III.2.5 Description of Representative Soil Profiles

PIT No.1

I. Information on the Site

a. Profile No.	:	1
b. Soil Name	:	Jhatpat Series
c. Date of Examination	:	March 7, 1982
d. Location	:	Mitta Rind (land owner), about 3 miles down Ballan Disty, 200 m left side.
e. Elevation	:	200 feet
f. Land Form and Slope	:	Almost flat, land slopes downward very gently to east for 2 miles.
g. Vegetation and Land-use	:	Fallow land, wheat is expected for next Rabi season, surrounded by the rape seed fields. Wheat yield about 50 mds. Natural vegetation consists of a few Acasia arabica (Ki Kar) and Zizyplus jujulea (Bes), and Catotropis procera (Akk - milk weeds), and some wild grass-ed of legume and graminaceae in the field.

II. General Information on the Soil

a. Parent Material	:	Braided stream - transported clayey deposits of recent river alluvium from the northern Marri - Bughti Hills.

b. Drainage : Imperfectly drained.

c. Depth of Groundwater : More than 6 feet below the surface.

d. Presence of Surface Stones, Others : None, all over vertical cracks about 15 cm apart.

e. Evidence of Erosion : Slight sheet erosion only expected under heavy rain or flood time, and slight accumulation of wind-brown sand in Kharif season.

III. Profile Description

0 - 6 cm	Yellowish brown (10YR 5/4) moist and pale brown (10YR 6/3) dry; silty clay; almost massive; very sticky moist, very hard (28) dry; few fine roots; abrupt smooth boundary; about 1 cm wide vertical cracks about 15 cm apart; pH 8.75. (Sample No. 1 - 1)
6 - 20 cm	Brown/dark brown (10YR 4/3) moist and pale brown (10YR 6/3) dry, silty clay; moderate fine platy; very sticky, hard (21) moist; clear smooth boundary; few cracks from above; pH 8.90. (Sample No. 1 - 2)
20 - 30 cm	Dark greyish brown (7.5YR 4/3) moist and pale brown (10YR 6/3) moist; silty clay; moderate very fine platy; very sticky, hard (21) moist; almost no roots; abrupt smooth boundary; pH 8.92. (Sample No. 1 - 3)
30 - 140 cm+	Yellowish brown (10YR 5/4) moist and pale brown (10YR 6/3) dry; silty clay loam to silty clay; weak fine platy; common very fine faint rust brown mottles (oxidized iron) from 60 - 100 cm, few the same below 100 cm; very sticky, hard (19 - 17) moist to slight wet; no roots; clear smooth boundary; pH 8.80. (Sample No. 1 - 4)

PIT No.4

I. Information on the Site

a. Profile No.	:	4
b. Soil Name	:	Jhatpat Series
c. Date of Examination	:	March 8, 1982
d. Location	:	Shamir Khan Mastyi (land owner), about 19 miles down Bari Disty, 200 m left side.
e. Elevation	:	176 feet
f. Land Form and Slope	:	Almost flat, land slopes downward very gently to south for 3 mile.
g. Vegetation and Land-use	:	Fallow land, surrounded by rape seed and wheat, poorly growing. Some wild grasses such as graminaceae in the field.

II. General Information on the Soil

a. Parent Material	:	Braided stream -transported clayey deposits of recent river alluvium from the northern Marri - Bughti Hills.
b. Drainage	:	Imperfectly drained.
c. Depth of Groundwater	:	More than 10 feet below the surface.
d. Presence of Surface Stones, Others	:	None, all over vertical cracks about 18 cm apart.
e. Evidence of Erosion	:	Slight sheet erosion only at the time of heavy rainfall or flood, and expected slight wind-brown sand to the field in Kharif season.

III. Profile Description

0 - 10 cm	Yellowish brown (10YR 5/4) moist and very pale brown (10YR 7/3) dry; silty clay loam; weak coarse crumb; very sticky moist, hard (22) dry; common fine roots; abrupt smooth boundary; about 1 cm wide vertical cracks about 18 cm apart; pH 8.75. (Sample No. 4-1)
10 - 21 cm	Brown (10 YR 5/3) moist and pale brown (10YR 6/3) dry; silty clay loam; moderate medium sub-angular blocky; very sticky, hard (22) moist; few fine roots; abrupt smooth boundary; pH 9.15. (Sample No. 4-2)
21 - 45 cm	Yellowish brown (10YR 5/4) moist and very pale brown (10 YR 7/3) dry; silty clay loam; moderate medium platy; very sticky, very hard (27) moist; few faint white mottles of fine gypsum crystal-line; few fine roots; clear smooth boundary; pH 8.30. (Sample No. 4-3)
45 - 110 cm+	Yellowish brown (10YR 5/4) moist and pale brown (10YR 6/3) dry, and inserted greyish brown (2.5Y 5/2) clay vein (around 60 cm below) moist; clay loam; strong medium platy; very sticky, very hard (25) moist; very few faint white mottels of gypsum crystalline; no roots; pH 8.25. (Sample No. 4-4)

PIT No.6

I. Information on the Site

a. Profile No. : 6

b. Soil Name : Jhatpat Series

c. Date of Examination	:	March 9, 1982
d. Location	:	Ali Maded (land owner), about 16 miles down Umrani Disty, 100 m left side.
e. Elevation	:	165 feet
f. Land Form and Slope	:	Almost flat, land slopes downward very gently to south-west for 5 miles.
g. Vegetation and Land-use	:	Fallow land, wheat is expected for next Rabi season; jowar and sorghum for Kharif season, poor yield; surrounded by wheat and belsiom fields. Few catotropis procera (Ak - milk weeds).

II. General Information on the Soil

a. Parent Mater-al	:	Braided stream - flood plain clayey deposits of early recent alluvium from piedmonts of the northern Marri - Bughti Hills.
b. Drainage	:	Imperfectly drained.
c. Depth of Groundwater	:	More than 10 feet, but wet below 120 cm from the surface due to the seepage from the distributory.
d. Presence of Surface Stones, Others	:	None, all over vertical cracks about 15 cm apart.
e. Evidence of Erosion	:	Slight sheet erosion only at the time of heavy rain or flood.

III. Profile Description

0 - 13 cm	Yellowish brown (10YR 5/4) moist and very pale brown (10YR 7/3) dry; silty clay; almost massive

(somewhat crumb); very sticky moist, extremely hard (32) dry; common fine roots; clear smooth boundary; about 1 cm wide vertical cracks about 15 cm apart; pH 8.95.
(Sample No. 6-1)

13 - 22 xm — Yellowish brown (10YR 5/4) moist and very pale brown (10YR 7/3) dry; silty clay; weak coarse blocky; very sticky, hard (20) moist; few fine roots; clear smooth boundary; pH 9.05.
(Sample No. 6-2)

22 - 42 cm — Yellowish brown (10YR 5/4) moist and pale brown (10YR 6/3) dry; silty clay; moderate fine granular; very sticky, hard (20) moist; very few fine roots; abrupt smooth boundary; pH 8.60.
(Sample No. 6-3)

42 - 120 cm+ — Yellowish brown (10YR 5/4) moist and light yellowish brown (10YR 6/4) dry, and inserted greyish brown (2.5Y 5.2) clay vein (around 70 cm below) moist; silty clay loam (silt loam); moderate medium blocky and platy; very sticky, hard (19) moist to wet (below 120 cm); no roots; pH 8.60.
(Sample No. 6-4)

PIT No.9

I. Information on the Site

a. Profile No. : 9

b. Soil Name : Kundi Series

c. Date of Examination : March 11, 1982

d. Location : Ali Akbar Khan (land owner), about 14 miles down Mangsi Disty, 100 m left side.

e. Elevation : 189 feet

f. Land Form and Slope : Almost flat, land slopes downward very gently to south-west for 5 miles.

g. Vegetation and Land-use : Fallow after rape seed, wheat is expected for next Rabi season, adjacent to the radish field.

II. General Information on the Soil

a. Parent Material : Braided stream - transported clayey deposits of recent alluvium from the northern Marri - Bughti Hills.

b. Drainage : Imperfectly drained.

c. Depth of Groundwater : More than 10 feet, but wet below 100 cm from the surface due to the seepage from the distributory.

d. Presence of Surface Stone, Others : None, all over vertical cracks about 18 cm apart.

e. Evidence of Erosion : Slight sheet erosion only at the time of heavy rainfall or flood.

III. Profile Description

0 - 18 cm — Yellowish brown (10YR 5/4) moist and pale brown (10YR 6/3) dry; silty clay - silty clay loam; weak medium subangular blocky; very sticky moist, very hard (23) dry; few fine roots; clear smooth boundary, about 1 cm wide vertical cracks about 18 cm apart; pH 8.90.
(Sample No. 9-1)

18 - 35 cm — Yellowish brown (10YR 5/4) moist and pale brown (10YR 6/3) dry; silty clay - silty clay loam; weak medium granular; very sticky, hard (18) moist; very few faint white mottles of gypsum

	crystalline; very few fine roots; pH 9.25. (Sample No. 9-2)
35 - 67 cm	Yellowish brown (10YR 5/4) moist and pale brown (10YR 6/3) dry; silty clay; weak coarse platy; very sticky, hard (17) moist; no roots; gradual smooth boundary; pH 9.05. (Sample No. 9-3)
67 - 100 cm+	Almost similar to horizon above but weak fine platy; hard (16) moist to wet below 100 cm from the surface; pH 9.32. (Sample No. 9-4)

PIT No.10

I. Information on the Site

a. Profile No.	:	10
b. Soil Name	:	Rojhan Series
c. Date of Examination	:	March 13, 1982
d. Location	:	Barren land, about 2 miles south of Jhatpat Station and 100 m west side of the railway to Sukkur.
e. Elevation	:	175 feet
f. Land Form and Slope	:	Almost flat, somewhat depressioned near the pit.
g. Vegetation and Land-use	:	Barren land, about 3,000 acres in extent due to strong salinity and shallow water table. Natural vegetation consist of Tamarix sp (Lai) and other lugume bushes with many small needles (Acasia type) in a sparse growth.

II. General Information on the Soil

a. Parent Material	:	Loess and flood-plain deposits of the old middle terrace comprising Indus River alluvium with a possible mixture of materials from the Marri - Bughti Hills.
b. Drainage	:	Poorly drained.
c. Depth of Groundwater	:	6 - 10 feet
d. Presence of Surface Stones, Others	:	None, almost all over covered with thin hygroscopic salt films.
e. Evidence of Erosion	:	Almost none but some further accumilation of salts under arid subtropical continental climate.

III. Profile Description

0 - 12 cm	Dark yellowish brown (10YR 4/4) moist and pale brown (10YR 6/3) dry; fine sandy loam; very weak medium platy; slightly sticky, very hard (23) moist; many fine single salt crystallines; few fine roots; abrupt smooth boundary; pH 8.20. (Sample No. 10 - 1)
12 - 23 cm	Dark yellowish brown (10YR 4/4) moist and pale brown (10YR 6/3) dry; fine sandy loam; massive; non-sticky, very hard (20) moist; few crystallines of gypsum and other salts; few fine roots; abrupt smooth boundary; pH 8.25. (Sample No. 10 - 2)
23 - 80 cm	Pale brown (2.5YR 6/3) moist and light brownish grey (10YR 6/2) moist; fine sand; single; non-sticky, hard (17) moist; very few medium roots (bushes); abrupt smooth boundary; pH 9.00. (Sample No. 10 - 3)

80 - 120 cm+ Brown (10YR 5/3) moist and light brownish grey (10YR 6/2) moist; silt loam; massive; slightly sticky, hard (20) moist; no roots; pH 9.05. (Sample No. 10 - 4)

PIT No.14

I. Information on the Site

a. Profile No.	:	14
b. Soil Name	:	Jhatpat Series
c. Date of Examination	:	March 15, 1982
d. Location	:	Jaggar Khan Umarani (land owner), 6 miles down Judher D, 100 m right side.
e. Elevation	:	208 feet
f. Land Form and Slope	:	Almost flat, land slopes downward very gently to south for 10 miles.
g. Vegetation and Land-use	:	Poorly growing grams in patches fllowing rice in Kharif season.

II. General Information on the Soil

a. Parent Material	:	Braided stream - transported clayey deposits of recent river alluvium from the northern Marri - Bughti Hills.
b. Drainage	:	Imperfectly drained.
c. Depth of Groundwater	:	More than 10 feet.
d. Presence of Surface Stones, Others	:	None, all over vertical cracks about 15 cm apart.
e. Evidence of Erosion	:	Slight sheet erosion only at the time of heavy rainfall or flood.

III. Profile Description

0 - 14 cm	Yellowish brown (10YR 5/4) moist and pale brown (10YR 6/3) dry; silty clay loam - clay loam; massive; very sticky, extremely hard (27); common fine roots; clear smooth boundary; about 1 cm wide vertical cracks about 15 cm apart; pH 8.60. (Sample No. 14 - 1)
14 - 29 cm	Dark yellowish brown (10YR 4/4) moist and very pale brown (10YR 7/3) dry; silty clay loam; moderate medium platy; very sticky, hard (19) moist; very few roots; clear smooth boundary; pH 8.90. (Sample No. 14 - 2)
29 - 59cm	Almost similar to horizon above but pale brown (10YR 6/3) dry; hard (20) moist; no roots; gradual smooth boundary; pH 9.20. (Sample No. 14 - 3)
59 - 100 cm+	Almost similar to horizon above but silty clay loam - silty clay; pH 9.30. (Sample No. 14 - 4)

PIT No.5

I. Information on the Site

a. Profile No.	:	5
b. Soil Name	:	Bolan Series
c. Date of Examination	:	March 9, 1982
d. Location	:	Falih Mohammed Umaseni (land owner), about 8 miles down Umrani Disty, 200 m right side.
e. Elevation	:	200 feet

g. Vegetation and Land-use : Fallow land after rape seeds, formerly sorghum and other crops but severe insect damage. Surrounded by wheat-growing lands. The field was plowed for paddy in Kharif season.

II. General Information on the Soil

a. Parent Material : Braided stream-flood plain clayey deposits of early recent alluvium from piedmonts of the northern Marri - Bughti Hills.

b. Drainage : Imperfectly drained.

c. Depth of Groundwater : More than 10 feet.

d. Presence of Surface Stones, Others : None, originally many cracks .

e. Evidence of Erosion : Slight sheet erosion only at the time of heavy rainfall or flood.

III. Profile Description

0 - 17 cm — Yellowish brown (10YR 5/4) moist and very pale brown (10YR 7/4) dry; silty clay loam; moderate crumb and coarse blocky; very sticky moist, very hard (25) dry; common fine roots; abrupt smooth boundary; cracks 15 cm apart downward for 15 cm; pH 8.45.
(Sample No. 5-1)

17 - 25 cm — Light yellowish brown (10YR 6/4) moist and pale brown (10YR 6/3) dry; silt loam inserted with thin clay layer of slightly reddish in color; slight sticky, hard (22) moist; moderately very fine platy; few fine foots; abrupt smooth boundary; pH 8.50
(Sample No. 5-2)

25 - 45 cm	Almost similar to horizon above but very hard (25) moist; almost no roots; abrupt smooth boundary; pH 8.60. (Sample No. 5-3)
45 - 60 cm	Light yellowish brown (10YR 6.5/4) moist and pale brown (10YR 6/3) dry; fine sandy loam; single; very friable, non-sticky, slightly hard (16) moist; no roots; abrupt smooth boundary; pH 8.78. (Sample No. 5-4)
60 - 110 cm+	Yellowish brown (10YR 5/4) moist and pale brown (10YR 6/3) dry; silty clay loam; almost massive; few faint rust mottles of oxidized iron; very sticky, hard (22) moist; no roots; pH 9.23. (Sample No. 5-5)

PIT No.16

I. Information on the Site

a. Profile No.	:	16
b. Soil Name	:	Jhatpat Series
c. Date of Examination	:	March 16, 1982
d. Location	:	Haq Nawaz Khoso (land owner), about 3 miles upstream from the end of Nasirabad Disty, 100 m right side.
e. Elevation	:	188 feet
f. Land Form and Slope	:	Almost flat, land slopes downward very gently to south for 3 miles.
g. Vegetation and Land-use	:	Fallow land after sorghum in Kharif season, wheat yield 16 - 20 mds/ac but grams decreased to 1md/ac due to insect damage, surrounded by wheat-growing lands.

II. General Inforamtion on the Soil

a. Parent Material	:	Braided stream-transported clayey deposits of recent river alluvium from the northern Marri - Bughti Hills.
b. Drainage	:	Imperfectly drained.
c. Depth of Groundwater	:	More than 10 feet below the surface.
d. Presence of Surface Stones, Others	:	None, all over vertical cracks about 14 cm apart.
e. Evidence of Erosion	:	Slight sheet erosion only at the time of heavy rainfall or flood.

III. Profile Description

0 - 15 cm	Yellowish brown (10YR 5/4) moist and very pale brown (10YR 7/3) dry; silt loam to silty clay loam; crumb or massive; slightly sticky moist; very hard (24) dry; few to common fine roots; clear smooth boundary; about 1 cm wide cracks vertically downward to 15 cm; pH 8.88. (Sample No. 16 - 1)
15 - 25 cm	Light yellowish brown (10YR 6/4) moist and very pale brown (10 YR 7/3) dry; silt loam; moderate fine platy and medium block; very sticky, hard (22) moist; few fine roots; abrupt smooth boundary; pH 8.88. (Sample No. 16 - 2)
25 - 32 cm	Dark yellowish brown (10YR 4/4) moist and very pale brown (10YR 7/3) dry; silty clay loam to silty clay; moderate medium granular; sticky, very hard (24) moist; almost no roots; clear smooth boundary; pH 8.70. (Sample No. 16 - 3)

32 - 60 cm	Light yellowish brown (10YR 6/4) moist and very pale brown (10YR 7/3) dry; silt loam inserted with thin silty clay layer; moderate fine platy; slightly sticky, hard (20) moist; no roots; abrupt smooth boundary; pH 8.70. (Sample NO. 16 - 4)
60 - 110 cm+	Yellowish brown (10YR 5/4) moist and very pale brown (10YR 7/3) dry; silty clay to silty clay loam; moderately coarse block to platy; common fine faint rust brown mottles (oxidized iron); very sticky, hard (18) moist; no roots; pH 8.30. (Sample No. 16 - 5)

PIT No.18

I. Information on the Site

a. Profile No.	:	18
b. Soil Name	:	Chhater Series
c. Date of Examination	:	March 17, 1982
d. Location	:	Barren land, about 6.5 miles upstream from Pat Feeder Canal, RD 418, 200 m left side.
e. Elevation	:	220 feet
f. Land Form and Slope	:	Gently undulating, land slopes downward to south-west for 10 miles.
g. Vegetation and Land-use	:	Uncultivated, supporting only a sparse vegetation comprising Aeroa Javanica (Bui) and Calotropis procera (Akk).

II. General Information on the Soil

a. Parent Material	:	Recent to early recent coarse detrial deposits of mixed piedmont alluvium

derived from the Marri - Bughti Hills.

b. Drainage : Excessively drained.

c. Depth of Groundwater : More than 6 feet below the surface.

d. Presence of Surface Stones, Others : None.

e. Evidnce of Erosion : Moderate sheet and wind erosion only at the time of heavy rainfall or flood and strong wind, respectively.

III. Profile Description

0 - 10 cm	Yellowish brown (10YR 5/4) moist and light yellowish brown (10YR 6/4) dry; sandy loam; single; friable, non-sticky moist, slightly hard (14); few fine roots; abrupt smooth boundary; pH 9.15. (Sample No. 18 - 1)
10 - 60 cm	Yellowish brown (10YR 5/4) moist and light yellowish brown (10YR 6/4) dry; loamy sand; single; very loose, non-sticky, hard (18) moist; very few fine roots; clear smooth boundary; pH 9.30. (Sample No. 18 - 2)
60 - 75 cm	Yellowish brown (10YR 5/4) moist and light yellowish brown (10YR 6/4) dry; silty clay loam to clay loam; weak coarse granular; very sticky, very hard (25) moist; no roots; clear smooth boundary; pH 8.70. (Sample No. 18 - 3)
75 - 140 cm+	Pale brown (10YR 6/3) moist and light yellowish brown (10YR 6/4) dry; silt loam; almost massive; slightly loose, slightly sticky, hard (17) moist; no roots; pH 9.05. (Sample No. 18 - 4)

PIT No.25

I. Information on the Site

a. Profile No.	:	25
b. Soil Name	:	Bolan Series
c. Date of Examination	:	March 30, 1982
d. Location	:	Barren land, about 200 m south of Pat Feeder Canal, RD 109.
e. Elevation	:	246 feet
f. Land Form and Slope	:	Gently undulating, land slope to south for 5 miles.
g. Vegetation nad Land-use	:	Uncultivated, wheat was grown beyond Disty. Almost no natural vegetations.

II. General Information on the Soil

a. Parent Material	:	Recent to early recent coarse detrital deposits of mixed piedmont alluvium derived from the Marri - Bughti Hills.
b. Drainage	:	Excessively drained.
c. Depth of Groundwater	:	Around 6 feet.
d. Presence of Surface Stones, Others	:	None
e. Evidence of Erosion	:	Moderate sheet and wind erosion only at the time of heavy rainfall or flood and strong wind, respectively.

III. Profile Description

0 - 13 cm	Brown (10YR 5/3) moist and pale brown (10YR 6/3) dry; silt loam; weak fine platy; sticky, hard (20) moist; few fine roots; clear smooth boundary; pH 8.35. (Sample No. 25 - 1)

13 - 27 cm	Yellowish brown (10YR 5/4) moist and pale brown (10YR 6/3) dry; silt loam; almost massive; slightly sticky, hard (moist); very few faint white crystallines of gypsum; no roots; clear smooth boundary; pH 8.15. (Sample No. 25 - 2)
27 - 100 cm+	Yellowish brown (10YR 5/4) moist and pale brown (10YR 6/3) dry; silty clay loam; massive to weak coarse blocky; sticky, hard (17) moist; very few faint white mottles of gypsum crystalline; no roots; pH 8.15. (Sample No. 25 - 3)

III.3-1 Present Land Use

Table III.3-1 Land Utilization in Nasirabad

(unit: acre, %)

Items	Total farm area	Cultivated area	Uncultivable area			
			Total	Cultivable waste	Forest	Unculturable
Percentage	% (100.0)	(81.5)	(18.5)	(10.6)	(0.4)	(7.5)
Area	586,057	477,767	108,290	62,290	1,949	44,051

Source: Pakistan Census of Agriculture, 1972.

Table III.3-2 Cropped Area in Nasirabad

(unit: acre, %)

Items	Total cropped area	Kharif crops area	Rabi crops area	Orchard area
Total area	% (100.0)	(57.8)	(42.2)	(0.0)
	457,803	264,590	193,005	208
Irrigated area	(100.0)	(57.7)	(42.3)	(0.0)
	452,460	260,994	191,269	197
Unirrigated area	(100.0)	(67.3)	(32.5)	(0.2)
	5,343	3,596	1,736	11

Source: Pakistan Census of Agriculture, 1972.

Cropping intensity

$$\frac{\text{Total cropped area}}{\text{Total farm area}} = \frac{457,803 \text{ acre}}{586,057 \text{ acre}}$$

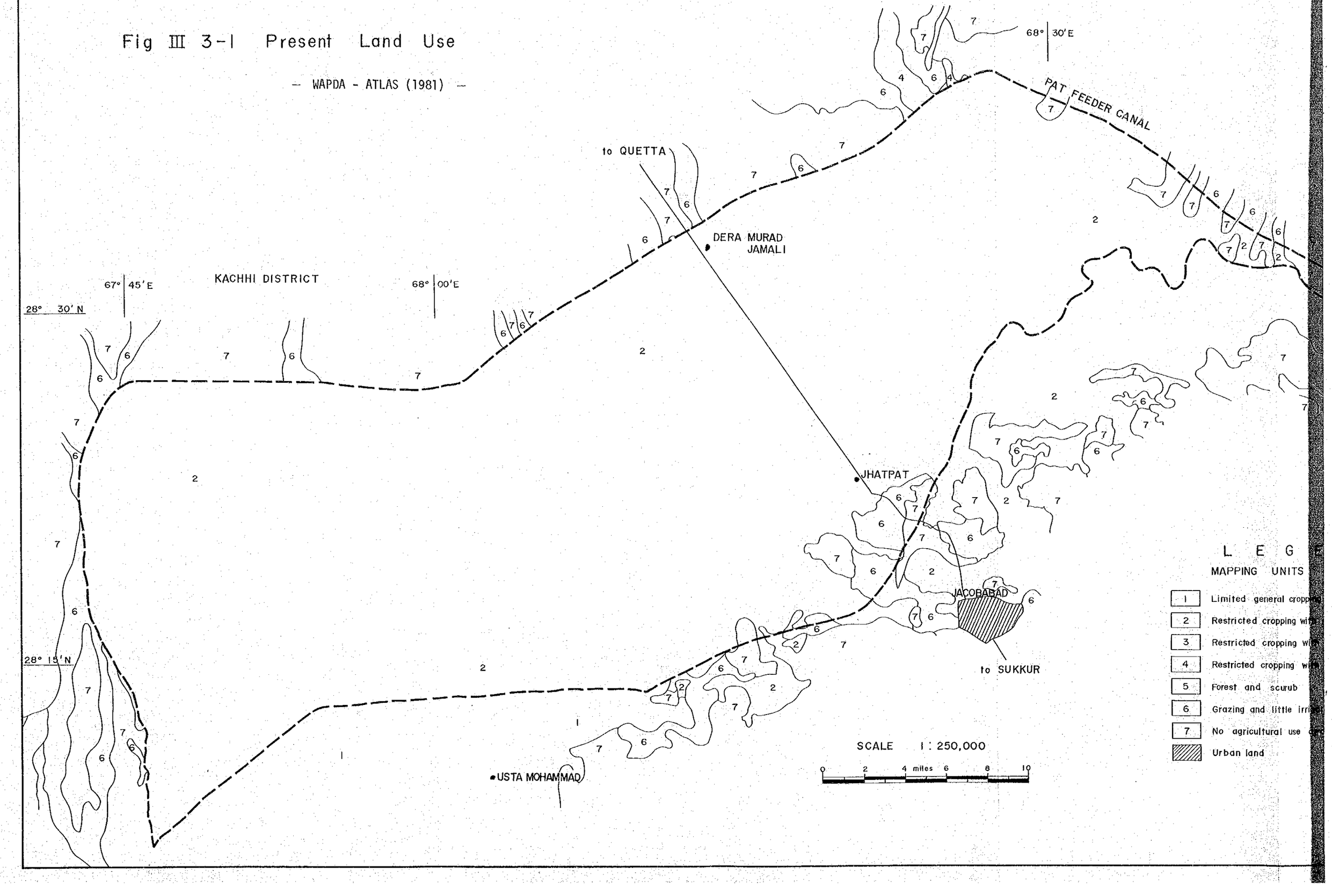
$$= 0.781$$

$$\frac{\text{Total cropped area}}{\text{Total cultivated area}} = \frac{457,803 \text{ acre}}{477,767 \text{ acre}}$$

$$= 0.958$$

Fig III 3-1 Present Land Use

— WAPDA - ATLAS (1981) —



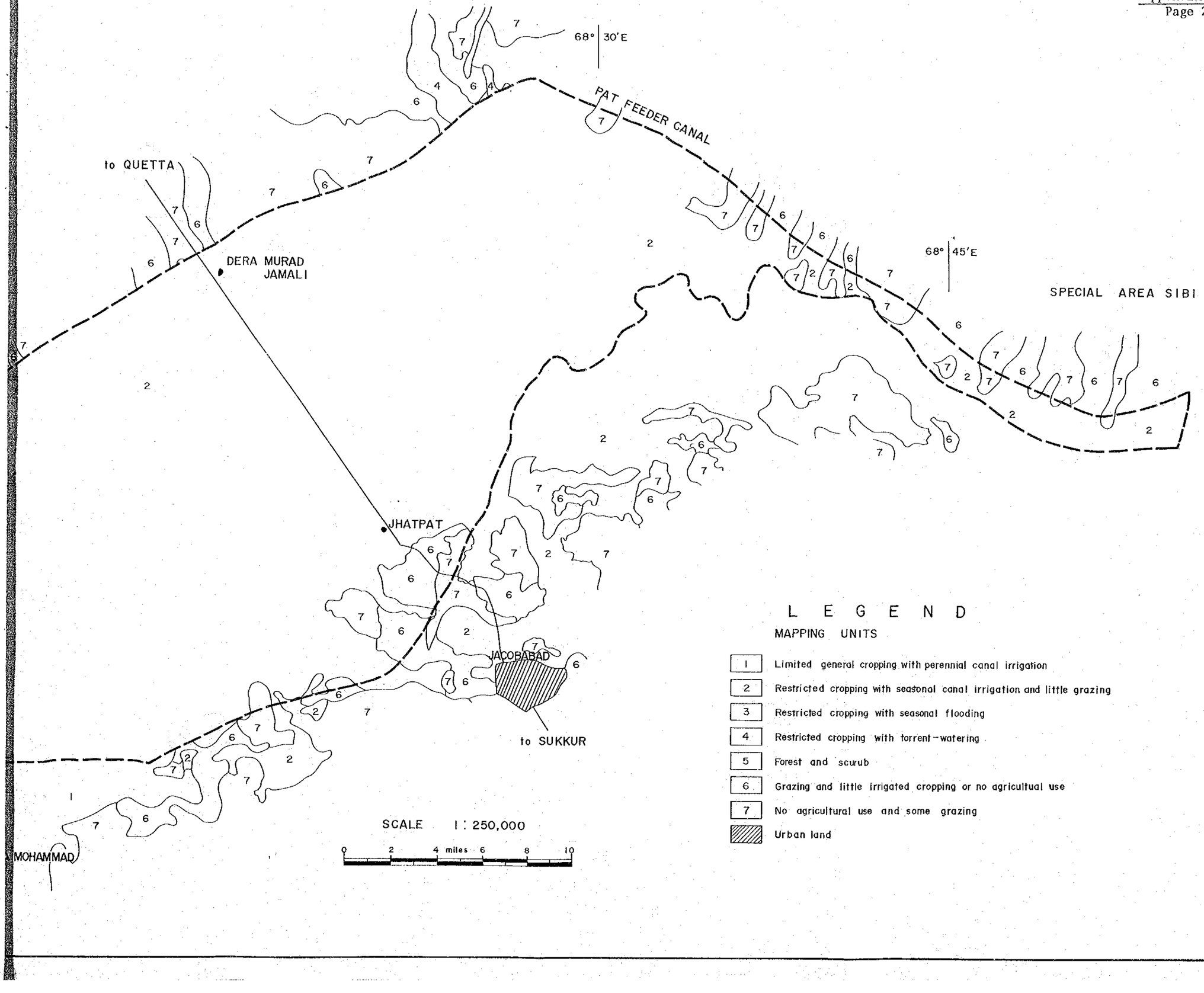

68° 30'E
PAT FEEDER CANAL
to QUETTA
DERA MURAD JAMALI
68° 45'E
SPECIAL AREA SIBI
JHATPAT
JACOBABAD
to SUKKUR
MOHAMMAD
SCALE 1 : 250,000
0 2 4 miles 6 8 10
L E G E N D
MAPPING UNITS
1 Limited general cropping with perennial canal irrigation
2 Restricted cropping with seasonal canal irrigation and little grazing
3 Restricted cropping with seasonal flooding
4 Restricted cropping with torrent-watering
5 Forest and scurub
6 Grazing and little irrigated cropping or no agricultual use
7 No agricultural use and some grazing
Urban land

Table III.3-3 Present Land Use Statistics in 1979/80

(Unit : acre)

Tehsil	Nos. of Village in the Project	Geographical Area	Recorded Area	Cultivated Area				Un-Cultivated Area		
				Total	Net Sown Area	Current Fallow Area	Area Sown More Than Twice	Total	Culturable Waste	Not Available for Cultivation
	(1)	(2)	(3)=(4)+(8)	(4)=(5)+(6)	(5)	(6)	(7)	(8)=(9)+(10)	(9)	(10)
Dera Murad Jamali	5	89,000	83,451	79,077	15,451	63,626	0	4,374	-	4,374
Chattar	3	24,000	22,760	20,582	6,049	14,533	0	2,178	405	1,773
Tamboo	46	236,000	226,418	115,587	21,854	93,733	0	110,831	101,049	9,782
Jhatpat	*73	*315,000	*278,150	*270,914	*148,823	*122,091	*13,021	*7,236	*4,182	*3,054
	(56)		(213,380)	(207,829)	(114,168)	(93,661)	(9,989)	(5,551)	(3,208)	(2,343)
Usta Muhammad	12	24,000	23,738	23,527	520	23,007	0	211	-	211
Total	*139	*688,000	*634,517	*509,687	*192,697	*316,990	*13,021	*124,830	*105,636	*19,194

Source : Land Revenue Offices of Dera Murad Jamali, Jhatpat and Usta Muhammad.

Note : *Including the estimated area which are not presently irrigated by Pat Feeder Canal (17 villages, 64,770 acres of total reported area).

Table III.3-4 Cropped Area in the Project Area

(Unit : acre)

Year	Area Settled	Discharge (cusec)	Karif Crop					Rabi Crop					Total
			Rice	Sorghum	Sesamum	Sugarcane	Subtotal	Wheat	Pulses	Oil Seeds	Others	Subtotal	
1972/73	612,189	2,160	-	109,904	36,664	-	195,383	26,916	6,541	29,455	15,194	78,106	273,489
1973/74	612,189	2,636	-	107,880	35,436	-	190,008	52,953	7,849	51,772	30,621	143,195	333,203
1974/75	612,189	2,346	-	99,772	19,029	-	160,241	28,846	2,328	10,513	8,538	50,225	210,466
1975/76	612,189	2,798	-	47,020	15,220	2,744	99,354	20,506	6,080	31,233	16,880	74,699	174,053
1976/77	612,189	1,859	-	44,487	14,140	3,592	96,389	19,858	3,548	20,614	13,740	57,760	154,149
1977/78	612,189	2,088	-	50,075	20,370	4,288	113,013	47,424	3,984	25,115	16,996	93,519	206,532
1978/79	612,189	2,061	27,230	22,602	9,840	5,670	65,342	88,362	4,082	41,235	22,240	155,919	221,261
1979/80	612,189	2,002	33,230	39,055	14,783	4,517	91,585	61,881	3,871	29,188	26,992	121,932	213,517
1980/81	612,189	2,050	70,000	37,244	14,991	4,825	127,060	90,000	4,000	30,000	33,000	157,000	284,059
Average (1972/73 ~ 1980/81)	612,189	2,222	43,487	62,004	20,052	2,848	126,485	48,527	4,698	29,902	20,467	103,595	230,080
Average (1978/79 ~ 1980/81)	612,189	2,038	43,487	32,967	13,205	5,004	94,663	80,081	3,984	33,474	27,410	144,949	239,612

Source : Department of Irrigation & Power, Jhatpat Office.

III.3.2 Farm Household and Land Tenure

1) Farm Labour

Estimated from the data of Population and Housing Survey conducted by the Cencus Organization in 1981, the total number of persons and households, farm households in the Project Area are as follows.

Table III.3-5 Estimate on Population and Household in the Project Area

(unit: persons, households)

Tehsil	Population	Household	Farm household	Persons per a house
Total	244,000	37,000	28,000	6.6
1.Dera Murad Jamali	33,800	5,500	4,800	6.1
2.Jhatpat	100,500	14,500	10,900	6.9
3.Usta Muhammad	23,500	2,900	2,300	8.1
4.Chattar	29,700	5,600	3,900	5.3
5.Tamboo	56,500	8,500	6,100	6.6

At present full time farm labour working in the Project Area were estimated at about 61,400 persons and part time as 32,600 persons, while total man-days per month of farm labour amounts to 1,861,000. This indicates that full time labour is available for 25 days and as part time for 10 days in a month.

2) Farm Size and Land Tenure

For the number of farm households by size of holding, those with from 12.5 to 25.0 acres farm are predominant, accounting for 43 percent. Their average is 18 acres. As for the land tenure types, tenant farmers are grate in number, accounting for 78 percent, followed by the owner farmers of 16 percent, and then by owner-cum-tenant farmers of 6 percent.

Table III.3-6 Population and Household in Nasirabad, 1981

(Unit: Persons, households)

Tehsil	Population			Household	Persons per a household
	Total	Male	Female		
1. Total	392,904	199,685	193,219	57,395	6.8
a. Dera Murad Jamali	43,070	22,507	20,563	6,803	6.3
b. Jhatpat	157,431	80,746	76,685	23,022	6.8
c. Usta Muhammad	106,170	52,605	53,565	13,251	8.0
d. Chattar	29,711	14,904	14,807	5,623	5.3
e. Tamboo	56,522	28,923	27,599	8,696	6.5
2. Rural area	364,892	184,520	180,372	53,559	6.8
a. Dera Murad Jamali	33,848	17,549	16,299	5,516	6.1
b. Jhatpat	150,740	76,953	73,787	22,023	6.8
c. Usta Muhammad	94,071	46,191	47,880	11,701	8.0
d. Chattar	29,711	14,904	14,807	5,623	5.3
e. Tamboo	56,522	28,923	27,599	8,696	6.5
3. Urban area	28,012	15,165	12,847	3,836	7.3
a. Dera Murad Jamali	9,222	4,958	4,264	1,287	7.2
b. Jhatpat	6,691	3,793	2,898	999	6.7
c. Usta Muhammad	12,099	6,414	5,685	1,550	7.8

Source: Nasirabad District Office, Baluchistan

Table III.3-7 Labor Force by Age Group in Baluchistan

(Unit: Persons)

Age group	Male				Female			
	Total persons	Agricultural occupations	Non-agri. occupations	Non-civilian labor	Total persons	Agricultural occupations	Non-agri. occupations	Non-civilian labor
1. Rual area								
Total	1,188,975	492,750	266,700	429,525	1,080,225	6,075	47,100	1,027,050
a. below 9 years	280,350	-	-	280,350	360,750	-	-	360,750
b. 10 - 14 years	173,775	40,125	41,625	92,025	134,250	825	14,550	118,875
c. 15 - 59 years	660,225	410,850	204,525	44,850	536,175	4,650	28,800	502,725
d. 60 - 69 years	47,100	29,550	12,300	5,250	31,125	375	1,950	28,800
e. 70 years & above	27,525	12,225	8,250	7,050	17,925	225	1,800	15,900
2. Urban area								
Total	227,148	9,614	111,964	105,570	199,686	23	16,031	183,632
a. below 9 years	62,077	-	-	62,077	65,872	-	-	65,872
b. 10 - 14 years	33,580	276	10,879	22,425	27,531	-	5,198	22,333
c. 15 - 59 years	120,589	8,142	94,277	18,170	98,072	23	9,660	88,389
d. 60 - 69 years	6,670	759	4,669	1,242	4,991	-	644	4,347
e. 70 years & above	4,232	437	2,139	1,656	3,220	-	529	2,691

Source: "Housing Economic and Demographic Survey - 1973, Statistical Tables Baluchistan" Census Organization, Interior Division, Government of Pakistan Islamabad.

Table III.3-8 Number of Farm Household and Operated Area by Farm Type and Size of Holding in Nasirabad*

Size of holding (acre)	Total	Owner	Owner cum-tenant	Tenant
1. Number of household *(unit: households, %)				
Total	21,971 (100.0)	3,390 (100.0)	1,393 (100.0)	17,188 (100.0)
under 1.0	- (-)	- (-)	- (-)	- (-)
1.0 - 2.5	212 (1.0)	42 (1.3)	- (-)	170 (1.0)
2.5 - 5.0	511 (2.3)	112 (3.3)	5 (0.4)	394 (2.3)
5.0 - 7.5	786 (3.6)	61 (1.8)	5 (0.4)	720 (4.2)
7.5 - 12.5	4,689 (21.3)	363 (10.7)	165 (11.8)	4,161 (24.2)
12.5 - 25.0	9,493 (43.2)	1,302 (38.4)	363 (26.1)	7,828 (45.6)
25.0 - 50.0	4,553 (20.7)	909 (26.8)	491 (35.2)	3,153 (18.3)
50.0 - 150.0	1,490 (6.8)	448 (13.2)	302 (21.6)	740 (4.3)
150.0 and over	237 (1.1)	153 (4.5)	62 (4.5)	22 (0.1)
2. Operated area *(unit: acre, %)				
Total	585,075 (100.0)	138,941 (100.0)	93,511 (100.0)	352,623 (100.0)
under 1.0	- (-)	- (-)	- (-)	- (-)
1.0 - 2.5	356 (0.1)	69 (0.0)	- (-)	287 (0.1)
2.5 - 5.0	1,936 (0.3)	423 (0.3)	20 (0.0)	1,493 (0.4)
5.0 - 7.5	4,604 (0.8)	361 (0.3)	25 (0.0)	4,218 (1.2)
7.5 - 12.5	47,141 (8.1)	3,600 (2.6)	1,643 (1.8)	41,898 (11.9)
12.5 - 25.0	171,587 (29.3)	24,205 (17.4)	6,364 (6.8)	141,018 (40.0)
25.0 - 50.0	158,690 (27.1)	31,374 (22.6)	17,246 (18.4)	110,070 (31.2)
50.0 - 150.0	109,625 (18.7)	34,310 (24.7)	25,499 (27.3)	49,816 (14.1)
150.0 and over	91,136 (15.6)	44,599 (32.1)	42,714 (45.7)	3,823 (1.1)
3. Average operated area per a farm (unit: acre)				
Total	26.6	41.0	67.1	20.5
under 1.0	-	-	-	-
1.0 - 2.5	1.7	1.6	-	1.7
2.5 - 5.0	3.8	3.8	4.0	3.8
5.0 - 7.5	5.9	5.9	5.0	5.9
7.5 - 12.5	10.1	9.9	10.0	10.1
12.5 - 25.0	18.1	18.6	17.5	18.0
25.0 - 50.0	34.9	34.5	35.1	34.9
50.0 - 150.0	73.6	76.6	84.3	67.3
150.0 and over	384.5	291.5	688.9	173.8

Note: * ... All figures are totalised sub-division Nasirabad and Pat Feeder

Source: "Pakistan Census of Agriculture, 1972" Agricultural Census Organization

Table III.3-9 Area of Owner-cum Tenant and Tenant Farm in Nasirabad

(unit: acres, %)

Farm	Owned Self Operated.	Share-cropped.	Leased Out.	Others.	Total.
Owner-cum Tenant Farm	(68.1) 63,705	(25.6) 23,947	(6.2) 5,811	(0.1) 48	(100.0) 93,511
Tenant Farm	-	(95.7) 337,384	(4.3) 15,239	(-)	(100.0) 352,623

Source: " Pakistan Census of Agriculture 1972 ".

Table III.3-10 Percentage of Share Cropping Contracts by Owner's Share in Nasirabad

(unit: households, %)

Items	Number of Share Cropping Contracts						
	1/4	1/3	2/5	1/2	2/3	over 2/3	Total
Percentage	(0.2)	(0.4)	(0.2)	(91.2)	(7.9)	(0.1)	100.0
Households	37	65	26	13,921	1,202	21	15,272

Source: " Pakistan Census of Agriculture, 1972 ".

III.3-3 Present crop Production

Table III. 3-11 Crop Production Data of Wheat

Year	Pakistan *1 Area ('000 ha)	Pakistan *1 Yield (kg/ha)	Pakistan *1 Production ('000 tons)	Baluchistan *1 Area ('000 ha)	Baluchistan *1 Yield (kg/ha)	Baluchistan *1 Production ('000 tons)	Nasirabad District *2 Area (ha)	Nasirabad District *2 Yield (kg/ha)	Nasirabad District *2 Production (tons)
Wheat									
1970/71	5,977.5	1,079	6,476.3	161.1	470	76.2		- No data -	
1971/72	5,797.1	1,190	6,890.4	195.3	406	78.6		- do -	
1972/73	5,970.6	1,245	7,442.3	149.5	452	68.6		- do -	
1973/74	6,112.6	1,245	7,628.9	167.4	664	111.2		- do -	
1974/75	5,812.3	1,319	7,673.5	145.6	904	131.1	33,590	1,355	45,500
1975/76	6,110.6	1,420	8,690.7	134.5	1,024	137.8	23,082	1,868	43,120
1976/77	6,390.1	1,431	9,143.9	148.1	986	146.0	22,645	2,110	47,683
1977/78	6,360.0	1,316	8,367.2	156.9	1,029	161.4	30,274	1,920	58,026
1978/79	6,687.1	1,488	9,950.0	167.8	1,244	208.8	51,000	2,020	102,950
1979/80	6,911.6	1,563	10,804.8	188.1	1,229	231.1	60,500	1,889	114,270
Average	6,213.0	1,214	7,543.9	161.4	837	135.1	36,849	1,861	68,592
Rice									
1970/71	1,503.4	1,466	2,199.7	40.1	710	28.5		- No data -	
1971/72	1,456.4	1,549	2,261.9	41.5	1,024	42.6		- do -	
1972/73	1,479.6	1,577	2,329.7	38.4	1,061	40.9		- do -	
1973/74	1,511.9	1,623	2,455.1	35.6	941	33.4		- do -	
1974/75	1,604.2	1,439	2,313.8	34.6	1,024	35.5	32,376	1,019	33,000
1975/76	1,709.7	1,537	2,617.5	38.3	1,033	39.6	35,703	1,014	36,200
1976/77	1,749.3	1,565	2,737.4	18.9	1,492	28.0	16,557	1,530	25,401
1977/78	1,899.1	1,555	2,949.6	38.1	1,021	38.9	36,382	1,010	36,900
1978/79	2,025.6	1,615	3,272.0	41.3	1,482	61.2	39,540	1,490	59,010
1979/80	2,034.5	1,581	3,215.8	42.1	2,223	93.6	39,525	2,285	90,300
Average	1,697.4	1,553	2,635.3	36.9	1,199	44.2	33,347	1,403	46,802
Jowar									
1970/71	557.6	590	329.2	80.9	553	44.7		- No data -	
1971/72	507.1	615	312.1	79.2	701	55.8		- do -	
1972/73	499.9	603	301.5	83.2	609	50.9		- do -	
1973/74	589.3	642	378.1	133.8	821	109.2		- do -	
1974/75	445.3	596	265.6	65.5	609	40.0	26,306	578	15,200
1975/76	475.7	591	281.0	62.8	599	37.8	38,493	601	23,140
1976/77	446.9	585	261.3	52.3	549	28.7	23,306	650	15,139
1977/78	519.5	547	284.1	152.1	437	66.5	30,233	660	20,100
1978/79	469.2	538	252.4	86.6	408	35.3	14,555	650	9,400
1979/80	423.4	588	249.1	55.3	624	34.5	28,327	748	21,200
Average	493.4	591	291.4	85.2	591	50.3	26,870	646	17,363

Source: * 1..... Agricultural Statistics of Pakistan, 1980
* 2..... Agricultural Statistics of Baluchistan, 1981

Table III. 3-12 Crop Production Data

Year	Pakistan *1			Baluchistan *1			Nasirabad District *2		
	Area ('000 ha)	Yield (kg/ha)	Production ('000 tons)	Area ('000 ha)	Yield (kg/ha)	Production ('000 tons)	Area (ha)	Yield (kg/ha)	Production (tons)
Sugarcane									
1970/71	636.2	36,415	23,167.0	0.0	-	1.0		- No data -	
1971/72	552.3	36,145	19,963.1	0.1	23,900	1.9		- do -	
1972/73	533.5	37,390	19,947.5	0.1	18,800	1.5		- do -	
1973/74	645.6	37,036	23,910.5	0.0	20,100	0.8		- do -	
1974/75	672.8	31,572	21,241.9	0.0	40,200	1.6	32	31,000	1,000
1975/76	699.8	36,506	25,546.7	0.1	26,300	2.1	26	29,000	750
1976/77	787.8	37,475	29,523.0	0.1	27,600	2.3	26	29,310	762
1977/78	822.5	36,567	30,076.6	0.1	17,000	1.7	-	-	-
1978/79	752.5	36,313	27,325.5	0.1	17,000	1.7	24	28,750	690
1979/80	718.5	38,271	27,497.7	0.1	28,000	2.8	36	30,556	1,100
Average	682.2	36,385	24,820.0	0.1	24,322	1.7	29	29,875	860
Cotton									
1970/71	1,733.2	314	542.2	-	-	-	-	-	-
1971/72	1,957.6	360	707.4	0.5	276	0.1		- No data -	
1972/73	2,010.0	350	701.6	0.1	-	0.0		- do -	
1973/74	1,844.8	360	658.5	0.6	203	0.1		- do -	
1974/75	2,031.0	314	634.1	0.2	350	0.1	-	-	-
1975/76	1,851.6	277	513.7	0.2	-	0.0	65	462	30
1976/77	1,864.7	233	434.9	0.4	250	0.1	112	540	60
1977/78	1,843.2	312	574.8	0.1	-	0.0	45	530	24
1978/79	1,891.2	250	473.2	0.1	-	0.0	-	-	-
1979/80	2,081.0	350	728.1	0.2	-	0.0	-	-	-
Average	1,910.8	312	606.9	0.3	270	0.1	74	514	38
Gram									
1970/71	914.2	540	493.8	4.5	452	2.0		- No data -	
1971/72	964.4	529	510.3	4.3	572	2.4		- do -	
1972/73	1,017.3	544	553.1	4.1	526	2.1		- do -	
1973/74	1,108.0	551	610.2	4.0	498	2.1		- do -	
1974/75	996.4	552	550.2	1.9	544	1.0		- do -	
1975/76	1,068.4	563	601.4	1.3	710	0.9	1,313	708	930
1976/77	1,094.5	593	649.4		- No data -		7	710	5
1977/78	1,099.1	558	613.5	1.2	667	0.8		- No data -	
1978/79	1,224.4	439	537.8	1.1	727	0.8	1,133	730	830
1979/80	1,128.5	278	313.4	1.1	727	0.8	1,105	742	820
Average	1,061.5	512	543.3	2.6	602	1.4	890	727	646

Source: * 1..... Agricultural Statistics of Pakistan, 1980
* 2..... Agricultural Statistics of Baluchistan, 1981

Table III. 3-13 Crop Production Data

Year	Pakistan *1 Area ('000 ha)	Pakistan *1 Yield (kg/ha)	Pakistan *1 Production ('000 tons)	Baluchistan *1 Area ('000 ha)	Baluchistan *1 Yield (kg/ha)	Baluchistan *1 Production ('000 tons)	Nasirabad District *2 Area (ha)	Nasirabad District *2 Yield (kg/ha)	Nasirabad District *2 Production (tons)
Mung									
1970/71	70.0	470	32.8	2.9	249	0.7	-	-	-
1971/72	71.8	498	35.5	5.1	516	2.7	-	-	-
1972/73	62.2	480	30.0	3.9	443	1.7	-	-	-
1973/74	68.6	461	32.0	5.9	304	1.8	-	-	-
1974/75	62.5	452	28.6	3.6	369	1.3	-	-	-
1975/76	67.3	470	31.9	3.6	369	1.3	-	-	-
1976/77	64.7	459	29.7	6.6	364	2.4	-	-	-
1977/78	65.5	470	30.8	5.1	388	2.0	-	-	-
1978/79	65.9	454	30.0	4.5	412	1.9	-	-	-
1979/80	69.0	473	32.7	2.7	479	1.3	-	-	-
Average	66.8	470	31.4	4.4	390	1.7	-	-	-
Mash									
1970/71	39.9	491	19.6	0.2	498	0.1	-	-	-
1971/72	43.6	475	20.7	0.0	-	0.0	-	-	-
1972/73	35.3	496	17.5	0.5	397	0.2	-	-	-
1973/74	43.9	508	22.3	0.5	470	0.2	-	-	-
1974/75	51.7	503	26.0	0.3	719	0.2	-	-	-
1975/76	58.4	510	29.8	1.4	618	0.8	-	-	-
1976/77	49.5	503	24.9	0.3	708	0.2	-	-	-
1977/78	52.9	514	27.2	1.0	596	0.6	-	-	-
1978/79	48.7	503	24.5	1.0	598	0.6	-	-	-
1979/80	64.1	520	33.3	0.5	607	0.3	-	-	-
Average	48.8	504	24.6	0.6	579	0.3	-	-	-
Masoor									
1970/71	61.0	350	21.1	0.2	-	0.0	-	-	-
1971/72	63.5	360	22.8	0.0	-	0.0	-	-	-
1972/73	77.9	350	27.1	0.0	-	0.0	-	-	-
1973/74	96.2	350	33.6	0.0	-	0.0	-	-	-
1974/75	75.4	350	26.5	0.0	-	0.0	-	-	-
1975/76	72.9	387	28.3	0.0	-	0.0	-	-	-
1976/77	79.5	385	30.6	0.1	-	0.0	-	-	-
1977/78	89.5	374	33.5	0.0	-	0.0	-	-	-
1978/79	106.1	368	39.0	0.0	-	0.0	-	-	-
1979/80	86.4	422	36.5	0.1	-	0.0	-	-	-
Average	80.8	370	29.9	0.0	-	0.0	-	-	-

Source: * 1..... Agricultural Statistics of Pakistan, 1980
* 2..... Agricultural Statistics of Baluchistan, 1981

Table III. 3-14 Crop Production Data

Year	Pakistan *1 Area ('000 ha)	Pakistan *1 Yield (kg/ha)	Pakistan *1 Production ('000 tons)	Baluchistan *1 Area ('000 ha)	Baluchistan *1 Yield (kg/ha)	Baluchistan *1 Production ('000 tons)	Nasirabad District *2 Area (ha)	Nasirabad District *2 Yield (kg/ha)	Nasirabad District *2 Production (tons)
Mattar									
1970/71	161.0	436	70.2	2.2	406	0.9		- No data -	
1971/72	212.5	445	94.5	2.3	360	0.8		- do -	
1972/73	192.9	461	89.0	2.3	360	0.8		- do -	
1973/74	215.2	457	98.3	2.1	360	0.7		- do -	
1974/75	136.8	444	60.8	0.3	452	0.1		- do -	
1975/76	150.5	439	66.1	0.0	-	0.0		- do -	
1976/77	187.9	443	83.2	0.5	352	0.2	496	350	173
1977/78	186.8	448	83.7	0.6	367	0.2		- No data -	
1978/79	183.6	447	82.1	0.8	383	0.3	809	380	310
1979/80	163.0	463	75.4	0.8	388	0.3	850	338	330
Average	179.0	449	80.3	1.2	343	0.4	718	377	271
Rapeseed & Mustard									
1970/71	509.9	526	269.3	37.2	332	12.2		- No data -	
1971/72	562.0	535	301.2	24.1	298	6.2		- do -	
1972/73	533.8	535	286.8	23.3	295	6.8		- do -	
1973/74	535.7	544	292.4	23.0	295	6.7		- do -	
1974/75	451.5	553	248.0	23.2	295	7.0	22,259	294	6,541
1975/76	470.1	572	267.3	11.2	304	3.4	8,871	287	2,550
1976/77	518.8	572	296.4	33.9	332	11.4	31,026	330	10,313
1977/78	412.3	573	236.1	18.6	355	6.6	17,242	360	6,140
1978/79	433.0	573	248.2	31.8	384	12.2	20,389	380	7,840
1979/80	409.4	604	247.1	23.4	397	9.3	20,802	399	8,300
Average	463.7	581	269.3	25.0	328	8.2	20,098	346	6,947
Groundnut									
1970/71	30.3	1,475	44.7	-	-	-	-	-	-
1971/72	41.1	1,392	57.2	-	-	-	-	-	-
1972/73	31.0	1,426	44.2	-	-	-	-	-	-
1973/74	38.0	1,424	54.1	-	-	-	-	-	-
1974/75	40.5	1,410	57.1	-	-	-	-	-	-
1975/76	43.6	1,413	61.6	-	-	-	-	-	-
1976/77	45.1	1,421	64.1	-	-	-	-	-	-
1977/78	50.7	1,428	72.4	-	-	-	-	-	-
1978/79	36.5	1,247	45.5	-	-	-	-	-	-
1979/80	40.8	1,233	50.3	-	-	-	-	-	-
Average	39.8	1,386	55.1	-	-	-	-	-	-

Source: * 1..... Agricultural Statistics of Pakistan, 1980
* 2..... Agricultural Statistics of Baluchistan, 1981

Note; The units of area and production for soybean and sunflwer are in hectare and ton repectively.

Table III. 3-15 Crop Production Data

Year	Pakistan *1 Area ('000 ha)	Pakistan *1 Yield (kg/ha)	Pakistan *1 Production ('000 tons)	Baluchistan *1 Area ('000 ha)	Baluchistan *1 Yield (kg/ha)	Baluchistan *1 Production ('000 tons)	Nasirabad District *2 Area (ha)	Nasirabad District *2 Yield (kg/ha)	Nasirabad District *2 Production (tons)
Sesamum									
1970/71	30.8	341	10.2	3.2	563	2.0		- No data -	
1971/72	41.6	323	13.5	4.4	461	2.0		- do -	
1972/73	29.7	350	10.4	2.6	664	1.7		- do -	
1973/74	32.9	378	12.4	7.2	498	3.5		- do -	
1974/75	22.8	360	8.1	5.3	435	2.3	1,416	441	625
1975/76	28.1	378	10.7	3.0	544	1.6	2,869	529	1,517
1976/77	30.3	397	12.0	8.9	470	4.2	8,553	480	4,105
1977/78	31.6	399	12.6	6.2	495	3.1	5,972	500	3,000
1978/79	45.9	409	18.7	15.3	498	7.6	15,056	500	7,530
1979/80	46.2	419	19.3	12.7	504	6.4	12,701	504	6,400
Average	34.0	376	12.8	6.9	513	3.4	7,761	498	3,863
Soybean									
1970/71	2,441	370	927	-	-	-	-	-	-
1971/72	1,904	489	932	-	-	-	-	-	-
1972/73	2,660	436	1,159	-	-	-	-	-	-
1973/74	2,199	456	1,002	-	-	-	-	-	-
1974/75	957	463	443	-	-	-	-	-	-
1975/76	833	484	403	-	-	-	-	-	-
1976/77	1,662	370	615	-	-	-	-	-	-
1977/78	3,049	423	1,290	-	-	-	-	-	-
1978/79	3,437	511	1,755	-	-	-	-	-	-
1979/80	3,512	378	1,326	-	-	-	-	-	-
Average	2,265	435	985	-	-	-	-	-	-
Sunflower									
1970/71	670	719	482	-	-	-	-	-	-
1971/72	1,250	698	873	-	-	-	-	-	-
1972/73	776	626	486	-	-	-	-	-	-
1973/74	516	477	246	-	-	-	-	-	-
1974/75	569	455	259	-	-	-	-	-	-
1975/76	483	472	228	-	-	-	-	-	-
1976/77	389	483	188	-	-	-	-	-	-
1977/78	37	946	35	-	-	-	-	-	-
1978/79	479	649	311	-	-	-	-	-	-
1979/80	592	600	355	-	-	-	-	-	-
Average	576	601	346	-	-	-	-	-	-

Source: * 1..... Agricultural Statistics of Pakistan, 1980
* 2..... Agricultural Statistics of Baluchistan, 1981

Table III.3-16 Estimation on Cropped Area by Crop in the Pat Feeder Command Area
(1975/76 - 1980/81)

Year	Sorguhum	Rice	Sesamum	Cotton	Sugarcane	Wheat	Gram	Mustard	Rapes	Total
1975/76	8,000	4,000	8,000	50	1,000	64,000	22,000	30,000	10,000	147,050
1976/77	10,000	3,000	10,000	100	1,500	69,000	25,000	25,000	8,000	151,600
1977/78	12,000	5,000	11,000	200	2,000	75,000	30,000	40,000	10,000	185,200
1978/79	15,000	18,000	10,000	300	2,000	82,000	35,000	40,000	18,000	220,300
1979/80	18,000	32,000	12,000	700	2,500	95,000	40,000	20,000	10,000	230,200
1980/81	20,000	50,000	15,000	500	3,000	100,000	46,000	8,000	2,000	244,500

Source : Agriculture Dept., Dera Murad Jamali

Table III.3-17 Estimated Wheat Production by Variety
(Pat Feeder Command Area, 1980/81 - 1981/82)

Year	Variety	Planted Area (ac)	Harrested Area (ac)	Yield (Mds/ac)	Production (Mds)
1980/81	Improved				
	(1) Sonalika	40,000	Same as Planted		
	(2) Pawan	20,000			
	(3) Yakora	10,000			
	(4) Mexi-Pak	8,000			
	(5) Others	-			
	Sub-total	78,000		N.A.	N.A.
	Local				
	(1) C - 591	5,000	- do -		
	(2) Chenab 70	7,000			
	(3) Local White	10,000			
	Sub-total	22,000		N.A.	N.A.
	Total	100,000		Ave.15	1,500,000
1981/82	Improved				
	(1) Sonalika	36,000	- do -		
	(2) Pawan	130,000			
	(3) Yakora	12,000			
	(4) Mexi-pak	8,000			
	(5) Others	10,000			
	Sub-total	196,000		N.A.	N.A.
	Local				
	(1) C - 591	1,000	- do -		
	(2) Chenob 70	500			
	(3) Local White	2,500			
	Sub-total	4,000		N.A.	N.A.
	Total	200,000		Ave.15	3,000,000

Table III.3-18 Estimated Rice Production by Variety
(Pat Feeder Command Area, 1976/77 - 1980/81)

Year	Variety	Planted Area (ac)	Harrested Area (ac)	Yield (Mds/ac)	Production (Mds)
1976/77	Irri-6 (Improved)	1,000	Same as Planted		
	Subdasi (Local)	500			
	Kangni (Local)	500			
	Bidro (local)	1,000			
	Total	3,000		Ave.15	45,000
1977/78	Irri-6	2,000	- do -		
	Subdasi	1,000			
	Kangni	1,000			
	Bidro	1,000			
	Total	5,000		Ave.15	75,000
1978/79	Irri-6	11,000	- do -		
	Subdasi	4,000			
	Kangni	2,000			
	Bidro	1,000			
	Total	18,000		Ave.15	270,000
1979/80	Irri-6	23,000	- do -		
	Subdasi	5,000			
	Kangni	3,000			
	Bidro	1,000			
	Total	32,000		Ave.15	480,000
1980/81	Irri-6	40,000	- do -		
	Subdasi	5,000			
	Kangni	3,000			
	Bidro	2,000			
	Total	50,000		Ave.15	750,000

Source : Agriculture Dept. Dera Murad Jamali.

Table III.3-19 Result on Crop Production of Demonstration Plots (1980/81)

Crop	No. of Plot	Area of Plot (ac)	Yield per Acre
1. Groundnut	1	4	12
	2	2	9
	3	4	-
	4	2	3 1/2
2. Sesamum	1	4	7
	2	4	8 1/2
	3	4	8 1/2
3. Sunflower	1	4	11
	2	4	7
	3	4	5 1/2
4. Wheat (Variety: Powan)	1	2	48
	2	1	45
	3	2	49
	4	2	20
	5	2	22
5. Rape	1	4	8
	2	4	10
	3	2	7
	4	2	8
6. Safflower	1	4	3
	2	4	4
	3	2	30 Seers
	4	4	5 1/2

Source : Extra Assistant Director of Agriculture Dept., Dera Murad Jamali.

III.3-4 Agriculture Credit

Table III.3-20 Loaning Status of Agricultural Development Bank of Pakistan (A.D.B.P.) in Nasirabad

Items	Name of branches: Dera Murad Jamali	Jhatpat	Usta Muhammad	Total
1. Total loan				
Numbers of loanees	309	4,361	no data	over 4,670
amount advanced(1,000Rs)	806	24,091	16,645	41,542
2. Long term loan				
Numbers of loanees	4	261	no data	over 265
amount advanced(1,000Rs)	231	13,326	8,475	22,032
3. Medium term loan				
Numbers of loanees	10	195	no data	over 205
amount advanced(1,000Rs)	63	2,610	845	3,518
4. Short term loan				
Numbers of loanees	295	3,905	no data	over 4,200
amount advanced(1,000Rs)	512	8,155	7,325	15,992

Note: Loaning condition are as below

Loans	Grace Period (year)	Repayment term (year)	Interest	Purpose
1. Long term loan	1.5	8	11%	Tractor, Tubewells.
2. Medium term loan	1.0	5	11%	Animals, Carts Open wells.
3. Short term loan	0.5	1	11%	Seed, Fertilizer Pesticides.

Source: A.D.B.P's three branches (Dera Murad Jamali, Jhatpat and Usta Muhammad) in Nasirabad District.

Table III.3-21 Livestock Population in Nasirabad District (1972 Census)

Kinds	Nos. of Household Different Type of Animal	Total (All Ages)	Male					Female				
			3 Years and Above					3 Years and Above				
			Total	For Breeding	For Work	Niether for Breeding and Work	Below 3 Years	Total	In Milk	Dry	Not Yet Calved	Below 3 Years
Cattle	25,771	137,484	57,833	298	56,009	1,526	18,541	46,453	20,948	21,647	3,858	14,657
Buffalo	5,568	19,509	341	210	58	73	3,075	11,257	6,806	3,628	823	4,836
Sheep	3,853	118,611	8,147 1/	N.A.	N.A.	N.A.	N.A.	73,974 2/	N.A.	N.A.	N.A.	N.A.
Goat	14,238	135,133	6,453 1/	N.A.	N.A.	N.A.	N.A.	80,880 1/	N.A.	N.A.	N.A.	N.A.
Asses	17,928	33,380	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Horses	3,779	4,533	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Camel	1,090	3,317	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Poultry	16,240	157,141	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Note : 1/ Nos. of male sheep or goat (one year old and above).

2/ Nos. of female sheep or goat (one year old and above).

Source : Assistant Director, Livestock Dept. Dera Murad Jamali.

Table III.3-22 Animal Population in the Pat Feeder Command Area (1980)

Area	Cattle	Buffalo	Sheep	Goat	Horses	Asses	Camel	Chicken
1. Uch	7,398	978	8,795	11,653	476	2,987	2,317	9,689
2. Nasirabad Distry	9,238	945	10,341	13,197	405	3,795	987	10,743
3. Jhudher	8,116	896	9,281	12,035	398	3,213	1,987	9,989
4. Temple	10,735	1,386	11,178	12,035	619	4,113	1,568	11,592
5. Jhatpat	11,987	1,415	13,236	10,189	398	3,989	1,292	9,857
6. Mohbat	7,353	629	5,945	6,892	157	1,998	778	2,989
7. Balan	13,345	1,737	15,821	16,363	238	4,816	1,138	10,349
8. Bari	11,783	995	11,782	12,177	347	3,985	983	9,856
9. Rupa	8,536	887	10,676	11,245	249	2,876	869	8,713
10. Umrani	8,579	536	9,347	10,293	258	2,853	839	8,248
11. Magsi	8,376	731	8,289	9,576	233	1,996	882	7,997
12. Qabula	8,781	771	9,687	10,215	537	2,178	617	9,895
13. Murad	6,139	395	8,225	9,147	297	1,897	781	8,345
Total	120,366	12,301	132,603	145,017	4,612	40,697	15,038	118,262

Source : Assistant Director, Livestock Dept. Dera Murad Jamali.

III.3-6 Farm Input Materals

Table III.3-23 Distributed Farm Inputs by Government Agencies

Kind		Unit	1978/79	1979/80	1980/81
1. Feretilizers					
(1) Urea	(46-0-0)	bag (50 ℔bs)	20,000	22,000	50,000
(2) TSP	(0-46-0)	-do-	-	-	-
(3) Nitro Phosphate	(23-23-0)	-do-	10,000	15,000	35,000
(4) DAP	(18-46-0)	-do-	20,000	24,000	46,000
(5) Muriate of Potash	(0-0-60)	-do-	-	-	-
2. Pesticides					
(1) BHC (10%, Powder)		kg	7,000	10,000	12,000
(2) Malathion		ℓ	1,000	1,200	1,500
(3) Gusathion		-do-	500	1,000	1,500
(4) Diptrex		kg	500	800	600
(5) Padan	(Granular)	-do-	500	1,000	5,000
(6) Basodin	(Granular)	-do-	1,000	1,500	2,000
(7) Zinc Phosphate	(Powder)	-do-	50	80	100
(8) Benlate	(-do-)	-do-	150	200	200
(9) Matasystox	(Liquid)	ℓ	1,000	1,200	1,000
(10) Dieldrin	(-do-)	ℓ	1,000	1,300	1,500

Note : DAP = Di-ammonium Phosphate

Source : Agriculture Dept., Dera Murad Jamali

Table III.3-24 Estimated Input Materials per Hectare by Crop, without Project, at Present

Materials	Unit	Sorghum	Rice	Sesamum	Sugarcane	Wheat	Rapes & Mustard	Gram	Berseem
1. Seeds	kg	40	50	14	3,000	100	14	70	50
2. Fertilizer									
-N	kg	20	40	10	100	40	5	-	-
-P_2O_5	"	10	20	20	50	20	10	-	-
-K_2O	"	-	-	-	-	-	-	-	-
3. Inspecticides									
-Powder	kg	0.2	-	-	1.0	0.1	0.1	0.2	-
-Granular	"	-	0.1	-	0.1	-	-	-	-
-Liquid	ℓ	0.1	0.2	0.1	0.1	-	0.1	0.1	-

Table III.3-25 Achievement of Insect Control (1980/81)

Crop	Kind of Pest	Controled Acreage	Chemical to be Used
1. Sorghum	Stem borer	7,000	Metasystox, Gusathion, Basodin 10G
2. Rice	Stem borer, Plant hopper Leaf hopper	5,000	Gusathion, Padan 4G, Basadin 10G
3. Sesamum	Aphid, Grass hopper White ant	1,500	Malathion, Gusathion, Dildrin
4. Cotton	Grass hopper, white fly Army worm, Ball worm	800	BHC 10% Dust, Metasystox, Dimicron, Dysiston 10G, Basodin 10G
5. Sugarcane	White ant, Black bug Stem borer	1,200	Dildrin, Dimecron, Dysiston 10G
6. Wheat	White ant Grass hopper, Rat	9,000	Dildrin, BHC 10% Dust, Zinc Phosphate
7. Gram	Gram pod borer	8,000	Sevin 10% Dust, Malathion, Thiodan
8. Rapes & Mustard	Aphid	6,000	BHC 10% Dust, Gusathion, Malathion
9. Vegetables	Fruit fly, Aphid, Cut worm	800	Diptrex, Malathion, Gusathion

Source : Agriculture Dept., Dera Murad Jamali.

III.3-7 Farm Mechanization and Labour Balance

Table III.3-26 Numbers of Farm Machinery and Land Levelling Equipments (1980/81)

Machinery	Number of Unit	Remarks
1. Four-Wheel Tractor and Attachment		
(1) Tractor, 50 HP	103	M.F:55, FIAT:23, Ford:25, U.S.S.R:0
(2) Tractor, over 50 HP	143	M.F:35, FIAT:15, Ford:28, U.S.S.R:65
(3) Attachment		
- Disc Plow	215	Pakistan-made: 65, Imported: 150
- Rotary Cultivator	220	Pakistan-made: 95, Imported: 220
- Disc Harrow	-	
- Tooth Harrow	-	
- Trailer	155	Pakistan-made: 150, Imported: 105
- Cultivator	246	
2. Power Tiller	-	
3. Sprayer		
- Napsack Type (3HP)	60	
- Power Sprayer (3HP)	12	(Farmers: 4, Agr. Dept.: 8)
- Hand Duster	20	
4. Threshers	-	
5. Dryers	-	
6. Water Pump		
- High-lift	55	All Imported.
- Low-lift	15	- do -
7. Bulldozer		
- 80HP	(5) 8	Owned by Agr. Engineering Dept.
- over 80HP	(3) 5	- do -

Note : The figures in the parenthesis show the reduced numbers of unit which are under repair.

Source : Agriculture Dept. and Agricultural Engineering Dept., Dera Murad Jamali.

Fig. III.3-2 Labour Requirement Balance in the Project Area, at Present

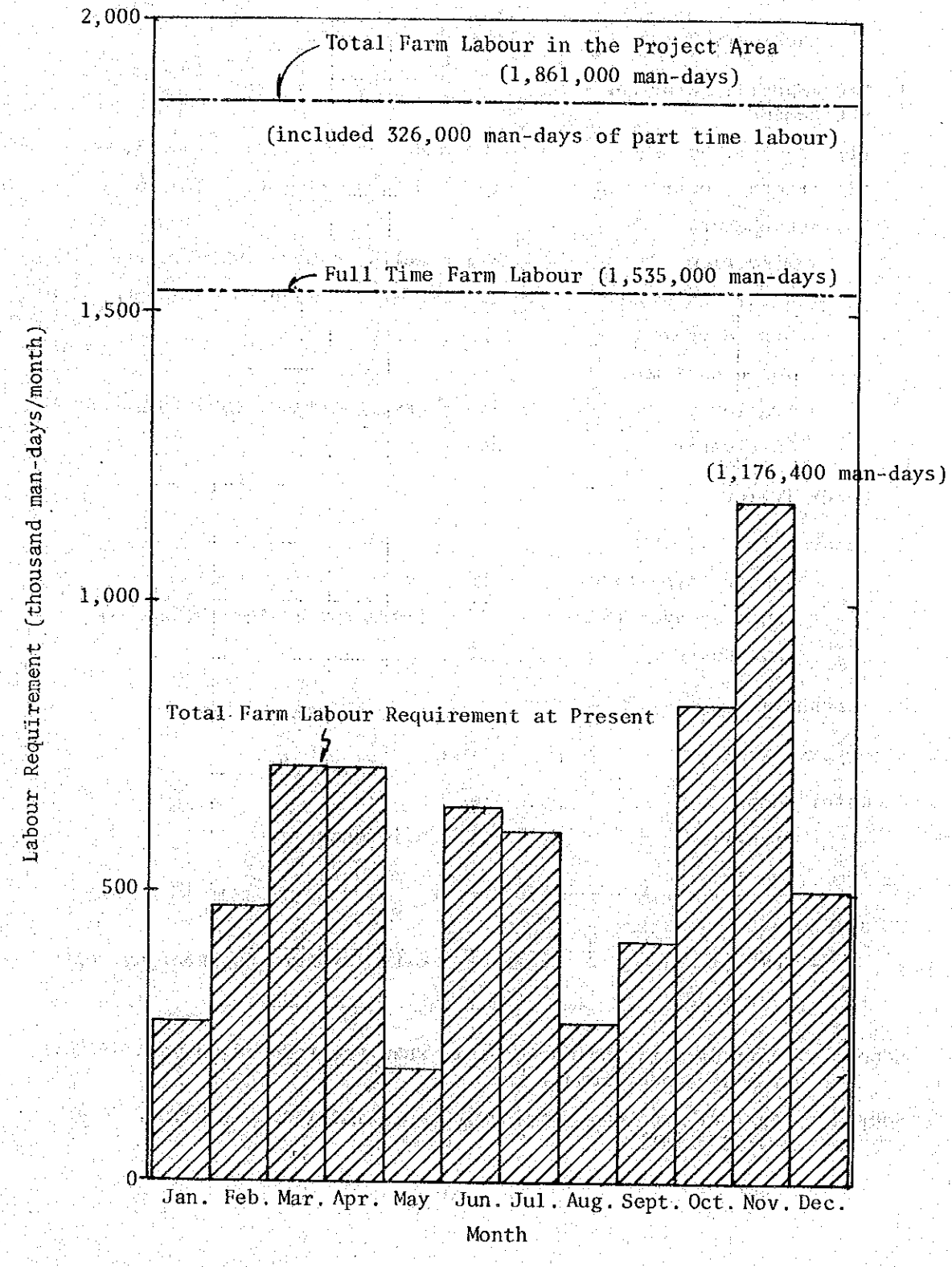


Fig. III.3-3 Present Organization Chart of Agriculture Extension

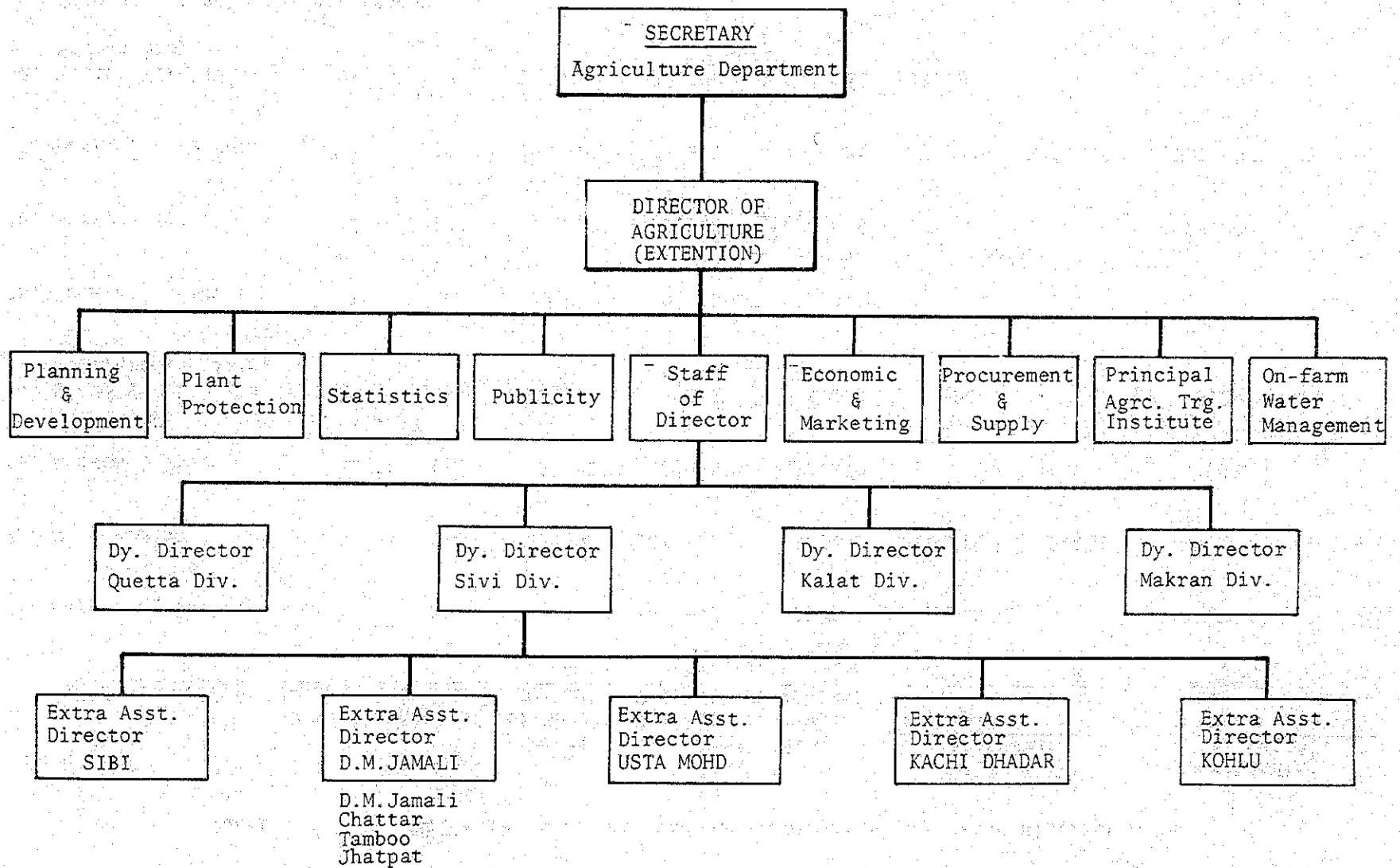


Table III.3-27 Societies Borrowers and Amount Overdue, Nasirabad District

Kind of Society	Nos. of Society	Total of Members	Amount of Share Capital (Rs)	Working Capital (Rs)	Loan Advance (1979-1981) (Rs)	Repayment		Outstanding ('81, Dec.31)	
						Principle Loan (Rs)	Interest (Rs)	Principle Loan (Rs)	Interest (Rs)
*1. Marketing Society	5	182	88,245	200,668	23,578	-	-	23,578	-
*2. Development Socy.	7	220	41,490	188,679	80,000	10,500	3,441	69,500	-
*3. Consumer Store	5	102	15,165	20,936	3,000	-	-	3,000	-
*4. Sheep Sharing and Wool Grading Socy.	2	35	10,200	13,667	5,000	1,910	-	3,290	-
*5. Tube Well Socy.	2	40	20,000	20,150	-	-		-	-
*6. Service Socy.	9	132	42,830	90,739	30,000	2,000	-	28,000	-
7. Multipurpose Socy.	30	850	493,000	4,756,667	4,037,981	239,998	246,477	3,797,983	250,296
8. Tractor Trolly Scheme Socy.	3	78	105,480	878,500	1,054,822	281,813	-	773,009	-

Note : * No activity at present.
Source : Co-operative Societies Inspector Office, Jhatpat.

Table III.4-1 List of Flood Inlet of Pat Feeder Canal

No.	Station	Width ft.	Height ft.	Number	Remarks
1.	RD 229	6	5	1	
2.	RD 269	6	5	1	
3.	RD 371	6	5	1	
4.	RD 411	6	5	1	
5.	RD 545	6	5	2	

FIG III·4-1 DRAINAGE PROJECT MAP