ANNEX I

LIVESTOCK/ AGRICULTURE/ INLAND FISHERY

ANNEX I

AGRICULTURE/LIVESTOCK/INLAND FISHERY

Contents

I.1	**Land**	
Table I-1.1	Present Land Use in the Study Area	I-1
Table I-1.2	Present Farmland in the Study Area	I-2
Table I-1.3	Present Land Use in the Study Area (Village Survey)	I-3
Table I-1.4	Present Land Use in the Study Area	I-3
Table I-1.5	Estimated Area of Crops and Fruit in the Study Area	I-4
Table I-1.6	Land Ownership in the Study Area (Farm Land)	I-14
Table I-1.7	Land Ownership in the Study Area (Orchard)	I-15
I.2	**Crop**	
Table I-2.1	Wheat Production and Yield in the Study Area	I-16
Table I-2.2	Barley Production and Yield in the Study Area	I-17
Table I-2.3	Pulses Production and Yield in the Study Area	I-18
Table I-2.4	Alfalfa Production and Yield in the Study Area	I-19
Table I-2.5	Present Cropping Schedule in the Study Area	I-20
Figure I-2.1	Present Cropping Calendar in Vastegan	I-21
Figure I-2.2	Present Cropping Calendar in Bazoft	I-22
Figure I-2.3	Present Cropping Calendar in Sarbaz	I-23
Figure I-2.4	Present Cropping Calendar in Tang Sorkh	I-24
Figure I-2.5	Present Cropping Calendar in Zeras	I-25
I.3	**Livestock**	
Table I-3.1	Livestock Population in the Study Area	I-26
Table I-3.2	Estimated AUM (Forage Crop Production)	I-27
Table I-3.3	Feed Supply and Requirement in the Study Area	I-29
Table I-3.4	Estimated Total AUM (Present village) (with Project)	I-30
Table I-3.5	Productivity of Meat and Milk in the Study Area	I-31
Table I-3.6	Basic Factors Livestock Farming in the Study Area	I-31

I.4 **Inland Fishery**

Table I-4.1 Number of Inland Fishery in the Study Area I-32

Table I-4.2 List of Issued ID Permission for Fish Culture Farms I-33

Table I-4.3 Project Profile (Inland Fishery) of Fish Breeding Center I-35

I.5 **Production Cost**

Table I-5.1 Present Production Cost of Main Crops I-37

Table I-5.2 Labor Requirement on Main Crops I-38

Table I-5.3 Planting and Preparation Cost of Main Crops I-39

Table I-5.4 Seed, Fertilizer and Labor Cost of Main Crops I-40

I.6 **Sericluture**

Table I-6.1 Priority Areas for Sericulture Projects I-41

Table I-6.2 Land Types Suitable for Mulberry Plantation I-42

Table I-6.3 Present Situation of Sericulture I-43

Table I-6.4 Activities and Expansion of Sericulture in Provinces I-44

Table I-6.5 Kinds of Silkworm I-45

Table I-6.6 Feed Consumption I-46

I.7 **Livestock (additional)**

Table I-7.1 Estimated Basic Unit for Cow-Raising I-47

Table I-7.2 Estimated Basic Unit for Sheep-Raising I-48

Table I-1.1 : Present Land Use in the Study Area

(unit : km²)

Area \ Item		Rocky	Forest	Range land	Farm land	Orchard	Tree Plant	Village	Wast	River Bed	Forest with Dry farming	Total
K4-1-9	Vastegan	40.39	0.00	11.42	35.24	0.46	0.69	1.59	0.11	0.00	0.00	89.90
K5-19a	Chaman Goli-Bazoft	74.91	1.27	18.75	11.17	0.23	0.00	0.32	0.00	0.31	6.24	113.20
K7-0-19-1	Sarbaz	74.13	0.00	53.92	2.08	20.41	0.18	1.57	0.00	2.21	0.00	154.50
K7-48	Tang Sorkh	22.26	0.00	31.18	4.58	2.66	0.04	0.26	3.15	1.27	0.00	65.40
K8-28	Zeras	7.21	0.00	33.61	21.41	0.00	0.00	0.21	0.50	0.76	0.00	63.70
Total		218.90	1.27	148.88	74.48	23.76	98.24	3.95	3.76	4.55	6.24	584.03

Source: JICA Study Team

Table I-1.2 : Present Farmland in the Study Area

(unit:ha)

Area \ Item		Village							
		Farmland				Orchard			Total
		Irrigated	Dry	Fallow land	Sub-Total	Irrigated	Rainfed	Sub-Total	
		①	②	③	④=①+②+③	⑤	⑥	⑦=⑤+⑥	⑧=④+⑦
K4-1-9	Vastegan	924	60	460	1,444	25	0	25	1,469
K5-19a	Chaman Goli-Bazoft	672	410	50	1,132	77	0	77	1,209
K7-0-19-1	Sarbaz	541	37	12	590	2,772	0	2,772	3,362
K7-48	Tang Sorkh	116	201	0	317	243	7	250	567
K8-28	Zeras	0	1,475	988	2,463	2	0	2	2,465
	Total	2,253	2,183	1,510	5,946	3,119	7	3,126	9,072

Area \ Item		Nomad							
		Farmland				Orchard			Total
		Irrigated	Dry	Fallow land	Sub-Total	Irrigated	Rainfed	Sub-Total	
		①	②	③	④=①+②+③	⑤	⑥	⑦=⑤+⑥	⑧=④+⑦
K4-1-9	Vastegan	8	3	0	11	25	0	25	36
K5-19a	Chaman Goli-Bazoft	215	145	0	360	19	0	19	379
K7-0-19-1	Sarbaz	112	3	5	120	826	0	826	946
K7-48	Tang Sorkh	30	46	0	76	16	3	19	95
K8-28	Zeras	0	0	0	0	0	0	0	0
	Grand Total	365	197	5	567	886	3	889	1,456

Area \ Item		Total							
		Farmland				Orchard			Total
		Irrigated	Dry	Fallow land	Sub-Total	Irrigated	Rainfed	Sub-Total	
		①	②	③	④=①+②+③	⑤	⑥	⑦=⑤+⑥	⑧=④+⑦
K4-1-9	Vastegan	932	63	460	1,455	50	0	50	1,505
K5-19a	Chaman Goli-Bazoft	887	555	50	1,492	96	0	96	1,588
K7-0-19-1	Sarbaz	653	40	17	710	3,598	0	3,598	4,308
K7-48	Tang Sorkh	146	247	0	393	259	10	269	662
K8-28	Zeras	0	1,475	988	2,463	2	0	2	2,465
	Grand Total	2,618	2,380	1,515	6,513	4,005	10	4,015	10,528

Source: Village Servey (JICA Syudy Team)

Table I-1.3 : Present Land Use in the Study Area based on Village Servey

(Unit: ha)

Area	Item	Farmland				Orchard			Total
		Irrigated	Dry	Fallow land	Sub-Total	Irrigated	Rainfed	Sub-Total	
		①	②	③	④=①+②+③	⑤	⑥	⑦=⑤+⑥	⑧=④+⑦
K4-1-9	Vastegan	932.00	63.00	460.00	1,455.00	50.00	0.00	50.00	1,505.00
		(64.00)	(4.00)	(32.00)	100%	(100)	(0.00)	100%	
K5-19a	Chaman Goli-Bazoft	887.00	555.00	50.00	1,492.00	96.00	0.00	96.00	1,588.00
		(59.50)	(37.20)	(3.40)	100%	(100)	(0.00)	100%	
K7-0-19-1	Sarbaz	653.00	40.00	17.00	710.00	3,598.00	0.00	3,598.00	4,308.00
		(92.00)	(6.00)	(2.00)	100%	(100)	(0.00)	100%	
K7-48	Tang Sorkh	146.00	247.00	0.00	393.00	259.00	10.00	269.00	662.00
		(37.00)	(63.00)	(0.00)	100%	(96)	(4.00)	100%	
K8-28	Zeras	0.00	1,475.00	988.00	2,463.00	2.00	0.00	2.00	2,465.00
		(0.00)	(60.00)	(40.00)	100%	(100)	(0.00)	100%	
Grand Total		2,618.00	2,380.00	1,515.00	6,513.00	4,005.00	10.00	4,015.00	10,528.00

Source: Village Servey (JICA Study Team)

Table I-1.4 : Present Land Use in the Study Area

(unit : km^2)

Area	Item	Farmland				Orchard			Total
		Irrigated	Dry	Fallow land	Sub-Total	Irrigated	Rainfed	Sub-Total	
		①	②	③	④=①+②+③	⑤	⑥	⑦=⑥+⑤	⑧=④+⑦
K4-1-9	Vastegan	22.55	1.41	11.28	35.24	0.46	0.00	0.46	35.70
K5-19a	Chaman Goli-Bazoft	6.65	4.16	0.38	11.17	0.23	0.00	0.23	11.40
K7-0-19-1	Sarbaz	1.91	0.12	0.04	2.08	20.41	0.00	20.41	22.49
K7-48	Tang Sorkh	1.69	2.89	0.00	4.58	2.55	0.11	2.66	7.24
K8-28	Zeras	0.00	12.85	8.56	21.41	0.00	0.00	0.00	21.41
Total		32.80	21.43	20.26	74.48	23.65	0.11	23.76	98.24

Source: Village Servey (JICA Study Team)

Table I-1.5 Estimated Crops Area (Vastegan)

Vastegan (unit: ha) Estimation Present

	Village Survey				Land Use				Future Scenario 1	
	Farmland	Crops	Estimated Land 1/	Estimated Planting 2/	Calculation from Map	Adjust Land 3/	Adjust Cultivable 4/	Intensity 5/ (%)	Crops Plantable	Note
1 Irrigated Farmland										
1 Crops										
1 Wheat, Barley		540.0		563.6			2,092.9		563.6	
2 Alfalfa		271.0		282.8			1,050.3		295.5	add 12.66
3 Sugar beat		82.0		85.6			317.8		85.6	
4 Legume		0.0		0.0			0.0		0.0	
5 Vegetable		0.0	second	0.0	second		0.0	second	0.0	second
6 Potatoes		47.0	cropping	49.1	cropping		182.2	cropping	49.1	cropping
7 Others		0.0		0.0			0.0		0.0	
sub-total	932.0	940.0	932.0	981.1		932.0	3,643.2		993.7	
8 Fallow land	460.0		460.0	460.0		2,529.0	0.0		2,516.3	less 12.66
sub-total	1,392.0	940.0	1,392.0	1,441.1	3,524.0	3,461.0	3,643.2	28.3	3,510.1	
2 Orchard										
1 Apple		42.0		42.0			38.6		38.6	
2 Grape		4.0		4.0			3.7		3.7	
3 Walnuts		2.0		2.0			1.8		1.8	
4 Apricot		1.5		1.5			1.4		1.4	
5 Pomegranate		0.0		0.0			0.0		0.0	
6 Fig		0.0		0.0			0.0		0.0	
7 Others		0.5		0.5			0.5		0.5	
sub-total	50.0	50.0	50.0	50.0	46.0	46.0	46.0		46.0	
sub-total (irrigated)	1,442.0	990.0	1,442.0	1,491.1	3,570.0	3,507.0	3,689.2		3,556.1	
2 Dry Farmland										
1 Crops										
1 Wheat, Barley				38.0		38.0	38.0		38.0	
2 Alfalfa										
3 Sugar beat										
4 Legume		15.0		15.0		15.0	15.0		15.0	
5 Vegetable										
6 Potatoes										
7 Others		10.0		10.0		10.0	10.0		10.0	
sub-total	63.0	25.0	63.0	63.0	0.0	63.0	63.0		63.0	
8 Fallow land	0.0		0.0		0.0	0.0	0.0		0.0	
sub-total	63.0	25.0	63.0	63.0	0.0	63.0	63.0	100.0	63.0	
2 Orchard										
1 Apple										
2 Grape										
3 Walnuts										
4 Apricot										
5 Pomegranate										
6 Fig										
7 Others										
sub-total	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	
sub-total (dry)	63.0	25.0	63.0	63.0	0.0	63.0	63.0	100.0	63.0	
Total (farmlsnd)	1,505.0	1,015.0	1,505.0	1,554.1	3,570.0	3,570.0	3,752.2	100.0	3,619.1	
3 Range Land										
1 AL (rangeland)					583.0					
2 BA (rangeland)					354.0					
3 EL (rangeland)					205.0					
Total (rangeland)	3,200.0				1,142.0	1,142.0	1,142.0			
4 Others					4,278.0	4,278.0	4,278.0			
Grand Total					8,990.0	8,990.0	9,172.2			

Note:
1/= Estimated based on farmland size of village survey
2/= Estimated based on land #1 considering cropping areas of village survey
3/= Estimated based on mapping data and land #1
4 = Estimated cultivable land based on land #3
Intensity 5/ = Cultivable Area/ Ajust Land

Vastegan (unit: ha)

	Results Present				Future Scenario 1 (rehabilitation of canals)				Scenario 2 (S1 + Soil Conservation)			
	Land Area (ha)	Cultibabe Area (ha)	Planting Area (ha)	Intensity (%)	Land Area (ha)	Cultibabe Area (ha)	Plantable Area (ha)	Intensity (%) Note	Land Area (ha)	Cultibabe Area (ha)	Plantable Area (ha)	Intensity (%) Note
1 Irrigated Farmland												
1 Crops												
1 Wheat, Barley		2,092.9	563.6			2,092.9	563.6			2,092.9	563.6	
2 Alfalfa		1,050.3	282.8			1,063.0	295.5	add 12.66		1,063.0	295.5	add 12.66
3 Sugar beat		317.8	85.6			317.8	85.6			317.8	85.6	
4 Legume		0.0	0.0			0.0	0.0			0.0	0.0	
5 Vegetable		0.0	0.0	second		0.0	0.0	second		0.0	0.0	second
6 Potatoes		182.2	49.1	cropping		182.2	49.1	cropping		182.2	49.1	cropping
7 Others		0.0	0.0			0.0	0.0			0.0	0.0	
sub-total	932.0	3,643.2	981.1		944.7	3,655.8	993.7		944.7	3,655.8	993.7	
8 Fallow land	2,529.0	0.0	2,529.0		2,516.3	0.0	2,516.3	less 12.66	2,516.3	0.0	2,516.3	less 12.66
sub-total	3,461.0	3,643.2	3,510.1		3,461.0	3,655.8	3,510.1	28.7	3,461.0	3,655.8	3,510.1	28.7
2 Orchard												
1 Apple		38.6	38.6			38.6	38.6			80.6	80.6	add 42.0
2 Grape		3.7	3.7			3.7	3.7			3.7	3.7	
3 Walnuts		1.8	1.8			1.8	1.8			1.8	1.8	
4 Apricot		1.4	1.4			1.4	1.4			1.4	1.4	
5 Pomegranate		0.0	0.0			0.0	0.0			0.0	0.0	
6 Fig		0.0	0.0			0.0	0.0			0.0	0.0	
7 Others		0.5	0.5			0.5	0.5			0.5	0.5	
sub-total	46.0	46.0	46.0		46.0	46.0	46.0		88.0	88.0	88.0	
sub-total (irrigated)	3,507.0	3,689.2	3,556.1		3,507.0	3,701.8	3,556.1		3,549.0	3,743.8	3,598.1	
2 Dry Farmland												
1 Crops												
1 Wheat, Barley		38.0	38.0		38.0	38.0	38.0		38.0	38.0	38.0	
2 Alfalfa			0.0									
3 Sugar beat			0.0									
4 Legume		15.0	15.0		15.0	15.0	15.0		15.0	15.0	15.0	
5 Vegetable			0.0									
6 Potatoes			0.0									
7 Others		10.0	10.0		10.0	10.0	10.0		10.0	10.0	10.0	
sub-total	63.0	63.0	63.0		63.0	63.0	63.0		63.0	63.0	63.0	
8 Fallow land	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	
sub-total	63.0	63.0	63.0	100.0	63.0	63.0	63.0	100.0	63.0	63.0	63.0	100.0
2 Orchard												
1 Apple												
2 Grape												
3 Walnuts												
4 Apricot												
5 Pomegranate												
6 Fig												
7 Others												
sub-total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	
sub-total (dry)	63.0	63.0	63.0		63.0	63.0	63.0		63.0	63.0	63.0	
Total (farmland)	3,570.0	3,752.2	3,619.1		3,570.0	3,764.8	3,619.1		3,612.0	3,806.8	3,661.1	
3 Range Land												
1 AL (rangeland)												
2 BA (rangeland)												
3 EL (rangeland)												
Total (rangeland)	1,142.0				1,142.0				1,100.0			less 42.0
4 Others	4,278.0				4,278.0				4,278.0			
Grand Total	8,990.0				8,990.0				8,990.0			

Table I-1.5 Estimated Crops Area in Charman Goli-Bazoft

Charman Goli-Bazoft — Estimation Present

	Village Survey				Land Use				Future	Scenario 1	
	Farmland	Crops	Estimated Land 1/	Estimated Planting 2/	Calculation from Map	Adjust Land 3/	Adjust Cultivable 4/	Intensity 5/ (%)	Crops Plantable	Note	Intensity (%)
1 Irrigated Farmland											
1 Crops											
1 Wheat, Barley	887.0	1,275.0		803.8			537.4		537.4		
2 Alfalfa		132.0		83.2			55.6		102.4	add 46.79	
3 Sugar beat		0.0		0.0			0.0		0.0		
4 Legume		0.0		0.0			0.0		0.0		
5 Vegetable		7.0	second	4.4	second		3.0	second	3.0	second	
6 Potatoes		0.0	cropping	0.0	cropping		0.0	cropping	0.0	cropping	
7 Others		0.0		0.0			0.0		0.0		
sub-total	887.0	1,414.0	887.0	891.4	593.0	593.0	596.0		642.7		
8 Fallow land	0.0		0.0	0.0		0.0	0.0		0.0		
sub-total	887.0	1,414.0	887.0	891.4	593.0	593.0	596.0	100.5	642.7		100.5
2 Orchard											
1 Apple		7.5		7.7			1.8		1.8		
2 Grape		13.5		13.8			3.3		3.3		
3 Walnuts		64.4		65.8			15.8		15.8		
4 Apricot		1.0		1.0			0.2		0.2		
5 Pomegranate		3.5		3.6			0.9		0.9		
6 Fig		3.0		3.1			0.7		0.7		
7 Others		0.6		0.6			0.1		0.1		
sub-total	95.5	93.5	95.5	95.5	23.0	23.0	23.0		23.0		
sub-total (irrigated)	982.5	1,507.5	982.5	986.9	616.0	616.0	619.0		665.7		
2 Dry Farmland											
1 Crops											
1 Wheat, Barley				552.0			1,141.8		1,095.0	less 46.79	
2 Alfalfa							0.0		0.0		
3 Sugar beat							0.0		0.0		
4 Legume		2.0		2.0			4.1		4.1		
5 Vegetable							0.0		0.0		
6 Potatoes							0.0		0.0		
7 Others		1.0		1.0			2.1		2.1		
sub-total	555.0	3.0	555.0	555.0	1,148.0	1,148.0	1,148.0		1,101.2		
8 Fallow land	50.0		50.0	50.0		0.0	0.0		0.0		
sub-total	605.0	3.0	605.0	605.0	1,148.0	1,148.0	1,148.0	100.0	1,101.2		100.0
2 Orchard											
1 Apple											
2 Grape											
3 Walnuts											
4 Apricot											
5 Pomegranate											
6 Fig											
7 Others											
sub-total	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
sub-total (dry)	605.0	3.0	605.0	605.0	1,148.0	1,148.0	1,148.0		1,101.2		
Total (farmland)	1,587.5	1,510.5	1,587.5	1,591.9	1,764.0	1,764.0	1,767.0		1,767.0		
3 Range Land											
1 AL (rangeland)					1,158.0	(WP)					
2 BA (rangeland)					717.0	(WP)					
3 EL (rangeland)											
Total (rangeland)	11,600.0				1,875.0	1,875.0	1,875.0				
4 Others					7,681.0	7,681.0	7,681.0				
Grand Total					11,320.0	11,320.0	11,323.0				

Note:
1/= Estimated based on farmland size of village surey
2/= Estimated based on land *1 considering cropping areas of village survey
3/= Estimated based on mapping data and land *1
4 = Estimated cultivable land based on land *3
Intensity 5/ = Cultivable Area/ Ajust Land

Charman Golf-Bazoft

	Results Present				Future Scenario 1 (rehabilitation of canals)				Scenario 2 (S1 + Soil Conservation)			
	Land Area (ha)	Cultibalbe Area (ha)	Planting Area (ha)	Intensity (%)	Land Area (ha)	Cultibalbe Area (ha)	Plantable Area (ha)	Intensity (%) Note	Land Area (ha)	Cultibalbe Area (ha)	Plantable Area (ha)	Intensity (%) Note
1 Irrigated Farmland												
1 Crops												
1 Wheat, Barley		537.4	537.4			537.4	537.4			427.4	427.4	less 110.0
2 Alfalfa		55.6	55.6			102.4	102.4	add 46.79		212.4	212.4	add 46.79+110
3 Sugar beat		0.0	0.0			0.0	0.0			0.0	0.0	
4 Legume		0.0	0.0			0.0	0.0			0.0	0.0	
5 Vegetable		3.0	3.0	second		3.0	3.0	second		3.0	3.0	second
6 Potatoes		0.0	0.0	cropping		0.0	0.0	cropping		0.0	0.0	cropping
7 Others		0.0	0.0			0.0	0.0			0.0	0.0	
sub-total	593.0	596.0	596.0		639.8	642.8	642.8		639.8	642.8	642.8	
8 Fallow land	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	
sub-total	593.0	596.0	596.0	100.5	639.8	642.8	642.8	100.5	639.8	642.8	642.8	100.5
2 Orchard												
1 Apple		1.8	1.8			1.8	1.8			1.8	1.8	
2 Grape		3.3	3.3			3.3	3.3			3.3	3.3	
3 Walnuts		15.8	15.8			15.8	15.8			15.8	15.8	
4 Apricot		0.2	0.2			0.2	0.2			0.2	0.2	
5 Pomegranate		0.9	0.9			0.9	0.9			0.9	0.9	
6 Fig		0.7	0.7			0.7	0.7			0.7	0.7	
7 Others		0.1	0.1			0.1	0.1			0.1	0.1	
sub-total	23.0	23.0	23.0		23.0	23.0	23.0		23.0	23.0	23.0	
sub-total (irrigated)	616.0	619.0	619.0		662.8	665.8	665.8		662.8	665.8	665.8	
2 Dry Farmland												
1 Crops												
1 Wheat, Barley		1,141.8	1,141.8			1,095.0	1,095.0	less 46.79		1,031.0	1,031.0	-46.79-5-59
2 Alfalfa		0.0	0.0			0.0	0.0			64.0	64.0	add 5.0+59.0
3 Sugar beat		0.0	0.0			0.0	0.0			0.0	0.0	
4 Legume		4.1	4.1			4.1	4.1			4.1	4.1	
5 Vegetable		0.0	0.0			0.0	0.0			0.0	0.0	
6 Potatoes		0.0	0.0			0.0	0.0			0.0	0.0	
7 Others		2.1	2.1			2.1	2.1			2.1	2.1	
sub-total	1,148.0	1,148.0	1,148.0		1,101.2	1,101.2	1,101.2		1,101.2	1,101.2	1,101.2	
8 Fallow land	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	
sub-total	1,148.0	1,148.0	1,148.0	100.0	1,101.2	1,101.2	1,101.2	100.0	1,101.2	1,101.2	1,101.2	100.0
2 Orchard												
1 Apple												
2 Grape												
3 Walnuts												
4 Apricot												
5 Pomegranate												
6 Fig												
7 Others												
sub-total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	
sub-total (dry)	1,148.0	1,148.0	1,148.0		1,101.2	1,101.2	1,101.2		1,101.2	1,101.2	1,101.2	
Total (farmland)	1,764.0	1,767.0	1,767.0		1,764.0	1,767.0	1,787.0		1,764.0	1,767.0	1,767.0	
3 Range Land												
1 AL (rangeland)												
2 BA (rangeland)												
3 EL (rangeland)												
Total (rangeland)	1,875.0				1,875.0				1,875.0			
4 Others	7,631.0				7,681.0				7,881.0			
Grand Total	11,320.0				11,320.0				11,320.0			

Table I-1.5 Estimated Crops Area (Sarbaz)

Sarbaz (unit: ha)

Estimation
Present

	Village Survey				Land Use				Future Scenario 1		
	Farmland	Crops	Estimated Land 1/	Estimated Planting 2/	Calculation from Map	Adjust Land 3/	Adjust Cultivable 4/	Intensity 5/ (%)	Crops Plantable	Note	Intensity
1 Irrigated Farmland											
1 Crops											
1 Wheat, Barley		120.0		228.5			228.5		228.5		
2 Alfalfa		221.0		420.7			420.7		494.5	add 73.81	
3 Sugar beat		0.0		0.0			0.0		0.0		
4 Legume		2.0	under apple	3.8	under apple		3.8	under apple	3.8	under apple	
5 Vegetable		0.0	trees	0.0	trees		0.0	trees	0.0	trees	
6 Potatoes		0.0		0.0			0.0		0.0		
7 Others		0.0		0.0			0.0		0.0		
sub-total	653.0	343.0	653.0	653.0	0.0	0.0	653.0		726.8		
8 Fallow land	0.0		0.0	0.0		0.0	0.0		0.0		
sub-total	653.0	343.0	653.0	653.0	0.0	0.0	653.0	32.2	726.8		34.7
2 Orchard								(against apple trees area)			
1 Apple		3,527.5		3,577.2			2,029.5		2,097.3	add 56.50+11.3	
2 Grape		0.0		0.0			0.0		0.0		
3 Walnuts		0.0		0.0			0.0		0.0		
4 Apricot		10.0		10.1			5.8		5.8		
5 Pomegranate		0.0		0.0			0.0		0.0		
6 Fig		0.0		0.0			0.0		0.0		
7 Others		10.0		10.1			5.8		5.8		
sub-total	3,597.5	3,547.5	3,597.5	3,597.5	2,041.0	2,041.0	2,041.0	100.0	2,108.8		100.0
sub-total (irrigated)	4,250.5	3,890.5	4,250.5	4,250.5	2,041.0	2,041.0	2,694.0	132.0	2,835.6		134.5
2 Dry Farmland											
1 Crops											
1 Wheat, Barley				40.0	208.0	40.0	208.0		40.0		
2 Alfalfa											
3 Sugar beat											
4 Legume											
5 Vegetable											
6 Potatoes											
7 Others											
sub-total	40.0	0.0	40.0	40.0	208.0	40.0	208.0		40.0		
8 Fallow land	17.0		0.0	0.0		168.0	0.0		156.7	less 11.3	
sub-total	57.0	0.0	40.0	40.0	208.0	208.0	208.0	19.2	196.7		20.3
2 Orchard											
1 Apple											
2 Grape											
3 Walnuts											
4 Apricot											
5 Pomegranate											
6 Fig											
7 Others											
sub-total	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
sub-total (dry)	57.0	0.0	40.0	40.0	208.0	208.0	208.0		196.7		
Total (farmland)	4,307.5	3,890.5	4,290.5	4,290.5	2,249.0	2,249.0	2,902.0		3,032.3		
3 Range Land											
1 AL (rangeland)											
2 BA (rangeland)											
3 EL (rangeland)											
Total (rangeland)	7,190.0				5,392.0	5,392.0	5,392.0		5,335.5	less 56.50	
4 Others					7,809.0	7,809.0	7,809.0				
Grand Total					15,450.0	15,450.0	16,103.0				

Note:
1/= Estimated based on farmland size of village surey
2/= Estimated based on land #1 considering cropping areas of village survey
3/= Estimated based on mapping data and land #1
4 = Estimated cultivable land based on land #3
Intensity 5/ = Cultivable Area/ Ajust Land

Sarbaz (unit: ha)

	Results Present				Future Scenario 1 (rehabilitation of canals)				Scenario 2 (S1 + Soil Conservation)			
	Land Area (ha)	Cultibalbe Area (ha)	Planting Area (ha)	Intensity (%)	Land Area (ha)	Cultibalbe Area (ha)	Plantable Area (ha)	Intensity (%) Note	Land Area (ha)	Cultibalbe Area (ha)	Plantable Area (ha)	Intensity (%) Note
1 Irrigated Farmland												
1 Crops												
1 Wheat, Barley		228.5	228.5			228.5	228.5			228.5	228.5	
2 Alfalfa		420.7	420.7			494.6	494.5	add 73.81		494.6	494.5	add 73.81
3 Sugar beat		0.0	0.0	under apple		0.0	0.0			0.0	0.0	
4 Legume		3.8	3.8	trees		3.8	3.8	under apple		3.8	3.8	under apple
5 Vegetable		0.0	0.0			00	0.0	trees		0.0	0.0	trees
6 Potatoes		0.0	0.0			00	0.0			0.0	0.0	
7 Others	0.0	0.0	0.0			0.0	0.0			0.0	0.0	
sub-total	0.0	653.0	653.0		0.0	726.9	726.8		0.0	726.9	726.8	
									0.0	0.0	0.0	
8 Fallow land	0.0	0.0	0.0		0.0	0.0	0.0					
sub-total	0.0	653.0	653.0	32.2	0.0	726.9	726.8	34.7	0.0	726.9	726.8	34.7
2 Orchard				(Intensity is against apple trees area)								
1 Apple		2,029.5	2,029.5			2,097.3	2,097.3	add 56.50+11.3		2,097.3	2,097.3	add 56.5+11.3
2 Grape		0.0	0.0			0.0	0.0			0.0	0.0	
3 Walnuts		0.0	0.0			0.0	0.0			0.0	0.0	
4 Apricot		5.8	5.8			5.8	5.8			5.8	5.8	
5 Pomegranate		0.0	0.0			0.0	0.0			0.0	0.0	
6 Fig		0.0	0.0			0.0	0.0			0.0	0.0	
7 Others		5.8	5.8			5.8	5.8			5.8	5.8	
sub-total	2,041.0	2,041.0	2,041.0	100.0	2,108.8	2,108.8	2,108.8	100.0	2,108.8	2,108.8	2,108.8	100.0
sub-total (irrigated)	2,041.0	2,694.0	2,694.0	132.0	2,108.8	2,835.7	2,835.6	134.5	2,108.8	2,835.7	2,835.6	134.5
2 Dry Farmland												
1 Crops												
1 Wheat, Barley		208.0	40.0			40.0	40.0			40.0	40.0	
2 Alfalfa										15.0	15.0	add 15.0
3 Sugar beat												
4 Legume												
5 Vegetable												
6 Potatoes												
7 Others												
sub-total	40.0	208.0	40.0		40.0	40.0	40.0		55.0	55.0	55.0	
8 Fallow land	168.0	0.0	168.0		156.7	156.7	156.7	less 11.3	141.7	141.7	141.7	-11.3-15
sub-total	208.0	208.0	208.0	19.2	196.7	196.7	196.7	20.3	196.7	196.7	196.7	23.0
2 Orchard												
1 Apple												
2 Grape												
3 Walnuts												
4 Apricot												
5 Pomegranate												
6 Fig												
7 Others												
sub-total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	
sub-total (dry)	208.0	208.0	208.0		196.7	196.7	196.7		196.7	196.7	196.7	
Total (farmland)	2,249.0	2,902.0	2,902.0		2,305.5	3,032.4	3,032.3		2,305.5	3,032.4	3,032.3	
3 Range Land												
1 AL (rangeland)												
2 BA (rangeland)												
3 EL (rangeland)												
Total (rangeland)	5,392.0				5,335.5			less 56.50	5,335.5			less 56.50
4 Others	7,809.0				7,809.0				7,809.0			
Grand Total	15,450.0				15,450.0				15,450.0			

Table I-1.5 Estimated Crops Area (Tang Sorkh)

Tang Sorkh (unit: ha) Estimation Present

	Village Survey				Land Use				Future Scenario 1		
	Farmland	Crops	Estimated Land 1/	Estimated Planting 2/	Calculation from Map	Adjust Land 3/	Adjust Cultivable 4/	Intensity 5/ (%)	Crops Plantable	Note	Intensity (%)
1 Irrigated Farmland											
1 Crops											
1 Wheat, Barley		215.0		166.9			166.9		161.9	less 5.0	
2 Alfalfa		107.0		83.1			83.1		159.4	add 76.28	
3 Sugar beat		0.0		0.0			0.0		0.0		
4 Legume		0.0		0.0			0.0		0.0		
5 Vegetable		0.0		0.0			0.0		5.0	add 5.0	
6 Potatoes		0.0		0.0			0.0		0.0		
7 Others		0.0		0.0			0.0		0.0		
sub-total	145.5	322.0	145.5	250.0	250.0	250.0	250.0		326.3		100.0
8 Fallow land	0.0		0.0			0.0	0.0		0.0		
sub-total	145.5	322.0	145.5	250.0	250.0	250.0	250.0	100.0	326.3		
2 Orchard											
1 Apple		190.3		190.3			188.8		188.8		
2 Grape		67.0		67.0			66.5		66.5		
3 Walnuts		0.7		0.7			0.7		0.7		
4 Apricot		0.0		0.0			0.0		0.0		
5 Pomegranate		0.0		0.0			0.0		0.0		
6 Fig		0.0		0.0			0.0		0.0		
7 Others		0.0		0.0			0.0		0.0		
sub-total	258.0	258.0	258.0	258.0	266.0	256.0	256.0		256.0		
sub-total (irrigated)	403.5	580.0	403.5	508.0	516.0	506.0	506.0		582.3		
2 Dry Farmland											
1 Crops											
1 Wheat, Barley			205.5	205.5			173.4		97.1	less 76.28	
2 Alfalfa				0.0			0.0		0.0		
3 Sugar beat				0.0			0.0		0.0		
4 Legume				0.0			0.0		0.0		
5 Vegetable				0.0			0.0		0.0		
6 Potatoes				0.0			0.0		0.0		
7 Others		41.0	41.0	41.0			34.6		34.6		
sub-total	246.5	41.0	246.5	246.5	208.0	208.0	208.0	100.0	131.7		
8 Fallow land	0.0		0.0	0.0		0.0	0.0		0.0		
sub-total	246.5	41.0	246.5	246.5	208.0	208.0	208.0	100.0	131.7		100.0
2 Orchard											
1 Apple											
2 Grape											
3 Walnuts											
4 Apricot											
5 Pomegranate		5.0	5.0	5.0		5.0	5.0		5.0		
6 Fig											
7 Others		5.0	5.0	5.0		5.0	5.0		5.0		
sub-total	10.0	10.0	10.0	10.0	0.0	10.0	10.0		10.0		
sub-total (dry)	256.5	51.0	256.5	256.5	208.0	218.0	218.0		141.7		
Total (farmland)	660.0	631.0	660.0	764.5	724.0	724.0	724.0		724.0		
3 Range Land											
1 AL (rangeland)											
2 BA (rangeland)											
3 EL (rangeland)											
Total (rangeland)	3,535.0				3,118.0	3,118.0	3,118.0				
4 Others					2,698.0	2,698.0	2,698.0				
Grand Total					6,540.0	6,540.0	6,540.0				

Note:
1/= Estimated based on farmland size of village survey
2/= Estimated based on land #1 considering cropping areas of village survey
3/= Estimated based on mapping data and land #1
4 = Estimated cultivable land based on land #3
Intensity 5/ = Cultivable Area/ Ajust Land

Tang Sorkh (unit: ha)

	Results Present				Future Scenario 1 (rehabilitation of canals)				Scenario 2 (S1 + Soil Conservation)			
	Land Area (ha)	Cultivable Area (ha)	Planting Area (ha)	Intensity (%)	Land Area (ha)	Cultivable Area (ha)	Plantable Area (ha)	Intensity (%) Note	Land Area (ha)	Cultivable Area (ha)	Plantable Area (ha)	Intensity (%) Note
1 Irrigated Farmland												
1 Crops												
1 Wheat, Barley		166.9	166.9			161.9	161.9	less 5.0		161.9	161.9	less 5.0
2 Alfalfa		83.1	83.1			159.4	159.4	add 76.28		159.4	159.4	add 76.28
3 Sugar beat		0.0	0.0			0.0	0.0			0.0	0.0	
4 Legume		0.0	0.0			0.0	0.0			0.0	0.0	
5 Vegetable		0.0	0.0			5.0	5.0	add 5.0		5.0	5.0	add 5.0
6 Potatoes		0.0	0.0			0.0	0.0			0.0	0.0	
7 Others		0.0	0.0			0.0	0.0			0.0	0.0	
sub-total	250.0	250.0	250.0	100.0	326.3	326.3	326.3		326.3	326.3	326.3	
8 Fallow land	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	
sub-total	250.0	250.0	250.0		326.3	326.3	326.3	100.0	326.3	326.3	326.3	100.0
2 Orchard												
1 Apple		188.8	188.8			188.8	188.8			188.8	188.8	
2 Grape		66.5	66.5			66.5	66.5			66.5	66.5	
3 Walnuts		0.7	0.7			0.7	0.7			0.7	0.7	
4 Apricot		0.0	0.0			0.0	0.0			0.0	0.0	
5 Pomegranate		0.0	0.0			0.0	0.0			0.0	0.0	
6 Fig		0.0	0.0			0.0	0.0			0.0	0.0	
7 Others		0.0	0.0			0.0	0.0			0.0	0.0	
sub-total	256.0	256.0	256.0		256.0	256.0	256.0		256.0	256.0	256.0	
sub-total (irrigated)	506.0	506.0	506.0		582.3	582.3	582.3		582.3	582.3	582.3	
2 Dry Farmland												
1 Crops												
1 Wheat, Barley		173.4	173.4			97.1	97.1	less 76.28		97.1	97.1	less 76.28
2 Alfalfa		0.0	0.0			0.0	0.0			0.0	0.0	
3 Sugar beat		0.0	0.0			0.0	0.0			0.0	0.0	
4 Legume		0.0	0.0			0.0	0.0			0.0	0.0	
5 Vegetable		0.0	0.0			0.0	0.0			0.0	0.0	
6 Potatoes		0.0	0.0			0.0	0.0			0.0	0.0	
7 Others		34.6	34.6			34.6	34.6			34.6	34.6	
sub-total	208.0	208.0	208.0		131.7	131.7	131.7		131.7	131.7	131.7	
8 Fallow land	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	
sub-total	208.0	208.0	208.0	100.0	131.7	131.7	131.7	100.0	131.7	131.7	131.7	100.0
2 Orchard												
1 Apple												
2 Grape												
3 Walnuts												
4 Apricot												
5 Pomegranate	5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0	5.0	
6 Fig												
7 Others	5.0	5.0	5.0		5.0	5.0	5.0		5.0	5.0	5.0	
sub-total	10.0	10.0	10.0		10.0	10.0	10.0		10.0	10.0	10.0	
sub-total (dry)	218.0	218.0	218.0									
					141.7	141.7	141.7		141.7	141.7	141.7	
Total (farmland)	724.0	724.0	724.0									
					724.0	724.0	724.0		724.0	724.0	724.0	
3 Range Land												
1 AL (rangeland)												
2 BA (rangeland)												
3 EL (rangeland)												
Total (rangeland)	3,118.0				3,118.0				3,118.0			
4 Others	2,698.0				2,698.0				2,698.0			
Grand Total	6,540.0				6,540.0				6,540.0			

Table I-1.5 Estimated Crops Area (Zeras)

Zeras (unit: ha)

	Estimation Present										
	Village Survey				Land Use				Future Scenario 1		
	Farmland	Crops	Estimated Land 1/	Estimated Planting 2/	Calculation from Map	Adjust Land 3/	Adjust Cultivable 4/	Intensity 5/ (%)	Crops Plantable	Note	Intensity (%)
1 Irrigated Farmland											
1 Crops											
1 Wheat, Barley											
2 Alfalfa											
3 Sugar beat											
4 Legume											
5 Vegetable											
6 Potatoes											
7 Others											
sub-total	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
8 Fallow land	0.0		0.0	0.0	0.0	0.0			0.0		
sub-total	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
2 Orchard											
1 Apple		0.0		0.0			0.0		0.0		
2 Grape		1.0		0.8			0.8		0.8		
3 Walnuts		0.5		0.4			0.4		0.4		
4 Apricot		0.0		0.0			0.0		0.0		
5 Pomegranate		1.3		1.1			1.1		1.1		
6 Fig		0.0		0.0			0.0		0.0		
7 Others		0.0		0.0			0.0		0.0		
sub-total	2.3	2.8	2.3	2.3	0.0	2.3	2.3		2.3		
sub-total (irrigated)	2.3	2.8	2.3	2.3	0.0	2.3	2.3	100.0	2.3	100.0	100.0
2 Dry Farmland											
1 Crops											
1 Wheat, Barley		1,377.5		1,368.2			1,983.9		1,368.2		
2 Alfalfa		0.0		0.0			0.0		0.0		
3 Sugar beat		0.0		0.0			0.0		0.0		
4 Legume		0.0		0.0			0.0		0.0		
5 Vegetable		0.0		0.0			0.0		0.0		
6 Potatoes		0.0		0.0			0.0		0.0		
7 Others		107.5		106.8			154.8		106.8		
sub-total	1,475.0	1,485.0	1,475.0	1,475.0	2,141.0	1,475.0	2,138.7		1,475.0		
8 Fallow land	988.0		988.0	988.0		663.7	0.0		663.7		
sub-total	2,463.0	1,485.0	2,463.0	2,463.0	2,141.0	2,138.7	2,138.7	69.0	2,138.7		69.0
2 Orchard											
1 Apple											
2 Grape											
3 Walnuts											
4 Apricot											
5 Pomegranate											
6 Fig											
7 Others											
sub-total	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
sub-total (dry)	2,463.0	1,485.0	2,463.0	2,463.0	2,141.0	2,138.7	2,138.7		2,138.7		
Total (farmland)	2,465.3	1,487.8	2,465.3	2,465.3	2,141.0	2,141.0	2,141.0		2,141.0		
3 Range Land											
1 AL (rangeland)											
2 BA (rangeland)											
3 EL (rangeland)											
Total (rangeland)	9,200.0				3,361.0	3,361.0	3,361.0				
4 Others					868.0	868.0	868.0				
Grand Total					6,370.0	6,370.0	6,370.0				

Note:
1/= Estimated based on farmland size of village surey
2/= Estimated based on land *1 considering cropping areas of village survey
3/= Estimated based on mapping data and land *1
4 = Estimated cultivable land based on land *3
Intensity 5/ = Cultivable Area/ Ajust Land

Zeras (unit: ha)

	Results Present				Futuro Scenario 1 (rehabilitation of canals)				Scenario 2 (S1 + Soil Conservation)			
	Land Area (ha)	Cultibalbe Area (ha)	Planting Area (ha)	Intensity (%)	Land Area (ha)	Cultibalbe Area (ha)	Plantable Area (ha)	Intensity (%) Note	Land Area (ha)	Cultibalbe Area (ha)	Plantable Area (ha)	Intensity (%) Note
1 Irrigated Farmland												
1 Crops												
1 Wheat, Barley		0.0	0.0			0.0	0.0			0.0	0.0	
2 Alfalfa		0.0	0.0			0.0	0.0			0.0	0.0	
3 Sugar beat		0.0	0.0			0.0	0.0			0.0	0.0	
4 Legume		0.0	0.0			0.0	0.0			0.0	0.0	
5 Vegetable		0.0	0.0			0.0	0.0			0.0	0.0	
6 Potatoes		0.0	0.0			0.0	0.0			0.0	0.0	
7 Others		0.0	0.0			0.0	0.0			0.0	0.0	
sub-total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	
8 Fallow land	0.0				0.0				0.0			
sub-total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	
2 Orchard												
1 Apple		0.0	0.0			0.0	0.0			0.0	0.0	
2 Grape		0.8	0.8			0.8	0.8			0.8	0.8	
3 Walnuts		0.4	0.4			0.4	0.4			0.4	0.4	
4 Apricot		0.0	0.0			0.0	0.0			0.0	0.0	
5 Pomegranate		1.1	1.1			1.1	1.1			1.1	1.1	
6 Fig		0.0	0.0			0.0	0.0			0.0	0.0	
7 Others		0.0	0.0			0.0	0.0			0.0	0.0	
sub-total	2.3	2.3	2.3		2.3	2.3	2.3		2.3	2.3	2.3	
sub-total (irrigated)	2.3	2.3	2.3	100.0	2.3	2.3	2.3	100.0	2.3	2.3	2.3	100.0
2 Dry Farmland												
1 Crops												
1 Wheat, Barley		1,983.9	1,368.2			1,983.9	1,368.2			1,636.2	1,282.2	-86
2 Alfalfa		0.0	0.0			0.0	0.0			366.2	287.0	+99+64+86+38
3 Sugar beat		0.0	0.0			0.0	0.0			0.0	0.0	
4 Legume		0.0	0.0			0.0	0.0			0.0	0.0	
5 Vegetable		0.0	0.0			0.0	0.0			0.0	0.0	
6 Potatoes		0.0	0.0			0.0	0.0			0.0	0.0	
7 Others		154.8	106.8			154.8	106.8			136.3	106.8	
sub-total	1,475.0	2,138.7	1,475.0		1,475.0	2,138.7	1,475.0		1,676.0	2,138.7	1,676.0	
8 Fallow land	663.7	0.0	663.7		663.7	0.0	663.7		462.7	0.0	462.7	-99-64-38
sub-total	2,138.7	2,138.7	2,138.7	69.0	2,138.7	2,138.7	2,138.7	69.0	2,138.7	2,138.7	2,138.7	73.4
2 Orchard												
1 Apple												
2 Grape												
3 Walnuts												
4 Apricot												
5 Pomegranate												
6 Fig												
7 Others												
sub-total	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	
sub-total (dry)	2,138.7	2,138.7	2,138.7		2,138.7	2,138.7	2,138.7		2,138.7	2,138.7	2,138.7	
Total (farmland)	2,141.0	2,141.0	2,141.0		2,141.0	2,141.0	2,141.0		2,141.0	2,141.0	2,141.0	
3 Range Land												
1 AL (rangeland)												
2 BA (rangeland)												
3 EL (rangeland)												
Total (rangeland)	3,361.0				3,361.0				3,361.0			
4 Others	868.0				868.0				868.0			
Grand Total	6,370.0				6,370.0				6,370.0			

Table J-1.6 : Land Ownership in the Study Area[1/] (Farm land)

	Private				Rented In			
	Irrigated		Rain fed		Irrigated		Rain fed	
	Household	Persent	Household	Persent	Household	Persent	Household	Persent
Less than 0.5ha	10	12.2	14	14.74	1	20	3	18.75
0.5 - 1.0	14	17.1	15	15.79	2	40	4	25
1.0 - 2.0	18	22.0	16	16.84	1	20	6	37.5
2.0 - 3.0	9	11.0	12	12.63	0	0	1	6.25
3.0 - 5.0	11	13.4	10	10.53	1	20	1	6.25
5.0 - 10.0	14	17.1	20	21.05	0	0	1	6.25
10.0 - 15.0	4	4.9	2	2.11	0	0	0	0
15.0 - 20.0	1	1.2	2	2.11	0	0	0	0
More than 20ha	1	1.2	4	4.21	0	0	0	0
Total	82	100.0	95	100.0	5	100.0	16	100.0

	Rented Out				Cooperative (Shared)			
	Irrigated		Rain fed		Irrigated		Rain fed	
	Household	Persent	Household	Persent	Household	Persent	Household	Persent
Less than 0.5ha	0	0	0	0	0	0	0	0
0.5 - 1.0	1	100	0	0	1	16.67	1	25
1.0 - 2.0	0	0.0	0	0	1	16.67	2	50
2.0 - 3.0	0	0.0	0	0	1	16.67	0	0
3.0 - 5.0	0	0	0	0	1	16.67	0	0
5.0 - 10.0	0	0	0	0	1	16.67	1	25
10.0 - 15.0	0	0	0	0	0	0	0	0
15.0 - 20.0	0	0	0	0	1	16.67	0	0
More than 20ha	0	0	0	0	0	0	0	0
Total	1	100.0	0	0.0	6	100.0	4	100

	Belonging to relative and free							
	Irrigated		Rain fed					
	Household	Persent	Household	Persent				
Less than 0.5ha	0	0	0	0				
0.5 - 1.0	0	0	0	0				
1.0 - 2.0	0	0.0	1	1.2				
2.0 - 3.0	0	0.0	1	1.2				
3.0 - 5.0	0	0	0	0				
5.0 - 10.0	0	0	0	0				
10.0 - 15.0	0	0	0	0				
15.0 - 20.0	0	0	0	0				
More than 20ha	0	0	0	0				
Total	0	0.0	2	2.4				

Note: 1/ Project Area (Behavioral Survey Area , JICA Study Team)

Souce: Behavioral Study and Supplementary Information . Rural Research Cente

Table I-1.7 : Land Ownership in the Study Area 1/(Orchard)

	Private				Rented In			
	Irrigated		Rain fed		Irrigated		Rain fed	
	Household	Persent	Household	Persent	Household	Persent	Household	Persent
Less than 0.5ha	19	26.0	1	11.1	0	0	0	0
0.5 - 1.0	12	16.4	3	33.3	0	0	0	0
1.0 - 2.0	12	16.4	3	33.3	0	0	1	100.0
2.0 - 3.0	5	6.8	0	0.0	0	0	0	0
3.0 - 5.0	12	16.4	0	0.0	0	0	0	0
5.0 - 10.0	9	12.3	2	22.2	0	0	0	0
10.0 - 15.0	2	2.7	0	0.0	0	0	0	0
15.0 - 20.0	1	1.4	0	0.0	0	0	0	0
More than 20ha	1	1.4	0	0.0	0	0	0	0
Total	73	100.0	9	100.0	0	0	1	100.0

	Rented Out				Cooperative (Shared)			
	Irrigated		Rain fed		Irrigated		Rain fed	
	Household	Persent	Household	Persent	Household	Persent	Household	Persent
Less than 0.5ha	0	0	0	0	1	10.0	0	0
0.5 - 1.0	0	0	0	0	3	30.0	0	0
1.0 - 2.0	0	0	0	0	5	50.0	1	100.0
2.0 - 3.0	0	0	0	0	1	10.0	0	0
3.0 - 5.0	0	0	0	0	0	0.0	0	0
5.0 - 10.0	0	0	0	0	0	0.0	0	0
10.0 - 15.0	0	0	0	0	0	0.0	0	0
15.0 - 20.0	0	0	0	0	0	0.0	0	0
More than 20ha	0	0	0	0	0	0.0	0	0
Total	0	0	0	0	10	100.0	1	100.0

	Belonging to relative and free							
	Irrigated		Rain fed					
	Household	Persent	Household	Persent				
Less than 0.5ha	0	0	0	0				
0.5 - 1.0	0	0	0	0				
1.0 - 2.0	0	0	0	0				
2.0 - 3.0	0	0	0	0				
3.0 - 5.0	1	100.0	0	0				
5.0 - 10.0	0	0	0	0				
10.0 - 15.0	0	0	0	0				
15.0 - 20.0	0	0	0	0				
More than 20ha	0	0	0	0				
Total	1	100.0	0	0.0				

Note: 1/ Project Area (Behavioral Survey Area , JICA Study Team)

Souce: *Behavioral Study and Supplementary Information . Rural Research Cent*

Table I-2.1 : Wheat Production and Yield in the Study Area, 1995-1999

Township \ Item	Year	Wheat								
		Harvested Area (ha)			Production (ton)			Yield (kg/ha)		
		Irrigation	Dry	Total	Irrigation	Dry	Total	Irrigation	Dry	Axe.
K4-1-9 Vastegan (Borujen)	1995	4,196.0	4,743.0	8,939.0	10,774.5	3,620.8	14,395.3	2,567.8	763.4	1,610.4
	1996	4,449.0	4,814.0	9,263.0	10,330.6	4,708.1	15,038.7	2,322.0	978.0	1,623.5
	1997	4,041.0	4,455.0	8,496.0	11,594.4	3,551.1	15,145.5	2,869.2	797.1	1,782.7
	1998	5,773.0	3,896.0	9,669.0	15,098.7	3,432.0	18,530.7	2,615.4	880.9	1,916.5
	1999	6,499.0	2,057.0	8,556.0	20,821.5	1,291.2	22,112.7	3,203.8	627.7	2,584.5
	Ave.	4,991.6	3,993.0	8,984.6	13,723.9	3,320.6	17,044.6	2,715.6	809.4	1,897.1
K5-19a C.G-Bazoft (Farsan)	1995	3,068.0	3,132.0	6,200.0	8,314.6	2,595.8	10,910.4	2,710.1	828.8	1,759.7
	1996	5,085.0	2,572.0	7,657.0	13,094.9	2,834.3	15,929.2	2,575.2	1,102.0	2,080.4
	1997	4,268.0	4,013.0	8,281.0	10,491.6	3,926.7	14,418.3	2,458.2	978.5	1,741.1
	1998	7,325.0	3,835.0	11,160.0	15,151.8	3,729.5	18,881.3	2,068.5	972.5	1,691.9
	1999	7,782.0	4,261.0	12,043.0	16,215.4	2,749.6	18,965.0	2,083.7	645.3	1,574.8
	Ave.	5,505.6	3,562.6	9,068.2	12,653.6	3,167.2	15,820.8	2,379.1	905.4	1,744.7
K7-0-19-1 Sarbaz (Boyrahmad)	1995	18,534.0	16,393.0	34,927.0	34,508.5	27,658.3	62,166.7	1,861.9	1,687.2	1,779.9
	1996	12,410.0	11,555.0	23,965.0	30,693.7	11,971.0	42,664.6	2,473.3	1,036.0	1,780.3
	1997	11,811.0	13,021.0	24,832.0	26,883.0	16,750.2	43,633.2	2,276.1	1,286.4	1,757.1
	1998	8,010.0	13,673.0	21,683.0	23,454.1	12,955.2	36,409.2	2,928.1	947.5	1,679.2
	1999	8,818.0	10,947.0	19,765.0	26,446.1	4,514.5	30,960.6	2,999.1	412.4	1,566.4
	Ave.	11,916.6	13,117.8	25,034.4	28,397.1	14,769.8	43,166.9	2,507.7	1,073.9	1,724.3
K7-48 Tange Sorkh (Semilon)	1995	3,806.0	7,274.0	11,080.0	11,497.2	6,196.0	17,693.2	3,020.8	851.8	1,596.9
	1996	4,248.0	4,740.0	8,988.0	13,195.6	3,991.1	17,186.6	3,106.3	842.0	1,912.2
	1997	3,685.0	4,673.0	8,358.0	9,691.9	3,701.5	13,393.4	2,630.1	792.1	1,602.5
	1998	3,224.0	3,665.0	6,889.0	6,709.1	1,763.2	8,472.4	2,081.0	481.1	1,229.8
	1999	4,110.0	3,366.0	7,476.0	12,961.7	1,632.8	14,594.6	3,153.7	485.1	1,952.2
	Ave.	3,814.6	4,743.6	8,558.2	10,811.1	3,456.9	14,268.0	2,798.4	690.4	1,667.2
K8-28 Zeras (Izeh)	1995	1,272.0	36,888.0	38,160.0	1,879.9	22,531.2	24,411.1	1,477.9	610.8	639.7
	1996	722.0	29,263.0	29,985.0	1,514.0	18,435.7	19,949.7	2,096.9	630.0	665.3
	1997	1,467.0	64,726.0	66,193.0	3,786.0	23,042.5	26,828.5	2,580.8	356.0	405.3
	1998	1,613.0	22,142.0	23,755.0	1,890.0	11,956.7	13,846.6	1,171.7	540.0	582.9
	1999	484.0	14,837.0	15,321.0	1,226.1	5,311.6	6,537.7	2,533.2	358.0	426.7
	Ave.	1,111.6	33,571.2	34,682.8	2,059.2	16,255.5	18,314.7	1,972.1	499.0	528.1

Source: Ministry of Agricultural stistics section

Table I-2.2 : Barley Production and Yield in the Study Area, 1995-1999

Township	Year	Barley								
		Harvested Area (ha)			Production (ton)			Yield (kg/ha)		
		Irrigation	Dry	Total	Irrigation	Dry	Total	Irrigation	Dry	Axe.
K4-1-9 Vastegan (Borujen)	1995	796.0	1,127.0	1,923.0	1,841.1	943.3	2,784.4	2,313.0	837.0	1,448.0
	1996	500.0	919.0	1,419.0	1,938.0	780.2	2,718.2	3,876.0	849.0	1,915.6
	1997	1,024.0	1,426.0	2,450.0	3,217.4	941.2	4,158.6	3,142.0	660.0	1,697.4
	1998	1,793.0	1,026.0	2,819.0	4,746.1	611.5	5,357.6	2,647.0	596.0	1,900.5
	1999	1,331.0	528.0	1,859.0	4,568.0	260.3	4,828.3	3,432.0	493.0	2,597.3
	Ave.	1,088.8	1,005.2	2,094.0	3,262.1	707.3	3,969.4	3,082.0	687.0	1,895.6
K5-19a C.G-Bazoft (Farsan)	1995	233.0	2,214.0	2,447.0	665.5	2,417.5	3,083.0	2,856.3	1,091.9	1,259.9
	1996	512.0	136.0	648.0	2,658.5	400.6	3,059.1	5,192.4	2,945.7	4,720.9
	1997	863.0	782.0	1,645.0	2,056.4	774.3	2,830.8	2,382.9	990.2	1,720.8
	1998	729.0	1,348.0	2,077.0	2,019.8	886.8	2,906.6	2,770.6	657.9	1,399.4
	1999	1,812.0	3,185.0	4,997.0	3,595.4	2,211.3	5,806.7	1,984.2	694.3	1,162.0
	Ave.	829.8	1,533.0	2,362.8	2,199.1	1,338.1	3,537.2	3,037.3	1,276.0	1,497.1
K7-0-19-1 Sarbaz (Boyrahmad)	1995	1,741.0	16,603.0	18,344.0	2,843.1	23,453.4	26,296.5	1,633.0	1,412.6	1,433.5
	1996	2,510.0	8,877.0	11,387.0	3,461.3	8,903.6	12,364.9	1,379.0	1,003.0	1,085.9
	1997	2,031.0	10,352.0	12,383.0	3,576.6	13,269.2	16,845.8	1,761.0	1,281.8	1,360.4
	1998	1,848.0	11,595.0	13,443.0	3,100.9	10,597.8	13,698.8	1,678.0	914.0	1,019.0
	1999	1,839.0	12,055.0	13,894.0	3,268.8	4,460.4	7,729.2	1,777.5	370.0	556.3
	Ave.	1,993.8	11,896.4	13,890.2	3,250.1	12,136.9	15,387.0	1,645.7	996.3	1,107.8
K7-48 Tange Sorkh (Semilon)	1995	769.0	1,652.0	2,421.0	2,012.5	2,005.5	4,018.0	2,617.0	1,214.0	1,659.7
	1996	1,127.0	334.0	1,461.0	3,464.6	402.6	3,867.2	3,074.2	1,205.3	2,647.0
	1997	446.0	824.0	1,270.0	1,192.6	653.7	1,846.3	2,674.1	793.3	1,453.8
	1998	368.0	433.0	801.0	790.9	297.0	1,087.9	2,149.1	685.9	1,358.1
	1999	953.0	545.0	1,498.0	3,031.7	312.3	3,344.0	3,181.2	573.1	2,232.3
	Ave.	732.6	757.6	1,490.2	2,098.5	734.2	2,832.7	2,739.1	894.3	1,900.9
K8-28 Zeras (Izeh)	1995	473.0	31,416.0	31,889.0	399.0	20,985.9	21,384.9	843.6	668.0	670.6
	1996	0.0	26,409.0	26,409.0	0.0	17,984.5	17,984.5	0.0	681.0	681.0
	1997	960.0	31,785.0	32,745.0	1,363.5	31,435.4	32,798.9	1,420.3	989.0	1,001.6
	1998	0.0	15,816.0	15,816.0	0.0	6,642.7	6,642.7	0.0	420.0	420.0
	1999	0.0	14,523.0	14,523.0	0.0	6,404.6	6,404.6	0.0	441.0	441.0
	Ave.	286.6	23,989.8	24,276.4	352.5	16,690.6	17,043.1	1,132.0	639.8	702.1

Source: Ministry of Agricultural stistics sectio

Table I-2.3 : Pulses Production and Yield in the Study Area, 1995-1999

Township	Year	Beans								
		Harvested Area (ha)			Production (ton)			Yield (kg/ha)		
		Irrigation	Dry	Total	Irrigation	Dry	Total	Irrigation	Dry	Axe.
K4-1-9 Vastegan (Borujen)	1995	243.0	14.0	257.0	337.1	3.3	340.4	1,387.1	238.0	1,324.5
	1996	886.0	0.0	886.0	1,410.1	0.0	1,410.1	1,591.5	0.0	1,591.5
	1997	888.0	0.0	888.0	1,443.2	0.0	1,443.2	1,625.2	0.0	1,625.2
	1998	620.0	0.0	620.0	1,437.8	0.0	1,437.8	2,319.1	0.0	2,319.1
	1999	660.0	0.0	660.0	1,491.7	0.0	1,491.7	2,260.1	0.0	2,260.1
	Ave.	659.4	2.8	662.2	1,224.0	0.7	1,224.6	1,836.6	47.6	1,849.3
K5-19a C.G-Bazoft (Farsan)	1995	66.0	0.0	66.0	90.4	0.0	90.4	1,369.8	0.0	1,369.8
	1996	155.0	0.0	155.0	211.7	0.0	211.7	1,365.6	0.0	1,365.6
	1997	229.0	0.0	229.0	467.4	0.0	467.4	2,041.1	0.0	2,041.1
	1998	114.0	0.0	114.0	117.0	0.0	117.0	1,026.0	0.0	1,026.0
	1999	160.0	0.0	160.0	250.3	0.0	250.3	1,564.5	0.0	1,564.5
	Ave.	144.8	0.0	144.8	227.4	0.0	227.4	1,473.4	0.0	1,570.1
K7-0-19-1 Sarbaz (Boyrahmad)	1995	51.0	0.0	51.0	43.5	0.0	43.5	853.2	0.0	853.2
	1996	233.0	0.0	233.0	380.7	0.0	380.7	1,633.8	0.0	1,633.8
	1997	192.0	0.0	192.0	320.9	0.0	320.9	1,671.4	0.0	1,671.4
	1998	454.0	0.0	454.0	482.3	0.0	482.3	1,062.4	0.0	1,062.4
	1999	1,227.0	0.0	1,227.0	1,923.7	0.0	1,923.7	1,567.8	0.0	1,567.8
	Ave.	431.4	0.0	431.4	630.2	0.0	630.2	1,357.7	0.0	1,460.9
K7-48 Tange Sorkh (Semilon)	1995	68.0	0.0	68.0	43.7	0.0	43.7	642.2	0.0	642.2
	1996	97.0	0.0	97.0	104.7	0.0	104.7	1,079.1	0.0	1,079.1
	1997	102.0	0.0	102.0	104.9	0.0	104.9	1,028.4	0.0	1,028.4
	1998	104.0	0.0	104.0	120.5	0.0	120.5	1,158.9	0.0	1,158.9
	1999	282.0	0.0	282.0	441.7	0.0	441.7	1,566.3	0.0	1,566.3
	Ave.	130.6	0.0	130.6	163.1	0.0	163.1	1,095.0	0.0	1,248.8
K8-28 Zeras (Izeh)	1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Ave.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Ministry of Agricultural stistics section

TableJ-2.1.4: Alfalfa Production and Yield in the Study Area, 1995-1999

Township	Year	Alfalfa								
		Harvested Area (ha)			Production (ton)			Yield (kg/ha)		
		Irrigation	Dry	Total	Irrigation	Dry	Total	Irrigation	Dry	Axe.
K4-1-9 Vastegan (Borujen)	1995	4,579.0	0.0	4,579.0	46,218.6	0.0	46,218.6	10,093.6	0.0	10,093.6
	1996	4,592.0	0.0	4,592.0	36,156.9	0.0	36,156.9	7,873.9	0.0	7,873.9
	1997	5,202.0	0.0	5,202.0	46,983.9	0.0	46,983.9	9,031.9	0.0	9,031.9
	1998	3,783.0	0.0	3,783.0	38,227.2	0.0	38,227.2	10,105.0	0.0	10,105.0
	1999	4,465.0	0.0	4,465.0	45,443.9	0.0	45,443.9	10,177.8	0.0	10,177.8
	Ave.	4,524.2	0.0	4,524.2	42,606.1	0.0	42,606.1	9,456.4	0.0	9,456.4
K5-19a C.G-Bazoft (Farsan)	1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Ave.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
K7-0-19-1 Sarbaz (Boyrahmad)	1995	685.0	0.0	685.0	4,618.9	0.0	4,618.9	6,742.9	0.0	6,742.9
	1996	53.0	0.0	53.0	207.7	0.0	207.7	3,918.9	0.0	3,918.9
	1997	1,208.0	0.0	1,208.0	5,226.2	0.0	5,226.2	4,326.3	0.0	4,326.3
	1998	687.0	0.0	687.0	4,604.8	0.0	4,604.8	6,702.8	0.0	6,702.8
	1999	1,323.0	14.0	1,337.0	8,542.5	14.0	8,556.5	6,456.9	0.0	6,399.8
	Ave.	791.2	14.0	794.0	4,640.0	14.0	4,642.8	5,864.5	0.0	5,847.4
K7-48 Tange Sorkh (Semilon)	1995	1,264.0	167.0	1,431.0	14,871.6	75.2	14,946.8	11,765.5	450.3	10,445.0
	1996	2,895.0	0.0	2,895.0	20,502.7	99.0	20,601.7	7,082.1	99.0	7,116.3
	1997	2,277.0	0.0	2,277.0	20,591.8	343.0	20,934.8	9,043.4	343.0	9,194.0
	1998	2,494.0	0.0	2,494.0	16,644.5	15.2	16,659.7	6,673.8	15.2	6,679.9
	1999	1,945.0	0.0	1,945.0	19,055.2	0.0	19,055.2	9,797.0	0.0	9,797.0
	Ave.	2,175.0	167.0	2,208.4	18,333.2	106.5	18,439.6	8,429.0	637.6	8,349.8
K8-28 Zeras (Izeh)	1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Ave.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Ministry of Agricultural stistics section

Table I-2.5 : Cropping Schedule of Main Crops in the Study Area

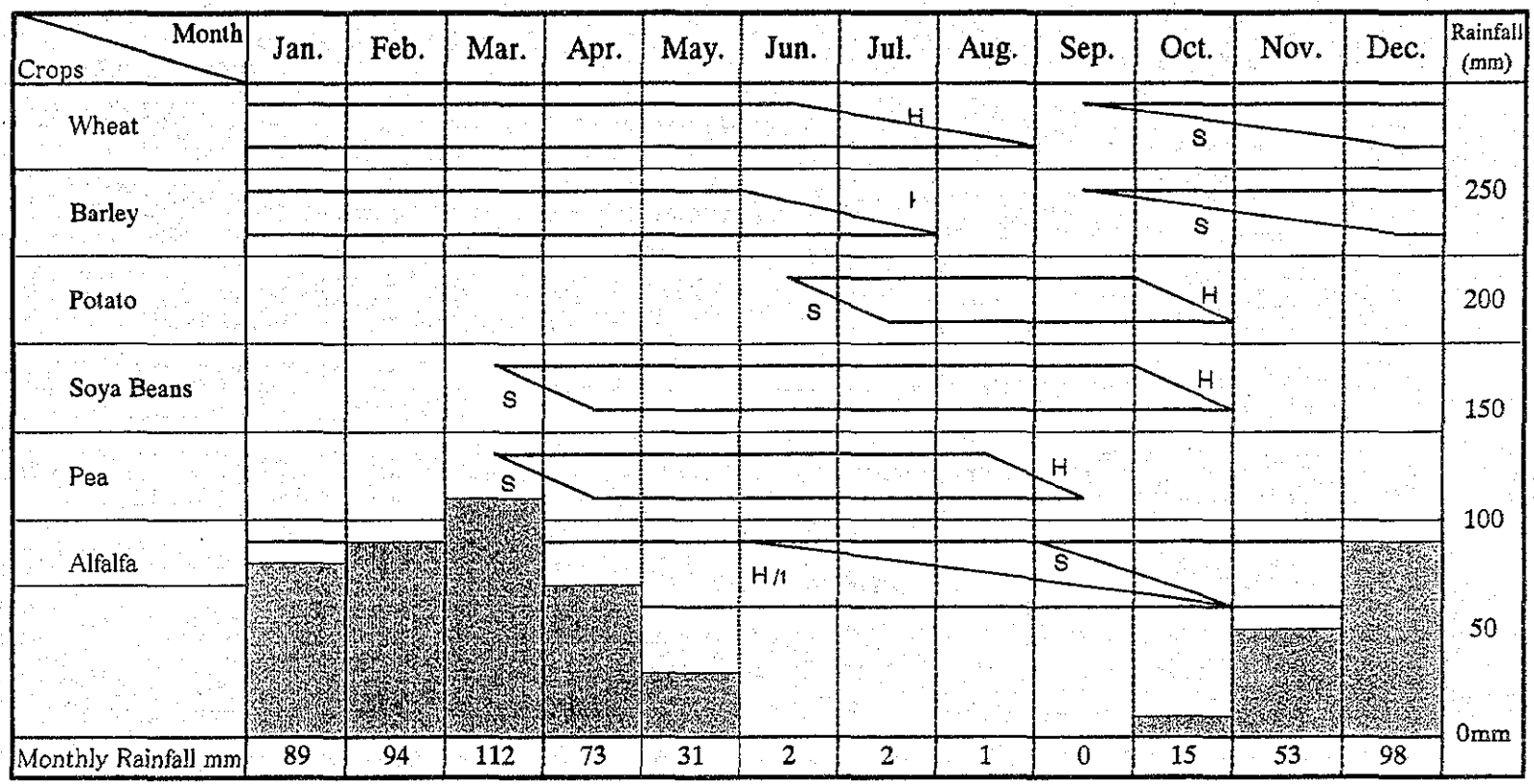
Item / Crop	Planting		Harvesting		Time to harvesting 2/
	Start	End	Start	End	
Cereals					
Wheat	6-Sep	21-Dec	22-Jun	21-Aug	263
Barley	6-Sep	21-Dec	5-Jun	6-Jul	232
Root Crops					
Potato	10-Jun	1-Jul	6-Sep	17-Oct	96
Onion	10-Jun	1-Jul	6-Sep	17-Oct	96
Sugar beet	25-Apr	5-Jun	2-Sep	22-Oct	132
Beans					
Pea	23-Sep	21-Nov	10-Jun	11-Jul	243.5
Lentil	23-Sep	21-Nov	10-Jun	11-Jul	243.5
Chick Bean	10-Jun	1-Jul	6-Sep	7-Oct	91
Bean 1/	10-Jun	1-Jul	11-Sep	12-Oct	96
Vegetables					
Tomato	31-May	6-Jul	22-Jul	22-Oct	79
Spinach	10-Jun	1-Jul	6-Sep	17-Oct	96
Cucummber	22-May	6-Jul	6-Aug	7-Oct	82.5
Forage crops					
Alfalfa	6-Sep	7-Oct	10-Jun	17-Oct	322
Clover	6-Sep	2-Oct	15-May	20-Jun	253.5

Note: 1/ as Soybeans, Long beans , Cowpea

2/as average of time to harvesting . Unit :days

Souce: Buget and Planning Section Agricultural Office Chahamahal-va-Bakhtiyari Province

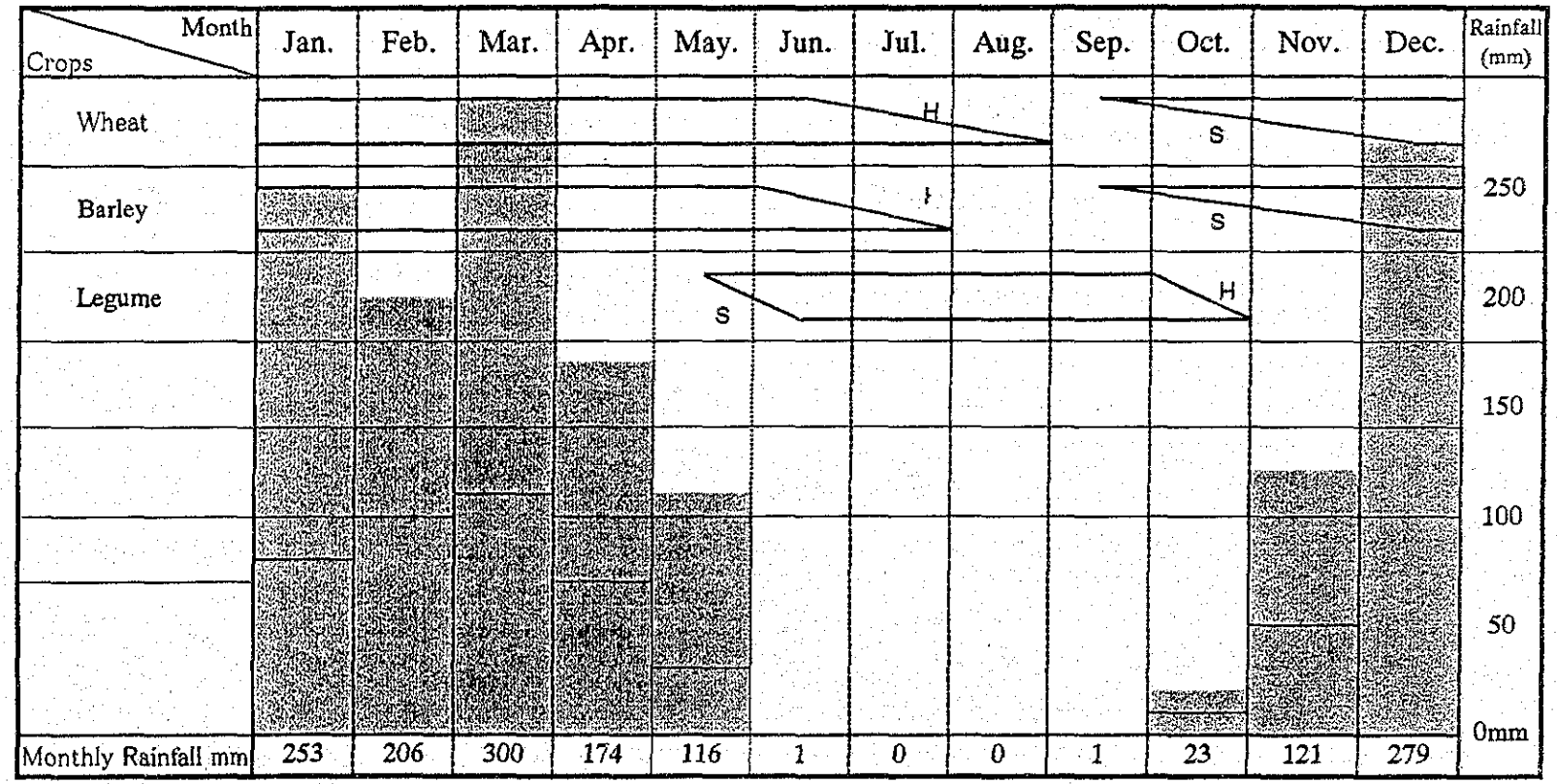
Figure I-2.1 : Present Cropping Calender in Vastegan



Source: JICA Study Team Inteview Servey (8/May/2001)

Note: S: Seedling H: Harvesting H/1: 4times harvesting in a year

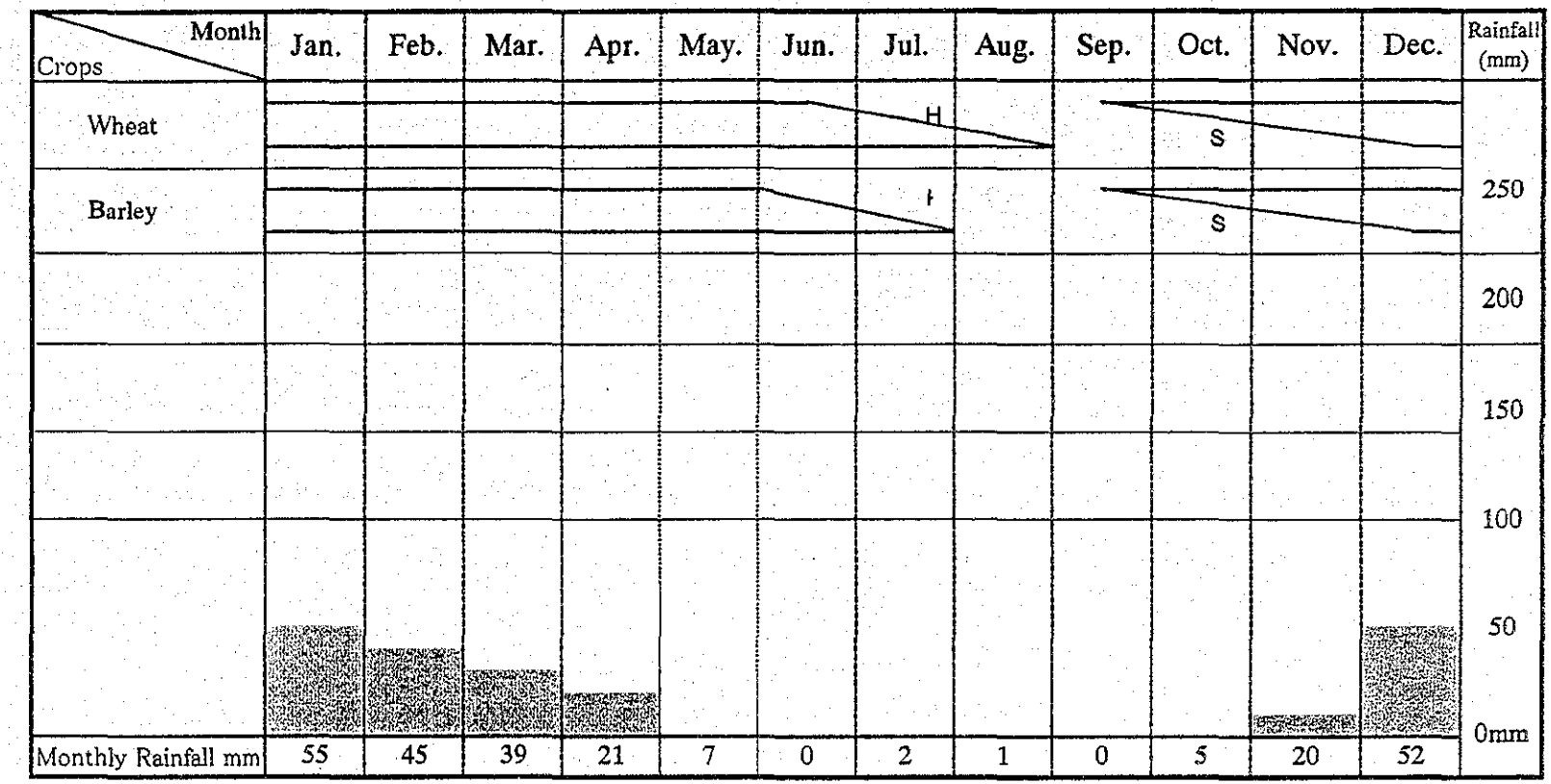
Figure I-2.2 : Present Cropping Calender in Bazoft



Source: JICA Study Team Inteview Servey (8/May/2001)

Note: S: Seedling H: Harvesting H/1: 4times harvesting in a year

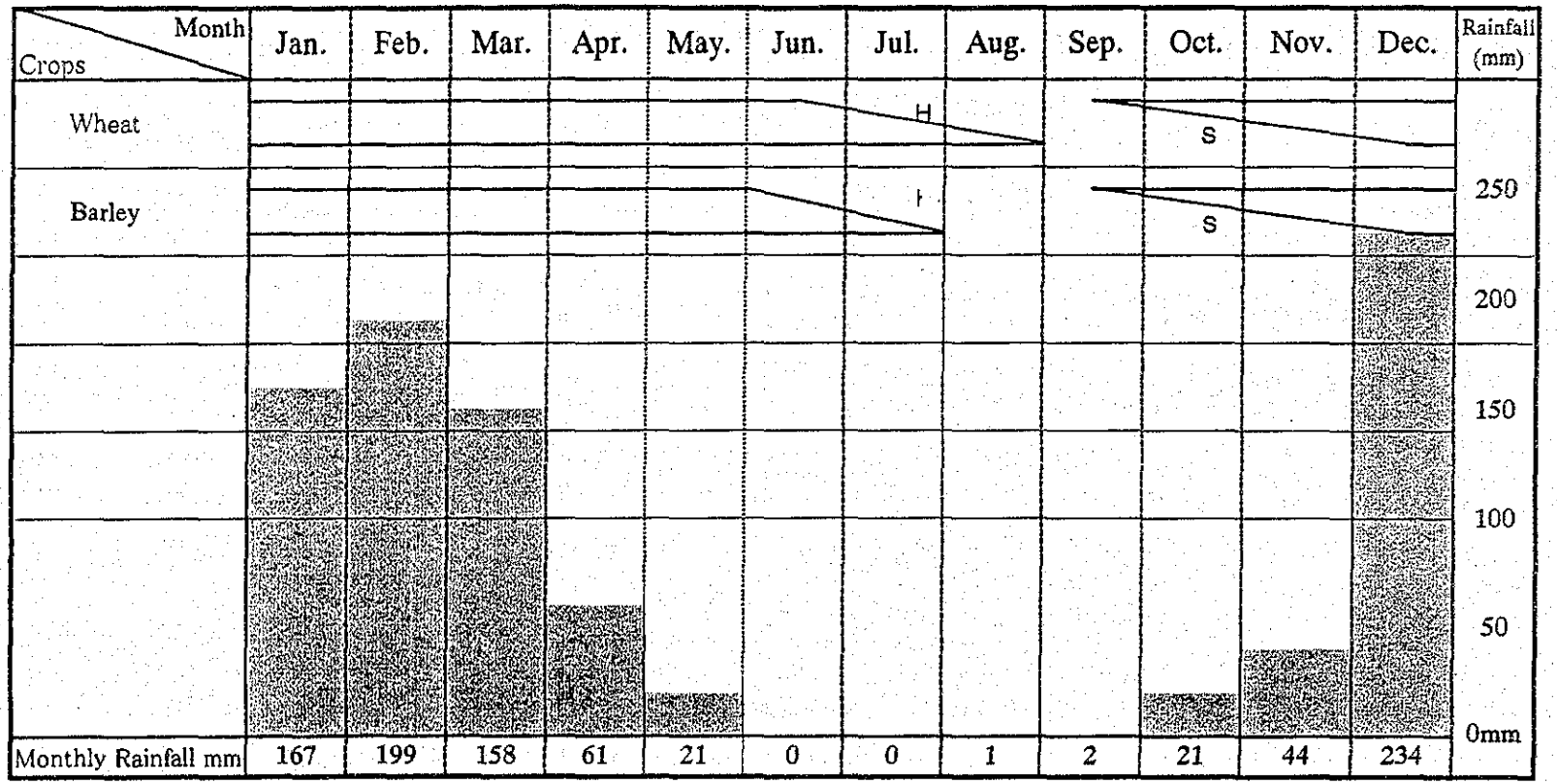
Figure I-2.3 : Present Cropping Calender in Sarbaz



Source: JICA Study Team Inteview Servey (8/May/2001)

Note: S: Seedling H: Harvesting H/1: 4times harvesting in a year

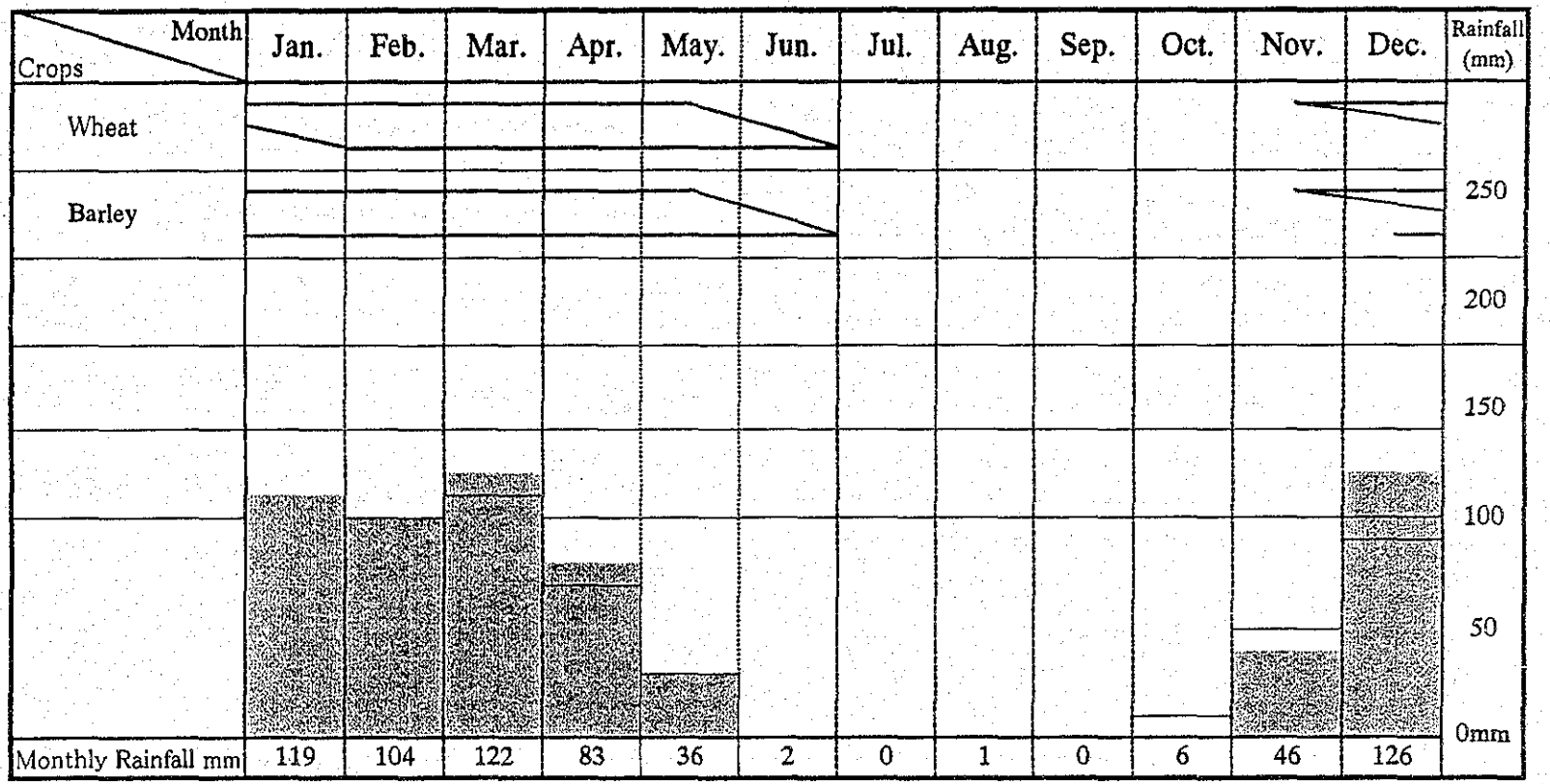
Figure I-2.4 : Present Cropping Calender in Tang Sorkh



Source: JICA Study Team Inteview Servey (8/May/2001)

Note: S: Seedling H: Harvesting H/1: 4times harvesting in a year

Figure I-2.5 : Present Cropping Calender in Zeras



Source: JICA Study Team Inteview Servey (8/May/2001)

Table I-3.1 : Present Livestock Population in the study Area

(unit:head)

Area	Item	Village								
		Sheep	Goats	Cows	Horse	Donkey	Poultry	Sub-Total		Animal Unit
								Seep + Goat	Others	
		①	②	③	④	⑤	⑥	⑦=①+②	⑧=③+④+⑤+⑥	
K4-1-9	Vastegan	5,350	650	750	8	290	1,500	6,000	1,048	11,240
K5-19a	Chaman Goli-Bazoft	3,230	2,765	1,380	393	239	6,750	5,995	2,012	16,055
K7-0-19-1	Sarbaz	3,285	960	1,219	0	657	5,240	4,245	1,876	13,625
K7-48	Tang Sorkh	1,180	1,010	94	1	47	2,640	2,190	142	2,900
K8-28	Zeras	7,110	17,560	638	232	830	7,385	24,670	1,700	33,170
	Total	20,155	22,945	4,081	634	2,063	23,515	43,100	6,778	76,990

Area	Item	Nomad								
		Sheep	Goats	Cows	Horse	Donkey	Poultry	Sub-Total		Animal Unit
								Seep + Goat	Others	
		①	②	③	④	⑤	⑥	⑦=①+②	⑧=③+④+⑤+⑥	
K4-1-9	Vastegan	6,000	1,250	0	60	260	250	7,250	320	8,850
K5-19a	Chaman Goli-Bazoft	7,200	4,850	425	762	702	1,560	12,050	1,889	21,495
K7-0-19-1	Sarbaz	19,300	18,750	132	80	755	3,300	38,050	967	42,885
K7-48	Tang Sorkh	10,950	8,400	0	57	212	2,510	19,350	269	20,695
K8-28	Zeras	0	0	0	0	0	0	0	0	0
	Grand Total	43,450	33,250	557	959	1,929	7,620	76,700	3,445	93,925

Area	Item	Total								
		Sheep	Goats	Cows	Horse	Donkey	Poultry	Sub-Total		Animal Unit
								Seep + Goat	Others	
		①	②	③	④	⑤	⑥	⑦=①+②	⑧=③+④+⑤+⑥	
K4-1-9	Vastegan	11,350	1,900	750	68	550	1,750	13,250	1,368	20,090
K5-19a	Chaman Goli-Bazoft	10,430	7,615	1,805	1,155	941	8,310	18,045	3,901	37,550
K7-0-19-1	Sarbaz	22,585	19,710	1,351	80	1,412	8,540	42,295	2,843	56,510
K7-48	Tang Sorkh	12,130	9,410	94	58	259	5,150	21,540	411	23,595
K8-28	Zeras	7,110	17,560	638	232	830	7,385	24,670	1,700	33,170
	Grand Total	63,605	56,195	4,638	1,593	3,992	31,135	119,800	10,223	170,915

Source: Village Servey (JICA Syudy Team)

Table I-3.2 Estimated AUM (Forage crop production)

Estimated Present Feed Production

Wheat (Barley)

	Area			Yield			Production			Straw		AUM
	irrigated	dry	total	irrigated	dry	ave.	irrigated	dry	total	yiled	production	
	(ha)	(ha)	(ha)	(kg/ha)	(kg/ha)	(kg/ha)	(ha)					
K4-1-9 Vastegan	506	34	540	2,716	809	1,897	1,374	28	1,401	1	1,401	10,862
K5-19a Chaman Goli-Bazoft	784	491	1,275	2,379	905	1,745	1,866	444	2,310	1	2,310	17,908
K7-0-19-1 Sarbaz	113	7	120	2,508	1,074	1,724	284	7	291	1	291	2,256
K7-48 Tang Sorkh	80	135	215	2,798	690	1,667	223	93	317	1	317	2,455
K8-28 Zeras	0	1,378	1,378	1,972	499	528	0	688	688	1	888	5,330
Total	1,483	2,045	3,528	2,474	695	1,258	3,669	1,420	5,007	1	5,007	38,812

Note:
- Area = village survey data for total, proportion value of irrigated and dry
- Yield = Wheat data (Township based) from Statistic Section, Ministry of Jihad-Agriculture
- Straw yield = estimated yield by Study Team
- AUM = 4.3kg x30 days = 129kg

Alfalfa

	Area			Yield			Production					AUM
	irrigated	dry	total	irrigated	dry	ave.	irrigated	dry	total	ratio	dry	
	(ha)	(ha)	(ha)	(kg/ha)	(kg/ha)	(kg/ha)	(ha)			(dry/fresh)	total	
K4-1-9 Vastegan	254	17	271	9,456	666	8,728	2,400	11	2,412	0.2	482	20,098
K5-19a Chaman Goli-Bazoft	81	51	132	8,755	666	8,728	711	34	745	0.2	149	6,206
K7-0-19-1 Sarbaz	208	13	221	5,865	1,000	8,728	1,221	13	1,234	0.2	247	10,284
K7-48 Tang Sorkh	40	67	107	8,429	638	8,728	335	43	378	0.2	76	3,147
K8-28 Zeras	0	0	0	8,755	666	8,728	0	0	0	0.2	0	0
Total	583	148	731	8,755	666	8,728	5,104	99	5,203	0.2	954	39,735

Note:
- Area = village survey data
- Yield = alfalfa average data (Township based) from Statistic Section, Ministry of Jihad-Agriculture
- Dry ratio = estimated by Study Team
- AUM = 0.8kg x30 days = 24kg

Table I-3.2 Estimated AUM (Forage crop production)

Estimated Present Feed Production

Wheat (Barley)

	Area			Yield			Production			Straw		AUM
	irrigated (ha)	dry (ha)	total (ha)	irrigated (kg/ha)	dry (kg/ha)	ave. (kg/ha)	irrigated (ha)	dry	total	yiled	production	
K4-1-9 Vastegan	506	34	540	2,716	809	1,897	1,374	28	1,401	1	1,401	10,862
K5-19a Chaman Goli-Bazoft	784	491	1,275	2,379	905	1,745	1,866	444	2,310	1	2,310	17,908
K7-0-19-1 Sarbaz	113	7	120	2,508	1,074	1,724	284	7	291	1	291	2,256
K7-48 Tang Sorkh	80	135	215	2,798	690	1,667	223	93	317	1	317	2,455
K8-28 Zeras	0	1,378	1,378	1,972	499	528	0	688	688	1	688	5,330
Total	1,483	2,045	3,528	2,474	695	1,258	3,669	1,420	5,007	1	5,007	38,812

Note:
Area = village survey data for total, proportion value of irrigated and dry
Yield = Wheat data (Township based) from Statistic Section, Ministry of Jihad-Agriculture
Straw yield = estimated yield by Study Team
AUM = 4.3kg x30 days = 129kg

Alfalfa

	Area			Yield			Production					AUM
	irrigated (ha)	dry (ha)	total (ha)	irrigated (kg/ha)	dry (kg/ha)	ave. (kg/ha)	irrigated (ha)	dry	total	ratio (dry/fresh)	dry total	
K4-1-9 Vastegan	254	17	271	9,456	666	8,728	2,400	11	2,412	0.2	482	20,098
K5-19a Chaman Goli-Bazoft	81	51	132	8,755	666	8,728	711	34	745	0.2	149	6,206
K7-0-19-1 Sarbaz	208	13	221	5,865	1,000	8,728	1,221	13	1,234	0.2	247	10,284
K7-48 Tang Sorkh	40	67	107	8,429	638	8,728	335	43	378	0.2	76	3,147
K8-28 Zeras	0	0	0	8,755	666	8,728	0	0	0	0.2	0	0
Total	583	148	731	8,755	666	8,728	5,104	99	5,203	0.2	954	39,735

Note:
Area = village survey data
Yield = alfalfa average data (Township based) from Statistic Section, Ministry of Jihad-Agriculture
Dry ratio = estimated by Study Team
AUM = 0.8kg x30 days = 24kg

Table I-3.3 : Feed Supply and Requirement in the Study Area

Estimated Total AUM

	Straw from wheat (barley)			Alfalfa			Rangeland			Total	Present	Required Feed		Over Grazing
	Area	Production	AUM	Area	Production	AUM	Area	Production	AUM	AUM	(head)			
	(ha)	(ton)		(ha)	(ton) dry		(ha)	(ton)				AU	AUM	rate
K4-1-9 Vastegan	540	1,401	10,862	271	482	20,098	1,142	208.5	3,475	34,435	14,618	14,190	170,280	4.9
K5-19a Chaman Goli-Bazoft	1,275	2,310	17,908	132	149	6,206	1,875	306.8	5,113	29,227	21,946	23,220	278,640	9.5
K7-0-19-1 Sarbaz	120	291	2,256	221	247	10,284	5,292	865.7	14,429	26,969	45,138	27,920	335,040	12.4
K7-48 Tang Sorkh	215	317	2,455	107	76	3,147	3,118	604.2	10,069	15,671	21,951	9,798	117,576	7.5
K8-28 Zeras	1,378	688	5,330	0	0	0	3,361	638.9	10,648	15,978	26,370	33,170	398,040	24.9
Total	3,528	5,007	38,812	731	954	39,735	14,788	2,624	43,734	122,281	130,023	108,298	1,299,576	10.6

Note:
Area = village survey data for total, proportion value of irrigated and dry
Yield = Wheat data (Township based) from Statistic Section, Ministry of Jihad-Agriculture
Straw yield = estimated yield by Study Team
AUM = 4.3kg x30 days = 129kg

Table I-3.4 Estimated Total AUM for Cow, Horse and Donkey (present, village)

	Straw from wheat (barley)			Alfalfa			Total AUM	Present (head)	Required Feed		Over grazing rate
	Area (ha)	Production (ton)	AUM	Area (ha)	Production (ton) dry	AUM			AU	AUM	
K4-1-9 Vastegan	540	1,401	10,862	271	482	20,098	30,960	1,048.0	5,240	62,880	2.0
K5-19a Chaman Goli-Bazoft	1,275	2,310	17,908	132	149	6,206	24,114	2,012.0	10,060	120,720	5.0
K7-0-19-1 Sarbaz	120	291	2,256	221	247	10,284	12,540	1,876.0	9,380	112,560	9.0
K7-48 Tang Sorkh	215	317	2,455	107	76	3,147	5,602	142.0	710	8,520	1.5
K8-28 Zeras	1,378	688	5,330	0	0	0	5,330	1,700.0	8,500	102,000	19.1
Total	3,528	5,007	38,812	731	954	39,735	78,547	6,778	33,890	406,680	5.2

Table I-3.5 Estimated Total AUM for Cow, Horse and Donkey (with plan)

	Straw from wheat (barley)			Alfalfa			Additiona Planned Alfalfa			Total	Future	Required Feed		Standard grazing rate
	Area (ha)	Production (ton)	AUM	Area (ha)	Production (ton) dry	AUM	Area (ha)	Production (ton) dry	AUM	AUM	(head)	AU	AUM	
K4-1-9 Vastegan	540	1,401	10,862	271	482	20,098	12.66	24	998	31,958	533	2,663	31,958	1.0
K5-19a Chaman Goli-Bazoft	1,275	2,310	17,908	132	149	6,206	46.79	82	3,414	27,528	459	2,294	27,528	1.0
K7-0-19-1 Sarbaz	120	291	2,256	221	247	10,284	125.24	147	6,121	18,661	311	1,555	18,661	1.0
K7-48 Tang Sorkh	215	317	2,455	107	76	3,147	85.71	144	6,020	11,622	194	969	11,622	1.0
K8-28 Zeras	1,378	688	5,330	0	0	0	0.00	0	0	5,330	89	444	5,330	1.0
Total	3,528	5,007	38,812	731	954	39,735	270.40	397	16,553	95,100	1,585	7,925	95,100	1.0

Table I-3.5 : Productivity of Meat and Milk in the Study Area

	Milk Yield		Live weight
	Daily Yield	Annual Yield	
	(lit/day/animal)	(lit/year/animal)	(kg/animal)
Cattle	1~2	100~200	150~200
Sheep	-	-	50~89
Goats	0.5	30~50	20~40

Source: JICA Study Team

Table I-3.5 : Productivity of Milk in the Study Area (standard)

		Holstein	Semi-local	Local
Live Weight	(kg/animal)	550	470	250
Production	(lit/day/animal)	18	12~16	4~5
Duration	(day/year)	300	250~270	210~230

Source: Provincial livestock office

Table I-3.6 Basic Factors Livestock Farming

(1) Standard Daily Ration (kg/day/head)

		Spring-Summer		Autumn-Winter	
		DCP	TDN	DCP	TDN
Local Cow	Adult	0.54	3.17	0.75	3.09
	Heifer	0.35	2.25	0.52	2.12
	Calf	0.30	1.74	0.34	1.61

		Spring-Summer		Autum-Winter	
		DCP	TDN	DCP	TDN
Hybied Race	Adult	1.04	6.35	1.37	6.43
	Heifer	0.64	3.74	0.87	3.64
	Calf	0.38	2.23	0.46	2.15

		Spring-Summer		Autum-Winter	
		DCP	TDN	DCP	TDN
Local Sheep	Adult	0.108	6.35	1.37	6.43
	Heifer	0.07	3.74	0.87	3.64
	Calf	0.06	2.23	0.46	2.15

Source : JICA Study Team

Table I-4.1 : Number of Inland Fishery farm in the Study Area

Area	Item	Number	Annual Production (ton/year)	Note
K4-1-9	Vastegan	1	5.0	Nasir Abad
K5-19a	Chaman Goli-Bazoft	2	200.0	Ghale Tabarak , Tabarak Olya
K7-0-19-1	Sarbaz	2	100.0	Noorabad
K7-48	Tang Sorkh	2	30.0	Sar Tang Sorkh
K8-28	Zeras	2	0.0	
	Total	5	335.0	

Source: Village Servey by JICA Study Team

Tbabl I-4.2 : List of issued ID Permission for cold water fish culture farms in Chaharmahar Bakhtyari Province. Untill 2000 (1/2)

File Number	No.	Applicant Name	Type	Township	District	Village	Water Source	I 1/	J2/	K3/	L4/	2000 5/	2001 5/	2002 5/	2003 5/	2004 5/	Total	O
	1	Gholamreza Sohrabi	Red	Boroujen	Gandoman	Nasirabad	Spring	50	5	500	5	0	0	0	0	0	5	2893
	2	Multi Purpose Coopriative	Legal	Boroujen	Gandoman	Kordbishe	Spring	250	25	3,000	30	30	–	–	–	–	60	–
	3	Abrizan Company	Legal	Boroujen	Gandoman	Emamghais	Spring	250	25	1,500	25	0	–	–	–	–	25	–
	4	Saberchaharmahar Company	Legal	Boroujen	Gandoman	Organ	Spring	80	0	520	8	0	–	–	–	–	8	–
	5	Gashtash Zargham	Red	Boroujen	Central	Sefeddasht	Well	30	3.5	300	3	0	–	–	–	–	3	–
	6	Said Tahmasebi	Red	Ardel	Miyankoh	Sarkhon	Spring	150	15	75	0	15	–	–	–	–	15	–
	7	Ghezel Parvar Company	Red	Ardel	Central	Azizabad	Spring	200	20	23	20	0	–	–	–	–	20	–
	8	Sabzakoh Trout Coopriative	Legal	Ardel	Central	Farkhorkafan	Spring	250	35	2,000	10	25	–	–	–	–	35	–
	9	Majid Saifi	Red	Ardel	Central	Rostamabad	Spring	20	20	191	0	35	–	–	–	–	35	–
	10	Rangen Kaman 286	Legal	Ardel	Miyankoh	Shalil	Spring	500	50	2,000	50	0	–	–	–	–	50	–
	11	Saradab Company	Legal	Ardel	Central	Rostamabad	Spring	250	75	5,500	75	0	–	–	–	–	75	–
	12	Chehel Cheshmenh Coopriative	Legal	Ardel	Central	Dehnosofla	Spring	250	25	1,700	25	0	–	–	–	–	25	–
	13	Pouan Company	Legal	Ardel	Central	Rostamabad	Spring	400	40	4,000	40	0	–	–	–	–	40	–
	14	Talla Cheshm Coopriative	Legal	Ardel	Central	Azizabad	Spring	500	50	2,300	25	25	–	–	–	–	50	–
	15	Manochar Tahmasebi	Red	Ardel	Miyankoh	Sarkhon	Spring	200	20	2,000	20	0	–	–	–	–	20	–
	16	Alireza Azizi	Red	Ardel	Miyankoh	Dehkohneh	Spring	250	25	2,500	25	0	–	–	–	–	25	–
	17	Trout Company	Legal	Ardel	Central	Rostamabad	Spring	200	20	1,600	0	20	–	–	–	–	20	–
									Piece(Ton)		Piece(Ton)						500000	
		Total						4570		3,978		15					516	

Note:

1/ I: Amount of Water discharge delyated by water Affair Office
2/ J: Production capacity of establish permission (Ton)
3/ K: Area of artificial Ponds (m^2)
4/ L: Exploited capacity of Permission until end of 1999 (Ton)
5/ M: Year
6/ O: Permission code

Source : Development and exploitation on of fish muliply and breeding centers during third Five-Year-Plan
P:Geographical location of water resources

Tbabl I-4.2 : List of issued ID Permission for cold water fish culture farms in Chaharmahar Bakhtyari Province. Untill 2000 (2/2)

File Number	No.	Applicant Name	Type	Township	District	Village	Water Source	I 1/	J2/	K3/	L4/	2000 5/	2001 5/	2002 5/	2003 5/	2004 6/	Total	O
	1	Pirghardeh company	Legal	Farsun	Mizdaj	Dehcheshmeh	Spring	–	Piece	–	Piece	–	0	0	0	0	5	2893
	2	Enayatallah Mohamadi	Red	Farsun	Mizdaj	Dehcheshmeh	Spring	–	–	–	20	–	–	–	–	–	60	–
	3	Zarkihizan Compnay	Legal	Farsun	Mizdaj	Dehcheshmeh	Other	–	–	–	25	–	–	–	–	–	25	–
	4	Saber Company	Legal	Farsun	Kohrang	Deimeh	Spring	–	–	–	15	–	–	–	–	–	8	–
	5	Hoshang Eslami	Red	Farsun	Mizdaj	Omidabad	Spring	–	–	–	–	–	–	–	–	–	3	–
	6	Manochehr Bagheri	Red	Farsun	Kohrang	Birgan Shahriavy	Spring	–	–	–	–	–	–	–	–	–	15	–
	7	Coopriative 257	Legal	Farsun	Bazoft	Morz	Spring	–	–	–	–	–	–	–	–	–	20	–
	8	Coopriative 266	Legal	Farsun	Bazoft	Morz	Spring	–	–	–	–	–	–	–	–	–	35	–
	9	Perghar dah cheshmeh company	Legal	Farsun	Mizdaj	Pir Ghar	Spring	–	–	–	–	–	–	–	–	–	35	–
	10	Yaver Soltari	Red	Farsun	Bazoft	Samsami	Spring	–	–	–	–	–	–	–	–	–	50	–
	11	Coopriative 280	Legal	Farsun	Bazoft	Nazi	Spring	–	–	–	–	–	–	–	–	–	75	–
	12	Rah Rhonda Farhadi	Red	Farsun	Bazoft	Doabsamsami	Spring	–	–	–	–	–	–	–	–	–	25	–
	13	Morvavid Company	Legal	Farsun	Kohrang	Deimeh	Spring	–	–	–	–	–	–	–	–	–	40	–
	14	Abdol Karim	Red	Farsun	Mizdaj	Dahcheshmeh	Spring	–	–	–	–	–	–	–	–	–	50	–
	15	Abdolkarim Mohamadi	Red	Farsun	Mizdaj	Dahcheshmeh	Spring	–	–	–	–	–	–	–	–	–	20	–
	16																	–
	17																	–
									Piece(Ton)		Piece(Ton)							
		Total																

Note:

1/ I: Amount of Water discharge delyated by water Affair Office
2/ J: Production capacity of establish permission (Ton)
3/ K: Area of artificial Ponds (m^2)
4/ L: Exploited capacity of Permission until end of 1999 (Ton)
5/ M: Year
6/ O: Permission code

Source : Development and exploitation on of fish muliply and breeding centers during third Five-Year-Plan
P:Geographical location of water resources

Table I-4.3: Project Profile (Inland Fishery) of Fish Breeding Center (inside the Study Area)

(1/2)

Project Name	Fish Breeding center of Ghezel Parver shafid Coleted (Provincial Project)			**Code**	
Sector	Provincial office of Jihad Agriculture				
Location	Fersan township Bazoft district Tabarak Village				
Objectives	**Objectives**	Established Job opportunity Increase fish meat production			
	Beneficiaries	For each 4ton one rebon project and one village participate			
Justification	**Relevant Development Strategy**	Best Utilization of water resources and established job oppotunity			
	Justification from National Plan/Sector Plan	This is provincial Project			
Scope of Project	Central of irrigation of villagers to township and established job for local people				
Implementing Agency					
Major Stakeholders					
Implementation Period		**2000-2004**	**2005-2009**	**2010-2014**	**2015-2020**
	Planning				
	Pilot Project				
	Construction				
	Implementation				
Project Cost	Initial Investment Land 50,000,000 Construction 3,500,000,000 Equipment 150,000,000 Total 3,700,000,000 Maintenance/ Recurrent Cost				
Possible Financial Source	Provincial credit and loan from bank system				
Relevant Projects to be jointly implemented	Infrastructure affair with Watershed management ,water affair, environmental org. Jihad Agricultural				
Maturity	After one year later				

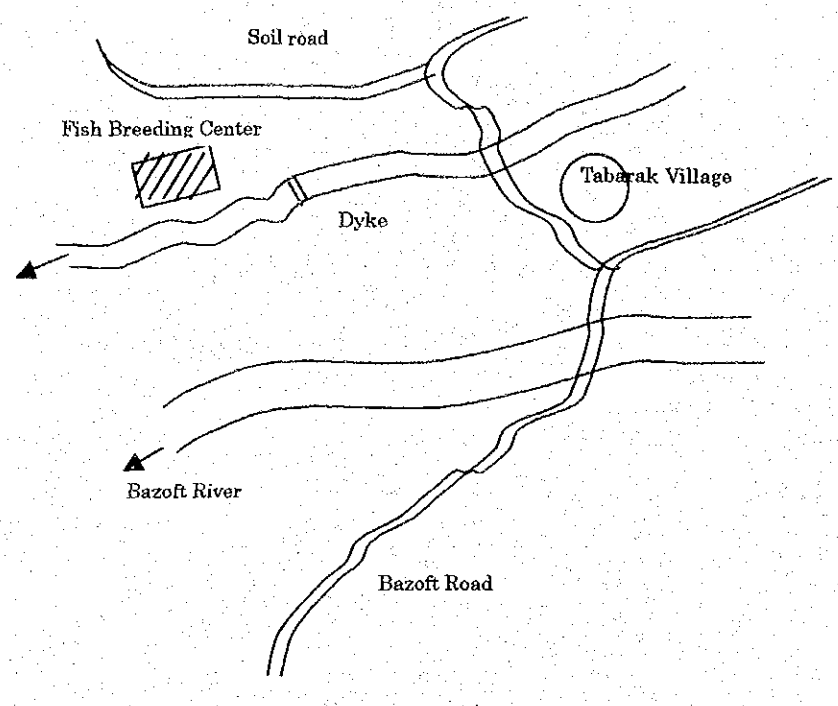
Location Map	
TOR/ Specification	Separation of dam-water transfer channel Construction of sediments central pool and construction fish breeding Pools around 12,000m2 for production of fish : the capacity will be around 200ton
Environmental Impacts	Nothing
Other Remarks	

Table I-5.1 : Present Production Cost of Main Crops

(unit: Rls)

CROP	Planting		Protection		Harvest		Land		Total Cost	
	cost	%	cost	%	cost	%	cost	%	cost	%
IR-wheat	471,720	19.30	432,160	17.68	438,870	20.83	722,420	29.56	2,444,080	100
RF-wheat	127,070	24.21	30,330	5.78	150,040	31.49	107,850	20.55	524,900	100
IR-barley	475,730	24.29	233,510	11.92	359,740	20.15	568,640	29.03	1,958,620	100
RF-barley	142,580	23.10	35,720	5.79	202,120	36.74	119,130	19.30	617,150	100
IR-chickpea	812,910	28.20	564,870	19.60	229,490	9.01	895,160	31.05	2,882,710	100
RF-chikpea	240,970	29.17	35,230	4.26	199,430	26.91	243,200	29.44	826,030	100
IR-lentil	442,030	14.60	431,650	14.26	334,730	12.73	1,500,110	49.56	3,026,650	100
RF-lentil	231,900	32.11	40,480	5.61	141,950	21.36	206,520	28.60	722,150	100
IR-green gram	409,140	11.88	742,860	21.58	572,430	20.07	1,200,000	34.85	3,443,000	100
Sugar beet	328,760	6.52	1,393,330	27.62	527,430	14.01	2,264,590	44.89	5,044,730	100
IR-potato	5,570,610	48.21	1,522,260	13.18	1,064,390	10.16	2,707,200	23.43	11,553,720	100
IR-tomato	1,237,830	12.05	1,824,670	17.77	3,836,670	30.87	3,716,670	36.19	10,269,170	100
Clover	325,630	14.26	548,560	24.02	590,110	31.34	673,690	29.50	2,283,320	100
Maize (for forage)	689,540	17.81	951,190	24.56	368,160	9.51	1,303,340	33.66	3,872,310	100
Other medical herbs	466,710	12.36	1,037,100	27.47	367,790	12.03	1,464,420	38.78	3,775,910	100
Gray pea	205,710	6.47	578,930	18.20	740,350	25.04	1,428,570	44.91	3,181,070	100
IR-Kasan	151,250	14.56	223,750	21.54	238,750	28.28	200,000	19.25	1,038,750	100
RF-Kasan	201,030	23.84	64,510	7.65	283,190	40.87	122,460	14.52	843,320	100
Other crops	623,550	19.76	1,099,240	34.84	646,930	24.38	516,670	16.38	3,154,950	100
Navy-bean	916,210	18.83	1,287,110	26.45	491,680	11.67	1,734,160	35.64	4,865,850	100
Kidney bean	834,130	22.36	1,055,650	28.30	418,600	14.24	869,570	23.31	3,729,700	100
IR-pintobean	1,260,300	23.06	1,261,270	23.08	455,870	9.68	2,095,890	38.35	5,465,710	100
Med Grain Rice	959,220	14.17	1,367,650	20.20	648,790	10.92	3,031,560	44.79	6,769,040	100

Source: Ministry of Agricultural statistics section

Table I-5.1.2 Labor Requirement on Main Crops

unit: (MAN/DAY LABOUR)

CROP	Plough	Disk harrow	Land Preparation	smoothing	diking and desiltation	nursery	seed drilling	manure sprea.	fertilizer spreading	irrigation	cultivation	spraying	wedding and thinning	harvesting	crop gather and transportin	threshing	loading	total
IR-wheat	14.27	4.00	2.15	1.51	0.0	0.0	0.76	0.98	0.87	50.08	0.00	1.29	0.00	12.25	2.40	0.00	0.49	91.05
RF-whear	4.00	0.00	0.00	0.00	0.0	0.0	0.56	0.40	0.32	0.00	0.00	0.21	0.00	7.49	204.25	1.33	0.19	218.75
IR-barley	40.00	0.00	1.57	1.54	0.0	0.0	25.22	1.07	0.88	0.00	0.00	0.40	0.00	10.61	1.87	0.00	0.52	83.68
RF-barley	7.10	0.00	0.00	0.00	0.0	0.0	0.00	0.28	0.69	0.00	0.00	0.00	0.00	7.02	1.30	1.50	0.38	18.27
IR-chickpea	0.00	0.00	10.00	10.00	0.0	0.0	0.00	0.00	0.73	11.34	7.26	0.00	2.00	6.00	1.45	0.00	0.40	49.18
RF-chickpea	10.00	0.00	0.00	0.00	0.0	0.0	0.00	0.00	0.32	0.00	2.38	0.00	6.67	6.37	2.33	5.00	0.60	33.67
IR-lentil	0.00	0.00	2.33	0.00	0.0	0.0	0.00	0.50	0.79	25.57	11.88	0.00	0.00	9.95	1.97	0.00	0.74	53.73
RF-lentil	10.00	0.00	0.00	0.00	0.0	0.0	0.00	0.00	0.51	0.00	1.94	0.00	0.00	4.92	2.38	5.00	0.61	25.36
IR-green gram	10.00	0.00	0.00	0.00	0.0	0.0	0.00	0.00	0.43	0.00	0.00	0.00	0.00	20.00	5.00	10.00	0.50	45.93
Sugar beet	0.00	0.00	1.45	0.00	0.0	0.0	0.12	1.33	1.25	147.67	20.25	0.00	12.30	20.00	11.29	0.00	3.42	219.08
IR-potato	0.00	0.00	14.36	0.00	0.0	0.0	0.60	3.13	1.31	0.00	4.03	2.61	8.33	30.14	10.66	0.00	6.92	82.09
IR-tomato	0.00	0.00	7.50	0.00	0.0	0.0	0.00	1.25	0.80	18.25	9.67	0.00	0.00	50.00	0.00	0.00	15.67	103.14
Clover	10.00	0.00	1.48	0.00	0.0	0.0	0.00	4.29	1.36	605.97	0.00	0.00	0.00	19.13	5.84	7.50	2.21	657.78
Maize (for forage)	0.00	0.00	8.00	0.00	0.0	0.0	0.00	0.00	204.83	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	222.83
Other medical herbs	0.00	0.00	0.00	0.00	0.0	0.0	0.00	2.50	1.13	33.95	12.52	0.00	0.00	10.55	3.93	0.00	0.60	65.18
Gray pea	0.00	0.00	0.00	0.00	0.0	0.0	0.00	0.00	0.47	0.00	4.00	0.00	0.00	18.21	2.00	1.00	0.83	26.51
IR-Kasan	0.00	0.00	2.50	0.00	0.0	0.0	0.00	1.25	0.00	0.00	0.00	0.00	0.00	6.25	0.00	0.00	0.25	10.25
RF-Kasan	9.47	0.00	0.00	0.00	0.0	0.0	0.00	0.56	2.79	0.00	0.00	0.00	0.00	7.92	2.11	0.00	1.97	24.82
Other crops	0.00	0.00	0.00	0.00	0.0	0.0	0.00	0.00	0.94	0.00	25.96	0.00	0.00	16.87	0.00	0.00	0.70	44.47
Navy-bean	0.00	0.00	6.72	10.00	0.0	0.0	244.20	1.07	1.32	21.91	9.54	1.27	10.00	13.24	1.91	0.00	1.14	322.32
kidney bean	0.00	0.00	8.57	0.00	0.0	0.0	0.00	4.00	0.74	0.00	0.00	0.00	10.00	12.38	4.29	0.00	0.73	40.71
IR-pintobean	0.00	0.00	6.47	0.00	0.0	0.0	0.00	0.58	0.72	12.42	6.20	0.74	0.00	11.14	1.76	0.00	0.60	40.63
Med Grain Rice	14.85	0.00	10.00	3.02	5.39	0.0	0.00	2.35	0.95	0.00	0.00	0.85	4.55	18.14	4.09	4.65	1.36	70.20

Source: Ministry of Agricultural statistics section

Table I-5.1.3: Planting and Preparation Cost of Main Crops

(unit: RLS)

CROP	Seed comsumed	Seeding treatment	Nursery and seeding	Other planting consts	total cost of planting & preparation
IR-wheat	275,820	5,420	11,900	500	471,720
RF-wheat	97,930	2,470	9,210	110	127,070
IR-barley	270,410	4,660	50,000	1,700	475,730
RF-barley	113,740	2,170	0	0	142,580
IR-chikcpea	636,580	0	0	0	812,910
RF-chikpea	178,880	0	0	0	240,970
IR-lentil	331,130	110	0	1,080	442,030
RF-lentil	172,090	0	0	0	231,900
IR-green gram	180,000	0	0	0	409,140
Sugar beet	128,750	0	46,230	0	328,760
IR-potato	4,874,740	7,490	175,060	0	5,570,610
IR-tomato	500,000	0	0	0	1,237,830
Clover	219,820	0	0	23,300	325,630
Maize (for forage)	326,070	0	0	0	689,540
Other medical herbs	288,060	0	0	0	466,710
Gray pea	142,860	0	0	0	205,710
IR-Kasan	57,500	0	0	0	151,250
RF-Kasan	178,770	0	0	0	201,030
Other crops	196,110	0	0	0	623,550
Navy-bean	511,700	3,650	20,000	0	916,210
kidney bean	550,780	0	0	0	834,130
IR-pintobean	812,610	200	0	0	1,260,300
Mes Grain Rice	316,180	15,770	0	0	959,220

Source: Ministry of Agricultural statistics section

Table I-5.1.4 Seed, Fertilizer and Labor Cost of Main Crops

(unit:RLS/ha)

CROP	Production	Seed	Fertilizer	Labor
IR-wheat	22,243.7	73.1	57.7	244.3
RF-wheat	4,356.4	39.6	59.3	19.9
IR-barley	14,482.9	46.9	40.1	173.1
RF-barley	5,537.9	41.2	71.2	303.1
IR-chikpea	9,703.2	83.8	25.1	197.3
RF-chikpea	3,426.7	108.7	71.4	101.8
IR-lentil	13,759.1	161.9	60.8	256.1
RF-lentil	1,579.1	40.6	27.9	62.3
IR-green gram	12,000.0	200.0	48.0	261.3
Sugar beet	294,552.5	18,901.4	654.0	1,344.5
IR-potato	231,287.2	79.7	291.5	2,817.5
IR-tomato	392,000.0	2,352,000.0	871.1	3,800.7
Clover	35,092.3	488.1	146.5	53.3
Maize (for forage)	199,705.5	4,973.1	356.7	896.2
Other medical herbs	6,213.5	269.4	20.0	95.3
Gray pea	18,214.3	182.1	204.0	687.1
IR-Kasan	15,000.0	400.0	120.0	1,463.4
RF-Kasan	5,808.9	58.5	54.9	234.0
Other crops	5,808.9	118.4	30.7	130.5
Navy-bean	15,084.6	101.0	39.6	46.8
kidney bean	7,304.3	42.9	21.0	179.4
IR-pintobean	16,753.3	97.9	41.1	410.1
Med Grain Rice	42,585.1	421.4	117.2	566.3

Source: Ministry of Agricultural statistics section

Table I-6.1 **Sericulture**
Priority Areas for Sericulture Projects

Provinces	First Priority	Second Priority	Third Priority
Gilan	Rashet, Astara, Rudbar, Fuman	Hillfoor, elevated parts of plains	–
Zanjan/Qazvin	Zanjan, Takestan, Qazvin	Zanjan, Takestan, Qazin	–
Hamdan	Tuserkan, Nahavand, Malayer, Hamdan	Tuserkan	–
East Azarbayajan	Marand, Ahar, Tabriz, Sarab	Morand, Moghan, Ahar, Moragheh, Myaneh	–
West Azarbayajan	Khoye	Khoye, Sardashet, Maku, Orumiyeh, Bukan	–
Kordestan	Sanandes, Marivan	Sanandes, Marivan, Saghoz	–
Kermonshahan	Keranshah, Paveh, IslamAbad	Kermanshah, Paveh, IsalamAbad	–
Lorestan	–	Khoramabad Burjerd, Aligudarz	–
Ilam	–	Ilam, Shirvan, Darehshahr	–
Khuzestan	–	–	Masjed Soleman, Izeh, similar areas
Kuhgiluyeh	–	–	Landeh, Ghalehraisi, Bidboland, Asfandan, Yasuj
Chahrmahal	–	–	Boroujen, Farakhshare, Boldaji, Gandoman, Sharekord, Polezamankhan
Busher	–	–	

Note: Khuzestan: Northern part of the province with elevation of 2200 to 2400m, which includes north and northeast of Masjed Soleman, Izeh, and simmilar areas, are suitable to relatively suitable for mulberry plantation.
Kuhgiluyeh: In this province parts with elevation of 1000 to 2200m in Landeh, Ghalehraisi, Bidboland, Asfandan and Yasuj are suitable for mulberry plantation. *While the parts with elevation of 1400 to 2500m in Dogonbadan, Bashet, Dehdashet and Telgerd are relatively suitable.*
Chahrmahal: Parts with elevation of 1500 to 2400m in Boroujen, Farakhshare, Boldaji, Gandoman and also in parts with elevation of 1600 to 2100m in Shahrekord and Polezamankhan are relatively suitable for mulberry plantation.

Source: Sericulture Company of Iran

Table I-6.2 Sericulture
Land Types Suitable for Mullberry Plantation

Unit: ha

Provinces	Possibility of establishment of mulberry Plantation in lands suitable for irrigated farming													Posibility of establishment of mulberry plantation *in gravely lands, not usitable for farming*						Grand Total
Land Type	7~3	3.6	4.1	4.4	4.5	4.6	4/5.3	4/5.4	5.5	5.8	7.4	7.5	sub-tot	3.8	8.1	8.2	9.1	9.2	sub-tot	
Gilan	7,500	27,500	-	-	3,600	2,400	-	133,000	-	16,500	10,000	-	200,500	-	-	-	-	-	0	200,500
Zanjan/Qazvin	-	-	281,250	-	-	-	-	-	-	-	-	-	281,250	-	20,000	69,125	-	33,000	122,125	403,375
Hamdan	-	-	263,000	-	-	-	-	-	-	-	-	-	263,000	-	31,000	65,000	-	-	96,000	359,000
East Azarbayajan	-	-	243,000	-	-	-	26,000	-	-	-	-	26,000	295,000	-	21,500	43,500	23,000	21,000	109,000	404,000
West Azarbayajan	-	-	231,480	-	-	-	-	-	-	-	-	-	231,480	-	26,850	33,250	42,950	37,300	140,350	371,830
Kordestan	-	-	39,000	-	-	-	-	-	-	-	-	-	39,000	-	4,700	17,000	-	-	21,700	60,700
Kermonshahan	-	-	185,000	-	-	-	-	-	-	-	-	-	185,000	-	57,000	75,000	-	-	132,000	317,000
Lorestan	-	-	97,000	-	-	-	-	-	-	-	-	-	97,000	-	35,000	47,000	1,500	-	83,500	180,500
Ilam	-	-	13,500	-	-	-	-	-	-	-	-	12,000	25,500	36,000	25,000	15,000	-	-	76,000	101,500
Khuzestan	-	-	89,000	51,500	-	-	-	-	21,500	-	-	27,500	189,500	-	21,470	35,000	26,530	4,000	87,000	276,500
Kuhgiluyeh	-	-	9,500	-	-	-	-	-	-	-	-	-	9,500	-	36,000	31,000	4,700	-	71,700	81,200
Chahrmahal	-	-	65,000	-	-	-	-	-	-	-	-	-	65,000	-	80,000	-	-	39,000	119,000	184,000
Busher	-	-	9,500	-	-	-	-	-	-	-	-	-	9,500	69,000	17,000	44,000	3,000	-	133,000	142,500
Total	7,500	27,500	1,526,230	51,500	3,600	2,400	26,000	133,000	21,500	16,500	10,000	65,500	1,891,230	105,000	375,520	474,875	101,680	134,300	1,191,375	3,082,605

Source: Sericulture Company of Iran

Table I-6.3 **Sericulture**
Present Situation of Sericulture (in 1988)

Provinces	Area of mulberry plantation (ha)	Average number of plants (tree/ha)	Total number of plants	% used for sericulture	Average production of leaves (ton/ha)	Total of leaves used for sericulture (ton)	Number of boxes of cultured silkworm	Amount of cocoon produced (kg)
Gilan	10,903	3,019	32,919,260	70.09	10	76,420	80,351	2,008,770
Zanjan/Qazvin	210	250	52,500	28.67	5	301	300	6,600
Hamdan	24	420	10,100	16.00	5	12	10	300
East Azarbayajan	1,900	352	66,950	14.90	8	2,490	1,382	30,174
West Azarbayajan	64	250	16,000	–	–	–	–	–
Kordestan	244	300	73,200	–	–	–	–	–
Kermonshahan	1,250	250	312,500	25.00	6	200	5	105
Lorestan	20	250	5,000	–	–	–	–	–
Ilam	27	248	6,700	–	–	–	–	–
Khuzestan	24	230	5,500	–	–	–	–	–
Kuhgiluyeh	13	270	3,500	–	–	–	–	–
Chahrmahal	17	250	4,250	–	–	–	–	–
Busher	11	250	2,750	–	–	–	–	–
Total	14,707	–	33,478,210					

Source: Sericulture Company of Iran

Table I-6.4 Sericulture
Activities and Expansion of Sericulture in Provinces

Provinces	Based on number of sericulture center (%)	Based on distribution of silkwom larva
Gilan	95.870	96.599
Zanjan/Qazvin	0.103	0.246
Hamdan	-	0.018
East Azarbayajan	3.020	3.031
West Azarbayajan	0.300	0.004
Kordestan	-	0.057
Kermonshahan	-	0.009
Lorestan	0.300	-
Ilam	0.103	-
Khuzestan	-	0.016
Kuhgiluyeh	0.300	-
Chahrmahal	0.103	0.016
Busher	-	-
Total	100.099	99.996

Source: Sericulture Company of Iran

Table I-6.5 Sericulture
Kinds of Silkworm

Kinds	Name	Scientific name	Origin	Feed	Coccon					
					weight (g)	length (mm)	width (mm)	silk length (m)	silk produc per 1,000 (g)	Dyniel
KASAN (common silkworm)				Mulberry	2.0	3.5	1.9	1,300-1,500	380.0	2.5-3.0
YASAN (wild silkworm)										
	Family:	*Saturniidae*								
1	TENSAN	*Antheraea yamami GUERIN*	Japan	oak	6.0	4.8	2.4	500-600	300-350	5.5-6.5
2	CHINESE SAKUSAN	*Antheraea pernyi GUERIN*	China	oak	8.0	5.0	2.5	600-700	260-300	4.8-5.1
3	INDIAN SAKUSAN	*Antheraea myritta DRVRY*	India	sal						
4	MUGASAN	*Antheraea asama HELFER*	India	*Magnolia hypoleuca*						
5	ERISAN	*Philosamia cynthia ricini MOORE*	India	castor oil plant						

Source: Japanese book "TENSAN"
Published by "SHADAN HOJIN NOSANGYOSON BUNKA KYOKAI"

Table I-6.6 Sericulture
Feed Comsupmtion

Age	Feed Supply (g)	Feed Consumption (g)	Percentage (%)
1	0.710	0.239	33.7
2	1.563	0.561	35.8
3	4.068	1.859	45.6
4	12.922	8.396	64.9
5	52.304	40.496	77.4
Total	71.566	51.550	72.0

Note: (1) in case of "TENSAN"
(2) This consumption is 2-2.5 times more than that of common silkworm.
(3) Feed = green leaves

Age	Female		Male	
	Feed Consumption (g)	Leaf area (cm2)	Feed Consumption(g)	Leaf area (cm2)
1	0.243	11.6	0.236	10.7
2	0.581	34.1	0.544	32.2
3	1.865	97.1	1.853	98.5
4	8.168	444.2	8.623	493.9
5	37.738	2,403.8	43.255	2,640.4
Total	48.568	2,990.8	54.510	3,275.7
Life (day)	47.4		53.2	

Note: (1) Feed = green leaves

Source: Japanese book "TENSAN"
Published by "SHADAN HOJIN NOSANGYOSON BUNKA KYOKAI"

Table I-7.1 Estimated Basic Unit for Cow-Raising

Estimated Basic Unit of Milk Cow-Raising

One head of cow (1/2)

Cow			Milk			Feed consumption			
Variety	Weight (kg)	AUM	production lit/day	duration d/year	production lit/year (ave.)	In case of (monthly) straw (kg/m.)	alfalfa (kg/m.)	In case of (yearly) straw (kg/y)	alfalfa (kg/y)
Semi-local	470	5	12-16	250-270	3,660	645	600	7,740	7,200

One head of cow (2/2)

Cow	Required feed area (ha) (in case of)			
	straw		alfalfa	
	irrigated	dry	irrigated	dry
Semi-local	2.9	10.4	0.8	10.8

Feed consumption for calf (Estimation)

Calf	Required alfalfa feed (yearly)		
	weight	Area (in case of)	
	(kg)	irrigated (ha)	dry (ha)
Semi-local	1,800.0	0.2	2.7

Remarks: AUM: = 4.3kgx30 days = 129 kg (wheat)
= 0.8kg x 30 days = 24 kg (dryed alfalfa) 120 kg (fresh alfalfa)
Feed yield (kg/ha) = 2,474 (irrigated wheat)
695 (dry wheat)
8,755 (irrigated alfalfa)
666 (dry alfalfa)

Cost and Benefit Ratio

Milk cow-raising (one head or 5 heads) per household

	Cost						Benefit					B/C ratio
	Required feed				Labor cost	Total	milk production			selling calf	Total	
	Feed consumption In case of (yearly) alfalfa (kg)	Required area (ha) In case of alfalfa irrigated	dry	Buying cost (Riel/year) In case of alfalfa	Keeper (Riel/year)	(Riel/year)	(lit/year)	unit price (Riel/year)	(Riel/year)	(Riel/year)		
In case of feed obtained from his field:												
One head	9,000	1.0	13.5		7,200,000	7,200,000	3,660	375	1,372,500.0	1,100,000	2,472,500.0	0.34
Five heads	45,000	5.1	67.6		7,200,000	7,200,000	18,300	375	6,862,500.0	4,400,000	11,262,500.0	1.56
In case of feed bought from others:												
One head				9,000,000	9,000,000	18,000,000	3,660	375	1,372,500.0	1,100,000	2,472,500.0	0.14
Five heads				45,000,000	9,000,000	54,000,000	18,300	375	6,862,500.0	4,400,000	11,262,500.0	0.21

*(cow+calf) feed

* every year: selling 4 calf out of 5 calf
one calf for keeping.

Remarks: Feed buying cost = 1,000 (Riel/kg)
Calf selling = 100 kg (one year old)x11,000 Riel/kg= 1,100,000 (Riel/head)
Keeper should collect 123.3kg per day for five cow and five calf.

Table I-7.2 Estimated Basic Unit for Sheep Raising

Estimated Basic Unit of Sheep

One head of sheep (1/2)

Cow			Meat			Feed consumption			
Variety	Weight (kg)	AUM		duration year		In case of (monthly)		In case of (yearly)	
						straw (kg/m.)	alfalfa (kg/m.)	straw (kg/y)	alfalfa (kg/y)
Local	40	1		40		129	120	1,548	1,440

One head of sheep (2/2)

Cow	Required feed area (ha) (in case of)			
	straw		alfalfa	
	irrigated	dry	irrigated	dry
Local	0.6	2.1	0.2	2.2

Feed consumption for young sheep (Estimation)

Calf	Required alfalfa feed (yearly)		
	weight (kg)	Area (in case of)	
		irrigated (ha)	dry (ha)
Local	360.0	0.04	0.5

** feed required: 1/4 viume of that for adult cow*

Remarks: AUM: = 4.3kgx30 days = 129 kg (wheat)
= 0.8kg x 30 days = 24 kg (dryed alfalfa) 120 kg (fresh alfalfa)
Feed yield (kg/ha) = 2,474 (irrigated wheat)
695 (dry wheat)
8,755 (irrigated alfalfa)
666 (dry alfalfa)

Cost and Benefit Ratio

Milk cow-raising (one head or 25 heads) per household

	Cost						Benefit					B/C ratio
	Required feed				Labor cost	Total	milk production			selling calf	Total	
	Feed consumption In case of (yearly) alfalfa (kg)	Required area (ha) In case of alfalfa irrigated	dry	Buying cost (Riel/year) In case of alfalfa	Keeper (Riel/year)	(Riel/year)	(lit/year)	unit price (Riel/year)	(Riel/year)	(Riel/year)		
In case of feed obtained from his field:							(for only family consumption)					
One head	1,800	0.2	2.7		7,200,000	7,200,000	0	0	0.0	400,000	400,000.0	0.06
25 heads	45,000	5.1	67.6		7,200,000	7,200,000	0	0	0.0	8,000,000	8,000,000.0	1.11
In case of feed bought from others:												
One head				1,800,000	9,000,000	10,800,000	0	0	0.0	400,000	400,000.0	0.04
25 heads				45,000,000	9,000,000	54,000,000	0	0	0.0	8,000,000	8,000,000.0	0.15

*(adult+young) feed

* every year: selling 20 heads out of 25
5 heads for males, unpregnant.

Remarks: Feed buying cost = 1,000 (Riel/kg)
Calf selling = 40 kg (two year old)x10,000 Riel/kg= 400,000 (Riel/head)
Keeper should take care sheep looking for feed.