

Appendix E
Water Supply Development Study

**FEASIBILITY STUDY
ON
THE DEVELOPMENT OF MUNDA DAM MULTIPURPOSE PROJECT
IN
ISLAMIC REPUBLIC OF PAKISTAN**

**FINAL REPORT
VOLUME III
SUPPORTING REPORT**

Appendix E : Water Supply Development Study

Table of Contents

	Page
E1 New Irrigation Scheme	E1
E1.1 Present Condition of the Study Area	E1
E1.2 Irrigation Development Plan.....	E2
E2 Irrigation Water Requirement.....	E4
E3 Civil Canals.....	E5
E4 Coordination on the Palai Dam Irrigation Scheme	E5
E5 Crop Budget Analysis.....	E5

List of Tables

	Page
Table E1.1 Command-wise Statistics of Land Capability Classes.....	ET1
Table E1.2 Land-holding Status by Farm-size in the Study Area	ET2
Table E1.3 Present Cropping Pattern in the Study Area Considering District- wise Cropping Patterns.....	ET3
Table E1.4 Agricultural Status of District Concerned (Peshawar District)	ET4
Table E1.5 Agricultural Productions of District Concerned (Charsadda District).....	ET5
Table E1.6 Agricultural Productions of District Concerned (Malakand District).....	ET6

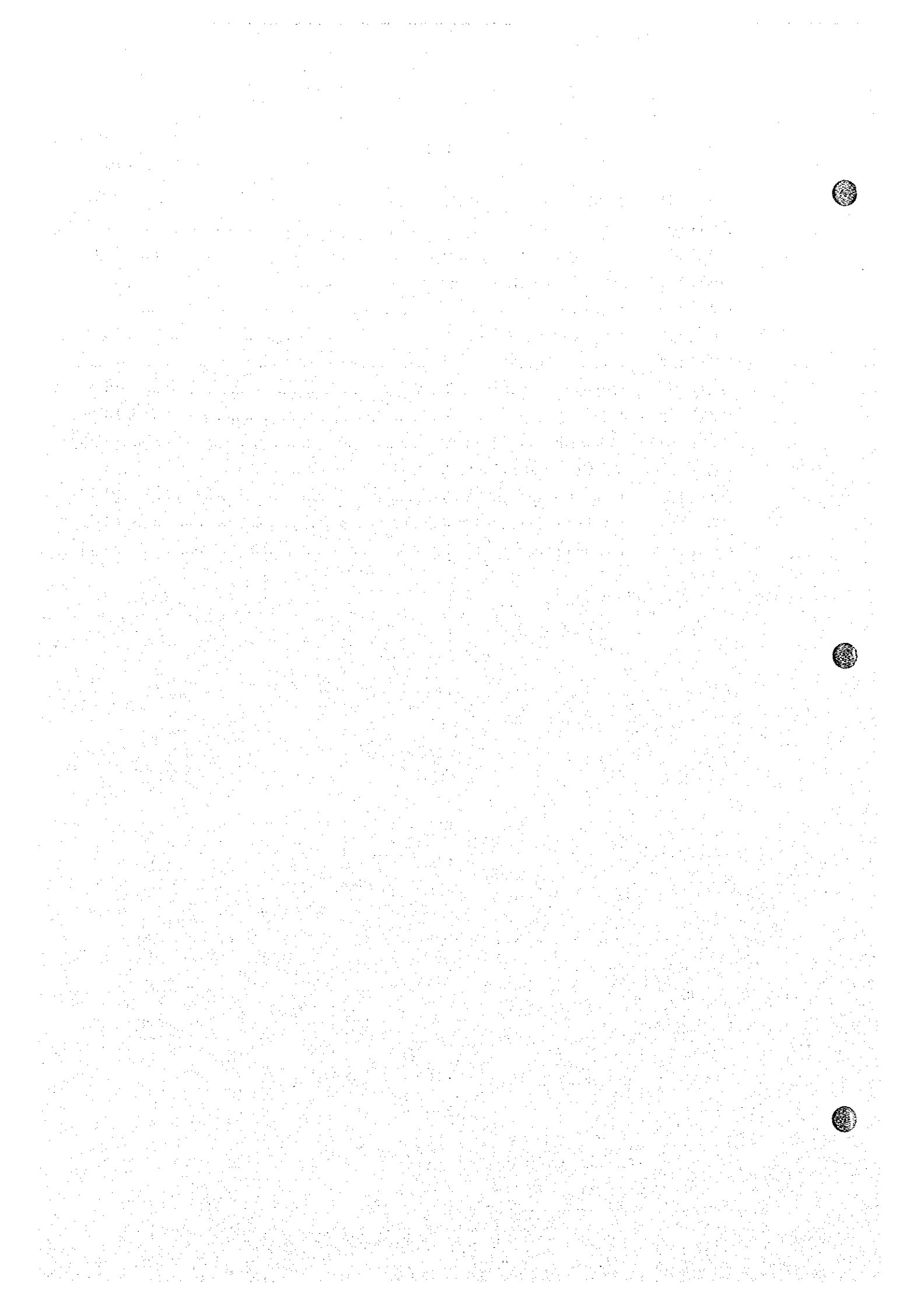
Table E1.7	Agricultural Productions of District Concerned (Mohmand District)	ET7
Table E1.8	Land Breakdown of the Study Area.....	ET8
Table E1.9	Agricultural Status at Left Bank of Study Area.....	ET9
Table E1.10	Agricultural Status at Right Bank of Study Area.....	ET10
Table E1.11	Present Yields in the Study Area.....	ET11
Table E1.12	Latest Whole-sale Prices by Crops in the Study Area.....	ET12
Table E1.13	Land Capability Classes of New Command Area	ET13
Table E2.1	Estimated Reference Evapo-Transpiration (ET _o) in the Study Area	ET14
Table E2.2	Crop Water Requirement in Munda Dam Multipurpose Project (1/3 – 3/3).....	ET15
Table E2.3	Irrigation Water Requirement in New Command Area for Munda Dam Multipurpose Project	ET18
Table E5.1	Crop Production Budget per Acre (1/20 – 20/20).....	ET19
Table E5.2	Agricultural Benefits in Financial Price (1/2 – 2/2)	ET39
Table E5.3	Agricultural Benefits in Economic Price (1/2 – 2/2).....	ET41
Table E5.4	Farm Budget in Financial Prices (1/3 – 3/3)	ET43
Table E5.5-1	Economic Crop Production Budget (Rs/Acre) for Maize	ET46
Table E5.5-2	Economic Crop Production Budget (Rs/Acre) for Kharif Fodder (Fresh).....	ET46
Table E5.5-3	Economic Crop Production Budget (Rs/Acre) for Sugarcane, Plant Crop	ET47
Table E5.5-4	Economic Crop Production Budget (Rs/Acre) for Sugarcane, Ratoon Crop	ET47
Table E5.5-5	Economic Crop Production Budget (Rs/Acre) for Pulse	ET48
Table E5.5-6	Economic Crop Production Budget (Rs/Acre) for Vegetables	ET48
Table E5.5-7	Economic Crop Production Budget (Rs/Acre) for Fruits.....	ET49
Table E5.5-8	Flood Damage Estimation for the Flood Affected Project Area Concerned.....	ET50
Table E5.6	Unit Prices of Farm Inputs and Outputs.....	ET51

List of Figures

	<u>Page</u>	
Figure E1.1	Command-wised Land Capability Classes.....	EF1
Figure E3.1	Location of Civil Canals downstream of Munda Headworks	EF2

List of Drawings

	Page
DWG I01	Feeder Tunnel of Left Bank Area..... ED1
DWG I02	Left Bank Canal..... ED2
DWG I03	Right Bank Canal..... ED3
DWG I04	Pump Station (Right Bank Area)..... ED4
DWG I05	Super Passage Structure ED5
DWG I06	Canal Culvert Structure..... ED6
DWG I07	Escape Structure ED7
DWG I08	Offtaking Structure ED8
DWG I09	Bridge..... ED9
DWG I10	Minor Head Regulator ED10
DWG I11	Tail Cluster and Mogha..... ED11
DWG I12	Drop Structure ED12
DWG I13	Road Crossing Structure..... ED13
DWG I14	Layout of On-Farm Facilities ED14



APPENDIX E WATER SUPPLY DEVELOPMENT STUDY

E1 New Irrigation Scheme

E1.1 Present Condition of the Study Area

(1) Study Area

The Study Area conforms to the new command area identified and proposed in the Pre-Feasibility Study (Pre-F/S).

Investigating the land capability of the new command area as referred to the report of Pre-F/S, the Study Area was classified into four (4) land classes as shown in Figure E1.1. Acreages by the land classes are indicated in Table E1.1, in which crop suitability for each product is referred to. For the crop suitability presented in the table, it is presumed that no crops are suited under the lands classed below IV unless some improvements are taken.

Farm size and farm owned were estimated in consideration of data obtained from the Agricultural Census (1990) and revenue records of concerned tehsils. The result is given in Table E1.2.

(2) Present Cropping Pattern

Present cropping pattern and intensity in the Study Area were determined from a recent series of Agricultural Statistics of NWFP, and revenue records of concerned tehsils in the Study Area. Through an investigation on agricultural data in barani areas of concerned tehsils in the Agricultural Statistics of NWFP, cropping intensity in the proposed area was obtained as shown in Table E1.3, based upon result by each administrative division as Table E1.4 to E1.7.

Furthermore, the latest three (3) years revenue records of concerned tehsils which cover 46.6% of Study Area were collected and utilized for the estimation of the present cropping pattern and intensity of the Study Area. Land breakdown of the Study Area is shown in Table E1.8, while agricultural status by left and right banks of Study Area obtained are shown in Table E1.9 and Table E1.10.

(3) Others

Present yields were estimated by the existing series of Agricultural Statistics of NWFP as shown in Table E1.11.

Latest whole-sale prices by crops in the Study Area were investigated as shown in Table E1.12. According to the table, large seasonal fluctuation was observed in the sequences of price of vegetables and fruits while the data of cereals were stable.

E1.2 Irrigation Development Plan

(1) New Command Area

It was unveiled that some portions of the new command area might be eliminated because farm lands are not fully arable and some overlap with the other existing irrigation plan and system. The command area partly covered by the Palai Dam Irrigation Scheme should be adjusted to avoid double development, having respect for that the Palai Dam Irrigation Project is a preceded scheme within the New command area of the Project. In due consideration of the fact that the implementation of the Palai Dam scheme is being suspended, it was proposed and agreed by GONWFP that the right bank of Jindai Khwar be covered by the Munda Dam Multipurpose project while the irrigation area of the Palai Dam scheme is extended westward. By this adjustment, the planned right canal of Palai Dam scheme will be added to the end of the left canal.

At the right bank a portion of the Study Area was found to be overlapping with the command area of the existing Warsak Left Irrigation Canal. However, the canal beyond 18.2 km from off-take was found to have not been functioning for a long time due to blockade of canal structure. Thereby, the canal command of the Warsak scheme is being limited within the right bank of Subhan Khwar at present. As there was no plan established for the restoration of this structure, and no budget is being allocated, it was proposed that the left bank command area of the Subhan Khwar be transformed as the command area for the Munda Dam Multipurpose Project, in which case a new canal will be aligned at higher elevations than the existing left bank canal of Warsak scheme, beyond Subhan Khwar. This was accepted by GONWFP.

Target area of new irrigation scheme of the Munda Dam Multipurpose Project is major rainfed farmlands extending in both banks of the Swat river. Adjusted new command area is summarized below.

Area of the New Irrigation Scheme

	(GCA)		(CCA)	
Left Bank Area	4,539	(11,220)	4,066	(10,050)
Right Bank Area	2,314	(5,720)	2,043	(5,050)
Total	6,853	(16,940)	6,109	(15,100)

Area of the new irrigation scheme was classified into four land classes as shown in Table E1.13. In this regard, a portion of 883 ha (2,180 acre) at the left bank was classified below Class III, due to its gravelly nature. It must be made arable by eliminating gravels.

(2) Proposed Cropping Pattern

Keeping in view the existing conditions and recorded performance in the existing Irrigation Scheme and farmers desire, the cropping pattern and intensity are proposed as follows:

Proposed Cropping Pattern and Intensity

Crops	Intensity(%)	Crops	Intensity(%)
Kharif		Rabi	
Maize	27	Wheat	30
Vegetables	8	Oilseeds	2
Pulses	4	Onion	6
Fodder	3	Vegetables	7
Tobacco	6	Fodder	3
Sugarcane	30	Sugarcane	(30)
Orchards	8	Orchards	(8)
Subtotal	86	Subtotal	48
		Total	134

Sugarcane is the most attractive and desirous crop of farmers at the moment. However, taking a big fluctuation of product prices and so on into consideration, intensity of sugarcane was reduced to 30% from the intensity of 35% proposed in Pre-F/S. Sugarcane is proposed to be planted once and then applied ratoon in the following two years as same as Swabi area.

The following table compares quantities of required water and profits between the proposed plan and actual records of Charsadda which is the major district belonging to the new irrigation development area. It shows that the proposed cropping pattern holds sound profitability and practicability.

Expected Yield of the Proposed Cropping Pattern

Crop/Items	Pre-F/S			F/S			Actual Values in Charsadda		
	Crop Intensity (%)	Water Requirement (mm)	Yield (Rs./ha)	Crop Intensity (%)	Water Requirement (mm)	Yield (Rs./ha)	Crop Intensity (%)	Water Requirement (mm)	Yield (Rs./ha)
Maize	29.0	118.55	148,120	27.0	110.38	137,910	27.3	111.50	139,340
Vegetables	6.0	47.63	289,600	8.0	63.51	386,130	0.9	7.15	43,440
Pulses	0.0	0.0	0	4.0	25.09	41,510	0.2	1.00	1,660
Fodder	3.0	15.44	36,570	3.0	15.44	36,570	0.9	4.84	11,460
Tobacco	6.0	43.47	503,470	6.0	43.47	503,470	10.3	74.33	860,930
Sugarcane	35.0	383.32	892,880	30.0	328.56	765,330	42.9	469.40	1,093,400
Orchards	5.0	54.20	375,070	8.0	86.71	600,100	2.0	22.11	153,030
Rice	0	0.0	0	0.0	0.0	0	0.2	2.38	34
R.Wheat	35.0	57.19	501,880	30.0	49.02	430,180	36.2	59.09	518,510
R.Barley	0.0	0.0	0	0.0	0.0	0.0	0.5	0.83	4,400
R.Oil seeds	2.0	7.31	10,540	2.0	7.31	10,540	0.1	0.33	470
R.Onion	1.0	4.03	52,140	6.0	24.19	312,850	0.1	0.28	3,650
R.Vegetables	4.0	9.87	155,190	7.0	17.28	271,580	1.3	3.31	51,990
R.Fodder	3.0	9.13	42,790	3.0	9.13	42,790	8.6	26.03	121,950
R.Sugarbeet	8.0	44.70	177,320	0.0	0.0	0	0.5	3.02	11,970
Total		794.84	3,185,560		780.09	3,538,950			3,016,220

Comparison results of cropping pattern with those of adjacent districts are also presented as reference as follows:

Comparison with Other Cropping Patterns

(%)

Crops	Munda Project		Records in adjacent area			
	Pre-F/S	F/S	Charsadda	Malakand	Peshawar	Mohmand
Maize	29.0	27.0	27.3	16.0	26.2	28.4
Vegetables	6.0	8.0	0.9	1.3	1.3	1.5
Pulses	0.0	4.0	0.2	0.2	0.1	0.4
Fodder	3.0	3.0	0.9	7.7	10.7	0.7
Tobacco	6.0	6.0	10.3	2.8	0.0	0.0
Sugarcane	35.0	30.0	42.9	14.3	28.8	31.4
Orchards	5.0	8.0	2.0	1.6	1.3	1.3
Rice	0	0.0	0.2	20.1	0.6	0.0
R.Wheat	35.0	30.0	36.2	28.0	46.6	53.5
R.Barley	0.0	0.0	0.5	0.1	2.3	0.6
R.Oil seeds	2.0	2.0	0.1	0.3	0.1	0.4
R.Onion	1.0	6.0	0.1	0.7	0.2	6.6
R.Vegetables	4.0	7.0	1.3	3.2	2.2	1.6
R.Fodder	3.0	3.0	8.6	4.1	11.7	1.1
R.Sugarbeet	8.0	0.0	0.5	0.0	2.9	0.0
Water Rq. (mm)	794.8	780.1	785.6	662.1	649.3	615.4
Yield (10 ³ Rs./ha)	3,185.6	3,539.0	3,016.2	1,582.0	2,172.8	2,321.9

E2 Irrigation Water Requirement

In the Pre-F/S report, irrigation water requirement for the Study Area was calculated at 145,626 AF (179,629,700 cu.m) per 29,380 acres (1,510.8 mm) with 180% cropping intensity. Calculation of the irrigation water requirement was updated. Reference evapotranspiration (ET_o) was re-calculated as shown

in Table E2.1. Estimated ETo of 1,694 mm was arrived at. Unit irrigation water requirement by crops were computed as shown in Table E2.2, being summarized in Table E2.3. Assuming irrigation efficiency at 0.54 (applying three components, Canals: 0.85, Watercourses: 0.85, Field: 0.75), irrigation height of 1,518 mm was obtained.

E3 Civil Canals

There are a number of civil canals along the Swat River downstream of the existing Munda Headworks. Due to meandering of the Swat river flowing down on alluvial fan, some civil canals were abandoned. For these reasons it is difficult to identify exact number of civil canals steadily functioning. Through the field reconnaissance and hearing from the farmers, 14 civil canals have been confirmed to be functional and continuously maintained by those beneficiaries. Location of functional civil canals is shown in Figure E3.1.

E4 Coordination on the Palai Dam Irrigation Scheme

Irrigation plan of the Palai Dam scheme is summarized as follows:

Irrigation Plan of the Palai Dam Scheme

Items	Unit	Right Bank Area	Left Bank Area	Total
Command Area	Acres	1,000.0	3,600.0	4,600.0
Irrigation Water amount	AF	2,407.5	8,666.8	11,074.3
Peak Discharge	Cusecs	6.5	23.5	30.0
Canal length	feet	11,500.0	38,450.0	53,705.0 (inc. Feeder Canal)

While an irrigation efficiency of 0.70 was applied in the Palai Dam scheme instead of 0.54 for the Munda Project, irrigation height of 733.8 mm was proposed. High-grade irrigation will be realized in the command area of Munda Dam Project in comparison with the Palai Dam scheme. Gap in the irrigation intensities between the Palai Dam scheme and Munda Dam Project can be satisfied by additionally supplying water from the proposed left bank canal of the Munda Project to the reservoir of the Palai Dam.

E5 Crop Budget Analysis

Crop budget analysis by crops presently harvested and proposed to be introduced under the condition of with-project, was conducted. Crop production budget per acre with and without project by crops were analyzed as shown in Table E5.1. Agricultural benefits assuming command area of 6,109 ha (15,100 acres) were

APPENDIX E

TABLES

Table E1.1 Command-wise Statistics of Land Capability Classes

Survey Area in Chapter 5 of Pre-feasibility Report: (Unit: Acres)

Land Class	Right Bank		Left Bank		Total	
	Area	%	Area	%	Area	%
I	8,360	61%	5,455	16%	13,815	29%
Iir	0	0%	4,790	14%	4,790	10%
IIsr	0	0%	660	2%	660	1%
IIIs	3,340	24%	4,010	12%	7,350	16%
IIIsr	315	2%	3,620	11%	3,935	8%
IVsr	0	0%	12,730	38%	12,730	27%
Misc.areas	1,780	13%	2,100	6%	3,880	8%
Total	13,795		33,365		47,160	

Study Area in Chapter 6 of Pre-feasibility Report: (Unit: Acres)

Land Class	Right Bank		Left Bank		Total	
	(GCA)	(CCA)	(GCA)	(CCA)	(GCA)	(CCA)
I	4,974	4,391	4,165	4,052	9,139	8,443
Iir	0	0	3,428	3,335	3,428	3,335
IIsr	0	0	660	642	660	642
IIIs	3,340	2,949	3,530	3,442	6,870	6,391
IIIsr	315	278	2,884	2,806	3,199	3,084
IVsr	0	0	6,116	4,253	6,116	4,253
Misc.areas	1,482	1,482	1,750	1,750	3,232	3,232
Total	10,111	9,100	22,533	20,280	32,644	29,380

Crop Suitability of the Land in Command Area:

Land Class	I	Iir	IIsr	IIIs	IIIsr	IVsr	Misc.areas
(Unit: Acres)	8,443	3,335	642	6,391	3,084	4,253	3,232
Wheat	1	1	1	2	2	4	4
Sugarcane	1	1	1	3	3	4	4
Sugarbeet	1	1	1	2	2	4	4
Maize	1	1	1	3	3	4	4
Tabacco	1	1	1	2	2	4	4
Oil-seeds	1	1	1	2	2	4	4
Opulses	1	1	1	2	2	4	4
Fodders	1	1	1	3	3	4	4
Vegetable:	1	1	1	2	2	4	4
Orchards	1	1	1	3	3	4	4

- 1 : Well suited
- 2 : Moderately suited
- 3 : Poorly suited
- 4 : Not suited

Table E1.2 Land-holding Status by Farm-size in the Study Area

(Unit: Acres)

District/Agency	Left Bank Area		Right Bank Area		Total	
Peshawar	0	0%	0	0%	0	0%
Charsadda	14,399	71%	8,918	98%	23,317	80%
Malakand	2,434	12%	0	0%	2,434	8%
Mohmand	3,447	17%	182	2%	3,629	12%
	20,280	100%	9,100	100%	29,380	100%

(Unit: Acres)

Farm-size	Peshawar		Charsadda		Malakand		Mohamad		Number	Gross (Acres)
	Number	Area	Number	Area	Number	Area	Number	Area		
Private Farm Total	-	-	5,016	24,648	8,095	27,932	2,019	16,202	5,903	29,380
under 1.0 acre	-	-	121	101	341	166	71	41	160	119
1.0 to 2.5	-	-	696	959	3,318	5,104	309	472	1,017	1,457
2.5 to 5.0	-	-	2,453	8,478	2,551	8,430	390	1,249	2,630	9,035
5.0 to 7.5	-	-	646	3,724	1,038	5,401	434	2,421	799	4,536
7.5 to 12.5	-	-	767	6,258	636	5,477	448	3,986	881	7,290
12.5 to 25.0	-	-	293	4,895	194	2,591	278	4,142	356	5,784
25.0 to 50.0	-	-	40	232	6	112	68	1,906	54	656
50.0 to 150.0	-	-	0	0	11	651	19	998	5	280
150.0 above	-	-	0	0	0	0	2	987	1	221
Areal percentage of Study area in total area of concerned district			94.6%		8.7%		22.4%			
Study area	0	0	4,746	23,317	705	2,434	452	3,629	5,903	29,380

Data source: modified data for non-irrigated area in Agricultural Census 1990

**Table E1.3 Present Cropping Pattern in the Study Area
Considering District-wise Cropping Patterns**

(Unit: Acres)

District/Agency	Left Bank Area		Right Bank Area		Total	
Peshawar	0	0%	0	0%	0	0%
Charsadda	14,399	71%	8,918	98%	23,317	80%
Malakand	2,434	12%	0	0%	2,434	8%
Mohmand	3,447	17%	182	2%	3,629	12%
	20,280	100%	9,100	100%	29,380	100%

Crops	Peshawar	Charsadda	Malakand	Mohmand	Gross (%)	Gross (Acres)
Maize	0.82%	1.98%	0.34%	0.57%	1.67%	491
Rice	0.00%	0.01%	0.00%	0.00%	0.01%	2
Kharif-veg.	0.00%	0.00%	0.00%	0.00%	0.00%	0
Kfarif-Fruits	0.00%	0.00%	0.00%	0.00%	0.00%	0
Kharif-fodder	0.33%	0.06%	0.24%	0.01%	0.07%	21
Sugarcane	0.56%	6.01%	0.00%	0.00%	4.78%	1,405
Wheat	26.57%	47.94%	58.65%	65.85%	51.02%	14,990
Barley	1.31%	3.27%	12.44%	4.12%	4.12%	1,212
Oil-seed	0.04%	0.13%	9.53%	1.37%	1.05%	309
Garlic	0.01%	0.01%	0.00%	0.00%	0.01%	2
Rabi-veg.	0.00%	0.00%	0.00%	0.00%	0.00%	0
Potato	0.00%	0.00%	0.00%	0.00%	0.00%	0
Onion	0.00%	0.02%	0.01%	0.00%	0.01%	4
Rabi-fruits	0.00%	0.00%	0.00%	0.00%	0.00%	0
Rabi-fodder	0.35%	0.57%	0.12%	0.01%	0.46%	136
Tobacco	0.00%	0.63%	0.09%	0.00%	0.51%	150
Cropping Int.	30.00%	60.62%	81.41%	71.94%	63.72%	18,721
Command area	0	21,757	2,434	5,190	29,380	
	0%	80%	8%	12%	100%	

Table E1.4 Agricultural Status of District Concerned (Peshawar District)

(in ha)

Areal Situation:	Cultivated Area		Un-cultivated Area		Irrigated Area		Non-irrigated Area	
	Reported Area	Cultivated Area	Un-cultivated Area	Irrigated Area	Non-irrigated Area			
1991/92	117,402	70,098	78,056	47,304	49,737	20,361		
1992/93	117,402	70,098	77,262	47,304	49,770	20,328		
1993/94	-	-	-	-	-	-		
1994/95	126,659	70,071	72,198	56,588	52,035	18,036		
1995/96	126,659	70,073	78,803	56,586	56,276	13,797		
1996/97	126,659	70,100	79,146	56,559	54,995	15,105		
	122,956	70,083	77,093	52,868	52,563	17,525		

(in Ton)

Crop-wise Production:	Production (in Ton)													
	Maize	Rice	Wheat	Sugarcane	Barley	Oil-seed	Garlic	Rabi-veg	Potato	Onion	Rabi-fruits	Rabi-fodder	Tobacco	Total
1991/92	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1992/93	25,559	1,031	50,266	780,840	1,309	30	4,612	17,295	576	2,307	2,837	180,762	0	1,212,390
1993/94	24,513	654	54,631	814,633	1,105	47	4,375	17,691	1,377	330	2,907	180,971	0	1,247,757
1994/95	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1995/96	19,691	610	60,613	751,252	2,479	35	6,574	17,880	349	510	2,948	181,284	0	1,189,041
1996/97	20,698	503	52,915	725,322	2,558	13	5,249	17,998	978	383	2,981	181,467	0	1,156,034
	22,615	700	54,606	768,012	1,863	31	5,203	17,716	320	883	2,918	181,121	0	1,201,306
Av. Area	13,753	335	24,479	15,134	1,210	56	415	1,140	65	86	295	6,165	0	70,135
Yield(kg)	1,644	2,087	2,231	50,747	1,539	557	12,529	15,540	12,664	10,232	9,901	29,380	-	-

(in Ton)

Crop-wise Production:	Production (in Ton)													
	Maize	Rice	Wheat	Sugarcane	Barley	Oil-seed	Garlic	Rabi-veg	Potato	Onion	Rabi-fruits	Rabi-fodder	Tobacco	Total
1991/92	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1992/93	90	0	6,852	5,775	201	8	0	0	0	0	0	908	0	14,449
1993/94	84	0	2,997	4,165	121	3	6	0	0	0	0	909	0	8,901
1994/95	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1995/96	271	0	4,402	2,905	41	4	0	0	0	0	0	911	0	9,150
1996/97	157	0	5,518	805	277	0	44	0	0	0	0	912	0	8,330
	151	0	4,942	3,413	160	4	13	0	0	0	0	910	0	10,208
Av. Area	145	0	4,657	98	230	8	1	0	0	0	0	62	0	5,257
Yield (kg)	1,042	-	1,061	35,000	696	484	10,000	-	-	-	-	14,677	-	-

Data Source: Agricultural Statistics, A.D. of NWFP

Table EL.5 Agricultural Productions of District Concerned (Charsadda District)

Areal Situation: (in ha)

	Reported Area	Cultivated Area	Cropped Area	Un-cultivated Area	Irrigated Area	Non-irrigated Area
1991/92	98,646	73,337	92,756	25,309	63,362	9,975
1992/93	98,646	73,337	88,205	25,309	63,387	9,950
1993/94	-	-	-	-	-	-
1994/95	98,646	73,433	95,582	25,213	63,384	10,049
1995/96	98,646	73,433	88,611	25,213	63,840	9,593
1996/97	98,646	73,433	101,518	25,213	63,840	9,593
	98,646	73,395	93,334	25,251	63,563	9,832

Crop-wise Production in irrigated area:

	Maize	Rice	Kharif-veg	Kharif-Fruits	Kharif-fodder	Sugarcane	Wheat	Barley	Oil-seed	Garlic	Rabi-veg	Potato	Onion	Rabi-fruits	Rabi-fodder	Tobacco	Total
1991/92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1992/93	29,710	289	5,932	14,061	11,313	1,280,073	57,686	797	25	1,112	12,858	936	635	2,403	179,980	14,409	1,612,219
1993/94	34,206	257	5,963	14,163	11,447	1,300,718	66,576	578	86	1,649	13,437	2,400	612	2,413	180,239	15,592	1,650,336
1994/95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1995/96	27,877	361	6,025	14,267	11,511	1,457,505	66,903	435	23	2,812	13,609	904	288	2,459	180,631	10,279	1,795,889
1996/97	32,427	174	6,065	14,328	11,565	1,600,619	58,086	343	79	2,224	13,660	6,885	287	2,489	181,058	12,565	1,942,853
	31,055	270	5,996	14,205	11,459	1,409,729	62,313	538	53	1,949	13,391	2,781	456	2,441	180,477	13,211	1,750,324
Av. Area	17,343	108	570	1,294	600	27,241	22,985	326	58	156	853	215	48	252	5,437	6,521	84,006
Yield AS3(k)	1,791	2,501	10,520	10,975	19,090	51,750	2,711	1,652	912	12,495	15,708	12,921	9,589	9,687	33,197	2,026	-

Crop-wise Production in non-irrigated area:

	Maize	Rice	Kharif-veg	Kharif-Fruits	Kharif-fodder	Sugarcane	Wheat	Barley	Oil-seed	Garlic	Rabi-veg	Potato	Onion	Rabi-fruits	Rabi-fodder	Tobacco	Total
1991/92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1992/93	283	2	0	0	57	14,897	8,189	135	0	0	0	0	0	0	904	72	24,539
1993/94	291	0	0	0	58	16,705	5,347	346	0	12	0	0	0	0	906	78	23,743
1994/95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1995/96	126	1	0	0	58	15,558	6,658	501	16	12	0	0	0	0	908	52	23,890
1996/97	220	0	0	0	58	19,835	4,442	402	2	10	0	0	31	0	910	63	25,973
	230	1	0	0	58	16,749	6,159	346	5	9	0	0	8	0	907	66	24,536
Av. Area	196	1	0	0	6	584	4,795	365	10	1	0	0	6,200	1	55	66	6,078
Yield (kg/ha)	1,175	1,500	-	-	9,625	28,704	1,284	947	474	11,333	-	-	-	-	16,491	1,011	-

Data Source: Agricultural Statistics, A.D. of NWFP

Table E1.6 Agricultural Productions of District Concerned (Malakand District)

Areal Situation: (in ha)

	Reported Area	Cultivated Area	Cropped Area	Un-cultivated Area	Irrigated Area	Non-irrigated Area
1991/92	52,134	45,680	57,230	6,454	34,376	11,304
1992/93	52,134	45,680	57,134	6,454	34,376	11,304
1993/94	-	-	-	-	-	-
1994/95	52,134	45,681	58,165	6,453	34,429	11,252
1995/96	52,134	45,681	58,820	6,453	34,429	11,252
1996/97	52,134	45,681	58,207	6,453	33,708	11,973
	52,134	45,681	57,911	6,453	34,264	11,417

Crop-wise Production:

	Maize	Rice	Khari-veg.	Khari-Fruits	Khari-fodder	Sugarcane	Wheat	Barley	Oil-seed	Garlic	Rabi-veg.	Potato	Onion	Rabi-fruits	Rabi-fodder	Tobacco	Total
1991/92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1992/93	9,642	12,508	6,778	4,790	70,045	188,118	21,864	19	63	234	11,123	564	3,391	3,874	42,417	1,096	377,026
1993/94	10,007	12,767	6,359	4,797	69,805	187,934	22,303	18	53	238	11,142	661	3,965	3,882	42,453	2,995	379,379
1994/95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1995/96	10,576	13,138	6,425	4,807	69,828	189,794	22,758	13	48	243	11,299	708	4,016	3,930	42,580	2,156	382,319
1996/97	10,607	13,135	6,409	4,808	69,852	190,881	20,475	11	45	239	11,283	718	3,936	3,850	42,624	2,519	381,392
	10,208	12,887	6,493	4,801	69,883	189,182	21,850	15	52	239	11,212	663	3,952	3,884	42,519	2,192	380,029
Av. Area	5,469	6,888	437	416	2,648	4,907	9,577	15	98	40	1,085	48	232	547	1,408	953	34,769
Yield (kg)	1,866	1,871	14,849	11,533	26,396	38,551	2,282	1,017	536	5,925	10,336	13,736	17,016	7,097	30,198	2,299	-

Crop-wise Production:

	Maize	Rice	Khari-veg.	Khari-Fruits	Khari-fodder	Sugarcane	Wheat	Barley	Oil-seed	Garlic	Rabi-veg.	Potato	Onion	Rabi-fruits	Rabi-fodder	Tobacco	Total
1991/92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1992/93	20	0	0	0	352	0	6,575	1,257	618	0	0	0	0	0	213	6	9,042
1993/94	21	0	0	0	351	0	5,263	1,016	516	0	0	0	0	0	213	15	7,394
1994/95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1995/96	16	0	0	0	351	0	5,212	848	450	0	0	0	0	0	214	11	7,102
1996/97	17	0	0	0	351	0	4,967	809	425	0	0	0	5	0	214	13	6,801
	19	0	0	0	351	0	5,504	983	502	0	0	0	1	0	214	11	7,585
Av. Area	38	0	0	0	27	0	6,696	1,420	1,089	0	0	0	1	0	14	10	9,295
Yield (kg)	484	-	-	-	13,009	-	822	692	461	-	-	-	1,000	-	15,250	1,154	-

Data Source: Agricultural Statistics, A.D. of NWFP

Table E1.7 Agricultural Productions of District Concerned (Mohmand District)

Areal Situation: (in ha)

	Reported Area	Cultivated Area	Cropped Area	Un-cultivated Area	Irrigated Area	Non-irrigated Area
1991/92	229,620	13,407	15,368	216,213	6,850	6,557
1992/93	229,620	13,500	15,733	216,120	6,870	6,630
1993/94	-	-	-	-	-	-
1994/95	229,620	13,939	16,308	215,681	6,995	6,944
1995/96	229,620	16,546	16,251	213,074	7,496	9,050
1996/97	229,620	16,822	16,771	212,798	7,559	9,263
	229,620	14,843	16,086	214,777	7,154	7,689

Crop-wise Production:

	Maize	Rice	Khariif-veg.	Kharif-Fruits	Khariif-fodder	Sugarcane	Wheat	Barley	Oil-seed	Garlic	Rabi-veg.	Potato	Onion	Rabi-fruits	Rabi-fodder	Tobacco	Total
1991/92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1992/93	3,532	0	576	708	274	58,856	6,300	0	8	100	764	780	5,750	625	1,085	0	79,358
1993/94	3,570	0	666	892	378	59,500	6,425	71	9	91	748	1,036	5,870	641	1,217	0	81,134
1994/95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1995/96	3,690	3	828	965	641	60,340	6,536	74	11	100	754	1,068	6,125	648	1,249	0	83,032
1996/97	3,726	3	908	1,037	651	60,981	6,553	81	395	120	814	1,207	6,260	885	1,527	0	85,148
	3,630	2	745	901	486	59,919	6,454	57	106	103	770	1,028	6,001	700	1,270	0	82,168
Av.Area	2,030	1	109	91	49	2,243	3,828	40	28	21	112	101	470	94	79	0	9,295
Yield (kg)	1,788	1,500	6,830	9,896	9,969	26,714	1,686	1,404	3,777	4,835	6,891	10,151	12,769	7,484	16,172	-	-

Crop-wise Production:

	Maize	Rice	Khariif-veg.	Kharif-Fruits	Khariif-fodder	Sugarcane	Wheat	Barley	Oil-seed	Garlic	Rabi-veg.	Potato	Onion	Rabi-fruits	Rabi-fodder	Tobacco	Total
1991/92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1992/93	55	0	0	0	1	0	5,050	300	52	0	0	0	0	0	5	0	5,463
1993/94	56	0	0	0	2	0	5,060	287	53	0	0	0	0	0	6	0	5,464
1994/95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1995/96	73	0	0	0	3	0	5,072	358	56	0	0	0	0	0	6	0	5,568
1996/97	80	0	0	0	3	0	4,290	300	44	0	0	0	0	0	8	0	4,725
	66	0	0	0	2	0	4,868	311	51	0	0	0	0	0	6	0	5,305
Av.Area	49	0	0	0	1	0	6,019	339	115	0	0	0	0	0	1	0	6,523
Yield (kg)	1,354	-	-	-	4,500	-	809	919	446	-	-	-	-	-	6,250	-	-

Data Source: Agricultural Statistics, A.D. of NWFP

Table E1.8 Land Breakdown of the Study Area

Left Bank Area

Name of Mouzas (Teh/Dist.)	Irrigated Area		Un-irrigated Area		Dagoba	Cultivated Area	Un-cultivated Area		Total Area	Remarks		
	Total	Canal	Wells	Total			Barani	Sailaba			Total	Waste Area
Dobandi	888.2	481.3	406.9	2,822.6	2,822.6	0.0	3,710.8	2,631.9	512.8	2,119.1	6,342.7	LSC
Shakoor	1,400.8	1,400.8	0.0	850.8	850.8	0.0	2,251.5	413.0	168.8	244.3	2,664.5	LSC
Behram	105.9	22.0	83.9	1,817.3	1,797.0	20.3	1,942.7	1,189.8	1.6	1,188.1	3,132.4	
Mera Tangi	2,418.4	2,174.4	244.0	3,939.6	3,901.0	38.6	6,358.0	1,165.9	441.0	724.9	7,523.9	Tangi Lift Canal
Qila	29.6	0.0	29.6	208.4	205.0	3.4	238.0	1,089.0	16.9	1,072.1	1,327.0	
Gandera Bala	1,573.0	1,573.0	0.0	211.8	198.3	13.5	1,784.8	199.8	41.0	158.8	1,984.5	USC
Asghar	48.0	0.0	48.0	225.6	189.4	36.3	273.6	56.1	1.4	54.8	329.8	
Barazai Dehri	92.6	0.0	92.6	753.4	753.4	0.0	847.9	177.9	116.4	61.5	1,025.8	
Nusratzai	140.5	113.5	27.0	723.6	721.8	1.9	864.1	526.3	265.3	261.0	1,390.4	
Abazai	976.0	894.9	81.1	1,248.8	2.4	1,246.4	2,224.8	2,163.8	568.8	1,595.0	4,388.5	Tangi Lift Canal
Total	7,673.0	6,659.8	1,013.2	12,801.8	11,441.5	1,360.3	20,496.2	9,613.3	2,133.8	7,479.5	30,109.5	

: Above mouzas are in Tangi tehsil.

Right Bank Area

Name of Mouzas	Irrigated Area		Un-irrigated Area		Dagoba	Cultivated Area	Un-cultivated Area		Total Area	Remarks		
	Total	Canal	Wells	Total			Barani	Sailaba			Total	Waste Area
Kathzai Bala	548.0	548.0	0.0	25.0	25.0	0.0	573.0	2,198.0	1,417.0	781.0	2,771.0	Jehri Br.
Sadar Garhi	193.0	164.0	29.0	51.0	33.0	18.0	245.0	84.0	26.0	58.0	329.0	Doaba Br.
Mata Hamza Khel	525.0	497.0	28.0	451.0	451.0	0.0	977.0	621.0	275.0	346.0	1,598.0	Jehri Br.
Mata Palangzai	479.0	468.0	11.0	100.0	100.0	0.0	579.0	850.0	539.0	311.0	1,429.0	Jehri Br.
Mata Rustam Khel	1,734.0	1,726.0	8.0	329.0	329.0	0.0	2,063.0	1,569.0	816.0	753.0	3,632.0	Jehri Br.
Pangpao	1,596.0	1,596.0	0.0	594.0	589.0	5.0	2,190.0	1,495.0	461.0	1,034.0	3,685.0	Michnai Br.
Daman Shabqadar	974.0	974.0	0.0	419.0	419.0	0.0	1,393.0	2,595.0	1,072.0	1,523.0	3,988.0	Michnai Br.
Dilazak	764.0	764.0	0.0	79.0	3.0	76.0	843.0	275.0	25.0	250.0	1,118.0	Michnai Br.
Total	6,813.0	6,737.0	76.0	2,048.0	1,949.0	99.0	8,863.0	9,687.0	4,631.0	5,056.0	18,550.0	

: Above mouzas are in Shabqadar tehsil.

Table E1.9 Agricultural Status at Left Bank of Study Area

Year	Mouzas		Cultivated Area:											Cropped Area in Rabi											Total Cropped		Cropping Intensity		
			Cropped Area in Kharif						Cropped Area in Rabi					Total	Wheat	Barley	Fodder	Tomato	Garlic	Sugarcane	Tobacco	Onion	Potato	Mustard	Orchard	Area			
			Area	Total	Maize	Sorghum	Sugarcane	Tomato	Chilli	Veg-ables	Total	Sugarcane	Garlic															Tomato	Barley
1994/95		Dobandi	2,822.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,898.0	1,618.0	223.0	47.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,898.0	67.2%	
		Shakoor	850.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	491.0	470.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	481.0	56.6%	
		Behram Dheri	1,817.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	305.0	301.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	305.0	16.8%	
		Mera Tangi	3,939.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3,111.0	3,111.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3,111.0	79.0%	
		Qila	208.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.0	112.0	58.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.0	81.6%	
		Gandera Bala	211.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	186.0	171.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	186.0	87.8%	
		Asghar	225.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	164.0	117.0	47.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	164.0	72.7%	
1995/96		Barazai	753.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	613.0	516.0	92.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	613.0	81.4%	
		Nusratzi	723.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	672.0	652.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	672.0	92.9%	
		Abazai	11,552.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,600.0	7,068.0	475.0	47.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,600.0	65.8%	
		Subtotal	2,822.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,924.0	1,614.0	270.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,924.0	68.2%	
		Shakoor	850.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	463.0	461.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	463.0	54.4%
		Behram Dheri	1,817.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	294.0	275.0	9.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	294.0	16.2%	
		Mera Tangi	3,939.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3,178.0	3,178.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3,178.0	80.7%	
1996/97		Qila	208.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166.0	110.0	56.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166.0	79.7%
		Gandera Bala	211.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	183.0	168.0	14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	183.0	86.4%	
		Asghar	225.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	157.0	113.0	44.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	157.0	69.6%	
		Barazai	753.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	586.0	508.0	76.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	586.0	77.8%	
		Nusratzi	723.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	635.0	620.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	635.0	87.8%
		Abazai	11,552.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,586.0	7,047.0	486.0	40.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,586.0	65.7%
		Subtotal	2,822.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	943.0	807.0	136.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	943.0	33.4%
Average (1995-1997)		Shakoor	850.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	406.0	403.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	406.0	47.7%
		Behram Dheri	1,817.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	304.0	297.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	304.0	16.7%
		Mera Tangi	3,939.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3,155.0	3,155.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3,155.0	80.1%
		Qila	208.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	174.0	114.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	174.0	83.5%
		Gandera Bala	211.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	180.0	172.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	180.0	85.0%
		Asghar	753.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	614.0	517.0	91.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	614.0	81.5%
		Nusratzi	723.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	614.0	517.0	91.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	614.0	81.5%
	Subtotal	11,852.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,373.0	6,890.0	305.0	29.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,373.0	29.9%	
	Average (1995-1997)	11,652.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,111.7	6,651.0	422.0	29.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,111.7	61.0%
			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	61.0%

Table E1.11 Present Yields in the Study Area

District/Agency	Left Bank Area		Right Bank Area		Total	
Peshawar	0	0%	0	0%	0	0%
Charsadda	14,399	71%	8,918	98%	23,317	80%
Malakand	2,434	12%	0	0%	2,434	8%
Mohmand	3,447	17%	182	2%	3,629	12%
	20,280	100%	9,100	100%	29,380	100%

Crops	Peshawar	Charsadda	Malakand	Mohmand	Yield (kgs/ha)	(kgs/Acre)
Maize	1,042	1,175	484	1,354	1,140	461
Rice	-	1,500	-	-	1,500	607
Kharif-veg.	-	-	-	-	-	-
Kfarif-Fruits	-	-	-	-	-	-
Kharif-fodder	10,807	9,625	13,009	4,500	9,272	3,752
Sugercane	35,000	28,704	-	-	28,704	11,616
Wheat	1,061	1,284	822	809	1,188	481
Barley	696	947	692	919	923	373
Oil-seed	484	474	461	446	469	190
Garlic	10,000	11,333	-	-	11,333	4,587
Rabi-veg.	-	-	-	-	-	-
Potato	-	-	-	-	-	-
Onion	-	6,200	1,000	-	5,714	2,312
Rabi-fruits	-	-	-	-	-	-
Rabi-fodder	14,677	16,491	15,250	6,250	15,130	6,123
Tobacco	-	1,011	1,154	-	1,025	415
Command area	0	23,317	2,434	3,629	29,380	
	0%	80%	8%	12%	100%	

Table E1.12 Latest Whole-sale Prices by Crops in the Study Area

	Whole sale Prices Rs./40 kg											
	Jun-97	Jul-97	Aug-97	Sep-97	Oct-97	Nov-97	Dec-97	Jan-98	Feb-98	Mar-98	Apr-98	May-98
CEREAL LINK												
Wheat	280.0	320.0	320.0	340.0	360.0	320.0	320.0	320.0	320.0	330.0	330.0	260.0
Barlay	260.0	280.0	280.0	280.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	290.0
Maize	320.0	360.0	360.0	360.0	360.0	280.0	280.0	280.0	280.0	290.0	290.0	
Rice Course	300.0	280.0	280.0	280.0	280.0	280.0	280.0	360.0	360.0	360.0	360.0	360.0
Rice Fine	480-640	480-640	480-640	480-640	480-640	640.0	640.0	760.0	760.0	760.0	760.0	760.0
Jowar	700-750	-	-	-	-	-	-	-	-	-	-	-
Bajra	-	600.0	600.0	600.0	600.0	600.0	600.0	600.0	-	-	-	-
PULSES												
Mash	1000.0	1000.0	1000.0	1000.0	880.0	800.0	820.0	820.0	820.0	820.0	820.0	820.0
Mong	640.0	640.0	640.0	640.0	720.0	760.0	760.0	760.0	760.0	780.0	780.0	780.0
Masoor	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0
Gram	-	-	-	-	-	-	-	-	-	-	-	-
Matter	720.0	-	-	-	-	-	-	-	-	-	-	-
Arhar	600.0	600.0	600.0	600.0	600.0	600.0	600.0	600.0	600.0	650.0	650.0	650.0
OIL SEED												
Rape&Mustard	400.0	400.0	500.0	600.0	600.0	-	600.0	600.0	-	-	-	660.0
Taramera	-	-	-	-	-	-	-	-	-	-	-	-
Cotton	-	-	-	-	-	-	-	-	-	-	-	-
Seasamum	-	-	-	-	-	-	-	-	-	-	-	-
G/Nut	-	-	-	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-	-	-	-
Cotton Seed	-	-	-	-	-	-	-	-	-	-	-	-
TOBACCO												
Tobacco Virg.I	1000.0	-	1760.0	1920.0	1920.0	-	-	-	-	-	-	-
Tobacco Virg.II	-	-	-	-	-	-	-	-	-	-	-	-
Tobacco Virg.III	-	-	2400.0	2400.0	2400.0	-	-	-	-	-	-	-
Sugarcane (to Mill)	-	-	-	-	-	42.0	42.0	42.0	42.0	42.0	-	-
Sugarcane (to Seed)	-	-	-	-	-	-	-	-	-	-	-	-
Sugarbeet	-	-	-	-	-	50.0	50.0	50.0	50.0	50.0	55.0	-
Gur	480-1000	800.0	1000.0	960.0	800.0	800.0	880-1120	800-1120	533-720	480-640	480-640	533-800
VEGETABLE												
Potato	400.0	400.0	400.0	480.0	400.0	440.0	240.0	200.0	180.0	-	-	120.0
Tomato	120.0	200.0	720.0	640.0	640.0	560.0	600.0	300.0	300.0	-	-	800.0
Lady Finger	240.0	360.0	320.0	480.0	-	-	-	-	-	-	-	480.0
Onion	320.0	400.0	240.0	320.0	320.0	320.0	300.0	300.0	300.0	-	-	-
Gourd	120.0	320.0	400.0	320.0	240.0	-	-	-	-	-	-	-
Bitter Gourd	200.0	280.0	240.0	400.0	-	-	-	-	-	-	-	-
Tori	-	-	-	160.0	-	-	-	-	-	-	-	-
Turnip	-	-	-	-	240.0	120.0	100.0	100.0	80.0	-	-	-
Coloculia	-	-	-	-	240.0	160.0	200.0	280.0	280.0	-	-	-
Califlower	-	-	-	-	320.0	240.0	150.0	150.0	140.0	-	-	-
Tender	-	-	-	-	-	-	-	-	-	-	320.0	280.0
Cucumber	-	-	-	-	-	-	-	-	-	-	330.0	280.0
FRUITS												
Peach	480.0	560.0	800.0	-	-	-	-	-	-	-	-	-
Pear	-	-	240.0	-	-	-	-	-	-	-	-	-
Plum	240.0	-	-	-	-	-	-	-	-	-	-	-
Persimmon	-	-	-	-	200.0	320.0	400.0	-	-	-	-	-
Nalfavn	-	-	-	-	-	-	-	140.0	180.0	-	-	-
Louquaf	-	-	-	-	-	-	-	-	-	-	520.0	-

Source: Agricultural Extension Office, Charsadda

Table E1.13 Land Capability Classes of New Command Area

Command area in the Left Bank: (Unit: acres)

Land Class	Study Area		beyond the Study Area		Total	
	(GCA)	(CCA)	(GCA)	(CCA)	(GCA)	(CCA)
I	2,135	2,078	2,030	1,974	4,165	4,052
IIr	3,428	3,335	0	0	3,428	3,335
IIsr	0	0	660	642	660	642
III _s	2,515	2,454	1,015	988	3,530	3,442
III _{sr}	0	0	2,884	2,806	2,884	2,806
IV _{sr}	3,138	2,183	2,978	2,070	6,116	4,253
Misc.areas	0	0	1,750	1,750	1,750	1,750
Total	11,216	10,050	11,317	10,230	22,533	20,280

Command area in the Left Bank: (Unit: ha)

Land Class	Study Area		beyond the Study Area		Total	
	(GCA)	(CCA)	(GCA)	(CCA)	(GCA)	(CCA)
I	864	841	822	799	1,686	1,640
IIr	1,387	1,350	0	0	1,387	1,350
IIsr	0	0	267	260	267	260
III _s	1,018	993	411	400	1,429	1,393
III _{sr}	0	0	1,167	1,136	1,167	1,136
IV _{sr}	1,270	883	1,205	838	2,475	1,721
Misc.areas	0	0	708	708	708	708
Total	4,539	4,066	4,580	4,141	9,119	8,207

The figure of the Command Area includes the area of existing Tangi scheme.

Command area in the Right Bank: (Unit: acres)

Land Class	Study Area		beyond the Study Area		Total	
	(GCA)	(CCA)	(GCA)	(CCA)	(GCA)	(CCA)
I	2,064	1,823	2,910	2,568	4,974	4,391
IIr	0	0	0	0	0	0
IIsr	0	0	0	0	0	0
III _s	3,341	2,949	0	0	3,341	2,949
III _{sr}	314	278	0	0	314	278
IV _{sr}	0	0	0	0	0	0
Misc.areas	0	0	1,482	1,482	1,482	1,482
Total	5,719	5,050	4,392	4,050	10,111	9,100

Command area in the Right Bank: (Unit: ha)

Land Class	Study Area		beyond the Study Area		Total	
	(GCA)	(CCA)	(GCA)	(CCA)	(GCA)	(CCA)
I	835	737	1,178	1,040	2,013	1,777
IIr	0	0	0	0	0	0
IIsr	0	0	0	0	0	0
III _s	1,352	1,193	0	0	1,352	1,193
III _{sr}	127	113	0	0	127	113
IV _{sr}	0	0	0	0	0	0
Misc.areas	0	0	600	600	600	600
Total	2,314	2,043	1,778	1,640	4,092	3,683

The figure of the Command Area includes the irrigable area of left bank of Subhan Khwar.

Table E2.1 Estimated Reference Evapo-Transpiration (ET₀) in the Study Area

Evapo-transpiration Estimated by Observed Pan Evaporation (for reference)

Station: Murdan

Items	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Epan (Monthly)	29.3	47.2	125.9	201.3	348.0	499.4	461.4	314.9	214.1	112.1	61.1	27.7	2,442.5
Epan (Daily)	0.95	1.69	4.06	6.71	11.23	16.65	14.88	10.16	7.14	3.62	2.04	0.89	
RI mean (%)	59.5	58.0	60.0	55.5	42.0	39.0	57.5	67.0	61.0	57.0	61.0	64.5	
Wind velocity*(Km/day)	62.2	88.9	80.0	88.9	80.0	106.7	128.9	124.4	66.7	40.0	53.3	40.0	
Kp	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
ET ₀ (Daily)	0.66	1.18	2.84	4.70	7.86	11.65	10.42	7.11	5.00	2.53	1.43	0.63	
ET ₀ (Monthly)	20.5	33.1	88.1	140.9	243.6	349.6	323.0	220.4	149.9	78.5	42.8	19.4	1,709.8

*: Data in Peshawar

Evapo-transpiration Estimated by FAO's Blaney-Criddle Method (for reference)

Station: Peshawar

Items	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Temperature	11.2	12.9	17.4	23.2	28.6	33.1	32.2	30.7	28.9	23.7	17.6	12.5	
P	0.23	0.25	0.27	0.29	0.31	0.32	0.32	0.30	0.28	0.25	0.23	0.22	
Px(0.46T+8.13)(=F)	3.05	3.52	4.36	5.45	6.60	7.47	7.34	6.68	6.00	4.76	3.73	3.05	
Monthly Total (F)	94.7	98.4	135.0	163.6	204.6	224.2	227.6	206.9	180.0	147.5	112.0	94.7	1,889.2
RI min	44.0	40.0	42.0	38.0	27.0	26.0	44.0	54.0	46.0	43.0	50.0	52.0	
n	8.0	8.7	9.5	10.6	12.2	12.8	10.4	10.3	10.8	10.3	9.0	7.7	
N	10.1	11.0	11.9	13.1	14.0	14.5	14.3	13.5	12.4	11.3	10.3	9.8	
n/N	0.79	0.79	0.80	0.81	0.87	0.88	0.73	0.76	0.87	0.91	0.87	0.79	
Wind velocity (m/sec)	0.72	1.03	0.93	1.03	0.93	1.23	1.49	1.44	0.77	0.46	0.62	0.46	
ET ₀ (Daily)	1.90	2.45	3.60	5.00	7.30	8.50	7.30	6.35	6.70	4.60	3.10	1.40	
ET ₀ (Monthly)	58.9	68.6	111.6	150.0	226.3	255.0	226.3	196.9	201.0	142.6	93.0	43.4	1,773.6

Evapo-transpiration Estimated by Modify PENMAN Method

Station: Peshawar

Items	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
ea	13.28	14.90	19.88	28.44	39.18	50.59	48.14	44.15	39.87	29.29	20.12	14.50	
ed	7.90	8.64	11.93	15.78	16.46	19.73	27.68	29.58	24.32	16.70	12.27	9.35	
(ea-ed)	5.38	6.26	7.95	12.66	22.72	30.86	20.46	14.57	15.55	12.59	7.85	5.15	
Wind velocity (Km/day)	62.2	88.9	80.0	88.9	80.0	106.7	128.9	124.4	66.7	40.0	53.3	40.0	
f (Wind velocity)	0.44	0.51	0.49	0.51	0.49	0.56	0.62	0.61	0.45	0.38	0.41	0.38	
(1-W)	0.42	0.40	0.31	0.28	0.22	0.21	0.20	0.21	0.22	0.26	0.33	0.41	
(1-W)f(ea-ed)	0.99	1.26	1.31	1.77	2.43	3.53	2.47	1.81	1.54	1.26	1.08	0.79	
Ra	7.90	9.80	12.40	14.80	16.50	17.10	16.80	15.50	13.40	10.80	8.50	7.20	
n	8.0	8.7	9.5	10.6	12.2	12.8	10.4	10.3	10.8	10.3	9.0	7.7	
N	10.1	11.0	11.9	13.1	14.0	14.5	14.3	13.5	12.4	11.3	10.3	9.8	
n/N	0.79	0.79	0.80	0.81	0.87	0.88	0.73	0.76	0.87	0.91	0.87	0.79	
(1-a)(0.25+0.5n/N)	0.48	0.48	0.49	0.49	0.51	0.52	0.46	0.47	0.51	0.53	0.52	0.48	
Ra(1-a)(0.25+0.5n/N)	3.82	4.74	6.04	7.27	8.49	8.87	7.73	7.34	6.89	5.72	4.38	3.47	
f(t)	12.94	13.28	14.08	15.24	16.42	17.45	17.25	16.88	16.50	15.83	14.12	13.20	
f(ed)	0.23	0.22	0.20	0.18	0.18	0.16	0.13	0.12	0.14	0.18	0.20	0.22	
f(n/N)	0.81	0.81	0.82	0.83	0.88	0.89	0.75	0.79	0.88	0.92	0.89	0.81	
f(t)f(ed)f(n/N)	2.39	2.40	2.33	2.29	2.58	2.53	1.69	1.63	2.08	2.57	2.50	2.32	
W()	0.83	1.42	2.45	3.61	4.61	5.03	4.87	4.54	3.75	2.31	1.25	0.69	
ET ₀ (Daily)	1.82	2.68	3.76	5.39	7.04	8.57	7.33	6.35	5.29	3.57	2.34	1.47	
ET ₀ (Monthly)	56.4	75.0	116.7	161.6	218.1	257.0	227.3	197.0	158.7	110.7	70.1	45.7	1,694.2

Table E2.2 Crop Water Requirement in Munda Dam Multipurpose Project (1/3)

Wheat;

Month 10days	Oct.			Nov.			Dec.			Jan.			Feb.			Mar.			Apr.			May			June						
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
	0.4	0.4	0.55	0.85	1.08	1.15	1.15	1.15	1.15	1.08	0.85	0.55	0.25	0.00	0.00																
		0.4		0.4	0.55	0.85	1.08	1.15	1.15	1.15	1.15	1.15	1.08	0.85	0.55	0.25	0.00	0.00													
			0.4	0.4	0.55	0.85	1.08	1.15	1.15	1.15	1.15	1.15	1.08	0.85	0.55	0.25	0.00	0.00													
				0.4	0.4	0.55	0.85	1.08	1.15	1.15	1.15	1.15	1.08	0.85	0.55	0.25	0.00	0.00													
					0.4	0.4	0.55	0.85	1.08	1.15	1.15	1.15	1.08	0.85	0.55	0.25	0.00	0.00													
						0.4	0.4	0.55	0.85	1.08	1.15	1.15	1.08	0.85	0.55	0.25	0.00	0.00													
							0.4	0.4	0.55	0.85	1.08	1.15	1.08	0.85	0.55	0.25	0.00	0.00													
								0.4	0.4	0.55	0.85	1.08	1.08	0.85	0.55	0.25	0.00	0.00													
Kr(10days)	0.40	0.40	0.45	0.55	0.65	0.74	0.80	0.90	1.01	1.09	1.09	1.01	0.88	0.72	0.55	0.39	0.28	0.16	0.06	0.00	0.00	0.00	0.00	0.00							
Kc	0.49			0.55			0.81			1.06			0.87			0.41			0.07			0.00									
Area % (10days)	0.143	0.285	0.43	0.57	0.71	0.86	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.66	0.71	0.57	0.43	0.285	0.143	0.00						
Area %	0.21			0.57			1.00			1.00			1.00			1.00			0.57			0.14									
ETo	110.7			70.1			45.7			56.4			75.0			116.7			161.6			218.1									
Req(l)	9.5			22.1			37.2			59.9			65.3			47.4			6.8			0.0									
Effective rain	1.1			1.2			4.5			10.8			19.9			40.5			12.1			3.5									
Water req.(mm)	8.4			20.9			32.7			49.1			45.4			6.9			0.0												

Total 163.4 mm

Sugarbeet;

Month 10days	Oct.			Nov.			Dec.			Jan.			Feb.			Mar.			Apr.			May			June						
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
		0.55	0.55	0.55	0.65	0.75	0.85	0.95	1.05	1.13	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.14	1.12	1.08	1.05	1.02								
			0.55	0.55	0.55	0.58	0.65	0.75	0.85	0.95	1.05	1.13	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.14	1.12	1.08	1.05	1.02							
				0.55	0.55	0.55	0.58	0.65	0.75	0.85	0.95	1.05	1.13	1.15	1.15	1.15	1.15	1.15	1.15	1.14	1.12	1.08	1.05	1.02							
					0.55	0.55	0.55	0.58	0.65	0.75	0.85	0.95	1.05	1.13	1.15	1.15	1.15	1.15	1.15	1.14	1.12	1.08	1.05	1.02							
						0.55	0.55	0.55	0.58	0.65	0.75	0.85	0.95	1.05	1.13	1.15	1.15	1.15	1.15	1.15	1.14	1.12	1.08	1.05	1.02						
							0.55	0.55	0.58	0.65	0.75	0.85	0.95	1.05	1.13	1.15	1.15	1.15	1.15	1.15	1.14	1.12	1.08	1.05	1.02						
								0.55	0.55	0.58	0.65	0.75	0.85	0.95	1.05	1.13	1.15	1.15	1.15	1.14	1.12	1.08	1.05	1.02							
Kr(10days)	0.55	0.55	0.55	0.56	0.58	0.61	0.66	0.72	0.81	0.90	0.98	1.05	1.10	1.13	1.15	1.15	1.15	1.14	1.13	1.12	1.09	1.08	1.00	1.05	1.04	1.00					
Kc	0.55			0.56			0.66			0.89			1.09			1.15			1.13			0.73			1.04						
Area % (10days)	0.167	0.333	0.50	0.67	0.83	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.833	0.67	0.5	0.333	0.17					
Area %	0.25			0.67			1.00			1.00			1.00			1.00			1.00			0.83			0.33						
ETo	110.7			70.1			45.7			56.4			75.0			116.7			161.6			218.1			218.1						
Req(l)	15.2			26.2			30.2			50.4			61.8			134.0			182.6			131.8			75.2						
Effective rain	1.1			1.2			4.5			10.8			19.9			40.5			12.1			3.5			3.5						
Water req.(mm)	14.1			25.0			25.7			39.6			61.9			93.5			170.5			128.3			71.7						

Total 558.7 mm

Oil-seeds;

Month 10days	Sep.			Oct.			Nov.			Dec.			Jan.			Feb.			Mar.			Apr.			May					
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3			
	0.4	0.4	0.40	0.40	0.46	0.59	0.71	0.84	0.96	1.09	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.10	0.96	0.78	0.59	0.4							
		0.4		0.4	0.40	0.46	0.59	0.71	0.84	0.96	1.09	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.10	0.96	0.78	0.59	0.4						
			0.4	0.4	0.40	0.46	0.59	0.71	0.84	0.96	1.09	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.10	0.96	0.78	0.59	0.4						
				0.4	0.4	0.40	0.46	0.59	0.71	0.84	0.96	1.09	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.10	0.96	0.78	0.59	0.4						
					0.4	0.40	0.46	0.59	0.71	0.84	0.96	1.09	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.10	0.96	0.78	0.59	0.4						
						0.4	0.4	0.40	0.46	0.59	0.71	0.84	0.96	1.09	1.15	1.15	1.15	1.15	1.10	0.96	0.78	0.59	0.4							
							0.4	0.4	0.40	0.46	0.59	0.71	0.84	0.96	1.09	1.15	1.15	1.15	1.15	1.10	0.96	0.78	0.59	0.4						
Kr(10days)	0.40	0.40	0.40	0.40	0.42	0.46	0.54	0.65	0.78	0.90	1.01	1.09	1.13	1.15	1.15	1.15	1.14	1.09	1.00	0.86	0.68	0.59	0.50	0.40	0.00	0.00				
Kc	0.40			0.41			0.55			0.90			1.12			1.15			0.98			0.59			0.11					
Area % (10days)	0.25	0.50	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.50	0.25	0.00					
Area %	0.38			0.92			1.00			1.00			1.00			1.00			1.00			0.75			0.13					
ETo	158.7			110.7			70.1			45.7			56.4			75.0			116.7			161.6			218.1					
Req(l)	23.8			41.1			35.6			40.9			63.3			85.9			114.6			71.4			3.6					
Effective rain	16.6			1.1			1.2			4.5			10.8			19.9			40.5			12.1			3.5					
Water req.(mm)	7.2			40.0			37.4			36.4			52.5			66.0			74.1			59.3			0.1					

Total 372.9 mm

Rabi Fodder;

Month 10days	Oct.			Nov.			Dec.			Jan.			Feb.			Mar.			Apr.			May			June					
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3			
	0.5	0.5	0.5	0.50	0.50	0.56	0.68	0.81	0.93	1.02	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05						
		0.5		0.5	0.50	0.50	0.56	0.68	0.81	0.93	1.02	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05						
			0.5	0.5	0.5	0.50	0.50	0.56	0.68	0.81	0.93	1.02	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05						
				0.5	0.5	0.50	0.50	0.56	0.68	0.81	0.93	1.02	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05						
					0.5	0.5	0.50	0.50	0.56	0.68	0.81	0.93	1.02	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05						
						0.5	0.5	0.50	0.50	0.56	0.68	0.81	0.93	1.02	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05						
							0.5	0.5	0.50	0.50	0.56	0.68	0.81	0.93	1.02	1.05	1.05	1.05	1.05	1.05										

Table E2.2 Crop Water Requirement in Munda Dam Multipurpose Project (2/3)

Rabi Vegetables:

Month 10days	Oct.			Nov.			Dec.			Jan.			Feb.			Mar.			Apr.		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Kc(10days)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Kc		0.90		0.90			0.90			0.90			0.90			0.90			0.90		
Area % (10days)	0.25	0.5	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.50	0.25
Area %		0.50		1.00			1.00			1.00			1.00			1.00			0.50		
ETo		110.7		70.1			45.7			56.4			75.0			116.7					
Req(I)		49.8		63.1			41.1			50.8			67.5			52.5					
Effective rain		1.1		1.2			4.5			10.8			19.9			43.5					
Water req.(mm)		48.7		61.9			36.6			40.0			47.6			12.0					0.0
Total																					246.8 mm

Maize:

Month 10days	June			July			Aug.			Sep.			Oct.			Nov.			Dec.		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	0.41	0.41	0.50	0.69	0.83	1.04	1.10	1.10	1.03	0.80	0.47										
Kc(10days)	0.41	0.41	0.41	0.50	0.62	0.78	0.93	1.03	1.09	1.08	1.01	0.85	0.77	0.64	0.47						
Kc		0.42		0.63			1.01			0.98			0.62								
Area % (10days)	0.25	0.5	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.50	0.25							
Area %		0.50		1.00			1.00			1.00			0.50								
ETo		257.0		227.3			197.0			155.7			110.7								
Req(I)		54.0		141.0			199.8			155.5			34.5								
Effective rain		6.3		75.7			79.3			16.6			1.1								
Water req.(mm)		47.7		64.3			120.5			138.9			33.4			0.0					0.0
Total																					406.8 mm

Tobacco:

Month 10days	Feb.			Mar.			Apr.			May			June			July			Aug.		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
		0.56		0.73	0.97	1.14	1.20	1.20	1.20	1.17	1.07	0.93	0.80								
Kc(10days)		0.56		0.73	0.97	1.14	1.20	1.20	1.20	1.20	1.17	1.07	0.93	0.80							
Kc		0.60		0.84			1.06			1.19			1.07								
Area % (10days)		0.1666	0.333	0.50	0.67	0.83	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.83	0.67	0.50	0.33	0.17	0.00	0.00	0.00
Area %		0.25		0.67			1.00			1.00			0.94			0.50			0.06		
ETo		75.0		116.7			161.6			218.1			257.0			227.3			197.0		
Req(I)		11.3		65.4			171.9			258.7			260.8			106.7			8.5		
Effective rain		19.9		80.5			12.1			3.5			6.3			75.7			79.3		
Water req.(mm)		0.0		24.9			159.8			255.2			254.5			30.0					0.0
Total																					724.5 mm

Kharif Fodder:

Month 10days	Apr.			May			June			July			Aug.			Sep.			Oct.		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	0.50	0.50	0.50	0.59	0.78	0.96	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Kc(10days)	0.50	0.50	0.50	0.52	0.57	0.64	0.70	0.78	0.85	0.93	1.00	1.04	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Kc		0.50		0.58			0.78			0.99			1.05			1.05			1.05		
Area % (10days)	0.13	0.25	0.38	0.50	0.63	0.88	1.00	1.00	1.00	1.00	1.00	0.88	0.63	0.50	0.38	0.25	0.13				
Area %		0.25		0.67			1.00			1.00			0.67			0.25					
ETo		161.6		218.1			257.0			227.3			197.0			158.7					
Req(I)		20.2		84.1			199.4			214.9			137.9			41.7					
Effective rain		12.1		3.5			6.3			75.7			79.3			16.6					
Water req.(mm)		8.1		80.6			193.1			149.2			58.6			25.1					0.0
Total																					514.6 mm

Pulses:

Month 10days	Apr.			May			June			July			Aug.			Sep.			
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
				0.50	0.64	0.83	0.97	1.10	1.10	1.10	1.09	1.04	0.93	0.85					
Kc(10days)				0.50	0.64	0.83	0.97	1.10	1.10	1.10	1.10	1.10	1.09	1.04	0.93	0.85			
Kc				0.50	0.64	0.83	0.97	1.10	1.10	1.10	1.10	1.10	1.09	1.04	0.93	0.85			
Area % (10days)				0.50	0.64	0.83	0.97	1.10	1.10	1.10	1.10	1.10	1.09	1.04	0.93	0.85			
Area %				0.50	0.64	0.83	0.97	1.10	1.10	1.10	1.10	1.10	1.09	1.04	0.93	0.85			
ETo				218.1			257.0			227.3			197.0			158.7			
Req(I)				62.6			224.2			247.4			203.6			70.9			
Effective rain				3.5			6.3			75.7			79.3			16.6			
Water req.(mm)				59.1			217.9			171.7			124.3			54.3			
Total																			627.3 mm

Table E2.2 Crop Water Requirement in Munda Dam Multipurpose Project (3/3)

Khari/Vegetable;

Month 10days	Apr.			May			June			July			Aug.			Sep.		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	0.50	0.50	0.64	0.83	0.97	1.07	1.10	1.10	1.10	1.10	1.10	1.09	1.04	0.98	0.89	0.85	0.85	0.85
Kc(10days)	0.50	0.50	0.55	0.62	0.73	0.86	0.92	1.06	1.09	1.10	1.10	1.10	1.08	1.05	1.00	0.94	0.91	0.87
Kc		0.52		0.74			1.05			1.09			1.00			1.00		0.88
Area % (10days)	0.25	0.50	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.50
Area %		0.50		1.00			1.00			1.00			1.00			1.00		0.50
ETo		161.6		218.1			257.0			227.3			197.0					158.7
Req (l)		41.6		161.8			269.4			248.5			196.5					69.5
Effective rain		12.1		3.5			6.3			75.7			79.3					16.6
Water req.(mm)		29.5		155.3			263.1			172.8			117.2					52.9
																Total		793.9 mm

Sugarcane;

Month 10days	Jan.			Feb.			Mar.			Apr.			May			Jun.		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	0.83	0.84	0.85	0.88	0.89	0.90	0.90	0.91	0.91	0.92	0.92	0.91	0.91	0.91	0.91	0.90	0.90	0.89
Kc(10days)	0.83	0.84	0.85	0.88	0.89	0.90	0.90	0.91	0.91	0.92	0.92	0.91	0.91	0.91	0.91	0.90	0.90	0.89
Kc		0.84		0.89			0.91			0.92			0.91			0.90		0.88
Area % (10days)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Area %		1.00		1.00			1.00			1.00			1.00			1.00		1.00
ETo		56.4		75			116.7			161.6			218.1			257.0		257.0
Req (l)		47.6		66.7			105.8			148.1			197.4			225.2		225.2
Effective rain		10.8		19.9			40.5			12.1			3.5			6.3		6.3
Water req.(mm)		36.8		46.8			65.3			136.0			193.9			218.9		218.9
																Total		1095.2 mm

Month 10days	Jul.			Aug.			Sep.			Oct.			Nov.			Dec.		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	0.80	0.75	0.73	0.70	0.68	0.68	0.67	0.66	0.66	0.66	0.67	0.69	0.71	0.74	0.76	0.78	0.81	0.82
Kc(10days)	0.80	0.75	0.73	0.70	0.68	0.68	0.67	0.66	0.66	0.66	0.67	0.69	0.71	0.74	0.76	0.78	0.81	0.82
Kc		0.76		0.69			0.66			0.67			0.74			0.80		0.80
Area % (10days)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Area %		1.00		1.00			1.00			1.00			1.00			1.00		1.00
ETo		227.3		197.0			158.7			110.7			70.1			45.7		45.7
Req (l)		171.9		135.5			105.3			74.5			51.7			36.7		36.7
Effective rain		75.7		79.3			16.6			1.1			1.2			4.5		4.5
Water req.(mm)		96.2		56.2			88.9			73.4			50.5			32.2		32.2
																Total		1095.2 mm

Orchard;

Month 10days	Jan.			Feb.			Mar.			Apr.			May			Jun.		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Kc(10days)	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Kc		0.80		0.80			0.80			0.80			0.80			0.80		0.80
Area % (10days)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Area %		1.00		1.00			1.00			1.00			1.00			1.00		1.00
ETo		56.4		75			116.7			161.6			218.1			257.0		257.0
Req (l)		45.1		60.0			93.4			129.3			174.5			205.6		205.6
Effective rain		10.8		19.9			40.5			12.1			3.5			6.3		6.3
Water req.(mm)		34.3		40.1			52.9			117.2			171.0			199.3		199.3
																Total		1063.9 mm

Month 10days	Jul.			Aug.			Sep.			Oct.			Nov.			Dec.		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Kc(10days)	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Kc		0.80		0.80			0.80			0.80			0.80			0.80		0.80
Area % (10days)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Area %		1.00		1.00			1.00			1.00			1.00			1.00		1.00
ETo		227.3		197.0			158.7			110.7			70.1			45.7		45.7
Req (l)		181.8		157.6			127.0			88.6			56.1			36.6		36.6
Effective rain		75.7		79.3			16.6			1.1			1.2			4.5		4.5
Water req.(mm)		106.1		78.3			110.4			87.5			54.9			32.1		32.1
																Total		1063.9 mm

Table E2.3 Irrigation Water Requirement in New Command Area for Munda Dam Multipurpose Project

	(Unit:mm)												
	Wheat	Sugarbeet	Oil-seeds	Rabi-Fodder	Onion	R.Vegetables	Maize	Tabacco	K.Fodder	Pulses	K.Vegetables	Sugarcane	Orchard
Jan.	49.1	39.6	52.5	31.6	17.7	40.0	0.0	0.0	0.0	0.0	0.0	36.8	34.3
Feb.	45.4	61.9	66.0	53.4	30.2	47.6	0.0	0.0	0.0	0.0	0.0	46.8	40.1
Mar.	6.9	93.5	74.1	81.8	81.2	12.0	0.0	24.9	0.0	0.0	0.0	65.3	52.9
Apr.	0.0	170.5	59.3	111.3	168.9	0.0	0.0	159.8	8.1	0.0	29.5	136.0	117.2
May	0.0	128.3	0.1	44.0	105.1	0.0	0.0	255.2	80.6	59.1	158.3	193.9	171.0
Jun.	0.0	71.7	0.0	0.0	0.0	0.0	47.7	217.9	218.9	218.9	218.9	199.3	199.3
Jul.	0.0	0.0	0.0	0.0	0.0	0.0	68.3	30.0	149.2	171.7	172.8	96.2	106.1
Aug.	0.0	0.0	0.0	0.0	0.0	0.0	120.5	0.0	58.6	124.3	117.2	56.2	78.3
Sep.	0.0	0.0	7.2	0.0	0.0	0.0	138.9	0.0	25.1	54.3	52.9	88.9	110.4
Oct.	8.4	14.1	40.0	45.0	0.0	48.7	35.4	0.0	0.0	0.0	0.0	73.4	87.5
Nov.	20.9	25.0	37.4	28.0	0.0	61.9	0.0	0.0	0.0	0.0	0.0	50.5	54.9
Dec.	32.7	25.7	36.4	20.5	0.0	36.6	0.0	0.0	0.0	0.0	0.0	32.2	32.1
	163.4	630.4	373.0	415.7	403.1	246.8	408.8	724.5	514.6	627.3	793.9	1,095.2	1,083.9

Irrigation Water Requirement in New Command Area

Crops Areal Percentage	Total Crop Intensity:												164.0 %	Orchard	54.00%	
	Wheat	Sugarbeet	Oil-seeds	Rabi-Fodder	Onion	R.Vegetables	Maize	Tabacco	K.Fodder	Pulses	K.Vegetables	Sugarcane				
Jan.	14.73	0.00	1.05	0.95	1.06	2.80	0.00	0.00	0.00	0.00	0.00	11.04	2.75	34.37	63.64	3,396
Feb.	13.63	0.00	1.32	1.60	1.81	3.33	0.00	0.00	0.00	0.00	0.00	14.05	3.21	38.95	72.13	4,261
Mar.	2.08	0.00	1.48	2.46	4.87	0.84	0.00	1.50	0.00	0.00	0.00	19.59	4.23	37.05	68.60	3,660
Apr.	0.00	0.00	1.19	3.34	10.13	0.00	0.00	9.59	0.24	0.00	2.36	40.79	9.37	77.02	142.62	7,863
May	0.00	0.00	0.00	1.32	6.31	0.00	0.00	15.31	2.42	2.36	12.67	58.16	13.68	112.23	207.84	11,089
Jun.	0.00	0.00	0.00	0.00	0.00	0.00	12.87	15.27	5.79	8.72	21.05	65.68	15.94	145.33	269.13	14,838
Jul.	0.00	0.00	0.00	0.00	0.00	0.00	18.43	1.80	4.48	6.87	13.83	28.86	3.49	82.75	153.24	8,176
Aug.	0.00	0.00	0.00	0.00	0.00	0.00	32.53	0.00	1.76	4.97	9.38	16.87	6.26	71.77	132.92	7,092
Sep.	0.00	0.00	0.14	0.00	0.00	0.00	37.51	0.00	0.75	2.17	4.23	26.66	8.83	80.30	148.70	8,198
Oct.	2.52	0.00	0.80	1.35	0.00	3.41	9.03	0.00	0.00	0.00	0.00	22.03	7.00	46.13	85.43	4,558
Nov.	6.27	0.00	0.75	0.84	0.00	4.33	0.00	0.00	0.00	0.00	0.00	15.15	4.39	31.73	58.76	3,239
Dec.	9.80	0.00	0.73	0.62	0.00	2.56	0.00	0.00	0.00	0.00	0.00	9.67	2.56	25.94	48.03	2,563
	49.02	0.00	7.46	12.47	24.19	17.28	110.37	49.47	15.44	25.09	63.51	328.55	86.72	783.57	1518.11	

**Table E5.1 Crop Production Budget per Acre (1/20)
without Project**

Maize (Non-Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	461	7.0	3,227	2,807
By-product Credit	kg	922	0.12	111	96
Total Revenue (1)				3,338	2,904
EXPENSES					
Materials					
Seed	kg	25	8.0	200	200
Fertilizer					
N	kg	20	15.0	300	441
P	kg	0		0	
K	kg	0		0	
Plant Protection				0	
Labours					
(Hired Labour)					
Planting (Sowing)	md			0	
Fertilizer Application	md	1	72.0	72	54
Plant Protection (Bird Scaring)	md	7.4	72.0	533	400
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	3	72.0	216	162
Threshing	md	4	72.0	288	216
Subtotal	md	15.4		1,109	832
(Family Labour)					
Planting (Sowing)	md		72.0	0	0
Fertilizer Application	md	1.6	72.0	115	86
Plant Protection (Bird Scaring)	md	2	72.0	144	108
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	3	72.0	216	162
Threshing	md		72.0	0	0
Subtotal (3)	md	6.6		475	356
(Total Labour Requirement)	md	22.0			
Others					
Land Preparation (Tractor)	acre	3	75.0	225	196
Sowing (Tractor)	acre	1	75.0	75	65
Credit	acre	1	37.0	37	37
Contingencies	acre	1		121	106
Total Expenses (2)				2,542	2,168
PRIMARY BENEFIT (4) = (1) - (2)				796	736
CASH BALANCE (5) = (4) + (3)				1,271	1,092

**Table E5.1 Crop Production Budget per Acre (2/20)
with Project**

Maize (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	1,000	7.0	7,000	6,090
By-product Credit	kg	2,000	0.12	240	209
Total Revenue (1)				7,240	6,299
EXPENSES					
Materials					
Seed	kg	18	8.0	144	144
Fertilizer					
N	kg	50	15.0	750	1,103
P	kg	25	20.0	500	570
K	kg	0	18.0	0	0
Plant Protection	acre	1		310	310
Labours					
(Hired Labour)					
Planting (Sowing)	md		72.0	0	0
Fertilizer Application	md		72.0	0	0
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	4	72.0	288	216
Threshing	md	4	72.0	288	216
Subtotal	md	8.0		576	432
(Family Labour)					
Planting (Sowing)	md	1	72.0	72	54
Fertilizer Application	md	2.0	72.0	144	108
Plant Protection	md	10	72.0	720	540
Weeding	md	2	72.0	144	108
Irrigation / Cleaning	md	7	72.0	504	378
Harvesting / Grading / Packing	md	4	72.0	288	216
Threshing	md	4	72.0	288	216
Subtotal (3)	md	30.00		2,160	1,620
(Total Labour Requirement)	md	38.0			
Others					
Land Preparation (Tractor)	no	4	75.0	300	261
Sowing (Tractor)	no	2	75.0	150	131
Credit	acre	1		37	37
Contingencies	acre	1		246	230
Total Expenses (2)				5,173	4,707
PRIMARY BENEFIT (4) = (1) - (2)				2,067	1,592
CASH BALANCE (5) = (4) + (3)				4,227	3,212

**Table E5.1 Crop Production Budget per Acre (3/20)
with Project**

Tobacco (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	1,025	41.0	42,025	36,268
By-product Credit	kg				
Total Revenue (1)				42,025	36,268
EXPENSES					
Materials					
Seed	g	5	320.0	1,600	1,600
Fertilizer					
N	kg	25	15.0	375	551
P	kg	35	20.0	700	798
K	kg	30	18.0	540	394
Plant Protection	no	2	310.0	620	620
Labours					
(Hired Labour)					
Planting (Sowing)	md	1.5	72.0	108	81
Fertilizer Application	md		72.0	0	0
Plant Protection	md		72.0	0	0
Weeding	md	4	72.0	288	216
Irrigation / Cleaning	md		72.0	0	0
Harvesting	md	6	72.0	432	324
Curing	md		72.0	0	0
Subtotal	md	11.5		828	621
(Family Labour)					
Planting (Sowing)	md	3.0	72.0	216	162
Fertilizer Application	md	1.5	72.0	108	81
Plant Protection	md	2	72.0	144	108
Weeding	md	5	72.0	360	270
Irrigation / Cleaning	md	7	72.0	504	378
Harvesting	md	11	72.0	792	594
Curing	md	5	72.0	360	270
Subtotal (3)	md	34.5		2,484	1,863
(Total Labour Requirement)	md	46.0			
Others					
Land Preparation (Tractor)	no	5	75.0	375	326
Sowing (Tractor)	no	3	75.0	225	196
Credit	acre			150	150
Contingencies	acre			395	356
Total Expenses (2)				8,067	7,280
PRIMARY BENEFIT (4) = (1) - (2)				33,958	28,988
CASH BALANCE (5) = (4) + (3)				36,442	30,851

**Table E5.1 Crop Production Budget per Acre (4/20)
with Project**

K.Fodder (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	9,000	0.84	7,560	6,577
By-product Credit	kg				
Total Revenue (1)				7,560	6,577
EXPENSES					
Materials					
Seed	kg	25	12.6	315	315
Fertilizer					
N	kg	40	15.0	600	882
P	kg	0		0	0
K	kg	0		0	0
Plant Protection				0	0
Labours					
(Hired Labour)					
Planting (Sowing)	md		72.0	0	0
Fertilizer Application	md		72.0	0	0
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md		72.0	0	0
Subtotal	md	0		0	0
(Family Labour)					
Planting (Sowing)	md		72.0	0	0
Fertilizer Application	md	1.5	72.0	108	81
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md	3.5	72.0	252	189
Harvesting / Grading / Packing	md	13	72.0	936	702
Subtotal (3)	md	18.0		1,296	972
(Total Labour Requirement)	md	18.0			
Others					
Land Preparation (Tractor)	no	3	75.0	225	196
Sowing (Tractor)	no	1	75.0	75	65
Credit	acre			62	62
Contingencies	acre			129	125
Total Expenses (2)				2,627	2,551
PRIMARY BENEFIT (4) = (1) - (2)				4,933	4,026
CASH BALANCE (5) = (4) + (3)				6,229	4,998

**Table E5.1 Crop Production Budget per Acre (5/20)
with Project**

K. Vegetable (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	4,788	5.5	26,334	22,911
By-product Credit	kg				
Total Revenue (1)				26,334	22,911
EXPENSES					
Materials					
Seed	kg	3	62.0	186	186
Fertilizer					
N	kg	52	15.0	780	1,147
P	kg	25	20.0	500	570
K	kg	18	18.0	324	237
Plant Protection	no	2	310.0	620	620
Labours					
(Hired Labour)					
Planting (Sowing)	md	4	72.0	288	216
Fertilizer Application	md	3	72.0	216	162
Plant Protection	md	2	72.0	144	108
Weeding	md	10	72.0	720	540
Irrigation / Cleaning	md	4	72.0	288	216
Harvesting / Grading / Packing	md	13	72.0	936	702
Subtotal	md	36		2,592	1,944
(Family Labour)					
Planting (Sowing)	md	4	72.0	288	216
Fertilizer Application	md		72.0	0	0
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md	3	72.0	216	162
Harvesting / Grading / Packing	md	5	72.0	360	270
Subtotal (3)	md	12		864	648
(Total Labour Requirement)	md	48.0			
Others					
Land Preparation (Tractor)	no	6	75.0	450	392
Sowing (Tractor)	no	3	75.0	225	196
Credit	acre			150	150
Contingencies	acre			335	304
Total Expenses (2)				6,801	6,197
PRIMARY BENEFIT (4) = (1) - (2)				19,533	16,714
CASH BALANCE (5) = (4) + (3)				20,397	16,066

**Table E5.1 Crop Production Budget per Acre (6/20)
without Project**

Pulses (Non-Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	240	21.2	5,088	4,386
By-product Credit	kg			0	
Total Revenue (1)				5,088	4,386
EXPENSES					
Materials					
Seed	kg	8	27.0	216	216
Fertilizer					
N	kg	0	15.0	0	0
P	kg	0	20.0	0	0
K	kg	0	18.0	0	0
Plant Protection	no	1	310.0	310	310
Labours					
(Hired Labour)					
Planting (Sowing)	md	1.5	72.0	108	81
Fertilizer Application	md		72.0	0	0
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	3	72.0	216	162
Threshing	md		72.0	0	0
Subtotal	md	4.5		324	243
(Family Labour)					
Planting (Sowing)	md	1	72.0	72	54
Fertilizer Application	md	0.5	72.0	36	27
Plant Protection	md	1	72.0	72	54
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	3	72.0	216	162
Threshing	md	5	72.0	360	270
Subtotal (3)	md	10.5		756	567
(Total Labour Requirement)	md	15.0			
Others					
Land Preparation (Tractor)	acre	2	75.0	150	131
Sowing (Tractor)	acre	1	75.0	75	65
Credit	acre			60	60
Contingencies	acre			95	80
Total Expenses (2)				1,911	1,606
PRIMARY BENEFIT (4) = (1) - (2)				3,177	2,780
CASH BALANCE (5) = (4) + (3)				3,933	3,347

**Table E5.1 Crop Production Budget per Acre (7/20)
with Project**

Pulses (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	314	21.2	6,657	5,738
By-product Credit	kg				
Total Revenue (1)				6,657	5,738
EXPENSES					
Materials					
Seed	kg	8	27.0	216	216
Fertilizer					
N	kg	16	15.0	240	353
P	kg	14	20.0	280	319
K	kg	0	18.0	0	0
Plant Protection	no	1	310.0	310	310
Labours					
(Hired Labour)					
Planting (Sowing)	md	1.5	72.0	108	81
Fertilizer Application	md		72.0	0	0
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	3	72.0	216	162
Threshing	md		72.0	0	0
Subtotal	md	4.5		324	243
(Family Labour)					
Planting (Sowing)	md	1	72.0	72	54
Fertilizer Application	md	0.5	72.0	36	27
Plant Protection	md	1	72.0	72	54
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	3	72.0	216	162
Threshing	md	5	72.0	360	270
Subtotal (3)	md	10.5		756	567
(Total Labour Requirement)		15.0			
Others					
Land Preparation (Tractor)	no	2	75.0	150	131
Sowing (Tractor)	acre	1	75.0	75	65
Credit	acre			60	60
Contingencies	acre			121	113
Total Expenses (2)				2,457	2,312
PRIMARY BENEFIT (4) = (1) - (2)				4,200	3,426
CASH BALANCE (5) = (4) + (3)				4,956	3,993

**Table E5.1 Crop Production Budget per Acre (8/20)
without Project**

Wheat (Non-Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	481	7.5	3,608	3,113
By-product Credit	kg	722	0.4	289	249
Total Revenue (1)				3,896	3,363
EXPENSES					
Materials					
Seed	kg	40	11.8	472	472
Fertilizer					
N	kg	20	15.0	300	441
P	kg	0		0	0
K	kg	0		0	0
Plant Protection				0	0
Labours					
(Hired Labour)					
Planting (Sowing)	md		72.0	0	0
Fertilizer Application	md		72.0	0	0
Plant Protection	md	1.5	72.0	108	81
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	4	72.0	288	216
Threshing	md	5	72.0	360	270
Subtotal	md	10.5		756	567
(Family Labour)					
Planting (Sowing)	md	1	72.0	72	54
Fertilizer Application	md	0.5	72.0	36	27
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	3	72.0	216	162
Threshing	md		72.0	0	0
Subtotal (3)	md	4.5		324	243
(Total Labour Requirement)	md	15.0			
Others					
Land Preparation (Tractor)	no	2	75.0	150	131
Sowing (Tractor)	no	1	75.0	75	65
Credit	acre			20	20
Contingencies	acre			105	97
Total Expenses (2)				2,127	1,970
PRIMARY BENEFIT (4) = (1) - (2)				1,769	1,392
CASH BALANCE (5) = (4) + (3)				2,093	1,635

**Table E5.1 Crop Production Budget per Acre (9/20)
with Project**

Wheat (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	1,150	7.5	8,625	7,443
By-product Credit	kg	1,725	0.4	690	595
Total Revenue (1)				9,315	8,039
EXPENSES					
Materials					
Seed	kg	40	11.8	472	472
Fertilizer					
N	kg	50	15.0	750	1,103
P	kg	25	20.0	500	570
K	kg	0		0	0
Plant Protection				0	0
Labours					
(Hired Labour)					
Planting (Sowing)	md		72.0	0	0
Fertilizer Application	md		72.0	0	0
Plant Protection	md	1.5	72.0	108	81
Weeding	md		72.0	0	0
Irrigation / Cleaning	md	1.5	72.0	108	81
Harvesting / Grading / Packing	md	4	72.0	288	216
Threshing	md	5	72.0	360	270
Subtotal	md	12.0		864	648
(Family Labour)					
Planting (Sowing)	md	1	72.0	72	54
Fertilizer Application	md	0.5	72.0	36	27
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md	1.5	72.0	108	81
Harvesting / Grading / Packing	md	3	72.0	216	162
Threshing	md		72.0	0	0
Subtotal (3)	md	6.0		432	324
(Total Labour Requirement)	md	18.0			
Others					
Land Preparation (Tractor)	no	4	75.0	300	261
Sowing (Tractor)	no	2	75.0	150	131
Credit	acre			20	20
Contingencies	acre			174	176
Total Expenses (2)				3,512	3,574
PRIMARY BENEFIT (4) = (1) - (2)				5,803	4,465
CASH BALANCE (5) = (4) + (3)				6,235	4,789

**Table E5.1 Crop Production Budget per Acre (10/20)
with Project**

Sugar Beet (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	12,756	1.1	14,032	12,207
By-product Credit	kg				
Total Revenue (1)				14,032	12,207
EXPENSES					
Materials					
Seed	kg	7	15.0	105	105
Fertilizer					
N	kg	45	15.0	675	992
P	kg	30	20.0	600	684
K	kg	20	18.0	360	263
Plant Protection	no	1	310.0	310	310
Labours					
(Hired Labour)					
Planting (Sowing)	md		72.0	0	0
Fertilizer Application	md		72.0	0	0
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	7.5	72.0	540	405
Subtotal	md	7.5		540	405
(Family Labour)					
Planting (Sowing)	md	1.5	72.0	108	81
Fertilizer Application	md	1.5	72.0	108	81
Plant Protection	md	1	72.0	72	54
Weeding	md	4	72.0	288	216
Irrigation / Cleaning	md	7	72.0	504	378
Harvesting / Grading / Packing	md	7.5	72.0	540	405
Subtotal (3)	md	22.5		1,620	1,215
(Total Labour Requirement)	md	30.0			
Others					
Land Preparation (Tractor)	no	6	75.0	450	392
Sowing (Tractor)	acre	3	75.0	225	196
Credit	acre			150	150
Contingencies	acre			252	236
Total Expenses (2)				5,062	4,751
PRIMARY BENEFIT (4) = (1) - (2)				8,970	7,456
CASH BALANCE (5) = (4) + (3)				10,590	8,671

**Table E5.1 Crop Production Budget per Acre (11/20)
with Project**

R.Fodder (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	15,000	0.57	8,550	7,439
By-product Credit	kg				
Total Revenue (1)				8,550	7,439
EXPENSES					
Materials					
Seed	kg	8	27.0	216	216
Fertilizer					
N	kg	18	15.0	270	397
P	kg	27	20.0	540	616
K	kg	0		0	0
Plant Protection				0	0
Labours					
(Hired Labour)					
Planting (Sowing)	md		72.0	0	0
Fertilizer Application	md		72.0	0	0
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md		72.0	0	0
Subtotal	md	0		0	0
(Family Labour)					
Planting (Sowing)	md	1	72.0	72	54
Fertilizer Application	md	1.5	72.0	108	81
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md	5.0	72.0	360	270
Harvesting / Grading / Packing	md	18.5	72.0	1,332	999
Subtotal (3)	md	26.0		1,872	1,404
(Total Labour Requirement)	md	26.0			
Others					
Land Preparation (Tractor)	no	3	75.0	225	196
Sowing (Tractor)	no	1	75.0	75	65
Credit	acre			62	62
Contingencies	acre			163	148
Total Expenses (2)				3,348	3,038
PRIMARY BENEFIT (4) = (1) - (2)				5,202	4,400
CASH BALANCE (5) = (4) + (3)				7,074	5,804

**Table E5.1 Crop Production Budget per Acre (12/20)
with Project**

R. Vegetables (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	7,500	3.0	22,500	19,575
By-product Credit	kg				
Total Revenue (1)				22,500	19,575
EXPENSES					
Materials					
Seed	kg	5	37.0	185	185
Fertilizer					
N	kg	52	15.0	780	1,147
P	kg	25	20.0	500	570
K	kg	18	18.0	324	237
Plant Protection	no	2	310.0	620	620
Labours					
(Hired Labour)					
Planting (Sowing)	md	4	72.0	288	216
Fertilizer Application	md	3	72.0	216	162
Plant Protection	md	2	72.0	144	108
Weeding	md	10	72.0	720	540
Irrigation / Cleaning	md	4	72.0	288	216
Harvesting / Grading / Packing	md	13	72.0	936	702
Subtotal	md	36		2,592	1,944
(Family Labour)					
Planting (Sowing)	md	4	72.0	288	216
Fertilizer Application	md		72.0	0	0
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md	3	72.0	216	162
Harvesting / Grading / Packing	md	5	72.0	360	270
Subtotal (3)	md	12		864	648
(Total Labour Requirement)	md	48.0			
Others					
Land Preparation (Tractor)	no	6	75.0	450	392
Sowing (Tractor)	no	3	75.0	225	196
Credit	acre			150	150
Contingencies	acre			335	304
Total Expenses (2)				6,800	6,196
PRIMARY BENEFIT (4) = (1) - (2)				15,701	13,379
CASH BALANCE (5) = (4) + (3)				16,565	14,027

**Table E5.1 Crop Production Budget per Acre (13/20)
without Project**

Oil Seed (Non-Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	190	11.46	2,177	1,879
By-product Credit	kg				
Total Revenue (1)				2,177	1,879
EXPENSES					
Materials					
Seed	kg	3	13.58	41	41
Fertilizer					
N	kg	20	15.0	300	441
P	kg	0	20.0	0	0
K	kg	0		0	0
Plant Protection	no	1	310.0	310	310
Labours					
(Hired Labour)					
Planting (Sowing)	md	1	72.0	72	54
Fertilizer Application	md		72.0	0	0
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	3	72.0	216	162
Threshing	md		72.0	0	0
Subtotal	md	4		288	216
(Family Labour)					
Planting (Sowing)	md			0	0
Fertilizer Application	md	0.5	72.0	36	27
Plant Protection	md	1	72.0	72	54
Weeding	md		72.0	0	0
Irrigation / Cleaning	md	0	72.0	0	0
Harvesting / Grading / Packing	md	3	72.0	216	162
Threshing	md	1.5	72.0	108	81
Subtotal (3)	md	6.0		432	324
(Total Labour Requirement)	md	10.0			
Others					
Land Preparation (Tractor)	no	2	75.0	150	131
Sowing (Tractor)	no	1	75.0	75	65
Credit	acre			20	20
Contingencies	acre			81	77
Total Expenses (2)				1,622	1,560
PRIMARY BENEFIT (4) = (1) - (2)				556	319
CASH BALANCE (5) = (4) + (3)				988	643

**Table E5.1 Crop Production Budget per Acre (14/20)
with Project**

Oil Seed (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	404	11.46	4,630	3,996
By-product Credit	kg				
Total Revenue (1)				4,630	3,996
EXPENSES					
Materials					
Seed	kg	3	13.58	41	41
Fertilizer					
N	kg	25	15.0	375	551
P	kg	20	20.0	400	456
K	kg	0		0	0
Plant Protection	no	1	310.0	310	310
Labours					
(Hired Labour)					
Planting (Sowing)	md	1	72.0	72	54
Fertilizer Application	md		72.0	0	0
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	3	72.0	216	162
Threshing	md		72.0	0	0
Subtotal	md	4		288	216
(Family Labour)					
Planting (Sowing)	md			0	0
Fertilizer Application	md	0.5	72.0	36	27
Plant Protection	md	1	72.0	72	54
Weeding	md		72.0	0	0
Irrigation / Cleaning	md	4	72.0	288	216
Harvesting / Grading / Packing	md	3	72.0	216	162
Threshing	md	2.5	72.0	180	135
Subtotal (3)	md	11.0		792	594
(Total Labour Requirement)	md	15.0			
Others					
Land Preparation (Tractor)	no	2	75.0	150	131
Sowing (Tractor)	no	1	75.0	75	65
Credit	acre			20	20
Contingencies	acre			123	119
Total Expenses (2)				2,498	2,438
PRIMARY BENEFIT (4) = (1) - (2)				2,132	1,558
CASH BALANCE (5) = (4) + (3)				2,924	2,152

**Table E5.1 Crop Production Budget per Acre (15/20)
without Project**

Barley (Non-Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	373	7.0	2,611	2,245
By-product Credit	kg	560	0.4	224	193
Total Revenue (1)				2,835	2,438
EXPENSES					
Materials					
Seed	kg	32	11.0	352	352
Fertilizer					
N	kg	0		0	0
P	kg	0		0	0
K	kg	0		0	0
Plant Protection				0	0
Labours					
(Hired Labour)					
Planting (Sowing)	md		72.0	0	0
Fertilizer Application	md		72.0	0	0
Plant Protection	md	1.0	72.0	72	54
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	3.0	72.0	216	162
Threshing	md	3.0	72.0	216	162
Subtotal	md	7.0		504	378
(Family Labour)					
Planting (Sowing)	md		72.0	0	0
Fertilizer Application	md	0.5	72.0	36	27
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	2.5	72.0	180	135
Threshing	md		72.0	0	0
Subtotal (3)	md	3.0		216	162
(Total Labour Requirement)	md	10.0			
Others					
Land Preparation (Tractor)	no	2	75.0	150	131
Sowing (Tractor)	no	1	75.0	75	65
Credit	acre			20	20
Contingencies	acre			66	55
Total Expenses (2)				1,308	1,098
PRIMARY BENEFIT (4) = (1) - (2)				1,527	1,340
CASH BALANCE (5) = (4) + (3)				1,743	1,502

**Table E5.1 Crop Production Budget per Acre (16/20)
with Project**

Barley (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	700	7.0	4,900	4,214
By-product Credit	kg	1,353	0.4	541	465
Total Revenue (1)				5,441	4,679
EXPENSES					
Materials					
Seed	kg	30	11.0	330	330
Fertilizer					
N	kg	16	15.0	240	353
P	kg	14	20.0	280	319
K	kg	0		0	0
Plant Protection				0	0
Labours					
(Hired Labour)					
Planting (Sowing)	md		72.0	0	0
Fertilizer Application	md		72.0	0	0
Plant Protection	md	2.0	72.0	144	108
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	7	72.0	504	378
Threshing	md	4	72.0	288	216
Subtotal	md	13.0		936	702
(Family Labour)					
Planting (Sowing)	md	1	72.0	72	54
Fertilizer Application	md	1.0	72.0	72	54
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md	7	72.0	504	378
Harvesting / Grading / Packing	md	5	72.0	360	270
Threshing	md	4	72.0	288	216
Subtotal (3)	md	18.0		1,296	972
(Total Labour Requirement)	md	31.0			
Others					
Land Preparation (Tractor)	no	2	75.0	150	131
Sowing (Tractor)	acre	1	75.0	75	65
Credit	acre			20	20
Contingencies	acre			166	145
Total Expenses (2)				3,418	2,971
PRIMARY BENEFIT (4) = (1) - (2)				2,023	1,708
CASH BALANCE (5) = (4) + (3)				3,319	2,680

**Table E5.1 Crop Production Budget per Acre (17/20)
with Project**

Sugarcane, Plant (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	21,000	0.9	18,900	16,311
By-product Credit	kg				
Total Revenue (1)				18,900	16,311
EXPENSES					
Materials					
Seed	kg	3,000	1.08	3,240	3,240
Fertilizer					
N	kg	60	15.0	900	1,323
P	kg	40	20.0	800	912
K	kg	25	18.0	450	329
Plant Protection				0	0
Labours					
(Hired Labour)					
Planting (Sowing)	md	4	72.0	288	216
Fertilizer Application	md		72.0	0	0
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md		72.0	0	0
Harvesting / Grading / Packing	md	6.5	72.0	468	351
Subtotal	md	10.5		756	567
(Family Labour)					
Planting (Sowing)	md	4	72.0	288	216
Fertilizer Application	md	3.0	72.0	216	162
Plant Protection	md		72.0	0	0
Weeding	md	11	72.0	792	594
Irrigation / Cleaning	md	7	72.0	504	378
Harvesting / Grading / Packing	md	6.5	72.0	468	351
Subtotal (3)	md	31.5		2,268	1,701
(Total Labour Requirement)	md	42			
Others					
Land Preparation (Tractor)	no	6	75.0	450	392
Planting (Tractor)	acre	3	75.0	225	196
Credit	acre			150	150
Contingencies	acre			462	440
Total Expenses (2)				9,476	9,053
PRIMARY BENEFIT (4) = (1) - (2)				9,424	7,257
CASH BALANCE (5) = (4) + (3)				11,692	8,958

**Table E5.1 Crop Production Budget per Acre (18/20)
with Project**

Sugarcane, Ratoon (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	17,600	0.9	15,840	13,670
By-product Credit	kg				
Total Revenue (1)				15,840	13,670
EXPENSES					
Materials					
Seed	kg	3,000	1.08	3,240	3,240
Fertilizer					
N	kg	60	15.0	900	1,323
P	kg	40	20.0	800	912
K	kg	25	18.0	450	329
Plant Protection					0
Labours					
(Hired Labour)					
Planting (Sowing)	md			0	0
Fertilizer Application	md			0	0
Plant Protection	md			0	0
Weeding	md			0	0
Irrigation / Cleaning	md			0	0
Harvesting / Grading / Packing	md	5.5	72.0	396	297
Subtotal	md	5.5	72.0	396	297
(Family Labour)					
Planting (Sowing)	md			0	0
Fertilizer Application	md	3.0	72.0	216	162
Plant Protection	md			0	0
Weeding	md	11	72.0	792	594
Irrigation / Cleaning	md	7	72.0	504	378
Harvesting / Grading / Packing	md	5.5	72.0	396	297
Subtotal (3)	md	26.5		1,908	1,431
(Total Labour Requirement)	md	32			
Others					
Land Preparation (Tractor)	no			0	0
Sowing (Tractor)	acre			0	0
Credit	acre			150	150
Contingencies	acre			392	384
Total Expenses (2)				8,236	8,066
PRIMARY BENEFIT (4) = (1) - (2)				7,604	5,604
CASH BALANCE (5) = (4) + (3)				9,512	7,035

**Table E5.1 Crop Production Budget per Acre (19/20)
with Project**

Orchards (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	6,002	7.0	42,014	36,426
By-product Credit	kg				
Total Revenue (1)				42,014	36,426
EXPENSES					
Materials					
Seed	no	100	45.0	4,500	4,500
Fertilizer					
N	kg	64	15.0	960	1,411
P	kg	40	20.0	800	912
K	kg	25	18.0	450	329
Plant Protection	no	3	310.0	930	930
Labours					
(Hired Labour)					
Planting (Sowing)	md			0	0
Fertilizer Application	md			0	0
Plant Protection	md	3	72.0	216	162
Weeding /Hoeing	md	3.5	72.0	252	189
Irrigation / Cleaning	md	5	72.0	360	270
Harvesting / Grading / Packing	md	23	72.0	1,656	1,242
Subtotal	md	34.5		2,484	1,863
(Family Labour)					
Planting (Sowing)	md			0	0
Fertilizer Application	md	2.5	72.0	180	135
Plant Protection	md			0	0
Weeding /Hoeing	md			0	0
Irrigation / Cleaning	md	5	72.0	360	270
Harvesting / Grading / Packing	md	4	72.0	288	216
Subtotal (3)	md	11.5		828	621
(Total Labour Requirement)	md	46.0			
Others					
Land Preparation (Tractor)	no	2	75.0	150	131
Sowing (Tractor)	no			0	0
Credit	acre			0	0
Contingencies	acre			555	535
Total Expenses (2)				11,657	11,231
PRIMARY BENEFIT (4) = (1) - (2)				30,357	25,195
CASH BALANCE (5) = (4) + (3)				31,185	25,816

**Table E5.1 Crop Production Budget per Acre (20/20)
with Project**

Onion (Irrigated)

Item	Unit	Quantity	Unit Price	Financial Value	Economic Value
		Unit/Acre	RS/Unit	RS/Acre	RS/Acre
REVENUE					
Main Crop	kg	5,000	6.2	31,000	26,970
By-product Credit	kg				
Total Revenue (1)				31,000	26,970
EXPENSES					
Materials					
Seed	kg	5	37.0	185	185
Fertilizer					
N	kg	52	15.0	780	1,147
P	kg	25	20.0	500	570
K	kg	18	18.0	324	237
Plant Protection	no	2	310.0	620	620
Labours					
(Hired Labour)					
Planting (Sowing)	md	4	72.0	288	216
Fertilizer Application	md	3	72.0	216	162
Plant Protection	md	2	72.0	144	108
Weeding	md	10	72.0	720	540
Irrigation / Cleaning	md	4	72.0	288	216
Harvesting / Grading / Packing	md	13	72.0	936	702
Subtotal	md	36		2,592	1,944
(Family Labour)					
Planting (Sowing)	md	4	72.0	288	216
Fertilizer Application	md		72.0	0	0
Plant Protection	md		72.0	0	0
Weeding	md		72.0	0	0
Irrigation / Cleaning	md	3	72.0	216	162
Harvesting / Grading / Packing	md	5	72.0	360	270
Subtotal (3)	md	12		864	648
(Total Labour Requirement)	md	48.0			
Others					
Land Preparation (Tractor)	no	6	75.0	450	392
Sowing (Tractor)	no	3	75.0	225	196
Credit	acre			150	150
Contingencies	acre			335	304
Total Expenses (2)				6,800	6,196
PRIMARY BENEFIT (4) = (1) - (2)				24,201	20,774
CASH BALANCE (5) = (4) + (3)				25,065	21,422

Table E5.2 Agricultural Benefits in Financial Price (1/2)

Crop	Without Project			With Project		
	Area (acres)	Unit Value (Rs/acre)	Total Benefit (1000Rs)	Area (acres)	Unit Value (Rs/acre)	Total Benefit (1000Rs)
(Kharif)						
Maize	257	796	204	4,076	2,067	8,424
Tobacco				755	33,958	25,630
K.Vegetables				1,208	19,533	23,588
Pulses				604	4,200	2,536
K.Fodder				453	4,933	2,234
Sugarcane				4,529	7,604	34,435
Orchard				1,208	30,357	36,659
Subtotal	257		204	12,831		133,506
(Rabi)						
Wheat	7,698	1,769	13,619	4,529	5,803	26,279
Oilseeds	151	556	84	302	2,132	644
Onion				906	24,201	21,919
R.Vegetables				1,057	15,701	16,590
R. Fodder				453	5,202	2,356
Sugarbeet				0	8,970	0
Barley	619	1,527	945	0	2,023	0
(Sugarcane) (Orchards)						
Subtotal	8,468		14,648	7,246		67,788
Annual	8,725		14,852	20,076		201,293
Net Project Benefit						186,442

Note: Sugarcane and Orchard (Fruits trees) occupy the cropped area through a year.

Table E5.2 Agricultural Benefits in Financial Price (2/2)

Crop	Without Project			With Project		
	Area (acres)	Unit Value (Rs/acre)	Total Benefit (1000Rs)	Area (acres)	Unit Value (Rs/acre)	Total Benefit (1000Rs)
(Kharif)						
Maize	257	796	204	4,076	2,067	8,424
Tobacco				755	33,958	25,630
K.Vegetables				1,208	19,533	23,588
Pulses				604	4,200	2,536
K.Fodder				453	4,933	2,234
Sugarcane				4,529	9,424	42,677
Orchard				1,208	30,357	36,659
Subtotal	257		204	12,831		141,748
(Rabi)						
Wheat	7,698	1,769	13,619	4,529	5,803	26,279
Oilseeds	151	556	84	302	2,132	644
Onion				906	24,201	21,919
R.Vegetables				1,057	15,701	16,590
R. Fodder				453	5,202	2,356
Sugarbeet				0	8,970	0
	619	1,527	945	0	2,023	0
(Sugarcane) (Orchards)						
Subtotal	8,468		14,648	7,246		67,788
Annual	8,725		14,852	20,076		209,535
Net Project Benefit						194,684

Note: Sugarcane and Orchard (Fruits trees) occupy the cropped area through a year.

Table E5.3 Agricultural Benefits in Economic Price (1/2)

Crop	Without Project			With Project		
	Area (acres)	Unit Value (Rs/acre)	Total Benefit (1000Rs)	Area (acres)	Unit Value (Rs/acre)	Total Benefit (1000Rs)
(Kharif) Maize	257	736	189	4,076	1,592	6,488
Tobacco				755	28,988	21,879
K.Vegetables				1,208	16,714	20,184
Pulses				604	3,426	2,069
K.Fodder				453	4,026	1,823
Sugarcane				4,529	5,604	25,378
Orchard				1,208	25,195	30,425
Subtotal	257		189	12,831		108,246
(Rabi) Wheat	7,698	1,392	10,716	4,529	4,465	20,220
Oilseeds	151	319	48	302	1,558	470
Onion				906	20,774	18,815
R.Vegetables				1,057	13,379	14,137
R. Fodder				453	4,400	1,993
Sugarbeet				0	7,456	0
Barley	619	1,340	829	0	1,708	0
(Sugarcane) (Orchards)						
Subtotal	8,468		11,594	7,246		55,635
Annual	8,725		11,783	20,076		163,881
Net Project Benefit						152,098

Note: Sugarcane and Orchard (Fruits trees) occupy the cropped area through a year.

Table E5.3 Agricultural Benefits in Economic Price (2/2)

Crop	Without Project			With Project		
	Area (acres)	Unit Value (Rs/acre)	Total Benefit (1000Rs)	Area (acres)	Unit Value (Rs/acre)	Total Benefit (1000Rs)
(Kharif)						
Maize	257	736	189	4,076	1,592	6,488
Tobacco				755	28,988	21,879
K. Vegetables				1,208	16,714	20,184
Pulses				604	3,426	2,069
K. Fodder				453	4,026	1,823
Sugarcane				4,529	7,257	32,863
Orchard				1,208	25,195	30,425
Subtotal	257		189	12,831		115,732
(Rabi)						
Wheat	7,698	1,392	10,716	4,529	4,465	20,220
Oilseeds	151	319	48	302	1,558	470
Onion				906	20,774	18,815
R. Vegetables				1,057	13,379	14,137
R. Fodder				453	4,400	1,993
Sugarbeet				0	7,456	0
Barley	619	1,340	829	0	1,708	0
(Sugarcane) (Orchards)						
Subtotal	8,468		11,594	7,246		55,635
Annual	8,725		11,783	20,076		171,366
Net Project Benefit						159,584

Note: Sugarcane and Orchard (Fruits trees) occupy the cropped area through a year.

Table E5.4 Farm Budget in Financial Prices (1/3)

Small Farmer

(Average Farm Size: 3.5 acre)

Crop	Without			With		
	Area (acres)	Unit Value (Rs/acre)	Income (Rs)	Area (acres)	Unit Value (Rs/acre)	Income (Rs)
(Kharif)						
Maize	0.06 (1.7%)	796	47	0.95 (27%)	2,067	1,953
Tobacco				0.21 (6%)	33,958	7,131
K. Vegetables				0.28 (8%)	19,533	5,469
Pulses				0.14 (4%)	4,200	588
K. Fodder				0.11 (3%)	4,933	518
Sugarcane				1.05 (30%)	9,424	9,895
Orchard				0.28 (8%)	30,357	8,500
Subtotal	0.06		47	3.01		34,055
(Rabi)						
Wheat	1.79 (51.0%)	1,769	3,158	1.05 (30%)	5,803	6,093
Oilseed	0.04 (1.0%)	556	19	0.07 (2%)	2,132	149
Onion				0.21 (6%)	24,201	5,082
R. Vegetables				0.25 (7%)	15,701	3,847
R. Fodder				0.11 (3%)	5,202	546
Sugarbeet				0.00 (0%)	8,970	0
Barley	0.14 (4.1%)	1,527	219	0.00	2,023	0
(Sugarcane) (Orchards)						
Subtotal	1.96		3,396	1.68		15,718
Annual	2.02		3,444	4.69		49,772
Incremental Income						46,329

Note: 1 Sugarcane and Orchard (Fruits trees) occupy the cropped area through a year.
2 Family labour cost (Non-cash cost) is excluded from the cost of farm inputs.

Table E5.4 Farm Budget in Financial Prices (2/3)

Average Farmer

(Average Farm Size: 4.4 acre)

Crop	Without			With		
	Area (acres)	Unit Value (Rs/acre)	Income (Rs)	Area (acrese)	Unit Value (Rs/acre)	Income (Rs)
(Kharif)						
Maize	0.07 (1.7%)	796	60	1.19 (27%)	2,067	2,456
Tobacco				0.26 (6%)	33,958	8,965
K.Vegetables				0.35 (8%)	19,533	6,876
Pulses				0.18 (4%)	4,200	739
K.Fodder				0.13 (3%)	4,933	651
Sugarcane				1.32 (30%)	9,424	12,440
Orchard				0.35 (8%)	30,357	10,686
Subtotal	0.07		60	3.78		42,812
(Rabi)						
Wheat	2.24 (51.0%)	1,769	3,970	1.32 (30%)	5,803	7,660
Oilseed	0.04 (1.0%)	556	24	0.09 (2%)	2,132	188
Onion				0.26 (6%)	24,201	6,389
R.Vegetables				0.31 (7%)	15,701	4,836
R. Fodder				0.13 (3%)	5,202	687
Sugarbeet				0.00 (0%)	8,970	0
Barley	0.18 (4.1%)	1,527	275	0.00	2,023	0
(Sugarcane) (Orchards)						
Subtotal	2.47		4,270	2.11		19,759
Annual	2.54		4,329	5.90		62,571
Incremental Income						58,242

Note: 1 Sugarcane and Orchard (Fruits trees) occupy the cropped area through a year.

2 Family labour cost (Non-cash cost) is excluded from the-cost of farm inputs .

Table E5.4 Farm Budget in Financial Prices (3/3)

Medium Farmer

(Average Farm Size: 16.6 acre)

Crop	Without			With		
	Area (acres)	Unit Value (Rs/acre)	Income (Rs)	Area (acres)	Unit Value (Rs/acre)	Income (Rs)
(Kharif)						
Maize	0.28 (1.7%)	796	225	4.48 (27%)	2,067	9,264
Tobacco				1.00 (6%)	33,958	33,822
K.Vegetables				1.33 (8%)	19,533	25,940
Pulses				0.66 (4%)	4,200	2,789
K.Fodder				0.50 (3%)	4,933	2,457
Sugarcane				4.98 (30%)	9,424	46,932
Orchard				1.33 (8%)	30,357	40,314
Subtotal	0.28		225	14.28		161,517
(Rabi)						
Wheat	8.47 (51.0%)	1,769	14,976	4.98 (30%)	5,803	28,899
Oilseed	0.17 (1.0%)	556	92	0.33 (2%)	2,132	708
Onion				1.00 (6%)	24,201	24,104
R.Vegetables				1.16 (7%)	15,701	18,245
R. Fodder				0.50 (3%)	5,202	2,591
Sugarbeet				0.00 (0%)	8,970	0
Barley	0.68 (4.1%)	1,527	1,039	0.00	2,023	0
(Sugarcane) (Orchards)						
Subtotal	9.31		16,108	7.97		74,546
Annual	9.59		16,333	22.24		236,063
Incremental Income						219,731

Note: 1 Sugarcane and Orchard (Fruits trees) occupy the cropped area through a year.
2 Family labour cost (Non-cash cost) is excluded from the cost of farm inputs.

Table E5.5-1 Economic Crop Production Budget (Rs/Acre) for Maize

(1997 Prices)

Item	Unit	Unit / acre	Price / unit	Total	Monthly Allocation							
					May a/	Jun	Jul	Aug	Sep	Oct	Nov a/	
REVENUE												
Main Crop	kg	650	6	3,900								3,900
By-product Credit	kg	1,300	0.12	156								156
TOTAL REVENUE				4,056								4,056
EXPENSES												
Land Preparation	no	5	75	375		188	188					
Seed : Input cost	kg	18	8	144			72	72				
Sowing	acre	1	75	75			38	38				
Fertilizer												
Urea, Nut	kg	30	15	450				225	225			
Application	md	1.25	72	90			22	41	27			
Bird Scaring for PP	md	10	72	720					360	360		
Harvesting	md	6	72	432								432
Threshing	md	4	72	288								288
Credit	acre	1		37		7	7	7	7	7	7	
Contingencies	acre	1		131		10	16	19	31	18		36
TOTAL EXPENSES				2,742	0	205	343	402	651	386		756
NET POTENTIAL FLOOD LOSSES					1,314	1,314	1,519	1,862	2,264	2,914		3,300

a/ : All months before June and after October

Note : Yield data collected through field investigation and agriculture department.

Table E5.5-2 Economic Crop Production Budget (Rs/Acre) for Kharif Fodder (Fresh)

(1997 Prices)

Item	Unit	Unit / acre	Price / unit	Total	Monthly Allocation							
					May a/	Jun	Jul	Aug	Sep	Oct	Nov a/	
REVENUE												
Main Crop	mt	7.5	840	6,300		315	945	1,575	1,638	1,386		441
By-product Credit		0		0								0
TOTAL REVENUE				6,300		315	945	1,575	1,638	1,386		441
EXPENSES												
Land Preparation	no	4	75	300	135	78	66	21				
Seed : Input cost	kg	25	12.6	315	142	82	69	22				
Sowing	no	1	75	75	33	21	18	6				
Fertilizer												
P.Nut	kg	20	20	400	180	104	88	28				
Application	md	1.25	72	90	45	24	19	5				
Irrigation	md	3.5	72	252	71	71	19	71	19			
Harvesting	md	22	72	1,584		79	238	396	412	348		111
Credit				60	12	12	12	12	12			
Contingencies	acre	1		154	31	24	26	28	22	17		6
TOTAL EXPENSES				3,230	649	495	555	590	465	366		116
NET POTENTIAL FLOOD LOSSES					3,070	3,719	4,214	4,770	5,360	5,825		6,191

a/ : All months before June and after October

Note : Yield data collected through field investigation and agriculture department.

Table E5.5-3 Economic Crop Production Budget (Rs/Acre) for Sugarcane, Plant Crop

(1997 Prices)

Item	Unit	Unit /acre	Price /unit	Total	Monthly Allocation							
					May a/	Jun	Jul	Aug	Sep	Oct	Nov a/	
REVENUE												
Main Crop	mt	15.3	900	13,770								16,050
By-product Credit	mt	0	0	0								0
TOTAL REVENUE				13,770								16,050
EXPENSES												
Land Preparation	no	5	75	375		188	188					
Seed : Input cost	mt	3	1,080	3,240			1,620	1,620				
Fertilizer												
Urea, Nut	kg	40	15	600				300	300			
Application	md	3	72	216			52	98	65			
Planting	md	8	72	576								
Weeding	md	13	72	936								
Irrigation	md	7	72	504					252	252		
Harvesting	md	12	72	864								864
Credit	acre	1		150	60	15	15	15	15	15	15	15
Contingencies	acre	1		373	3	10	94	102	32	13	44	44
TOTAL EXPENSES				7,834	63	213	1,969	2,135	664	280	923	
NET POTENTIAL FLOOD LOSSES					5,936	5,999	6,212	8,180	10,315	10,979	11,259	

a/ : All months before June and after October

Note : Yield data collected through field investigation and agriculture department.

Table E5.5-4 Economic Crop Production Budget (Rs/Acre) for Sugarcane, Ratoon Crop

(1997 Prices)

Item	Unit	Unit /acre	Price /unit	Total	Monthly Allocation							
					May a/	Jun	Jul	Aug	Sep	Oct	Nov a/	
REVENUE												
Main Crop	mt	12.1	900	10,890								3,900
By-product Credit	mt	0		0								156
TOTAL REVENUE				10,890								4,056
EXPENSES												
Fertilizer												
Urea, Nut	kg	40	15	600		600						
Application	md	3	72	216	71	145						
Weeding	md	10	72	720		540	180		360	360		
Irrigation	md	7	72	504	106	76	76	76	76	76	76	25
Harvesting	md	10	72	720								720
Credit				330	132	32	32	32	32	32	32	32
Contingencies	acre	1		155	15	70	14	5	23	23	23	39
TOTAL EXPENSES				3,245	325	1,462	302	113	491	491	491	816
NET POTENTIAL FLOOD LOSSES					7,646	7,970	9,432	9,734	9,847	10,338	10,829	
Average for Planted and Ratoon Crops (Rs/acre)												

a/ : All months before June and after October

Note : Yield data collected through field investigation and agriculture department.

Table E5.5-5 Economic Crop Production Budget (Rs/Acre) for Pulse

(1997 Prices)

Item	Unit	Unit / acre	Price / unit	Total	Monthly Allocation							
					May a/	Jun	Jul	Aug	Sep	Oct	Nov a/	
REVENUE												
Main Crop	kg	248	21.2	5,258								5,258
By-product Credit	kg	0		0								0
TOTAL REVENUE				5,258								5,258
EXPENSES												
Land Preparation	no	3	75	225	113	113						
Seed : Input cost	kg	8	27	216		216						
Sowing	no	1	75	75		75						
Fertilizer												
P.Nut	kg	20	20	400		400						
Application	md	0.5	72	36		36						
PP cost	acre	1	310	310				310				
Harvesting	md	6	72	432						143		289
Threshing	md	8	72	576								576
Credit	acre	1		60	10	10	10	10	10	10	10	
Contingencies	acre	1		117	6	42	1	16	1	8		43
TOTAL EXPENSES				2,447	0	892	11	336	11	160		909
NET POTENTIAL FLOOD LOSSES					2,811	2,811	3,703	3,714	4,050	4,060		4,220

a/ : All months before June and after October

Note : Yield data collected through field investigation and agriculture department.

Table E5.5-6 Economic Crop Production Budget (Rs/Acre) for Vegetables

(1997 Prices)

Item	Unit	Unit / acre	Price / unit	Total	Monthly Allocation							
					May a/	Jun	Jul	Aug	Sep	Oct	Nov a/	
REVENUE												
Main Crop	kg	2,613	5.5	14,372								3,900
By-product Credit	kg	0		0								156
TOTAL REVENUE				14,372								4,056
EXPENSES												
Land Preparation	no	8	75	600	240			360				
Seed : Input cost	kg	3	62	186	74			93	19			
Fertilizer												
P. Nut	kg	14	20	280	98			140	42			
N. Nut	kg	29	15	435		435						
K. Nut	kg	7	18	126	126							
Application	md	3	72	216	86			108	22			
Planting	md	10	72	720	288			360	72			
Weeding	md	13	72	936		702	234					
Plant Protection Materials												
Application	md	1.5	72	108		36	36	36				
Irrigation	md	7	72	504	101	76	76	76	76	76		25
Harvesting	md	20	72	1,440								1,440
Credit				160	64	16	16	16	16	16	16	16
Contingencies	acre	1		301	54	68	23	65	12	5		74
TOTAL EXPENSES				6,322	0	1,436	488	1,357	258	96		1,555
NET POTENTIAL FLOOD LOSSES					8,049	8,049	9,486	9,974	11,330	11,589		11,685

a/ : All months before June and after October

Note : Yield data collected through field investigation and agriculture department.

Table E5.5-7 Economic Crop Production Budget (Rs/Acre) for Fruits

(1997 Prices)

Items	Unit	Unit / acre	Price / unit	Total	Monthly Allocation						
					May a/	Jun	Jul	Aug	Sep	Oct	Nov a/
REVENUE											
Main Crop	kg	2,986	7.8	23,291							
By-product Credit	kg	0		0							
TOTAL REVENUE				23,291							
EXPENSES											
Fertilizer											
P. Nut	kg	15	20	300							
Urea, Nut	kg	30	15	450							
Application	md	4	72	288							
Weeding/hoeing	md	14	72	1,008							
Plant Protection	acre	1	310	310							
Materials											
Application	md	3	72	216							
Irrigation	md	17	72	1,224							
Harvesting/grading/p	md	40	72	2,880							
Contingencies	acre	1		334							
TOTAL EXPENSES				7,010							
NET POTENTIAL FLOOD LOSSES				16,281							

Note : Yield data collected through field investigation and agriculture department.

Table E5.5-8 Flood Damage Estimation for the Flood Affected Project Area Concerned

CCA (%)	CROP		May	June	July	August
11.8	Maize	Yield Loss (%)	30	40	50	100
		Damages/acre crop (Rs)	1,314	1,314	1,519	1,862
		Damages/acre flooded (Rs)	47	62	90	220
1.2	Fodder	Yield Loss (%)	85	80	75	55
		Damages/acre crop (Rs)	3,070	3,719	4,214	4,770
		Damages/acre flooded (Rs)	31	36	38	31
46.6	Sugarcane	Yield Loss (%)	60	50	40	30
		Damages/acre crop (Rs)	6,791	6,985	7,822	8,957
		Damages/acre flooded (Rs)	1,899	1,628	1,458	1,252
0.2	Orchards	Yield Loss (%)	100	100	100	100
		Damages/acre crop (Rs)	16,281	16,281	16,281	16,281
		Damages/acre flooded (Rs)	33	33	33	33
0.93	Vegetables	Yield Loss (%)	100	100	100	100
		Damages/acre crop (Rs)	8,049	8,049	9,486	9,974
		Damages/acre flooded (Rs)	75	75	88	93
0.9	Pulses	Yield Loss (%)	100	100	100	100
		Damages/acre crop (Rs)	2,811	2,811	3,703	3,714
		Damages/acre flooded (Rs)	25	25	33	33
Total Damages/acre flooded/month (Rs)			2,109	1,858	1,740	1,662
Total Weighted Damages (Rs/acre)			232	483	765	316

Notes:

- 1 Yield loss estimates by crop by month reflect estimates derived for each crop according to flood depth over 3 feet and 10 days runoff period.
- 2 Damages/acre reflect net potential flood loss estimates by crop by month as detailed in Table-where yield loss is not total, damages reflect net loss in income (losses in gross revenue less saving in harvesting, transport, marketing and artisans).
- 3 Estimates are weighted according to cropping pattern within the flooded area.
- 4 Total damages/acre flooded are a summation of individual crop damages.
- 5 Total weighted damages reflect the probability of the flood occurring in May (0.11), June (0.26) July (0.44), August (0.19) within this reach.

Table E5.6 Unit Prices of Farm Inputs and Outputs

Item	Unit	Farmgate Price (Financial)	Conversion Factor	Economic Price	Remarks
Crops					
Maize	kg	7.00	0.87	6.09	
Tobacco	kg	41.00	0.863	35.38	
Khalif Fodder	mt	840	0.87	730.80	
Khalif Vegetables	kg	5.50	0.87	4.79	
Pulses	kg	21.20	0.862	18.27	
Sugarcane	kg	0.90	0.863	0.78	
Fruits	kg	7.80	0.867	6.76	
Wheat	kg	7.50	0.863	6.47	
Sugarbeet	kg	1.10	0.87	0.96	
Rabi Fodder	kg	0.57	0.87	0.50	
Rabi Vegetables	kg	3.00	0.87	2.61	
Onion	kg	6.20	0.87	5.39	
Oilseed	kg	11.46	0.863	9.89	
Barley	kg	7.00	0.86	6.02	
Maize straw	kg	0.12	0.87	0.10	
Wheat straw	kg	0.40	0.863	0.35	
Farm Inputs					
(Seed/Seedling)					
Maize	kg	8.00	1	8.00	
Tobacco	g	320.00	1	320.00	
Khalif Fodder	kg	12.60	1	12.60	
Khalif Vegetables	kg	62.00	1	62.00	
Pulses	kg	27.00	1	27.00	
Sugarcane	kg	1.08	1	1.08	
Fruits	no	45.00	1	45.00	
Wheat	kg	11.80	1	11.80	
Sugarbeet	kg	15.00	1	15.00	
Rabi Fodder	kg	27.00	1	27.00	
Rabi Vegetables	kg	37.00	1	37.00	
Oilseed	kg	13.58	1	13.58	
Barley	kg	11.00	1	11.00	
(Fertilizer Nutrient)					
N	kg	15.00	1.47	21.27	
P	kg	20.00	1.14	22.37	
K	kg	18.00	0.73	13.05	
(Agro-chemicals)					
Insecticide		310.00	1	310.00	
(Pesticide)					
(Labour)					
(Machinery)					
	acre	72.00	0.75	54.00	
	(hour)	75.00	0.87	65.25	
				0.00	