

Table E.3.7.1 Crop Production and Yield in D.I. Khan, Kulachi Tehsils

Crops	D. I. Khan Tehsil						Kulachi Tehsil						Total														
	Irrigated Area			Non-irrigated Area			Irrigated Area			Non-irrigated Area			Total														
	Area (ha)	Production (tons)	Yield (t/ha)	Area (ha)	Production (tons)	Yield (t/ha)	Area (ha)	Production (tons)	Yield (t/ha)	Area (ha)	Production (tons)	Yield (t/ha)	Area (ha)	Production (tons)	Yield (t/ha)												
A. CEREALS																											
Wheat	36,650	72,363	1.97	12,612	12,179	0.97	49,271	84,542	1.72	1,500	3,005	2.00	3,500	3,378	0.97	5,000	6,383	1.28	38,159	75,368	1.98	16,112	15,557	0.97	54,271	90,925	1.68
1987-88	31,722	63,443	2.00	20,416	21,768	1.07	52,138	88,040	1.69	1,424	2,848	2.00	14,791	12,837	0.87	16,215	15,741	0.97	33,146	69,156	2.09	35,207	33,907	0.96	68,353	103,781	1.52
1988-89	34,753	71,812	2.01	25,271	23,897	0.95	64,024	101,739	1.59	1,643	3,289	1.95	10,843	10,010	0.92	12,486	12,319	1.06	40,396	81,051	2.01	36,114	33,907	0.94	76,510	114,938	1.50
1989-90	32,808	65,616	2.00	22,397	21,692	0.97	55,205	87,823	1.59	1,432	2,867	2.02	10,696	10,359	0.97	12,128	12,346	1.09	34,240	69,018	2.02	33,093	32,051	0.97	67,333	101,069	1.50
1990-91	32,190	64,380	2.00	21,326	21,498	1.01	53,516	79,844	1.49	1,702	3,404	2.00	6,770	6,851	1.01	8,472	10,368	1.22	33,892	68,801	2.03	21,096	21,349	1.01	54,984	90,150	1.64
1991-92	34,328	68,656	2.00	23,004	22,807	0.99	56,331	83,648	1.49	1,540	3,080	2.00	5,320	5,891	1.11	10,860	11,278	1.03	35,852	71,702	2.02	28,324	27,498	0.97	64,276	100,177	1.56
Average	34,328	68,656	2.00	23,004	22,807	0.99	56,331	83,648	1.49	1,540	3,080	2.00	5,320	5,891	1.11	10,860	11,278	1.03	35,852	71,702	2.02	28,324	27,498	0.97	64,276	100,177	1.56
1987-88	1,461	813	0.56	1,937	951	0.49	3,398	1,764	0.52	28	22	0.79	1,909	929	0.49	1,937	951	0.49	1,489	835	0.56	3,846	1,880	0.49	5,335	2,715	0.51
1988-89	3,316	2,708	0.82	6,063	4,918	0.81	9,370	7,626	0.81	62	57	0.92	6,001	4,861	0.81	6,063	4,918	0.81	3,378	2,708	0.82	12,064	9,779	0.81	15,442	12,544	0.81
1989-90	2,712	2,020	0.74	4,274	3,163	0.74	6,986	5,183	0.74	6	5	0.83	4,268	3,158	0.74	4,274	3,163	0.74	2,718	2,025	0.75	8,342	6,321	0.74	11,260	8,346	0.74
1990-91	1,650	1,431	0.87	1,747	1,504	0.86	3,397	2,935	0.86	22	20	0.91	1,800	1,484	0.86	1,747	1,504	0.86	1,672	1,451	0.87	3,472	2,988	0.86	5,144	4,339	0.86
1991-92	1,956	1,730	0.88	1,800	1,584	0.88	3,756	3,314	0.88	0	0	0.78	1,800	1,584	0.88	1,800	1,584	0.88	1,956	1,730	0.88	3,600	3,168	0.88	5,256	4,898	0.88
1992-93	1,953	1,523	0.78	5,311	4,142	0.78	7,264	5,665	0.78	81	65	0.78	5,311	4,142	0.78	5,311	4,142	0.78	2,034	1,586	0.78	10,541	8,221	0.78	12,375	9,807	0.78
Average	2,115	1,704	0.78	3,522	2,710	0.77	5,627	4,315	0.77	33	28	0.84	3,482	2,683	0.77	3,422	2,710	0.77	2,228	1,732	0.78	7,011	5,393	0.77	9,219	7,143	0.77
1987-88	784	712	0.91	176	137	0.78	960	849	0.88	49	50	1.02	127	87	0.69	176	137	0.78	833	762	0.91	303	224	0.74	1,136	986	0.87
1988-89	982	871	0.88	361	276	0.76	1,353	1,150	0.85	72	77	1.07	289	199	0.69	361	276	0.76	1,064	951	0.89	650	475	0.73	1,714	1,426	0.83
1989-90	1,008	964	0.96	350	272	0.78	1,358	1,143	0.84	63	62	0.98	287	210	0.73	350	272	0.78	1,071	933	0.87	637	482	0.76	1,708	1,415	0.83
1990-91	1,089	964	0.89	377	298	0.79	1,466	1,262	0.86	80	80	1.00	297	218	0.73	377	298	0.79	1,169	1,044	0.89	674	516	0.77	1,843	1,560	0.85
1991-92	904	826	0.91	352	280	0.80	1,256	1,106	0.88	76	77	1.01	276	203	0.74	352	280	0.80	980	903	0.92	628	483	0.77	1,608	1,386	0.86
1992-93	914	827	0.90	104	103	0.83	1,038	930	0.90	23	24	1.04	101	124	1.03	103	83	0.83	937	851	0.91	225	182	0.81	1,162	1,033	0.89
Average	914	827	0.90	104	103	0.83	1,038	930	0.90	23	24	1.04	101	124	1.03	103	83	0.83	937	851	0.91	225	182	0.81	1,162	1,033	0.89
1987-88	540	243	0.45	1,691	664	0.39	2,231	907	0.41	230	125	0.54	1,461	539	0.37	1,691	664	0.39	770	762	0.99	303	224	0.74	1,136	986	0.87
1988-89	2,108	1,065	0.51	7,251	3,974	0.54	9,859	5,059	0.51	501	276	0.55	7,250	3,887	0.53	7,251	3,974	0.54	2,609	1,261	0.48	15,001	7,672	0.51	17,610	9,033	0.51
1989-90	2,728	1,701	0.62	4,975	3,157	0.63	7,703	4,838	0.63	415	270	0.63	4,560	2,887	0.63	4,975	3,157	0.63	3,143	1,911	0.63	9,333	6,044	0.63	12,678	8,015	0.63
1990-91	4,271	2,197	0.51	5,733	2,959	0.51	10,004	5,136	0.51	341	191	0.56	5,392	2,748	0.51	5,733	2,959	0.51	4,612	2,388	0.52	11,125	5,687	0.51	15,737	8,075	0.51
1991-92	993	534	0.54	2,484	1,306	0.53	3,477	1,840	0.53	351	203	0.58	2,133	1,103	0.52	2,484	1,306	0.53	1,344	737	0.55	4,617	2,409	0.52	5,961	3,146	0.53
1992-93	2,498	1,309	0.52	3,819	2,004	0.52	5,319	3,313	0.52	266	156	0.59	3,553	1,848	0.52	3,819	2,004	0.52	2,764	1,465	0.53	7,372	3,852	0.52	10,136	5,317	0.52
Average	2,190	1,178	0.54	4,402	2,311	0.53	6,528	3,313	0.53	351	203	0.58	2,133	1,103	0.52	2,484	1,306	0.53	2,540	1,382	0.54	8,467	4,378	0.53	11,002	5,860	0.52
1987-88	18,015	14,009	0.78	2,872	2,161	0.75	20,887	16,170	0.77	38	62	1.67	2,814	2,099	0.75	2,872	2,161	0.75	18,073	14,071	0.78	5,686	4,260	0.75	23,759	18,331	0.77
1988-89	25,890	22,703	0.88	10,278	8,780	0.85	36,168	31,483	0.87	155	175	1.13	10,123	8,605	0.85	10,278	8,780	0.85	26,045	22,878	0.88	20,401	17,385	0.85	46,446	40,263	0.87
1989-90	28,179	24,453	0.87	10,694	9,319	0.87	38,873	33,221	0.87	132	132	1.00	11,121	9,749	0.87	11,253	9,849	0.87	25,585	22,557	0.88	22,374	16,668	0.74	47,959	39,225	0.82
1990-91	25,432	21,332	0.84	10,694	9,319	0.87	38,873	33,221	0.87	148	70	0.47	10,546	9,240	0.80	10,694	9,319	0.87	20,449	18,084	0.88	21,240	8,550	0.40	49,467	20,231	0.41
1991-92	25,432	21,332	0.84	10,694	9,319	0.87	38,873	33,221	0.87	57	31	0.54	3,665	1,259	0.35	3,700	1,590	0.43	20,449	18,084	0.88	7,383	3,149	0.43	32,872	14,203	0.43
1992-93	20,129	17,174	0.86	8,556	7,494	0.88	30,806	26,615	0.87	26	413	15.88	2,895	1,258	0.43	2,921	1,671	0.61	21,555	9,587	0.48	2,929	0.50	25,971	12,516	0.48	
Average	23,850	20,129	0.85	9,504	8,225	0.86	30,806	26,615	0.87	96	164	1.70	8,860	4,330	0.63	8,924	4,924	0.65	23,946	15,305	0.64	13,817	8,824	0.64	37,762	24,128	0.64
1987-88	2,652	91,066	34.34	2	78	39.00	2,654	91,144	34.34	2	56	28.00	1	22	22.00	3	78	26.00	2,654	91,122	34.33	3	100	33.33	2,657	91,222	34.33
1988-89	3,462	120,625	34.84	0	0	0.00	3,462	120,625	34.84	0	0	0.00	0	0	0.00	0	0	0.00	3,462	120,625	34.84	0	0	0.00	3,462	120,625	34.84
1989-90	3,836	135,676	35.34	3	106	35.33	3,839	135,676	35.34	3	106	35.33	3	106	35.33	3	106	35.33	3,839	135,676	35.34	3	106	35.33	3,839	135,676	35.34
1990-91	4,651	165,120	35.50	3	107	35.67	4,654	165,227	35.50	3	107	35.67	3	107	35.67	3	107	35.67	4,654	165,227	35.50	3	107	35.67	4,657	165,334	35.50
1991-92	5,087	183,140	36.00	3	108	36.00	5,090	183,248	36.00	3	108	36.00	3	108	36.00	3	108	36.00	5,090	183,248	36.00	3					

Table E.3.7.2 Annual Crop Production in the Study Area

Crops	Irrigated Area			940 ha			Rod Kohi Area			27,100 ha			Barani Area			78,600 ha			106,640 ha		
	Sown Area (ha)	Unit Yield (t/ha)	Production (tons)	Sown Area (ha)	Unit Yield (t/ha)	Production (tons)	Sown Area (ha)	Unit Yield (t/ha)	Production (tons)	Sown Area (ha)	Unit Yield (t/ha)	Production (tons)	Sown Area (ha)	Unit Yield (t/ha)	Production (tons)	Sown Area (ha)	Unit Yield (t/ha)	Production (tons)	Sown Area (ha)	Unit Yield (t/ha)	Production (tons)
A. KHARIF SEASON CROPS																					
Sorghum (Jowar)	10	0.79	8	1,310	0.74	969	1,210	0.70	847	2,530	0.72	1,824									
Millet (Bajra)	5	0.78	4	1,010	0.77	778	1,455	0.75	1,091	2,470	0.76	1,873									
Maize	10	0.63	6							10	0.63	6									
Pulses (Mung beans)	5	0.52	3							5	0.52	3									
Sugarcane	30	35.55	1,067							30	35.55	1,067									
Cotton	45	1.54	69	15	1.00	15				60	1.41	84									
Fodder	10	11.86	119							10	11.86	119									
Guara	10	1.90	19	75	1.63	122	145	1.50	218	230	1.56	359									
Vegetables, Fruits, others	5	2.40	12	20	3.00	60				25	2.88	72									
Total Sown Area	130			2,430			2,810			5,370			5,370						5.0%		
	0.1%			2.3%			2.6%			5.0%			5.0%								
B. RABI SEASON CROPS																					
Wheat	600	2.02	1,212	4,660	0.97	4,520	3,280	0.95	3,116	8,540	1.04	8,848									
Barley	10	0.90	9	240	0.76	182	150	0.75	113	400	0.76	304									
Pulses (Gram)	160	0.64	102	1,970	0.60	1,182	2,290	0.60	1,374	4,420	0.60	2,658									
Oilseeds / Lentil	10	0.54	5	1,380	0.53	731	1,190	0.50	595	2,580	0.52	1,332									
Fodder	60	13.30	798							60	13.30	798									
Vegetables, Fruits, others	10	4.20	42	20	4.20	84				30	4.20	126									
Total Sown Area	850	(880)*		8,270			6,910			16,030			16,030						(16,060)*		
	0.8%	0.8%		7.8%			6.5%			15.1%			15.1%						15.1%		
Annual Sown Area	980	(1,010)*	0.9%	10,700	10.0%		9,720	9.1%		21,400	20.1%		21,400	20.1%							

Source : Revenue Office D. I. Khan, August 1993, Ref ; Table E.3.5.1

Note : *) ; including 30 ha of sugarcane area

Table E.3.8.1 Present Population of Livestock in the Study Area

Items /Nos.	Landless Farmers 30	Marginal Farmers 10	Small Farmers 31	Medium Farmers 39	Large Farmers 100	Total/ Average (210)	Total Population
No. of Animals per Household							
Cows						<u>5.61</u>	<u>62,002</u>
- Adoult	3.10	3.10	2.87	2.36	3.25	3.00	40,021
- Young	1.77	2.20	1.39	1.56	1.67	1.65	21,981
Bulls/ Steer						<u>2.14</u>	<u>23,699</u>
- Adoult	2.00	2.20	1.55	1.44	1.65	1.67	22,310
- Young		1.20	0.06		0.08	0.10	1,389
Buffaloes						<u>1.29</u>	<u>14,252</u>
- Adoult	0.43	0.50	0.71	0.56	0.79	0.67	8,941
- Young	0.23	0.50	0.48	0.38	0.42	0.40	5,311
Sheep						<u>7.10</u>	<u>78,571</u>
- Adoult	6.93	4.00	6.48	4.08	3.51	4.57	60,913
- Young	1.90	1.80	1.45	1.18	1.12	1.32	17,658
Goats						<u>12.08</u>	<u>133,587</u>
- Adoult	6.97	3.00	8.13	7.13	8.15	7.54	100,634
- Young	1.50	1.30	3.61	1.97	2.72	2.47	32,952
Camel						<u>0.36</u>	<u>3,991</u>
- Adoult	0.40	0.10	0.32	0.33	0.22	0.28	3,671
- Young			0.06	0.03	0.02	0.02	320
Horse						<u>0.07</u>	<u>748</u>
- Adoult	0.03		0.03	0.05	0.06	0.05	621
- Young					0.02	0.01	127
Donkey						<u>0.17</u>	<u>1,915</u>
- Adoult	0.10	0.10	0.16	0.21	0.13	0.14	1,915
- Young							
Chicken						<u>10.20</u>	<u>112,836</u>
- Adoult	2.90	2.30	3.39	3.03	4.01	3.50	46,643
- Young	3.70	12.30	4.39	3.87	5.21	4.96	66,193
Dairy Products							
Eggs per day	4.77	4.75	3.69	6.33	5.15	5.08	

Sources : These figure are estimated based on the farm survey (210 household, 104 Mouza).
Total household is 13,340 in the Study Area (141,700ha)
Average is estimated weighted average of each scale farmers.

Table E.3.9.1 Utilization of Farm Products

Unit: Percentage(%)

Crop	Study Area			CRBC Area		
	Production	Home Consumption	Marketed (sold)	Production	Home Consumption	Marketed (sold)
Wheat	100.0	42.1	57.9	100.0	35.6	64.4
Rice	-	-	-	100.0	6.0	94.0
Millet	100.0	7.2	92.8	100.0	100.0	0.0
Sorghum	100.0	8.6	91.4	100.0	100.0	0.0
Maize	100.0	6.1	93.9	100.0	39.8	60.2
Oil seeds	100.0	0.5	99.5	100.0	0.0	100.0
Gram	100.0	11.3	88.7	100.0	14.1	85.9
Guara	100.0	0.0	100.0	-	-	-
Sugarcane	-	-	-	100.0	4.2	95.8
Vegetables	-	-	-	100.0	0.0	100.0

Source: Farm Survey by JICA Study Team

Table E.3.9.2 Crop Sales Destination**(a) Study Area**

Crops	Study Area		CRBC Area			Total
	Other Farmers	Village Shop	Commission Agent	Beopari	Other	
Wheat	4.8	23.8	6.3	65.1	0.0	100.0
Rice	0.0	0.0	0.0	0.0	0.0	0.0
Sugarcane	0.0	0.0	0.0	0.0	0.0	0.0
Gram	1.9	19.2	21.2	57.7	0.0	100.0
Oil seed	0.0	38.1	9.5	52.4	0.0	100.0
Millet	0.0	46.4	10.7	42.9	0.0	100.0
Sorghum	0.0	27.6	10.3	62.1	0.0	100.0
Maize	0.0	0.0	0.0	100.0	0.0	100.0
Vegetables	0.0	0.0	0.0	0.0	0.0	0.0

(b) CRBC Gravity Irrigation Area

Crops	Study Area		CRBC Area			Total
	Other Farmers	Village Shop	Commission Agent	Beopari	Other	
Wheat	0.0	0.0	6.3	93.7	0.0	100.0
Rice	0.0	0.0	0.0	100.0	0.0	100.0
Sugarcane	0.0	0.0	0.0	33.0	67.0	100.0
Gram	0.0	0.0	0.0	100.0	0.0	100.0
Oil seed	0.0	0.0	0.0	100.0	0.0	100.0
Millet	0.0	0.0	0.0	0.0	0.0	0.0
Sorghum	0.0	0.0	0.0	0.0	0.0	0.0
Maize	0.0	50.0	0.0	50.0	0.0	100.0
Vegetables	0.0	0.0	0.0	0.0	0.0	0.0

Source : Farm Survey by JICA Study Team

Note : Sugarcane was sold to Sugar mills under other in CRBC Gravity Area

Table E.3.9.3 Deceipts and Issue of Wheat at Food Department of D.I.Khan

(a) Imported Wheat									(Unit: ton)
Month	Opening Balance	Stock Received		Total Stock	Stock issues			Total Issues	Closing Balance
		From Karachi Road	Rail		Mills	AFS	WFP and Other		
1992/93									
July, 1992	165.6	0.0	879.3	1,044.8	55.8	0.0	0.0	55.8	989.0
August, 1992		0.0	135.5	1,124.6	0.0	412.3	0.0	412.3	712.3
September, 1992		680.1	687.6	2,079.9	966.3	393.2	0.0	1,359.5	720.4
October, 1992		1,816.6	2,336.6	4,873.6	1,898.7	0.0	0.0	1,898.7	2,974.9
November, 1992		1,403.2	190.2	4,568.3	2,334.0	0.0	0.0	2,334.0	2,234.3
December, 1992		510.2	23.6	2,768.1	2,480.2	0.0	0.0	2,480.2	287.9
January, 1993		1,056.9	2,108.7	3,453.5	3,399.0	0.0	0.0	3,399.0	54.5
February, 1993		3,439.5	5,078.7	8,572.7	2,710.0	0.0	0.0	2,710.0	5,862.7
March, 1993		4,822.0	5,222.9	15,907.6	3,734.6	99.0	0.0	3,833.6	12,074.0
April, 1993		5,840.4	11,024.9	28,939.3	4,600.0	0.0	0.0	4,600.0	24,339.3
May, 1993		2,117.2	10,388.8	36,845.3	850.0	1,709.5	0.0	2,559.5	34,285.8
June, 1993		0.0	611.3	34,897.1	200.0	912.8	1,042.0	2,154.8	32,742.3
Total	165.6	21,686.1	38,688.0	60,539.7	23,228.6	3,526.8	1,042.0	27,797.4	32,742.3
1993/94 *									
July, 1993	32,742.3	0.0	46.8	32,789.1	160.0	806.6	513.9	1,480.5	31,308.6
August, 1993		0.0	0.0	31,308.6	480.0	202.5	741.8	1,424.3	29,884.3
September, 1993		0.0	0.0	29,884.3	685.3	178.6	1,015.0	1,878.9	28,005.4
October, 1993		348.6	4,825.4	33,179.3	2,328.0	254.1	380.3	2,962.4	30,217.0
November, 1993		1,173.9	2,322.5	33,713.4	2,886.0	744.6	1,147.8	4,778.4	28,935.0
December, 1993		0.0	1,974.8	30,909.8	2,751.0	2,047.9	1,548.6	6,347.5	24,562.3
January, 1994		1,257.4	0.0	25,819.6	6,198.9	38.4	1,244.0	7,481.3	18,338.4
February, 1994		0.0	0.0	18,338.4	2,075.0	0.0	2,575.0	4,650.0	13,688.4
Total	32,742.3	2,779.9	9,169.5	44,691.7	17,564.2	4,272.7	9,166.4	31,003.3	13,688.4

(b) Indigenous Wheat									Unit: ton
Month	Opening Balance	Stock received Pascco by		Total Total Stock	Stock issues			Total Issues	Closing Balance
		Road	Rail		Mills	AFS	Transfer		
1992/93									
July, 1992	1,492.0	276.0	0.0	1,768.0	1,134.2	0.0	0.0	1,134.2	633.7
August, 1992		94.0	0.0	727.7	620.0	7.7	0.0	627.7	100.0
September, 1992		2,195.5	0.0	2,295.5	903.7	26.8	0.0	930.5	1,365.0
October, 1992		164.5	0.0	1,529.5	491.3	0.0	0.0	491.3	1,038.2
November, 1992		24.0	0.0	1,062.2	326.0	0.0	0.0	326.0	736.2
December, 1992		0.0	0.0	736.2	509.8	0.0	0.0	509.8	226.4
January, 1993		0.0	0.0	226.4	221.0	0.0	0.0	221.0	5.4
February, 1993		0.0	0.0	5.4	0.0	0.0	0.0	0.0	5.4
March, 1993		0.0	0.0	5.4	5.4	0.0	0.0	5.4	0.0
April, 1993		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May, 1993		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June, 1993		687.4	0.0	687.4	0.0	0.0	0.0	0.0	687.4
Total	1,492.0	3,441.4	0.0	4,933.4	4,211.4	34.5	0.0	4,246.0	687.4
1993/94 *									
July, 1993	687.4	822.1	0.0	1,509.5	0.0	0.0	0.0	0.0	1,509.5
August, 1993		1,853.6	0.0	3,363.1	190.0	0.0	501.0	691.0	2,672.1
September, 1993		4,831.4	0.0	7,503.5	544.7	0.0	660.0	1,204.7	6,298.8
October, 1993		0.0	0.0	6,298.8	682.0	0.0	561.0	1,243.0	5,055.8
November, 1993		0.0	0.0	5,055.8	854.0	0.0	1,574.7	2,428.7	2,627.1
December, 1993		0.0	0.0	2,627.1	724.0	0.0	426.5	1,150.5	1,476.6
January, 1994		648.0	0.0	2,124.6	576.1	0.0	1,233.5	1,809.6	315.0
February, 1994		1,352.0	0.0	1,667.0	485.0	0.0	20.0	505.0	1,162.0
Total	687.4	9,507.1	0.0	10,194.5	4,055.8	0.0	4,976.7	9,032.5	1,162.0

Source : Food Department of D.I.Khan

* July 1993 - February 1994 (8 months only)

Notes : AFS ; Afghan Refugees, WFP ; World Food Program

Table E.3.9.4 Market Flow Paths of Crops in D.I. Khan District

Markets	Out (To)	Products	In (From)	Products
D.I.Khan (District Market)	Karschi	Dates, Musk Melon, Rice	Peshawar, Bannu, Kohat, Mardan, Swat	Tomato, plum, maize, apple.
	Peshawar, Bannu, Kohat, Mardan, Swat	Dates, Musk Melon, Mango, Vegetables, Rice	Lahore, Sheikhupura, Faisalabad,	Wheat, atta, rice, pulses, gowds, lady finger, suji, maida, spices, melon, apple (cold storage), edible oil, ghee, etc.
	Lahore, Faisalabad, Gujranwala, Rawalpindi	Dates, Musk Melon, Rice	Gujranwala, Jhang	
	Multan, D.G.Khan, Muzafargarh, Mianwali, Bhakkar, Sargodha	Mango, Vegetables (tomato and onions)	Multan, D.G.Khan, Muzafargarh, Mianwali, Bhakkar, Sargodha, Lalyah, Rahim Yar Khan	Wheat, onion, lady finger, cauliflower, musk melon, citrus, pulses, oil cakes, mango etc.
	To all villages and interunion markets located within Dist. D.I.Khan, including Kulachi, Yarik, Paniala, Daraban, Paroa, and Kohat, Bannu, Swat, Frontier Region and South Waziristan Agency (FATA)	Wheat, rice, pulses, sugar, edible oils, cucumber, radish, carrot, turpin, dates, mango, musk melon, tomato, gowds, lady finger, gram, spices, flour etc.	Quetta, Zhob	Apple, fruits etc.
	Tank	Oil seeds	Sukkur, Karachi, Kundi, Tanabe Allah Yar	Spices, tomato, dates, onion etc.
	D.I.Khan	Cereals	Kulachi	Wheat, cereals, oil seeds, melon
	Paharpur	Jowar, Bajra,	Yarik	Wheat, sorghum, millet, oil seed
	Muddi, Ghara Isa Khan, Musazai Sharif, Hun, Chowdwan, Kot Zafer, Rovi,	Commodities, edible oils, flour, maida, vegetables, fruits etc.	Paniala, Daraban	Wheat, vegetables, pomegranate, fig, malta, berry, date, grains, vegetables etc.
	Karschi	Fruits,	Paroa	Wheat, grains, vegetables, fruits
Paharpur	Sargodha, Jhang, Faisalabad, Multan,	Melon	D.I.Khan	Wheat, flour, maida, suji
	Yarik	Wheat, gram, oil seed,	Paharpur	Dates
	Paniala	Mango, gram,	Muddi, Ghara Isa Khan, Musazai Sharif, Hun, Chowdwan, Kot Zafer, Rovi,	Fruits, vegetables, wheat, pulses, bajra, millet, oil seeds, grains etc.
	Paroa	Wheat, jawar, gowara,	Karschi	Textile, boseries, metals etc.
	Rangpur, Mithapur, Bomal, Kalagore etc.	Commodities, edible oils, flour, maida, vegetables, fruits etc.	Lahore	Textile, boseries, metals, vegetables etc.
	D.I.Khan	Wheat, sorghum, oil seed, millet,	Zhob, Quetta	Fruits, dry fruits
	Rodikbel, Saddra, Budh, Tajgi Rodi, Kbel	Commodities, edible oils, flour, maida, vegetables, fruits	D.I.Khan	Ghee, textile etc.
	Sargodha, Multan	Grains	Multan, Faisalabad, Gujranwala, Mianwali	Gram, mango, dates
	Paharpur	Fruits, vegetables	Rangpur, Mithapur, Bomal, Kalagore	Fruits, vegetables, wheat, pulses, bajra, millet, oil seeds, grains etc.
	Abdul Kbel, Giloty	Edible oils, flour, fruits, vegetables	Peshawar, Bannu, Kohat	Jowar, wheat, gram
Paniala	D.I.Khan	Fruits, vegetables	D.I.Khan	Ghee, textile, fruits, dry fruits.
	Abdul Kbel, Giloty	Edible oils, flour, fruits, vegetables	Rodikbel, Saddra, Budh, Tajgi Rodi, Kbel	Fruits, vegetables, wheat, pulses, bajra, millet, oil seeds, grains etc.
	Bannu, Kohat, Tank	Fruits, vegetables	Kbel	Ghee, textile, fruits, dry fruits, spices, flour, sugar, onions, potato
	Paharpur	Gur, mango	Abdul Kbel, Giloty	Fruits, vegetables, grams, millet, oil seed etc.
	Musazai, Chaudhwan, Talai, Maroo, Matt, Tali, Zarkhani	Commodities, edible oils, flour, maida, vegetables, fruits etc.	D.I.Khan	Spices, flour, ghee, wheat.
	Paniala	Dates, pulses	Musazai, Chaudhwan, Talai, Maroo, Matt, Tali, Zarkhani	Fruits, vegetables, grams, millet oil seed etc.
	Paharpur	Mango, dates	Multan, Faisalabad,	Fruit, cloths, cotton
	Paniala	Mango, dates	D.I.Khan	Cheese, pulses, sugar
	Miran, Ramak, Lundia Sharif, Naiveila, Maroo	Commodities, edible oils, flour, maida, vegetables, fruits	Peshawar, Kohat	Gawara, shoes
			Multan, Sargodha, Faisalabad	Wheat, ghee, cloths, flour, fruit

Source : Market Survey by JICA Study Team

Table E.3.9.5 Offtake of the Fertilizer from NFC and ADA (D.I.Khan)

(a) Offtake of the Fertilizer from NFC (1992/93-1993/94)

	Unit: Ton						
	Urea	CAN	NP	AS	SSP	DAP	Total
1992/93	3,177	920	925	185	550	788	6,545
1993/94*	2,220	570	315	0	320	1,820	5,245

Source : National Fertilizer Corporation (NFC) of D.I. Khan
* July 1993 - March 1994 (9 months only)

(b) Offtake of the Fertilizer from ADA (1991/92-1993/94)

	Unit: Ton									
	Urea	CAN	NP	SOP	AS	SSP	NPK	TSP	DAP	Total
1991/92	937.3	0.1	226.0	30.4	75.3	144.0	832.7	0.0	3,514.6	5,760.4
1992/93	1,689.7	23.9	213.5	29.1	33.6	122.6	159.9	58.0	4,621.7	6,951.9
1993/94*	840.8	0.0	121.6	8.9	2.2	20.2	77.9	0.0	2,542.6	3,614.2

Source : Agricultural Development Authority (ADA) of D.I. Khan
* July 1993 - February 1994 (8 months only)

Notes : CAN : Calcium Ammonium Nitrate SSP : Single Super Phosphate
NP : Nitro Phosphate (23, 23) NPK : N.P.K. Compound Fertilizer (10:20:20)
SOP : Sulphate of Potash TSP : Triple Super Phosphate
AS : Ammonium Sulfate DAP : Di-Ammonium Phosphate

Table E.3.10.1 Procurement / Support Prices of Major / Minor Crops

(Unit : Rupees per 40 Kgs.)

Crops	1976 /77	1977 /78	1978 /79	1979 /80	1980 /81	1981 /82	1982 /83	1983 /84	1984 /85	1985 /86	1986 /87	1987 /88	1988 /89	1989 /90	1990 /91	1991 /92	1992 /93	1993 /94
A. GRAIN CROPS																		
A-1 Wheat	39.65	39.65	48.23	50.00	58.00	58.00	64.00	64.00	70.00	80.00	80.00	82.50	85.00	96.00	112.00	124.00	130.00	160.00
A-2 Rice (Paddy)																		
Basmati	55.73	58.48	64.30	64.30	75.00	85.00	88.00	90.00	90.00	93.00	102.00	130.00	135.00	143.50				
B/370															150.00			
B/385															143.50	155.00	175.00	185.00
Lateefy															100.00			135.00
IRRI-6 (FAQ)	32.15	32.15	32.15	32.15	38.58	45.00	49.00	51.00	51.00	53.00	53.00	55.00	60.00	66.00	73.00	78.00	85.00	90.00
IRRI-6 (Superior)										57.00	57.00	59.00	65.00	71.00	80.00			95.00
KF-282,DR-82,DR-83 (FAQ)											56.00	59.00	65.00	71.00	80.00	85.00	95.00	100.00
KS-282,DR-82,DR-83 (Super.)											60.00	63.00	70.00	76.00	84.00			105.00
A-3 Rice (Cleaned)																		
Basmati	108.80	101.80	117.89	117.89	137.00	150.00	154.00	160.00	160.00	175.00	204.00	250.00	258.00	276.00				
Basmati (Superior)													264.00	283.00				
B/370 (5% Broken)															293.00			
B/370 (10% Broken)															286.00			
B/385 (5% Broken)															283.00	308.00	340.00	360.00
B/385 (10% Broken)															276.00	300.00	330.00	350.00
Lateefy (5% Broken)															197.00			280.00
IRRI-6 (FAQ)	57.87	48.30	52.51	52.51	63.00	72.50	80.00	83.00	83.00	86.60	86.50	89.50	100.00	113.00	127.00	140.00	150.00	157.00
IRRI-6 (Superior)	64.30	57.87	60.00	60.00	72.00	83.00	89.00	92.00	92.00	95.00	95.00	98.00	111.00	124.00	150.00	160.00	170.00	181.00
IRRI-6 (Broken)											71.00							
KS-282,DR-82,DR-83 (FAQ)											92.00	97.00		121.00	146.00	153.90	162.00	176.00
KS-282,DR-82,DR-83 (Super.)											100.00	105.00	120.00	134.00	158.00	178.00	190.00	202.00
B. SUGAR CROPS																		
B-1 Sugarcane (Millgate)																		
Balochistan																		17.00
N.W.F.P.	5.89	5.89	5.89	7.23	9.38	9.38	9.38	9.38	9.38	9.38	11.52	11.52	12.32	13.50	15.25	16.75	17.50	18.00
Punjab	6.16	6.16	6.16	7.50	9.65	9.65	9.65	9.65	9.65	9.65	11.79	11.79	12.59	13.75	15.25	16.75	17.50	18.00
Sind	6.32	6.32	6.32	7.66	9.81	9.81	9.81	9.81	9.81	9.81	11.95	11.95	12.86	14.00	15.75	17.00	17.75	18.25
B-2 Sugar-Beet	6.97	6.97	6.97	10.72	10.72	10.72	10.72	10.72	10.72	15.00					17.15			
C. FIBRE CROPS																		
C-1 Seed Cotton (phutti)																		
Desi	128.60	141.46	143.61	143.61	156.00	166.00	168.00	169.50	169.50	173.50	173.50	173.50	176.50	191.50	220.00	255.00	275.00	290.00
AC-134,NT	133.96	147.89	147.89	147.80	160.00	170.00	175.00	178.00	181.00	185.00	185.00	185.00	188.00	203.00	235.00	270.00		
B-557,149-F,NIAB-78 (a)	144.68	159.68	159.68	159.68	171.00	178.00	183.00	186.00	189.00	193.00	193.00	193.00	196.00	211.00	245.00	280.00	300.00	315.00
Sarmast,Qalandri,CIM-70	155.40	171.47	171.47	171.47	182.00	192.00	197.00	200.00	203.00	207.00	207.00	207.00	210.00	225.00	260.00	290.00	310.00	325.00
Deltapine MS-39/40,MS-84																		
K-68/69,MNH-93,MNH-129																		
C-2 Seed Cotton (Lint)																		
Desi		359.00	369.74	375.00	409.38	419.00	419.00	426.40	426.40	426.40	426.40	428.00	431.00	463.50	550.00	622.00	695.00	726.00
AC-134,NT	434.04	359.00	389.00	410.46	442.61	449.00	449.00	471.60	476.80	476.80	476.80	480.00	483.00	515.00	615.00	685.00		
B-577,149-F,NIAB-78(a)	482.26	415.82	424.39	445.83	475.80	473.00	473.00	496.00	500.40	500.40	500.40	504.00	507.00	539.00	645.00	715.00	770.00	801.00
Sarmast,Qalandri,CIM-70	525.13	451.18	459.97	481.19	509.00	515.00	515.00	538.00	542.27	542.27	542.27	546.00	549.00	581.00	690.00	745.00	800.00	831.00
Deltapine MS-39/40,MS-84																		
K-68/69,MNH-93,MNH-129																		
D. OIL SEEDS																		
D-1 Sunflower, at farm level					117.89	133.00	140.00	150.00	170.00	170.00	170.00	170.00	177.00	205.00	225.00	250.00	280.00	315.00
D-2 Soyabean, at farm level					107.17	117.00	122.00	140.00	160.00	160.00	160.00	160.00	165.00	185.00	200.00	230.00	250.00	275.00
D-3 Safflower, at farm level					96.45	122.00	120.00	125.00	140.00	140.00	140.00	140.00	143.00	165.00	180.00	220.00		270.00
E. OTHER CROPS																		
E-1 Potatoes																		
At farm level										40.00	42.00	42.00	47.00	52.00				
At mandi level	26.80	26.80	26.80	26.80	26.80	26.80	40.50	40.50	40.50	42.00	44.50	44.50	50.00	55.00	55.00	65.00	67.00	77.00
E-2 Onions																		
At farm level							23.00	27.50	27.50	30.00	32.00	34.00						
At mandi level	19.30	19.30	19.30	19.30	19.30	19.30	25.00	30.00	30.00	32.50	34.50	36.50	40.00	42.00	51.50	60.00	65.00	78.00
E-3 Gram																		
At farm level								150.00	150.00	150.00	157.50	157.50						
At mandi level								153.00	153.00	153.00	160.50	160.50	180.00	200.00	210.00	230.00	235.00	275.00

Source : Agriculture Price Commission, Islamabad

Note : (a) : Prices of Naib-78 was fixed for the first time for the 1986-87.

(1) : Prices of ONIONS from 1989-90 are at the procurement center only, and these prices are for the sizes of: for 1989-90 40-45 mm & above 45 mm; for 1990-91 40-50 mm & above 50 mm

(2) : Prices of POTATOES from 1990-91 are at the procurement center only, and these prices are for the sizes of 40-45 mm & above 55 mm.

(3) : Prices of OIL SEEDS from 1990-91 are at the procurement center and these prices includes Rs. 5/40 Kgs as marketing charges.

Table E.3.10.2 Retail Prices of Major Crops in D.I. Khan District

Crops	Unit	1993										1994			Average
		April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	March		
Cereals															
Wheat Maxi Pak	kg	3.95	3.80	3.80	3.80	3.80	3.80	3.80	4.00	4.00	4.50	4.80	4.80	4.07	
Wheat Desi	kg	4.00	3.90	3.90	3.90	3.90	3.90	3.90	4.00	4.50	4.80	4.80	4.80	4.17	
Wheat Atta (Flour)	kg	4.25	4.25	4.25	4.25	4.25	4.50	4.50	4.75	5.00	5.00	5.00	5.25	4.60	
Paddy (Irr)	kg	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.50	2.75	2.75	n.a.	n.a.	2.69	
Rice Basmati	kg	16.00	16.00	16.00	14.00	14.00	14.00	14.00	15.50	16.00	14.50	14.50	15.50	15.00	
Rice Irr	kg	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	
Maize	kg	4.50	5.25	5.25	5.20	4.55	4.55	4.50	5.50	4.50	4.00	4.50	4.50	4.73	
Bajra (Millet)	kg	4.75	4.80	5.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.71	
Jowar (Sorghum)	kg	3.50	3.00	4.50	5.00	5.00	5.00	5.00	5.00	5.00	6.00	6.00	6.00	4.92	
Barley	kg	3.00	3.00	3.00	4.50	4.50	4.50	4.25	4.25	3.75	4.25	4.00	5.00	4.00	
Pulses															
Mung (split)	kg	14.00	12.50	13.00	15.00	18.00	18.00	18.00	19.00	18.00	19.00	14.00	12.00	15.88	
Gram Black (whole)	kg	6.50	9.00	10.00	13.00	12.50	12.50	13.00	13.00	13.00	12.50	12.50	12.50	11.67	
Oil Seeds															
Rape and Mustard	kg	7.70	8.00	8.10	9.00	9.00	9.00	9.00	9.00	9.00	10.00	10.00	9.50	8.94	
Sugar															
Sugar Refined	kg	12.25	12.50	12.50	12.50	12.00	12.00	12.00	12.50	12.50	12.50	12.50	12.00	12.31	
Gur	kg	9.00	9.00	8.50	7.00	11.00	11.00	11.00	12.00	9.00	9.00	8.00	8.00	9.38	
Vegetables															
Potatoes	kg	4.00	4.00	6.00	5.00	5.00	5.00	5.00	6.00	4.00	3.50	4.00	5.00	4.71	
Tomatoes	kg	6.00	8.00	16.00	12.00	6.00	6.00	12.00	16.00	12.00	16.00	20.00	12.00	11.83	
Lady-fingers	kg	24.00	10.00	9.00	10.00	8.00	12.00	12.00	n.a.	8.00	n.a.	n.a.	30.00	13.67	
Brinjals (Eggplant)	kg	8.00	5.00	6.00	n.a.	5.00	6.00	n.a.	6.00	4.00	4.00	5.00	8.00	6.33	
Onion (dry)	kg	5.00	5.00	4.00	5.00	5.00	6.00	7.00	6.00	12.00	10.00	8.00	6.00	6.58	
Cauliflower	kg	n.a.	n.a.	n.a.	n.a.	n.a.	12.00	10.00	6.00	5.00	4.00	4.00	6.00	6.71	
Fruits															
Kinnu (Citrus)	kg	7.00	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	8.00	8.00	10.00	10.00	8.60	
Apple	kg	28.00	32.00	25.00	20.00	24.00	24.00	24.00	24.00	24.00	24.00	28.00	28.00	25.08	
Mangoes	kg	n.a.	16.00	16.00	20.00	30.00	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	20.50	
Guava	kg	15.00	13.00	n.a.	8.00	8.00	n.a.	n.a.	14.00	14.00	14.00	16.00	16.00	13.11	
Others															
Wheat Straw	kg	1.10	1.10	1.10	1.10	1.10	1.20	1.30	1.50	1.80	1.80	1.80	1.80	1.39	

Source : Market Survey by JICA Study Team

Note : Basic data come from the Agriculture Department of D.I. Khan and the market survey including interviews to dealers and retailers by JICA Team.

Table E.3.10.3 Whole Prices of Major Crops in D.I. Khan District

Crops	Unit	1993										1994			Average
		April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	March		
Cereals															
Wheat Maxi Pak	40 kg	145.00	145.00	147.00	151.00	152.00	-	157.00	160.00	160.00	160.00	160.00	169.00	155.09	
Wheat Desi	40 kg	160.00	159.50	150.00	160.00	158.00	-	162.00	165.00	165.00	165.00	165.00	173.00	162.05	
Wheat Atta (Flour)	40 kg	170.00	170.00	180.00	171.00	172.00	-	173.00	174.00	171.00	175.00	182.00	192.00	175.45	
Paddy (Irr)	40 kg	n.a.	n.a.	n.a.	n.a.	n.a.	-	95.00	100.00	100.00	100.00	n.a.	n.a.	98.75	
Rice Basmati	40 kg	540.00	535.00	560.00	570.00	560.00	-	560.00	560.00	560.00	560.00	560.00	560.00	556.82	
Rice Irr	40 kg	220.00	230.00	230.00	230.00	230.00	-	230.00	230.00	230.00	230.00	230.00	230.00	229.09	
Maize	40 kg	200.00	205.00	210.00	171.00	180.00	-	165.00	160.00	160.00	170.00	165.00	240.00	184.18	
Bajra (Millet)	40 kg	250.00	177.00	180.00	185.00	185.00	-	180.00	180.00	175.00	240.00	240.00	240.00	202.91	
Jowar (Sorghum)	40 kg	220.00	125.00	n.a.	145.00	n.a.	-	125.00	127.00	130.00	120.00	182.00	200.00	152.67	
Barley	40 kg	160.00	150.00	120.00	140.00	n.a.	-	160.00	158.00	160.00	140.00	153.00	140.00	148.10	
Pulses															
Mung (split)	40 kg	340.00	330.00	360.00	370.00	370.00	-	500.00	520.00	550.00	520.00	510.00	480.00	440.91	
Mung (whole)	40 kg	280.00	280.00	290.00	290.00	300.00	-	n.a.	430.00	430.00	450.00	480.00	400.00	363.00	
Gram Black (whole)	40 kg	330.00	300.00	360.00	360.00	440.00	-	440.00	440.00	420.00	440.00	445.00	440.00	401.36	
Oil Seeds															
Rape and Mustard	40 kg	290.00	310.00	310.00	350.00	350.00	-	350.00	350.00	350.00	380.00	380.00	360.00	343.64	
Oil Cakes															
Rape and Mustard	40 kg	130.00	130.00	140.00	160.00	160.00	-	200.00	200.00	200.00	200.00	200.00	210.00	175.45	
Cotton seeds	40 kg	150.00	150.00	170.00	170.00	170.00	-	190.00	190.00	190.00	190.00	190.00	200.00	178.18	
Sugar															
Sugar Refined	40 kg	480.00	462.00	480.00	522.00	510.00	-	530.00	536.00	460.00	456.00	480.00	478.00	490.36	
Gur	40 kg	260.00	247.00	360.00	320.00	300.00	-	320.00	320.00	360.00	320.00	320.00	320.00	313.36	
Vegetables															
Potatoes	40 kg	120.00	126.00	150.00	200.00	160.00	-	240.00	266.00	240.00	112.00	112.00	122.00	168.00	
Tomatoes	40 kg	200.00	170.00	320.00	400.00	300.00	-	390.00	370.00	480.00	600.00	670.00	475.00	415.91	
Lady-fingers	40 kg	n.a.	n.a.	240.00	240.00	n.a.	-	240.00	360.00	n.a.	n.a.	800.00	n.a.	376.00	
Brinjals (Eggplant)	40 kg	n.a.	n.a.	80.00	n.a.	n.a.	-	250.00	135.00	120.00	120.00	160.00	200.00	152.14	
Onion (dry)	40 kg	240.00	300.00	145.00	196.00	200.00	-	240.00	288.00	320.00	256.00	200.00	205.00	235.45	
Cauliflower	40 kg	146.00	120.00	100.00	n.a.	n.a.	-	n.a.	n.a.	160.00	200.00	320.00	390.00	205.14	
Fruits															
Kinnu (Citrus)	40 kg	186.00	335.00	320.00	n.a.	n.a.	-	n.a.	n.a.	160.00	200.00	320.00	390.00	273.00	
Apple	40 kg	n.a.	n.a.	n.a.	n.a.	n.a.	-	664.00	640.00	600.00	800.00	1000.00	1000.00	784.00	
Mangoes	40 kg	n.a.	480.00	600.00	410.00	n.a.	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	496.67	
Guava	40 kg	n.a.	400.00	n.a.	n.a.	n.a.	-	n.a.	n.a.	400.00	360.00	482.00	480.00	424.40	
Others															
Wheat Straw	40 kg	28.00	30.00	30.00	50.00	55.00	-	60.00	60.00	60.00	50.00	50.00	52.00	47.73	

Source : Market Survey by JICA Study Team

Note : Basic data come from the Agriculture Department of D.I. Khan

Table E.3.10.4 Analysis on Present Market Prices of Major Crops

(Unit: Rupee)

Crops	Unit	Retail Prices (a)	Wholesale		Farmgate (calculated)	
			Prices (b)	Rate (b)/(a)	Prices (c)	Rate (c)/(a)
Cereals						
Wheat Maxi Pak	kg	4.07	3.88	0.95	3.70	0.91
Wheat Desi	kg	4.17	4.05	0.97	3.87	0.93
Wheat Atta	kg	4.60	4.39	0.95	-	-
Paddy (Irri)	kg	2.69	2.47	0.92	2.32	0.86
Rice Basmati	kg	15.00	13.92	0.93	-	-
Rice Irri	kg	6.00	5.73	0.95	-	-
Maize	kg	4.73	4.60	0.97	4.41	0.93
Bajra (Millet)	kg	5.71	5.07	0.89	4.87	0.85
Jowar (Sorghum)	kg	4.92	3.82	0.78	3.64	0.74
Barley	kg	4.00	3.70	0.93	3.53	0.88
Pulses						
Mung (split)	kg	15.88	11.02	0.69	-	-
Gram Black (whole)	kg	11.67	10.03	0.86	9.73	0.83
Oil Seeds						
Rape and Mustard	kg	8.94	8.59	0.96	8.32	0.93
Vegetables						
Potatoes	kg	4.71	4.20	0.89	3.82	0.81
Tomatoes	kg	11.83	10.40	0.88	9.56	0.81
Lady-fingers	kg	13.67	9.40	0.69	8.71	0.64
Brinjals (Eggplant)	kg	6.33	3.80	0.60	3.45	0.54
Onion (dry)	kg	6.58	5.89	0.89	5.40	0.82
Cauliflower	kg	6.71	5.13	0.76	4.69	0.70
Fruits						
Kinno (Citrus)	kg	8.60	6.83	0.79	6.33	0.74
Apple	kg	25.08	19.60	0.78	18.72	0.75
Mangoes	kg	20.50	12.42	0.61	11.75	0.57
Guava	kg	13.11	10.61	0.81	10.00	0.76

Notes:

- (1) Retail and wholesale prices come from Table E.3.10.2 and Table E.3.10.3, respectively.
- (2) Farmgate prices are calculated by subtracting agent's commission fee and marketing costs from wholesale price.
- (3) Agent's commission from growers is set at 2 % of wholesale price for cereals, pulses and oil seeds, 6 % for vegetables, and 3 % for fruits based on the market survey.
- (4) Marketing costs are set at Rs. 0.1 per kg for cereals, pulses and oil seeds, Rs. 0.13 per kg for vegetables, and Rs. 0.29 per kg for fruits. (see Table E.3.10.5)

Table E.3.10.5 Marketing Costs for Farmgate to D.I. Khan Market

Cost Item	(Unit: Rupee / kg)				
	Cereals	Pulses	Oil seeds	Vegetables	Fruits
Transport Cost (1)	0.060	0.060	0.060	0.060	0.120
Loading/unloading	0.025	0.025	0.025	0.050 (2)	0.125
Octroi (3)	0.007 (4)	0.018	0.025	0.020	0.040
Total	0.092	0.103	0.110	0.130	0.285

Source: Market Survey by JICA Study Team

Note : Each marketing cost except Octroi rate is the almost average figure among dealers and wholesalers based on the market survey.

(1) Rs. 2.00/ton/km is prevailing figure although there is a fluctuation. Transportation cost of fruits is more expensive compared with others mainly because they are highly seasonal and perishable. The distance from farmgate to D.I. Khan market is set at 30 km.

(2) Loading and unloading costs of tomato are the same as those of fruits.

(3) Municipal authority charges

(4) Octroi rate of paddy is Rs. 0.025 per kg. (Rs. 2.5 per 100kg)

Table E.3.10.6 Assessment of Financial Prices of Major Crops

Crops	Unit	Unit: Rupee	
		Retail Prices (1)	Farmgate Prices (2)
Cereals			
Wheat	kg	4.12	3.50
Paddy (Irr)	kg	2.69	2.28
Maize	kg	4.73	4.02
Bajra (Millet)	kg	5.71	4.86
Jowar (Sorghum)	kg	4.92	4.18
Barley	kg	4.00	3.40
Pulses			
Mung (whole)	kg	11.12	9.45
Gram Black (whole)	kg	11.67	9.92
Oil Seeds			
Rape and Mustard	kg	8.94	7.60
Sunflower	kg	-	7.00 (3)
Sugarcane	kg	-	0.35 (4)(5)
Seed Cotton	kg	-	9.80 (4)
Vegetables			
Potatoes	kg	4.71	2.35
Tomatoes	kg	11.83	5.92
Lady-fingers	kg	13.67	6.83
Brinjals (Eggplant)	kg	6.33	3.17
Onion (dry)	kg	6.58	3.29
Cauliflower	kg	6.71	3.36
Fruits			
Kinnu (Citrus)	kg	8.60	4.30
Apple	kg	25.08	12.54
Mangoes	kg	20.50	10.25
Guava	kg	13.11	6.56
Others			
Wheat Straw	kg	1.39	0.50 (4)
Fodder (Berseem)	kg	-	0.25 (4)
Fodder (Millet/Sorghum)	kg	-	0.20 (4)
Guara	kg	-	4.00 (4)

Notes:

(1) See Table E.3.10.2. Retail price of wheat is the average price for Wheat Maxi Pak and Desi (local). Retail price of Mung (whole) is 70 % of the prices for Mung (split).

(2) Financial prices are set at 85 % of retail prices for cereals, pulses and oil seeds and 50 % of retail prices for vegetables and fruits.

(3) Procurement price in farm level by Ghee Corporation of Pakistan through PASSCO.

(4) Market survey by the JICA Study Team

(5) Procurement price at sugar millgate is Rs. 0.45/kg.

Table E.3.10.7 Prices of Seeds

(Unit: Rupee)

Variety	Unit	Prices	Variety	Unit	Prices
Wheat	kg	5.90	Tomatoes	kg	800.00
Maize	kg	4.64	Lady-fingers	kg	36.00
Paddy	kg	3.84	Brinjals (Eggplants)	kg	400.00
Bajra (Millet)	kg	7.95	Cauliflower	kg	450.00
Jowar (Sorghum)	kg	8.08	Onion	kg	100.00
Barley	kg	4.50	Mango	Tree	30.00
Mung	kg	12.00	Apple	Tree	10.00
Gram	kg	12.00	Apricot	Tree	3.00
Rape and Mustard	kg	12.00	Kinnu (Citrus)	Tree	25.00
Sunflower	kg	20.00	Guava	Tree	10.00
Cotton	kg	8.25	Fodder (Berseem)	kg	25.00
Sugarcane	kg	0.45	Guara	kg	5.25

Source : Market Survey by JICA Study Team

Note : Basic data come from Agriculture Development Authority (ADA), Agriculture Department and Fruits and Vegetable Development Board.

Table E.3.10.8 Prices of Fertilizers

(Unit: Rupee)

Variety	Nutrient Contents (%)			Unit	Prices	Unit	Prices
	N	P	K				
Indigenous							
Urea	46	0	0	kg	4.68	N/kg	10.17
Ammonia Sulfate (A/S)	21	0	0	kg	3.20	N/kg	15.24
Single Super Phosphate (SSP)	0	18	0	kg	2.70	N/kg	15.00
Imports							
Urea	46	0	0	kg	4.68	N/kg	10.17
Di-Ammonium Phosphate (DAP)	18	46	0	kg	6.80	N/kg	10.63
Nitro Phosphate	23	23	0	kg	4.90	N/kg	10.65
Triple Super Phosphate (TSP)	0	46	0	kg	3.92	N/kg	8.52
Sulfate of Potash (SOP)	0	0	50	kg	3.90	N/kg	7.80
NPK Compound (10, 20, 20)	10	20	20	kg	4.94	N/kg	9.88
Calcium Ammonium Nitrate (CAN)	26	0	0	kg	3.22	N/kg	12.38

Source : Market Survey by JICA Study Team

Note : Basic data come from Agricultural Development Authority (ADA) of D.I. Khan.

Table E.3.11.1 On-farm Food Storage Conditions

Items	Study Area	CRBC Gravity Irrigation Area
Practice of Food Storage (%)	82.9	100.0
Quantity of Food Stuff (Average kg/year)		
Wheat	1,241	1,670
Rice	0	152
Pulses	211	20
Maize	200	0
Sorghum/Millet	310	8
Others	100	0
<u>Total</u>	<u>2,062</u>	<u>1,850</u>
Storage Facilities (% to the respondents)		
Room	28.4	20.0
Metal bin	0.0	0.0
Kutchha bin	21.3	5.0
Other (Date palm leave bin)	50.3	75.0
<u>Total</u>	<u>100.0</u>	<u>100.0</u>
Storage Capacity (% to the respondents)		
Under 400 kg	18.9	0.0
440 - 800 kg	22.8	20.0
800 - 1200 kg	13.3	30.0
Above 1200 kg	45.0	50.0
<u>Total</u>	<u>100.0</u>	<u>100.0</u>

Source : Farm Survey by JICA Study Team

Table E.3.13.1 Present Crop Production Value in the Study Area

Crops	Total Area		106,640 ha	Unit Price (Rs./kg)	Crop Production Value (Rs. '000)
	Cropping Area (ha)	Unit Yield (t/ha)	Production (tons)		
A. KHARIF SEASON CROPS					
Sorghum (Jowar)	2,530	0.72	1,820	4.18	7,620.0
Millet (Bajra)	2,470	0.76	1,870	4.86	9,090.0
Maize	10	0.63	6	4.02	25.0
Pulses (Mung beans)	5	0.52	3	9.45	25.0
Sugarcane	30	35.55	1,070	0.35	370.0
Cotton	60	1.41	85	9.80	830.0
Fodder	10	11.86	120	0.20	25.0
Guara	230	1.56	360	4.00	1,440.0
Vegetables, Fruits, others	25	2.88	70	3.17	220.0
Total Cropping Area	5,370				19,645.0
	5.0%				
B. RABI SEASON CROPS					
Wheat	8,540	1.04	8,850	3.50	30,980.0
Barley	400	0.76	300	3.40	1,030.0
Pulses (Gram)	4,420	0.60	2,660	9.92	26,380.0
Oilseeds / Lentil	2,580	0.52	1,330	7.60	10,120.0
Fodder	60	13.30	800	0.25	200.0
Vegetables, Fruits, others	30	4.20	130	3.36	445.0
Total Cropping Area	16,030	(16,060)*			69,155.0
		15.1%			
Annual Sown Area	21,400	(21,430)*	20.1%		88,800.0

Source : Revenue Office D. I. Khan, August 1993, Ref ; Table E.3.7.2

Note : *) ; including 30 ha of sugarcane area

Table E.3.14.1 Present Family Income and Expenditure by Classification of Farm Household

Item (Operating size/ Result of sampling survey, ha)	Tenant 10.42	Marginal 0.74	Small 2.31	Medium 4.70	Large 18.89	Total 12.94
I. Income	30,645 (100.0%)	17,607 (100.0%)	22,098 (100.0%)	29,406 (100.0%)	38,065 (100.0%)	33,135 (100.0%)
I-1 Farm Income	19,332 (63.0%)	6,867 (39.0%)	10,904 (49.0%)	17,210 (59.0%)	24,145 (63.0%)	20,089 (61.0%)
1. Crop production	11,781	1,246	3,564	6,515	14,511	10,779
2. Livestock & dairy production	7,551	5,621	7,340	10,695	9,634	9,310
I-2 Non - Farm Income	11,313 (37.0%)	10,740 (61.0%)	11,194 (51.0%)	12,196 (41.0%)	13,920 (37.0%)	13,046 (39.0%)
1. Employment	9,513	7,500	8,097	9,421	11,068	10,154
2. Business	1,233	1,800	2,710	1,349	1,935	1,934
3. Remittance	567	1,440	387	1,426	917	958
II. Expenditure	30,559	17,392	21,571	28,158	35,254	31,066
1. Farm Expenditure	8,355	790	2,462	4,462	10,175	7,529
2. Living Expenditure	22,204	16,602	19,109	23,696	25,079	23,537
III. Balance	86	215	527	1,248	2,811	2,069

Note : Operating sizes of farm are the sampling result of JICA Farm Survey.

Table E.3.15.1 Source and Utilization of Credit by Farm Survey

(1) SOURCE OF CREDIT

Item	Marginal (<1.0 ha)		Small (1 - 3 ha)		Medium (3 - 5 ha)		Large (5 ha<)		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Bank	2	40.0	1	8.3	4	25.0	20	30.8	27	27.6
Neighbour	2	40.0	4	33.3	2	12.5	4	6.2	12	12.2
Friend	1	20.0	5	41.7	8	50.0	34	52.3	48	49.0
Wholesaler	0	0	0	0	1	6.3	1	1.5	2	2.0
Businessman	0	0	0	0	0	0	4	6.2	4	4.1
Others	0	0	2	16.7	1	6.2	2	3.0	5	5.1
Total	5	100.0	12	100.0	16	100.0	65	100.0	98	100.0

(2) UTILIZATION OF CREDIT

Item	Marginal (<1.0 ha)		Small (1 - 3 ha)		Medium (3 - 5 ha)		Large (5 ha<)		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Land purchase	0	0	0	0	0	0	3	4.6	3	3.1
Tractor equipment	0	0	0	0	0	0	2	3.1	2	2.0
Farm input	5	100.0	12	100.0	16	100.0	60	92.3	93	94.9
Others	0	0	0	0	0	0	0	0	0	0
Total	5	100.0	12	100.0	16	100.0	65	100.0	98	100.0

Table E.3.15.2 ADBP Loan Disbursement and Repayment Condition in D.I.Khan District

Kind of Credit	No. of Loan Cases				Amount Disbursed (Rs.000)				Recovery Rate 1992/3 (%)
	1989-1990	1990-1991	1991-92	1992-93	1989-1990	1990-1991	1991-92	1992-93	
I. General Credit									
1. Development credit	761	586	310	264	44,005	32,007	19,766	24,657	45.9
Medium term	636	522	260	184	20,697	17,913	8,468	4,661	45.2
Long-term	125	64	50	80	23,308	14,094	11,298	19,996	46.5
2. Production credit (short term)	286	205	266	836	2,521	2,643	3,004	4,280	59.8
Fertilizer	286	205	266	836	2,521	2,643	3,004	4,280	59.8
II. Agribusiness credit	0	0	0	0	0	0	0	0	-
Total	1,047	791	576	1,100	46,526	34,650	22,770	28,937	46.5

Source: ADBP Regional Office, D.I.Khan

Table E.3.15.3 Amount per ADBP Loan in D.I.Khan District

Kind of Credit	Amount per Loan (RS.000)			
	1989-1990	1990-1991	1991-92	1992-93
I. General Credit				
1. Development credit	58	55	64	93
Medium term	33	34	33	25
Long-term	186	220	226	250
2. Production credit (short term)	9	13	11	5
Fertilizer	9	13	11	5
II. Agribusiness credit	0	0	0	0
Total	44	44	40	26

Source: ADBP Regional Office, D.I.Khan

Table E.3.15.4 ADBP Credit Disbursement by Size of Loan in D.I.Khan District

Size of Loans (Rs.)	Loan Cases		Disbursement		
	Number	Share (%)	Amount (Rs.'000)	Share (%)	
Up to 10,000		828	75.2	3,925	13.6
10,001 to 25,000	25,000	80	7.3	1,535	5.3
25,001 to 50,000	50,000	113	10.3	3,423	11.8
50,001 to 100,000	100,000	3	0.3	261	0.9
100,001 to 200,000	200,000	11	1.0	1,985	6.9
200,001 to 500,000	500,000	65	5.9	17,808	61.5
500,001 to 1,000,000	1,000,000	0	0.0	0	0.0
Above 1,000,000		0	0.0	0	0.0
Total		1,100	100.0	28,937	100.0

Source: ADBP Regional Office, D.I.Khan

Table E.3.15.5 ADBP Credit Disbursement by Size of Holding in D.I.Khan District

Size of Holding (ha)	Loan Cases		Disbursement		
	Number	Share (%)	Amount (Rs.'000)	Share (%)	
I. Landless		0	0	0	
II. Owners					
Under 5.1		333	30.3	4,410	15.2
5.1 to 10.1		98	8.9	6,351	21.9
10.1 and above		669	60.8	18,176	62.9
Total		1,100	100.0	28,937	100.0

Source: ADBP Regional Office, D.I.Khan

Table E.3.15.6 Outline of Credit Schemes under Agricultural Development Bank of Pakistan

Kind of credit	Purpose	Eligibility of Loans	Loan Amount	Mark up	Repayment Period
I. Production Finance Seed Fertilizer, Pesticide and others	Farm input supply for wheat, sugarcane, cotton and paddy	Landless: Two guarantor Others : Mortgage of land or other property	Financial limits for: 1. Landless grower (Rs.10,000) 2. For others (Rs.25,000)	15.50% (12.5% on prompt payment)	Immediately after the harvest of the crop Maximum limit 18 months
II. Development Finance 1. Tractor and Machinery loans 2. Tube-wells 3. Livestock	1. Tractor and machinery 2. Construction of Tube well 3. Farm transport, Motor cycle and Pick-up	1. Land owners holding limit upto 2.02ha over 2. Mortgage of land or other property 3. Two guarantors 1. Mortgage of land or other property 2. Two guarantors 3. Land owners 1. Mortgage of land or other property 2. Two guarantors 3. Land owners	Financial limitation to total cost (80-95%) -do- -do-	-do- -do- -do-	7 years 8 years Maximum limit 10 years
III. Project Financing To establish agro based industry	1. Dairy plant, oil mill, rice mill, flour mill, juice plant, cold storage etc. 2. Industry providing agriculture inputs, services and implements 3. farming and livestock on large scale	1. Application fee (Rs.0.5% of the project cost) 2. Mortgage of land or other property 3. Land owners -do- -do-	-do- -do- -do-	1. General ; 15.5% (12.5% on prompt payment) 2. High profit projects ; 20.0% (15% on regular payment) -do- -do-	-do- -do- -do-

Source: Public relation department Agriculture Development Bank of Pakistan Islamabad February 1991

Table E.3.15.7 Cooperative Loan Disbursement in D.I.Khan District

Kind of Credit	No. of Loan Cases				Amount Disbursement (Rs.'000)				Amount per Loan (Rs.)			
	1986-1987	1987-1988	1988-1989	1989-1990	1986-1987	1987-1988	1988-1989	1989-1990	1986-1987	1987-1988	1988-1989	1989-1990
I. Production Financing (Crop Loans):												
Seed	397	318	288	149	8,809	6,585	8,723	8,008	22,189	20,708	30,288	53,745
Fertilizer	397	318	288	149	11,235	9,326	10,308	9,152	28,300	29,327	35,792	61,423
Pesticide	397	318	288	149	3,228	2,373	3,219	3,625	8,131	7,462	11,177	24,329
By season and crops	397	318	288	149	23,272	18,284	22,250	20,785	58,620	57,497	77,257	139,497
Rabi/Wheat	130	132	84	7	4,972	5,327	3,998	585	38,246	40,356	47,595	83,571
Khariif/Cotton	0	0	0	0	0	0	0	0	0	0	0	0
Khariif/Sugarcane	267	186	204	142	18,300	12,957	18,252	20,200	68,539	69,661	89,471	142,254
Paddy	0	0	0	0	0	0	0	0	0	0	0	0
II. Development Financing												
Tractor & machinery loans	0	7	7	2	0	1,663	2,368	706	0	237,571	338,286	353,000
III. Project Financing												
	0	0	0	0	0	0	0	0	0	0	0	0
IV. Youth Investment Promotion Society												
	0	0	0	0	0	0	0	0	0	0	0	0
Total	397	325	295	151	23,272	19,947	24,618	21,491	58,620	61,375	83,451	142,325

Note : Total loan recovery rate is around 76.5% in August, 1993. Source : Cooperative Bank, D.I.Khan
Since 1990-91, the cooperative loan have not been disbursed in D.I.Khan.

Table E.3.15.8 Cooperative Crop Loan Disbursement in D.I.Khan District

Kind of Credit	No. of Society	No. of Borrowing Member	Amount Disbursed (Rs.'000)			Cultivated Area (ha)	
			Total	Per Society	Per Borrower	Total	Per Borrower
By Inputs							
Seed							
1986-1987	397	2,626	8,809	22.2	3.4	10,990	4.2
1987-1988	318	2,146	6,585	20.7	3.1	9,266	4.3
1988-1989	288	1,094	8,723	30.3	8.0	10,235	9.4
1989-1990	149	4,065	8,008	53.7	2.0	8,931	2.2
Fertilizer							
1986-1987	397	2,626	11,235	28.3	4.3	10,990	4.2
1987-1988	318	2,146	9,326	29.3	4.3	9,266	4.3
1988-1989	288	1,094	10,308	35.8	9.4	10,235	9.4
1989-1990	149	4,065	9,152	61.4	2.3	8,931	2.2
Pesticide							
1986-1987	397	2,626	3,228	8.1	1.2	10,990	4.2
1987-1988	318	2,146	2,373	7.5	1.1	9,266	4.3
1988-1989	288	1,094	3,219	11.2	2.9	10,235	9.4
1989-1990	149	4,065	3,625	24.3	0.9	8,931	2.2
By Season and Crops							
Rabi/Wheat							
1986-1987	130	838	4,972	38.2	5.9	3,579	4.3
1987-1988	132	827	5,327	40.4	6.4	4,019	4.9
1988-1989	84	616	3,998	47.6	6.5	2,843	4.6
1989-1990	7	63	585	83.6	9.3	299	4.7
Khariif/Sugarcane							
1986-1987	267	1,788	18,300	68.5	10.2	7,411	4.1
1987-1988	186	1,319	12,957	69.7	9.8	5,247	4.0
1988-1989	204	478	18,252	89.5	38.2	7,392	15.5
1989-1990	142	4,002	20,200	142.3	5.0	8,632	2.2

Note : Total loan recovery rate is around 76.5% in August, 1993. Source : Cooperative Bank, D.I.Khan
Since 1990-91, the cooperative loan have not been disbursed in D.I.Khan.

Table E.3.15.9 Cooperative Development Loan Disbursement in D.I.Khan District

Kind of Credit	No. of Society	No. of Borrowing Member	Amount Disbursed (Rs.'000)			Cultivated Area (ha)	
			Total	Per Society	Per Borrower	Total	Per Borrower
Tractor & machinery loan							
1986-1987	0	0	0	0	0	0	0
1987-1988	7	49	1,663	237.6	33.9	369	7.5
1988-1989	7	49	2,368	338.3	48.3	385	7.9
1989-1990	2	14	706	353.0	50.4	153	10.9

Source : Cooperative Bank, D.I.Khan

Table E.3.15.10 Outline of Cooperative Loan Schemes

Kind of credit	Purpose	Eligibility of Loans	Loan Amount and Disbursement	Mark up (%/a.n)	Repayment Period	Grace Period
I. Production Finance	Farm input supply for wheat, sugarcane, cotton and paddy	1. Two guarantor 2. Mortgage of land 3. Not a previous defaulter	1. Small farmers Rs.1,600/Acre upto Rs.20,000 2. Economic farmer upto Rs.30,000 3. In kind	Crop except sugarcane 1. Small farm (9.5%) (7.0 on prompt payment) 2. Economic farmers (14%) (10% on prompt payment)	8 months	None
				Sugarcane Both farmers (10%)	18 months	None
II. Development Finance	1. Procurement of tractor and machinery	1. Land owners only 2. Mortgage of land 3. Two guarantors 4. Regularly admitted members of PCB	1. Financial limitation to total cost by holding 5.1 ha ; 95% 10.1 ha ; 90% 20.3 ha ; 85% 2. In kind	Imported goods (15%) (11% on prompt payment) Local manufactured (12%) (8% on prompt payment)	6 years	None
	2. Construction of Tube well	1. Regularly admitted members of PCB 2. Not a previous defaulter 3. Land owners 4. Project size 1/4 cusec ; - Rainfed (5.1 ha above) - Irrigated (10.1 ha above) 1/2 cusec ; - Rainfed (10.1 ha above) - Irrigated (20.3 ha above) 5. Proper cost estimate 6. Water quality test certificate	1. -do- 2. Equipment in kind and labor cost in cash	12% (8% on prompt payment)	8 years	None
	3. Meat and Milch cattle	1. Mortgage of land or two guarantor	1. Maximum Rs.10,000 2. In kind	12% (8% on prompt payment)	5 years	None
	4. Bullocks	1. Mortgage of land or two guarantor 2. farmers tilling upto 5.1 ha 3. Inquiry and cost estimate by managing committee	1. Maximum Rs.5,000 2. In kind	12% (8% on prompt payment)	As prescribed from time to time	None
	5. Transport to vegetable growers	1. Mortgage of land 2. Payment direct to supplier 3. Proof(khasra) of cultivation of fruit/vegetable 4. Comprehensively insured and registered	1. Financial limitation to total cost ; 80% 2. In kind	15% (11% on prompt payment)	6 years	None
III. Project Finance	To establish agro-based concern, dairy/ poultry /sheep /goat /orchard /farming etc.	1. Regularly admitted member by PCB 2. Not a previous defaulter 3. Feasibility report, if outlay exceeds Rs.1.5 Million 4. Utilization of own equity	1. Maximum Rs. 5 million 2. Financial limitation to total cost: 60-70 % 3. Disbursement by progress	16% (12% on prompt payment)	6-7 years	1-2 years
IV. Youth Investment Promotion Society (YIPS)	Promotion of self-employment	1. Finance only to Registered youth co-operatives 2. Member's age limit upto 18-30 years 3. Educational standard more than matric (10 classes) 4. Unemployed person	1. Maximum (Rs. 1 million) 2. Area-wise financial limitation to total cost Rural = 90% Urban = 85%	Rural Project ; 7% Urban Project ; 9%	8 years	1 year

Note : Objective Loanees ; Cooperative societies and their members

1. Small farmers ; Less 5.1 ha

2. Economic farmer; 5.1 - 20.3 ha

Source: Loaning Procedure, federal Bank for Cooperatives, July 1991.

Table E.3.16.1 Outline of Cooperative Organization in NWFP and D.I.Khan District (1993)

(1) OUTLINE OF COOPERATIVE ORGANIZATION IN NWFP (1993)

Item	No. of Societies	No. of Members		Capital Formation				
		Total	Per Society	Share Capital (Thousand Rs.)		Working Capital (Thousand Rs.)		
				Total	Per Society	Total	Per Society	Per Member
I. Provincial Level								
1. Secondary level societies	44	26,360	599	32,393	736	846,724	19,244	32.12
2. Primary agricultural societies	6,820	356,879	52	49,969	7	557,665	82	1.56
3. Non-agriculture societies	167	17,445	104	1,789	11	8,001	48	0.46
4. Industrial societies	124	3,161	25	250	2	1,519	12	0.48
5. Miscellaneous societies	11	263	24	6	1	13	1	0.05
Total	7,166	404,108	56	84,407	12	1,413,922	197	3.50
II. D.I.Khan								
1. Secondary level societies	4	175	44	45	11	528	132	3.02
2. Primary agricultural societies	456	35,793	78	3,166	7	22,279	49	0.62
3. Non-agriculture societies	7	938	134	90	13	1,021	146	1.09
4. Industrial societies	12	208	17	14	1	131	11	0.63
Total	479	37,114	77	3,315	7	23,959	50	0.65
III. Study Area								
1. Primary agricultural societies	26	1,024	39	218	8	2,622	101	2.56

Source : Department of Cooperatives, NWFP, D.I.Khan

(2) LIST OF ACTIVE COOPERATIVE ORGANIZATIONS IN THE ADMINISTRATIVE AREA COVERING THE STUDY AREA

Tehsil	Location		Name of Cooperatives	No. of Members	Capital Formation				
	Union Council/ Town Committee	Mauza			Share Capital (Rs.)	Working Capital (Rs.)			
I. Primary Agricultural Societies									
				1,024	217,616	2,622,195			
D.I.Khan	Paniyala Yarik	Paniyala Janobi Yarik	Paniyala Janobi CS	43	2,300	207,300			
			Yarik CS	36	2,460	65,460			
			Yarik MC	20	8,400	28,500			
			Yarik Union Council MP	120	11,643	11,843			
	Chahkan	Rodhi Khel Budh	Rodhi Khel CS	23	2,700	82,600			
			Budh CS	26	2,427	24,650			
			Kot Isa Khan CS	15	505	1,115			
			Jowia Shai CS	22	635	15,369			
			Pota CS	18	317	33,643			
			Chahkan CS	26	1,672	162,239			
	Zandani	Zandani	Chahkan MP	20	2,000	2,100			
			Chahkan Union Council MP	32	1,600	49,920			
			Zandani CS	19	812	6,785			
			Zandani Union Council MP	162	8,750	23,042			
			Taj MP	20	9,200	96,200			
			Sheroo Nau CS	41	1,846	32,846			
			Sheroo Kohna CS	27	693	19,483			
			Jandi MP	21	9,200	96,400			
	Tehsil D.I.Khan total				691	67,160	959,495		
	Kulach	Kulach	Maddi	Maddi CS	10	206	450		
Maddi Gharbi CS			12	250	1,250				
Gara Isa Khan		Kot Isa Khan	Kot Isa Khan MP	16	5,000	5,000			
			Dhulka Jadid MP	55	50,000	360,000			
			Gandi Umar Khan Jannoobi MP	30	5,000	107,000			
			Gandi Umar Khan MP	30	5,000	110,000			
Gara Mir Alam		Gara Mir Alam	Gara Mir Alam MP	100	60,000	854,000			
			Gara Mir Alam Shumali MP	80	25,000	225,000			
			Tehsil Kulach total				333	150,456	1,662,700

Note : CS ; Credit society, MP ; Multipurpose society
Source : Department of Cooperatives, D.I.Khan

Table E.3.16.2 Major Constraints in the Present Farming by Classification of Farm Household

Constraints	Tenant		Marginal		Small		Medium		Large		Total (Avg)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
(No Respondents)	30		10		31		39		130		210	
Irrigation Water	23	76.7	6	60.0	20	64.5	29	74.4	101	77.7	156	74.3
Drought	23	76.7	9	90.0	28	90.3	31	79.5	103	79.2	171	81.4
Excess Water	0	0	1	0	1		1	0	4	3.1	7	3.3
Pests & Diseases	0	0	0	0	0		0	0	2	1.5	2	1.0
Few HY Varieties	4	13.3	3	30.0	7	22.6	7	17.9	19	14.6	36	17.1
Little fertilization	4	13.3	3	30.0	10	32.3	10	25.6	24	18.5	47	22.4
Labour Shortage	0	0	0	0	0		2	0	1	0.8	3	1.4
Poor roads	1	3.3	2	20.0	2	6.5	1	2.6	7	5.4	12	5.7
Others	0	0	0	0	0		0	0	1	0.8	1	0.5
Total Answer	55		24		68		81		262		435	

Note : The farmers were asked to list three major constraints. /_1 ; Covering marginal, small, medium, and large farmers. Tenant farmers are included in 4 kinds of farmers.

Source : JICA Farm Survey

Table E.3.16.3 Farmers' Concerns about the Chashma Right Bank First Lift Irrigation Project

Item	Tenant		Marginal		Small		Medium		Large		Total / 1	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
No. Respondents	30		10		31		39		130		210	
1 Knowledge about the project												
- Yes	23	76.7	9	90.0	29	93.5	30	76.9	107	82.3	175	83.3
- No	7	23.3	1	10.0	2	6.5	9	23.1	23	17.7	35	16.7
Total	30	100.0	10	100.0	31	100.0	39	100.0	130	100.0	210	100.0
2 Participate in project												
- Yes	29	96.7	9	90.0	31	100.0	39	100.0	128	98.5	207	98.6
- No	1	3.3	1	10.0	0	0	0	0	2	1.5	3	1.4
Total	30	100.0	10	100.0	31	100.0	39	100.0	130	100.0	210	100.0
3 Kind of participation												
- Labour	19	65.5	3	33.3	13	41.9	14	35.9	57	44.5	87	42.0
- Any work	9	31.0	5	55.6	14	45.2	18	46.2	51	39.8	88	42.5
- Pray	1	3.4	-	-	1	3.2	2	5.1	14	10.9	17	8.2
- Give land	-	-	-	-	3	9.7	4	10.3	4	3.1	11	5.3
- Do not know	-	-	-	-	-	-	-	-	1	0.8	1	0.5
- None	-	-	1	11.1	-	-	1	2.6	1	0.8	3	1.4
Total	29	100.0	9	100.0	31	100.0	39	100.0	128	100.0	207	100.0
4 Expected benefits												
- Bring prosperity	6	20.7	2	20.0	5	16.1	7	17.9	27	20.9	41	19.6
- Increase cultivation, production	10	34.5	1	10.0	8	25.8	14	35.9	28	21.7	51	24.4
- Employment	-	-	1	10.0	2	6.5	1	2.6	8	6.2	12	5.7
- Solve problems & finance	3	10.3	1	10.0	8	25.8	9	23.1	34	26.4	52	24.9
- More land under cultivation	10	34.5	3	30.0	8	25.8	8	20.5	32	24.8	51	24.4
- None	-	-	2	20.0	-	-	-	-	-	-	2	1.0
Total	29	100.0	10	100.0	31	100.0	39	100.0	129	100.0	209	100.0
5 Willing to pay water charge												
- Yes	30	100.0	10	100.0	30	96.8	38	97.4	127	97.7	205	97.6
- No	-	-	-	-	1	3.2	1	2.6	3	2.3	5	2.4
Total	30	100.0	10	100.0	31	100.0	39	100.0	130	100.0	210	100.0
6 Knowledge of water charge												
- Yes	1	3.3	-	-	5	16.1	7	17.9	12	9.2	24	11.4
- No	29	96.7	10	100.0	26	83.9	32	82.1	118	90.8	186	88.6
Total	30	100.0	10	100.0	31	100.0	39	100.0	130	100.0	210	100.0
7 How much more willing to pay												
- Same	24	80.0	6	60.0	19	61.3	27	69.2	88	67.7	140	66.7
- 10%	3	10.0	3	30.0	2	6.5	4	10.3	19	14.6	28	13.3
- 20%	2	6.7	1	10.0	2	6.5	5	12.8	8	6.2	16	7.6
- 30%	-	-	-	-	4	12.9	3	7.7	8	6.2	15	7.1
- 40%	-	-	-	-	-	-	-	-	1	0.8	1	0.5
- 50%	1	3.3	-	-	4	12.9	-	-	5	3.8	9	4.3
- over 100%	-	-	-	-	-	-	-	-	1	0.8	1	0.5
Total	30	100.0	10	100.0	31	100.0	39	100.0	130	100.0	210	100.0

Notes: / 1 : Covering marginal, small, medium, and large farmers. Tenant farmers are included in 4 kinds of farmers.

Typical Comments regarding type of works and benefits:

- "We are willing to even give land free for the canal" "We will labour for this project"
- "It is a good project, whatever work is required, even labour"
- "During the construction of the project I will do whatever work is required, because it will bring prosperity"
- "What ever is asked we will do, as long as we are provided with water"
- "The entire population will assist & cooperate with the Government on this project - President Rodkahi Organization"
- "We are poor people we can pray for the success and labor for it" " We will provide free labour"
- "If only food is provided we will do free labour"
- "With water we will be able to cultivate all of our lands including waste land, and grow many crops"
- "From this project - production will increase" "This project will improve our economic conditions, we are very poor"
- "It will bring prosperity to us, drinking water will be available"
- "After completion of this project we will become financially independent, our country will prosper, and the people will bless the Government"
- "This project will enable us to cultivate all of our lands and generate income for us, roads will be constructed the area will develop, and our children will be able to get education"
- "We will be able to plant sugar cane, rice, wheat and cotton"
- "Our land will be brought into cultivation and our yields will increase, we won't have to do labour to earn living, but cultivate lands and earn honorable living"
- "Besides other benefits this project itself will generate employment"

Source : JICA Farm Survey

**Table E.3.16.4 Farmers' Suggestions and Opinions of the Project
by Classification of Farm Household**

Item	Tenant		Marginal		Small		Medium		Large		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
No. of Respondents	30		10		31		39		130		210	
Construction of canal/water course	2	6.7	4	40.0	11	35.5	7	17.9	27	20.8	49	23.3
Good & beneficial project	5	16.7	1	10.0	6	19.4	8	20.5	36	27.7	51	24.3
We pray for its success	2	6.7	-	-	1	3.2	1	2.6	3	2.3	5	2.4
Care for good material	-	-	-	-	-	-	-	-	2	1.5	2	1.0
Quick and timely Completion of project	4	13.3	1	10.0	4	12.9	6	15.4	14	10.8	25	11.9
Canal should cover maximum area, need good alignment	3	10.0	1	10.0	2	6.5	6	15.4	11	8.5	20	9.5
Sufficient water supply	1	3.3	1	10.0	1	3.2	-	-	1	0.8	3	1.4
Strong and durable canal should be built	-	-	-	-	-	-	-	-	2	1.5	2	1.0
Canal/watercourses should be lined to reduce waterlogging/salinity	1	3.3	-	-	1	3.2	-	-	2	1.5	3	1.4
- None	12	40.0	2	20.0	5	16.1	11	28.2	32	24.6	50	23.8
Total	30	100.0	10	100.0	31	100.0	39	100.0	130	100.0	210	100.0

Note: /_1 ; Covering marginal, small, medium, and large farmers. Tenant farmers are included in 4 kinds of farmers.

Typical Comments regarding suggestions and opinions:

"This is a very good project, it should be completed at the earliest because the government makes a lot of promises during election time but never fulfill, this project will be very successful, there is no need for surveys"

"The earlier the project is finished it will solve our water problem, barren land will become green, the nation will benefit"

"The canal should be constructed at the earliest, there is nothing to be said about this project except that it excellent, nothing could be better than this project"

"Water should flow regularly, power interruptions should not occur, water courses should be lined, so that no water is wasted and waterlogging is prevented"

"I pray that this project is completed soon, for it will bring prosperity to our area and our land will produce the highest as it very fertile land"

"After this project is completed, our water courses should be lined by the government so that no water is wasted as it is a precious resource"

"We pray that this project is completed in my lifetime, if water is brought then our life will change, this canal should be completed, our children will offer prayers"

"Bunds should be made to prevent damage from Rodkahi waters, we are grateful to the government for development this project"

"Canal should be lined, to prevent water logging and salinity, plenty of water should be planned"

"The destiny of this land will change"

"We are starving, if water comes, we will be able to cultivate land, grow crops, this project must be completed at earliest"

"Alignment should be carefully chosen so that maximum benefit is achieved, good quality materials and construction should be ensured, maximize supply and command area"

Source: JICA Farm Survey

Table E.3.17.1 Number of Villagers and Councilors selected by Union and Mouza

Tehsil Union Council	Selected Mouza	Number of Villagers				Number of Councilors
		1st	2nd	Total	(%)	
1. D.I. Khan						
Paniala	13.1 Paniala Janobi	-	30	30	9.2	-
Band Korai	-	-	-	-	-	-
Yarik	102 Yarik	-	30	30	9.2	-
	110 Budh	-	30	30	9.2	-
Keach	111 Rahman	-	27	27	8.3	-
Chakhan	115 Chakhan	27	25	52	16.0	5
Zindani	164 Zindani	-	36	36	11.0	-
Lunda Sharif	154 Chhigiri	-	20	20	6.1	-
	153 Jumma Sharif	-	20	20	6.1	-
Naivala	188 Rashid	-	-	-	-	-
Mahra	197 Mahran	-	-	-	-	-
Miran	207 Chirri Bhor	-	-	-	-	-
Ghara Isa Khan	48 Gandhi Umer Khan	26	30	56	17.2	4
Musa Zia Sharif	28 Gandhi Ashiq	-	-	-	-	-
Chowdwan	53 Jandi	-	-	-	-	-
2. Kulachi						
Muddi	25K Muddi	-	25	25	7.7	-
Total		53	273	326	100.0	9

Table E.3.17.2 Age Range of Respondents

Age Range	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	No.	%	No.	%	No.	%	No.	%
18 - 25	18	(49.9)	15	(26.8)	10	(19.2)	6	(22.2)
26 - 35	6	(16.7)	19	(33.9)	21	(40.4)	5	(18.5)
36 - 45	8	(22.2)	9	(16.1)	9	(17.3)	4	(14.8)
46 - 55	2	(5.6)	7	(12.5)	8	(15.4)	3	(11.1)
56 - 65	1	(2.8)	4	(7.1)	3	(5.8)	7	(26.0)
Above 65	1	(2.8)	2	(3.6)	1	(1.9)	2	(7.4)
Total	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

Age Range	Paniala Janobi		Budh		Yarik		Muddi	
	No.	%	No.	%	No.	%	No.	%
18 - 25	1	(3.3)	9	(30.0)	7	(23.3)	6	(24.0)
26 - 35	7	(23.3)	6	(20.0)	5	(16.7)	5	(20.0)
36 - 45	6	(20.0)	9	(30.0)	6	(20.0)	6	(24.0)
46 - 55	4	(13.3)	3	(10.0)	6	(20.0)	7	(28.0)
56 - 65	10	(33.4)	2	(6.7)	3	(10.0)	1	(4.0)
Above 65	2	(6.7)	1	(3.3)	3	(10.0)	0	(0.0)
Total	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)

Age Range	Jumma Sharif		Chhigiri		Total Villagers		Councilor	
	No.	%	No.	%	No.	%	No.	%
18 - 25	5	(25.0)	8	(40.0)	85	(26.1)	0	(0.0)
26 - 35	7	(35.0)	5	(25.0)	86	(26.4)	0	(0.0)
36 - 45	1	(5.0)	1	(5.0)	59	(18.0)	4	(44.4)
46 - 55	3	(15.0)	3	(15.0)	46	(14.1)	4	(44.4)
56 - 65	1	(5.0)	3	(15.0)	35	(10.7)	1	(11.2)
Above 65	3	(15.0)	0	(0.0)	15	(4.6)	0	(0.0)
Total	20	(100.0)	20	(100.0)	326	(100.0)	9	(100.0)

Table E.3.17.3 Educational Qualification of Respondents

Literacy Level and Classes	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	No.	%	No.	%	No.	%	No.	%
Illiterate	24	(66.7)	42	(75.0)	34	(65.4)	19	(70.4)
Primary (1-5)	5	(13.9)	7	(12.5)	6	(11.5)	6	(22.2)
Middle (6-8)	3	(8.3)	5	(8.9)	6	(11.5)	2	(7.4)
Matric (9-10)	4	(11.1)	1	(1.8)	2	(3.8)	0	(0.0)
FA/FSC (11-12)	0	(0.0)	0	(0.0)	2	(3.8)	0	(0.0)
BA/BSC/LLB (13<)	0	(0.0)	1	(1.8)	2	(3.8)	0	(0.0)
Total	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

FA/FSC (Faculty of Arts, Faculty of Science College)

BA/BSC/LLB (Bachelor of Arts, Bachelor of Science, Legal Law Bachelor)

Literacy Level and Classes	Paniata Janobi		Budh		Yarik		Muddi	
	No.	%	No.	%	No.	%	No.	%
Illiterate	14	(46.7)	21	(70.0)	11	(36.8)	9	(36.0)
Primary (1-5)	8	(26.7)	5	(16.7)	3	(10.0)	5	(20.0)
Middle (6-8)	1	(3.3)	2	(6.7)	7	(23.3)	4	(16.0)
Matric (9-10)	5	(16.7)	1	(3.3)	7	(23.3)	2	(8.0)
FA/FSC (11-12)	1	(3.3)	1	(3.3)	1	(3.3)	3	(12.0)
BA/BSC/LLB (13<)	1	(3.3)	0	(0.0)	1	(3.3)	2	(8.0)
Total	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)

Literacy Level and Classes	Jumma Sharif		Chhigiri		Total Villagers		Councilor	
	No.	%	No.	%	No.	%	No.	%
Illiterate	15	(75.0)	13	(65.0)	202	(62.0)	4	(44.4)
Primary (1-5)	3	(15.0)	4	(20.0)	52	(16.0)	1	(11.1)
Middle (6-8)	0	(0.0)	1	(5.0)	31	(9.5)	2	(22.2)
Matric (9-10)	1	(5.0)	2	(10.0)	25	(7.7)	1	(11.1)
FA/FSC (11-12)	0	(0.0)	0	(0.0)	8	(2.5)	0	(0.0)
BA/BSC/LLB (13<)	1	(5.0)	0	(0.0)	8	(2.5)	1	(11.1)
Total	20	(100.0)	20	(100.0)	326	(100.0)	9	(100.0)

Table E.3.17.4 Occupation of Respondents

Occupation	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	No.	%	No.	%	No.	%	No.	%
Agriculture only	26	(72.1)	43	(76.8)	36	(69.2)	21	(77.8)
Agriculture and others	7	(19.5)	7	(12.5)	11	(21.2)	2	(7.4)
Agriculture + Government Employee	1	(2.8)	1	(1.8)	4	(7.7)	1	(3.7)
Agriculture + Labor	5	(13.9)	4	(7.1)	7	(13.5)	0	(0.0)
Agriculture + Driver	1	(2.8)	2	(3.6)	0	(0.0)	1	(3.7)
Non-agriculture	3	(8.4)	5	(9.0)	2	(3.8)	4	(14.8)
Labor	2	(5.6)	2	(3.6)	1	(1.9)	3	(11.1)
Others	1	(2.8)	3	(5.4)	1	(1.9)	1	(3.7)
No Job	0	(0.0)	1	(1.8)	3	(5.8)	0	(0.0)
Total	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

Table E.3.17.5 Tenure Status of the Respondents

Tenure Status	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	No.	%	No.	%	No.	%	No.	%
Landlord	1	(2.8)	0	(0.0)	4	(7.7)	0	(0.0)
Owner cultivator	20	(55.6)	23	(41.1)	24	(46.2)	15	(55.6)
Owner cum tenant	12	(33.3)	24	(42.9)	19	(36.5)	7	(25.9)
Tenant	0	(0.0)	3	(5.4)	0	(0.0)	1	(3.7)
Non-agricultural household	3	(8.3)	6	(10.7)	5	(9.6)	4	(14.8)
Total	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

Tenure Status	Paniala Janobi		Budh		Yarik		Muddi	
	No.	%	No.	%	No.	%	No.	%
Landlord	18	(60.0)	2	(6.7)	14	(46.7)	7	(28.0)
Owner cultivator	9	(30.0)	13	(43.3)	10	(33.3)	10	(40.0)
Owner cum tenant	3	(10.0)	12	(40.0)	5	(16.7)	2	(8.0)
Tenant	0	(0.0)	0	(0.0)	0	(0.0)	1	(4.0)
Non-agricultural household	0	(0.0)	3	(10.0)	1	(3.3)	5	(20.0)
Total	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)

Tenure Status	Jumma Sharif		Chhigiri		Total Villagers		Councilor	
	No.	%	No.	%	No.	%	No.	%
Landlord	6	(30.0)	3	(15.0)	55	(16.9)	8	(88.9)
Owner cultivator	4	(20.0)	11	(55.0)	139	(42.6)	0	(0.0)
Owner cum tenant	6	(30.0)	4	(20.0)	94	(28.8)	1	(11.1)
Tenant	3	(15.0)	0	(0.0)	8	(2.5)	0	(0.0)
Non-agricultural household	1	(5.0)	2	(10.0)	30	(9.2)	0	(0.0)
Total	20	(100.0)	20	(100.0)	326	(100.0)	9	(100.0)

Table E.3.17.6 Land Holding Size of Respondents

Holding Size (ha)	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	No.	%	No.	%	No.	%	No.	%
0	3	(8.3)	9	(16.1)	5	(9.6)	5	(18.5)
< 2	1	(2.8)	1	(1.8)	2	(3.8)	3	(11.1)
2 - 6	11	(30.6)	15	(26.8)	7	(13.5)	3	(11.1)
6 - 10	6	(16.7)	5	(8.9)	5	(9.6)	1	(3.7)
10 - 14	2	(5.5)	6	(10.7)	2	(3.8)	4	(14.8)
14 - 18	2	(5.5)	6	(10.7)	2	(3.8)	5	(18.5)
18 - 22	2	(5.6)	3	(5.4)	7	(13.5)	0	(0.0)
22 <	9	(25.0)	11	(19.6)	22	(42.3)	6	(22.3)
Total	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

Holding Size (ha)	Paniala Janobi		Budh		Yarik		Muddi	
	No.	%	No.	%	No.	%	No.	%
0	0	(0.0)	3	(10.0)	1	(3.3)	6	(24.0)
< 2	0	(0.0)	1	(3.3)	0	(0.0)	1	(4.0)
2 - 6	6	(20.0)	3	(10.0)	1	(3.3)	2	(8.0)
6 - 10	0	(0.0)	4	(13.3)	3	(10.0)	1	(4.0)
10 - 14	8	(26.7)	4	(13.3)	6	(20.0)	3	(12.0)
14 - 18	1	(3.3)	3	(10.0)	2	(6.7)	4	(16.0)
18 - 22	4	(13.3)	0	(0.0)	0	(0.0)	2	(8.0)
22 <	11	(36.7)	12	(40.1)	17	(56.7)	6	(24.0)
Total	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)

Holding Size (ha)	Jumma Sharif		Chhigiri		Total Villagers		Councilor	
	No.	%	No.	%	No.	%	No.	%
0	4	(20.0)	2	(10.0)	38	(11.7)	0	(0.0)
< 2	3	(15.0)	1	(5.0)	13	(4.0)	0	(0.0)
2 - 6	3	(15.0)	4	(20.0)	55	(16.9)	0	(0.0)
6 - 10	4	(20.0)	2	(10.0)	31	(9.5)	0	(0.0)
10 - 14	3	(15.0)	0	(0.0)	38	(11.7)	1	(11.1)
14 - 18	0	(0.0)	5	(25.0)	30	(9.2)	0	(0.0)
18 - 22	0	(0.0)	1	(5.0)	19	(5.8)	0	(0.0)
22 <	3	(15.0)	5	(25.0)	102	(31.3)	8	(88.9)
Total	20	(100.0)	20	(100.0)	326	(100.0)	9	(100.0)

Table E.3.17.7 Source of Property of Respondents

Source	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	No.	%	No.	%	No.	%	No.	%
None	3	(8.3)	9	(16.1)	5	(9.6)	5	(18.5)
Purchase	1	(2.8)	3	(5.4)	1	(1.9)	1	(3.7)
Father/Grandfather	28	(77.8)	42	(75.0)	45	(86.5)	21	(77.8)
Purchase + Father/Grandfather	4	(11.1)	0	(0.0)	1	(1.9)	0	(0.0)
From government	0	(0.0)	2	(3.6)	0	(0.0)	0	(0.0)
Total	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

Source	Paniala Janobi		Budh		Yarik		Muddi	
	No.	%	No.	%	No.	%	No.	%
None	0	(0.0)	3	(10.0)	1	(3.3)	6	(24.0)
Purchase	2	(6.7)	1	(3.3)	0	(0.0)	2	(8.0)
Father/Grandfather	19	(63.3)	23	(76.7)	25	(83.4)	17	(68.0)
Purchase + Father/Grandfather	9	(30.0)	3	(10.0)	4	(13.3)	0	(0.0)
From government	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Total	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)

Source	Jumna Sharif		Chhigiri		Total Villagers		Councilor	
	No.	%	No.	%	No.	%	No.	%
None	4	(20.0)	2	(10.0)	38	(11.7)	0	(0.0)
Purchase	0	(0.0)	0	(0.0)	11	(3.4)	0	(0.0)
Father/Grandfather	16	(80.0)	18	(90.0)	254	(77.9)	9	(100.0)
Purchase + Father/Grandfather	0	(0.0)	0	(0.0)	21	(6.4)	0	(0.0)
From government	0	(0.0)	0	(0.0)	2	(0.5)	0	(0.0)
Total	20	(100.0)	20	(100.0)	326	(100.0)	9	(100.0)

Table E.3.17.8 Annual Income of Respondents

Range of Annual Income (Rs.)	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	No.	%	No.	%	No.	%	No.	%
< 5,000	5	(13.9)	12	(21.4)	13	(25.0)	4	(14.8)
5,000 - 15,000	17	(47.1)	21	(37.6)	13	(25.0)	16	(59.3)
15,000 - 25,000	4	(11.1)	6	(10.7)	10	(19.2)	4	(14.8)
25,000 - 35,000	2	(5.6)	5	(8.9)	4	(7.7)	1	(3.7)
35,000 - 45,000	2	(5.6)	4	(7.1)	2	(3.8)	2	(7.4)
45,000 - 55,000	4	(11.1)	1	(1.8)	1	(1.9)	0	(0.0)
55,000 - 65,000	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
65,000 - 75,000	1	(2.8)	0	(0.0)	1	(1.9)	0	(0.0)
75,000 <	1	(2.8)	7	(12.5)	8	(15.4)	0	(0.0)
Total	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

Range of Annual Income (Rs.)	Paniala Janobi		Budh		Yarik		Muddi	
	No.	%	No.	%	No.	%	No.	%
< 5,000	2	(6.7)	0	(0.0)	2	(6.7)	1	(4.0)
5,000 - 15,000	11	(36.6)	12	(40.0)	5	(16.7)	15	(60.0)
15,000 - 25,000	3	(10.0)	8	(26.7)	5	(16.7)	5	(20.0)
25,000 - 35,000	2	(6.7)	3	(10.0)	6	(20.0)	0	(0.0)
35,000 - 45,000	2	(6.7)	2	(6.7)	7	(23.2)	0	(0.0)
45,000 - 55,000	4	(13.3)	2	(6.7)	2	(6.7)	2	(8.0)
55,000 - 65,000	4	(13.3)	2	(6.7)	0	(0.0)	0	(0.0)
65,000 - 75,000	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
75,000 <	2	(6.7)	1	(3.2)	3	(10.0)	2	(8.0)
Total	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)

Range of Annual Income (Rs.)	Jumma Sharif		Chhigiri		Total Villagers		Councilor	
	No.	%	No.	%	No.	%	No.	%
< 5,000	4	(20.0)	2	(10.0)	45	(13.8)	0	(0.0)
5,000 - 15,000	9	(45.0)	11	(55.0)	130	(39.9)	1	(11.1)
15,000 - 25,000	5	(25.0)	3	(15.0)	53	(16.3)	0	(0.0)
25,000 - 35,000	2	(10.0)	2	(10.0)	27	(8.3)	0	(0.0)
35,000 - 45,000	0	(0.0)	1	(5.0)	22	(6.7)	1	(11.1)
45,000 - 55,000	0	(0.0)	0	(0.0)	16	(4.9)	1	(11.1)
55,000 - 65,000	0	(0.0)	0	(0.0)	6	(1.9)	1	(11.1)
65,000 - 75,000	0	(0.0)	0	(0.0)	2	(0.7)	0	(0.0)
75,000 <	0	(0.0)	1	(5.0)	25	(7.7)	5	(55.6)
Total	20	(100.0)	20	(100.0)	326	(100.0)	9	(100.0)

Table E.3.17.9 Previous Status of Councilors' Family Members

Status	Gara Isa Khan	Chahkan	Total
Family member			
Member of union council	2	5	7
Chairman of union council	1	0	1
No status	1	0	1
Total	4	5	9

Table E.3.17.10 Previous Status of Councilors

Status	Gara Isa Khan	Chahkan	Total
Councilor own			
Member of union council	0	5	5
Chairman of union council	1	0	1
No status	3	0	3
Total	4	5	9

Table E.3.17.11 Factors Motivating to Contest Election

Item	Gara Isa Khan	Chahkan	Total
To serve people	3	4	7
As social worker	0	1	1
No response	1	0	1
Total	4	5	9

Table E.3.17.12 Decision Make Process in Union Council

Item	Gara Isa Khan	Chahkan	Total
The chairman makes decision in consultaion with other members	4	5	9
All members pass resolution in favour of schemes	0	0	0
Chairman makes decision in consultation of local govt. officials	0	0	0
Chairman makes decision in favour of strong political group	0	0	0
Total	4	5	9

Table E.3.17.13 Quarters Extending Cooperation in Implementation of Development Projects

Item	Gara Isa Khan	Chahkan	Total
Common villagers	1	0	1
Member of the party	1	0	1
Relatives	0	0	0
Friends	0	0	0
Beraderi members/Family group members	1	5	6
Local government officials	1	0	1
Total	4	5	9

Table E.3.17.14 Major Problems of the Villages

Source	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	No.	%	No.	%	No.	%	No.	%
Bad road condition	1	(2.8)	2	(3.6)	0	(0.0)	23	(85.2)
Provision of electricity	1	(2.8)	10	(17.9)	13	(25.0)	0	(0.0)
No dispensary	28	(77.8)	16	(28.6)	31	(59.6)	19	(70.4)
No irrigation water	25	(69.4)	41	(73.2)	47	(90.4)	17	(63.0)
No drinking water supply	5	(13.9)	27	(48.2)	6	(11.5)	0	(0.0)
Shortage of educational facilities	1	(2.8)	5	(8.9)	6	(11.5)	1	(3.7)
No post office and public call office	10	(27.8)	0	(0.0)	0	(0.0)	3	(11.1)
Unemployment	0	(0.0)	1	(1.8)	0	(0.0)	5	(18.5)
No livestock dispensary	2	(5.6)	0	(0.0)	2	(3.8)	0	(0.0)
Flood problem	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
No. of respondents	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

Source	Paniala Janobi		Budh		Yarik		Muddi	
	No.	%	No.	%	No.	%	No.	%
Bad road condition	6	(20.0)	26	(86.7)	1	(3.3)	18	(72.0)
Provision of electricity	5	(16.7)	15	(50.0)	2	(6.7)	1	(4.0)
No dispensary	7	(23.3)	8	(26.7)	12	(40.0)	15	(60.0)
No irrigation water	27	(90.0)	28	(93.3)	26	(86.7)	15	(60.0)
No drinking water supply	21	(70.0)	25	(83.3)	5	(16.7)	1	(4.0)
Shortage of educational facilities	13	(43.3)	10	(33.3)	7	(23.3)	0	(0.0)
No post office and public call office	2	(6.7)	4	(13.3)	0	(0.0)	0	(0.0)
Unemployment	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
No livestock dispensary	10	(33.3)	3	(10.0)	1	(3.3)	2	(8.0)
Flood problem	2	(6.7)	0	(0.0)	4	(13.3)	0	(0.0)
No. of respondents	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)

Source	Jumma Sharif		Chhigiri		Total Villagers		Councilor	
	No.	%	No.	%	No.	%	No.	%
Bad road condition	7	(35.0)	0	(0.0)	84	(25.8)	4	(44.4)
Provision of electricity	3	(15.0)	0	(0.0)	50	(15.3)	2	(22.2)
No dispensary	6	(30.0)	16	(80.0)	158	(48.5)	4	(44.4)
No irrigation water	15	(75.0)	17	(85.0)	258	(79.1)	4	(44.4)
No drinking water supply	0	(0.0)	0	(0.0)	90	(27.6)	3	(33.3)
Shortage of educational facilities	0	(0.0)	10	(50.0)	53	(16.3)	1	(11.1)
No post office and public call office	12	(60.0)	12	(60.0)	43	(13.2)	0	(0.0)
Unemployment	0	(0.0)	0	(0.0)	6	(1.8)	0	(0.0)
No livestock dispensary	2	(10.0)	4	(20.0)	26	(8.0)	0	(0.0)
Flood problem	4	(20.0)	0	(0.0)	10	(3.1)	0	(0.0)
No. of respondents	20	(100.0)	20	(100.0)	326	(100.0)	9	(100.0)

Table E.3.17.15 Steps to be Taken to Solve the Problems

Item	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	No.	%	No.	%	No.	%	No.	%
Approach to the government	19	(52.8)	41	(73.2)	41	(78.8)	14	(51.9)
Approach to union chairman	7	(19.4)	6	(10.7)	10	(19.2)	0	(0.0)
None	10	(27.8)	9	(16.1)	1	(1.9)	13	(48.1)
No. of respondents	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

Item	Paniala Janobi		Budh		Yarik		Muddi	
	No.	%	No.	%	No.	%	No.	%
Approach to the government	21	(70.0)	21	(70.0)	20	(66.7)	16	(64.0)
Approach to union chairman	3	(10.0)	5	(16.7)	1	(3.3)	0	(0.0)
None	6	(20.0)	4	(13.3)	9	(30.0)	9	(36.0)
No. of respondents	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)

Item	Jumma Sharif		Chhigiri		Total Villagers		Councilor	
	No.	%	No.	%	No.	%	No.	%
Approach to the government	10	(50.0)	12	(60.0)	215	(66.0)	6	(66.7)
Approach to union chairman	4	(20.0)	0	(0.0)	36	(11.0)	3	(33.3)
None	6	(30.0)	8	(40.0)	75	(23.0)	0	(0.0)
No. of respondents	20	(100.0)	20	(100.0)	326	(100.0)	9	(100.0)

Table E.3.17.16 Evaluation of Development Activities by Villagers (1/2)

Source	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	No.	%	No.	%	No.	%	No.	%
Satisfied with working of the union council								
Yes	27	(75.0)	38	(68.0)	28	(54.0)	19	(70.0)
No	9	(25.0)	18	(32.0)	24	(46.0)	8	(30.0)
Reasons for unsatisfaction to working of the union council								
No help	7	(19.0)	7	(13.0)	18	(35.0)	2	(7.0)
Lazy people	2	(6.0)	11	(20.0)	6	(12.0)	5	(19.0)
Dishonest	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Others	0	(0.0)	0	(0.0)	1	(2.0)	1	(4.0)
Satisfied with working of the provincial government								
Yes	29	(81.0)	32	(57.0)	28	(54.0)	24	(89.0)
No	7	(19.0)	15	(27.0)	23	(44.0)	3	(11.0)
Reasons for unsatisfaction to working of the provincial government								
No good work	0	(0.0)	14	(25.0)	17	(33.0)	3	(11.0)
No reason	7	(19.0)	1	(2.0)	6	(12.0)	0	(0.0)
Dishonest	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
No government involment	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
No participation	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Decrease of disputes (Yes)	36	(100.0)	46	(82.0)	41	(79.0)	27	(100.0)
Decrease of disputes by which organization								
Union council	19	(53.0)	25	(45.0)	18	(35.0)	19	(70.0)
Villagers	17	(47.0)	21	(38.0)	23	(44.0)	8	(30.0)
No. of respondents	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

Source	Paniala Janobi		Budh		Yarik		Muddi	
	No.	%	No.	%	No.	%	No.	%
Satisfied with working of the union council								
Yes	9	(30.0)	14	(47.0)	29	(97.0)	15	(60.0)
No	21	(70.0)	16	(53.0)	1	(3.0)	10	(40.0)
Reasons for unsatisfaction to working of the union council								
No help	4	(13.0)	8	(27.0)	1	(3.0)	3	(12.0)
Lazy people	1	(3.0)	0	(0.0)	0	(0.0)	2	(8.0)
Dishonest	0	(0.0)	8	(27.0)	0	(0.0)	0	(0.0)
Others	16	(53.0)	0	(0.0)	0	(0.0)	5	(20.0)
Satisfied with working of the provincial government								
Yes	19	(63.0)	11	(37.0)	28	(93.0)	23	(92.0)
No	11	(37.0)	19	(63.0)	2	(7.0)	2	(8.0)
Reasons for unsatisfaction to working of the provincial government								
No good work	0	(0.0)	11	(37.0)	2	(7.0)	4	(16.0)
No reason	0	(0.0)	2	(7.0)	0	(0.0)	0	(0.0)
Dishonest	0	(0.0)	6	(20.0)	0	(0.0)	0	(0.0)
No government involment	6	(20.0)	0	(0.0)	0	(0.0)	0	(0.0)
No participation	5	(17.0)	0	(0.0)	0	(0.0)	3	(12.0)
Decrease of disputes (Yes)	26	(87.0)	25	(83.0)	30	(100.0)	24	(96.0)
Decrease of disputes by which organization								
Union council	3	(10.0)	10	(33.0)	11	(37.0)	9	(36.0)
Villagers	23	(77.0)	15	(50.0)	19	(63.0)	15	(60.0)
No. of respondents	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)

Table E.3.17.16 Evaluation of Development Activities by Villagers (2/2)

Source	Jumma Sharif		Chhigiri		Total Villagers		Councilor	
	No.	%	No.	%	No.	%	No.	%
Satisfied with working of the union council								
Yes	15	(75.0)	20	(100.0)	214	(66.0)	7	(78.0)
No	5	(25.0)	0	(0.0)	112	(34.0)	2	(22.0)
Reasons for unsatisfaction to working of the union the union council								
No help	0	(0.0)	0	(0.0)	50	(15.0)	0	(0.0)
Lazy people	2	(10.0)	0	(0.0)	29	(9.0)	0	(0.0)
Dishonest	0	(0.0)	0	(0.0)	8	(2.0)	2	(22.0)
Others	3	(15.0)	0	(0.0)	26	(8.0)	0	(0.0)
Satisfied with working of the provincial government								
Yes	13	(65.0)	16	(80.0)	223	(68.0)	4	(44.0)
No	7	(35.0)	4	(20.0)	93	(29.0)	3	(33.0)
Reasons for unsatisfaction to working of the provincial government								
No good work	0	(0.0)	4	(20.0)	55	(17.0)	3	(33.0)
No reason	4	(20.0)	0	(0.0)	20	(6.0)	0	(0.0)
Dishonest	0	(0.0)	0	(0.0)	6	(2.0)	0	(0.0)
No government involment	0	(0.0)	0	(0.0)	6	(2.0)	0	(0.0)
No participation	3	(15.0)	0	(0.0)	11	(3.0)	0	(0.0)
Decrease of disputes (Yes)	19	(95.0)	17	(85.0)	291	(89.0)	2	(22.0)
Decrease of disputes by which organization								
Union council	9	(45.0)	10	(50.0)	133	(41.0)	2	(22.0)
Villagers	10	(50.0)	7	(35.0)	158	(48.0)	0	(0.0)
No. of respondents	20	(100.0)	20	(100.0)	326	(100.0)	9	(100.0)

Table E.3.17.17 Nature of Villagers' Participation in Development Projects

Item	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	No.	%	No.	%	No.	%	No.	%
Free labor	16	(44.4)	23	(41.1)	35	(67.3)	5	(18.5)
No participation by villagers	14	(38.9)	12	(21.4)	17	(32.7)	6	(22.2)
Labor on payment	6	(16.7)	6	(10.7)	0	(0.0)	9	(33.3)
Supervise the work	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Financila help	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Coorporation	0	(0.0)	15	(26.8)	0	(0.0)	7	(25.9)
No. of respondents	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

Item	Paniata Janobi		Budh		Yarik		Muddi	
	No.	%	No.	%	No.	%	No.	%
Free labor	7	(23.3)	1	(3.3)	13	(43.3)	7	(28.0)
No participation by villagers	16	(53.3)	15	(50.0)	2	(6.7)	3	(12.0)
Labor on payment	0	(0.0)	3	(10.0)	4	(13.3)	0	(0.0)
Supervise the work	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Financila help	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Coorporation	7	(23.3)	11	(36.7)	11	(36.7)	15	(60.0)
No. of respondents	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)

Item	Jumma Sharif		Chhigiri		Total Villagers	
	No.	%	No.	%	No.	%
Free labor	1	(5.0)	11	(55.0)	119	(36.5)
No participation by villagers	9	(45.0)	3	(15.0)	97	(29.8)
Labor on payment	8	(40.0)	0	(0.0)	36	(11.0)
Supervise the work	0	(0.0)	0	(0.0)	0	(0.0)
Financila help	0	(0.0)	0	(0.0)	0	(0.0)
Coorporation	2	(10.0)	6	(30.0)	74	(22.7)
No. of respondents	20	(100.0)	20	(100.0)	326	(100.0)

Table E.3.17.18 Socio-Cultural and Economic Changes in the Villages

Item	Zindani		G. U. Khan		Chakhan		Rahman		Paniata Janobi		Budh	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Socio-Cultural Change												
- People have aware of their responsibilities	31	(86.0)	43	(77.0)	34	(65.0)	25	(93.0)	24	(80.0)	20	(67.0)
- People prefer to work collectively	24	(67.0)	44	(79.0)	37	(71.0)	22	(81.0)	20	(67.0)	18	(60.0)
- People participate in the decisions of development projects	21	(58.0)	30	(54.0)	33	(63.0)	14	(52.0)	23	(77.0)	10	(33.0)
- Common man also takes interests in development activities	25	(69.0)	32	(57.0)	28	(54.0)	18	(67.0)	25	(83.0)	12	(40.0)
- People incline to give education to their females	24	(67.0)	45	(80.0)	40	(77.0)	24	(89.0)	30	(100.0)	25	(83.0)
2. Economic Change												
- During last 5 years the income of the people has increased	19	(53.0)	18	(32.0)	19	(37.0)	12	(44.0)	18	(60.0)	15	(50.0)
- Farmers are getting better nutritional food	26	(72.0)	27	(48.0)	16	(31.0)	11	(41.0)	14	(47.0)	23	(77.0)
- People started giving education to their children	28	(78.0)	34	(61.0)	42	(81.0)	20	(74.0)	28	(93.0)	14	(47.0)
- People are also able to build new houses	8	(22.0)	9	(16.0)	12	(23.0)	7	(26.0)	10	(33.0)	8	(27.0)
3. General Change												
- Domination of landlord/rich families over the people is decreasing	28	(78.0)	34	(61.0)	35	(67.0)	6	(22.0)	30	(100.0)	27	(90.0)
- People are now trying to purchase property	23	(64.0)	29	(52.0)	25	(48.0)	10	(37.0)	12	(40.0)	25	(83.0)
- People are able to take their product to market through road	31	(86.0)	24	(43.0)	27	(52.0)	10	(37.0)	4	(13.0)	10	(33.0)
No. of respondents	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)	30	(100.0)	30	(100.0)

Item	Yarik		Muddi		J. Sharif		Chhigiri		Total Villagers		Councilor	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Socio-Cultural Change												
- People have aware of their responsibilities	23	(77.0)	20	(80.0)	17	(85.0)	18	(90.0)	255	(78.0)	1	(11.0)
- People prefer to work collectively	27	(90.0)	15	(60.0)	15	(75.0)	12	(60.0)	234	(72.0)	5	(56.0)
- People participate in the decisions of development projects	12	(40.0)	12	(48.0)	14	(70.0)	10	(50.0)	179	(55.0)	2	(22.0)
- Common man also takes interests in development activities	16	(53.0)	14	(56.0)	13	(65.0)	11	(55.0)	194	(60.0)	1	(11.0)
- People incline to give education to their females	30	(100.0)	25	(100.0)	20	(100.0)	20	(100.0)	283	(87.0)	7	(78.0)
2. Economic Change												
- During last 5 years the income of the people has increased	6	(20.0)	10	(40.0)	12	(60.0)	5	(25.0)	134	(41.0)	2	(22.0)
- Farmers are getting better nutritional food	23	(77.0)	11	(44.0)	16	(80.0)	10	(50.0)	177	(54.0)	0	(0.0)
- People started giving education to their children	30	(100.0)	20	(80.0)	15	(75.0)	12	(60.0)	243	(75.0)	4	(44.0)
- People are also able to build new houses	6	(20.0)	9	(36.0)	12	(60.0)	4	(20.0)	85	(26.0)	0	(0.0)
3. General Change												
- Domination of landlord/rich families over the people is decreasing	30	(100.0)	25	(100.0)	20	(100.0)	20	(100.0)	255	(78.0)	5	(56.0)
- People are now trying to purchase property	11	(37.0)	7	(28.0)	12	(60.0)	10	(50.0)	164	(50.0)	0	(0.0)
- People are able to take their product to market through road	8	(27.0)	10	(40.0)	10	(50.0)	16	(80.0)	150	(46.0)	4	(44.0)
No. of respondents	30	(100.0)	25	(100.0)	20	(100.0)	20	(100.0)	326	(100.0)	9	(100.0)

Table E.3.17.19 Community Organization in the Villages

Item	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	No.	%	No.	%	No.	%	No.	%
Zakat and Ushr committee	32	(88.9)	55	(98.2)	49	(94.2)	27	(100.0)
Jirga/Village consulting elder members	2	(5.6)	1	(1.8)	3	(5.8)	0	(0.0)
Cooperative society	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Islahi committee	2	(5.6)	0	(0.0)	0	(0.0)	0	(0.0)
No response	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
No. of respondents	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

Item	Paniala Janobi		Budh		Yarik		Muddi	
	No.	%	No.	%	No.	%	No.	%
Zakat and Ushr committee	30	(100.0)	30	(100.0)	30	(100.0)	23	(92.0)
Jirga/Village consulting elder members	12	(40.0)	0	(0.0)	0	(0.0)	0	(0.0)
Cooperative society	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Islahi committee	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
No response	0	(0.0)	0	(0.0)	0	(0.0)	2	(8.0)
No. of respondents	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)

Item	Jumna Sharif		Chhigiri		Total Villagers		Councilor	
	No.	%	No.	%	No.	%	No.	%
Zakat and Ushr committee	20	(100.0)	18	(90.0)	314	(96.3)	9	(100.0)
Jirga/Village consulting elder members	0	(0.0)	0	(0.0)	18	(5.5)	0	(0.0)
Cooperative society	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Islahi committee	0	(0.0)	0	(0.0)	2	(0.6)	0	(0.0)
No response	0	(0.0)	2	(10.0)	4	(1.2)	0	(0.0)
No. of respondents	20	(100.0)	20	(100.0)	326	(100.0)	9	(100.0)

Table E.3.17.20 Conflict at the Time of Election

Item	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	No.	%	No.	%	No.	%	No.	%
No	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)
Yes	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
No. of respondents	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

Item	Paniala Janobi		Budh		Yarik		Muddi	
	No.	%	No.	%	No.	%	No.	%
No	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)
Yes	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
No. of respondents	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)

Item	Jumna Sharif		Chhigiri		Total Villagers	
	No.	%	No.	%	No.	%
No	20	(100.0)	20	(100.0)	326	(100.0)
Yes	0	(0.0)	0	(0.0)	0	(0.0)
No. of respondents	20	(100.0)	20	(100.0)	326	(100.0)

**Table E.3.17.21 Concerns on Organization and Activities
for CRBC Lift Irrigation Project**

Item	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	Yes	%	Yes	%	Yes	%	Yes	%
1. Knowledge about the Chashma 1st Lift Irrigation Project	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)
2. FA establishment by distributary	36	(100.0)	50	(89.3)	52	(100.0)	27	(100.0)
3. FA's participation in D/D & construction	20	(55.6)	25	(44.6)	30	(57.7)	3	(11.1)
4. O&M under distributary by FA	32	(88.9)	48	(85.7)	43	(82.7)	19	(70.4)
5. Collection of water charge by FA	25	(69.4)	45	(80.4)	49	(94.2)	17	(63.0)
6. Financial management of FA activities	30	(83.3)	53	(94.6)	46	(88.5)	20	(74.1)

Note : 2 ; Establishment of Farmers' Association (FA) by a unit of distributary
3 ; Participation of FA in detail design and construction of the project
4 ; Operation and maintenance of irrigation facilities at each distributary level by FA
(regulation pond at the head of distributary, distributary canal, minor/sub-minor canal, watercourse,
other related irrigation facilities) under the technical and financial assistance
5 ; Collection of water charge from all member farmers by FA based on the consumption of irrigation water
6 ; Financial management by FA on water rate collection and payment, cost for operation and maintenance of
irrigation facilities, agricultural credit, etc. under technical and financial assistance

Item	Paniala Janobi		Budh		Yarik		Muddi	
	Yes	%	Yes	%	Yes	%	Yes	%
1. Knowledge about the Chashma 1st Lift Irrigation Project	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)
2. FA establishment by distributary	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)
3. FA's participation in D/D & construction	5	(16.7)	20	(66.7)	18	(60.0)	10	(40.0)
4. O&M under distributary by FA	12	(40.0)	22	(73.3)	22	(73.3)	12	(48.0)
5. Collection of water charge by FA	14	(46.7)	19	(63.3)	25	(83.3)	13	(52.0)
6. Financial management of FA activities	25	(83.3)	30	(100.0)	30	(100.0)	25	(100.0)

Item	Jumma Sharif		Chhigiri		Total Villagers		Councilor	
	Yes	%	Yes	%	Yes	%	Yes	%
1. Knowledge about the Chashma 1st Lift Irrigation Project	20	(100.0)	20	(100.0)	326	(100.0)	9	(100.0)
2. FA establishment by distributary	18	(90.0)	19	(95.0)	317	(97.2)	9	(100.0)
3. FA's participation in D/D & construction	10	(50.0)	8	(40.0)	149	(45.7)	9	(100.0)
4. O&M under distributary by FA	9	(45.0)	5	(25.0)	224	(68.7)	8	(88.9)
5. Collection of water charge by FA	12	(60.0)	10	(50.0)	229	(70.2)	8	(88.9)
6. Financial management of FA activities	20	(100.0)	20	(100.0)	299	(91.7)	8	(88.9)

**Table E.3.17.22 Farmers' Concerns on Procedure for FA Set-Up,
Government Assistance and Water Rate
for CRBC Lift Irrigation Project**

Item	Zindani		Gadi Umer Khan		Chakhan		Rahman	
	Yes	%	Yes	%	Yes	%	Yes	%
1. Union councillors' participation for FA set-up	32	(88.9)	6	(10.7)	8	(15.4)	12	(44.4)
2. Chairman of FA elected from union councillors	0	(0.0)	0	(0.0)	25	(48.1)	0	(0.0)
3. Necessity of Government assistance for FA set-up	35	(97.2)	27	(48.2)	51	(98.1)	27	(100.0)
4. Other necessary government assistant								
Financial assistance	26	(72.2)	18	(32.1)	34	(65.4)	20	(74.1)
Training	24	(66.7)	30	(53.6)	25	(48.1)	14	(51.9)
Coordination	22	(61.1)	45	(80.4)	22	(42.3)	10	(37.0)
Technical assistance	20	(55.6)	46	(82.1)	45	(86.5)	12	(44.4)
5. FA could convince the members for a higher water rate payment	36	(100.0)	56	(100.0)	52	(100.0)	27	(100.0)

Item	Paniala Janobi		Budh		Yarik		Muddi	
	Yes	%	Yes	%	Yes	%	Yes	%
1. Union councillors' participation for FA set-up	18	(60.0)	18	(60.0)	15	(50.0)	11	(44.0)
2. Chairman of FA elected from union councillors	4	(13.3)	0	(0.0)	9	(30.0)	1	(4.0)
3. Necessity of Government assistance for FA set-up	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)
4. Other necessary government assistant								
Financial assistance	17	(56.7)	25	(83.3)	22	(73.3)	20	(80.0)
Training	12	(40.0)	20	(66.7)	14	(46.7)	18	(72.0)
Coordination	8	(26.7)	12	(40.0)	12	(40.0)	16	(64.0)
Technical assistance	22	(73.3)	20	(66.7)	30	(100.0)	18	(72.0)
5. FA could convince the members for a higher water rate payment	30	(100.0)	30	(100.0)	30	(100.0)	25	(100.0)

Item	Jumma Sharif		Chhigiri		Total Villagers		Councilor	
	Yes	%	Yes	%	Yes	%	Yes	%
1. Union councillors' participation for FA set-up	12	(60.0)	10	(50.0)	142	(43.6)	9	(100.0)
2. Chairman of FA elected from union councillors	2	(10.0)	2	(10.0)	43	(13.2)	1	(11.1)
3. Necessity of Government assistance for FA set-up	20	(100.0)	20	(100.0)	295	(90.5)	9	(100.0)
4. Other necessary government assistant								
Financial assistance	15	(75.0)	14	(70.0)	211	(64.7)	5	(55.6)
Training	7	(35.0)	5	(25.0)	169	(51.8)	6	(66.7)
Coordination	3	(15.0)	4	(20.0)	154	(47.2)	7	(77.8)
Technical assistance	12	(60.0)	10	(50.0)	235	(72.1)	9	(100.0)
5. FA could convince the members for a higher water rate payment	20	(100.0)	20	(100.0)	326	(100.0)	9	(100.0)

Table E.4.2.1 Difficulties on Transportation of Farm Products

(a) Study Area

Items	Classification of Mouza						Total	
	Low Density		Medium Density		High Density		Number	%
	Number	%	Number	%	Number	%		
No. of Respondents								
Total Respondents	59	100.0	77	100.0	74	100.0	210	100.0
Feel difficulties	31	52.5	10	13.0	20	27.0	61	29.0
Problems								
Access Roads	25	62.5	6	40.0	9	31.0	40	47.6
Transport Facilities	10	25.0	3	20.0	12	41.4	25	29.8
Cost	5	12.5	6	40.0	8	27.6	19	22.6
Others	0	0.0	0	0.0	0	0.0	0	0.0
Total	40	100.0	15	100.0	22	100.0	84	100.0

(b) CRBC Gravity Irrigation Area

Items	Classification of Mouza						Total	
	Low Density		Medium Density		High Density		Number	%
	Number	%	Number	%	Number	%		
No. of Respondents								
Total Respondents	6	100.0	9	100.0	5	100.0	20	100.0
Feel difficulties	4	66.7	4	44.4	1	20.0	9	45.0
Problems								
Access Roads	2	50.0	3	60.0	1	50.0	6	54.5
Transport Facilities	0	0.0	0	0.0	0	0.0	0	0.0
Cost	2	50.0	2	40.0	1	50.0	5	45.5
Others	0	0.0	0	0.0	0	0.0	0	0.0
Total	4	100.0	5	100.0	2	100.0	11	100.0

Source : Farm Survey by JICA Study Team

Table E.5.2.1 Profitability of Crops per ha

Items	Gross		Net Return (Rs.)	Score	Labor Requirement		Score	Water Requirement		Score
	Return (Rs.)	Production Cost (Rs.)			Amount (man-day)	Profit (Rs./man-day)		Amount (m ³)	Profit (Rs./m ³)	
Kharif Season Crops										
Maize	15,120	5,920	9,200	III	40	230.0	III	6,700	1.37	III
Paddy	11,340	7,840	3,500	IV	60	58.3	V	14,300	0.24	V
Pulses (Mung Bean)	19,150	5,900	13,250	II	40	331.3	II	7,100	1.87	III
Cotton	19,850	7,350	12,500	II	55	227.3	III	11,000	1.14	III
Fodder (Millet)	9,000	3,250	5,750	III	30	191.7	IV	5,500	1.05	III
Vegetables (Eggplant)	31,700	10,480	21,220	I	70	303.1	II	6,900	3.08	I
Rabi Season Crops										
Wheat	16,200	7,650	8,550	III	40	213.8	III	7,400	1.16	III
Pulses (Gram)	20,040	6,030	14,010	II	40	350.3	II	5,800	2.42	II
Oilseeds (Rape/ Mustard)	19,000	5,770	13,230	II	50	264.6	III	5,300	2.50	II
Fodder (Berseem)	13,750	5,110	8,640	III	40	216.0	III	5,200	1.66	III
Sugarcane	24,500	11,800	12,700	III	80	158.8	IV	21,200	0.60	IV
Fruits (Mango)	21,580	5,140	16,440	II	135	121.8	III	18,100	0.91	III
Vegetables (Cauliflower)	50,400	12,250	38,150	I	85	448.8	I	4,700	8.12	I
Spring Season Crops										
Maize (seed)	16,200	5,920	10,280	II	40	257.0	III	7,400	1.39	III
Oilseeds (Sunflower)	17,500	4,870	12,630	II	40	315.8	II	6,000	2.11	II

Note : C.I. ; Cropping Intensity, Ref. ; TABLES E.5.2.1 and E.5.6.2

Table E.5.2.2 Crop Water Requirement per ha

Items	Water Requirement (m ³ /ha)	PC-1 Proforma		CRBC Stage-III		Proposed Pattern	
		C.I. (%)	Amount (m ³)	C.I. (%)	Amount (m ³)	C.I. (%)	Amount (m ³)
Kharif Season Crops							
Maize	6,700	10.0	670.0	20.0	1,340.0	20.0	1,340.0
Paddy	14,300	2.0	286.0	14.0	2,002.0	0.0	0.0
Pulses	7,100	0.0	0.0	0.0	0.0	5.0	355.0
Cotton	11,000	10.0	1,100.0	12.0	1,320.0	10.0	1,100.0
Fodder	5,500	13.0	715.0	8.0	440.0	10.0	550.0
Sugarcane	15,700	15.0	2,355.0	5.0	785.0	10.0	1,570.0
Fruits	13,400	2.5	335.0	1.5	201.0	2.5	335.0
Vegetables	6,900	2.5	172.5	1.5	103.5	2.5	172.5
Miscellaneous	8,000	5.0	400.0	0.0	0.0	0.0	0.0
Sub-total		60.0	6,033.5	62.0	6,191.5	60.0	5,422.5
Rabi Season Crops							
Wheat	7,400	45.0	3,330.0	50.0	3,700.0	45.0	3,330.0
Gram	5,800	5.0	290.0	5.0	290.0	10.0	580.0
Oilseeds	5,300	5.0	265.0	10.0	530.0	10.0	530.0
Fodder	5,200	10.0	520.0	10.0	520.0	10.0	520.0
Sugarcane	5,500	15.0	825.0	5.0	275.0	10.0	550.0
Fruits	4,700	2.5	117.5	1.5	70.5	2.5	117.5
Vegetables	4,700	2.5	117.5	1.5	70.5	2.5	117.5
Miscellaneous	8,000	5.0	400.0	0.0	0.0	0.0	0.0
Sub-total		90.0	5,865.0	83.0	5,456.0	90.0	5,745.0
Spring Season Crops							
Maize	7,400	0.0	0.0	0.0	0.0	5.0	370.0
Oilseeds	6,000	0.0	0.0	5.0	300.0	5.0	300.0
Sub-total		0.0	0.0	5.0	300.0	10.0	670.0
Water Requirement per Ha							
Kharif Season Crops		60.0	6,033.5	62.0	6,191.5	60.0	5,422.5
Rabi Season Crops		90.0	5,865.0	83.0	5,456.0	90.0	5,745.0
Spring Season Crops		0.0	0.0	5.0	300.0	10.0	670.0
Total		150.0	11,898.5	150.0	11,947.5	160.0	11,837.5
Irrigable Area							
	Total Water Volume						
Kharif Season Crops	787.90 MCM		130,588 ha		121,374 ha		129,323 ha
Spring Season Crops							
Rabi Season Crops	674.50 MCM		115,004 ha		123,625 ha		117,406 ha
Total	1,462.40 MCM		245,592 ha		244,999 ha		246,729 ha

Note : C.I. : Cropping Intensity

Table E.5.2.3 Net Return per ha by Each Cropping Pattern

Items	Net Return (Rs./ha)	PC-I Proforma		CRBC - Stage III		Proposed Pattern	
		C.I. (%)	Amount (Rs.)	C.I. (%)	Amount (Rs.)	C.I. (%)	Amount (Rs.)
Kharif Season Crops							
Maize	9,200	10.0	920	20.0	1,840	20.0	1,840
Paddy	3,500	2.0	70	14.0	490	0.0	0
Pulses	13,250	0.0	0	0.0	0	5.0	663
Cotton	12,500	10.0	1,250	12.0	1,500	10.0	1,250
Fodder	5,750	13.0	748	8.0	460	10.0	575
Sugarcane	12,700	15.0	1,905	5.0	635	10.0	1,270
Fruits	16,440	2.5	411	1.5	247	2.5	411
Vegetables	21,220	2.5	531	1.5	318	2.5	531
Miscellaneous	6,000	5.0	300	0.0	0	0.0	0
Sub-total		60.0	6,134	62.0	5,490	60.0	6,539
Rabi Season Crops							
Wheat	8,550	45.0	3,848	50.0	4,275	45.0	3,848
Pluses	14,100	5.0	705	5.0	705	10.0	1,410
Oilseeds	13,230	5.0	662	10.0	1,323	10.0	1,323
Fodder	8,640	10.0	864	10.0	864	10.0	864
Sugarcane (ratoon)	6,920	15.0	1,038	5.0	346	10.0	692
Fruits	16,440	2.5	411	1.5	247	2.5	411
Vegetables	38,150	2.5	954	1.5	572	2.5	954
Miscellaneous	6,000	5.0	300	0.0	0	0.0	0
Sub-total		90.0	8,781	83.0	8,332	90.0	9,501
Spring Season Crops							
Maize	10,280	0.0	0	0.0	0	5.0	514
Oilseeds	12,630	0.0	0	5.0	632	5.0	632
Sub-total		0.0	0	5.0	632	10.0	1,146
Annual Net Return per Ha							
Kharif Season Crops		60.0	6,134	62.0	5,490	60.0	6,539
Rabi Season Crops		90.0	8,781	83.0	8,332	90.0	9,501
Spring Season Crops		0.0	0	5.0	632	10.0	1,146
Total		150.0	14,915	150.0	14,453	160.0	17,186
			US\$ 497		US\$ 482		US\$ 573

Note : C.I. : Cropping Intensity, Net Return : Net crop production value
US\$ 1 = Rs. 30.0, Ref. : TABLES E.5.6.2 (1/4 - 4/4).

Table E.5.3.1 Summary of Proposed Farming Practices under With Project Condition

Name of Crops	Soil Suitability	Sowing Time	Variety	Sowing Method	Seed Rate (kg/ha)	Row Spacing (cm)	Fertilizer Application	Nos. of Irrigation	Harvesting Date (Days after Sowing)	Target Yield (t/ha)
A. Kharif Season Crops										
1. Maize	Loam to clay loam	Mid. July to 1st week of August	Sarhad Ihsan Azam Local	Drill Pora	30	75	N: 120 P: 90 K: 60	4 to 6	100 - 120	3.0 - 4.5
2. Pulses - Mung, Mash - Muth	Loam	June to July	Local	Drill Pora	100	45	N: 50 P: 60 K: 0	3 to 4	90 - 110	1.5 - 2.5
3. Cotton	Loam to silty loam	May to June	MNH-93 DNH-1 NIA-78	Drill, Pora Dibbling	20 - 25	75	N: 150 P: 75 K: 25	5 to 6	180 - 200	1.5 - 2.5
4. Fodder - Millet - Sorghum	Light loam to heavy loam	1st week July to 1st week Aug.	Millet DS-75 Giza-3	Pora	10 - 15 (Millet) 25 (Sorghum)	60 - 75	N: 90 P: 50 K: 0	3 to 4	50 - 60	40.0 - 50.0
5. Sugarcane	Clay to loam	Mid. of February to Mid. March	CP 65737 L 6296 IM-61	Cone sets into the soil	6,000 - 8,000	75 - 90	N: 150 P: 100 K: 90	14 to 18	330 - 360	50.0 - 90.0
6. Vegetable - Eggplant	Loam	March to April	Local Black beauty	Ridge	0.65 for nursery	75 - 90	N: 90 P: 50 K: 0	8 to 10 (10 - 12 days interval)	100 - 120	10.0 - 12.0
B. Rabi Season Crops										
1. Wheat	Sandy loam to loam	Mid. of October to November	Kaghan-93 Pirabak-85 Pak-81	Drill Pora	100 - 120	25	N: 120 P: 90 K: 60	4 to 6	160 - 180	3.5 - 5.0
2. Pulses - Gram	Sandy loam to loam	Mid. September to October	CM-72 NIFA-88	Drill Pora	60.0 - 70.0	45	N: 60 P: 60 K: 60	1 to 2	150 - 180	2.0 - 2.5
3. Oilseeds - Rape seeds - Mustard - Barseem	Sandy loam to loam	20th September to October	Pak-china Tower Westar Local	Drill Pora Broadcasting	6.0 - 8.0 15 - 20	30 - 40	N: 90 P: 60 K: 0	3 to 4	150 - 180	2.0 - 3.0
5. Sugarcane	Clay to loam	Mid. of Sept. to Mid. October	CP 65737 L 6296 IM-61	Cane sets into the soil	45,000 - 60,000	75 - 90	N: 150 P: 100 K: 90	15 to 20	360 - 400	60.0 - 90.0 Ratoon 40.0 - 50.0
6. Fruits - Mango	Sandy loam to loam	* Mid. February to Mid. March ** October	LANGRA CHAUNSA DUSEHTY Local	Transplanting	70 plants	12m x 12m	N: 300 P: 200 K: 100	15 to 20	after 5 years	10.0 - 15.0
7. Vegetables - Cauliflower	Loam	September	Local	Nursery Transplanting	1.0 - 1.5	60 - 70	N: 90 P: 60 K: 0	9 to 10	90 - 100	15.0 - 20.0
C. Spring Season Crops										
1. Maize (seed)	Loam to clay loam	Mid. Feb. to March	Sarhad Ihsan Azam	Drill Pora	30	75	N: 120 P: 90 K: 0	4 to 6	100 - 120	3.0 - 4.0
2. Oilseeds - Sunflower	Loam to clay loam	Feb. to March	Hysun-23 NK-265 O.P.Y.	Planter Kera	7.0 - 8.0	75	N: 125 P: 90 K: 0	4 to 5	90 - 100	2.0 - 3.0

Source : Crop guide prepared by Agricultural Research Institute, D. I. Khan

Table E.5.3.2 Farm Inputs and Labor Requirement per ha under With Project Condition

Items	Unit per Ha	Rabi Season Crops				Kharif Season Crops				Spring Season Crops					
		Wheat (Rape/mustard)	Oilseeds (Gram)	Pulses (Betseem)	Vegetables (Cauliflower)	Maize (Mung Bean)	Pulses (Millet)	Fodder (Eggplant)	Sugercane (seed)	Oilseeds (sunflower)	Fruits (Mango)				
A. Farm Inputs															
1. Seeds	(kg)	100	7.5	60	20	1.50	30	100	25	15	0.6	6,000	30	7.5	55
2. FYM/Compost	(tons)	5.0	0.0	0.0	5.0	5.0	5.0	0.0	5.0	5.0	5.0	5.0	5.0	5.0	15.0
3. Fertilizer															
- Urea (N : 46%)	(kg)	225	150	125	100	200	200	100	200	100	200	250	200	150	500
- TSP (P : 46%)	(kg)	150	125	125	125	125	125	125	125	50	125	200	125	125	400
- SOP (K : 50%)	(kg)	125	0	125	0	0	0	0	50	0	0	150	0	0	200
4. Agro-chemicals															
- Insecticide	(kg)	10	10	10	10	100	10	10	20	0	100	20	10	10	100
- Pesticide	(lit)	2	2	1	1	4	2	1	2	0	2	2	2	1	5
B. Machinery and Animal Power Requirement															
- Land Preparation	(hrs)	7.5	6.0	6.0	7.5	7.5	7.5	6.0	7.5	7.5	7.5	7.5	7.5	6.0	10.0
- Drill for sowing	(hrs)	5.5	5.5	5.5	0.0	0.0	5.5	5.5	5.5	0.0	0.0	0.0	5.5	5.5	0.0
- Threshing by tractor	(hrs)	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C. Labor															
1. Land Preparation	(man-day)	4	4	4	4	10	4	4	4	4	10	4	4	4	30
2. Nursery/ sowing	(man-day)	0	0	0	0	2	0	0	0	0	2	0	0	0	5
3. Transplanting	(man-day)	0	0	0	0	10	0	0	0	0	10	10	0	0	10
/Sowing	(man-day)	4	2	4	2	0	4	4	4	2	0	0	4	4	0
4. Fertilizer Application	(man-day)	4	4	4	3	5	4	4	4	3	5	4	4	4	10
5. Weeding	(man-day)	4	4	4	2	10	4	4	4	2	10	10	4	4	10
6. Water Management	(man-day)	6	8	2	4	15	4	2	6	2	10	10	4	6	24
7. Harvesting	(man-day)	15	25	20	23	30	15	20	30	15	20	40	15	15	40
8. Threshing, others	(man-day)	3	3	2	2	3	5	2	3	2	3	2	5	3	6
Total		40	50	40	40	85	40	40	55	30	70	80	40	40	135

Source : Crop guide prepared by Agricultural Research Institute, D. I. Khan

Table E.5.3.3 Annual Labor Requirement per ha for Proposed Cropping Pattern

Items	CROP LABOR REQUIREMENT			JAN.			FEB.			MAR.			APR.			MAY			JUNE			JULY			AUG.			SEPT.			OCT.			NOV.			DEC.		
	Share	45 days	40 man-day	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III						
1. Wheat	45%	45 days	40 man-day	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.222	0.180	0.180	0.180	0.180	0.180										0.040	0.040	0.040	0.080	0.080	0.080	0.042	0.042	0.042			
2. Maize	20%	45 days	40 man-day										0.018	0.036	0.036	0.044	0.027	0.027	0.027	0.027	0.027	0.116	0.089	0.089	0.049	0.049	0.049												
3. Maize (spring) (Seed)	5%	30 days	40 man-day				0.007	0.013	0.013	0.015	0.007	0.007	0.007	0.007	0.007	0.007	0.040	0.033																					
4. Kharif Pulses	5%	45 days	40 man-day													0.004	0.009	0.009	0.014	0.010	0.006	0.006	0.006	0.030	0.030	0.024	0.024	0.024	0.024	0.024									
5. Rabi Pulses	10%	45 days	40 man-day	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.049	0.049	0.049	0.049	0.049										0.009	0.018	0.018	0.018	0.018	0.009	0.007	0.007	0.007	0.007	0.007	0.007			
6. Sugarcane	10%	45 days	80 man-day	0.047	0.007	0.007	0.011	0.022	0.022	0.022	0.022	0.014	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.011	0.022	0.022	0.049	0.069	0.069	0.054	0.054	0.047	0.047	0.047	0.047	0.047	0.047	0.047			
7. Rabi Oilseeds	10%	45 days	50 man-day	0.041	0.011	0.011	0.011	0.011	0.011	0.011	0.062	0.062	0.062	0.062	0.062										0.009	0.013	0.013	0.013	0.013	0.015	0.011	0.011	0.011	0.011	0.011	0.011			
8. Spring Oilseeds	5%	30 days	40 man-day				0.007	0.010	0.010	0.012	0.009	0.009	0.009	0.009	0.009	0.009	0.030	0.030																					
9. Cotton	10%	45 days	55 man-day	0.055																					0.009	0.018	0.018	0.018	0.018	0.018	0.009	0.009	0.009	0.009	0.009	0.009			
10. Kharif Fodder	10%	45 days	30 man-day													0.009	0.013	0.013	0.013	0.014	0.009	0.009	0.009	0.009	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018			
11. Rabi Fodder	10%	45 days	40 man-day	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020																											
12. Kharif Vegetables	2.5%	45 days	70 man-day										0.006	0.007	0.007	0.012	0.007	0.006	0.013	0.007	0.007	0.007	0.007	0.017	0.010	0.010	0.010												
13. Rabi Vegetables	2.5%	45 days	85 man-day	0.008	0.004	0.004	0.014	0.014	0.014	0.014	0.014													0.006	0.007	0.007	0.001	0.007	0.006	0.004	0.004	0.004	0.004	0.004	0.004				
14. Fruits	2.5%	135 man-day		0.004	0.004	0.010	0.019	0.019	0.019	0.019	0.012	0.004	0.004	0.004	0.004	0.019	0.019	0.019	0.019	0.019	0.019	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004			
Total Labor Requirement per ha				0.19	0.10	0.12	0.14	0.16	0.16	0.16	0.24	0.21	0.27	0.32	0.32	0.24	0.31	0.13	0.16	0.14	0.11	0.09	0.09	0.09	0.07	0.08	0.12	0.22	0.23	0.22	0.32	0.35	0.34	0.33	0.32	0.33	0.19	0.19	0.21

Table E.5.4.1 Crop Yield Trials Data of ARI D.I.Khan, 1991-92

Crops	Fertilizer Trial			Unit Yield (t/ha)	Remarks	Other Trial	Unit Yield (t/ha)	Remarks
	N	P	K					
Wheat					Wheat			
					Variety :	<u>Sowing Date</u>		
	120	90	0	5.73	Pirsabak-85	16 November :	5.79	Variety ;
	120	90	100	5.60	KCL	30 November :	4.58	Pirsabak-85
	120	90	100	5.92	SOP	14 December :	5.25	
						18 December :	4.82	100kg/ha
	120	90	0	4.32	Variety :	11 January :	5.17	of seed rate
	120	90	100	4.52	Pirsabak-85	<u>Average :</u>	<u>5.12</u>	
	120	90	200	5.12		16 November :	5.46	Variety ;
	120	90	400	4.86		30 November :	5.67	Khyber-87
	120	90	800	5.26		14 December :	5.75	
						18 December :	4.67	100kg/ha
						11 January :	4.67	of seed rate
						<u>Average :</u>	<u>5.24</u>	
Maize					Rape/ Mustard			
	0	90	60	2.39	Variety :	BM-1		Fertilizer dose :
	90	90	60	3.59	Azam	15cm row spacing	3.20	N : 90
	120	90	60	4.12		30cm row spacing	2.19	P : 60
	150	90	60	4.52		45cm row spacing	2.49	K : 0
	180	90	60	4.96		Alex		
	120	0	60	3.93	Variety :	15cm row spacing	2.96	Sowing Date :
	120	40	60	4.94	Azam	30cm row spacing	2.65	8 Oct. 1991
	120	80	60	5.77		45cm row spacing	3.14	
	120	120	60	6.33				
	120	160	60	6.83				
	120	200	60	7.46				
Sugarcane					Sugarcane			
					Variety :	<u>Sowing Date</u>		
	135	0	0	63.30	COL-75	15 September :	95.56	Variety ;
	135	110	0	72.30	CP65/357	15 October :	62.22	CP75/324
	135	110	250	94.00	CP51/213	15 November :	77.78	
					(Average yield)	15 December :	75.04	
						15 January :	90.37	
Cotton					Cotton			
					Variety :			
	Control	50	0	2.38	DNH-25	15 February :	75.92	
	100	50	0	2.89		15 March :	56.67	
	150	50	0	2.63				
	200	50	0	2.91		15 September :	45.95	Ratoon
						15 October :	38.52	
						15 November :	40.74	
						15 December :	18.89	
Cauliflower					Cauliflower			
	50	80	80	Improved level	Sowing Date ;			
	<u>Location</u>			<u>level</u>	1 Aug, 1991	15 January :	26.30	
	Pahar pur			23.00	- do -	15 February :	28.15	
	- do -			24.00	7 Sept., 1991	15 March :	20.37	
	Wanda Baloch			26.00	- do -			
	Mitha pur			22.80	15 Sept., 1991			
	Chah Kmal			26.00	- do -			
	Paroa			20.40	- do -			
Pea					Sorghum			
	50	100	80	Improved level	Sowing Date ;			<u>Stalk yield</u>
	<u>Location</u>			<u>level</u>	26 Oct., 1991	CSH-11	3.12	18.20
	Wanda Baloch			6.00	30 Oct., 1991	CSH-1	2.29	14.58
	Mitha pur			6.40		ICSV-107	2.31	20.83
						ICSV-112	2.30	20.42
						ICSV-219	2.42	28.33
						ICSV-221	2.53	26.67
						ICSV-225	2.61	13.75
						TRAT-204	2.25	11.25
						(Basal dose of N : 100, P : 50)		
						Sowing date : 21 July, 1991		
Onion					Onion			
	50	100	80	Improved level	Transplanting Date ;			
	<u>Location</u>			<u>level</u>	24 Dec., 1991			
	Pahar pur			23.80	16 Jan., 1991			
	Paroa			28.00	25 Feb., 1991			
	Gomal Kalan			18.00				

Source : Annual Progress Report, Agricultural Research Institute (ARI), D. I. Khan, 1991 - 92

Table E.5.4.2 Estimation of Cropped Area and Cropping Intensity under Without Project

Crops	Irrigated Area			1,000 ha			Rod Kohi Area			27,100 ha			Barani Area			73,700 ha			101,800 ha				
	Harvested Area (ha)	Damage Area (ha)	Sown Area (ha)	Harvested Area (ha)	Damage Area (ha)	Sown Area (ha)	Harvested Area (ha)	Damage Area (ha)	Sown Area (ha)	Harvested Area (ha)	Damage Area (ha)	Sown Area (ha)	Harvested Area (ha)	Damage Area (ha)	Sown Area (ha)	Harvested Area (ha)	Damage Area (ha)	Sown Area (ha)	Harvested Area (ha)	Damage Area (ha)	Sown Area (ha)	Crop Share (%)	
A. Kharif Season Crops																							
Sorghum	5	5	10	6.7%	380	930	1,310	53.9%	350	770	1,120	42.7%	735	1,705	2,440	46.9%							
Millet	5	5	10	6.7%	180	830	1,010	41.6%	430	940	1,370	52.3%	615	1,775	2,390	46.0%							
Maize	10	10	20	13.3%	0	0	0	0	0	0	0	0	10	10	20	0.4%							
Pulses	5	5	10	6.7%	0	0	0	0	0	0	0	0	5	5	10	0.2%							
Sugarcane	20	10	30	20.0%	0	0	0	0	0	0	0	0	20	10	30	0.6%							
Cotton	20	20	40	26.7%	10	10	20	0.8%	0	0	0	0	30	30	60	1.2%							
Fodder	5	5	10	6.7%	0	0	0	0	0	0	0	0	5	5	10	0.2%							
Guara	5	5	10	6.7%	30	40	70	2.9%	60	70	130	5.0%	95	115	210	4.0%							
Vegetables, Fruits, others	10	0	10	6.7%	10	10	20	0.8%	0	0	0	0	20	10	30	0.6%							
Total Area	83	65	150	100.0%	610	1,820	2,430	100.0%	840	1,780	2,620	100.0%	1,535	3,665	5,200	100%							
	8.5%	6.5%	15.0%		2.3%	6.7%	9.0%		1.1%	2.4%	3.6%		1.5%	3.6%	5.1%								
B. Rabi Season Crops																							
Wheat / Barley	320	330	650	69.9%	1,980	2,920	4,900	59.3%	1,250	1,700	2,950	48.4%	3,550	4,950	8,500	55.6%							
Pluses	70	90	160	17.2%	790	1,180	1,970	23.8%	780	1,370	2,150	35.2%	1,640	2,640	4,280	28.0%							
Oil Seeds	10	10	20	2.2%	380	1,000	1,380	16.7%	300	700	1,000	16.4%	690	1,710	2,400	15.7%							
Sugarcane	20	10	30	3.2%	0	0	0	0	0	0	0	0	20	10	30	0.2%							
Fodder	40	20	60	6.5%	0	0	0	0	0	0	0	0	40	20	60	0.4%							
Vegetables, Fruits, others	10	0	10	1.1%	10	10	20	0.2%	0	0	0	0	20	10	30	0.2%							
Total Area	470	460	930	100.0%	3,160	5,110	8,270	100.0%	2,330	3,770	6,100	100.0%	5,960	9,340	15,300	100%							
	47.0%	46.0%	93.0%		11.7%	18.9%	30.5%		3.2%	5.1%	8.3%		5.9%	9.3%	15.0%								
Total Sown Area	85	65	150		610	1,820	2,430		840	1,780	2,620		1,535	3,665	5,200								
Kharif Season Crops	470	460	930		3,160	5,110	8,270		2,330	3,770	6,100		5,960	9,340	15,300								
Rabi Season Crops	555	525	1,080		3,770	5,930	10,700		3,170	5,550	8,720		7,495	13,005	20,500								
Total Cultivated Area - 101,800ha	55.5%	52.5%	108.0%		13.9%	25.6%	39.5%		4.3%	7.5%	11.8%		7.4%	12.8%	20.1%								
Cropping Intensity																							

Note : These figures are estimated based on the present condition (ref. Table E.3.5.2).

Table E.5.4.3 Cropped Area, Unit Yield and Production under Without Project

Crops	Irrigated Area			1,000 ha			Rod Kohi Area			27,100 ha			Barani Area			73,700 ha			Total Area		
	Sown Area (ha)	Yield (t/ha)	Unit Production (tons)	Sown Area (ha)	Yield (t/ha)	Unit Production (tons)	Sown Area (ha)	Yield (t/ha)	Unit Production (tons)	Sown Area (ha)	Yield (t/ha)	Unit Production (tons)	Sown Area (ha)	Yield (t/ha)	Unit Production (tons)	Sown Area (ha)	Yield (t/ha)	Unit Production (tons)	Sown Area (ha)	Yield (t/ha)	Unit Production (tons)
A. Kharif Season Crops																					
Sorghum	10	0.79	8	1,310	0.74	969	1,120	0.70	784	2,440	0.72	1,761									
Millet	10	0.78	8	1,010	0.77	778	1,370	0.75	1,028	2,390	0.76	1,813									
Maize	20	0.63	13							20	0.63	13									
Pulses	10	0.52	5							10	0.52	5									
Sugarcane	30	35.55	1,067							30	35.55	1,067									
Cotton	40	1.54	62	20	1.00	20															
Fodder	10	11.86	119							10	11.86	119									
Guara	10	1.90	19	70	1.63	114	130	1.50	195	210	1.56	328									
Vegetables, Fruits, others	10	2.40	24	20	3.00	60															
Total Sown Area	150			2,430			2,620			5,200			5,200						5,200		
	0.1%			2.4%			2.6%			5.1%			5.1%						5.1%		
B. Rabi Season Crops																					
Wheat / Barley	650	2.02	1,313	4,900	0.97	4,753	2,950	0.95	2,803	8,500	1.04	8,869									
Pulses	160	0.64	102	1,970	0.60	1,182	2,150	0.60	1,290	4,280	0.60	2,574									
Oilseeds / Lentil	20	0.54	11	1,380	0.53	731	1,000	0.50	500	2,400	0.52	1,242									
Fodder	60	13.30	798							60	13.30	798									
Fruits	5	3.00	15	10	3.00	30				15	3.00	45									
Vegetables, others	5	5.50	28	10	5.50	55				15	5.50	83									
Total Sown Area	900			8,270			6,100			15,270			15,270						15,270		
	0.9%			8.1%			6.0%			15.0%			15.0%						15.0%		
Annual Sown Area	1,050			10,700			8,720			20,470			20,470						20,470		
	1.1%			10.5%			8.6%			20.1%			20.1%						20.1%		

Remark : *) ; including 30ha of Sugarcane area. Ref ; Table E.5.4.2

Table E.5.4.4 Incremental Crop Production between Without and With Projects

Crops	Without Project 101,800 ha			With Project 115,600 ha			Increment 13,800 ha		
	Sown Area (ha)	Unit Yield (t/ha)	Production (tons)	Sown Area (ha)	Unit Yield (t/ha)	Production (tons)	Sown Area (ha)	Unit Yield (t/ha)	Production (tons)
A. Kharif Season Crop									
Sorghum	2,440	0.72	1,760				-2,440		-1,760
Millet	2,390	0.76	1,810				-2,390		-1,810
Maize	20	0.63	15	23,100	3.5	80,850	23,080	2.87	80,835
Pulses	10	0.52	5	5,800	2.0	11,600	5,790	1.48	11,595
Cotton	60	1.36	80	11,500	2.0	23,000	11,440	0.64	22,920
Fodder	10	11.86	120	11,500	45.0	517,500	11,490	33.14	517,380
Guara	210	1.56	330				-210		-330
Vegetables, others	30	2.80	85	3,000	10.0	30,000	2,970	7.20	29,915
Total Sown Area	5,170			54,900			49,730		
	** (5,200)	5%		** (69,400)	60%		** (64,200)	55%	
B. Rabi Season Crops									
Wheat / Barely	8,500	1.04	8,870	52,000	4.0	208,000	43,500	2.96	199,130
Pulses	4,280	0.60	2,575	11,500	2.5	28,750	7,220	1.90	26,175
Oilseeds	2,400	0.52	1,240	11,500	2.5	28,750	9,100	1.98	27,510
Fodder	60	13.30	800	11,500	55.0	632,500	11,440	41.70	631,700
Sugarcane	30	35.55	1,070	11,500	55.0 *	632,500	11,470	19.45	631,430
Fruits	15	3.00	50	3,000	10.0	30,000	2,985	7.00	29,950
Vegetables, others	15	5.50	80	3,000	15.0	45,000	2,985	9.50	44,920
Total Sown Area	15,300			104,000			88,700		
		15%			90%			75%	
C. Spring Season Crops									
Maize				5,800	3.5	20,300	5,800	3.50	20,300
Oilseeds				5,800	2.5	14,500	5,800	2.50	14,500
Total Sown Area				11,600			11,600		
					10%			10%	
Annual Sown Area	20,470			170,500			150,030		
	* (20,500)	20%		** (185,000)	160%		** (164,500)	140%	

Note : (*) ; including 30 ha of sugarcane area. (**); including 11,500 ha of sugarcane area and 3,000ha of fruits area
Target unit yield of sugarcane is average of 2 years included ratoon.
(%) ; Cropping Intensity

Table E.5.6.1 Financial Crop Budget under Without Project Condition (1/3)

- WHEAT -										- SORGHUM -					
Items	Unit per Ha	Rainfed Area		Rod Kubi Area		Irrigation Area		Unit Price	Rainfed Area		Rod Kubi Area		Irrigation Area		
		Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	Quantity	Amount (Rs.)		Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	
GROSS RETURN															
Production	(kg)	3.50	950	3,325	970	3,395	2,020	7,070	4.18	700	2,926	240	3,041	790	3,302
By Products (straw)	(Kg)	0.50	1,045	523	1,067	534	2,222	1,111	0.00	0	0	0	0	0	0
				3,848		3,929		8,181			2,926		3,041		3,302
PRODUCTION COST															
Farm Inputs															
1. Seeds	(kg)	5.90	74.2	438	88.8	524	91.5	540	8.08	19.8	160	30.3	164	30.3	164
2. FYM/Compost	(tone)	50	0.0	0	0.0	0	0.0	0	50	0.0	0	0.0	0	0.0	0
3. Fertilizer															
- Urea (N : 46%)	(kg)	4.68	0	0	0	0	150	702	4.68	0	0	0	0	0	0
- TSP (P : 46%)	(kg)	3.92	0	0	0	0	125	490	3.92	0	0	0	0	0	0
- SOP (K : 50%)	(kg)	3.90	0	0	0	0	0	0	3.90	0	0	0	0	0	0
4. Agro-chemicals															
- Insecticides	(kg)	35	0	0	0	0	0	0	35	0	0	0	0	0	0
- Pesticide	(lit.)	250	0	0	0	0	0	0	250	0	0	0	0	0	0
Sub-total				438		524		1,222			160		164		164
Machinery and Animal Power															
1. Land preparation	(hrs)	15.0	3.3	240	3.2	240	7.5	563	75.0	2.4	190	2.9	218	5.1	383
2. Drill for sowing	(hrs)	15.0	3.0	225	3.0	225	3.0	225	75.0	0.0	0	0.0	0	0.0	0
3. Threshing by tractor	(hrs)	70.0	2.0	140	2.4	168	5.2	364	70.0	0.0	0	0.0	0	0.0	0
Sub-total				605		633		1,152			180		218		383
Labor															
1. Land preparation	(man-day)	50	2.0	100	2.0	100	2.0	100	50	2.0	100	2.0	100	2.0	100
2. Nursery/sowing	(man-day)	50	0.0	0	0.0	0	0.0	0	50	0.0	0	0.0	0	0.0	0
3. Transplanting	(man-day)	50	0.0	0	0.0	0	0.0	0	50	0.0	0	0.0	0	0.0	0
4. Fertilizer application	(man-day)	50	2.0	100	2.0	100	2.0	100	50	2.0	100	2.0	100	2.0	100
5. Hoeing/weeding	(man-day)	50	0.0	0	0.0	0	0.0	0	50	0.0	0	0.0	0	0.0	0
6. Water management	(man-day)	50	0.0	0	0.0	0	2.0	100	50	0.0	0	0.0	0	1.0	50
7. Harvesting	(man-day)	50	5.0	250	7.0	350	10.0	500	50	2.0	100	3.0	150	4.0	200
8. Threshing, others	(man-day)	50	2.0	100	2.0	100	4.0	200	50	1.0	50	2.0	100	2.0	100
Total			11.0	550		700		1,100		7.0	350		450		550
Miscellaneous															
5% of above cost				80		93		199			38		82		55
Total Production Cost				1,672		1,950		4,183			724		823		1,151
Net Return per Ha (Rs.)				2,175		1,979		3,998			2,202		2,220		2,151

- MILLET -										- GRAM -					
Items	Unit per Ha	Rainfed Area		Rod Kubi Area		Irrigation Area		Unit Price	Rainfed Area		Rod Kubi Area		Irrigation Area		
		Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	Quantity	Amount (Rs.)		Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	
GROSS RETURN															
Production	(kg)	4.86	250	3,645	770	3,743	780	3,791	9.92	600	5,952	600	5,952	640	6,349
By Products (straw)	(kg)	0.20	1,125	225	1,155	231	1,170	234	0.20	0	0	0	0	0	0
				3,870		3,973		4,025			5,952		5,952		6,349
PRODUCTION COST															
Farm Inputs															
1. Seeds	(kg)	7.95	17.4	138	15.9	126	23.7	188	12.00	46.3	556	43.2	518	50.0	600
2. FYM/Compost	(tone)	50	0.0	0	0.0	0	0.0	0	50	0.0	0	0.0	0	0.0	0
3. Fertilizer															
- Urea (N : 46%)	(kg)	4.68	0	0	0	0	0	0	4.68	0	0	0	0	0	0
- TSP (P : 46%)	(kg)	3.92	0	0	0	0	0	0	3.92	0	0	0	0	0	0
- SOP (K : 50%)	(kg)	3.90	0	0	0	0	0	0	3.90	0	0	0	0	0	0
4. Agro-chemicals															
- Insecticides	(kg)	35	0	0	0	0	0	0	35	0	0	0	0	0	0
- Pesticide	(lit.)	250	0	0	0	0	0	0	250	0	0	0	0	0	0
Sub-total				138		126		188			556		518		600
Machinery and Animal Power															
1. Land preparation	(hrs)	75.0	4.4	330	4.4	330	5.4	405	75.0	5.7	428	5.7	428	6.3	473
2. Drill for sowing	(hrs)	75.0	0.0	0	0.0	0	0.0	0	75.0	2.2	165	2.2	165	2.5	188
3. Threshing by tractor	(hrs)	70.0	0.0	0	0.0	0	0.0	0	70.0	0.0	0	0.0	0	0.0	0
Sub-total				330		330		405			593		593		660
Labor															
1. Land preparation	(man-day)	50	2.0	100	2.0	100	2.0	100	50	2.0	100	2.0	100	2.0	100
2. Nursery/sowing	(man-day)	50	0.0	0	0.0	0	0.0	0	50	0.0	0	0.0	0	0.0	0
3. Transplanting	(man-day)	50	0.0	0	0.0	0	0.0	0	50	0.0	0	0.0	0	0.0	0
4. Fertilizer application	(man-day)	50	2.0	100	2.0	100	2.0	100	50	2.0	100	2.0	100	2.0	100
5. Hoeing/weeding	(man-day)	50	0.0	0	0.0	0	0.0	0	50	1.0	50	1.0	50	2.0	100
6. Water management	(man-day)	50	0.0	0	0.0	0	1.0	50	50	0.0	0	0.0	0	1.0	50
7. Harvesting	(man-day)	50	5.0	250	7.0	350	8.0	400	50	3.0	150	3.0	150	5.0	250
8. Threshing, others	(man-day)	50	1.0	50	1.0	50	1.0	50	50	2.0	100	3.0	100	3.0	150
Total			10.0	500		600		750		10.0	500		500		750
Miscellaneous															
5% of above cost				48		53		62			82		81		101
Total Production Cost				1,012		1,102		1,411			1,231		1,091		2,111
Net Return per Ha (Rs.)				2,858		2,864		2,614			4,221		4,261		4,238

Source : Farm survey, 1993 by the JICA Team

Note : Harvesting and threshing cost calculated based on contract basis as 1/10th of the yield.

Table E.5.6.1 Financial Crop Budget under Without Project Condition (2/3)

- OILSEED (Mustard) -									- SUGARCANE, COTTON, MAIZE - Irrigated Area										
Items	Unit per Ha	Rainfed Area			Red Kribi Area			Irrigation Area			Sugarcane			Cotton			Maize		
		Unit Price	Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	Unit Price	Quantity	Amount (Rs.)	Unit Price	Quantity	Amount (Rs.)	Unit Price	Quantity	Amount (Rs.)		
GROSS RETURN																			
Production	(kg)	7.60	500	3,800	5.30	4,028	5.40	4,104	0.35	35,530	12,443	9.80	1,540	15,092	4.02	630	2,533		
By Products (straw)	(kg)	0.00	0	0	0	0	0	0	0.00	0	0	0.25	770	193	0.20	945	189		
				3,800		4,028		4,104			12,443			15,285			2,722		
PRODUCTION COST																			
Farm Inputs																			
1. Seeds	(kg)	12.00	10.8	130	8.5	102	8.7	104	0.45	2,050	3,578	8.25	40.0	330	4.64	36.8	171		
2. FYM/Compost	(tone)	50	0.0	0	0.0	0	0.0	0	50	0.0	0	50	0.0	0	50	0.0	0		
3. Fertilizer																			
- Urea (N : 46%)	(kg)	4.68	0	0	0	0	0	0	4.68	225	1,053	4.68	125	585	4.68	125	585		
- TSP (P : 46%)	(kg)	3.92	0	0	0	0	0	0	3.92	150	588	3.92	0	0	3.92	0	0		
- SOP (K : 50%)	(kg)	3.90	0	0	0	0	0	0	3.90	0	0	3.90	0	0	3.90	0	0		
4. Agro-chemicals																			
- Insecticides	(kg)	35	0	0	0	0	0	0	35	0	0	56	0	0	56	0	0		
- Pesticide	(lit.)	250	0	0	0	0	0	0	250	1	0	80	2	160	80	0	0		
Sub-total				130		102		104			5,210			1,075			756		
Machinery and Animal Power																			
1. Land preparation	(hrs)	75.0	2.5	188	5.0	375	5.3	398	75.0	4.9	368	75.0	7.0	525	75.0	5.8	435		
2. Drill for sowing	(hrs)	75.0	0.0	0	0.0	0	0.0	0	75.0	5.3	371	75.0	0.0	0	75.0	0.0	0		
3. Threshing by tractor	(hrs)	70.0	0.0	0	0.0	0	0.0	0	70.0	0.0	0	70.0	0.0	0	70.0	0.0	0		
Sub-total				188		375		398			739			525			435		
Labor																			
1. Land preparation	(man-day)	50	2.0	100	2.0	100	2.0	100	50	2.0	100	50	2.0	100	50	2.0	100		
2. Nursery/sowing	(man-day)	50	0.0	0	0.0	0	0.0	0	50	0.0	0	50	0.0	0	50	0.0	0		
3. Transplanting	(man-day)	50	0.0	0	0.0	0	0.0	0	50	10.0	500	50	0.0	0	50	0.0	0		
sowing	(man-day)	50	2.0	100	2.0	100	2.0	100	50	0.0	0	50	2.0	100	50	2.0	100		
4. Fertilizer application	(man-day)	50	0.0	0	0.0	0	0.0	0	50	2.0	100	50	4.0	200	50	1.0	50		
5. Hoeing/weeding	(man-day)	50	0.0	0	0.0	0	0.0	0	50	8.0	400	50	2.0	100	50	0.0	0		
6. Water management	(man-day)	50	0.0	0	0.0	0	0.0	0	50	4.0	200	50	2.0	100	50	1.0	50		
7. Harvesting	(man-day)	50	5.0	250	6.0	300	6.0	300	50	30.0	1,500	50	57.0	2,850	50	10.0	500		
8. Threshing, others	(man-day)	50	2.0	100	2.0	100	2.0	100	50	2.0	100	50	1.0	50	50	2.0	100		
Total			11.0	550		600		650		58.0	2,900		70.0	3,500		18.0	900		
Miscellaneous																			
5 % of above cost				43		58		58			443			255			105		
Total Production Cost				210		1,131		1,209			9,300			5,355			2,195		
Net Return per Ha (Rs.)				3,590		2,897		2,895			3,143			9,930			536		

- GUARA -									- MUNG BEAN, VEGETABLES - Irrigated Area										
Items	Unit per Ha	Rainfed Area			Red Kribi Area			Irrigation Area			Mung Bean			Kharif Vegetable			Rabi Vegetable		
		Unit Price	Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	Quantity	Amount (Rs.)	Unit Price	Quantity	Amount (Rs.)	Unit Price	Quantity	Amount (Rs.)	Unit Price	Quantity	Amount (Rs.)		
GROSS RETURN																			
Production	(kg)	4.00	1,500	6,000	1,630	6,520	1,900	7,600	9.45	520	4,914	3.17	2,400	7,608	3.36	4,200	14,112		
By Products (straw)	(kg)	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
				6,000		6,520		7,600			4,914			7,608			14,112		
PRODUCTION COST																			
Farm Inputs																			
1. Seeds	(kg)	4.50	18.9	85	20.0	90	20.0	90	12.00	50.0	600	400	3.0	1,200	450	7.0	3,150		
2. FYM/Compost	(tone)	50	0.0	0	0.0	0	0.0	0	50	0.0	0	0.0	0	0	0.0	0	0		
3. Fertilizer																			
- Urea (N : 46%)	(kg)	4.68	0	0	0	0	0	0	4.68	0	0	0	0	0	0	0	0		
- TSP (P : 46%)	(kg)	3.92	0	0	0	0	0	0	3.92	0	0	0	0	0	0	0	0		
- SOP (K : 50%)	(kg)	3.90	0	0	0	0	0	0	3.90	0	0	0	0	0	0	0	0		
4. Agro-chemicals																			
- Insecticides	(kg)	35	0	0	0	0	0	0	35	0	0	0	0	0	0	0	0		
- Pesticide	(lit.)	250	0	0	0	0	0	0	250	0	0	0	0	0	0	0	0		
Sub-total				85		90		90			600			1,200			3,150		
Machinery and Animal Power																			
1. Land Preparation	(hrs)	75.0	5.7	428	5.7	428	6.3	473	75.0	6.3	473	5.0	375	5.0	375	5.0	375		
2. Drill for sowing	(hrs)	75.0	2.0	150	2.0	150	2.5	188	75.0	2.5	188	0.0	0	0.0	0	0.0	0		
3. Threshing by tractor	(hrs)	70.0	0.0	0	0.0	0	0.0	0	70.0	6.0	420	0.0	0	0.0	0	0.0	0		
Sub-total				578		578		660			1,080			375			375		
Labor																			
1. Land preparation	(man-day)	50	4.0	200	5.0	250	5.0	250	50	2.0	100	3.0	100	2.0	100	2.0	100		
2. Nursery/sowing	(man-day)	50	0.0	0	0.0	0	0.0	0	50	0.0	0	0.0	0	0.0	0	0.0	0		
3. Transplanting	(man-day)	50	0.0	0	0.0	0	0.0	0	50	0.0	0	0.0	0	0.0	0	0.0	0		
sowing	(man-day)	50	4.0	200	4.0	200	4.0	200	50	2.0	100	15.0	750	20.0	1,000	20.0	1,000		
4. Fertilizer application	(man-day)	50	0.0	0	0.0	0	0.0	0	50	0.0	0	0.0	0	0.0	0	0.0	0		
5. Hoeing/weeding	(man-day)	50	2.0	100	2.0	100	2.0	100	50	2.0	100	0.0	0	0.0	0	0.0	0		
6. Water management	(man-day)	50	0.0	0	0.0	0	0.0	0	50	1.0	50	6.0	300	6.0	300	6.0	300		
7. Harvesting	(man-day)	50	10.0	500	14.0	700	20.0	1,000	50	5.0	250	30.0	1,500	40.0	2,000	40.0	2,000		
8. Threshing, others	(man-day)	50	5.0	250	5.0	250	7.0	350	50	3.0	150	0.0	0	0.0	0	0.0	0		
Total			25.0	1,350		1,500		2,000		15.0	750		53.0	2,650		68.0	3,400		
Miscellaneous																			
5 % of above cost				96		108		138			122			211			336		
Total Production Cost				2,008		2,276		2,888			2,552			4,436			7,271		
Net Return per Ha (Rs.)				3,992		4,244		4,713			3,363			5,500			6,841		

Source : Farm survey, 1993 by the JICA Team

Note : Harvesting and threshing cost calculated based on contract basis as 1/10th of the yield.

Table E.5.6.1 Financial Crop Budget under Without Project Condition (3/3)

- FODDER, RICE (Paddy) - Irrigated Area										
Items	Unit per Ha	Unit Price	Kharif Fodder		Unit Price	Rabi Fodder (Berseem)		Unit Price	Rice (Paddy)	
			Quantity	Amount (Rs.)		Quantity	Amount (Rs.)		Quantity	Amount (Rs.)
GROSS RETURN										
Production	(kg)	0.20	11,860	2,372	0.25	13,300	3,325	2.28	2,360	5,381
By Products (straw)	(kg)			0				0.20	2,832	566
				<u>2,372</u>			<u>3,325</u>			<u>5,947</u>
PRODUCTION COST										
Farm Inputs										
1. Seeds	(kg)	4.64	19.6	91	25.00	15.4	385	3.84	46.3	178
2. FYM/ Compost	(tons)	50	0.0	0		0.0	0		0.0	0
3. Fertilizer										
- Urea (N : 46%)	(kg)	4.68	0	0		0	0		160	749
- TSP (P : 46%)	(kg)	3.92	0	0		0	0		136	533
- SOP (K : 50%)	(kg)	3.90	0	0		0	0		0	0
4. Agro-chemicals										
- Insecticides	(kg)	35	0	0		0	0		0	0
- Pesticide	(lit.)	250	0	0		0	0		1	250
Sub-total				91			385			1,710
Machinery and Animal Power										
1. Land preparation	(hrs)	75.0	6.1	458		6.1	458		7.5	563
2. Drill for sowing	(hrs)	75.0	0.0	0		0.0	0		0.0	0
3. Threshing by tractor	(hrs)	70.0	0.0	0		0.0	0		6.0	420
Sub-total				458			458			983
Labor										
1. Land preparation	(man-day)	50	2.0	100		2.0	100		1.0	50
2. Nursery/ sowing	(man-day)	50	0.0	0		0.0	0		4.0	200
3. Transplanting	(man-day)	50	0.0	0		0.0	0		20.0	1,000
/sowing	(man-day)	50	2.0	100		2.0	100		0.0	0
4. Fertilizer application	(man-day)	50	2.0	100		2.0	100		4.0	200
5. Hoeing /weeding	(man-day)	50	0.0	0		0.0	0		2.0	100
6. Water management	(man-day)	50	1.0	50		1.0	50		4.0	200
7. Harvesting	(man-day)	50	18.0	900		25.0	1,250		10.0	500
8. Threshing, others	(man-day)	50	0.0	0		0.0	0		2.0	100
Total			25.0	1,250		32.0	1,600		47.0	2,350
Miscellaneous										
5 % of above cost				90			122			252
Total Production Cost				1,888			2,565			5,294
Net Return per Ha	(Rs.)			484			760			653

Source : Farm survey, 1993 by the JICA Team

Note : Harvesting and threshing cost calculated based on contract basis as 1/10th of the yield.

Table E.5.6.2 Financial Crop Budget under With Project Condition (1/4)

Items	Unit per Ha		Wheat		Maize		Maize (seed)		Unit		Pulses (Mung)		Pulses (Gram)			
	Unit	Price	Quantity	Amount (Rs.)	Unit	Price	Quantity	Amount (Rs.)	Unit	Price	Quantity	Amount (Rs.)	Unit	Price	Quantity	Amount (Rs.)
GROSS RETURN																
Production	(kg)	3.50	4,000	14,000	4.02	3,500	14,070	4.33	3,500	15,155	9.45	2,000	18,900	9.92	2,000	19,840
By Products (straw)	(kg)	0.50	4,400	2,200	0.20	5,250	1,050	0.20	5,250	1,050	0.25	1,000	250	0.20	1,000	200
			(x 1.1)	16,200		(x 1.5)	15,120		(x 1.5)	16,205		(x 0.5)	19,150		(x 0.5)	20,040
PRODUCTION COST																
Farm Inputs																
1. Seeds	(kg)	5.90	100.0	590	4.64	30.0	139	4.64	30.0	139	12.0	100.0	1,200	12.0	60.0	720
2. FYM/ Compost	(tons)	50	5.0	250	50	5.0	250	50	5.0	250	50	0	0	50	0	0
3. Fertilizer																
- Urea (N : 46%)	(kg)	4.68	225	1,053	4.68	200	936	4.68	200	936	4.68	100	468	4.68	125	585
- TSP (P : 46%)	(kg)	3.92	150	588	3.92	125	490	3.92	125	490	3.92	125	490	3.92	125	490
- SOP (K : 50%)	(kg)	3.90	125	488	3.90	0	0	3.90	0	0	3.90	0	0	3.90	125	488
4. Agro-chemicals																
- Insecticide	(kg)	35	10	350	35	10	350	35	10	350	35	10	350	35	10	350
- Pesticide	(lit.)	250	2	500	250	2	500	250	2	500	250	1	250	250	1	250
Sub-total				3,819			2,665			2,665			2,758			2,883
Machinery and Animal Power																
1. Land preparation	(hrs)	75.0	7.5	563	75.0	7.5	563	75.0	7.5	563	75.0	6.0	450	75.0	6.0	450
2. Drill for sowing	(hrs)	75.0	5.5	413	75.0	5.5	413	75.0	5.5	413	75.0	5.5	413	75.0	5.5	413
3. Threshing by tractor	(hrs)	70.0	7.0	490	70.0	0.0	0	70.0	0.0	0	70.0	0.0	0	70.0	0.0	0
Subtotal				1,465			975			975			863			863
Labor																
1. Land preparation	(M/D)	50	4.0	200	50	4.0	200	50	4.0	200	50	4.0	200	50	4.0	200
2. Nursery/ sowing	(M/D)	50	0.0	0	50	0.0	0	50	0.0	0	50	0.0	0	50	0.0	0
3. Transplanting	(M/D)	50	0.0	0	50	0.0	0	50	0.0	0	50	0.0	0	50	0.0	0
/sowing	(M/D)	50	4.0	200	50	4.0	200	50	4.0	200	50	4.0	200	50	4.0	200
4. Fertilizer application	(M/D)	50	4.0	200	50	4.0	200	50	4.0	200	50	4.0	200	50	4.0	200
5. Hoing /weeding	(M/D)	50	4.0	200	50	4.0	200	50	4.0	200	50	4.0	200	50	4.0	200
6. Water management	(M/D)	50	6.0	300	50	4.0	200	50	4.0	200	50	4.0	200	50	4.0	200
7. Harvesting	(M/D)	50	15.0	750	50	15.0	750	50	15.0	750	50	20.0	1,000	50	20.0	1,000
8. Threshing, others	(M/D)	50	3.0	150	50	5.0	250	50	5.0	250	50	2.0	100	50	2.0	100
Total			40.0	2,000		40.0	2,000		40.0	2,000		40.0	2,000		40.0	2,000
Miscellaneous																
5 % of above cost				364			282			282			281			282
Total Production Cost				7,648			5,922			5,922			5,902			6,032
Net Return per Ha				8,552			9,198			10,283			13,248			14,008

Source : Farm survey, 1993 by the JICA Team

Note : Harvesting and threshing cost calculated based on contract basis as 1/10th of the yield.

Table E.5.6.2 Financial Crop Budget under With Project Condition (2/4)

Items	Unit per Ha	Unit Price	Sugarcane Quantity	Sugarcane Amount (Rs.)	Unit Price	Oilseeds (Rape/mustard) Quantity	Oilseeds (Rape/mustard) Amount (Rs.)	Unit Price	Oilseeds (Sunflower) Quantity	Oilseeds (Sunflower) Amount (Rs.)	Unit Price	Kharif Fodder (Millet) Quantity	Kharif Fodder (Millet) Amount (Rs.)	Unit Price	Rabi Fodder (Berseem) Quantity	Rabi Fodder (Berseem) Amount (Rs.)
GROSS RETURN																
- Production	(kg)	0.35	70,000	24,500	7.60	2,500	19,000	7.00	2,500	17,500	0.25	45,000	9,000	0.25	55,000	13,750
By Products (straw)	(kg)		(40,000) ratoon	24,500 (14,000)			19,000			17,500			9,000			13,750
PRODUCTION COST																
Farm Inputs																
1. Seeds	(kg)	0.45	6,000	2,700 *	12.0	7.5	90	20.00	7.5	150	25.0	15.0	119	25.0	20.0	500
2. FYM/Compost	(tons)	50	5.0	250 *	50	0.0	0	50	5.0	250	50	5.0	250	50	5.0	250
3. Fertilizer																
- Urea (N : 46%)	(kg)	4.68	250	1,170	4.68	150	702	4.68	150	702	4.68	100	468	4.68	100	468
- TSP (P : 46%)	(kg)	3.92	200	784	3.92	125	490	3.92	125	490	3.92	50	196	3.92	125	490
- SOP (K : 50%)	(kg)	3.90	150	585	3.90	0	0	3.90	0	0	3.90	0	0	3.90	0	0
4. Agro-chemicals																
- Insecticide	(kg)	35	20	700	35	10	350	35	10	350	35	0	0	35	10	350
- Pesticide	(lit.)	250	2	500	250	2	500	250	1	250	250	0	0	250	1	250
Sub-total				6,689 (3,739)			2,132			2,192			1,033			2,308
Machinery and Animal Power																
1. Land preparation	(hrs)	75.0	7.5	563 *	75.0	6.0	450	75.0	6.0	450	75.0	7.5	563	75.0	7.5	563
2. Drill for sowing	(hrs)	75.0	0.0	0	75.0	5.5	413	75.0	0.0	0	75.0	0.0	0	75.0	0.0	0
3. Threshing by tractor	(hrs)	70.0	0.0	0	70.0	0.0	0	70.0	0.0	0	70.0	0.0	0	70.0	0.0	0
Sub-total				563			863			450			563			563
Labor																
1. Land preparation	(M/D)	50	4.0	200 *	50	4.0	200	50	4.0	200	50	4.0	200	50	4.0	200
2. Nursery/ sowing	(M/D)	50	0.0	0	50	0.0	0	50	0.0	0	50	0.0	0	50	0.0	0
3. Transplanting /sowing	(M/D)	50	10.0	500 *	50	0.0	0	50	0.0	0	50	0.0	0	50	0.0	0
4. Fertilizer application	(M/D)	50	0.0	0	50	2.0	100	50	4.0	200	50	2.0	100	50	2.0	100
5. Hoing/weeding	(M/D)	50	4.0	200	50	4.0	200	50	4.0	200	50	3.0	150	50	3.0	150
6. Water management	(M/D)	50	10.0	500	50	4.0	200	50	4.0	200	50	2.0	100	50	2.0	100
7. Harvesting	(M/D)	50	40.0	2,000	50	8.0	400	50	6.0	300	50	4.0	200	50	4.0	200
8. Threshing, others	(M/D)	50	2.0	100	50	25.0	1,250	50	15.0	750	50	15.0	750	50	23.0	1,150
Total			80.0	4,000 (3,000)		50.0	2,500		40.0	2,000		30.0	1,500		40.0	2,000
Miscellaneous																
5 % of above cost				563			275			232			155			244
Total Production Cost				11,814 (7,076)			5,769			4,874			3,251			5,114
Net Return per Ha	(Rs.)			12,686	6,924	9,805 *	13,231			12,626			5,749			8,636

Source : Farm survey, 1993 by the JICA Team

Note : Harvesting and threshing cost calculated based on contract basis as 1/10th of the yield.

Table E.5.6.2 Financial Crop Budget under With Project Condition (3/4)

Items	Unit per Ha		Paddy (rice)		Cotton		Fruits (Mango)		Kharif Vegetable		Rabi Vegetables	
	Unit	Price	Quantity	Amount (Rs.)	Unit	Price	Quantity	Amount (Rs.)	Unit	Price	Quantity	Amount (Rs.)
GROSS RETURN												
Production	(kg)	2.28	4,500	10,260			10,000	102,500			15,000	50,400
By Products (straw)	(kg)	0.20	5,400	1,080								0
	(x 1.2)			11,340				102,500				50,400
								(21,580)				
PRODUCTION COST												
Farm Inputs												
1. Seeds	(kg)	3.84	40.0	154			55.0	1,650			0.6	240
2. FYM/Compost	(tons)	50	5.0	250			15.0	750			5.0	250
3. Fertilizer												
- Urea (N : 46%)	(kg)	4.68	200	936			500	2,340			200	936
- TSP (P : 46%)	(kg)	3.92	150	588			400	1,568			125	490
- SOP (K : 50%)	(kg)	3.90	100	390			200	780			0	0
4. Agro-chemicals												
- Insecticide	(kg)	35	20	700			100	3,500			100	3,500
- Pesticide	(lit.)	250	2	500			5	1,250			2	500
				3,518				11,838			4	1,000
								(3,000)				6,838
Machinery and Animal Power												
1. Land preparation	(hrs)	75.0	7.5	563			10.0	750			7.5	563
2. Drill for sowing	(hrs)	75.0	0.0	0			0.0	0			0.0	0
3. Threshing by tractor	(hrs)	70.0	5.5	385			0.0	0			0.0	0
				948				750				563
								(190)				
Labor												
1. Land preparation	(M/D)	50	4.0	200			30.0	1,500			10.0	500
2. Nursery/ sowing	(M/D)	50	2.0	100			5.0	250			2.0	100
3. Transplanting	(M/D)	50	15.0	750			10.0	500			10.0	500
/sowing	(M/D)	50	0.0	0			0.0	0			0.0	0
4. Fertilizer application	(M/D)	50	4.0	200			10.0	500			5.0	250
5. Hoing /weeding	(M/D)	50	4.0	200			10.0	500			10.0	500
6. Water management	(M/D)	50	6.0	300			24.0	1,200			15.0	750
7. Harvesting	(M/D)	50	20.0	1,000			40.0	2,000			30.0	1,500
8. Threshing, others	(M/D)	50	5.0	250			6.0	300			3.0	150
			60.0	3,000			135.0	6,750			85.0	4,250
								(1,700)				
Miscellaneous												
5 % of above cost				373				967				967
								(250)				
Total Production Cost				7,838				20,305				10,577
								(5,140)				
								NPV 10%				
Net Return per Ha				3,502				12,498				21,223
								20 years =				38,155

Source : Farm survey, 1993 by the JICA Team

Note : Harvesting and threshing cost calculated based on contract basis as 1/10th of the yield.

Table E.5.6.2 Financial Crop Budget under With Project Condition (4/4)

- MANGO - Without Project																
Items	Unit	Year										Total (a)	Unit Prices (b)	Amount (a x b) (Rs)	20 years	
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th					
GROSS RETURN																
Production	kg	0	0	0	0	1,000	1,500	2,000	2,500	3,000	3,000	13,000	10.25	133,250 (c)	140,750	
	Rs.	0	0	0	0	10,250	15,375	20,500	25,625	30,750	30,750					
PRODUCTION COST																
Farm Inputs																
1) Seeds	seedling	51	0	0	0	0	0	0	0	0	0	51	30	1,530	1,530	
2) FYM/Compost	ton	5	0	0	0	5	0	0	0	0	5	15	50	750	1,500	
3) Fertilizers																
- Urea (N : 46%)	kg	40	80	120	160	200	200	200	200	200	200	1,600	4.68	7,488	16,848	
- TSP (P : 46%)	kg	30	60	90	120	150	150	150	150	150	150	1,200	3.92	4,704	10,584	
- SOP (K : 50%)	kg	20	40	60	80	100	100	100	100	100	100	800	3.90	3,120	7,020	
3) Agro-chemicals																
- Insecticide	lit	10	20	30	40	50	50	50	50	50	50	400	35	14,000	31,500	
- Pesticide	kg	0.4	0.8	1.2	1.6	2.0	2.0	2.0	2.0	2.0	2.0	16.0	250	4,000	9,000	
Machinery Requirement																
1) Tractor																
- Land Preparation	hour	10	0	0	0	0	0	0	0	0	0	10	75	750	750	
Labour Requirement																
1) Land preparation	man-day	25	0	0	0	0	0	0	0	0	0	25	50	1,250	1,250	
2) Nursery	man-day	5	0	0	0	0	0	0	0	0	0	5	50	250	250	
3) Transplanting	man-day	10	0	0	0	0	0	0	0	0	0	10	50	500	500	
4) Fertilizer application	man-day	5	1	5	8	10	10	10	10	10	10	79	50	3,950	6,050	
5) Weeding	man-day	10	10	10	10	10	10	10	10	10	10	100	50	5,000	10,000	
6) Water management	man-day	10	10	10	10	20	20	20	20	20	20	160	50	8,000	18,000	
7) Harvesting	man-day	0	0	0	0	12	18	23	29	35	35	205	152	50	7,600	25,100
8) Packing/ loading	man-day	0	0	0	0	1	2	3	4	5	5	20	50	1,000	3,500	
(sub-total)		(65)	(21)	(25)	(28)	(53)	(60)	(66)	(73)	(80)	(80)	(551)				
Miscellaneous (5% of above production cost)																
		5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			3,195	7,169	
Total Production Cost		6,943	2,851	3,936	4,968	7,417	7,522	7,837	8,205	8,572	8,835			67,087 (d)	150,551	
Net Return per Ha (e - d)		-6,943	-2,851	-3,936	-4,968	2,833	7,853	12,663	17,420	22,178	21,915			66,163	290,192 (14,510)	
											Benefit	NPV(10%)=	135,260 (6,763)			
											Cost	NPV(10%)=	59,691 (2,985)	Net Production Value NPV 10% = 3,778		

- MANGO - With Project															
Items	Unit	Year										Total (a)	Unit Prices (b)	Amount (a x b) (Rs)	20 years
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th				
GROSS RETURN															
Production	kg	0	0	0	0	2,000	4,000	6,000	8,000	10,000	10,000	40,000	10.25	410,000 (c)	1,435,000
	Rs.	0	0	0	0	20,500	41,000	61,500	82,000	102,500	102,500				
PRODUCTION COST															
Farm Inputs															
1) Seeds	seedling	55	0	0	0	0	0	0	0	0	0	55	30	1,650	1,650
2) FYM/Compost	ton	15	0	0	0	15	0	0	0	0	15	45	50	2,250	4,500
3) Fertilizers															
- Urea (N : 46%)	kg	100	200	300	400	500	500	500	500	500	500	4,000	4.68	18,720	42,120
- TSP (P : 46%)	kg	80	160	240	320	400	400	400	400	400	400	3,200	3.92	12,544	28,224
- SOP (K : 50%)	kg	40	80	120	160	200	200	200	200	200	200	1,600	3.90	6,240	14,040
3) Agro-chemicals															
- Insecticide	lit	20	40	60	80	100	100	100	100	100	100	800	35	28,000	63,000
- Pesticide	kg	1.0	2.0	3.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	40.0	250	10,000	22,500
Machinery Requirement															
1) Tractor															
- Land Preparation	hour	10	0	0	0	0	0	0	0	0	0	10	75	750	750
Labour Requirement															
1) Land preparation	man-day	30	0	0	0	0	0	0	0	0	0	30	50	1,500	1,500
2) Nursery	man-day	5	0	0	0	0	0	0	0	0	0	5	50	250	250
3) Transplanting	man-day	10	0	0	0	0	0	0	0	0	0	10	50	500	500
4) Fertilizer application	man-day	5	1	5	8	10	10	10	10	10	10	79	50	3,950	6,050
5) Weeding	man-day	10	10	10	10	10	10	10	10	10	10	100	50	5,000	10,000
6) Water management	man-day	12	12	12	12	24	24	24	24	24	24	192	50	9,600	21,600
7) Harvesting	man-day	0	0	0	0	8	16	24	32	40	40	160	50	8,000	28,000
8) Packing/ loading	man-day	0	0	0	0	2	3	4	5	6	6	26	50	1,300	4,300
(sub-total)		(72)	(23)	(27)	(30)	(54)	(63)	(72)	(81)	(90)	(90)	(602)			
Miscellaneous (5% of above production cost)															
		5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			5,513	12,449
Total Production Cost		9,069	5,171	7,363	9,503	13,532	13,217	13,690	14,162	14,635	15,422			115,767 (d)	261,433
Net Return per Ha (e - d)		-9,069	-5,171	-7,363	-9,503	6,968	27,783	47,810	67,838	87,865	87,078			294,233	1,173,567 (58,678)
											Benefit	NPV(10%)=	431,495 (21,575)		
											Cost	NPV(10%)=	102,723 (5,136)	Net Production Value NPV 10% = 16,439	

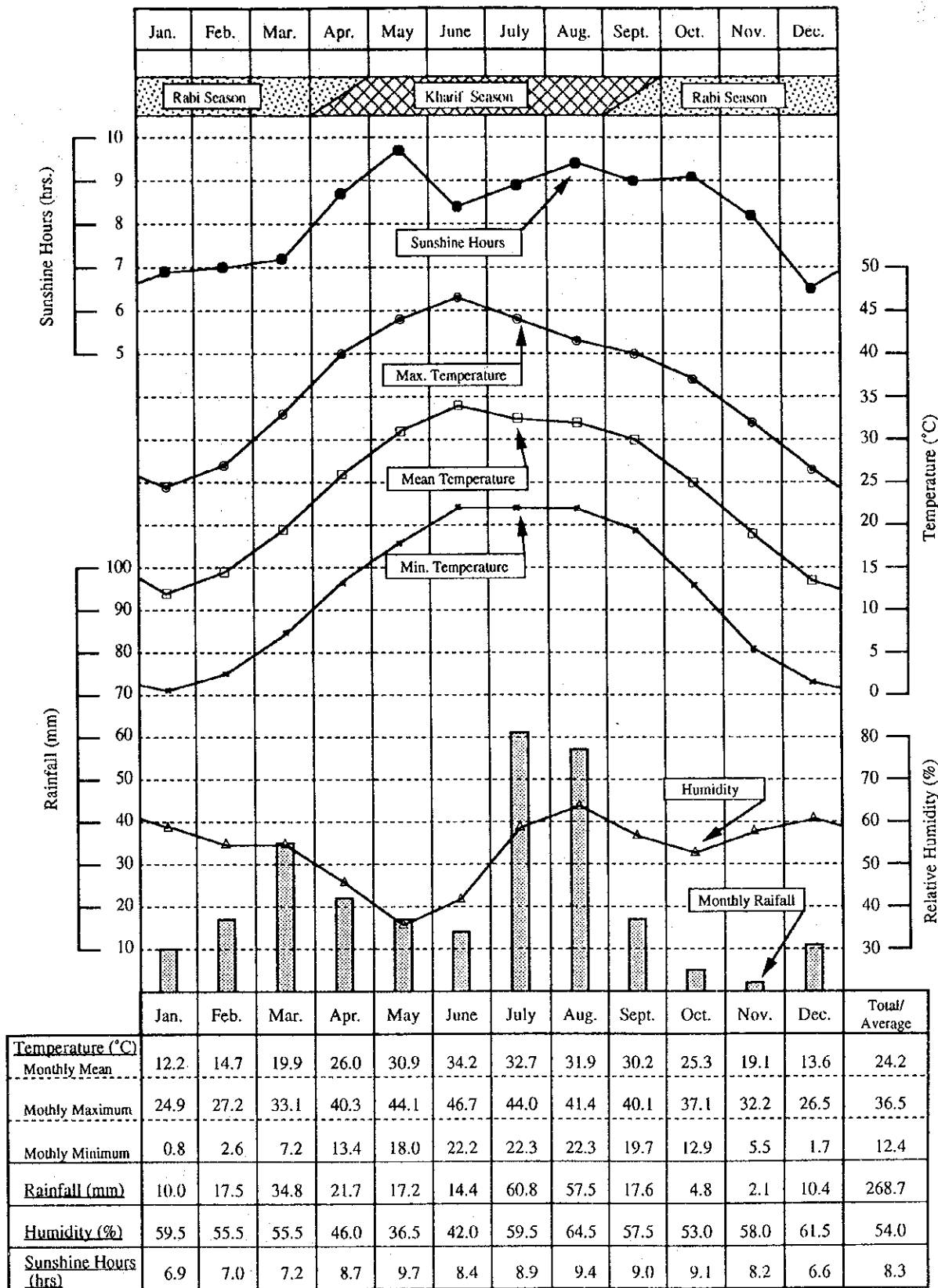
Table E.5.6.3 Net Crop Production Value under Without Project Condition

Items	Irrigated Area				Rod Kohi Area				Rainfed Area				Total Area (115,600ha)			
	Cropping Area (ha)	Unit Value (Rp./ha)	Production Value (Rp.,000)	Total Value (Rp.,000)	Cropping Area (ha)	Unit Value (Rp./ha)	Production Value (Rp.,000)	Total Value (Rp.,000)	Cropping Area (ha)	Unit Value (Rp./ha)	Production Value (Rp.,000)	Total Value (Rp.,000)	Cropping Area (ha)	Unit Value (Rs./ha)	Production Value (Rp.,000)	Net Value (Rp.,000)
Kharif Season Crops																
Sorghum	10	2,151	21.5	2,908.2	1,310	2,220	2,908.2	2,908.2	1,120	2,202	2,466.2	2,466.2	2,440	2,210	5,396.0	5,396.0
Millet	10	2,614	26.1	2,892.6	1,010	2,864	2,892.6	2,892.6	1,370	2,853	3,908.6	3,908.6	2,390	2,860	6,827.4	6,827.4
Maize	20	526	10.5	0.0	0	0	0.0	0.0	82	0	0.0	0.0	20	530	10.5	10.5
Pluses	10	2,363	23.6	0.0	0	0	0.0	0.0	0	0	0.0	0.0	10	2,360	23.6	23.6
Sugarcane	30	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	30	0	0.0	0.0
Cotton	40	9,930	397.2	198.6	20	9,930	198.6	198.6	0	0	0.0	0.0	60	9,930	595.8	595.8
Fodder	10	484	4.8	0.0	0	0	0.0	0.0	0	0	0.0	0.0	10	480	4.8	4.8
Guara	10	4,713	47.1	297.1	70	4,244	297.1	297.1	130	3,992	519.0	519.0	210	4,110	863.2	863.2
Vegetables (Eggplant)	10	3,172	31.7	63.4	20	3,172	63.4	63.4	0	0	0.0	0.0	30	3,170	95.2	95.2
Sub-total	150		562.7	6,360.0	2,430		6,360.0	6,360.0	2,702		6,893.8	6,893.8	5,200		13,816.5	13,816.5
Rabi Season Crops																
Wheat	650	3,998	2,598.7	9,697.1	4,900	1,979	9,697.1	9,697.1	2,950	2,175	6,416.3	6,416.3	8,500	2,200	18,712.1	18,712.1
Pulses (Gram)	160	4,238	678.1	8,394.2	1,970	4,261	8,394.2	8,394.2	2,150	4,221	9,075.2	9,075.2	4,280	4,240	18,147.4	18,147.4
Oilseeds (Rape/Mustard)	20	2,895	57.9	3,997.9	1,380	2,897	3,997.9	3,997.9	1,000	2,890	2,890.0	2,890.0	2,400	2,890	6,945.8	6,945.8
Sugarcane	30	3,143	94.3	0.0	0	0	0.0	0.0	0	0	0.0	0.0	30	3,140	94.3	94.3
Fodder (Berseem)	60	760	45.6	0.0	0	0	0.0	0.0	0	0	0.0	0.0	60	760	45.6	45.6
Fruits	5	3,780	18.9	37.8	10	3,780	37.8	37.8	0	0	0.0	0.0	15	3,780	56.7	56.7
Vegetables, others	5	6,841	34.2	68.4	10	6,841	68.4	68.4	0	0	0.0	0.0	15	6,840	102.6	102.6
Sub-total	930		3,527.7	22,195.3	8,270		22,195.3	22,195.3	6,100		18,381.4	18,381.4	15,300		44,104.4	44,104.4
Kharif Season Crops	150		562.7	6,360.0	2,430		6,360.0	6,360.0	2,702		6,893.8	6,893.8	5,200		13,816.5	13,816.5
Rabi Season Crops	930		3,527.7	22,195.3	8,270		22,195.3	22,195.3	6,100		18,381.4	18,381.4	15,300		44,104.4	44,104.4
Total	1,080		4,090.4	28,555.3	10,700		28,555.3	28,555.3	8,802		25,275.2	25,275.2	20,500		57,929.9	57,929.9

Table E.5.6.4 Incremental Net Crop Production Value between Without and With Projects

Items	CCA 115,600 ha	Without Project			With Project			Increment	
		Cropping Area (ha)	Unit Production Value (Rp.)	Total Production Value (Rp.,000)	Cropping Area (ha)	Unit Production Value (Rp.)	Total Production Value (Rp.,000)	Cropping Area (ha)	Production Value (Rp.,000)
Kharif Season Crops									
Sorghum	2,440	2,200	5,395	0	0	0	-2,440	-5,395	
Millet	2,390	2,860	6,827	0	0	0	-2,390	-6,827	
Maize	20	530	11	23,100	9,198	212,474	23,080	212,463	
Pluses	10	2,360	24	5,800	13,248	76,838	5,790	76,815	
Cotton	60	9,930	596	11,500	12,498	143,727	11,440	143,131	
Fodder	10	480	5	11,500	5,749	66,114	11,490	66,109	
Guara	210	4,110	863	0	0	0	-210	-863	
Vegetables (Eggplant)	30	3,170	95	3,000	21,223	63,669	2,970	63,574	
Sub-total	5,170		13,816	54,900	61,916	562,822	49,730	549,006	
Rabi Season Crops									
Wheat	8,500	2,200	18,712	52,000	8,552	444,704	43,500	425,992	
Pulses (Gram)	4,280	4,240	18,147	11,500	14,008	161,092	7,220	142,945	
Oilseeds (Rape/Mustard)	2,400	2,890	6,946	11,500	13,231	152,157	9,100	145,211	
Sugarcane	30	3,140	94	11,500	9,805	112,758	11,470	112,663	
Fodder (Berseem)	60	760	46	11,500	8,636	99,314	11,440	99,268	
Fruit (Mango)	15	3,780	57	3,000	4,238	12,714	2,985	12,657	
Vegetables	15	6,840	103	3,000	38,153	114,459	2,985	114,356	
Sub-total	15,300		44,105	104,000	96,623	1,097,197	88,700	1,053,093	
Spring Season Crops									
Maize	0	0	0	5,800	10,283	59,641	5,800	59,641	
Oilseeds	0	0	0	5,800	12,626	73,231	5,800	73,231	
Sub-total	0		0	11,600	22,909	132,872	11,600	132,872	
Total									
Kharif Season Crops	5,170	0	13,816	54,900	61,916	562,822	49,730	549,006	
Rabi Season Crops	15,300	0	44,105	104,000	96,623	1,097,197	88,700	1,053,093	
Spring Season Crops	0	0	0	170,500	181,448	1,792,891	150,030	1,734,971	
Total	20,470	0	57,920	501	253,364	2,452,910	288,460	2,452,910	

FIGURES



Source : D.I. Khan Meteorological Station, 30 years average from 1961 to 1990

Fig. E.3.1.1 Meteorological Data in the Study Area

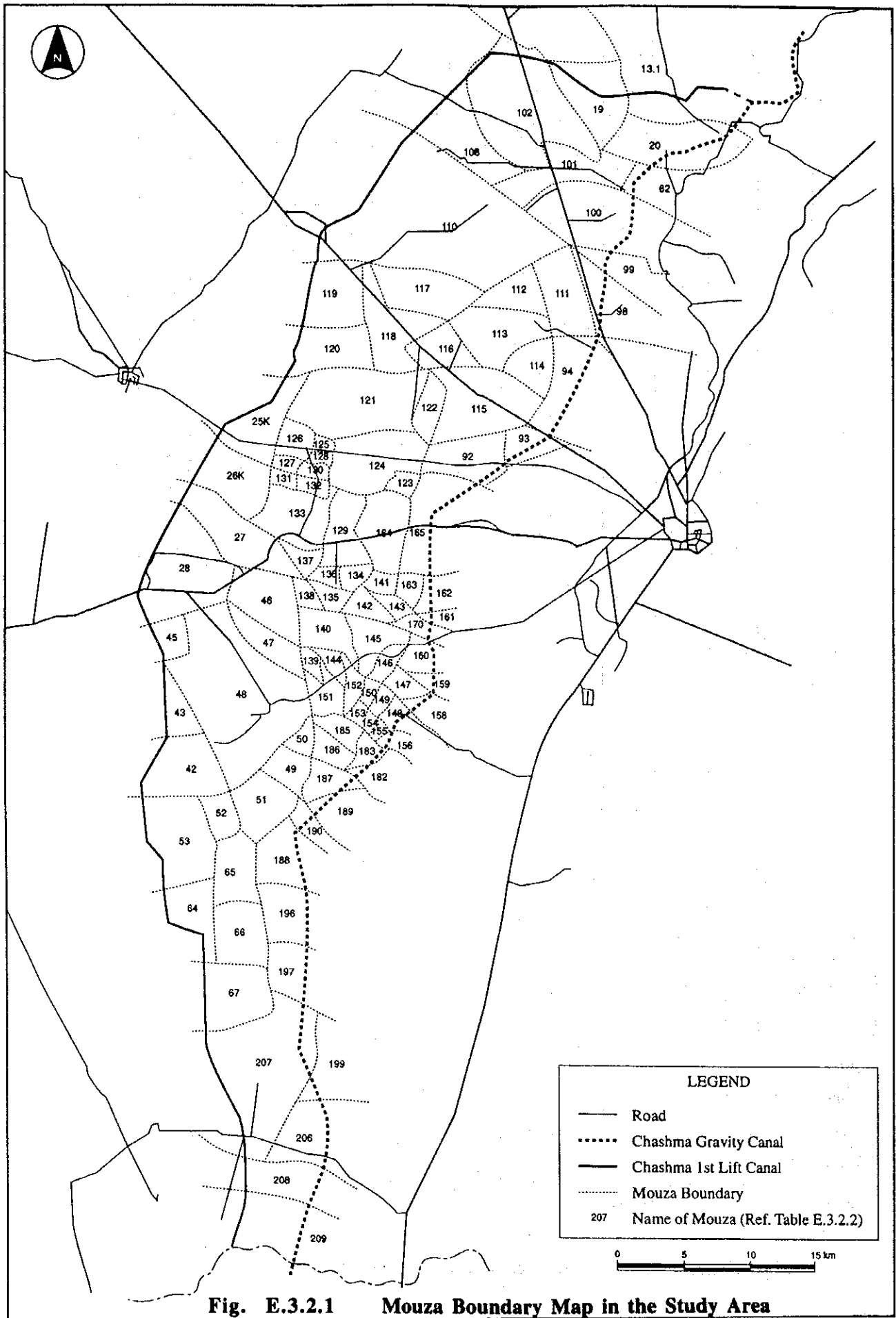


Fig. E.3.2.1 Mouza Boundary Map in the Study Area

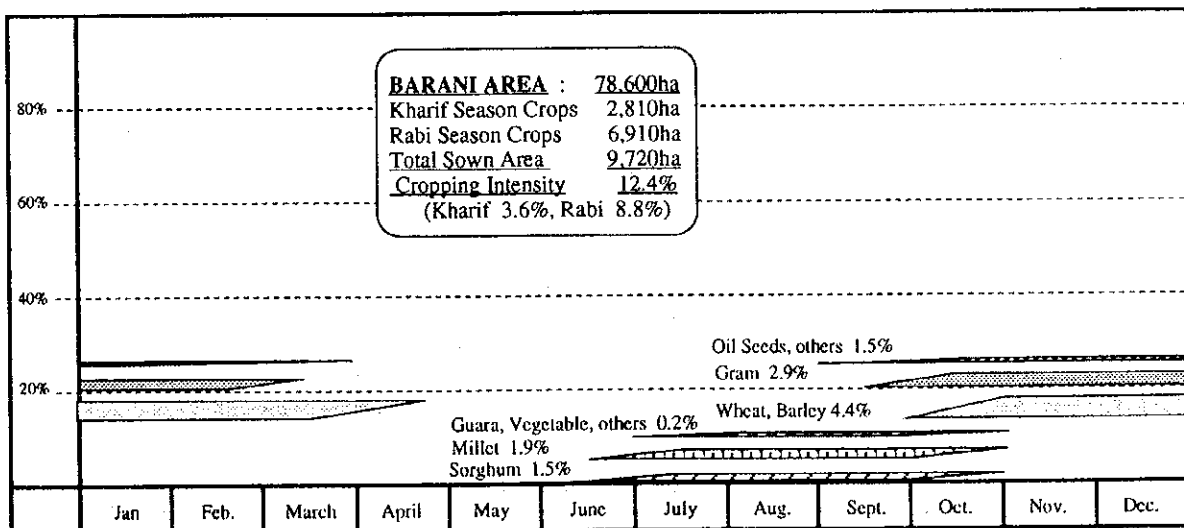
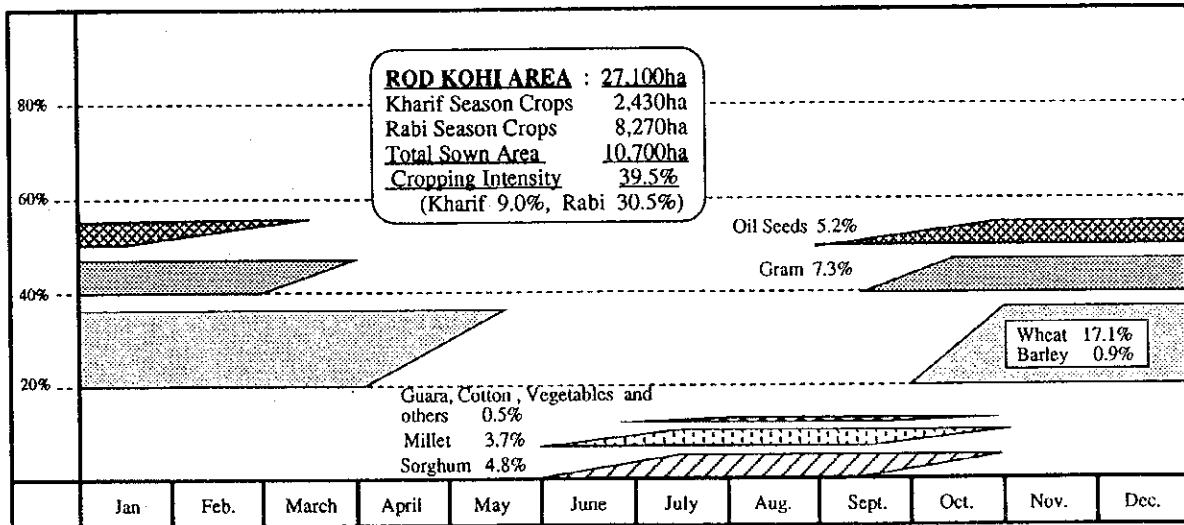
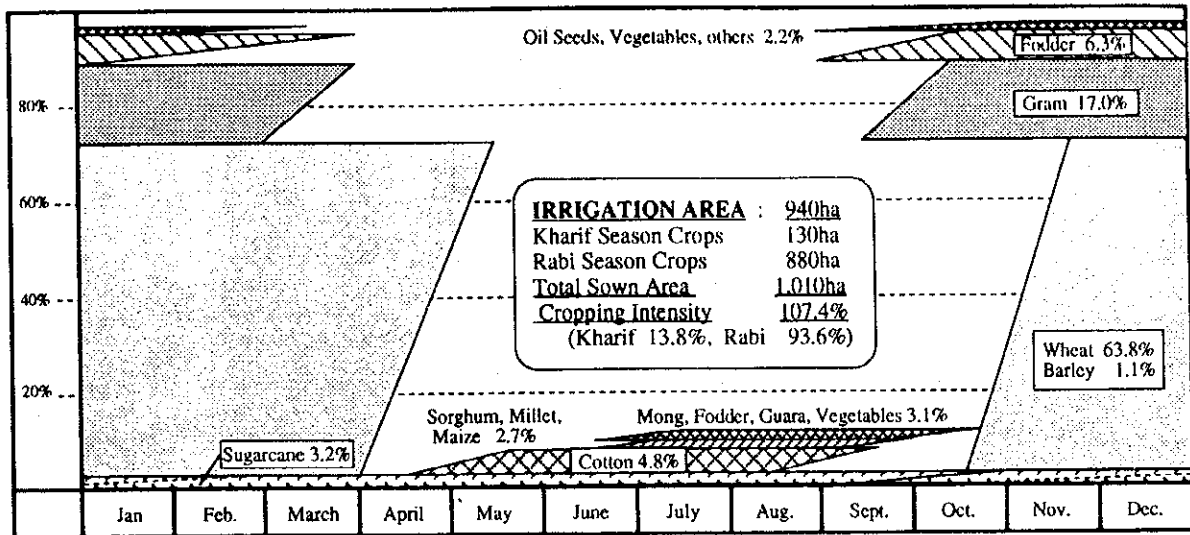
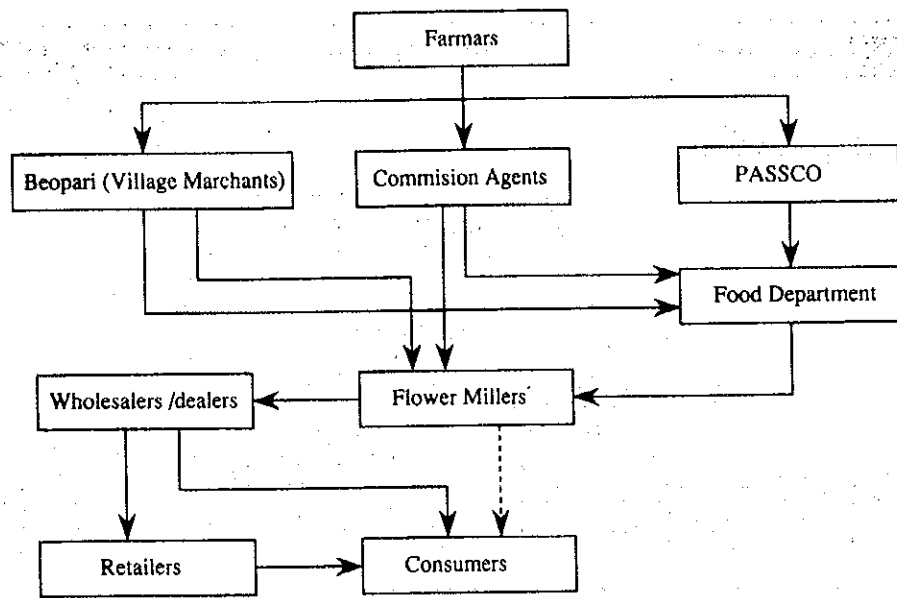
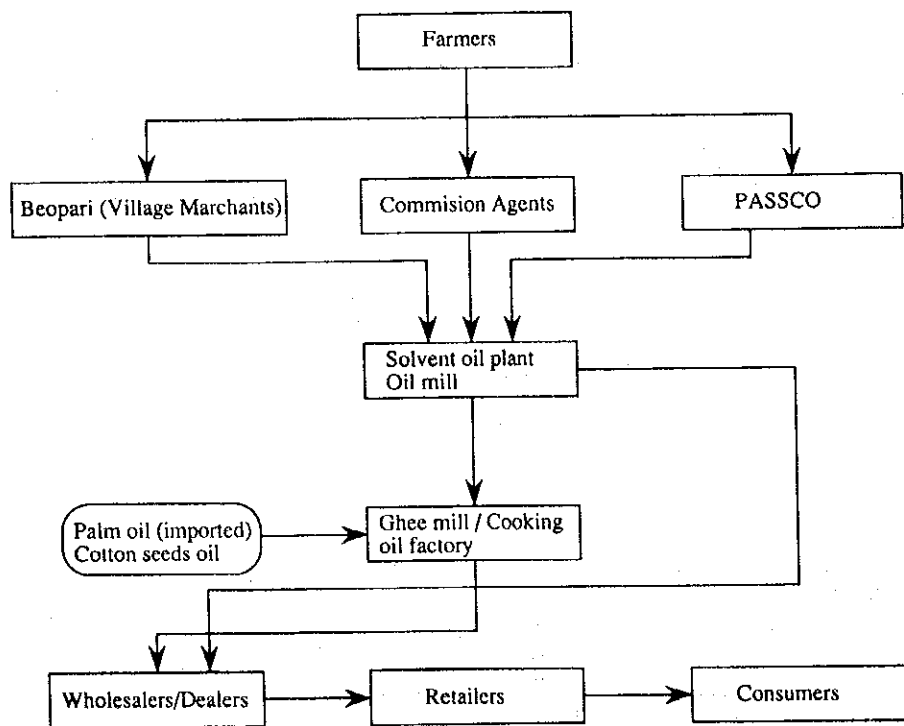


Fig. E.3.5.1 Present Cropping Patterns in the Study Area



(a) Marketing Flow of Wheat

- (1) 58% and 64% of wheat production are marketed from farms in Study Area and CRBC area, respectively.
- (2) 65% and 94% of wheat marketed are through Beopari in Study Area and CRBC area, respectively.
- (3) Procurement is conducted through PASSCO by the Food Department in D.I. Khan.



(b) Marketing Flow of Oil seeds (Sunflower)

Fig. E.3.9.1 Marketing Flow of Wheat and Oilseeds (Sunflower)

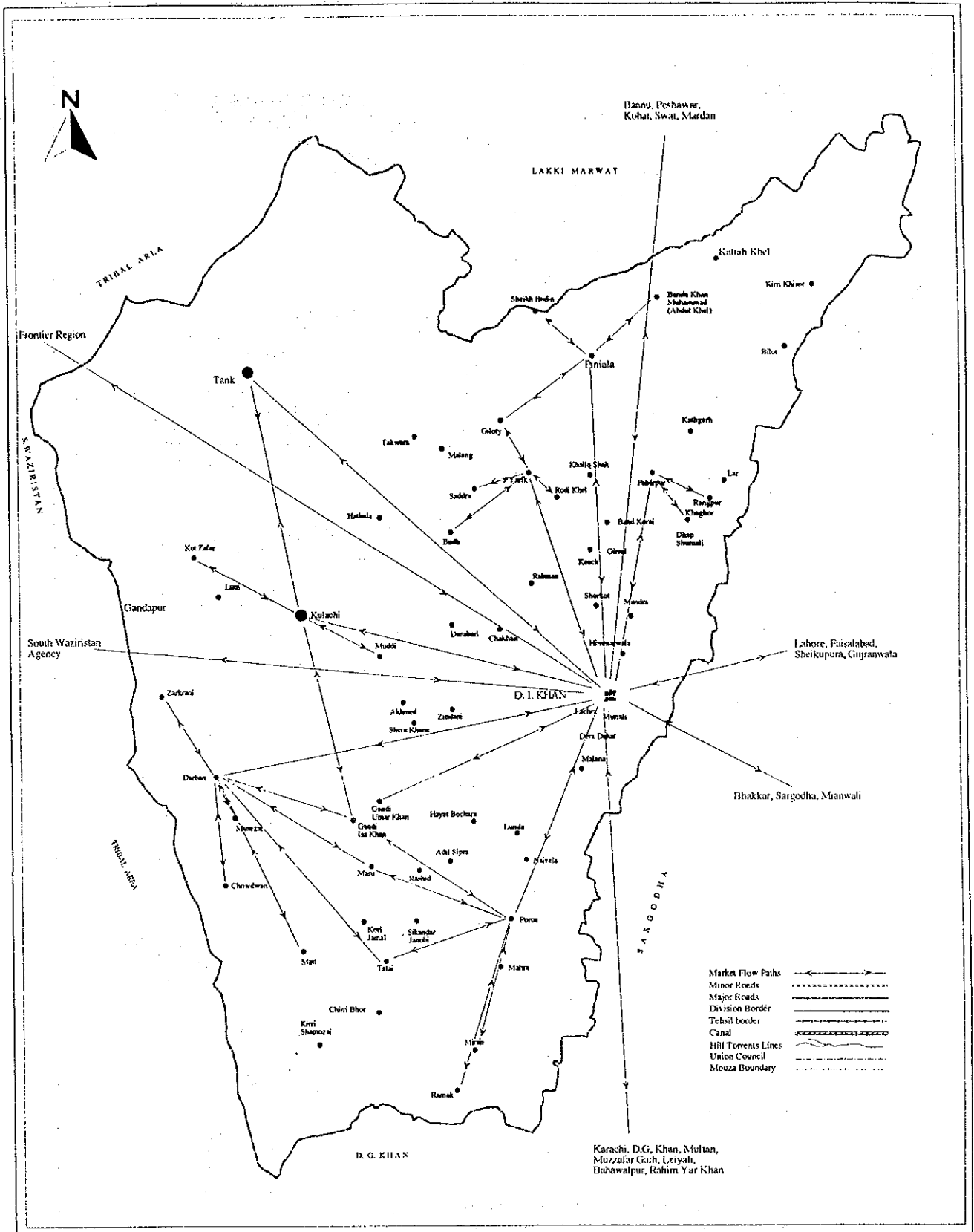


Fig. E.3.9.2 Marketing Flow Paths in D.I.Khan

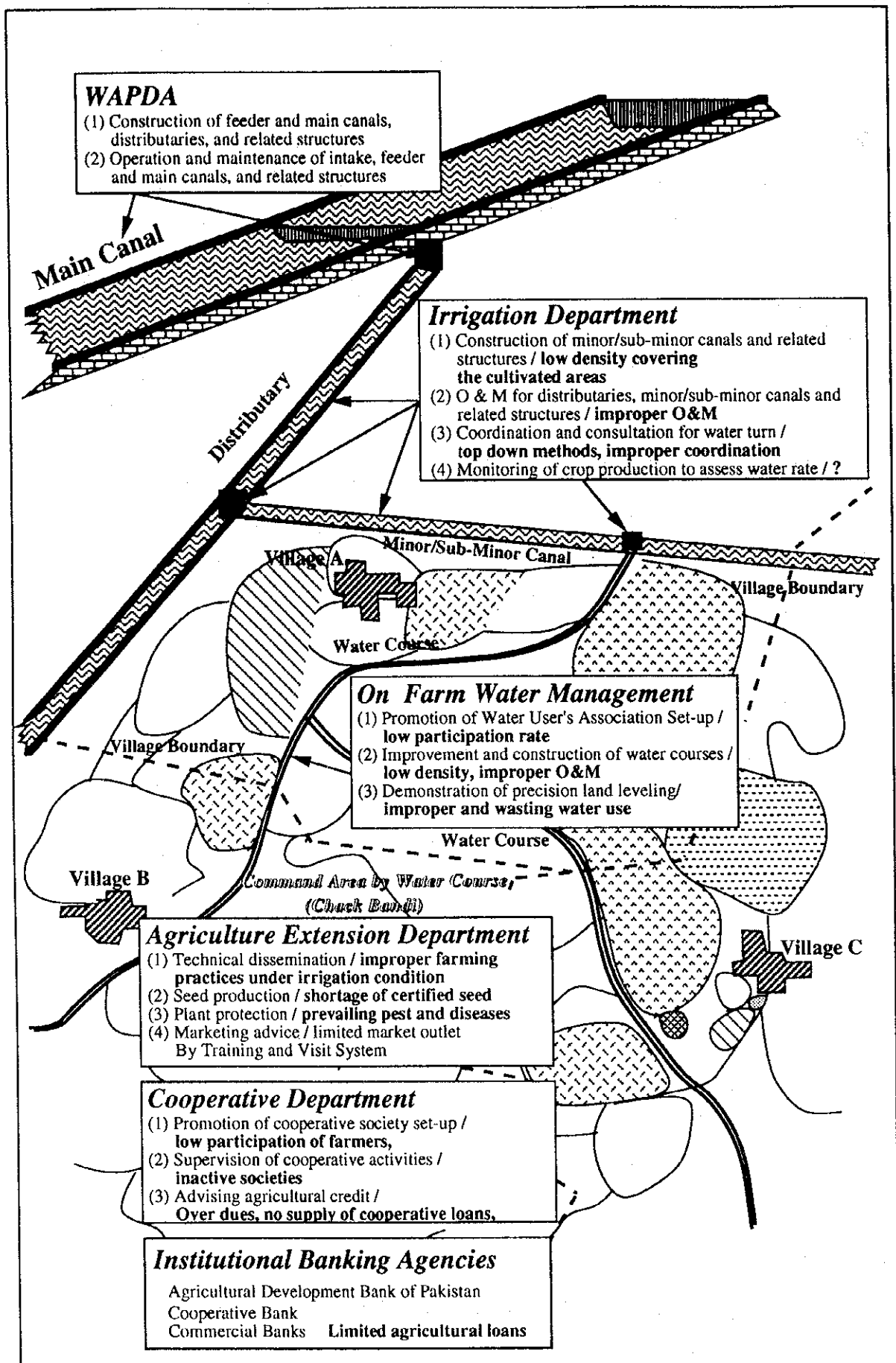


Fig. E.4.2.1 Command area Development and Government Agencies (CRBC Gravity Irrigation Area)
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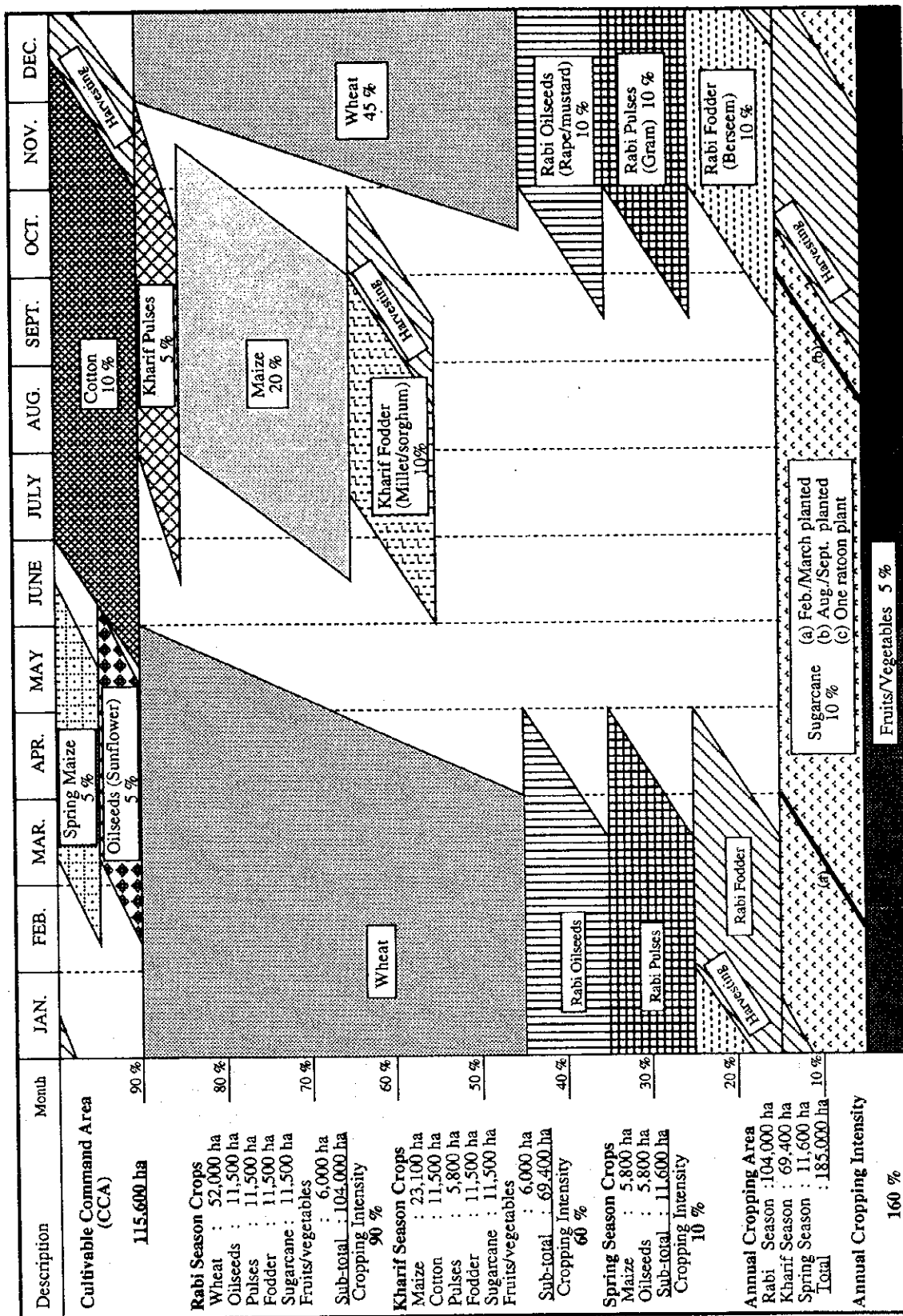


Fig. E.5.4.1 Proposed Cropping Pattern

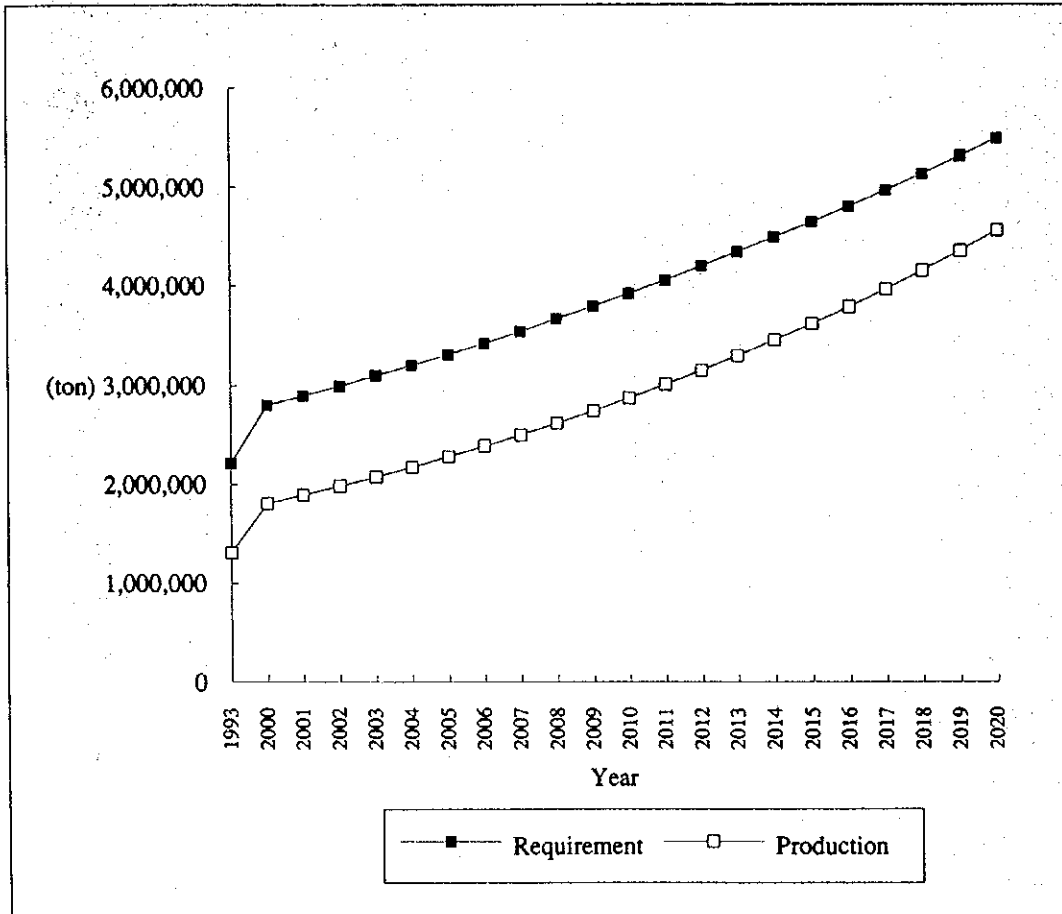


Fig. E.5.5.1 Food Balance (Wheat and Other Grains) in NWFP

Conditions: (1) Production of wheat in NWFP is 1,163,383 ton and that of other grains (millet, sorghum and barley) is 85,019 ton in 1991/92.

(2) Production growth rate is assumed to be 4.73 % in a year. This is based on the assumption that the production in 2006/7 will be double compared with that of 1991/92 in fifteen years. After the 2006/7 onwards, the same growth rate is applied.

(3) Population growth rate is set up at 3.42% per year based on the past trend in NWFP.

(4) Per capita requirement of wheat is assumed to be 129 kg per person in a year based on the data from the Provincial Food Department in NWFP.

(5) Per capita requirement of other grains is assumed to be 4.6 kg per person in a year. This is based on the data from the Perspective Plan (1988-2003).

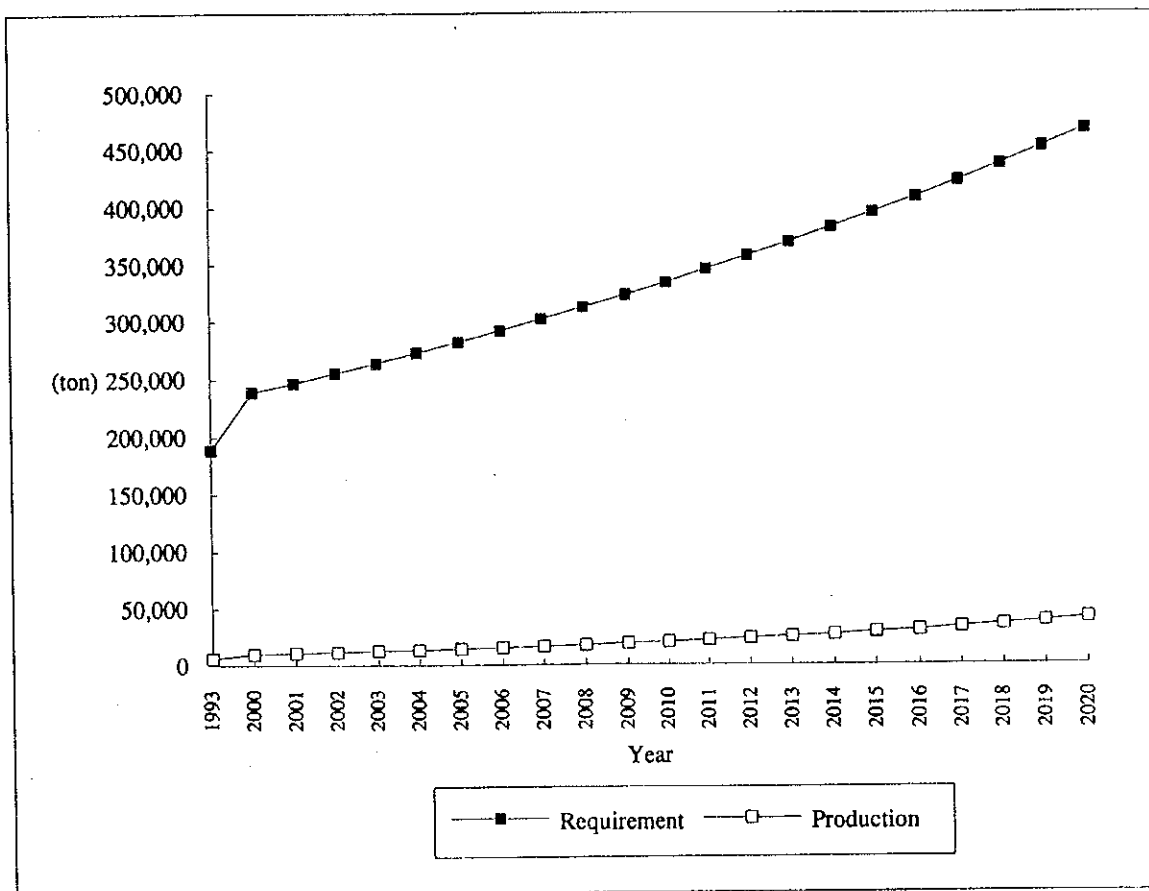


Fig. E.5.5.2 Food Balance (Edible Oil) in NWFP

- Conditions: (1) Production of oil seeds (rape and mustard seed, cotton seed, sesame and soyabean) in NWFP is 18,194 ton in 1991/92, of which rape and mustard seed accounts for 90.1% (16,479 ton).
- (2) Production growth rate is assumed to be 7.18 % in a year. This is based on the assumption that the production in 2001/2 will be double compared with that of 1991/92 in ten years. After the year 2001/2 onwards, the same growth rate is applied.
- (3) Population growth rate is set up at 3.42% per year based on the past trend in NWFP.
- (4) Per capita requirement of edible oil is assumed to be 11.4 kg per person in a year based on the Seventh Five Year Plan and Perspective Plan, 1988-2003.
- (5) Extraction rate on oil seeds is assumed to be 32 % in average based on the Report of the National Commission on Agriculture (1988). This rate is rather high compared with the actual rate.

ANNEX F

INSTITUTIONS

ANNEX-F

PROJECT ORGANIZATION AND IMPLEMENTATION ARRANGEMENTS

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ANNEX-F PROJECT ORGANIZATION AND IMPLEMENTATION ARRANGEMENTS

F.1 Present National Institutional Framework for Irrigated Agriculture

Institutionally the irrigated agricultural development is managed by two Ministries at the national level viz. the Ministry of Food & Agriculture and the Ministry of Water and Power. The Ministry of Food & Agriculture almost deals with all aspects of agriculture and food and their inputs and out puts except water whereas the later Ministry deals with development of water resources only besides power development. Any water resources development project, therefore, primarily lies under the jurisdiction of Ministry of Water and Power and has almost no concern with the Ministry of Agriculture. Pakistan being in the semiarid zone, its agriculture is dependent on artificial irrigation to the extent of 90%. All other agricultural activities including inputs such as fertilizers and pesticides, marketing, price regulation, research and extension, land leveling, on-farm water management and farmers' association etc. are the responsibility of the Ministry of Food & Agriculture.

The Ministry of Water and Power is therefore a single input Ministry so far as agriculture is concerned and develops this resource both at the macro and micro level quite independent of the Ministry of Agriculture. At the macro level it deals with the resource through an independent institution of WAPDA (Water and Power Development Authority) and at the micro level by coordinating the activities of the Provincial Irrigation Departments of the four provinces of NWFP, Punjab, Sindh and Baluchistan.

The drainage problems created as a result of artificial irrigation are mostly handled by WAPDA through SCARP (Salinity Control and Reclamation Projects) Programme. The flood control projects on the other hand are also dealt with by the Ministry of Water and Power through its Federal Flood Commission who normally coordinate the activities of Provincial Irrigation Departments and sanctions various flood protection projects. Both the Ministries are quite independent of each other with very little coordination.

At the provincial level also the position remains the same between the departments of food and agriculture and irrigation and power which position permeates down to the field level. The completely stratified vertical heir-archel system has an inbuilt disadvantage for integrated agricultural development and is one of the major factors in having much lower efficiency in terms of agriculture productivity per unit of water

consumption. In almost all the new irrigation projects the Ministry of agriculture or the agriculture department of the provincial government comes into action only after the irrigation facilities have been completed and thus it takes a long time for the lands to develop their optimum production capacity even at much lower level of productivity.

The Ministry of water and power some times undertake irrigation projects even at the micro level within the provinces such as the Chashma Right Bank Gravity Canal, the Pat Feeder Canal and the Pehur High Level Canal and the provincial governments agree to such undertakings because of the incentive that these will be financed by the Federal Government. In such cases the coordination and investment efficiency further drops as is evident from the example given below.

F.2 Past Lessons from C.R.B. Gravity Canal Irrigation Project

F.2.1 Observation

During the presentation of phase I field study progress report on the C.R.B. 1st Lift Irrigation Project to the provincial government certain constraints in the development and operation of the project were high lighted by the Study Team based on observations in the field and construction of C.R.B. gravity flow canal. Briefly these constraints during development and operational stages were :

(1) Implementation Schedule and Progress at development Stage

The present gravity canal which is quite similar to the lift canal was started in 1978 and was to be completed by 1985. Because of various constraints such as inadequate financial allocations by the federal government due to competing demand, lack of coordination among the various provincial and federal institutions, complicated procedure in loan agreement, appointment of consultants and contractors, and lack of interest by the provincial government departments considering the project to be the federal responsibility, only stage I and stage II of the project have been completed till 1992. These two stages constitute 50% of the work and will irrigate only 27% of the new area. The stage III is now scheduled to be completed in 7 years starting from fiscal year 1994-95. However looking at the past record and the progress since 1991, it is likely to take at least 10 years taking the completion target to 2004-2005. Thus the project which was scheduled to be completed in 7 years will be taking 26 years. Besides the delays in completion of the project cost has increased from Rs. 1,500 million to Rs. 12,000 million almost eight times.

(2) Constraints in the Project Implementation

1) Financial

The major constraint in the timely completion of the canal and distribution system has been the lack of timely availability of financial resources for the project. This problem is not only specific to this project but is common to most of the projects in the country. The scheduled provision of finances is never provided in the annual budget because of the gape between resources and demand at the time of budget preparation. Even after the budget, when the ways and means position can not provide the funds according to budget or some emergency like flood or draught occurs requiring diversion of resources, an ad- hoc cut to all the projects is applied which further reduces the funds availability and affects the progress.

The international financial agencies also split the project in stages and for each stage separate financial agreements are signed requiring separate appointment of consultants, preparation and updating of feasibility studies, detailed designs and a long procedure of tendering and appointment of consultants. C.R.B. gravity canal is a typical victim of such delays.

2) Lack of Coordination

Coordination is probably one of the most important factor in development of agricultural projects. It needs coordination of the implementation agency primarily with the department of irrigation and agriculture research and extension. It also needs coordination with the beneficiaries, credit agencies, forestry, fisheries, agricultural supply organizations, marketing institutions, rural development organizations & communication etc. to optimize benefits and to develop the lands to its optimum production in the minimum possible time. Unfortunately the water and power development authority (WAPDA) a Federal agency did not have any significant coordination despite the fact that four coordination committees at the provincial, divisional and district level were instituted. The lack of coordination is inherent in the vertical heirarchel system and centralized decision making. For example a decision at the divisional committee level could not be implemented because it had to be ratified by the concerned department at the provincial/federal government level who either delayed the decision or differed with it resulting into non implementation of the decision.

3) Institutional Inefficiency and Lack of Interest

C.R.B. gravity canal project is being implemented by WAPDA - a federally controlled statutory organization which is not directly responsible to the provincial government. This project was one of the medium priority project for the WAPDA and therefore proper attention could not be paid by them. There were design delays, contractual delays, approval delays, delays in appointment of consultants and contractors and frequent changes in management and staff. Further since the beneficiaries belonged to a province who did not have a strong voice at the federal level, the timely completion of the project was only of secondary priority to the federal institution. Since the provincial irrigation department was weak in qualified and experience manpower, the provincial government had no alternative but to let WAPDA be the executing agency besides the incentive of federal budgeting. In future, however, the federal budgeting will no longer be available for the provincial projects as stated by the Planning Commission.

F.2.2 Other Development Requirements

Besides the construction of water conveyance system, an agricultural development project needs land leveling, provision of farm inputs, rural infrastructure development, availability of machinery and farm labor, institution of farmers' organization etc. which are lagging far behind and therefore maturing the project to obtain even partial benefits will take at least 20 years.

F.2.3 Constraints at the Operation & Maintenance Stage

The constraints highlighted at the O&M stage with particular reference to institutional frame work (included in the Interim Report) were :

- a) Low population density resulting into scarcity of labor or necessitating introduction of farm mechanization.
- b) Limited financial capacity of the farmers for the development of irrigated agriculture will require financial assistance. However, because of low produce index value of their lands at present, some institutional intervention will be necessary to enable them to take advantage of credit facilities available from financial institution such as placement of a revolving fund at the disposal of the Agriculture Development Bank to be supervised by the Project institution.
- c) The farmers knowledge and experience on modern intensive farming including

use of improved seeds, fertilizers, agro-chemicals, livestock improvement, etc. need to be up dated through personal and intensive advice and the required institutional support.

- d) The marketing knowledge and framework is not available in the Study Area. The communication facilities are virtually non existent. These facilities will have to be provided as an integral part of the Project to obtain full developmental results.
- e) Agriculture support services including farmers organizations, management of irrigation water distribution, extension of agricultural technology, distribution of agricultural credit, etc. are grossly insufficient to accrue the prospective irrigation development benefits even in the present C.R.B. gravity canal command area and there appear to be no efforts made to improve the same.
- f) Disorganized and non-coordinated activities of the various agencies such as WAPDA irrigation, agriculture, on farm water management, rural development for the current C.R.B. gravity canal project have resulted into low density of minors, sub-minors and water courses, disorganized water distribution, non adherence to cropping pattern given in the original plan, improper use and waste of water at farm level, low participation of farmers, and construction of roads as per political requirement without any regard to their economic requirement. The coordination committee at various levels have failed to respond to the requirements of the project.
- g) In addition to the present constraints, another serious constraint is being created by using the CRBC system according to the age old inefficient and inflexible supply based irrigation system where as the canal is designed for most productive crop based irrigation system.

In conclusion it was emphasized upon the provincial government that in order to obtain high agriculture production through irrigation over maximum land, giving employment to people and raising their standards, an active and well coordinated institution was needed. Success of all investments and deployment of resources rely on well organized operation and maintenance and therefore a strong and proper institution was required to be planned.

F.3 Institutional Study Activities

The provincial government after accepting the view point of Study Team on these

issues requested the Government of Japan to undertake further study in this regard as a part of the Feasibility Study for the Project to enable them to improve the institutional framework both for the construction and operation of the Project. The Government of Japan responded positively and provided the institutional expert for the Study. The institutional study has been designed to be undertaken in three steps at this time. In step I, a preliminary concept of an institution for the Project was conceived and a questionnaire was prepared before the start of the study. The questionnaire along with summary of the Project and constraints as given in the interim report were circulated to various federal and provincial departments as well as private institutions dealing with the management aspects of the development in the country.

Meetings were arranged with top bureaucrats and professors of these institutions. The following departments and agencies were contacted by writing letters to them giving details :

1. Ministry of Water and Power, Government of Pakistan
2. Organization and Methods division of the Government of Pakistan
3. Establishment Division of Government of Pakistan
4. Planning Division of Government of Pakistan
5. World Bank
6. Asian Development Bank
7. Lahore University of Management
8. WAPDA
9. Irrigation Department of Government of Punjab
10. International Irrigation Management Institute currently working on the possibility of crop based irrigation management in Pakistan (CRBC and Swat canal system)
11. Irrigation Department of NWFP
12. Agriculture Department of NWFP
13. Planning, Development & Environment Department of NWFP
14. Pakistan Academy of Rural Development
15. Finance Department of NWFP
16. Services and General Administration Department of NWFP
17. Chief Secretary, NWFP
18. Senior Member, Board of Revenue, NWFP
19. Commissioner, D. I. Khan District Division
20. Deputy Commissioner, D. I. Khan District
21. Two members of provincial assembly from D. I. Khan District

22. President, Chamber of Farmers, D. I. Khan District
23. International Consultants on water sector development
24. Asian Development Bank, Islamabad Office
25. World Bank, Islamabad Office

On arrival of the JICA Team for the phase II field study, the step II of the institutional study was commenced through physical contracts by the Study Team with the above departments and their views obtained.

In the step III of the institutional study, two questionnaires were designed and distributed among the farmers and the district level development departments. Separate meetings were held with farmer beneficiaries, chairman and members of the twelve union councils of the benefited area at Chahkan, Gara Isa Khan and Yarh etc.

The meetings, attended by a large number of big and small farmers and chairman of the union councils, were given a briefing about the Project, its economic effects on their future and their liabilities towards operation and maintenance cost of the Project. They were also briefed about the questionnaires and the proposal for project institution.

Two meetings were held on two consecutive days with 24 nation building departments in the district concerned with the Project Area and their views were obtained in the meetings and later through the questionnaires.

In the 2nd field study (June to September, 1994) more meetings were held with farmers of the remaining union councils in the project area in the same way as before and questionnaires were distributed for obtaining their views.

Meetings were also held with the national building departments of D. I. Khan district individually and their views obtained on the problems that could impede the progress on the C.R.B. Lift Irrigation Canal Project and the recommended institutional framework for this project. The following departments directly concerned with the project were contacted by the team.

- | | |
|-----------------------------|---------------------------------|
| 1. Irrigation | 2. Agricultural Research |
| 3. Agricultural Extension | 4. Agricultural Engineering |
| 5. On-Farm Water Management | 6. Soil Conservation |
| 7. Animal Husbandry | 8. Food |
| 9. Cooperative | 10. Agricultural Dev. Authority |

- | | |
|--------------------------------|------------------------------------|
| 11. Fruit & Vegetable Board | 12. Forest Department |
| 13. Wild Life | 14. Fisheries |
| 15. Building Department | 16. Highways department |
| 17. Public Health Engr. Deptt. | 18. Health Deptt. (Headquarters) |
| 19. Department of Industries | 20. Education Department (Schools) |
| 21. Population Welfare | 22. Local Govt. & Rural Develop. |
| 23. Revenue Department | 24. Dera Development Authority |

The above 24 provincial departments at the district level fall under 12 separate Ministries at the provincial level viz (i) Irrigation, (ii) Agriculture, (iii) Food, (iv) Board of Revenue, (v) Forest, (vi) Communication & Works, (vii) Public Health Engineering, (viii) Industries, (ix) Population Welfare, (x) Local Government & Rural Development, (xi) Health and (xii) Education and are completely independent of each other. The federal agency of WAPDA is responsible for construction of CRBC gravity canal and electrification and the Agriculture Development Bank is to provide loan facilities to the farmers. These departments employ 712 technical staff and 4,515 supporting staff excluding the staff of hospitals and schools related to the Project Area.

Staff Strength of Federal & Provincial Agencies at D. I. Khan

Item	No. of Agencies	Technical	Administrative	Total
Federal	2	217	516	733
Provincial	24	495	3,999	4,494
Total	26	712	4,515	5,227

Excludes health (except D. I. Khan hospital) and teachers in education department.

It can be seen from the above table that technical staff is limited to 11% and 89% is administrative staff out of which about 52% is grade 4 and below.

The Provincial budget excluding education is spent as follows (1992/1993)

	Rs. in Million		
	Revenue	Development	Total
Establishment	135.7 (72.76%)	13.3 (19.1%)	149.0 (58.2%)
Utilities	11.3	1.8	13.1
Others	39.5 (21.2%)	54.4 (78.3)	93.9 (36.7%)
Total	186.5	69.5	256.0

The detailed activities of the provincial organizations is given in Table F.3.1 whereas details of staff and budget is at Table F.3.2 to F.3.7. The organization charts can be seen at Fig. F.3.1 to F.3.2.25.

F.4 Coordination Issues and Counter Measures

The four coordination committees viz PSCC. (Project Supervision and Coordination Committee) at the federal level, PCC. (Project Coordination Committee) at provincial level, PMC. (Project Management Committee) at divisional level and DPCC. (District Project Coordination Committee) at district level are given in Table F.4.1 along with their basis of establishment and their aims and objectives. These committees have been established since 1985 and earlier and have hardly achieved any meaningful coordination as can be seen from subsequent response of the 24 coordinating departments.

Views of Provincial District Level Agencies on Coordination Issues

As stated before the 24 district level development departments were called for a joint meetings under the chairmanship of Deputy Commissioner (the over all administrative head of the district).

They were given a briefing about the scope of the project, the preliminary layout of the feeder canal, the pumping site and the main canal with its distribution system and its drainage problems. They were also informed that this being a very expansive project involving 60 feet lift (20 meters including friction losses) will result into high water rates per acre of irrigation than gravity canal (gravity canal rates are estimated at Rs. 138 per acre-foot of water). Thus the O&M costs which have to be paid by beneficiaries would be almost twice or thrice of the gravity flow canal. Because of such high costs the water under this project has to be used judiciously and therefore high delta crops such as rice will have to be avoided. Instead crop with high profitability and low water consumption have to be encouraged. This will only be possible if water rates per unit of water consumption are introduced instead of present rates per unit of crop area. The introduction and realization of such rates would be possible if operation of the distribution system at distributary head is transferred to the farmers association. They were also informed about the delay in the completion of C.R.B. gravity canal and the lack of coordination between the various departments.

They were then requested that in view of their experience they should give their independent views irrespective of their departmental policy on the questionnaire

already distributed among them. Beside, they may give their departmental strength at the district level along with their annual revenue and development budget. Subsequently detailed meetings were held with each of the provincial departments and the questionnaire retrieved from 36 respondents. The findings of these meetings and response are tabulated in Table F.4.2 to F.4.6.

The meetings with the district level agencies and their response to the questionnaire can be seen Table F.4.3 that of the 24 departments 11 departments showed no coordination interest with any irrigation project. Of the remaining 13 departments 7 coordinated with C.R.B. Lift Irrigation Project only. 5 departments stated to have coordinated with C.R.B. gravity canal, 4 with on-farm water management and 7 with Chashma command area management project. The interesting aspect is that agriculture research organization and the Local Government & Rural Development Department coordinated with the C.R.B. Lift Irrigation Project only because the JICA consultants strongly associated them with their work as their counterparts.

The usual coordination instrument (Table F.4.4) used is personal contact 64%, liaison officer 11% and committees 14%. This clearly shows that the coordination committees have not been a success on the C.R.B. gravity canal project.

69% of the respondents (Table F.4.5) stated that they were dissatisfied with coordination committees because such committees could neither give any solution nor they could make any implementable decision.

In suggesting counter measures for effective and integrated approach for C.R.B. 1st lift irrigation project (Table F.4.6) 69% of the respondents showed the establishment of an autonomous new body as their first priority and 17% as their second priority. Only 17% showed strengthening of the existing department and 14% strengthening of the coordination activity as their 1st priority.

Each department is working independently of the other having no consultation and very little contact with the other departments at the time of planing and implementation of the project under them. In addition, most of the district agencies are having neither any programs nor any plans for the development of project area in their respective jurisdictions.

F.5 Findings

F.5.1 Views of National and International Experts

The interviews with about 25 national and international experts including bureaucrats, academicians, politicians, World Bank and ADB consultants revealed that 90% of them were in favor of associating the farmers and beneficiaries with all the stages of the project including planning, implementation, operation and maintenance of the project.

It is also the view expressed in the recent World Bank study "Irrigation & Drainage: Issues and Options" of August 31, 1993 which strongly advocated the formation of farmers organizations and public utility around a canal command area as a unit and such a system be spread over the entire country turning each canal command area into independent utility with farmers associations as their clients. However on a new project like the one under subject it will not be possible to have public utility also in the private sector as no development has taken place as yet and therefore a mix of the public and private sector will be more appropriate.

Regarding the coordination between various departments it was strongly felt that such coordination is absent and it will be very hard to achieve coordination in the present vertical hierarchical system.

On this subject also about 90% including the departments of provincial agriculture and irrigation, were of the opinion that a strong independent authority to be set up under provincial legislation would be extremely effective to develop the project in the shortest possible time and operate the same efficiently with the help and cooperation of the farmers associations. By and large they agreed with the preliminary concept of the authority to be called Chashma Right Bank Development Authority.

F.5.2 Meetings with Provincial and District Level Agencies

From these meetings and response to the questionnaires it is clearly understood that most of the district level departments do not consider that the C.R.B. lift canal and the irrigated area under the same could be developed on fast track basis under the existing institutional framework. It was felt that presently each department is working independent of the other having no consultation and very little contact with the other departments at the time of planning and implementation of the projects under them. In addition most of the district agencies are having neither any program nor any plan for the development of the Project Area in their respective jurisdiction. As can be seen

from Table F.4.7 only 14% thought that strengthening of the existing coordination system would be able to provide the necessary coordination whereas 69% recommended the setting up of a new independent authority for the project implementation and its ultimate operation. They were also of the opinion that the operation of the canal according to crop water requirements would not be possible under existing institutional arrangements nor it would be possible to realize much higher water rates from the farmers of C.R.B. gravity and lift canal as against other canal systems in the province. It was felt that the water rates have to be rationalized on the overall provincial basis to meet the operation and maintenance charges for the canal system put together which was of course a difficult task to perform in the present political system. The view at the provincial level, however, was that the project should be financially viable and should not be subsidized from other provincial revenues. To achieve this objective it would be necessary that a separate independent institution is set up for the project to deal with it quite independent of other canal systems. To ensure the rationalization of higher water rates the authority has to go into individual agreements with all the farmers before the construction of the project that they would pay for operation and maintenance cost of the system. The consensus of opinion was that in order to develop the project in the fastest possible manner, distribute the water according to crop water requirements and realize the abiana according to rationalized rates through farmers' associations, the setting up of an independent institution would be the only solution.

F.5.3 District Organization and Staff

The 24 district level agencies and 2 federal agencies employ 712 technical staff and 4,515 administrative staff totaling to 5,227 against the proposed strength of 312 authority employees. The authority of course would be employing consultants and using the farmers' associations for the work which is presently being carried out by the various departments and would therefore be able to carry out their responsibilities more effectively through small well educated and well coordinated selected staff for the Project Area.

F.5.4 Budget Utilization

It has been indicated earlier that at the district level about 72.76% of the revenue budget and 58.2% of the overall budget including development is spent on establishment. This appears to be un-proportionally high expenditure and the position can be reversed if a small effective organization is set up to carry out the same work far more effectively.

F.5.5 Farmers' Concern

Through the meetings with farmers and union councilors the following issues were observed :

- a) The majority of the farmers were not satisfied with working of the nation building departments and complained that they were never consulted about the development activity by these departments in their villages.
- b) Complaints about the wastage and pilferage of funds were common.
- c) A change from the existing system of independent approach by line departments to a comprehensive integrated approach for development of the C.R.B. lift irrigation project area was welcome by the farmers.
- d) The farmers very much wanted to be made a part of the development planning and implementation at all levels.
- e) Contrary to the irrigation department view that farmers will not pay higher water charges, the farmers fully agreed and were prepared to sign agreements in advance to pay the water charges for the operation and maintenance of the project despite the fact that the lift canal water charges will be much higher than gravity flow canal charges. They however emphasized that water availability should be ensured to mature the crops.
- f) The farmers agreed that the formation of farmers association at distributary/minor level will be useful and could work with the support of the government to operate the distributary.
- g) The farmers when questioned about the collection of water rates with technical support of administrative authorities of the project on the crop basis had mixed feeling as they could not comprehend the volume and type of work.
- h) The farmers and even union council members were strongly of the view that the farmers associations should be non political and should be independent of the union councils as it was an economic activity in the interest of all the farmers where as the union councils were divided between various political parties.

- i) The formation of the executive committees of the farmers associations should be by consensus of all the big and small farmers under the distributary/minor irrespective of the size of their holdings. However it will be more appropriate to organize farmers association at the water course level and at minor level and these association should send their chief representatives to the distributary level farmers association.

F.6 Institutional Development Plan

F.6.1 Concept

From the constraints and findings given above it is evident that the present institutional system can not respond to the requirements of the project with particular reference to the following four issues :

- 1) Development of the project in an integrated manner within the scheduled time and estimated cost.
- 2) Operating the system in response to the crop water requirements against the present supply based practices.
- 3) Making the farmers and the beneficiaries to participate in the planning, development and operation of the project through water course and distributary level farmers' association.
- 4) Recovery of much higher water charges (on the basis of water consumption) against the present nominal charges on the other irrigation systems.

Its repetition with any kind of improvements and adjustment may have only a marginal effect on the construction of the project.

It is therefore proposed that the C.R.B. lift irrigation project should be handled through a different approach than the present line departments. The most acceptable approach is that there shall be an independent statutory authority created through an act of the provincial government to carry out the planning, development and operation of the project through the involvement of farmers association. The farmers' associations will need a strong technical and legal support in terms of advisory services on the one hand and implementation of their decision through legal framework on the other. The authority should be responsible for most of the development activity in the project area including construction of canal, distribution system, infrastructure facilities, land leveling , drainage system, agricultural research and extension, provision of inputs such as fertilizers and pesticides development of

marketing system, marketing growth centres, availability of credit facilities etc. directly or through farmers' associations and other agencies. The farmers should be associated in all decision making and should have a very close liaison with the experts of the authority. It is proposed that the authority should be set up before detailed design of the project is taken up so that the farmers' associations could be consulted during such detailed design.

F.6.2 Outline of Chashma Right Bank Development Authority

The authority, to be called Chashma Right Bank Development Authority with Headquarters at D. I. Khan, shall be constituted under an act of the provincial parliament for the integrated development of the Chashma Right Bank 1st lift irrigation project with the following composition :

1. Chairman
2. Member Irrigation
3. Member Agriculture
4. Member Socio-Economic Development
5. Advisor Farmers' Representative
6. Advisor Financial Institute's Representative

Under each of the members for irrigation, agriculture and socio-economic development there shall be a department set up to be manned by volunteer experts invited and selected from amongst the experts of provincial/federal departments for a period of five years. The terms and conditions of service in the authority should be far more lucrative than the department so as to attract the best manpower. Once they join the authority they should have no choice to return to the department without the express permission of the authority for a period of five years.

The authority should have the minimum key staff only. During development stage they should mostly utilize the services of consultants so that they do not carry surplus staff to operation stage. The authority should be funded by the provincial government by passing the international loan directly to the authority and making provision for social welfare programme in the provincial budget. The funds for development should be provided strictly in accordance with the construction schedule given in the approved project document.

The authority being autonomous in nature should make its own rules. It should be given legal powers under relevant acts for smooth performance of their duties such as

power under land acquisition act, under revenue act for acquisition of land and collection of revenues etc. Draft plan, organization chart and staff strength are given at Attachment F.1, Fig. F.6.1 and F. 6.2, and Table F.6.1 and F.6.2, respectively.

Although the authority would be set up for the development of C.R.B. lift irrigation project, the legislation should be so drafted that it can take over the development operation and maintenance of the distribution system under gravity flow canal at a later stage. On its success it shall also be able to replace the 21 nation building departments for D. I. Khan district and take over their activities. List of the departments along with their staff strength is given in Attachment F.2.

F.6.3 Institutional Arrangement

(1) Drafting and passing of act by the Parliament

Soon after the conceptual approval of the project, the act should be drafted for setting up of the Chashma Right Bank Development Authority on the lines of the Water and Power Development Authority and Thal Development Authority. The mode and tenure of appointment of chairman and members, financial powers and functions and responsibilities of the Authority both during development and operational stages should be clearly defined.

(2) Authority Core Body

Soon after the legislation the authority core body should be set up to oversee the detailed design of the project, to organize farmers' associations and to oversee the planning of the infrastructure facilities. The core body of the authority should be :

1. Chairman
2. Members irrigation, agriculture and infrastructure development.
3. Superintending engineer design and planning with 4 senior engineers.
4. Directors adoptive research and seed development, infrastructure.
5. Land acquisition collector.
6. director finance.
7. Assistant Director extension with five extension advisors.

As the work picks up, the authority should gradually expand and appoint advisor from farmers associations after first five distributary level farmers' associations of 25 associations have been organized and an advisor from financial institution after the loan has been sanctioned.

(3) Schedule of transfer of existing department duties

Ideally the functions, duties, assets and responsibilities of all the 21 departments to be replaced by the authority should be transferred to the authority immediately on setting up of the authority to have a clean break from the present system to the new system. This may, however, not be possible and therefore, a gradual transfer of functions in a smooth manner to help the authority to establish on sound footing on the one hand and absorb the surplus staff of the departments in other districts on the other, may be desirable. The mode of transfer should be that those existing departments which are purely developmental in nature could be transferred much earlier than those which have operational responsibilities. Such departments would be agriculture research and extension along with their assets including offices, residences, and research farms to be used by the authority. Other departments such as wild life, fisheries, Dera Development Authority, rural development, fruit and vegetable board, agricultural development authority, soil conservation etc. which are not very active at present could be taken over in the second stage when the C.R.B. development authority has sufficiently strengthened itself to take these responsibilities. Departments like irrigation, on-farm water management, animal husbandry, food, cooperative, forest, public health engineering, industries, population welfare etc. should be taken over in the third phase so that the authority takes over all the developmental functions in the district within one year from the date of setting up of the core body.

Soon after the setting up of the authority it should activate its agriculture wing to help formation of farmers' associations within the stage 1 and 2 of the C.R.B. gravity canal and the lift canal so that the farmers are organized to use the water according to crop water requirements on the gravity canal and help in planning and design of the main lift canal.

The Water and Power Development Authority should transfer the operation of distributary head regulators upto Stage II of the gravity canal to C.R.B. Development Authority to rationalize the water supply in accordance with the crop water requirements on 10 daily basis and enforce the cropping pattern given in the project document. any slackness in such rationalization will not only distort the cropping pattern and the inherent disadvantages but will also create shortages at the tail after the completion of the gravity canal project. In the long run the control gates of all distributaries should be transferred to C.R.B. Development Authority with WAPDA to oversee that these are operated according to their share and that the province of

Punjab gets its share at the provincial boundary.

(4) Transfer of Rod Kohi System

In order to optimize the utilization of water resources, the rod Kohi system, currently operated by the district administration through irrigation department, should also be transferred to the authority so as to utilize this resource in conjunction with the two canals and also plan for its utilization on upstream areas beyond the lift canal boundary as the existing rights are surrendered in favor of perennial irrigation system. The authority will not only plan utilization of Rod Kohi water for irrigation but will also plan and implement the flood control measures which will become all the more necessary when the lands utilizing this water come under perennial irrigation. A preliminary schedule of such additional responsibilities is given in Attachment F.3.

(5) Operating the System According to Crop Water Requirements

As stated elsewhere currently all canal systems in the country are operated on supply based system irrespective of crop water requirements. However, with the development of sweet ground water in certain zones a flexible supplemental source of irrigation became available to the farmers which not only fulfilled the crop water demand but also helped in increased intensity of irrigation. In saline ground water zones the supply based irrigation system continues with low productivity and frequent distortion of water utilization.

In D. I. Khan the ground water is saline and therefore the canal has been designed according to crop water requirements.

Since the existing irrigation departments are accustomed to supply based irrigation system it has not been possible for them to organize the utilization of frequently varying water supply in C.R.B. gravity canal to satisfy the crops demand. International Irrigation Management Institute (IIMI) on the request of Government of Pakistan carried out some studies in C.R.B. gravity canal area and upper swat canal area. Due to shortage of time and some lack of coordination they could not make conclusive recommendations.

The one conclusion that can be read between the lines is the demand based irrigation system can only be operated by the farmers themselves. One water course which was allowed to be operated by the farmers themselves showed that the water releases closely followed the crop demand curve. Although such a small sample can not be

considered to prove the success of such an approach but the examples of other countries such as Japan and even the central Asian countries show that the best way of water utilization according to the crop water requirements would be through farmers' associations.

The C.R.B. development authority will therefore have to give high priority to organize farmers' association at the distributary and water course level. To train such associations, advisory services should be provided by the authority to help them in devising a cropping pattern among the farmers and making a water budget for each six months of the year. Once the budget is approved by the authority in the light of overall water availability the supply of water on terminal dates has to be ensured. The distributary level farmers' association will then be responsible for further distribution among the water course associations which in turn will be responsible for water distribution among the farmers.

To operate this system the most important role will be played by the agricultural advisor at the distributary level and therefore he has to be a highly qualified and well trained person.

In order to involve the farmers fully and to give them a sense of ownership, the operation and maintenance of the distributary should be completely transferred to the distributary association with the authority only controlling the head gates.

Further the association may be charged on the basis of water released from the head gate of the distributary and they may fix the water rates for each crop according to its consumptive use. For example the water rates for sugarcane using 81" of water may be 4 1/2 times the water rates for wheat using 18" of water only. In this way they will be able to control the cropping pattern to low delta crops.

(6) Setting up of Special Project Unit for Distributary Development Programme

It is further proposed that a special project unit should be set up for the development of one of the distributaries (Disty 5) of the gravity canal in accordance with the new approach. The draft proposal is given in Attachment F.4. This unit will not only test the viability of the new approach but will also be of great help to implement the new development approach over the whole of the Chashma Right Bank Lift Irrigation Project in the 1st instance and over the Chashma Right Bank Gravity Canal when it is taken over in stages.

TABLES

Table F.3.1 Outline of Provincial Department Activities in D.I. Khan (I/3)

No. Department / Agency	Mandate	On-Going Project		Future Plan	
		Project Name & Activities	Project Cost (Rs. Million)	Project Name & Activities	Project Cost (Rs. Million)
1-1 Irrigation Department / Paharpur	Operation and maintenance of Paharpur canal, spurs, bund guide, etc.	(1) Restoration of Bund No 27 (2) Restoration 5 spurs (3) Operational maintenance of distributaries	16,000 30,000 46,000	Restoration of Bund No.27 Restoration of 5 spurs	16,000 30,000 46,000
1-2 Irrigation Department / Project Irrigation Division	Operation and maintenance of CRBC stage II command area	(1) CRBC Command Area Development Project		CRBC Stage III Project	
2. Agricultural Research Institute	(1) Breeding of high yielding, insect pest resistant cultivars of rice, wheat, millets, oilseeds, fruits & vegetables. (2) Devise a viable package of production technology for the newly evolved and existing cultivars of crops, fruits & vegetables	(1) Breeding, introduction, selection and hybridization of new varieties of cereals, oilseeds, fruits and vegetables (2) Synthesis of package of production technology.	11,000	(1) More expanded research on sugarcane rice fruits and vegetables (2) Researching the problem of Rod Kohi area.	20,000
3 Agricultural Extension	(1) Education of growers in adoption of package of production of crops fruits and vegetable. (2) Production of basic & certified seed of major crops.	(1) CRBC Command Area Development Project (2) CRBC Stage III Project	4,172	CRBC Stage III Project	4,172
4. Agricultural Engineering	(1) Supply of farm machinery in construction of small dams and field embankments for irrigation in the Rod Kohi area of D.I.Khan. (2) Technical & Financial assistance of growers in sinking of Tube wells (3) Technical assistance in the management of water erosion due to River Indus.	(1) Maintenance of Rod Kohi irrigation (2) Flood Management of tube wells (3) Assistance in drilling of tube wells			
5. On -Farm	(1) Establishment of water user associations (2) Water Courses Construction (3) Precision land levelling and training of water users.	On Farm Water Management Project i) water course construction ii) Water user association iii) Precision land levelling	76,138	On Farm Water Management Project. CRBC stage II	148,805
6. Soil Conservation Department	Execution of spurs, spill ways, land levelling, loose stone walls in order to minimize losses due to wind and water erosion	Wind and Water Erosion Management Project			
7. Livestock and Dairy Development	(1) Provide treatment and veterinary coverage to livestock against diseases control of parasitic diseases (2) Advising services to Livestock farmers (3) Genetic improvement of animals farm	Management of livestock diseases in the area through curative and preventive treatment.	15,598	(1) Opening of 4 veterinary dispensaries (2) Establishment of sheep farm (3) Establishment of Research Farm on Buffaloes	0,600 2,400 4,200 7,200
8. Food Department	(1) Receipt and storage of wheat & supply to flour mills (2) Supervision /checking rates of essential commodities	Routine activities		Enhanced procurement of wheat and other commodities due to accelerated production after commissioning of CRBC	
9. Cooperative Department	(1) Organization of Cooperative societies (2) Audit and supervision of credit recovery of loan	Routine activities			
10. Agricultural Development Authority	Procurement of seed and supply it to the farmers	Routine activities			

Table F.3.1 Outline of Provincial Department Activities in D.I. Khan (2/3)

No. Department / Agency	Mandate	On-Going Project		Future Plan	
		Project Name & Activities	Project Cost (Rs. Million)	Project Name & Activities	Project Cost (Rs. Million)
11. Fruit and Vegetable Development Board	Development of fruits and vegetables	(1) Improvement of fruit farms and orchards (2) Block plantation of fruit (3) Promotion and expansion of fruit & vegetable species		Special attention to the Development of Mango & Date Culture in the area	
12 Forest Department	(1) Linear plantation along canal and road (2) Farm forestry and forestry extension (3) Afforestation along CRBC Project stage II (4) Afforestation of state lands in D.I.Khan	Afforestation along CRBC Project Stage II	23.288	(1) Afforestation along CRBC Project II (2) Afforestation along CRBC Project stage III	23.288
13. Wildlife Department	(1) Protection management and conservation of wildlife in D.I.Khan (2) Development of wild life as a natural resource.	Implementation of NWFP wildlife Act 1975, Game Rules 1984, Falcon Rules 1981, and General Rules 1977		1. Development of Sheikh Buddin area as an ideal National park 2. Development of Dera - Darya Khan Bridge as a recreational site	
14. Fisheries Department	(1) Conservation of fish life (2) Enforcement of fisheries ordinance (3) Leasing of fishing sites of river Indus annually (4) Record of captured fish (5) Promotion of farm fish (6) Development of fisheries through artificial fish seed (7) Introduction of new technology of fish culture	Establishment of Fish nurseries center in D.I.Khan i) Fish Seed Production facilities ii) Expansion of fish seed iii) Production facilities iv) Rearing of healthy brood stock	6.779	1) Develop: of abandoned canal and seepage nullahs 2) Introduction and propagating of new species of carps fisheries in the area	9.500 35.500 45.000
15. Building Department	Construction and maintenance of government building of various provincial institutions	(1) Establishment of 30 primary schools (2) Construction of 36 class room (3) Establishment of 42 Primary school (4) Construction of 18 class room	9.456 5.004 16.162 2.934 33.556	(1) Establishment of 30 primary schools (2) Construction of 36 class room (3) Establishment of 42 Primary school (4) Construction of 18 class room	9.456 5.004 16.162 2.934 33.556
16. Highway Department	Construction and maintenance of public roads	(1) Improvement of D.I.Khan-Chashma road (2) Construction widening of B.T Road from chaudhwan to Kiri shamoza (3) Construction R-T Road from Gilloti to Hathala	60.000 30.251 29.322 119.573		
17. Public Health Engineering Department	Provide drinking water facilities to urban/rural areas	(1) Water Supply Scheme in D.I.Khan (2) Improvement & Extension of Water Supply to Darabin (3) Improvement & Extension of Water Supply Scheme	80.518 6.568 4.179 91.265	(1) Water Supply Scheme in D.I.Khan 2.Improvement & Extension of Water Supply to Darabin 3. Improvement & Extension of Water Supply Scheme	80.518 6.568 4.179 91.265
18 Health Department	(1) Provide curative and preventive treatment throaty hospitals, dispensaries, rural health centers and basic health unit etc. (2) Expanded program on Immunization (EPI) on various diseases (3) Monitoring the sanitation and pure food and drug supply to the public (4) Training of health personnel	(1) Completion of incomplete buildings and improvement BHU (2) Expansion of Zanana Hospital (3) improvement of DHQ Hospital (4) Continuation of new DHQ	10.000 13.000 14.000 170.000 207.000	(1) Completion of incomplete buildings and improvement BHU (2) Expansion of Zanana Hospital (3) improvement of DHQ Hospital (4) Continuation of new DHQ	10.000 13.000 14.000 170.000 207.000
19 Department of Industries and Mineral Development	Control and supervision of minerals.				

Table F.3.1 Outline of Provincial Department Activities in D.I. Khan (3/3)

No.	Department / Agency	Mandate	On-Going Project		Future Plan	
			Project Name & Activities	Project Cost (Rs. Million)	Project Name & Activities	Project Cost (Rs. Million)
20	Education Department	(1) Imparting education to the public in accordance with the Islamic ideology and the ideology of Pakistan (2) Enhance the literacy rate (3) Improvement of education quality through better teaching skills, monitoring and evaluation and better supervised examination	1. Construction of 7 class rooms in middle high school 2. Up gradation of 8 Primary school to middle status 3. Up gradation of 3 middle to high status	1.400 6.917 3.876 12.193	1. Improvement of accommodation facilities 2. Construction of 6 additional class rooms 3. Up gradation of 2 high school to high secondary	2.627 1.784 6.896 11.307
21	Population Welfare Department	(1) Motivation, IEC registration of eligible couples (2) Free medical aid, contraceptive and surgery, etc.	Routine activities	-		
22	Local Government and Rural Development Department	(1) Execution and implementation of developmental works in rural areas sponsored by member of provincial assembly in the district (2) Coordination with District Development committee in planning and implementation of Annual Dev. Program (3) Assist the Deputy Commissioner in rural works program in D.I. Khan.	(1) MPA sponsored scheme (2) MNA/Senator sponsor schemes (3) Income Generation Project, in refugees areas	20,000 5,000 30,000 55,000	Future plan is not yet prepared as the funds for coming year are not available and the MPA & MNAs have not yet identified the schemes of their respectable areas.	-
23	Revenue Department:	(1) District administration and revenue collection (2) Maintenance of land records	Routine activities	-		
24	Dera Development Authority	(1) Establishment of town ship in urban areas (2) Construction of urban roads, parks and other recreational facilities	Establishment of Dera town ship scheme, D.I. Khan Construction of roads, parks, sewerages system, electrification, drainage, water supply	10.053	1. Construction of urban road 2. Construction of Parks and recreational facilities.	2.021 8.032 10.053

Table F.3.2 Staff Composition of Provincial Departments and Agencies in D.I. Khan District

Agencies	(Unit : Number of staff)									
	Technical				Administrative and Supporting				Others	Grand
	Grade 20 & 19	18 & 17	16 - 11	Total	17	16-9	8-5	Total	4-1	Total
1. Irrigation Department/CRBC Paharpur	1	4	16	21	0	23	111	134	260	415
Irrigation Department/1st Lift	0	4	4	8	0	5	8	13	4	25
2. Agricultural Research	1	44	1	46	0	16	65	81	62	189
3. Agricultural Extension Department	0	27	0	27	3	7	46	56	65	148
4. Agricultural Engineering Department	1	0	2	3	0	7	46	53	64	120
5. On-Farm Water Management	0	9	21	30	1	3	26	30	53	113
6. Soil Conservation Department	0	2	0	2	0	0	6	6	11	19
7. Animal Husbandry Department	0	17	0	17	0	26	53	79	97	193
8. Food Department	0	0	1	1	0	2	17	19	57	77
9. Cooperative Department	0	0	7	7	0	1	20	21	5	33
10. Agricultural Development Authority(Agricultural Supply)	0	0	2	2	0	2	18	20	13	35
11. Fruit and Vegetable Development Board	0	3	0	3	1	1	16	18	36	57
12. Forest Department	0	1	1	2	0	3	66	69	9	80
13. Wildlife Department	0	1	2	3	0	2	6	8	39	50
14. Fisheries Department	0	1	4	5	0	1	5	6	32	43
15. Building Department	1	5	16	22	0	3	15	18	6	46
16. Highway Department	0	6	18	24	0	14	86	100	671	795
17. Public Health Engineering Department	1	11	37	49	0	9	51	60	38	147
18. Health Department, District Health Office	1	136	0	137	0	225	158	383	472	992
Head Quarter Hospital, D.I.Khan	8	60	51	119	1	16	60	77	154	350
19. Department of Industries and Mineral Development	0	0	5	5	0	0	6	6	3	14
20. Education Department, District Administration	1	27	30	58	0	25	55	80	100	238
School	6	256	206	468	0	1,050	2,950	4,000	1,575	6,043
21. Population and Welfare	0	7	1	8	0	11	63	74	33	115
22. Local Government and Rural Development	0	3	5	8	0	4	39	43	10	61
23. Revenue Department	0	1	0	1	10	48	190	248	178	427
24. Dera Development Authority	1	4	1	6	0	13	10	23	33	62
Total	22	629	431	1,082	16	1,517	4,192	5,725	4,080	10,887
Excluding staff of hospital and school	(0.2)	(5.8)	(4.0)	(10.0)	(0.1)	(13.9)	(38.5)	(52.5)	(37.5)	(100.0)
(%)	(0.2)	(7.0)	(3.9)	(11.1)	(0.3)	(10.0)	(26.3)	(36.6)	(52.3)	(100.0)

Source : Provincial departments and agencies in D.I.Khan

Table F.3.3 Staff Composition Share of Provincial Departments and Agencies in D.I.Khan District

Agencies	(Unit : %)													
	By Agency				By Staff				By Grade					
	Techni- cal Support	Admi. & Support	Others	Total	Techni- cal Support	Admi. & Support	Others	Total	20 & 19	18-17	16-9	8-5	4-1	Total
1. Irrigation Department/CRBC Paharpur	1.9	2.3	6.4	3.8	5.1	32.3	62.6	100.0	0.2	1.0	9.4	26.7	62.7	100.0
Irrigation Department/1st Lift	0.7	0.2	0.1	0.2	32.0	52.0	16.0	100.0	0	16.0	36.0	32.0	16.0	100.0
2. Agricultural Research	4.3	1.4	1.5	1.7	24.3	42.9	32.8	100.0	0.5	23.3	9.0	34.4	32.8	100.0
3. Agricultural Extension Department	2.5	1.0	1.6	1.4	18.2	37.8	44.0	100.0	0	20.3	4.7	31.1	43.9	100.0
4. Agricultural Engineering Department	0.3	0.9	1.6	1.1	2.5	44.2	53.3	100.0	0.8	0	7.5	38.3	53.4	100.0
5. On-Farm Water Management	2.8	0.5	1.3	1.0	26.5	26.5	47.0	100.0	0	8.8	21.2	23.0	47.0	100.0
6. Soil Conservation Department	0.2	0.1	0.3	0.2	10.5	31.6	57.9	100.0	0	10.5	0	31.6	57.9	100.0
7. Animal Husbandry Department	1.6	1.4	2.4	1.8	8.8	40.9	50.3	100.0	0	8.8	13.5	27.5	50.2	100.0
8. Food Department	0.1	0.3	1.4	0.7	1.3	24.7	74.0	100.0	0	0	3.9	22.1	74.0	100.0
9. Cooperative Department	0.6	0.4	0.1	0.3	21.2	63.6	15.2	100.0	0	0	24.2	60.6	15.2	100.0
10. Agricultural Development Authority(Agricultural Supply)	0.2	0.3	0.3	0.3	5.7	57.1	37.2	100.0	0	0	11.4	51.4	37.2	100.0
11. Fruit and Vegetable Development Board	0.3	0.3	0.9	0.5	5.3	31.6	63.1	100.0	0	7.0	1.8	28.1	63.1	100.0
12. Forest Department	0.2	1.2	0.2	0.7	2.5	86.3	11.2	100.0	0	1.3	5.0	82.5	11.2	100.0
13. Wildlife Department	0.3	0.1	1.0	0.5	6.0	16.0	78.0	100.0	0	2.0	8.0	12.0	78.0	100.0
14. Fisheries Department	0.5	0.1	0.8	0.4	11.6	14.0	74.4	100.0	0	2.3	11.6	11.6	74.5	100.0
15. Building Department	2.0	0.3	0.1	0.4	47.8	39.1	13.1	100.0	2.2	10.9	41.3	32.6	13.0	100.0
16. Highway Department	2.2	1.7	16.4	7.3	3.0	12.6	84.4	100.0	0	0.8	4.0	10.8	84.4	100.0
17. Public Health Engineering Department	4.5	1.0	0.9	1.4	33.3	40.8	25.9	100.0	0.7	7.5	31.3	34.7	25.8	100.0
18. Health Department, District Health Office	12.7	6.7	11.6	9.1	13.8	38.6	47.6	100.0	0.1	13.7	22.7	15.9	47.6	100.0
Head Quarter Hospital, D.I.Khan	11.0	1.3	3.8	3.2	34.0	22.0	44.0	100.0	2.3	17.4	19.1	17.1	44.1	100.0
19. Department of Industries and Mineral Development	0.5	0.1	0.1	0.1	35.7	42.9	21.4	100.0	0	0	35.7	42.9	21.4	100.0
20. Education Department, District Administration	5.4	1.4	2.5	2.2	24.4	33.6	42.0	100.0	0.4	11.3	23.1	23.1	42.1	100.0
School	43.3	69.9	38.6	55.5	7.7	66.2	26.1	100.0	0.1	4.2	20.8	48.8	26.1	100.0
21. Population and Welfare	0.7	1.3	0.8	1.1	7.0	64.3	28.7	100.0	0	6.1	10.4	54.8	28.7	100.0
22. Local Government and Rural Development	0.7	0.8	0.2	0.6	13.1	70.5	16.4	100.0	0	4.9	14.8	63.9	16.4	100.0
23. Revenue Department	0.1	4.3	4.4	3.9	0.2	58.1	41.7	100.0	0	2.6	11.2	44.5	41.7	100.0
24. Dera Development Authority	0.6	0.4	0.8	0.6	9.7	37.1	53.2	100.0	1.6	6.5	22.6	16.1	53.2	100.0
Total	100.2	99.7	100.1	100.0	9.9	52.6	37.5	100.0	0.2	5.9	17.9	38.5	37.5	100.0

Source : Provincial departments and agencies in D.I.Khan

Table F.3.4 Budget Allocation of Provincial Departments and Agencies in D.I. Khan District (1990/91 - 1992/93 Average)

(Unit : Rs.'000)

Agencies	Recurrent				Development				Grand Total			
	Establishment	Utilities	Others	Total	Establishment	Utilities	Others	Total	Establishment	Utilities	Others	Total
1. Irrigation Department/CRBC Paharpur	33,421.0	0	2,894.0	36,315.0	6,530.0	0	0	6,530.0	39,951.0	0	2,894.0	42,845.0
Irrigation Department/1st Lift	910.9	67.7	1.4	980.0	0	0	0	0	910.9	67.7	1.4	980.0
2. Agricultural Research	6,751.0	1,585.0	0	8,336.0	1,020.0	1,306.0	0	2,326.0	7,771.0	2,891.0	0.0	10,662.0
3. Agricultural Extension Department	8,472.2	2,448.6	784.7	11,705.5	0	0	0	0	8,472.2	2,448.6	784.7	11,705.5
4. Agricultural Engineering Department	10,556.1	0	6,734.5	17,290.6	0	0	0	0	10,556.1	0	6,734.5	17,290.6
5. On-Farm Water Management	2,611.7	1,383.9	1,803.6	5,799.2	897.3	0	0	897.3	3,509.0	1,383.9	1,803.6	6,696.5
6. Soil Conservation Department	476.8	0	385.9	862.7	0	0	0	0.0	476.8	0	385.9	862.7
7. Animal Husbandry Department	3,975.6	19.7	171.4	4,166.7	66.9	85.0	104.4	256.3	4,042.5	104.7	275.8	4,423.0
8. Food Department	1,462.3	0	106.9	1,569.2	0	0	0	0	1,462.3	0	106.9	1,569.2
9. Cooperative Department	1,041.9	0	43.8	1,085.7	195.7	0	0	195.7	1,237.6	0	43.8	1,281.4
10. Agricultural Development Authority(Agricultural Supply)	39.3	0	0	39.3	0	0	0	0	39.3	0	0	39.3
11. Fruit and Vegetable Development Board	198.5	0	0	198.5	0	0	0	0	198.5	0	0	198.5
12. Forest Department	4,146.3	33.2	3,037.8	7,217.3	830.1	0	1,428.4	2,258.5	4,976.4	33.2	4,466.2	9,475.8
13. Wildlife Department	619.3	34.3	70.0	723.6	101.7	32.0	140.0	273.7	721.0	66.3	210.0	997.3
14. Fisheries Department	545.3	649.1	120.7	1,315.1	0	269.3	118.4	387.7	545.3	918.4	239.1	1,702.8
15. Building Department	2,723.6	246.2	8.1	2,977.9	0	0	0	0	2,723.6	246.2	8.1	2,977.9
16. Highway Department	14,011.4	266.6	45.7	14,323.7	0	0	50,776.5	50,776.5	14,011.4	266.6	50,822.2	65,100.2
17. Public Health Engineering Department	646.0	183.3	0.9	830.2	0	0	89.1	89.1	646.0	183.3	90.0	919.3
18. Health Department, District Health Office	22,655.0	658.2	21,473.3	44,786.5	0	0	0	0	22,655.0	658.2	21,473.3	44,786.5
Head Quarter Hospital, D.I.Khan	11,981.4	4,796.5	498.6	17,276.5	0	0	0	0	11,981.4	4,796.5	498.6	17,276.5
19. Department of Industries and Mineral Development	175.0	0	0	175.0	181.7	0	0	181.7	356.7	0	0	356.7
20. Education Department, District Administration	6,789.9	190.2	1,193.7	8,173.8	0	0	0	0	6,789.9	190.2	1,193.7	8,173.8
School	112,811.6	340.5	4,407.8	117,559.9	0	0	0	0	112,811.6	340.5	4,407.8	117,559.9
21. Population and Welfare	1,025.3	23.7	386.3	1,435.3	2,059.3	36.8	424.8	2,520.9	3,084.6	60.5	811.1	3,956.2
22. Local Government and Rural Development	1,714.1	73.7	0	1,787.8	0	0	0	0	1,714.1	73.7	0	1,787.8
23. Revenue Department	9,695.8	3,407.1	234.4	13,337.3	397.0	97.1	3.8	497.9	10,092.8	3,504.2	238.2	13,835.2
24. Dera Development Authority	1,025.0	0	0	1,025.0	1,026.6	0	1,320.3	2,346.9	2,051.6	0	1,320.3	3,371.9
Total	260,482.3	16,407.5	44,403.5	321,293.3	13,306.3	1,826.2	54,405.7	69,538.2	273,788.6	18,233.7	98,809.2	390,831.5
Excluding staff of hospital and school	(66.6)	(4.2)	(11.4)	(82.2)	(3.4)	(0.5)	(13.9)	(17.8)	(70.1)	(4.7)	(25.2)	(100.0)
(%)	(53.0)	(4.4)	(15.4)	(72.8)	(5.2)	(0.7)	(21.3)	(27.2)	(58.2)	(5.1)	(36.7)	(100.0)

Source : Provincial departments and agencies in D.I.Khan

Table F.3.5 Budget Allocation Share of Provincial Departments and Agencies in D.I. Khan District (1990/91 - 1992/93 Average)

(Unit : %)

Agencies	By Budget Item			Total	By Contents			Total
	By Agency	Recurrent	Development		Establishment	Utilities	Others	
1. Irrigation Department/CRBC Paharpur	11.0	84.8	15.2	100.0	93.2	0	6.8	100.0
Irrigation Department/1st Lift	0.3	100.0	0	100.0	92.9	6.9	0.2	100.0
2. Agricultural Research	2.7	78.2	21.8	100.0	72.9	27.1	0	100.0
3. Agricultural Extension Department	3.0	100.0	0	100.0	72.4	20.9	6.7	100.0
4. Agricultural Engineering Department	4.4	100.0	0	100.0	61.1	0	38.9	100.0
5. On-Farm Water Management	1.7	86.6	13.4	100.0	52.4	20.7	26.9	100.0
6. Soil Conservation Department	0.2	100.0	0	100.0	55.3	0	44.7	100.0
7. Animal Husbandry Department	1.1	94.2	5.8	100.0	91.4	2.4	6.2	100.0
8. Food Department	0.4	100.0	0	100.0	93.2	0	6.8	100.0
9. Cooperative Department	0.3	84.7	15.3	100.0	96.6	0	3.4	100.0
10. Agricultural Development Authority(Agricultural Supply)	0.0	100.0	0	100.0	100.0	0	0	100.0
11. Fruit and Vegetable Development Board	0.1	100.0	0	100.0	100.0	0	0	100.0
12. Forest Department	2.4	76.2	23.8	100.0	52.5	0.4	47.1	100.0
13. Wildlife Department	0.3	72.6	27.4	100.0	72.3	6.6	21.1	100.0
14. Fisheries Department	0.4	77.2	22.8	100.0	32.0	53.9	14.1	100.0
15. Building Department	0.8	100.0	0	100.0	91.5	8.3	0.2	100.0
16. Highway Department	16.7	22.0	78.0	100.0	21.5	0.4	78.1	100.0
17. Public Health Engineering Department	0.2	90.3	9.7	100.0	70.3	19.9	9.8	100.0
18. Health Department, District Health Office	11.5	100.0	0	100.0	50.6	1.5	47.9	100.0
Head Quarter Hospital, D.I.Khan	4.4	100.0	0	100.0	69.4	27.8	2.8	100.0
19. Department of Industries and Mineral Development	0.1	49.1	50.9	100.0	100.0	0	0	100.0
20. Education Department, District Administration	2.1	100.0	0	100.0	83.1	2.3	14.6	100.0
School	30.1	100.0	0	100.0	96.0	0.3	3.7	100.0
21. Population and Welfare	1.0	36.3	63.7	100.0	78.0	1.5	20.5	100.0
22. Local Government and Rural Development	0.5	100.0	0	100.0	95.9	4.1	0	100.0
23. Revenue Department	3.5	96.4	4	100.0	73.0	25.3	1.7	100.0
24. Dera Development Authority	0.9	30.4	69.6	100.0	60.8	0	39.2	100.0
Total	100.1	82.2	17.8	100.0	70.1	4.7	25.2	100.0

Source : Provincial departments and agencies in D.I.Khan

Table F.3.6 Budget Availability by Staff of Provincial Departments and Agencies in D.I.Khan District (1990/91 - 1992/93 Average)

Agencies	Establishment Budget Per		Utilities & Other Budget Per		Total Budget Per	
	Technical Staff	All Staff	Technical Staff	All Staff	Technical Staff	All Staff
	1. Irrigation Department/CRBC Paharpur	1,902.4	96.3	137.8	7.0	2,040.2
Irrigation Department/1st Lift	113.9	36.4	8.6	2.8	122.5	39.2
2. Agricultural Research	168.9	41.1	62.8	15.3	231.8	56.4
3. Agricultural Extension Department	313.8	57.2	119.8	21.8	433.5	79.1
4. Agricultural Engineering Department	3,518.7	88.0	2,244.8	56.1	5,763.5	144.1
5. On-Farm Water Management	117.0	31.1	106.3	28.2	223.2	59.3
6. Soil Conservation Department	238.4	25.1	193.0	20.3	431.4	45.4
7. Animal Husbandry Department	237.8	20.9	22.4	2.0	260.2	22.9
8. Food Department	1,462.3	19.0	106.9	1.4	1,569.2	20.4
9. Cooperative Department	176.8	37.5	6.3	1.3	183.1	38.8
10. Agricultural Development Authority(Agricultural Supply)	19.7	1.1	0	0	19.7	1.1
11. Fruit and Vegetable Development Board	66.2	3.5	0	0	66.2	3.5
12. Forest Department	2,488.2	62.2	2,249.7	56.2	4,737.9	118.4
13. Wildlife Department	240.3	14.4	92.1	5.5	332.4	19.9
14. Fisheries Department	109.1	12.7	231.5	26.9	340.6	39.6
15. Building Department	123.8	59.2	11.6	5.5	135.4	64.7
16. Highway Department	583.8	17.6	2,128.7	64.3	2,712.5	81.9
17. Public Health Engineering Department	13.2	4.4	5.6	1.9	18.8	6.3
18. Health Department, District Health Office	165.4	22.8	161.5	22.3	326.9	45.1
Head Quarter Hospital, D.I.Khan	100.7	34.2	44.5	15.1	145.2	49.4
19. Department of Industries and Mineral Development	71.3	25.5	0	0	71.3	25.5
20. Education Department, District Administration	117.1	28.5	23.9	5.8	140.9	34.3
School	241.1	18.7	10.1	0.8	251.2	19.5
21. Population and Welfare	385.6	26.8	109.0	7.6	494.5	34.4
22. Local Government and Rural Development	214.3	28.1	9.2	1.2	223.5	29.3
23. Revenue Department	10,092.8	23.6	3,742.4	8.8	13,835.2	32.4
24. Dera Development Authority	341.9	33.1	220.1	21.3	562.0	54.4
Total	253.0	25.1	108.2	10.8	361.2	35.9
Excluding staff of hospital and school	301.0	33.2	216.2	23.8	517.2	57.0

Source : Provincial departments and agencies in D.I.Khan

Table F.3.7 Comparison on Budget Availability by Provincial Departments and Agencies in D.I.Khan District (1990/91 - 1992/93 Average)

Agencies	Establishment Budget Per		Utilities & Other Budget Per		Total Budget Per	
	Technical Staff	All Staff	Technical Staff	All Staff	Technical Staff	All Staff
	1. Irrigation Department/CRBC Paharpur	752	384	127	65	565
Irrigation Department/1st Lift	45	145	8	26	34	109
2. Agricultural Research	67	164	58	142	64	157
3. Agricultural Extension Department	124	228	111	202	120	220
4. Agricultural Engineering Department	1,391	351	2,075	519	1,596	401
5. On-Farm Water Management	46	124	98	261	62	165
6. Soil Conservation Department	94	100	178	188	119	126
7. Animal Husbandry Department	94	83	21	19	72	64
8. Food Department	578	76	99	13	434	57
9. Cooperative Department	70	149	6	12	51	108
10. Agricultural Development Authority(Agricultural Supply)	8	4	0	0	5	3
11. Fruit and Vegetable Development Board	26	14	0	0	18	10
12. Forest Department	983	248	2,079	520	1,312	330
13. Wildlife Department	95	57	85	51	92	55
14. Fisheries Department	43	51	214	249	94	110
15. Building Department	49	236	11	51	37	180
16. Highway Department	231	70	1,967	595	751	228
17. Public Health Engineering Department	5	18	5	18	5	18
18. Health Department, District Health Office	65	91	149	206	91	126
Head Quarter Hospital, D.I.Khan	40	136	41	140	40	138
19. Department of Industries and Mineral Development	28	102	0	0	20	71
20. Education Department, District Administration	46	114	22	54	39	96
School	95	75	9	7	70	54
21. Population and Welfare	152	107	101	70	137	96
22. Local Government and Rural Development	85	112	9	11	62	82
23. Revenue Department	3,989	94	3,459	81	3,830	90
24. Dera Development Authority	135	132	203	197	156	152
Total	100	100	100	100	100	100

Source : Provincial departments and agencies in D.I.Khan

Table F.4.1 Coordination Committees for CRBC Area Development

Name of Committee	Basis of Establishment	Aims/Objectives	Frequency of Meeting
<p>1. Project Supervision and Coordination Committee (PSCC) Chaired by Secretary, Ministry of Water and Power. (Comprise ranking executives of Ministry of Food, Agriculture and Cooperatives, NWFP, WAPDA and other concern agencies)</p>	<p>Agreed upon in the memorandum of understanding, signed by: 1. Authorized Representatives of Asian development Bank 2. Authorized Representatives of WAPDA 3. Authorized Representatives of Govt. of NWFP</p>	<p>1. To ensure the provision of all necessary inputs for the project and project related activities 2. To take up problems that have not been solved by the Project Coordination Committee</p>	<p>Meet as required but not less frequently than quarterly</p>
<p>2. Project Coordination Committee (PCC) Chaired by Additional Chief Secretary NWFP. (Members, ranking executives of concerned Provincial Agencies, Project Director CRBIP, Commissioner D.I.Khan)</p>	<p>-do-</p>	<p>1. To ensure that the activities of various provincial agencies related to Agriculture development are properly coordinated 2. That these activities are carried out complementary to the implementation of the Drainage component 3. To take up problems not solved by PMC</p>	<p>-do-</p>
<p>3. Project Management Committee (PMC) Chaired by Commissioner D.I.Khan Members: 1. Chairman District Council D.I.Khan 2. Deputy Commissioner D.I.Khan 3. Executive Engineer Irrigation D.I.Khan 4. Project Director On Farm Water Management, D.I.Khan 5. Director Agriculture(Extension) D.I.Khan 6. Director Agriculture Research D.I.Khan 7. Deputy Registrar Cooperative Societies D.I.Khan 8. Regional Manager Agriculture Development Bank of Pakistan</p>	<p>PC.1 of the project decision of PCC meeting held on 7/4/1985 in civil secretariat Peshawar</p>	<p>1. To coordinate the implementation of the project component 2. To monitor the progress of physical works as well as expenditure related to these works 3. To report the progress of implementation of various project component and expenditure, on them to see, PCC, CRBC, NWFP, P&D Department on quarterly basis or earlier if directed by PCC, NWFP on the existing progress report forms or on such forms as may be devised later on to meet requirement of ADB 4. To help PCC, NWFP in monitoring and evaluation of the project when ever required. 5. Any other function assigned by PCC, NWFP</p>	<p>-do-</p>
<p>4. District Project Coordination Committee (DPCC) Chaired by Deputy Commissioner, D.I.Khan Members: 1. Project Director On Farm Water Management D.I.Khan 2. Executive Engineer Irrigation D.I.Khan 3. Deputy Director Agriculture(Extension) D.I.Khan 4. Director Agriculture Research D.I.Khan 5. Agriculture Engineer D.I.Khan 6. Deputy Registrar Cooperative Societies D.I.Khan 7. Manager Agriculture Development Bank of Pakistan</p>	<p>Agreed upon in the memorandum of understanding, signed by: 1. Authorized Representative ADB 2. Authorized Representative WAPDA 3. Authorized Representative Govt. of NWFP</p>	<p>1. To coordinate project related activities with in the project area 2. To identify and eliminate problems relating to Paharpur project implementations 3. To report progress to the project steering committee at Federal level and in the event a problem exists which cannot be resolved by the project coordination committee the same shall be submitted to the project steering committee for final decision</p>	<p>-do-</p>

Table F.4.2 Major Reasons for Delayed Completion of CRBC Gravity Irrigation Projects Pointed by Respondent Agencies

Item	Yes	Do not know	Total
1. Lack of financing due to competing demands	14	22	36
2. Inefficiency of the institutions dealing with the project (lack of coordination)	13	23	36
3. Lack of interest by the Federal agency	9	27	36
4. Complicated procedure asked by the financing institution	10	26	36
5. Lack of interest by the provincial government, because the project is not their direct responsibility	7	29	36
6. Incompetence of the provincial departments to realize the adverse effects of foregone benefits	6	30	36

Table F.4.3 Actual Coordination Activities Done by Respondent Agencies for the CRBC Projects

Agencies	(Coordinated : *, Not Coordinated : -)				
	CRBC Gravity Irrigation Project	On Farm Water Management Project	Chashma Command Area Development Project	CRBC 1st Lift Irrigation Project	Other Irrigation Projects
1. Irrigation Department/Project Irrigation Division	*	*	*	*	*
Irrigation Department/1st Lift	-	-	-	*	*
2. Agricultural Research	-	-	-	*	-
3. Agricultural Extension Department	*	-	*	*	-
4. Agricultural Engineering Department	-	-	-	-	-
5. On-Farm Water Management	*	*	*	-	-
6. Soil Conservation Department	-	*	-	-	-
7. Animal Husbandry Department	-	-	*	-	*
8. Food Department	-	-	-	-	-
9. Cooperative Department	-	-	-	-	-
10. Agricultural Development Authority(Agricultural Supply)	-	-	-	-	-
11. Fruit and Vegetable Development Board	-	-	-	-	-
12. Forest Department	*	-	*	-	-
13. Wildlife Department	-	-	-	-	-
14. Fisheries Department	-	-	-	-	-
15. Building Department	-	-	-	-	*
16. Highway Department	-	-	-	-	-
17. Public Health Engineering Department	-	-	-	-	*
18. Health Department	-	-	-	-	-
19. Department of Industry, Commerce and Mineral Development	*	*	-	-	-
20. Education Department	-	-	-	-	-
21. Population and Welfare	-	-	-	-	-
22. Local Government and Rural Development	-	-	-	*	-
23. Revenue Department	-	-	-	*	-
24. Dera Development Authority	-	-	-	*	-
No. of Coordinated Agencies	5	4	5	7	5

Table F.4.4 Stepwise Coordination Activities Done by Respondent Agencies for the CRBC Projects with Respective Agencies

Agencies Coordinated	/Stage	(Unit : Number of Respondent)			
		Planning	Implementation	O & M	Others
1. With WAPDA		1	1	1	2
2. With Irrigation Department		0	0	0	0
3. With Extension Department		0	0	0	0
4. With On Farm Water Management		1	1	0	0
5. With Revenue Department		0	0	0	0
6. With Chamber of Agriculture		1	1	2	0
Total		3	3	3	2

Table F.4.5 Usual Coordination Instruments Being Used by Respondent Agencies

Coordinated Agencies	Number of Response	(%)
1. Committee (Project Management Committee, Project Coordination Committee)	5	(14)
2. Liaison officer	4	(11)
3. Personal contact	23	(64)
4. Others	2	(6)
Total Number of Respondents		36 (100)

Table F.4.6 Satisfaction and Constraints of Coordination by Respondent Agencies

Item	Number of Response	(%)
1. Satisfied with existing coordination mechanism (Answer Yes)	10	(28)
2. Reasons for shortage /lack of coordination		
Improper meeting	12	(33)
No solution and decision making	25	(69)
No coordination with farmers/beneficiaries	6	(17)
Others	5	(14)
3. Necessity of separate coordinating office at district level (Answer Yes)	33	(92)
Total Number of Respondents		36 (100)

Table F.4.7 Important Countermeasures for Effective and Integrated Approach for CRBC 1st Lift Irrigation Projects by Respondent Agencies

Item	Number by Priority			Number of Response	(%)
	1st	2nd	3rd		
1. Strengthening of departments through	6	17	13		
Financial allocation by the project	(17)	(47)	(36)	24	(67)
Training for existing staffs				7	(19)
Additional employment				1	(3)
Avoidance of a short term and frequent transfer				4	(11)
2. Strengthening of coordination activities through	5	13	18		
Give the decision authority to the district level	(14)	(36)	(50)	27	(75)
Frequent meetings				2	(6)
Additional staff assignments				1	(3)
Training for existing staff				6	(17)
3. Establishment of an autonomous new body	25	6	5	36	(100)
	(69)	(17)	(14)		
Total Number of Respondents	36	36	36	36	(100)
	(100)	(100)	(100)		