6.6	4.4	13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.1	1.7
GB - 6	Oasis de Gabes	6.6	4.4	13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.1	1.7
GB - 7	Limawa 1 et 2	6.7	4.5	13.4	13.4	5.6	31.7		33.4	18.9	14.5	22.3	66.8	1.7
GB - 8	M'dou	6.6	4.4	13.2	13.2	5.5	31.4		33.1		14.3	22.0	66.1	1.7
GB - 9	Chott El Fertk	6.8		13.7	13.7	5.7	31.4		33.0		14.3	22.0	68.4	1.7
GB - 10	Bouchemma	6.6	4.4	13.2	13.2	5.5	31.4		33.1		14.3	22.0	66.1	1.7
GB - 11	Mahjoub	6.6	4.4	13.2	13.2	5.5	31.4		33.0	18.7	14.3	22.0	66.0	1.7
GB - 12	Safen	6.6	4.4	13.2		5.5	31.4		33.1	18.7	14.3	22.0	66.1	1.7
GB - 13	Sbouri	6.6	4.4	13.2		5.5	31.4		33.1	18.7	14.3	22.0	66.1	1.7
GB - 14	Faycal	6.6	4.4	13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.0	1.7
GB - 15	M'zinas Ghannouch	6.6	4.4	13.2	13.2	5.5	31.4		33.0	18.7	14.3	22.0	66.0	1.7
GB - 16	Metouia	6.6		13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.1	1.7
GB - 17	Ouedhref	6.6	4.4	13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.1	1.7
GB - 18	Amineche	6.6	4.4				31.4		33.1	18.7	14.3	22.0	66.0	
GB - 19	Chenchou 1		4.2	12.6	12.6	5.2	31.4		33.1	18.7	14.3	22.0	66.1	
GB - 20	Chenchou 2		4.5	13.4		5.6	31.8		33.4	18.9	14.5	22.3	66.8	
GB - 21	Tekouri	6.6		13.2	13.2	5.5	31.4		33.0	18.7	14.3	22.0	66.0	
GB - 22	Hamma oasis	6.6		13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.1	
GB - 23	M'rina hamma	6.6		13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.0	
GB - 24	Bechima 1	6.6	4.4	13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.1	
GB - 25	Bechima 2	6.6	4.4	13.2	13.2	5.5	29.8		31.4	17.8	13.6	20.9	62.7	
GB - 26	Khayet	6.6	4.4	13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.1	
GB - 27	Ben Chikouf	6.6	4.4	13.2	13.2	5.5	31.4		33.0	18.7	14.3	22.0	66.0	
GB - 28	Gib Dekhane	6.6	4.4			5.5	31.4		33.1	18.7	14.3	22.0	66.1	
GB - 29	Oued Nekhla	6.6	4.4			5.5	31.4		33.1	18.7	14.3	22.0	66.1	
GB - 30	Arram	6.6	4.4	13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.1	
GB - 31	Mareth 1	6.6	4.4	13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.1	
GB - 32	Mareth 2	6.6	4.4	13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.1	
GB - 33	Mareth 3	6.6	4.4	13.2			31.4		33.1	18.7	14.3	22.0	66.1	
GB - 34	Mareth 5	6.6	4.4	13.2	13.2	5.5	31.4		33.0	18.7	14.3	22.0	66.0	
GB - 35	Mareth 6	6.6	4.4	13.2	13.2	5.5	31.4		33.1	18.7	14.3	22.0	66.1	
GB - 36	Zarat 2	6.6	4.4	13.2	13.2	5.5	31.4		33.0	18.7	14.3	22.0	66.0	
GB - 37	Zerkine 1 et 3	6.6	4.4	13.2	13.2	5.5	31.4		33.0	18.7	14.3	22.0	66.0	
GB - 38	Zerkine 2	6.6	4.4	13.2	13.2	5.5	31.4		33.0		14.3	22.0	66.0	
GB - 39	Ayoune Zerkine	6.6	4.4	13.2		5.5	31.4		33.0		14.3	22.0	66.0	
GB - 40	Mednia	6.7	4.4	13.3		5.6	31.7		33.3		14.5	22.2	66.6	
GB - 41	Kettana 1	6.6	4.4	13.2	13.2	5.5	31.4		33.0		14.3	22.0	66.0	
GB - 42	Kettana 3	6.6	4.4	13.2	13.2	5.5	31.4		33.1		14.3		66.1	
GB - 43	Kettana 4	6.6	4.4	13.2	13.2	5.5	31.4		33.0		14.3	22.0	66.0	1.7
GB - 44	Sidi Sellam	7.2	5.2	13.3		6.2	31.4		33.1	18.7	14.3	22.0	66.1	
GB - 45	Zrig Bavaria		4.4	13.2		5.5	31.4		33.1		14.3	22.0	66.1	1.7
GB - 46	Ghandri		4.4			5.5								
GB - 47	Lazrath 1		4.4	13.2			31.4		33.0		14.3	22.0	66.0	
GB - 48	Lazrath 3		4.4	13.2			31.4		33.1	18.7	14.3	22.0	66.1	
	Average	6.6	4.4	13.3	13.2	5.5	31.4		33.1	18.7	14.3	22.0	65.9	1.7
	Average	6.5	4.7	11.5	11.9	4.6	23.2		23.6	11.5	10.2	23.3	61.2	1.7

Source : JICA study team estimation

Table E.5.4.2 Yield of Major Crops by Oasis under Without Project Condition

(Unit : ton/ha)

Code No.	Name of Oasis	Date Palm	Olive	Pomegranate	Apricot	Fig/ other Fruit	Carrot	Turnip	Onion	Kidney Bean	Pepper	Tomato	Fodder Crops	Industrial Crops
Gafsa Governorate														
GF - 1	Kasba	7.8	8.2	8.3	19.5	8.1	30.2	27.2	15.1	10.1	30.2		60.4	
GF - 2	Sud Ouest	7.5	7.9	8.0	18.8	7.8	29.1	26.2	14.6	9.7	29.1		58.2	
GF - 3	El Guettar	7.4	7.8	7.9	18.7	7.7	30.0	26.1	14.5	9.7	30.1		58.0	
GF - 4	Lalla	7.7	8.1	8.2	19.4	8.0	30.1	27.1	15.0	10.2	30.1		60.1	
GF - 5	El Ksar	7.8	8.2	8.3	19.6	8.1	30.3	27.3	15.2	10.1	30.3		60.7	
GF - 6	Oued Shifi	6.5						20.0	10.0				45.1	
GF - 7	Thelja	7.3	7.3					25.6	14.2				56.9	
GF - 8	Segdoud	6.3	6.3	7.9	7.9	5.8	19.3	19.3	9.6	11.0	19.3		43.4	
	Average	7.3	8.0	8.2	19.3	7.7	29.6	26.5	14.6	10.0	29.6		59.8	
Tozeur Governorate														
TZ - 1	Tozeur	6.2	2.9	2.2	2.5	2.4	12.9	14.4	6.7	6.7	14.4		76.6	
TZ - 2	Kastilia	6.2	2.9	2.2	2.5	2.4	13.1	14.5		6.8	14.5		77.5	
TZ - 3	Oued El Kouche	6.3	2.9	2.3	2.6	2.5	13.2	14.7		6.9	14.7		78.5	
TZ - 4	Neflayette	6.3	2.9	2.2	2.5	2.4	13.2	14.6		6.8	14.6		77.9	
TZ - 5	Chenna	6.4	3.0	2.3	2.6	2.5	13.5	15.0		7.0	15.0		77.9	
TZ - 6	Helba Est	5.9	2.7	2.1	2.4	2.3	12.3	13.6		6.4	13.6		72.6	
TZ - 7	Helba Ouest	6.3	2.9	2.3	2.5	2.4	13.2	14.7	6.9	6.9	14.7		78.4	
TZ - 8	Jhim 1	5.6	2.6	2.0	2.3	2.2	11.7	13.0	6.1	6.1	13.0		69.2	
TZ - 9	Jhim 2	6.1	2.8	2.2	2.4	2.4	12.7	14.1		6.6	14.1		75.3	
TZ - 10	Ibn Chabbat 3	4.8	2.1	2.4	2.8	2.7	14.0	15.9	7.4	7.4	15.9		84.9	
TZ - 11	Nefta	6.0	2.8	2.1	2.4	2.3	12.5	13.9	6.5	6.5	13.9		74.2	
TZ - 12	Ghardgaya	6.0	2.8	2.2	2.5	2.6	12.8	14.2	6.6	6.6	14.2		75.6	
TZ - 13	Ibn Chabbat 1	4.7	2.1	2.4	2.7	2.6	14.1	15.6	7.3	7.3	15.6		83.6	
TZ - 14	Ibn Chabbat 2	4.7	2.1	2.4	2.7	2.6	14.3	15.9	7.4	7.4	15.9		84.9	
TZ - 15	Drae Sud	4.8	2.1	2.4	2.8	2.7	14.3	15.9	7.4	7.4	15.9		84.9	
TZ - 16	Hazoua 1	5.9	2.7	2.1	2.4	2.3	12.3	13.7		6.4	13.7		73.1	
TZ - 17	Hazoua 2	4.3	1.9	2.2	2.5	2.4	12.9	14.4		6.7	14.4		76.6	
TZ - 18	Hazoua 3	4.3	1.9	2.2	2.5	2.4	12.9	14.4	6.7	6.7	14.4		76.6	
TZ - 19	Oued Loghrissi	4.2	1.9	2.1	2.4	2.3	12.6	14.0		6.5	14.0		74.7	
TZ - 20	Tozrark	4.2	1.9	2.1	2.4	2.3	12.6	14.0		6.5	14.0		74.7	
TZ - 21	Cedada	5.9	2.7	2.1	2.4	2.3	12.3	13.7	6.4	6.4	13.7		72.8	
TZ - 22	Oghoumes	6.0	2.8	2.1	2.4	2.3	12.6	14.0	6.5	6.5	14.0		74.7	
TZ - 23	Degache	5.9	2.7	2.1	2.4	2.3	12.5	13.9	6.5	6.5	13.9		73.9	
TZ - 24	Chakmou	6.2	2.9	2.2	2.5	2.4	12.9	14.3	6.7	6.7	14.3		76.3	
TZ - 25	El Hamma	5.9	2.7	2.1	2.4	2.3	12.4	13.7	6.4	6.4	13.7		73.2	
TZ - 26	Tameza	6.2	2.9	2.2	2.5	2.4	12.9	14.4	6.7	6.7	14.4		76.5	
TZ - 27	Chebika	6.5	3.0	2.3	2.6	2.5	13.6	15.1		7.1			80.7	
TZ - 28	Fourn El Khanga	6.5	3.0	2.3	2.6	2.5	13.6	15.1	7.1	7.1			80.7	
TZ - 29	Mides	6.5	3.0	2.3	2.6	2.5	13.6	15.1		7.1			80.7	
TZ - 30	Ain El Karma	6.5	2.9	2.2	2.5	2.4	12.9		6.7	6.7			76.5	
	Average	5.7	2.6	2.3	2.6	2.5	12.9	14.3	6.7	6.7	14.3		76.0	
Kebili Governorate														
KB - 1	Bechri	5.6	4.5	3.0	2.4	2.6	12.8	14.2	6.6	6.6	16.1		47.4	
KB - 2	Bouabdallah	5.4	4.5	3.1		2.6	12.9	14.4	6.7	6.7	16.3		47.8	
KB - 3	Fatnassa	5.9	4.7	3.2	2.5	2.7	13.4	14.9	7.0	7.0	16.9		49.8	
KB - 4	El Ghaa	5.6	4.4	3.0	2.4	2.5	12.7	14.1	6.6	6.6	16.0		47.0	
KB - 5	Menchia	5.2	4.1	2.8	2.2	2.4	11.9	13.2	6.1	6.1	14.9		43.9	
KB - 6	Nagga	5.7		3.1	2.4	2.6	13.1	14.6	6.8	6.8	16.5		48.5	
KB - 7	Oum Soraa	5.3	4.2	2.9	2.3	2.4	12.2	13.5	6.3	6.3	15.3		45.1	
KB - 8	Oued Zira	5.5	4.4	3.0	2.3	2.5	12.5	13.9	6.5	6.5	15.7		46.3	
KB - 9	Ouled Touati	5.6	4.1	2.8	2.2	2.4	11.8	13.1	6.1	6.1	14.8		43.6	
KB - 10	Tenebig	5.5	4.4	3.0	2.3	2.5	12.6	14.0	6.5	6.5	15.9		46.7	
KB - 11	Zaouiet El Anes	5.7	4.5	3.0	2.4	2.6	12.8	14.2	6.6	6.6	16.1		47.4	
KB - 12	Zaouiet El Harth	5.2	4.2		2.2	2.4	12.0	13.3	6.2	6.2	15.1		44.4	
KB - 13	Zaouiet Louhichi	5.8	4.6	3.2	2.5	2.7	13.3	14.8	6.9	6.9	16.7		49.2	
KB - 14	Chouchet Nagga	4.1		3.1	2.4	2.6	13.0	14.5	6.9	6.8	16.4		48.3	
KB - 15	Guatiya	5.6	4.5	3.0	2.4	2.6	12.8	14.2	6.6	6.6	16.1		47.4	
KB - 16	Jedida	5.5	4.4	3.0	2.3	2.5	12.6	14.0	6.6	6.6	15.9		46.8	
KB - 17	Mansoura	5.2	4.2		2.2	2.4	12.0	13.3	6.2	6.2	15.1		44.4	
KB - 18	Rabta	5.6		3.0	2.4	2.5	12.7	14.1	6.6	6.6	16.0		47.1	
KB - 19	Telmine	5.5	4.4	3.0	2.3	2.5	12.6	14.0	6.5	6.5	15.9		46.7	
KB - 20	Tembib	5.9	4.7	3.2	2.5	2.7	13.5	15.0	7.0	7.0	17.0		50.0	
KB - 21	Tombar	5.6	4.4	3.0	2.4	2.5	12.7	14.2	6.6	6.6	16.1		47.2	
KB - 22	Limagues	5.8	4.6	3.1	2.4	2.6	13.2	14.7	6.8	6.8	16.6		48.9	
KB - 23	Mazraa Neji	5.6	4.4	3.0	2.4	2.5	12.7	14.1	6.6	6.6	16.0		47.2	
KB - 24	Oum El Farth 1 et 2	6.0	4.7	3.2		2.7	13.6	15.2	7.1	7.1	17.2		50.5	
KB - 25	Sufimi	6.0	4.8	3.3	2.6	2.8	13.9	15.4	7.2	7.2	17.5		51.3	
KB - 26	Saidane	4.1	3.4	3.1	2.4	2.6	13.1	14.5	6.8	6.8	16.5		48.5	
KB - 27	Barghouthia	5.7	4.6	3.1	2.4	2.6	13.1	14.6	6.8	6.8	16.5		48.5	
KB - 28	Bazma	5.7	4.7	3.2	2.5	2.7	13.4	14.9	7.0	7.0	17.1		48.5	
KB - 29	B'chelli	5.7	4.6	3.1	2.4	2.6	13.1	14.6	6.8	6.8	16.5		48.5	
KB - 30	Blidette	5.7	4.5	3.1	2.4	2.6	12.9	14.4	6.7	6.7	16.3		47.9	
KB - 31	Zaouine	5.4		2.9	2.3	2.5	12.3	13.6	6.4				45.4	
KB - 32	Jemna	6.1	4.8	3.3	2.6	2.8	13.9	15.4	7.2	7.2	17.5		51.4	
KB - 33	Mouria	6.0	4.5	3.0	2.4	2.6	12.8	14.2	6.6	6.6	16.1		47.4	
KB - 34	Msaid	5.5		3.0	2.3	2.5	12.6	14.1	6.6	6.6	15.9		46.8	
KB - 35	Rahmat	5.8	4.6	3.1	2.4	2.6	13.2	14.7	6.9	6.9	16.7		49.0	
KB - 36	Ras El Ain	5.8	4.6	3.2	2.5	2.7	13.3	14.8	6.9	6.9	16.7		49.2	
KB - 37	Souk El Balez	5.8	4.6	3.1	2.4	2.6	13.2	14.6	6.8	6.8	16.6		48.8	
KB - 38	Ben Zitoun 1 et 2	5.7	4.5	3.1	2.4	2.6	12.9	14.4	6.7	6.7	16.3		47.9	
KB - 39	Bouazine	5.9	4.7	3.2	2.5	2.7	13.5	15.0	7.0	7.0	17.0		50.1	
KB - 40	Guellada	5.8		3.1	2.4	2.6	13.1	14.6	6.8	6.8	16.5		48.5	
KB - 41	Kelwamen	5.6		3.0	2.4	2.6	12.8	14.2	6.6	6.6	16.1		47.4	
KB - 42	Kibria	6.0	4.8	3.3	2.5	2.7	13.7	15.3	7.1	7.1	17.3		50.9	
KB - 43	Sidi Hamed	5.7		3.1	2.4	2.6	13.1	14.6	6.8	6.8	16.5		48.5	
KB - 44	Atifet	4.0		3.0	2.4	2.6	12.8	14.3	6.7	6.7	16.2		47.5	
KB - 45	Douz	5.7	4.5	3.1	2.4	2.6	12.9	14.4	6.7	6.7	16.3		47.9	
KB - 46	Ghoula	6.1	5.1	3.5	2.7	2.9	14.7	16.4	7.6	7.6	18.6		54.6	
KB - 47	Golaa	6.1	4.9	3.3	2.6	2.8	14.0	15.6	7.3	7.3	17.6		51.9	
KB - 48	Graf	6.0	4.9	3.3	2.6	2.8	14.0	15.6	7.3	7.3	17.6		51.9	
KB - 49	Hsay	5.9	4.7	3.2	2.5	2.7	13.5	15.0	7.0	7.0	17.0		49.9	
KB - 50	Noueil	5.6	4.5	3.0	2.4	2.6	12.8	14.2	6.6	6.6	16.1		47.4	
KB - 51	Zafraane	6.3	5.0	3.4	2.7	2.9	14.3	15.9	7.4	7.4	18.0		53.1	
KB - 52	Bouhamra	5.7	4.6	3.1	2.4	2.6	13.1	14.6	6.8	6.8	16.5		48.6	
KB - 53	Ksar Ghilane	5.6	4.5	3.0	2.4	2.6								
KB - 54	Saktouma	6.0	4.9	3.3	2.6	2.8	14.0	15.6	7.3	7.3	17.6		51.9	
KB - 55	Tarfaya	6.2	5.0	3.4	2.7	2.9	14.4	16.0	7.5	7.5	18.1		53.2	
KB - 56	Dhomrana	4.2		3.2	2.5	2.7	13.6	15.1	7.1	7.1	17.1		50.4	
KB - 57	Smida	4.2		3.2	2.5	2.7	13.4	14.9	7.0	7.0	16.9		49.7	
KB - 58	Ghidma	5.7		3.3	2.6	2.8	14.0	15.6	7.3	7.3	17.7		52.0	
KB - 59	Sabria	5.4		2.9	2.3	2.5	12.4	13.7	6.4	6.4	15.6		45.8	
KB - 60	Faouar 1	5.7		3.1	2.4	2.6	13.1	14.6	6.8	6.8	16.5		48.6	
KB - 61	Faouar 2	5.9		3.2	2.5	2.7	14.7	16.2	7.0	7.0	18.2		51.6	
KB - 62	Bechri	4.2		3.2		2.7	13.4	14.9	7.0	7.0	16.9		49.8	
KB - 63	Dergine	4.6		3.5	2.7	2.9	14.7	16.4	7.6	7.6	18.5		54.5	
KB - 64	Matrouha	5.6		3.0	2.4	2.6	12.8	14.2	6.6	6.6	16.1		47.4	
KB - 65	Regim 1	4.2		3.2	2.5	2.7	13.5	15.0	7.0	7.0	17.0		50.1	
KB - 66	Regim2	4.3		3.3	2.6	2.8	13.8	15.3	7.1	7.1	17.3		51.0	
KB - 67	Tarfayet Elma	4.1		3.1	2.4	2.6	13.2	14.6	6.8	6.8	16.6		48.8	
	Average	5.5	4.5	3.1	2.5	2.6	13.2	14.5	6.8	6.8	16.6		48.8	
Gabes Governorate														
GB - 1	Ain Zrig	6.0		11.9	11.9	5.0	28.3	29.8		12.9	19.9		59.6	1.5
GB - 2	Temoula 1		4.0	12.1	12.1	5.0	28.7	30.2	17.1	13.1	20.1		60.3	1.5
GB - 3	Temoula 2	5.7	3.8	11.4	11.4	4.8	27.1	28.5		12.4	19.0		57.0	1.4
GB - 4	Zrig dakhlania	5.9		11.8	11.8	4.9	28.2	29.6		12.8			59.2	1.5
GB - 5	Teboulbou	5.6	3.7	11.2	11.2	4.7	26.5	27.9	15.8	12.1	18.6		55.8	1.4
GB - 6	Oasis de Gabes	5.8	3.9	11.6	11.6	4.8	27.5	28.9	16.4	12.5	19.3		59.0	1.4
GB - 7	Limaoua 1 et 2	5.7	3.8	11.3	11.3	4.7	26.9	28.3	16.1	12.3	18.9		56.7	1.4
GB - 8	M'dou	5.6	3.8	11.3	11.3	4.7	26.9	28.3		12.2	18.8		56.5	1.4
GB - 9	Chott El Ferik	6.2		12.3	12.3	5.1	28.3	29.8		12.9	19.9		61.7	1.5
GB - 10	Bouchemma	6.0	3.9	11.8	11.8	4.9	28.1	29.6		12.8	19.7		59.1	1.5
GB - 11	Mahjoub	6.0	3.8	11.5	11.5	4.8	27.3	28.8	16.3	12.5	19.2		57.5	1.4
GB - 12	Salem	5.9	3.9	11.7	11.7	4.9	27.8	29.3	16.6	12.7	19.5		58.5	1.5
GB - 13	Sboul	5.8	3.8	11.5	11.5	4.8	27.4	28.9	16.4	12.5	19.3		57.7	1.4
GB - 14	Faycal	5.8	3.9	11.7	11.7	4.9	27.8	29.2	16.6	12.7	19.5		58.4	1.5
GB - 15	M'zirat Ghannouch	5.8	3.9	11.6	11.6	4.8	27.5	28.9	16.4	12.5	19.3		57.8	1.4
GB - 16	Metouia	5.9		11.8	11.8	4.9	28.1	29.5	16.7	12.8	19.7		59.0	1.5
GB - 17	Oued Ref	5.7	3.7	11.0	11.0	4.6	26.3	27.6	15.7	12.0	18.4		58.0	1.4
GB - 18	Aouinette	5.9	3.9			4.9	27.9	29.3	16.6	12.7	19.5		58.6	
GB - 19	Chenchou 1		3.7	11.0	11.0	4.6	26.2	27.6	15.7	12.0	18.4		55.2	
GB - 20	Chenchou 2		3.9	11.7	11.7	4.9	27.8	29.3	16.6	12.7	19.5		58.5	
GB - 21	Tekouri	5.6		11.2	11.2	4.7	26.7	28.1	15.9	12.2	18.7		56.1	
GB - 22	Hamma oasis	5.6		11.6	11.6	4.8	27.6	29.0	16.4	12.6	19.3		58.0	
GB - 23	Mzirat hamma	5.6		11.5	11.5	4.8	27.3	28.8	16.3	12.5	19.2		57.5	
GB - 24	Bechima 1	6.0	4.0	11.9	11.9	5.0	28.4	29.9	16.9	12.9	19.9		59.7	
GB - 25	Bechima 2	5.5	3.7	11.0	11.0	4.6	26.2	27.6	15.7	12.0	18.4		55.2	
GB - 26	Khebayet	6.1	4.1	12.2	12.2	5.1	29.0	30.5	17.3	13.2	20.4		61.1	
GB - 27	Ben Ghilouf	6.2	4.1	12.4	12.4	5.2	29.6	31.1	17.6	13.5	20.8		63.0	
GB - 28	Ghb Dakhane	6.1	4.1			5.1	29.0	30.5	17.3	13.2	20.3		61.0	
GB - 29	Oued Nekhla	6.0	4.0			5.0	28.4	29.9	16.9	12.9	19.9		59.7	
GB - 30	Arram	5.5	3.8	11.3	11.3	4.7	26.8	28.2	16.0	12.2	18.8		56.4	
GB - 31	Mareth 1	5.6	3.8	11.3	11.3	4.7	26.9	28.3	16.0	12.2	18.8		56.5	
GB - 32	Mareth 2	5.5	3.7	11.0	11.0	4.6	26.2	27.6	15.7	12.0	18.4		55.2	
GB - 33	Mareth 3	5.7	4.0	11.9	11.9	4.9	28.2	29.7	16.8	12.9	19.8		59.4	
GB - 34	Mareth 5	5.0	3.3	9.9	9.9	4.1	23.6	24.8	14.1	10.8	16.6		49.6	
GB - 35	Mareth 6	5.7	3.8	11.3	11.3	4.7	26.9	28.3	16.1	12.3	18.9		56.7	
GB - 36	Zarat 2	5.7	3.8	11.5	11.5	4.8	27.2	28.7	16.2	12.4	19.1		57.3	
GB - 37	Zerkine 1 et 3	6.0	4.0	12.0	12.0	5.0	28.5	30.0	17.0	13.0	20.0		59.9	
GB - 38	Zerkine 2	5.8	3.8	11.5	11.5	4.8	27.4	28.8		12.5	19.2		57.5	
GB - 39	Ayoune Zerkine	5.9	3.9	11.8		4.9	28.1	29.5		12.8	19.7		59.0	
GB - 40	Mehsia	5.9	4.3	12.9		5.4	30.6	31.2		14.0	21.5		64.4	
GB - 41	Kettana 1	5.1	3.4	10.2	10.2	4.3	24.4	25.6		11.1	17.1		51.2	
GB - 42	Kettana 3	5.6	3.8	10.5	11.3	4.7	26.9	28.3		12.2	18.8		56.5	
GB - 43	Kettana 4	5.4	3.6	10.7	10.7	4.5	25.5	26.8		11.6	17.9		53.6	1.3
GB - 44	Sidi Sellam	6.0	4.0	12.1		5.0	28.7	30.2	17.1	13.1	20.2		60.5	
GB - 45	Zrig Barrania		3.9	11.7		4.9	27.8	29.2		12.7	19.5		58.4	1.5
GB - 46	Ghandri		3.9			4.9								
GB - 47	Laraith 1		3.8	11.5			27.2	28.7		12.4	19.1		57.3	
GB - 48	Laraith 3		4.0	11.9			28.2	29.7	16.8	12.9	19.8		59.4	
	Average	5.8	3.8	11.3	11.4	4.8	27.4	28.8	16.4	12.5	19.2		58.0	1.4
	Average	5.7	4.0	10.6	11.6	4.4	20.4	20.8	10.3	9.1	20.8		54.5	1.4

Source : JICA study team estimation

Table E.5.4.3 Production of Major Crops by Oasis under With Project Condition

(Unit : tons)

Code No.	Name of Oasis	Date Palm	Olive	Pomegranate	Apricot	Fig/ other Fruit	Carrot	Turnip	Onion	Kidney Bean	Pepper	Tomato	Fodder Crops	Industrial Crops
Gafsa Governorate														
GF - 1	Kasba	613	4,576	126	1,470	183	1,640		1,475	754	737	1,640	10,808	
GF - 2	Sud Ouest	355	5,283	198	420	213	910		885	492	880	1,574	10,972	
GF - 3	El Guettar	2,481	1,050	99	42	202	1,342		888	656	55	66	3,785	
GF - 4	Lalla	315	5,429	207	147	101	656		649	328	935	1,574	15,111	
GF - 5	El Ksar	966	3,092	657	453	176	787		738	328	825	2,196	15,088	
GF - 6	Oued Sidi	256							22	22			348	
GF - 7	Thelja	375	84						90	66			465	
GF - 8	Seghoud	1,385	358	54	24	79	118		111	56	77	177	1,494	
	Sub-total	6,747	19,873	1,350	2,586	1,013	5,424		4,857	2,703	3,509	7,229	57,570	
Tozeur Governorate														
TZ - 1	Tozeur	5,909	51	40	11	68	363		483	75	263	322	6,027	
TZ - 2	Kastilia	269	8	8	4	14	29		32		15	32	517	
TZ - 3	Oued El Krocha	393	6	3	3	3	15		16		8	16	258	
TZ - 4	Nefhayette	449	6	5	3	5	29		32		15	32	344	
TZ - 5	Chenini	559	6	5	3	11	29		32		15	32	431	
TZ - 6	Hebba Est	462	3	5	3	11	15		16		8	16	258	
TZ - 7	Hebba Ouest	290	6	5	3	8	15		16	8	8	32	344	
TZ - 8	Jbim 1	235	6	3	3	5	15		16	8	15	16	431	
TZ - 9	Jbim 2	1,035	10	10	6	22	15		16		8	16	344	
TZ - 10	Dra Chabbat 3	1,418	18	28	20	59	60		66	23	46	50	616	
TZ - 11	Nefta	5,624	22	30	6	43	290		322	75	225	242	4,133	
TZ - 12	Ghardaya	228	3	5	3	8	29		32		8	16	258	
TZ - 13	Dra Chabbat 1	1,040	13	26	12	45	45		66	16	39	33	622	
TZ - 14	Dra Chabbat 2	1,188	9	28	15	53	60		50	15	46	50	792	
TZ - 15	Dras Sud	620	9	25	11	45	59		65	15	38	49	522	
TZ - 16	Hazoua 1	426	3	33	3	11	28		15		14	15	327	
TZ - 17	Hazoua 2	230	3	7		14	15		16		8	16	261	
TZ - 18	Hazoua 3	1,188	6	31	11	29	44		33	8	23	16	435	
TZ - 19	Oued Loghrani	350	2	8	3	8	14		16		8	16	319	
TZ - 20	Tozeur	195	9	3	3	8	29		16		8	16	159	
TZ - 21	Cedada	338	10	3		5	15		16	8	15	16	431	
TZ - 22	Ogbourres	615	13	10	3	16	29		16	8	16	16	399	
TZ - 23	Degache	4,737	262	38	8	41	348		386	113	270	290	5,338	
TZ - 24	Chakmou	536	13	8	3	11	15		16	8	8	16	344	
TZ - 25	El Hamma	2,537	19	15	6	24	145		161	34	105	129	1,894	
TZ - 26	Tameria	504	6	5	3	5	15		16	8	8	16	344	
TZ - 27	Chebika	338	3			5	15				8		86	
TZ - 28	Foum El Kharga	276	6	5	3	8	15			8	8		172	
TZ - 29	Mides	173	3	2		5	15		16		8		172	
TZ - 30	Ain El Karma	152	3	2		3	15			8	8		172	
	Sub-total	32,407	541	371	148	594	1,817		1,985	437	1,266	1,516	26,751	
Kebili Governorate														
KB - 1	Bechri	1,005	5	7		5	44		49	15	46	56	2,512	
KB - 2	Bou Nefla	1,543	5	7		6	88		98	15	76	93	3,549	
KB - 3	Faouara	1,261	10	11	3	7	44		49	8	53	56	2,730	
KB - 4	El Olaa	534	31	4	3	7	59		65	23	76	56	1,966	
KB - 5	Menshia	768	36	14	5	22	44		66	15	76	56	3,331	
KB - 6	Naggla	1,139		4		5	15		16	8	23	19	1,966	
KB - 7	Oum Sereas	902	82	7	3	7	44		66	15	84	74	1,256	
KB - 8	Oued Zen	1,068	26	11	3	11	42		62	7	102	71	3,178	
KB - 9	Ouled Toueil	371	5	4		4	59		66	23	46	37	2,730	
KB - 10	Tembig	307	10	7	3	5	44		66	8	38	37	1,911	
KB - 11	Zaouiet El Arres	742	31	4		3	44		49	8	30	37	1,856	
KB - 12	Zaouiet El Hark	494	22			3	29		33	8	23	37	1,856	
KB - 13	Zaouiet Lodhibi	499	26	4		6	44		66	15	61	56	2,293	
KB - 14	Chenchet Naggla	110		4		2	30		33	8	31	19	883	
KB - 15	Guetaya	877	15	7	5	20	103		115	23	68	56	2,293	
KB - 16	Jedida	781	41	4		6	118		131	38	23	37	3,003	
KB - 17	Mansoura	506	20			5	44		49	8	38	56	2,020	
KB - 18	Rabta	1,005		7	3	7	176		197	81	46	74	2,184	
KB - 19	Telemine	1,325	36	42	3	36	118		1,460	30	68	93	2,184	
KB - 20	Tembib	627	41	11		23	118		131	38	137	130	3,549	
KB - 21	Toujane	704	36	14		16	142		157	40	79	84	2,728	
KB - 22	Limagnes	333	15	4		2	44		49	15	30	37	2,621	
KB - 23	Mazraa Neji	390	10	7		4	44		33	8	30	37	1,856	
KB - 24	Oued El Ferth 1 et 2	332	10	4		3	59		66	23	38	56	1,911	
KB - 25	Sidi Ami	480	20	4		5	44		49	8	38	37	3,549	
KB - 26	Sidi Sene	83	23	7	3	9	30		47	8	62	38	1,304	
KB - 27	Burghouthia	301	10	4		6	176		197	53	53	56	903	
KB - 28	Bazma	767	92	35	5	15	15		16	8			1,365	
KB - 29	El Chelli	767	5	7	3	22	176		197	53	53	56	2,184	
KB - 30	El Ghette	448	5	4		8	176		197	53	137	149	1,201	
KB - 31	Zaouiet	435		4		3	59		82	23			928	
KB - 32	Jemna	672	10	4		7	206		230	46	76	93	4,294	
KB - 33	Mansria	486	5	4	3	8	176		197	76	76	93	2,184	
KB - 34	Sidi Saad	550		11	3	15	132		148	53	76	74	3,276	
KB - 35	Rahmat	493	5	11		12	59		66	23	8	19	3,822	
KB - 36	Ras El Ain	1,574	46	21		19	162		180	61	152	185	3,345	
KB - 37	Sidi El Bakri	333	31	14		8	88		98	23	61	74	2,293	
KB - 38	Bou Zroun 1 et 2	843	5	7	3	14	441		492	84	304	279	2,348	
KB - 39	Bourzine	538	5	11	3	15	296		328	84	53	56	2,948	
Kebili Governorate														
KB - 40	Ouedlada	627		4	3	8	221		246	76	142	223	2,730	
KB - 41	Kebanaou	282		4		5	74		82	30	46	56	1,365	
KB - 42	Klibia	538	15	7	3	7	103		115	23	152	186	1,802	
KB - 43	Sidi Hamed	376		11	5	15	74		82	23	46	56	1,638	
KB - 44	Adjet	911		25	6	41	595		654	223	77	94	3,533	
KB - 45	Douz	1,574	51	21	8	41	74		82	30	30	37	3,276	
KB - 46	Ghoula	410	16	11	6	14	45		50	8	15	19	1,818	
KB - 47	Golaa	371	16	7	3	9	45		50	8	15	19	1,873	
KB - 48	Grad	650	16	7	8	9	25		83	15	46	56	2,755	
KB - 49	Hazy	474	20	14	5	17	88		98	23	38	56	2,457	
KB - 50	Nouel	512	26	18	5	18	88		98	23	38	56	2,457	
KB - 51	Zahrane	605	15	7	3	7	59		66	23	38	37	2,239	
KB - 52	Boukamra	461	10	7	3	9	59		49	15	23	37	1,638	
KB - 53	Ksar Ghilane	621	5	4		3								
KB - 54	Sakhouna	442	10	11	6	17	45		50	8	15	19	1,708	
KB - 55	Tarfaya	449	10	11	3	9	60		66	23	23	19	1,929	
KB - 56	Dhoraraou	202		4		5	75		83	31	31	38	1,656	
KB - 57	Souida	269		14	5	10	60		83	23	23	19	2,318	
KB - 58	Ghidma	493		4		6	118		131	38	137	130	2,730	
KB - 59	Sabria	358		4	3	5	88		98	23	99	112	1,856	
KB - 60	Faouar 1	531		4		6	118		131	30	91	112	1,856	
KB - 61	Faouar 2	486		4		8	191		213	53	190	186	2,730	
KB - 62	Bechri	461		4		6	75		66	23	92	113	2,042	
KB - 63	Dergine	315		7	5	9	106		117	25	47	57	2,902	
KB - 64	Matrouha	576		11	8	12	74		82	23	53	56	2,730	
KB - 65	Regim 1	461		7	3	9	119		133	31	92	75	4,416	
KB - 66	Regim 2	418		7		15	122		134	34	101	113	3,471	
KB - 67	Tarfayet Elma	221		7		8	60		66	15	46	56	1,380	
	Sub-total	48,789	985	564	154	299	6,739		8,883	2,009	4,258	4,613	155,647	
Gabes Governorate														
GB - 1	Ain Zrig	607		469	40	61	157		165		72	66	1,452	19
GB - 2	Temouda 1		9	53	172	116	63		33	19	43	22	529	5
GB - 3	Temouda 2	26	4	79	53	24	31		33		14	22	132	5
GB - 4	Zrig dahlouia	79		185	13	17	31		33		14		529	3
GB - 5	Tebolbou	4,353	414	2,072	198	270	628		662	56	358	220	5,288	136
GB - 6	Oasis de Gabes	3,201	13	3,115	40	39	502		331	37	215	176	8,263	340
GB - 7	Limacon 1 et 2	3	86	817	94	336	507		468	38	232	178	1,536	10
GB - 8	M'Rou	106	13	119	26	55	31		33		14	22	595	14
GB - 9	Chott El Fetih	61		96	42	68	31		33		29	32	265	20
GB - 10	Boucheman	733	31	211	13	44	94		99		43	44	859	19
GB - 11	Mabjah	1,406	625	149	26	44	1,570		1,650	112	801	638	6,230	32
GB - 12	Salem	304	202	79		6	283		304	37	172	132	1,322	9
GB - 13	Shoul	218	145	66		8	314		298	37	172	110	1,256	3
GB - 14	Fejoul	726	563	198	13	33	879		1,291	94	172	132	4,092	22
GB - 15	M'rina Ghannouch	205	884	396	53	77	1,099		1,254	94	601	462	4,356	24
GB - 16	Metouia	1,426		647	13	11	879		1,291	94	172	132	4,094	22
GB - 17	Oued Ref	1,366	53	513	26	11	1,099		1,254	94	601	462	7,271	22
GB - 18	Aouinette	475	704				471		563	56	272	220	330	
GB - 19	Chenchou 1		451	84	38	37	176		99	19	72	44	1,653	
GB - 20	Chenchou 2		99	40		84	123		167	38	87	67	334	
GB - 21	Tebourk	139		119	13	8	94		66	19	43	44	990	
GB - 22	Hamma nord	2,475		264	26	17	502		463	56	257	198	9,915	
GB - 23	M'rina hamma	370		251	40	11	94		66	19	43	44	2,310	
GB - 24	Bechima 1	1,342	238	488	106	44	94		66	19	43	44	2,644	
GB - 25	Bechima 2	1,181	273	475	79	39	149		157	18	82	63	4,389	
GB - 26	Khebayet	271	145	185	13	39	157		166	19	86	66	3,305	
GB - 27	Bou Ghilouf	667	185	252	26	88	502		462	56	257	198	7,920	
GB - 28	Gh'Dekhane	218	145			22	31		33		14	22	1,963	
GB - 29	Oued Nekhla	319	48			6	31		66		14	44	331	
GB - 30	Arram	297	317	475	26	44	188		299	19	100	66	661	
GB - 31	Marcth 1	125	57	858	13	11	94		66	19	43	44	1,322	
GB - 32	Marcth 2	264	66	3,558	40	22	188		199	19	100	66	5,248	
GB - 33	Marcth 3	40	79	79			63		66		29	22	661	
GB - 34	Marcth 5	20	167	832	79	28	157		165	19	86	66	2,970	
GB - 35	Marcth 6	145	154	330	26	22	126		132	19	57	44	3,636	
GB - 36	Zeur 2	165	132	1,452	53	28	220		198	19	100	66	3,960	
GB - 37	Zerkine 1 et 3	66	88	1,056	26	22	94		99	19	57	44	1,650	
GB - 38	Zerkine 2	264	101	1,188	13	11	31		33		29	22	660	
GB - 39	Ayoune Zerkine	20	26	264		6	31		33		29	22	660	
GB - 40	Mehaia	47	57	456		17	63		67		29	22	333	
GB - 41	Ketana 1	20	92	911	26	17	94		99		43	44		
GB - 42	Ketana 3	59	145	1,162	79	22	31		33		14			
GB - 43	Ketana 4	20	220	845	66	17	53		66		29	22		26
GB - 44	Sidi Sellam	130	354	306		68	170		195	19	100	66		
GB - 45	Zrig Bouraria		268	79		22	31		33		14	22	661	34
GB - 46	Ghorbi		22			138								
GB - 47	Lourdh 1		97	172			31		66		29	22	66	
GB - 48	Lourdh 3		172	211			63		66	19	29	22	132	
	Sub-total	29,559	7,458	25,620	1,612	3,121	13,311		13,486	1,197	5,947	4,574	106,816	748
	Total	100,502	28,858	25,904	4,478	4,167	26,299		29,210	6,246	14,548	17,933	346,584	748

Source : JICA study team estimation

Table E.5.4.4 Production of Major Crops by Oasis under Without Project Condition

(Unit: kcs)

Code No.	Name of Oasis	Date Palm	Olive	Pomegranate	Apricot	Fig/Other Fruit	Carrot/Turnip	Onion	Kidney Bean	Pepper	Tomato	Fodder Crops	Industrial Crops
Gafsa Governorate													
GF - 1	Kasba	570	4,264	116	1,365	170	1,510	1,360	695	677	1,510	9,966	
GF - 2	Sud Ouest	517	4,690	176	936	195	815	786	436	776	1,397	9,719	
GF - 3	El Ouest	2,186	920	87	37	185	1,200	783	580	49	60	2,900	
GF - 4	Lafla	289	4,943	189	136	176	602	596	300	867	1,445	13,823	
GF - 5	El Kaar	897	2,849	606	451	162	697	683	304	758	2,030	13,961	
GF - 6	Oued Sidi	298						20	20			316	
GF - 7	Thelja	322	72					77	57			398	
GF - 8	Sejnane	1,091	139	55	24	70	97	97	48	77	154	1,302	
Sub-total		5,970	17,875	1,229	2,989	958	4,920	4,401	2,441	3,203	6,596	52,385	
Tozeur Governorate													
TZ - 1	Tozeur	5,342	46	35	10	60	323	432	67	235	268	5,342	
TZ - 2	Kastilia	242	6	7	3	12	26	29		14	29	465	
TZ - 3	Oued El Kouba	359	6	2	3	5	13	15		7	15	236	
TZ - 4	Nefflayette	410	6	4	3	5	26	29		14	29	312	
TZ - 5	Chemas	518	6	5	3	10	27	30		14	30	390	
TZ - 6	Hebba Est	395	3	4	2	9	12	14		6	14	218	
TZ - 7	Hebba Ouest	265	6	5	3	7	13	15	7	7	29	314	
TZ - 8	Jhim 1	190	5	3	2	4	12	13	6	12	13	346	
TZ - 9	Jhim 2	915	8	9	5	19	13	14	-	7	14	301	
TZ - 10	Ibn Chabbat 3	1,334	17	26	20	57	56	64	22	44	48	594	
TZ - 11	Nefta	4,890	20	25	5	37	250	278	65	195	209	3,562	
TZ - 12	Ghardaya	398	3	4	3	8	26	28		7	14	227	
TZ - 13	Ibn Chabbat 1	959	13	24	11	42	42	62	15	37	31	599	
TZ - 14	Ibn Chabbat 2	1,095	8	26	14	49	57	48	15	44	48	764	
TZ - 15	Dras Sud	787	8	24	11	43	57	64	15	37	48	509	
TZ - 16	Hazwa 1	360	3	11	2	9	25	34		13	14	292	
TZ - 17	Hazwa 2	176	2	4		10	13	14		7	14	230	
TZ - 18	Hazwa 3	929	4	20	8	19	39	29	7	20	14	383	
TZ - 19	Oued Leghlani	294	2	6	2	7	13	14		7	14	299	
TZ - 20	Tozeur	164	8	2	2	7	25	14		7	14	149	
TZ - 21	Cedada	289	8	2		5	12	14	6	13	14	364	
TZ - 22	Dghomes	535	11	8	2	14	25	14	7	13	14	374	
TZ - 23	Degache	4,174	221	32	7	35	300	334	98	234	250	4,582	
TZ - 24	Chebika	482	12	7	3	10	13	14	7	7	14	305	
TZ - 25	El Hamma	2,214	16	15	5	21	124	137	32	90	110	1,610	
TZ - 26	Tameria	453	6	6	3	5	13	14	7	7	14	306	
TZ - 27	Chebika	130	3			5	14			7		81	
TZ - 28	Foum El Khanga	260	6	5	3	8	14		7	7		161	
TZ - 29	Mides	163	3	2		5	14	15		7		161	
TZ - 30	Ain El Karma	143	3	2		2	13		7	7		153	
Sub-total		28,705	468	313	131	525	1,609	1,761	308	1,122	1,545	23,648	
Kebili Governorate													
KB - 1	Bechri	879	5	6		5	38	43	13	40	48	2,180	
KB - 2	Bouabdallah	1,431	5	6		5	37	46	13	67	82	3,107	
KB - 3	Faouara	1,162	9	10	3	7	40	45	7	49	51	2,450	
KB - 4	El Glaa	470	26	3	2	6	51	56	20	66	48	1,692	
KB - 5	Menchia	624	29	11	4	18	36	53	12	61	45	2,678	
KB - 6	Nagga	1,015		3		4	13	15	7	20	17	1,746	
KB - 7	Oum Seraya	747	67	6	2	6	37	54	13	69	61	1,037	
KB - 8	Oued Zea	897	22	9	2	9	38	56	7	91	63	2,824	
KB - 9	Oided Touzi	325	4	3		4	47	52	18	37	30	2,180	
KB - 10	Teraibia	264	9	6	2	5	38	56	7	33	32	1,435	
KB - 11	Zaouiet El Aaes	662	27	3		3	38	43	7	26	32	1,612	
KB - 12	Zaouiet El Hatab	395	17			2	24	27	6	19	30	1,510	
KB - 13	Zeraf Lenbikhi	452	23	3		5	40	59	14	55	50	2,066	
KB - 14	Chenchet Nagga	98		3		2	26	29	7	27	16	733	
KB - 15	Gouaiya	767	14	6	5	18	90	99	20	59	48	1,991	
KB - 16	Jedida	671	35	3		5	101	112	33	20	32	2,574	
KB - 17	Mansoura	411	17			4	36	40	6	31	45	1,643	
KB - 18	Rebia	879		6	2	6	152	169	53	40	64	1,884	
KB - 19	Telmine	1,139	31	36	2	31	101	1,246	26	59	80	1,868	
KB - 20	Tembib	578	38	10		22	108	120	35	126	119	3,250	
KB - 21	Tombar	616	31	12		14	137	142	33	66	81	2,596	
KB - 22	Limagnes	302	14	3		2	40	44	14	23	33	2,347	
KB - 23	Mansur Nejl	342	9	6		3	38	28	7	26	32	1,605	
KB - 24	Oum El Fath 1 et 2	306	9	3		2	54	61	21	36	52	1,768	
KB - 25	Sufiani	450	19	3		5	42	46	7	36	35	3,335	
KB - 26	Saidane	74	20	6	2	8	26	15	7	54	33	970	
KB - 27	Bayrbouthia	268	9	3		5	157	175	48	48	50	873	
KB - 28	Bazma	638	85	32	3	14	13	15	7			1,213	
KB - 29	Bebelli	701	5	6	2	20	157	175	48	48	50	1,940	
KB - 30	Bidette	399	5	3		7	155	173	47	121	130	1,054	
KB - 31	Zaouine	367		3		3	49	68	19			772	
KB - 32	Jemna	641	10	3		7	195	216	43	72	88	3,954	
KB - 33	Mansofa	456	5	3	2	7	154	170	66	66	81	1,896	
KB - 34	Mesid	473		9	2	13	113	127	46	66	64	2,806	
KB - 35	Rabrat	647	5	9		11	53	59	21	7	17	3,430	
KB - 36	Ras El Ain	1,423	41	19		17	146	163	53	138	167	3,050	
KB - 37	Souk El Biaca	302	28	12		6	79	88	20	54	66	2,050	
KB - 38	Ben Zitoun 1 et 2	787	5	6	2	13	387	432	74	268	245	2,060	
KB - 39	Beznzine	496	5	10	3	14	270	300	77	49	51	2,765	
KB - 40	Gueblia	568		3	2	7	197	219	68	163	198	2,425	
KB - 41	Kebili ouest	246		3		5	64	71	26	40	48	1,185	
KB - 42	Kibria	504	14	7	3	6	96	107	21	142	173	1,680	
KB - 43	Sidi Hamed	513		9	3	13	66	73	20	41	50	1,455	
KB - 44	Adles	792		21	5	35	512	572	194	67	82	3,040	
KB - 45	Doua	1,402	45	19	7	37	65	72	27	27	33	2,874	
KB - 46	Ghaila	384	15	11	5	13	44	49	8	15	19	1,502	
KB - 47	Galaa	348	15	7	3	8	42	47	7	15	18	1,765	
KB - 48	Grid	600	15	3	8	8	70	78	15	44	53	2,595	
KB - 49	Hazy	437	19	13	5	16	81	90	21	35	54	2,245	
KB - 50	Nouail	448	23	15	5	16	77	85	20	33	48	2,133	
KB - 51	Zafrane	586	15	7	3	7	57	64	22	37	36	2,177	
KB - 52	Bechiuza	410	9	6	2	8	52	44	14	20	33	1,458	
KB - 53	Kaar Ghilane	543	5	3		2							
KB - 54	Sakhouna	408	10	10	5	15	42	47	7	15	18	1,609	
KB - 55	Tarfaya	428	10	10	3	8	56	64	23	23	18	1,862	
KB - 56	Dhiouana	176		3		5	68	76	28	28	34	1,512	
KB - 57	Saida	235		13	3	9	54	75	21	21	17	2,067	
KB - 58	Ghdina	439		3		6	112	125	37	131	124	2,600	
KB - 59	Sabria	302		3	2	4	74	82	19	83	94	1,557	
KB - 60	Faouar 1	473		3		6	105	117	27	82	99	1,652	
KB - 61	Faouar 2	448		3		7	191	211	49	175	182	2,580	
KB - 62	Bechni	403		3		6	67	60	21	84	101	1,843	
KB - 63	Degjoc	308		7	3	9	103	115	23	46	56	2,634	
KB - 64	Matrouha	504		9	7	10	64	71	20	46	48	2,370	
KB - 65	Regim 1	412		6	3	8	108	120	28	84	68	4,008	
KB - 66	Regim 2	343		7		14	110	122	28	85	104	3,315	
KB - 67	Tarfayet Elma	193		6		8	53	58	14	41	50	1,220	
Sub-total		36,250	873	502	120	638	6,017	7,068	1,790	3,756	4,116	139,851	
Gabes Governorate													
GB - 1	Ain Zrig	552		405	36	55	142	149		65	60	1,311	17
GB - 2	Temsouk 1		8	48	157	105	57	30	17	39	20	482	5
GB - 3	Temsouk 2	23	4	68	46	24	27	29		12	19	124	4
GB - 4	Zrig dakhlania	71		165	12	15	28	30		13		474	3
GB - 5	Tebulbou	1,148	348	1,758	168	230	530	558	47	303	186	4,464	112
GB - 6	Oasis de Gabes	2,813	12	2,738	35	34	440	289	33	188	154	9,375	260
GB - 7	Limacon 1 et 2	6	72	689	79	282	430	396	32	193	151	1,304	8
GB - 8	Mdou	90	11	102	23	47	27	28		12	19	509	11
GB - 9	Chott El Fedl	56		86	37	61	28	30		26	20	185	18
GB - 10	Bouchemma	666	27	189	12	39	84	89		38	39	768	17
GB - 11	Mahjoub	1,278	540	104	23	38	1,365	1,440	98	300	557	5,463	27
GB - 12	Salem	271	679	70		5	250	312	33	152	117	1,170	8
GB - 13	Shoul	191	925	58		5	274	260	33	150	97	1,096	6
GB - 14	Fayed	638	499	176	12	29	778	1,139	83	152	117	3,621	20
GB - 15	M'ziraa Ghannouch	100	794	348	46	67	963	1,098	82	525	405	3,015	20
GB - 16	Metouia	1,274		578	12	10	787	1,151	84	154	118	3,658	20
GB - 17	Oued Ref	1,180	48	429	22	9	921	1,049	79	504	385	6,380	18
GB - 18	Arcinette	425	624				419	498	50	241	195	293	
GB - 19	Chenchou 1		133	77	33	51	105	83	16	60	37	1,380	
GB - 20	Chenchou 2		86	35		74	111	147	33	76	59	293	
GB - 21	Teboulbou	118		101	11	5	80	56	16	37	37	842	
GB - 22	Ramamouria	2,100		232	23	14	442	406	49	227	174	8,700	
GB - 23	Mdina hamma	314		219	35	10	82	58	16	36	38	2,013	
GB - 24	Bachima 1	1,078	216	440	95	40	85	60	17	39	40	2,388	
GB - 25	Bachima 2	903	229	396	66	32	131	138	16	72	55	3,654	
GB - 26	Khebayet	250	135	171	12	36	145	153	17	79	61	3,055	
GB - 27	Ben Gilloul	626	172	236	25	83	474	435	53	243	187	7,560	
GB - 28	Gib Dokhane	201	135			20	29	31		13	20	1,830	
GB - 29	Oued Nekhila	108	44			5	28	60		13	40	299	
GB - 30	Arram	248	274	407	23	34	161	169	16	85	56	564	
GB - 31	Mareth 1	106	49	735	13	9	81	53	16	37	38	1,130	
GB - 32	Mareth 2	120	56	1,298	33	18	157	166	16	84	55	4,416	
GB - 33	Mareth 3	34	72	71			56	59		26	20	594	
GB - 34	Mareth 5	15	125	624	59	21	118	124	14	65	50	2,232	
GB - 35	Mareth 6	125	133	283	23	19	108	113	16	49	38	3,319	
GB - 36	Zarat 2	143	114	1,265	46	24	190	172	16	87	57	3,438	
GB - 37	Zerkine 1 et 3	60	80	960	24	20	86	90	17	52	40	1,458	
GB - 38	Zerkine 2	232	87	1,035	12	10	27	29		25	19	535	
GB - 39	Ayoune Zerkine	18	23	236		5	28	30		26	20	590	
GB - 40	Medrin	41	56	452		16	62	64		28	22	322	
GB - 41	Ketana 1	15	71	704	30	13	73	77		33	34		
GB - 42	Ketana 3	50	125	924	68	19	27	28		12			
GB - 43	Ketana 4	15	180	685	54	14	52	54		23	18		20
GB - 44	Sidi Sellim	108	272	278		55	144	181	17	92	61		
GB - 45	Zrig Bouania		238	70		20	28	29		13	20	584	30
GB - 46	Ghandri		20			123							
GB - 47	Lnaath 1		84	150			27	57		25	19	57	
GB - 48	Lnaath 3		156	190			56	58	17	26	20	119	
Sub-total		18,033	6,848	29,282	1,391	1,847	10,741	11,768	1,848	5,154	3,994	93,941	648
Total		88,963	25,964	32,326	5,031	3,967	23,287	25,798	5,667	13,276	16,051	309,825	648

Source: JICA study team estimation

Table E.5.4.5 Amount of Production Increased by the Project

(Unit : ton)

Code No.	Name of Oasis	Date Palm	Olive	Pomegranate	Apricot	Fig/ other Fruit	Carrot/ Turnip	Onion	Kidney Bean	Pepper	Tomato	Fodder Crops	Industrial Crops
	Gafsa Governorate												
GF - 1	Kasba	44	312	10	105	13	130	115	60	60	130	842	
GF - 2	Sud Ouest	38	594	22	44	18	104	99	54	104	170	1,253	
GF - 3	El Guettar	265	130	12	5	17	112	105	76	7	5	385	
GF - 4	Lalla	26	488	18	11	15	54	53	28	65	130	1,288	
GF - 5	El Ksar	69	243	51	32	14	90	55	34	66	168	1,117	
GF - 6	Oued Sidi	48						2	2			32	
GF - 7	Thelja	53	12					13	10			67	
GF - 8	Sejnane	294	20	8	1	10	54	14	8		22	192	
	Sub-total	848	4,298	122	198	86	503	456	261	306	633	5,185	
	Tozeur Governorate												
TZ - 1	Tozeur	606	5	5	1	8	40	51	8	28	34	665	
TZ - 2	Kasrilia	27	2	1	1	2	3	3		1	3	52	
TZ - 3	Oued El Kouche	34	1	0	0	0	1	1		3	1	23	
TZ - 4	Nefflayette	39	1	1	0	1	3	3		1	3	33	
TZ - 5	Chenna	41	0	0	0	1	2	2		1	2	41	
TZ - 6	Hefta Est	67	1	1	0	2	2	3		1	3	41	
TZ - 7	Hefta Ouest	25	1	0	0	1	1	1	1	1	3	31	
TZ - 8	Jbim 1	44	1	1	1	1	3	3	1	3	3	85	
TZ - 9	Jbim 3	120	1	1	1	2	2	2		1	2	43	
TZ - 10	Ibn Chabbat 3	83	1	1	1	2	4	2	1	2	2	32	
TZ - 11	Nefta	734	3	5	1	6	40	44	10	30	33	571	
TZ - 12	Ghardgaya	30	0	1	0	0	3	4		1	2	32	
TZ - 13	Ibn Chabbat 1	82	1	2	1	3	3	4	1	3	2	22	
TZ - 14	Ibn Chabbat 2	93	0	1	1	4	2	2	1	2	2	28	
TZ - 15	Dras Sud	33	0	1		2	2	2	0	1	1	13	
TZ - 16	Hazoua 1	61	1	2	0	2	3	2		2	2	35	
TZ - 17	Hazoua 2	53	1	2		5	2	2		1	2	31	
TZ - 18	Hazoua 3	259	2	11	4	10	5	4	1	3	2	52	
TZ - 19	Oued Leghfisi	56	0	1	0	1	2	2		2	2	20	
TZ - 20	Tozrarit	31	1	0	0	1	4	2		2	2	10	
TZ - 21	Cedada	49	2	0		1	2	2	1	2	2	67	
TZ - 22	Dghoumes	80	2	2	0	2	4	2	2	3	2	25	
TZ - 23	Degache	566	41	6	1	6	48	53	15	36	40	756	
TZ - 24	Chakmen	54	1	1	0	1	2	2	1	1	2	39	
TZ - 25	El Hamma	338	3	1	1	4	21	24	6	15	19	284	
TZ - 26	Tameza	51	1	0	0	1	2	2	1	1	2	38	
TZ - 27	Chebika	8	0			0	1			0		5	
TZ - 28	Foum El Khanga	16	0	0	0	1	1		0	0		11	
TZ - 29	Mides	10	0	0		0	1	1		0		11	
TZ - 30	Ain El Karma	9	0	0		0	2		1	1		19	
	Sub-total	3,701	73	48	17	69	208	224	50	144	151	3,103	
	Kebili Governorate												
KB - 1	Bechel	126	1	1		1	6	7	2	6	8	331	
KB - 2	Bouabdallah	212	1	1		1	11	12	2	9	12	442	
KB - 3	Faouara	99	1	1	0	0	4	5	1	4	5	240	
KB - 4	El Olfaa	67	4	1	0	1	8	9	3	10	8	274	
KB - 5	Menchia	144	7	3	1	4	8	13	3	15	11	653	
KB - 6	Nagga	125		0		1	2	2	1	2	2	220	
KB - 7	Oum Somaa	155	14	1	0	1	8	12	5	14	13	219	
KB - 8	Oued Zira	163	4	2	0	2	5	7	1	11	6	354	
KB - 9	Oued Foual	46	1	1		1	12	13	5	9	8	550	
KB - 10	Tenchig	43	1	1	0	1	6	10	1	6	5	277	
KB - 11	Zaouiet El Anes	81	4	1		0	6	7	1	4	5	245	
KB - 12	Zaouiet El Harth	99	5			1	5	6	1	4	7	347	
KB - 13	Zirri Louhichi	47	3	0		0	4	6	2	6	6	227	
KB - 14	Chouchet Nagga	12		0		0	4	4	1	4	2	110	
KB - 15	Guraya	110	2	1	1	2	13	15	3	9	8	302	
KB - 16	Sedida	110	6	1		1	17	19	5	3	5	429	
KB - 17	Mansoura	95	4			1	8	9	1	7	11	377	
KB - 18	Rabta	126		1	0	1	24	28	0	6	10	300	
KB - 19	Telmine	186	5	6	0	5	17	214	4	10	14	316	
KB - 20	Tembib	49	3	1		2	10	11	3	11	11	299	
KB - 21	Fondar	88	5	2		2	15	15	7	13	8	132	
KB - 22	Limagues	31	2	0		0	5	5	2	3	4	274	
KB - 23	Mazraa Neji	49	1	1		1	6	5	1	4	5	252	
KB - 24	Oum El Farch I et 2	26	1	0		0	5	5	2	3	4	144	
KB - 25	Sofimi	30	1	0		0	2	3	0	2	2	215	
KB - 26	Saidane	9	3	1	0	1	4	2	1	7	5	134	
KB - 27	Barghouthia	33	1	0		1	19	22	6	6	6	110	
KB - 28	Bazma	78	7	3	0	1	1	2	1			153	
KB - 29	Bichelli	86	1	1	0	2	19	22	6	6	6	244	
KB - 30	Bisdette	49	1	0		1	22	24	6	16	18	142	
KB - 31	Zaouiae	68		1		1	10	14	4			156	
KB - 32	Jemna	32	1	0		0	11	14	2	4	6	246	
KB - 33	Mourda	30	1	1	0	1	13	26	10	10	13	288	
KB - 34	Mlaiki	77		2	0	2	19	21	7	10	11	468	
KB - 35	Rahmat	86	1	1		1	6	7	2	1	2	392	
KB - 36	Ras El Ain	148	5	2		1	15	18	6	14	19	335	
KB - 37	Souk El Bajez	31	3	2		1	9	11	2	6	8	244	
KB - 38	Ben Zitoun I et 3	97	1	1	0	1	54	60	10	36	35	288	
KB - 39	Bourmine	42	0	1	0	1	26	28	7	4	5	243	
	Kebili Governorate												
KB - 40	Guelada	59		0	0	1	24	27	0	19	25	305	
KB - 41	Kelwamen	35		1		1	10	11	4	6	8	180	
KB - 42	Kibla	34	1	0	0	1	8	8	2	10	13	122	
KB - 43	Sidi Rached	63		1	1	2	8	9	2	5	6	183	
KB - 44	Atlet	110		4	1	5	84	92	29	10	13	493	
KB - 45	Dour	172	6	2	1	4	9	10	4	4	5	402	
KB - 46	Gnoula	25	0		0	0	1	0	0	0	0	17	
KB - 47	Golaa	23	1	0	0	1	3	3	0	1	1	109	
KB - 48	Grati	50	1	0	1	1	5	5	1	2	3	160	
KB - 49	Hazy	37	2	1	0	1	7	8	2	3	5	212	
KB - 50	Noueil	64	3	3	1	2	11	13	3	5	8	324	
KB - 51	Zafraane	19	0	0			2	2	1	1	1	62	
KB - 52	Bouhamra	50	1	1	0	1	6	5	2	2	4	180	
KB - 53	Ksar Ghilane	78	1	1		0							
KB - 54	Sakkouma	34	1	1	0	1	3	3	0	1	1	99	
KB - 55	Tarfaya	21	0	0	0	0	2	2	1	1	1	67	
KB - 56	Ghacerana	25		0		0	7	8	2	2	3	144	
KB - 57	Smida	34		1	0	1	6	9	2	2	2	231	
KB - 58	Ghidma	54		0		0	6	6	2	5	6	130	
KB - 59	Sabria	56		1	0	1	14	16	4	16	18	299	
KB - 60	Faouar 1	58		0		0	14	14	3	10	13	204	
KB - 61	Faouar 2	38		0		1		3	4	15	4	150	
KB - 62	Bechel	58		0		0	8	7	2	8	11	200	
KB - 63	Dergine	7			0	0	3	2	1	1	2	68	
KB - 64	Marouha	72		2	1	1	10	11	3	7	8	360	
KB - 65	Region 1	49		1	0	0	11	13	3	8	7	408	
KB - 66	Region2	36		0		1	11	12	5	16	9	156	
KB - 67	Tarfayet Elma	28		1		1	7	8	2	5	7	160	
	Sub-total	4,539	163	62	13	70	722	1,816	120	460	697	16,396	
	Gabes Governorate												
GB - 1	Ain Zeig	55		44	4	6	16	16		7	6	141	2
GB - 2	Temouta 1		1	4	14	11	5	3	2	4	2	46	1
GB - 3	Temouta 2	4	1	11	7	4	4	3		2	3	18	2
GB - 4	Zeig dakhlania	8		20	1	2	3	4		2		55	0
GB - 5	Teboulbou	205	66	314	30	39	98	104	9	55	34	824	24
GB - 6	Oasis de Gabes	388	2	378	5	5	62	42	5	27	22	888	60
GB - 7	Linacea I et 2	1	13	128	15	54	77	71	6	35	27	232	2
GB - 8	M'dou	16	2	17	4	8	5	5		2	3	86	2
GB - 9	Chott El Ferik	5		10	4	7	3	3		3	2	20	2
GB - 10	Bouchemma	67	4	23	1	5	10	11		5	5	91	2
GB - 11	Mahjoub	128	85	15	3	6	205	210	14	101	81	808	6
GB - 12	Salem	32	23	9		1	32	42	4	19	15	152	1
GB - 13	Sboul	26	20	9		1	40	38	5	22	14	160	1
GB - 14	Faycal	88	64	23	2	4	101	152	11	19	15	471	3
GB - 15	M'zirna Ghanouch	25	101	48	6	10	137	156	12	76	57	543	4
GB - 16	Metoula	151		69	1	1	92	140	10	18	14	440	3
GB - 17	Oueslati	186	9	86	4	2	179	209	15	97	76	891	4
GB - 18	Aouinette	50	80				53	65	6	30	25	37	
GB - 19	Cherchou 1		18	11	5	7	21	17	3	12	7	273	
GB - 20	Cherchou 2		13	5		11	16	21	5	11	0	42	
GB - 21	Tekourt	21		18	2	1	14	10	3	6	7	149	
GB - 22	Hamma oasis	375		32	3	2	61	57	7	31	24	1,215	
GB - 23	Mzirna hamma	56		32	5	1	12	9	2	5	6	298	
GB - 24	Bechima 1	104	22	48	10	4	9	6	2	4	4	256	
GB - 25	Bechima 2	197	43	79	13	6	18	19	2	10	8	525	
GB - 26	Khebayet	21	10	14	1	3	12	13	1	7	5	250	
GB - 27	Ben Ghilouf	40	13	15	2	5	29	27	3	14	11	360	
GB - 28	Ghb Dekhane	17	10			2	2	3		1	2	153	
GB - 29	Oued Nechla	11	4			1	3	6		1	4	32	
GB - 30	Arram	50	43	68	4	6	28	29	3	15	10	97	
GB - 31	Mareth 1	19	6	124	2	2	14	10	3	6	6	192	
GB - 32	Mareth 2	44	13	260	7	4	31	33	3	16	11	872	
GB - 33	Mareth 3	5	7	8			6	7		3	2	67	
GB - 34	Mareth 5	5	42	298	20	7	39	41	5	21	16	718	
GB - 35	Mareth 6	20	21	48	4	3	18	19	3	8	6	517	
GB - 36	Zarat 2	23	18	187	7	4	29	26	3	13	9	522	
GB - 37	Zerkine I et 3	6	8	96	2	2	9	9	2	5	4	153	
GB - 38	Zerkine 2	32	14	153	2	1	4	4		4	3	85	
GB - 39	Ayoune Zerkine	2	3	28		1	3	4		3	2	70	
GB - 40	Medeila	6	1	14		1	2	2		1	1	11	
GB - 41	Kettara 1	5	21	207	6	4	21	23		10	10		
GB - 42	Kettara 3	9	20	218	11	3	5	5		2			
GB - 43	Kettara 4	4	40	160	13	3	2	12		5	4		6
GB - 44	Sidi Sellam	22	82	28		13	26	14	2	8	5		
GB - 45	Zeig Barrania		31	9		2	4	4		2	3	77	4
GB - 46	Ghadri		3			15							
GB - 47	Lazadh 1		13	22			4	9		4	3	9	
GB - 48	Lazadh 3		16	21			6	7	2	3	2	13	
	Sub-total	2,537	1,003	3,334	221	274	1,570	1,717	149	753	581	12,875	128
	Total	11,635	5,536	3,565	448	500	3,004	5,011	679	1,663	1,951	37,559	128

Source : JICA study team estimation

Ref. : Tables E.5.4.1, E.5.4.2, E.5.4.3, E.5.4.4

Table E.5.5.1 Net Return per Ha under Without and With Project Condition

- Financial Price - (Unit : D./ha)

Description		Gross Income Yield* (tons)	Unit Price (D./kg)	Amount (a)	Production Cost Farm Inputs	Labor Cost	Others	Total (b)	Net Return (a - b)
1. Arboriculture									
1.1 Date Palm	Without Project	4.55	1.025	4,662	357	199	27	583	4,079
	With Project	5.18		5,305	475	278	37	790	4,515
	Increment	0.63		643				207	436
1.2 Olive	Without Project	4.78	0.400	1,914	217	158	19	394	1,520
	With Project	5.33		2,133	296	174	24	494	1,639
	Increment	0.55		219				100	119
1.3 Pomegranate	Without Project	7.90	0.287	2,273	348	265	31	644	1,629
	With Project	9.25		2,655	412	292	36	740	1,915
	Increment	1.35		382				96	286
1.4 Apricot	Without Project	9.88	0.493	4,869	363	371	37	771	4,098
	With Project	10.98		5,411	429	420	43	892	4,519
	Increment	1.10		542				121	421
1.5 Fig	Without Project	3.37	0.385	1,296	249	265	39	553	743
	With Project	3.77		1,450	349	292	51	692	758
	Increment	0.40		154				139	15
2. Vegetables									
2.1 Turnip* /Carrot	Without Project	20.00	0.201	4,020	374	348	36	758	3,262
	With Project	22.50		4,523	419	406	41	866	3,657
	Increment	2.50		502				108	394
2.2 Onion	Without Project	21.00	0.186	3,906	437	348	39	824	3,082
	With Project	23.80		4,427	482	348	41	871	3,556
	Increment	2.80		521				47	474
2.4 Kindey Beans	Without Project	10.40	0.370	3,848	263	348	31	642	3,206
	With Project	11.70		4,329	374	464	42	880	3,449
	Increment	1.30		481				238	243
2.5 Pepper	Without Project	9.20	0.874	8,041	1,047	348	70	1,465	6,576
	With Project	10.30		9,002	1,086	406	34	1,526	7,476
	Increment	1.10		961				61	900
2.6 Tomato	Without Project	20.90	0.310	6,479	628	348	49	1,025	5,454
	With Project	23.40		7,254	673	406	54	1,133	6,121
	Increment	2.50		775				108	667
3. Fodder Crops									
3.1 Lucern	Without Project	54.40	0.053	2,883	250	348	30	628	2,255
	With Project	65.30		3,461	345	406	38	789	2,672
	Increment	10.90		578				161	417
4. Cash Crops									
4.1 Henna	Without Project	1.40	1.839	2,575	387	261	32	680	1,895
	With Project	1.70		3,126	482	348	41	871	2,255
	Increment	0.30		552				191	361

Remark : Figures of arboriculture crops are estimated average yield and annual cost of 25 years.
Ref. : Tables K.3.1.1 (1)to (8)

Table E.5.5.2 Future Crop Production and Gross Production Value

Description	Unit	Gafsa Governorate			Tozeur Governorate			Kebili Governorate			Gabes Governorate			Total		
		W/O Project	With Project	Increment	W/O Project	With Project	Increment	W/O Project	With Project	Increment	W/O Project	With Project	Increment	W/O Project	With Project	Increment
1. Arboriculture	(Dar Pisse)															
1.1 Date Palm	1.025 D./kg															
- Planted Area	(ha)	812	812		5,036	5,036		6,566	6,566		3,113	3,113		15,527	15,527	
- Yield	(tons/ha)	7.2	8.3	1.1	5.7	6.4	0.7	5.5	6.2	0.7	5.8	6.6	0.8	5.7	6.5	0.7
- Production	(tons)	5,876.1	6,743.2	867.1	28,706.5	32,408.0	3,701.5	36,250.2	40,789.3	4,539.1	18,032.6	20,557.4	2,524.8	88,865	100,498	11,632.5
- Gross Production Value	(D.'000)	6,023.0	6,911.8	888.8	29,424.2	33,218.2	3,794.0	37,156.5	41,809.0	4,652.6	18,483.4	21,071.3	2,587.9	91,067	103,010	11,943.3
1.2 Olive	0.400 D./kg															
- Planted Area	(ha)	2,221	2,221		177	177		194	194		1,727	1,727		4,319	4,319	
- Yield	(tons/ha)	8.1	8.9	0.8	2.6	3.1	0.4	4.5	5.1	0.6	3.9	4.4	0.6	6.0	6.7	0.7
- Production	(tons)	17,875.0	19,673.5	1,798.5	467.6	540.7	73.1	872.4	985.1	112.7	6,647.9	7,650.1	1,002.2	25,863	28,849	2,986.5
- Gross Production Value	(D.'000)	7,150.0	7,869.6	719.4	187.0	216.3	29.2	349.0	394.0	45.1	2,659.2	3,060.0	400.9	10,345	11,540	1,194.6
1.3 Pomegranate	0.287 D./kg															
- Planted Area	(ha)	150	150		145	145		161	161		1,788	1,788		2,244	2,244	
- Yield	(tons/ha)	8.2	9.0	0.8	2.2	2.6	0.3	3.1	3.5	0.4	11.3	13.2	1.9	10.0	11.3	1.6
- Production	(tons)	1,228.9	1,350.7	121.8	323.0	371.7	48.7	501.8	563.7	61.9	20,281.9	23,619.5	3,337.6	22,336	25,906	3,570.0
- Gross Production Value	(D.'000)	352.7	387.7	35.0	92.7	106.7	14.0	144.0	161.8	17.8	5,820.9	6,778.8	957.9	6,410	7,435	1,024.6
1.4 Apricot	0.493 D./kg															
- Planted Area	(ha)	125	125		51	51		49	49		122	122		347	347	
- Yield	(tons/ha)	19.1	20.7	1.6	2.6	2.9	0.3	2.5	2.7	0.3	11.4	13.2	1.8	11.6	12.9	1.3
- Production	(tons)	2,388.7	2,589.3	200.6	131.3	147.6	16.3	120.1	133.5	13.4	1,390.7	1,611.5	220.8	4,031	4,482	451.1
- Gross Production Value	(D.'000)	1,177.6	1,276.5	98.9	64.7	72.8	8.0	59.2	65.8	6.6	685.6	794.5	108.9	1,987	2,210	222.4
1.5 Fig / Others	0.385 D./kg															
- Planted Area	(ha)	124	124		213	213		243	243		383	383		963	963	
- Yield	(tons/ha)	7.7	8.4	0.7	2.5	2.8	0.3	2.6	2.9	0.3	4.8	5.5	0.7	4.1	4.6	0.5
- Production	(tons)	957.5	1,043.4	85.9	524.5	593.6	69.1	637.8	708.9	71.1	1,846.7	2,121.1	274.4	3,967	4,467	500.5
- Gross Production Value	(D.'000)	368.6	401.7	33.1	201.9	228.5	26.6	245.6	272.9	27.4	711.0	816.6	105.6	1,527	1,720	192.7
Sub-total :		15,072.0	16,847.1	1,775.1	29,979.6	33,842.5	3,871.9	37,954.2	42,703.6	4,749.4	28,360.1	32,521.3	4,161.2	111,356.8	125,914.4	14,557.6
2. Vegetables																
2.1 Turnip / Carrot	0.201 D./kg															
- Planted Area	(ha)	166	166		125	125		457	457		392	392		1,140	1,140	
- Yield	(tons/ha)	29.6	32.7	3.0	12.9	14.5	1.7	13.2	14.8	1.6	27.4	31.4	4.0	20.4	23.1	2.6
- Production	(tons)	4,920.2	5,423.5	503.3	1,608.5	1,816.9	208.4	6,016.8	6,739.1	722.3	10,741.1	12,307.8	1,566.7	23,287	26,287	3,000.7
- Gross Production Value	(D.'000)	989.0	1,090.1	101.2	323.3	365.2	41.9	1,209.4	1,354.6	145.2	2,159.0	2,473.9	314.9	4,681	5,284	603.1
2.2 Onion	0.186 D./kg															
- Planted Area	(ha)	166	166		123	123		541	541		408	408		1,238	1,238	
- Yield	(tons/ha)	26.5	29.3	2.8	14.3	16.1	1.8	14.5	16.4	1.9	28.8	33.6	3.277.2	20.8	23.6	2.8
- Production	(tons)	4,401.0	4,856.8	455.8	1,761.0	1,984.8	223.8	7,867.6	8,883.1	1,015.5	11,768.6	13,489.0	1,720.4	25,798	29,214	3,415.5
- Gross Production Value	(D.'000)	818.6	903.4	84.8	327.5	369.2	41.6	1,463.4	1,652.3	188.9	2,189.0	2,509.0	320.0	4,798	5,434	635.3
2.3 Kadey Beans	0.370 D./kg															
- Planted Area	(ha)	167	167		58	58		263	263		64	64		552	552	
- Yield	(tons/ha)	14.6	16.2	1.6	6.7	7.5	0.9	6.8	7.6	0.8	16.4	18.7	2.3	10.3	11.5	1.2
- Production	(tons)	2,441.4	2,702.5	261.1	387.7	437.4	49.7	1,789.7	2,009.3	219.6	1,048.1	1,196.7	148.6	5,667	6,346	679.0
- Gross Production Value	(D.'000)	903.3	999.9	96.6	143.4	161.8	18.4	662.2	743.4	81.3	387.8	442.8	55.0	2,097	2,348	251.2
2.4 Pepper	0.874 D./kg															
- Planted Area	(ha)	319	319		168	168		558	558		413	413		1,458	1,458	
- Yield	(tons/ha)	10.0	11.0	1.0	6.7	7.5	0.9	6.8	7.6	0.8	14.5	14.3	-0.2	9.1	10.2	1.1
- Production	(tons)	3,203.4	3,509.7	306.3	1,122.0	1,266.2	144.2	3,797.6	4,257.8	460.2	5,153.9	5,906.5	752.6	13,277	14,940	1,663.3
- Gross Production Value	(D.'000)	2,799.8	3,067.5	267.7	980.6	1,106.7	126.0	3,319.1	3,721.3	402.2	4,504.5	5,162.3	657.8	11,604	13,058	1,453.7
2.5 Tomato	0.310 D./kg															
- Planted Area	(ha)	223	223		94	94		248	248		208	208		773	773	
- Yield	(tons/ha)	29.6	32.4	2.8	14.3	16.1	1.8	16.6	18.6	2.0	19.2	22.0	2.8	20.8	23.2	2.4
- Production	(tons)	6,596.3	7,228.8	632.5	1,344.7	1,516.1	171.4	4,115.6	4,612.1	496.5	3,994.4	4,576.2	581.8	16,051	17,933	1,882.2
- Gross Production Value	(D.'000)	2,044.9	2,240.9	196.1	416.9	470.0	53.1	1,275.8	1,429.8	153.9	1,238.3	1,418.6	180.4	4,976	5,559	583.5
Sub-total :		7,555.5	8,301.8	746.3	2,191.8	2,472.9	281.1	7,929.9	8,901.3	971.4	10,678.5	12,006.5	1,328.0	28,155.6	31,682.5	3,526.9
3. Fodder Crops																
3.1 Lucern	0.053 D./kg															
- Planted Area	(ha)	886	886		311	311		2,850	2,850		1,620	1,620		5,667	5,667	
- Yield	(tons/ha)	59.1	65.0	5.9	76.0	86.0	10.0	48.8	54.5	5.8	58.0	65.9	8.0	54.5	61.2	6.6
- Production	(tons)	52,385.4	57,570.1	5,184.7	23,648.4	26,751.4	3,103.0	139,050.6	155,446.8	16,396.2	93,940.7	106,815.7	12,875.0	309,025	346,584	37,558.9
- Gross Production Value	(D.'000)	2,776.4	3,051.2	274.8	1,253.4	1,417.8	164.3	7,369.7	8,238.7	869.0	4,978.9	5,661.2	682.4	16,378	18,369	1,990.6
4. Industrial Crops																
4.1 Henna	1.839 D./kg															
- Planted Area	(ha)										452	452		452	452	
- Yield	(tons/ha)										1.4	1.7	0.3	1.4	1.7	0.3
- Production	(tons)										640.3	768.4	128.1	640	768	128.1
- Gross Production Value	(D.'000)										1,177.5	1,413.1	235.6	1,178	1,413	235.6
Total Planted Area	(ha)	5,359	5,359		6,501	6,501		12,130	12,130		10,690	10,690		34,680	34,680	
Gross Production Value	(D.'000)	25,403.9	28,200.1	2,796.2	33,415.7	37,733.1	4,317.4	53,353.8	59,843.6	6,589.8	46,994.9	53,602.1	6,607.2	157,868.3	177,378.9	20,310.6

Remarks : W/O Project ; Without Project Condition. These price are financial (market price) , September 1995

Ref. : Tables E.5.4.3, E.5.4.4 and E.5.5.1

Table E.5.5.3 Future Production Cost and Net Production Value

Description	Unit	Gafsa Governorate			Tozeur Governorate			Kebili Governorate			Gabes Governorate			Total		
		W/O Project	With Project	Increment	W/O Project	With Project	Increment	W/O Project	With Project	Increment	W/O Project	With Project	Increment	W/O Project	With Project	Increment
1. Arboriculture (W/O P. Cost) (W/P. Cost)																
1.1 Date Palm 583 D./ha 760 D./ha																
- Planted Area	(ha)	812	812		5,036	5,036		6,566	6,566		3,113	3,113		15,527	15,527	
- Gross Production Value	(D. '000)	6,023.0	6,911.8	888.8	29,424.2	33,218.2	3,794.0	37,156.5	41,809.0	4,652.6	18,483.4	21,071.3	2,587.9	91,087	103,010	11,923
- Production Cost	(D. '000)	473.4	641.5	168.1	2,936.0	3,978.4	1,042.5	3,828.0	5,187.1	1,359.2	1,814.9	2,459.3	644.4	9,052	12,266	3,214
- Net Production Value	(D. '000)	5,549.6	6,270.3	720.7	26,488.2	29,239.8	2,751.6	33,328.5	36,621.9	3,293.4	16,668.5	18,612.1	1,943.5	82,034.8	90,744.0	8,709.2
1.2 Olive 394 D./ha 494 D./ha																
- Planted Area	(ha)	2,221	2,221		177	177		194	194		1,727	1,727		4,319	4,319	
- Gross Production Value	(D. '000)	7,150.0	7,869.4	719.4	187.0	216.3	29.2	349.0	394.0	45.1	2,659.2	3,060.0	400.9	10,345	11,540	1,195
- Production Cost	(D. '000)	875.1	1,097.2	222.1	69.7	87.4	17.7	76.4	95.8	19.4	680.4	853.1	172.7	1,702	2,134	432
- Net Production Value	(D. '000)	6,274.9	6,772.2	497.3	117.3	128.8	11.5	272.5	298.2	25.7	1,978.7	2,206.9	228.2	8,643.5	9,406.2	762.2
1.3 Pomegranate 644 D./ha 760 D./ha																
- Planted Area	(ha)	150	150		145	145		161	161		1,788	1,788		2,244	2,244	
- Gross Production Value	(D. '000)	352.7	387.7	35.0	92.7	106.7	14.0	144.0	161.8	17.8	5,820.9	6,778.8	957.9	6,410	7,435	1,025
- Production Cost	(D. '000)	96.6	111.0	14.4	92.4	106.3	13.9	103.7	119.1	15.5	1,151.5	1,323.1	171.6	1,444	1,660	215
- Net Production Value	(D. '000)	256.1	276.7	20.6	0.3	0.4	0.1	40.3	42.6	2.3	4,669.4	5,455.7	786.2	4,966.2	5,775.4	809.2
1.4 Apricot 771 D./ha 892 D./ha																
- Planted Area	(ha)	125	125		51	51		49	49		122	122		347	347	
- Gross Production Value	(D. '000)	1,177.6	1,276.5	98.9	64.7	72.8	8.0	59.2	65.8	6.6	685.6	794.5	108.9	1,987	2,210	222
- Production Cost	(D. '000)	96.4	111.5	15.1	39.3	45.5	6.2	37.8	43.7	5.9	94.1	108.8	14.8	268	310	42
- Net Production Value	(D. '000)	1,081.3	1,165.0	83.8	25.4	27.3	1.9	21.4	22.1	0.7	591.6	685.6	94.1	1,719.6	1,900.1	180.4
1.5 Fig / Others 553 D./ha 692 D./ha																
- Planted Area	(ha)	124	124		213	213		243	243		383	383		963	963	
- Gross Production Value	(D. '000)	368.6	401.7	33.1	201.9	228.5	26.6	245.6	272.9	27.4	711.0	816.6	105.6	1,527	1,720	193
- Production Cost	(D. '000)	68.6	85.8	17.2	117.8	147.4	29.6	134.4	168.2	33.8	211.8	265.0	53.2	533	666	134
- Net Production Value	(D. '000)	300.1	315.9	15.8	84.1	81.1	-3.0	111.2	104.8	-6.4	499.2	551.6	52.4	994.6	1,053.4	58.8
2. Vegetables																
2.1 Turnip / Carrot 758 D./ha 866 D./ha																
- Planted Area	(ha)	166	166		125	125		457	457		392	392		1,140	1,140	
- Gross Production Value	(D. '000)	989.0	1,090.1	101.2	323.3	365.2	41.9	1,209.4	1,354.6	145.2	2,159.0	2,473.9	314.9	4,681	5,284	603
- Production Cost	(D. '000)	125.8	143.8	17.9	94.8	108.3	13.5	346.4	395.8	49.4	297.1	339.5	42.3	864	987	123
- Net Production Value	(D. '000)	863.1	946.4	83.2	228.6	256.9	28.4	863.0	958.8	95.8	1,861.8	2,134.4	272.6	3,816.5	4,296.5	480.0
2.2 Onion 824 D./ha 871 D./ha																
- Planted Area	(ha)	166	166		123	123		541	541		408	408		1,238	1,238	
- Gross Production Value	(D. '000)	818.6	903.4	84.8	327.5	369.2	41.6	1,463.4	1,652.3	188.9	2,189.0	2,509.0	320.0	4,798	5,434	635
- Production Cost	(D. '000)	136.8	144.6	7.8	101.4	107.1	5.8	445.8	471.2	25.4	336.2	355.4	19.2	1,020	1,078	58
- Net Production Value	(D. '000)	681.8	758.8	77.0	226.2	262.0	35.8	1,017.6	1,181.0	163.5	1,852.8	2,153.6	300.8	3,778.4	4,355.5	577.1
2.3 Kindey Beans 842 D./ha 880 D./ha																
- Planted Area	(ha)	167	167		58	58		263	263		64	64		552	552	
- Gross Production Value	(D. '000)	903.3	999.9	96.6	143.4	161.8	18.4	662.2	743.4	81.3	387.8	442.8	55.0	2,097	2,348	251
- Production Cost	(D. '000)	107.2	147.0	39.7	37.2	51.0	13.8	168.8	231.4	62.6	41.1	56.3	15.2	354	486	131
- Net Production Value	(D. '000)	796.1	853.0	56.9	106.2	110.8	4.6	493.3	512.0	18.7	346.7	386.5	39.8	1,742.4	1,862.2	119.9
2.4 Pepper 1,445 D./ha 1,526 D./ha																
- Planted Area	(ha)	319	319		168	168		558	558		413	413		1,458	1,458	
- Gross Production Value	(D. '000)	2,799.8	3,067.5	267.7	980.6	1,106.7	126.0	3,319.1	3,721.3	402.2	4,504.5	5,162.3	657.8	11,604	13,058	1,454
- Production Cost	(D. '000)	467.3	486.3	18.9	246.1	256.4	10.2	817.5	851.5	34.0	605.0	630.2	25.2	2,136	2,224	88
- Net Production Value	(D. '000)	2,332.4	2,581.2	248.8	734.5	850.3	115.8	2,501.6	2,869.8	368.2	3,899.5	4,532.0	632.6	9,468.0	10,833.4	1,365.3
2.5 Tomato 1,023 D./ha 1,135 D./ha																
- Planted Area	(ha)	223	223		94	94		248	248		208	208		773	773	
- Gross Production Value	(D. '000)	2,044.9	2,240.9	196.1	416.9	470.0	53.1	1,275.8	1,429.8	153.9	1,238.3	1,418.6	180.4	4,976	5,559	583
- Production Cost	(D. '000)	228.6	252.7	24.1	96.4	106.5	10.2	254.2	281.0	26.8	213.2	235.7	22.5	792	876	83
- Net Production Value	(D. '000)	1,816.3	1,988.2	172.0	320.5	363.5	43.0	1,021.6	1,148.8	127.1	1,025.1	1,183.0	157.9	4,183.5	4,683.5	500.0
3. Fodder Crops																
3.1 Lucern 628 D./ha 789 D./ha																
- Planted Area	(ha)	886	886		311	311		2,850	2,850		1,620	1,620		5,667	5,667	
- Gross Production Value	(D. '000)	2,776.4	3,051.2	274.8	1,253.4	1,417.8	164.5	7,369.7	8,238.7	869.0	4,978.9	5,661.2	682.4	16,378	18,369	1,991
- Production Cost	(D. '000)	556.4	699.1	142.6	195.3	245.4	50.1	1,789.8	2,248.7	458.9	1,017.4	1,278.2	260.8	3,559	4,471	912
- Net Production Value	(D. '000)	2,220.0	2,352.2	132.1	1,058.1	1,172.4	114.4	5,579.9	5,990.0	410.1	3,961.5	4,383.1	421.6	12,819.5	13,897.7	1,078.2
4. Industrial Crops																
4.1 Henna 680 D./ha 871 D./ha																
- Planted Area	(ha)										452	452		452	452	
- Gross Production Value	(D. '000)										1,177.5	1,413.1	235.6	1,178	1,413	236
- Production Cost	(D. '000)										307.4	393.7	86.3	307	394	86
- Net Production Value	(D. '000)										870.2	1,019.4	149.2	870.2	1,019.4	149.2
Total Planted Area	(ha)	5,359	5,359		6,501	6,501		12,130	12,130		10,690	10,690		34,680	34,680	
Gross Production Value	(D. '000)	25,403.9	28,200.1	2,796.2	33,415.7	37,733.2	4,317.4	53,253.8	59,843.6	6,589.8	44,994.9	51,602.1	6,607.2	157,068.3	177,379.0	20,310.7
Production Cost	(D. '000)	3,232.2	3,920.2	688.1	4,026.4	5,239.7	1,213.4	8,002.8	10,093.5	2,090.8	6,770.0	8,298.3	1,528.3	22,031.3	27,551.8	5,520.5
Net Production Value	(D. '000)	22,171.7	24,279.9	2,108.1	29,389.4	32,493.4	3,104.1	45,251.0	49,750.1	4,499.1	38,224.9	43,303.8	5,078.9	135,037.0	149,827.1	14,790.1

Remarks : W/O Project ; Without Project Condition, These price are financial (market price) , September 1995
Ref. : Tables E.5.5.1 and E.5.5.2

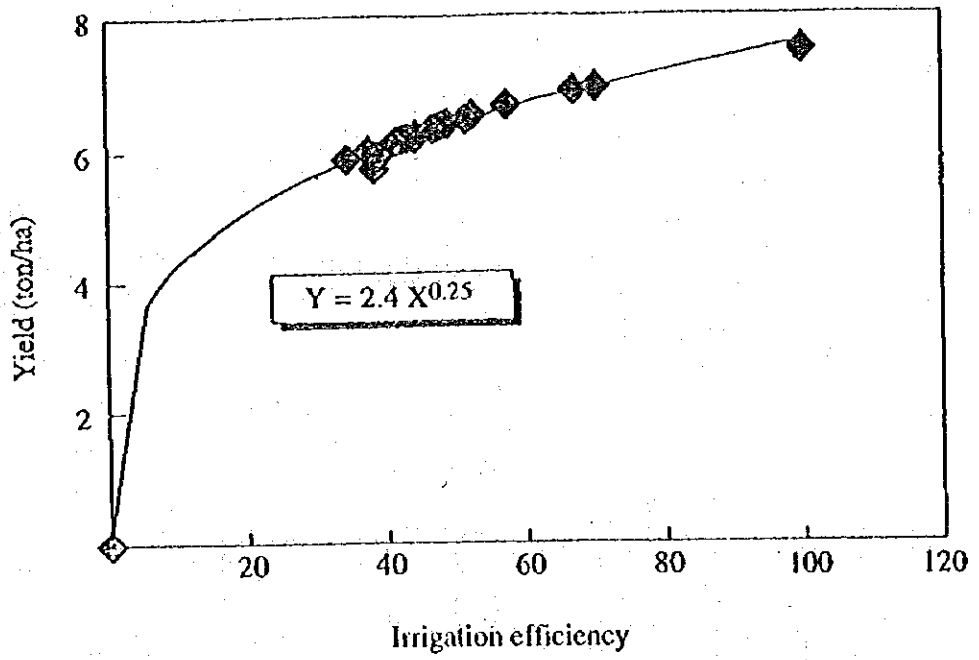

Fig. E.3.7.1 Relationship between the yield of date palm and irrigation efficiency in the traditional oasis in Tozeur governorate (1993)

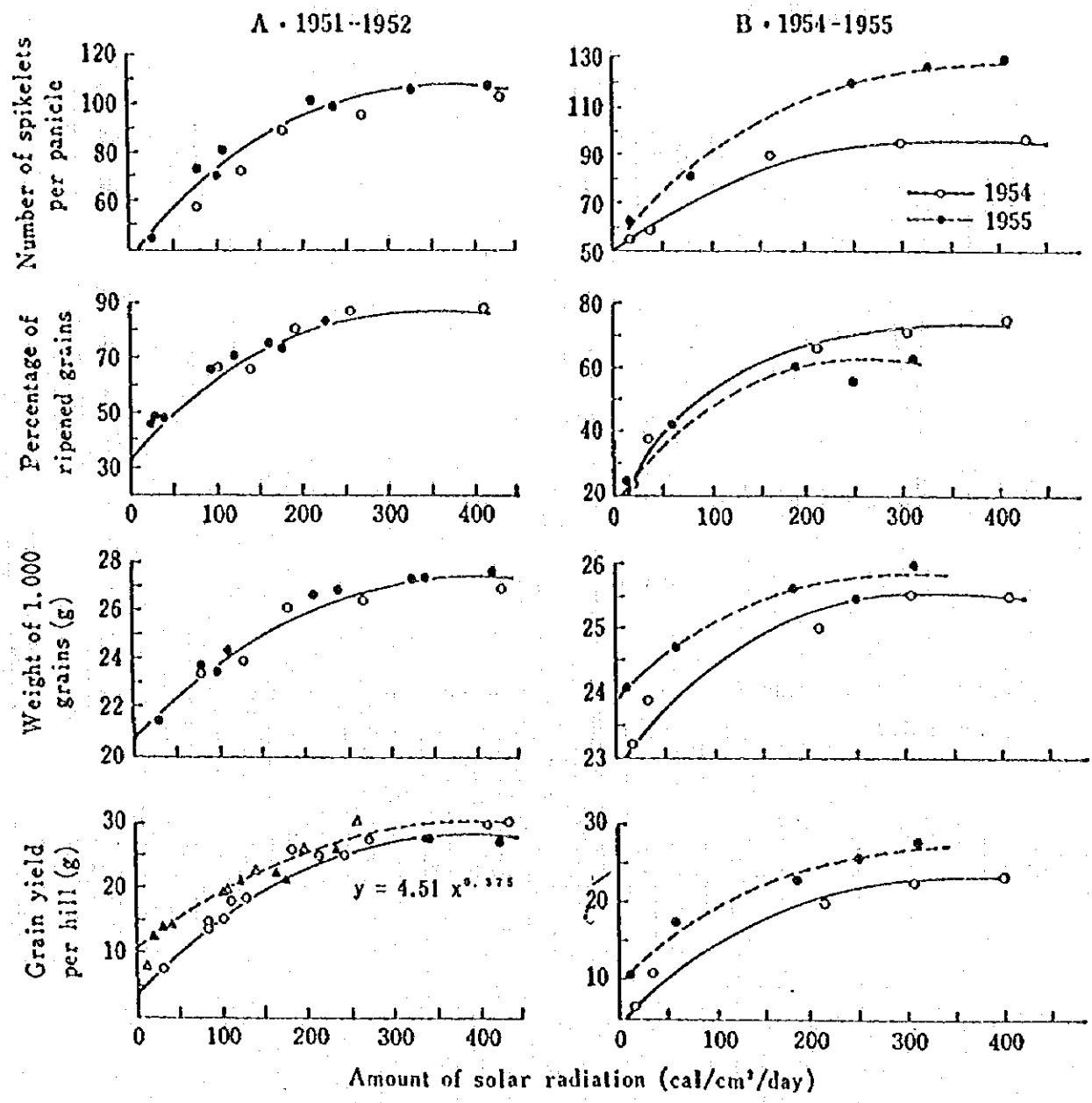

Fig. E.3.7.2-1 Relationship between amount of solar radiation and yield and its component of paddy (Matsushima 1957).

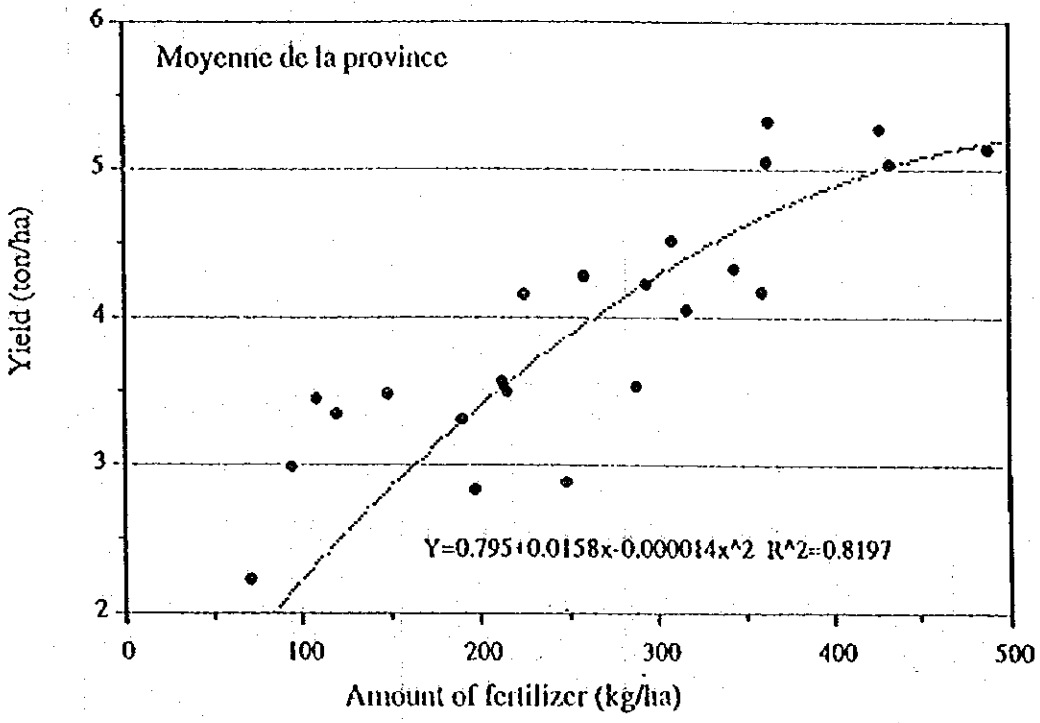

Fig. E.3.7.2-2 Relationship between applied amount of fertilizer and paddy yield under intensification programme (1992).

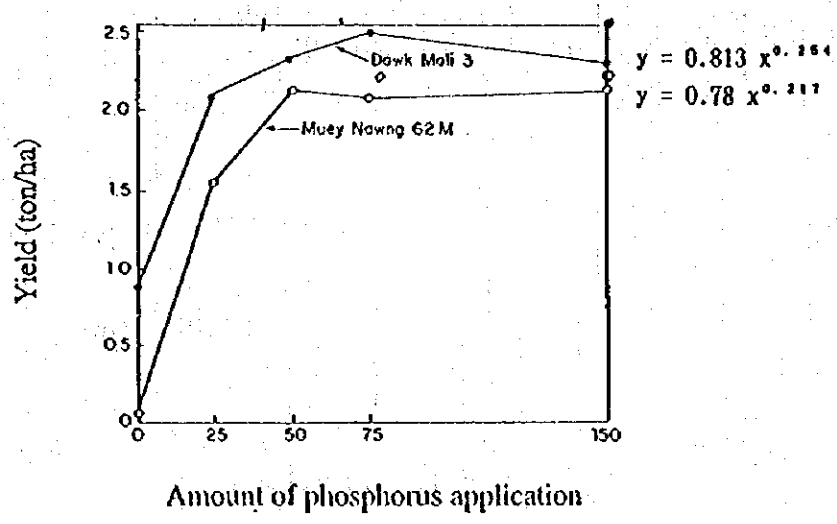

Fig. E.3.7.2-3 Responsen of two rice varieties to different level of phosphorus application (Koyama et al 1973).

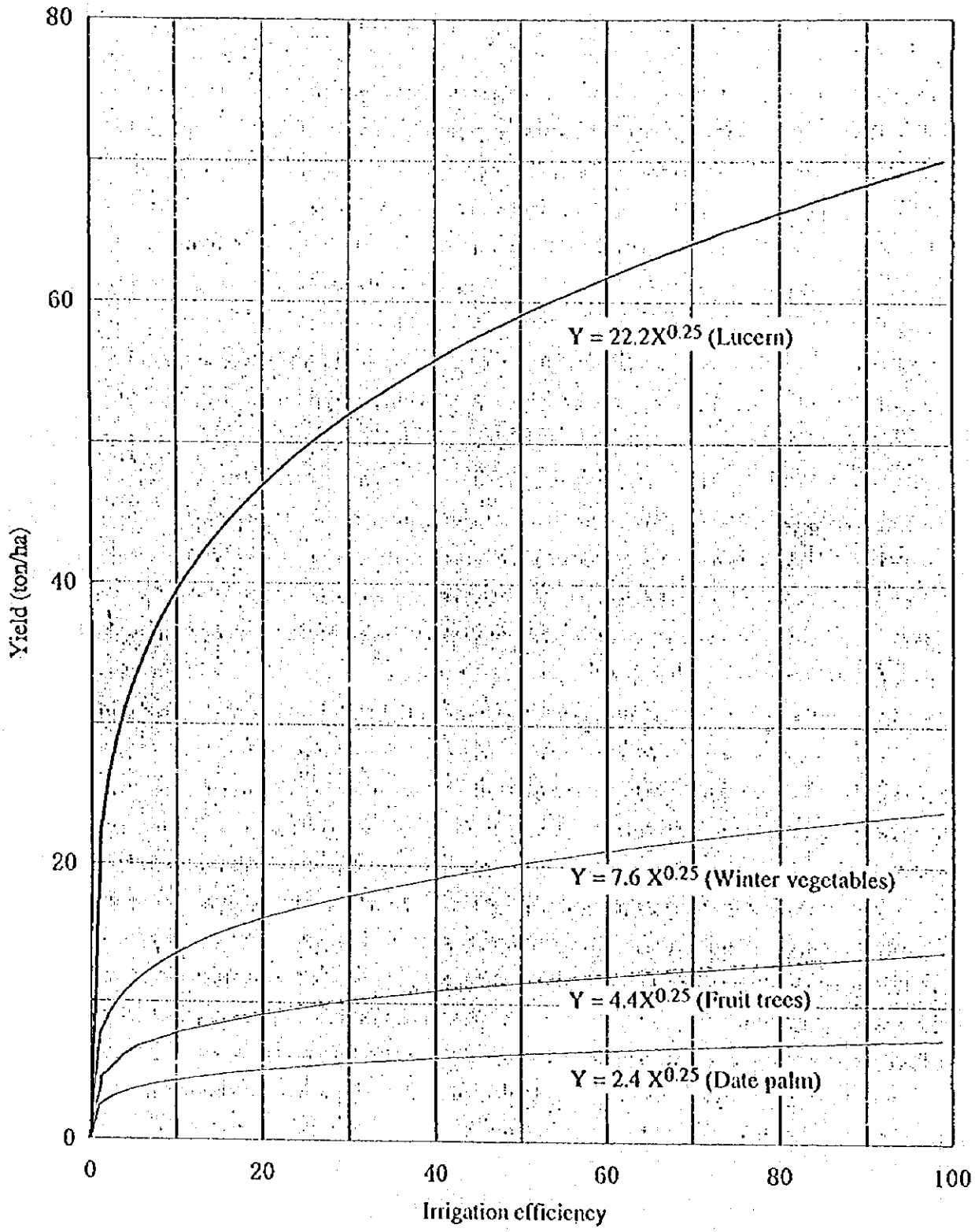

Fig E.5.4.1 Relationship between yield of major crops and irrigation efficiency.

ANNEX - F

IRRIGATION AND DRAINAGE

ANNEX - F

IRRIGATION AND DRAINAGE

TABLE OF CONTENTS

ANNEX-F

IRRIGATION AND DRAINAGE

LIST OF TABLES

F.1 IRRIGATION

F.1.1 Procedure

Prediction methods for crop water requirements are used in the Study to estimate irrigation water requirements. To calculate water requirements of crops under different climatic and agronomic conditions, the guidelines formulated by Food and Agriculture Organization of the United Nations (FAO) in 1977 are employed. Crop water requirements are defined as "the depth of water needed to meet the water loss through evapotranspiration (ETcrop) of a disease-free crop, growing in large fields under non-restricting soil condition. Prior to estimating ETcrop, "the effect of climate on crop water requirements" and "the effect of the crop characteristics on crop water requirements" will be discussed in this section.

F.1.2 Potential Evapotranspiration

The effect of climate on crop water requirements is given by the potential evapotranspiration (ETo) which is defined as "the rate of evapotranspiration from an extensive surface of 8 to 15 cm tall, green grass cover of uniform height, completely shading the ground and not short of water". The four methods, Blaney-Criddle, Penman, Espinar and Class-A Pan Evaporation method are examined using the mean climatic data of 20 years. It is important to note that the said guidelines recommend to apply the modified Penman method, which offers the best results with minimum possible error, in estimating ETo.

Calculation results of the potential evapotranspiration by using the respective four methods at four governorates of Gafsa, Tozeur, Kebili and Gabes are shown in Table F.1.2.1. It is seen in the table that the annual potential evapotranspiration (ETo) estimated by Pan Evaporation method shows the highest and that estimated by Espinar shows the lowest in all the governorates. It is understood that there is a big difference in potential evapotranspiration estimated by the Pan Evaporation and the Espinar methods, whilst a fairly close correlation is seen among the values calculated by Blaney-Criddle and Penman methods in the four respective governorates. According to the said guidelines, the Blaney-Criddle method can be applicable only for periods of one month or longer; in humid, windy mid-latitude winter conditions. In this regard, it is recommended to adopt the Penman method in the Study area in estimating potential evapotranspiration .

F.1.3 Categorization of The Present Cropping Patterns and Crop Coefficients

The present cropping patterns are categorized into 13 items as follows:

(1) O-1: Principal crop is olive.
(2) O-2: Principal crop is olive, followed by fruits and annual crops.
(3) D-1: Principal crop is dates.
(4) D-2: Principal crop is dates followed by fruits.
(5) D-3: Principal crop is dates followed by annual crops.
(6) D-4: Principal crop is dates followed by fruits and annual crops.
(7) DF-1: Dates and fruits are mixed.
(8) DF-2: Dates, fruits and annual crops are mixed.
(9) F-1: Fruits and olive are mixed.
(10) F-2: Fruits, olive and annual crops are mixed.
(11) FD-1: Fruits and dates are mixed.
(12) FD-2: Fruits, dates and annual crops are mixed.
(13) A-1: Principal crop is annual crop with scattered tree crops.

The four methods described in the foregoing paragraphs predict the effect of climate on reference crop evapotranspiration (ETo). To account for the effect of the crop characteristics on crop water requirements, crop coefficients (kc) are to be presented to relate ETo to crops evapotranspiration (ETcrop). The kc values relate to evapotranspiration of a desease-free crop grown in large fields under optimum soil water and fertility conditions and achieving full production potential under the given growing environment. ETcrop can be found by:

$$ETcrop = kc \cdot ETo$$

In the Study, crop coefficients of the respective crops are, in principle, referred to the guidelines of the FAO. For some crops, the crop coefficients, which are commonly used in this region and experimentally obtained, are adopted, because there are no remarkable differences in values among them.

In the Study area, crop coefficients of olive are derived from the report (*1) prepared for establishing development plan for Sud-Ouest Pilot Oasis. Crop coefficients of fruit trees are represented by those of pomegranate, which is refered to the report (*2) prepared for the formulation of development plan in Gabes. Crop coefficients of dates are referred to actual measurements in the experimental station at Zafaraniah in Iraq (*3). Crop coefficients of annual crops are represented by those of alfalfa (*2).

Crop coefficients of respective crops are given in Table F.1.3.1. Present cropping patterns and cropping intensity are shown in Table F.1.3.2. Weighted average crop coefficients for the respective cropping patterns are referred to in Table F.1.3.3. ETcrop values calculated based on the categorization of the present cropping patterns are seen in Table F.1.3.4.

F.1.4 Irrigation Application Interval

Correct timing of irrigation applications is of over-riding importance. Delayed irrigations, particularly when the crop is sensitive to water stress, will affect yields, which cannot be compensated for by subsequent over-watering. Timing of irrigation has to conform to soil water depression requirements of the crop which vary considerably with evaporative demand, rooting depth and soil type as well as with stage of crop growth.

**1 ANALYSE DIAGNOSTIC DU ERIMETRE PILOTE SUD - OUEST*
République Tunisienne
Ministere de l'Agriculture
C.R.D.A. DE GAFSA
ANNEE 93/94

**2 ETUDE DE CREATION D'UN PERIMETRE IRRIGUE A PARTIR DES EAUX USEES TRAITEES DE LA STATION D'EPURATION DE GABES*
PHASE 1: IDENTIFICATION
EDITION DEFINITIVE
MINISTERE DE L'AGRICULTURE
C.R.D.A. DE GABES
Date Avril 1994

**3. PROJET D'ECONOMIE DE L'EAU DU PERIMETRE IRRIGUE DE DOUZ (GOUVERNORAT DE KEBILI)*
PAR BEN HASSINE Mohamed
MINISTERE DE L'AGRICULTURE
DIRECTION GENERALE DU GENIE RURAL Octobre 1993

Depth of irrigation application is the depth of water that can be stored within the root zone between the so-called field capacity and the allowable level of the soil water can be depleted for a given crop, soil and climate. The depth of water readily available to the crop is defined as p.Sa where Sa is the total available soil water and p is the fraction of the total available soil water which can be used by the crop without affecting its evapotranspiration and/or growth. Sa in the Study area is estimated to be within the range of 80 mm/m and 120 mm/m according to the studies made by CRDA and soil analysis carried out during Phase 1. The value of p ranges between 0.45 and 0.65, which is derived from the guidelines published by FAO. The irrigation interval can be obtained from:

$$i = \frac{(p.Sa).D}{ETcrop}$$

where : i = interval of irrigation in days
p.Sa = readily available soil water in mm/m
D = rooting depth in m
ETcrop = crop evapotranspiration

Table F.1.4.1 shows the calculated results of irrigation intervals in the driest season. It is understood that the irrigation interval ranges between 11 days and 18 days for olives, 8 days and 14 days for dates, 4 days to 7 days for annual crops depending on the texture of soil.

F.1.5 Effective Rainfall and Net Irrigation Requirements

Effective rainfall can be estimated by the evapotranspiration/precipitation ratio method which was developed by the U.S. Department of Agriculture's Soil Conservation Service. The relationship between average monthly effective rainfall and mean monthly rainfall is tabulated in this method for different values of average monthly ETcrop. According to the table, light rains intercepted by plant foliage with full ground cover and high ETcrop are close to 100 percent effective. Since monthly ETcrop is much higher than monthly rainfall in the Study area, effective rainfall is deemed to be 100 percent as shown in Table F.1.5.1. Net irrigation water requirements are thus worked out as shown in Table F.1.5.2. The table indicates that net irrigation requirements of dates are the highest, and followed by olive and annual crops. The requirements of fruit trees are the lowest. In terms of governorate, net irrigation requirements in Tozeur and Kebili are higher than those in Gafsa and Gabes due to higher evapotranspiration and less rainfall.

F.1.6 Water Loss Through Earth Ditch

As discussed in ANNEX-G, measurement of water loss through earth ditches was made in the eight oases. As a result, water loss in the traditional oases is estimated at 25% in 100 meters, whereas that in the new oases is 30% in 100 meters.

Although the loss rate is not proportional to the length of unimproved ditches (earth ditches), it is worked out as shown below:

Relation between length of unimproved ditch and loss rate

Oasis \ Length	12.5 m	25 m	50 m	75 m	100 m	125 m	150 m	175 m	200 m
Traditional	3.25 %	6.5 %	13 %	19 %	25 %	30 %	35 %	39.5 %	44 %
New	4 %	8 %	16 %	23 %	30 %	35.5 %	41 %	46 %	51 %

F.1.7 Irrigation Efficiency

To account for losses of water incurred during conveyance and application to the field, an efficiency factor will have to be included when calculating the gross irrigation requirements. Efficiency is normally subdivided into three stages, each of which is affected by a different set of conditions.

Conveyance efficiency (Ec) is defined as ratio between water produced at tube-wells to a block of fields and that released at the end of system (hydrant). Field canal efficiency (Eb) is defined as ratio between water received at dissipating basin and that received at the inlet of the block of fields (basins in case of basin irrigation). Field application efficiency (Ea) is defined as ratio between water directly available to the crop and that received at the field inlet. Project efficiency (Ep) is defined as ratio between water made directly available to the crop and that released at tube-wells, or $Ep = Ea \cdot Eb \cdot Ec$.

ditch (earth ditch). For instance, if average length of unimproved ditch length is 100 m in traditional oases, loss rate is 25% or Eb is 0.75 as discussed in the preceding section, whereas if 50 m is improved by means of concrete canal and/or pipeline, out of 100m, loss rate becomes 13% or Eb is 0.87 because the length of unimproved ditch depending on field layout, land grading and size of basin. Irrigation efficiency in the new oases seems to be rather high than that in the traditional oases since irrigation practice in the former is improved by constructing temporary small basins and that in the latter needs improvement in operation and technical control (size of basin). In this regard, Ea is estimated at 0.80 in the traditional oases and 0.85 in the new oases.

F.1.8 Optimization of Canalization (Intensity of Improved Canal/Pipeline)

Table F.1.8.1 shows the field canal efficiencies (Eb) in three cases for eight oases, (1) present condition, (2) canalization up to last 50 m (length of unimproved earth ditch is 25 m), and (3) canalization up to last 25 m (length of unimproved earth ditch is 12.5 m). In Case (1), field canal efficiency (Eb) is estimated based in the average actual length of unimproved earth ditch, which was measured out on the drawings on a scale of 1/2,000 prepared by sample survey. In Case (2), Eb is estimated at 0.935 or (1.0 - 0.065) in the traditional oases and 0.92 or (1.0-0.08) in the new oases, respectively because average length of unimproved earth ditch is 25 m. Likewise, in Case (3), Eb is estimated at 0.965 or (1.0 - 0.035) and 0.96 or (1.0 - 0.04) in the traditional and new oases, respectively.

Table F.1.8.2 compares the actually supplied amount of water and the estimated gross irrigation requirements. Irrigation achievement in 1994 ranges from 34% to 57% as seen in column 9 of the table (without project). Tables F.1.8.3 and F.1.8.4 also compare the supplied amount of water and the estimated gross irrigation requirements with project. Irrigation achievement reaches as high as 57% - 76% in Case (2), and 59% - 79% in Case (3). Table F.1.8.5 summarizes the increment of irrigation achievement in respective Cases of (2) and (3).

Design of canalization/pipelining was made on the standardized field plot of 2.25 ha (150m X 150m) to estimate construction costs in four cases of (1) canalization up to last 100m, (2) canalization up to last 75m, (3) canalization up to last 50m, (4) canalization up to last 25m. Table F.1.8.6 compares the saved water loss and canalization costs. The ratios between the saved water loss and

construction costs are almost same among Cases (1), (2) and (3), and abruptly falls down in Case (4). In other words, the amount of benefit generated by saved water loss is proportional to the construction cost in Cases (1), (2) and (3). However increment of benefit to the increment of cost become smaller in Case (4), which means efficiency of investment of construction cost is lower than other 3 cases. It is therefore understood that the most efficient canalization is up to last 50 m leaving unimproved ditch of 50 m long.

F.2 DRAINAGE

F.2.1 Leaching Requirements

Soil salinity is mainly affected by water quality, irrigation method and practices, soil conditions and rainfall. Salinity levels in the soil generally increase as the growing season advances. Leaching can be practiced during, before and after the crop season depending on available water supply, but provided that salt accumulation in the soil does not exceed the crop tolerance level, which are given as electrical conductivity of the soil saturation extract (ECe) in mmhos/cm. With poor quality water, frequent irrigation and excessive leaching water may be required to obtain acceptable yields. Values of quality of irrigation water are also given which relate to commonly experienced yield levels. Irrigation water quality (ECw) is expressed as electrical conductivity in mmhos/cm.

Leaching requirement (LR) is the minimum amount of irrigation water supplied that must be drained through the root zone to control soil salinity at the given specific level. For sandy soil to loam soils with good drainage and where rainfall is low, the leaching requirement can be obtained from:

$$LR = \frac{ECw}{5\ Ece - ECw}$$

where: ECw = electrical conductivity of the irrigation water, mmhos/cm

ECe = electric conductivity of the soil saturation extract for a given crop appropriate to the tolerable degree of yield reduction, mm hos/cm