No. 02

THE PEOPLE'S REPUBLIC OF BANGLADESH

THE MASTER PLAN STUDY ON THE MODEL RURAL DEVELOPMENT PROJECT PHASE II FOR KACHUA, NABINAGAR, BANCHARAMPUR AND DEBIDWAR UPAZILAS

ANNEXES

VOLUME - I

ANNEX A SOCIO-ECONOMY
ANNEX B CROPS AND LIVESTOCK
ANNEX C INLAND FISHERY
ANNEX D INSTITUTION AND SUPPORTING SYSTEM
ANNEX E COOPERATIVES

DECEMBER 1991

JAPAN INTERNATIONAL COOPERATION AGENCY

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ABBREVIATIONS (1/2)

AUDP	Annual Upazila Development Programme
BADC	Bangladesh Agricultural Development Corporation
BARC	Bangladesh Agricultural Research Council
BARD	Bangladesh Academy for Rural Development
BARI	The Bangladesh Agricultural Research Institute
BAU	Bangladesh Agricultural University
BB	Bangladesh Bank
BBS	Bangladesh Bureau of Statistics
BKB	Bangladesh Krishi Bank
BPDB	Bangladesh Power Development Board
BRAC	Bangladesh Rural Advancement Committee
BRDB	Bangladesh Rural Development Board
BRRI	Bangladesh Rice Research Institute
BS	Block Supervisor
BSBL	Bangladesh Samabaya (Cooperative) Bank Ltd.
BSCIC	Bangladesh Small and Cottage Industries Corporation
BSS	Bhumiheen-Bityaheen Samabaya Samity
BWDB	Bangladesh Water Development Board
CERDI	Central Extension Resources Development Institute
DAE	Department of Agriculture Extension
DOC	Department of Cooperatives
DOF	Department of Fisheries
DPHE	Department of Public Health Engineering
DTW	Deep Tube-Well
FAO	Food and agricultural Organiation of the United Nations
FFW	Food-for-Work
FFYP	Fourth Five Year Plan
GDP	Gross Domestic Product
GNP	Gross National Product
GOB	Government of Bangladesh
HTW	Hand Tube-Well
HYV	High Yielding Varieties
IDP	Infrastructure Development Programme
IMP	Irrigation Management Programme
JICA	Japan International Cooperation Agency
JSARD	Joint Study on Agricultural and Rural Development
KSS	Krishak Samabaya Samity
LGEB	Local Government Engineering Bureau
LLP	Low-Lift Pump
MBSS	Mahila Bhumiheen-Bityaheen Samabaya Samity
MFL	Ministry of Fisheries and Livestock
MJSS	Fishermen Cooperative Society

ABBREVIATIONS (2/2)

MOA	Ministry of Agriculture
MRDPP	Model Rural Development Project Programme
MSS	Mahila Samabaya Samity
NCB	Nationalized Commercial Bank
NGO	Non-Governmental Organization
PBS	Pali Bidui Samittes
PLMCS	Primary Land Mortgage Cooperative Society
PSGCS	Primary Sugarcane Growers Society
RAKUB	Rajshahi Krishi Unnayan Bank
RDA	Rural Development Academy
RDTI	Rural Development Training Institute
REB	Rural Electrification Board
RHD	Roads and Highways Department
RMP	Road Maintenance Programme
RWSP	Rural Water Supply Programme
S/W	Scope of Work
SEBS	Socio-Economic Baseline Survey
SFFW	Special Food-for-Works
STW	Shallow Tube-Well
T & V	Training and Visit
TSS	Wavers Cooperative Society
UCCA	Upazila Central Cooperative Association
UCMDS	Union Cooperative Multipurpose Society
UEO	Upazila Extension Officer
UIC	Upazila Irrigation Committee
UIT	Upazila Irrigation Team
UNDP	The United Nations Development Programme
UNICEF	United Nations Children's Fund
UPU	Universal Postal Union
UTDC	Upazila Training and Development Center
VGF	Vulnerable Group Feeding Programme
WFP	World Food Program
WHO	World Health Organization

ABBREVIATIONS OF MEASUREMENTS

Length

mm	=	millimeter		
cm	=	centimeter		
	=	0.39 in.		
m	=	meter	=	1.09 yd
	=	3.28 ft.		
km	=	kilometre	=	0.62 ml
in.	=	inch	=	2.54 cm
ft.	=	foot	=	30.48 cm
yd.	=	yard	=	91.44 cm
ml.	=	mile	=	1.61 km

Area

cm^2	=	square centimeter		
m^2	=	square meter		
km^2	=	square kilometer		
	=	100 ha		
ha	=	hectare	=	0.01 km^2
	=	2.5 ac		
ac	=	acre	=	0.41 ha
	=	4,047 m^2		
ft^2	=	square feet		
	=	0.09 m^2		
$mile^2$	=	square mile =		2.59 km^2

Electrical Measures

kW	=	kilowatt	=	1,000 watt
MW	=	megawatt	=	1,000 KW
GW	=	gigawatt	=	1,000 MW
kV	=	kilovolt	=	1,000 volt

Other Measures

%	=	percent
°	=	degree
'	=	minute
"	=	second
°C	=	degree in Celsius
lakh	=	10^5
crore	=	10^7
Hp, PS	=	horse power
TPH	=	ton per hour

Volume

lit.	=	litter		
cm^3	=	cubic centimeter		
m^3	=	cubic meter		
	=	1,000 lit.		
MCM	=	million m^3		
	=	$1x10^3$ m^3		
ft^3	=	cubic feet	=	0.028 m^3
	=	28.32 lit.		
ac-in.	=	acre inch	=	102.79m^3
ac-ft.	=	acre feet	=	1,234 m^3

Weight

g	=	gram			
kg	=	kilogram			
t	=	metric ton	=	1,000	kg
lb	=	pound	=	454	g
cavan	=	sack (bag)			
		paddy	=	50	kg/sack
		paddy seed	=	45	kg/sack
		corn seed	=	50	kg/sack
		pod peanut seed	=	25	kg/sack

Time

sec	=	second		
min	=	minute	=	60 seconds
hr	=	hour	=	60 minutes
	=	3,600 seconds		
day	=	24 hrs	=	1,440 minutes
	=	86,400 seconds		
yr	=	year		

Derived Measures

m^3/sec	=	cubic meter per second (Cumec)
ft^3/sec	=	cubic foot per second (Cusec)

Monetary

US$	=	US dollar
¥	=	Japanese yen
TK	=	Bangradesh Taka

ANNEX A

SOCIO-ECONOMY

ANNEX A SOCIO-ECONOMY

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1. SOCIO-ECONOMIC CONDITIONS IN BANGLADESH

1.1 Demography

According to the population projection made by Planning Commission, the total population of Bangladesh is estimated at 113 million in 1990 with an annual growth rate of 2.16%(2.5% according to official report). The percentage of urban population is 18 while that of rural is 82. The density of population was 605 per sq. km in 1981. It has increased to 784 per sq.km in 1990. The sex ratio of the population is 106, i. e. 106 males per 100 females. The crude death rate and the crude birth rate are estimated as 13.6 and 35.2 per thousand persons in 1990. The total fertility rate per woman is estimated 4.5 in 1990 and 3.3 in 1995. As for religions moslem occupies more than 80% of the population.

1.2 Economy

Since the emergence of Bangladesh as an independent nation in 1971, the government of Bangladesh has undertaken the mid-term development plans, the First Five Year (1973-78), Two - Year (1978-80), the Second Five Year (1980-85) and the Third Five Year (1985-90), successively with the purpose of satisfying the basic human needs of the people, accelerating the economic growth, establishing food self sufficiency and promoting self reliance in national economy. In spite of these greater efforts, the Bangladesh economy has not shown remarkable change to achieve the expected target. Especially the economy has worsened under the influence of the second oil crisis and the low price of primary products in 1980's. The government, dealing with the economical environment above, has started to implement the stabilizing policy for improving the external and internal imbalance in economy.

With the Gulf crisis on 2 August 1990, Bangladesh has faced with serious problems, mainly the increasing oil price and reducing remittances. In November the diesel oil price records 2 times compared with the price before the Gulf crisis. Regarding remittances, these will be reduced largely because of the returning of overseas employees from the Gulf area. In fact, the proportion of these remittances to GDP were more than 30% and the number of migrated employees was around 100,000 in 1989-90. The remittance of wages earned by Bangladeshis account for more than 50% of Bangladesh foreign exchange earnings and 25% of the total imports of the country. About 85% of the Bangladeshis working in the Middle East are unskilled labourers.

The Third Five Year Plan was launched in 1985. The major emphasis of the plan was to develop infrastructures particularly energy and to induce private sector investments in both agriculture and industry.

During the Third-Five-Year-Plan period the Gross Domestic Product (GDP) of Bangladesh increased slowly and the shares of the major sectors underwent marginal. The structural change in GDP is shown in the following table.

(Base : constant factor cost of 1984-85)

Item	Annual Growth Rate(%) 1984-89	Share of GDP 1984-1985	1989-90
Agriculture	1.72	43.32	39.15
Industries	4.02	9.07	9.17
Other Sectors	5.53	47.61	51.68
Total	3.81	100.00	100.00

Source : The Fourth Five Year Plan 1990 - 95, June 1990

During the 1960 - 89 period, the annual growth rate was 4.7% in 1960-65, 3.3% in 1965-70,0% in 1970-75, 5.3% in 1975-80, 3.6% in 1980-85 and 3.8% in 1984-89. During this period, a significant development was made in the industry and other sectors. It increased from the share of GDP of 5% and 28% in 1960-65 to 9% and 52%.in 1989-90. On the contrary, the agriculture sector dropped from 57% in 1960-65 to 39% in 1989-90.

In spite of the mention above, the agriculture sector essentially remained the primary and largest contributor (39%) of GDP in 1989-90. In industrial sector, major industrial outputs, for example, jute and cotton textile industries are closely related to agriculture which use agricultural crops as their raw materials, and fertilizer industry.

Despite of the relatively declining importance of the agriculture sector in the national economy, the sector still produces about two-fifths of economy's output and employs nearly three-fifths of the active population.

1.3 Labour Force and Employment

The estimation of labour force in 1990 is 37.13 million with an annual growth rate of 3.40% during 1990-95. The labour force increase per year is estimated as around 1.20 million. On the other side, the annual growth rate of population is estimated as 2.04% during 1990-95. The higher growth of labour force compared to the growth rate of population is contributed mostly

by increasing female participation rate in the labour force. The crude female participation rate was only 2.5% in 1974 which increased to 3.4% in 1981 and 6.4% in 1985-86. This is contributed mainly by government policy on female employment in public sector. As mentioned above the labour force is constantly increasing. An additional employment has been created at 0.8 million per year during the third Five Year Plan period. This means the labour force increase exceeds around 0.4million the expected employment generation figure.

Regarding occupation in 1984-85, the total employment is 29 million of which male employment is 91.2% and female employment is 8.8%. Among them the major sector is agriculture which occupies 57.7%. And the second sector is production & transport with 16.8%. The sales, services and professional & technical are 11.6, 6.6 and 3.3% respectively. According to the UNDP report, agricultural wage rate in 1987 -88 is Tk 22.49 to Tk 47.64 per day on nominal, Tk 5.23 to Tk 11.44 per day on real. Industrial skilled labour wage rate is Tk 39.28 to Tk 60.50 per day on nominal.

1.4 Trade

Regarding foreign trade, the government has taken export promoting and importing policy. The total import amount is US$ 17,873 million with the nominal increasing rate of annual average at 5.2% during 1984-85 to 1988-89. The total export amount is US$ 8,547 million with the nominal increasing rate of annual average at 10.6% during the same period. And it can be observed that the trade gap is US$ 9,326 million with the nominal increasing rate of 4.5%. The balance of payments gap in Bangladesh is covered by foreign remittances with US$ 3,578 million and foreign aid with US$ 7,772 million during the Third Plan period (1985-90).

The main export commodities are jute goods, clothing (including leather), fisheries products and row jute of which the proportion of these commodities to the total export value are 28%, 42%, 15% and 7% in 1988. Non traditional exports are the principal contributors which increased 21.5% per annum during third plan period.

The main import commodities are machineries & transport equipments fuels, food stuffs and chemicals of which the proportion of these commodities to the total import value are 16%, 11%, 22%, and 9%.

The main export countries are USA (31%), Italy (8.6%), Japan (5.5%), UK (5.4%) and Singapore (4.3%) in 1988. The main import countries are Japan (12.0%), USA (9.0%), UAE (2.6%) and Singapore (7.6%).

1.5 Development Activities

The development budget to the total government expenditure occupies around 45% with TK. 45,590 million in 1988-89. The annual growth rate of the development expenditure is 5.5% during 1984-85 to 1988-89. Among this expenditure, the sectors consisting of agriculture, flood control, water resources and rural institutions occupy 28% of the total.

The annual development programme (ADP) in 1988-89 is financed by domestic resources (8.7%) and foreign aid (91.3%). The sectoral allocation of the ADP divides into 25% for Agriculture & Rural Development, 18% for Power & Energy, 6% for Industry, 16% for Transport & Communication and 5% for Assistance to Upazilas.

The net foreign aid in GDP in 1989-90 is 6%, decreasing as compared with 8% in 1984-85. The gross investment in GDP in 1989-90 is 13%, the same level in 1984-85.

The main aid donors (1987/88) are IDA, Japan, ADB, USA, UN, EEC, Canada, Netherlands, Denmark, Sweden etc.

In spite of a significant development in national economy Bangladesh still depends on foreign financial aid, which is nearly 50% of its total financial resources. According to the Fourth Five Year Plan, the total outlay of the Fourth Plan (1990-95) is TK. 67,230 core. This is proposed to be financed through domestic resources of TK. 32,470 core (48%) and net external resources of TK. 34,760 core (52%). External resources would thus finance 52% of the total outlay compared to 55% envisaged and 65% estimated to have been achieved for the Third Five Year Plan (1985-90).

1.6 Prices

Indices of wholesale price and consumer price show an upward tendency, especially, those of consumer price are rising at high rate. Annual rising rate of wholesale price are 17.1% in 1984-85, 4.5% in 1985-86, 8.1% in 1986-87, 6.1% in 1987-88 and 7.7% in 1988-89. Annual rising rates of consumer price also show 11.8% in 1984-85, 8.9% in 1985-86, 11.4% in 1986-87, 9.8% in 1987-88 and 13.7% in 1988-89. The national economy of Bangladesh has thus been under a considerable inflation. The rate of inflation in 1988 was 9.4% according to UNDP.

2. SOCIO-ECONOMIC CONDITIONS IN THE STUDY AREA

2.1 General

The study area, which consists of 60 unions and 786 villages, is administratively made up by four Upazilas of old Comilla District located at 50 km east of Dhaka. Nabinagar and Bancharampur are located in the northern District extending along the Meghna river, while Kachua and Debidwar are located in the central parts of the District.

The total population in the study area in 1990 was estimated to be 1,300 thousand and the population density is 1,302 persons per sq.km which is higher than the national average of 785 persons per sq.km. The population density in Debidwar Upazila shows higher compared to other Upazilas.

The total number of projected households in the study area is approximately 221,000 and the average family size per household is 5.9.

The cultivated lands are 96,876 ha which occupy 80% of the total land area and the proportion of farm households to total households is 80%. These figures show that the study area is a predominant agricultural area compared with the national and district average.

2.2 Demography

The population density of the study area is one of the highest in Bangladesh, and is 1.7 times the national average. The annual population growth rates ranged from 1.61% to 2.54% between 1961 - 74 and from 1.87% to 2.33% between 1974 - 81 in the four Upazilas. During both periods, the annual population growth rates is lower than the district average 2.16% and 2.39% excluding the rate of Kachua in 1961 - 74. These figures show that the population growth rate in the study area is increasing 1.99% between 1961 - 74 to 2.17% between 1974 - 81 in spite of reduction of the national population growth rate from 2,48% to 2.32% at the same period. The total population as of 1990 for the study area was estimated to be 1,300 thousand assuming that the annual population growth rate is based on these above situations. The demographic conditions of the study area are presented below.

Demographic Condition of the Study Area in 1990

Upazila	Total area (ha)	Total land (ha)	Population (1000)	Pop. density (pers/km^2)
Kachua	23,600	23,100	297	1,258
Debidwar	23,900	23,400	341	1,427
Bancharampur	18,700	16,900	259	1,385
Nabinagar	33,500	31,200	401	1,197
Study Area	99,700	94,600	1,298	1,302
National Total	1,440,000	11,655,000	113,000	785

Source; Table A.2.1

The land availability per capita of the study area is 0.07 ha compared to 0.10 ha for the country.

Based on field sample survey in 1990, age group distribution of the study area is summarized below.

Age group	%
0 - 9	24.5
10 - 59	70.2
60 -	5.3

Source: Field Sample Survey 1990

The population between 0 to 9 years age group constitutes 24.5% of the total population. Population in the age group of 10 to 59, on the other hand, constitutes 70.2% whose age group is the working population group and supplies the active labour force in the study area. Only 5.3% of the total population is constituted by the age group of 60 years and above.

Field Sample Survey also shows that male constitutes 56.5% while female constitutes 43.5% of the total population of the sample farms. So the ratio of female and male is 1:1.3. The average family size in the project area is 6.7 persons, of which 4.9 persons are classified into the labour force age group.

As for religion, 91.7% of the total population are Moslem, 8.2% are Hindu and 0.1% are Buddhist in 1981.

2.3 Economy

2.3.1 Regional Economy

The gross domestic product of Comilla Region was 41,850 million Taka in 1988/89 (at current market price, which contributed 6% to that of the whole country. The GRP of the Comilla Region was higher than the whole regional average with Tk 32,970 million, on the other hand the GRP of Comilla Region per capita was lower as 4,850 Taka in 1988 /89 compared to that of the whole regional average with Tk 6,040 .

Crops as a dominant sub-sector contributes 32.4% of the Gross Regional Product. This sub-sector contributes 82.9% of the agricultural sector production. The main crop varieties of the region are rice, wheat, jute, sugarcane and potato etc.

Concerning live stock, main constraints would be considered in the low land configuration and in the study area in which all limited relatively high lands (high land is 0% , medium high land is 42%) are reserved for habitation. The main situation is insufficient feeds. The share of Livestock sub sector to GRP is 3.8% and that of the agricultural gross product is 9.7%.

The contribution of forestry sub-sector to the Gross Regional Product is almost negligible. It contributes only 0.1% of the Gross Regional Product against 4.1% for the country as a whole. The total area of the region under reserve forest is very small. Only 7 sq.km or about 0.12% of the total area are under reserve forest. There is no reserve front area.

The fishery sub sector of the region provides 3.2% of gross regional product and 7.1% of gross agricultural product against 3.3% and 8.9% for the country.

The industry sector of Comilla region contributes about 5.0% of the gross regional product against 8.4% for the country as a whole in 1988. There are approximately 13 thousand cottage industry units located in the whole region of Comilla which accounts for 4.72% of the national total,and 37 thousand persons are engaged in the cottage industry. There are 6 cotton textile industries and 3 jute mills in Comilla region which account 10.7% and 4.3% of the country. Among the registered factories by major industrial groups, there are 41 food manufacturing, 5 tobacco, 12 textile, 6 chemical products and 12 drugs and pharmaceutical products factories located in Comilla district (according to the Comilla district statistics 1983).

As for other sectors, transport, storage & communication, housing services, trade services and construction contribute 17.0%, 11.6%, 8.0% and 7.6% of the gross regional product in 1988.

2.3.2 Agricultural Net Value of the Study Area

Based on current market price, the agricultural sector viz, crop, livestock and fishery excluding forestry sub-sector net value related to the study area were computed. Forestry is negligible in the study area.

Agricultural net value of the study at present area is summarized as follow.

	In 1990 amount (Tk.Million)	%
Crop	1,800	77
Livestock	160	7
Fishery	367	16
Total	2,327	100

(1) Crops

For estimating the net value for crop sub-sector, 17 crops were chosen and those value were calculated based on 1990/91 prices and current condition. The gross value of production per ha refers to the value of a given crop at current market price ha. This was estimated as under;

$$GV = Qm \times Pm + Qr \times Pr \qquad (1)$$

Where GV - Gross value of production of each crop per ha
Qm - Quantity of each main product per ha
Qr - Quantity of each plant residue per ha
Pm - Price of each main product per unit
Pr - Price of each plant residue per unit

The net value of production of each crop per ha at market price refers to the gross value of production per ha minus value of imput, this was estimated by the following formula;

$$NV = GV - IC \qquad (2)$$

Where NV - Net value of production of each crop per ha
IC - Input cost of each crop per ha excluding labour input

The total net value of production of each crop per ha times each cropped area. This was estimated as under.

$$TNV_1 = NV \times CA \qquad (3)$$

TNV - Total net value of production of each crop per ha
CA - Cropped area of each crop

The net value for crop sub-sector at present counts Tk 1,800 million based on the above formula. Detail information refers to Annex B.

(2) Livestock

The net value for livestock sub-sector consists of meat, milk and eggs production.

Total net value of livestock production at current market price was calculated based on estimated production and net value per unit by meat, milk and eggs.

$$TNV_2 = Qi \times NYi + Qj \times NPj + Qk \times NVk \qquad (4)$$

TNV_2 - Total net value of livestook production
Qi - Quantity of meat production
Qu - Quantity of milk production
Qk - Quantity of eggs production
NVi - Net value of meat per unit
NVj - Net value of milk per unit
NVk - Net value of eggs per unit

The net value for livestock sub-sector at present counts Tk 160 million . Detail information refers to Annex B

(3) Fishery

The net value for fishery was divided into open water fishery and closed water fishery.

Total net value of fishery productioon at current market prices was calculated based on estimated production and net value per unit by open water fishery and closed water fishery.

$$TNV_3 = Qx \times NVx + Qy \times NVy \qquad (5)$$

TNV_3 - Total net value of fishery production
Qx - Quantity of open water fishery production
Qy - Quantity of closed water fishery production
NVx - Net value of open water fishery production
NVy - Net value of closed water fishery

The net value for fishery sub-sector at present count Tk 367 million . Detail information refers to Annex C.

(4) Agricultural Net Value per Capita

Gross domestic product of Comilla region per capita in 1988/89 was Tk 4,850 (at current market price), ad that of agriculture was Tk 1,900. Agricultural net value per capita of the study area was Tk 2,780 at 990/91 prices.

	1988/89 Collila Region[1)]	1990/91 Study Area[2)]
Agricultural Net Value Per Capita	Tk 1,900	Tk 1,780

Source: 1) Statistical Yearbook of Bangladesh 1990
2) Consultant's estimation

2.4 Labour and Employment

2.4.1 Labour

Based on field sample survey the active working population of 10 years of age and over accounted for 20% of total population, 27% of the population of 10 years and over. On the

other hand, the no-working and unemployment ratio, except for students and housewives was 20%.

Bangladesh Planning Commission estimated that annual growth rate of labour force is 3.4 % per annum. Based on the field sample survey labour force potential for 10 years of age and over excluding students, housewives and aged people 65 years and over is 32 % of the total population or approximately 416,000. This means that new entrants, about 14,000 will be added into labour force. New employment creation also needs to be provided for these pepole.

2.4.2 Employment

(1) Farm Activities

Agriculture is clearly the most important employment source in the study area. Sample survey findings show that agriculture is dominant with 65% of the working population. The rests are engaged in non farm activities. Farm working people are divided into two types, namely (a) people working in own land, (b) hired farm labour including farm labour to be temporary non-farm worker.

In general, the population pressure on the land will have become strong , pushing out labour. These labourers may add to new labour force in urban area or share the family land or become tenant farmer etc. On the other hand, irrigated agriculture necessitates more labour. Therefore it can be expected that the expansion of irrgated area will give new employment opportunities in highly populated areas like the study area.

It is also clear that agriculture related employment opportunities in women have been reduced during last decades. In the period 1974 to 81, the share of economically active women in agricultue, had declined from 77 to 23%. More attention should be given in the job creation for women.

During the last decades many rural women have migrated to urban areas for employment in the garment industries to avoid employment situation in the rural areas.

The following table shows the job field of the study area.

Field	% of the working population
Agriculture	
1) Working in Own Farm Land	30.4
2) Hired Farm Labour	12.9
3) 1)+2)	6.6
4) 1)+Non Farm	10.1
5) 2)+Non Farm	3.1
6) 1)+2)+Non Farm	1.6
Sub Total	64.7
Non Farm Activities	35.3
Total	100.0

Source : Field Sample Survey, 1990

The hired farm labours are mainly seasonal workers as engaged in paddy tranplanting, weeding, paddy harvesting, and transportation etc. It is known that rural area has a large number of seasonal farm labour migration following the different crop season. In study area main destination is Sylhet region for crop harvesting during March and April. Probably more labourers are going outside than the in coming labourers to the study area.

The farm labour wage seasonally varies around Tk 35 to Tk 45 per day without meal

(3) Non Farm Activities

Non farm activites are mainly self employed condition in rural area. These activities in the study area available from field sample survey as listed below.

Field of Activities		% of the working Population
Farm Working		64.7
Non Farm Working		35.3
1) Commerce/ Business	7.4	
2) Public Services	4.6	
3) Handicraft	3.0	
4) School Teacher	2.9	
5) Rick shaw Pulling	2.6	
6) Construction	2.3	
7) Fishery	2.3	
8) Rural Industry	1.2	
9) Others	9.0	
Total		100.0

Source : Field Sample Survey, 1990

2.5 Holdings and Land Tenure

(1) Holdings

Farm holdings are classified according to Bangladesh Bureau of Statistics in three broad group (a) small farm holdings having an operated area of 0.1 to 1.0 ha, (b) medium farm holdings having an operated area of 1.0 to 3.0 ha, (c) Large farm holdings having an operated area of 3.0 ha and over. Farm holdings occupy approximately 80% of the total holdings, and remaining are classified into non farm holdings. In the agriculture census non farm holdings categorize in three ways viz (d) holdings having no owned area, (e) holdings having homestead but no cultivated area, (f) holdings having cultivated area up to 0.1 ha.

Based on the census data holdings of the study area in 1990 computed as following that 18.7% of the total holdings are non farms, 68.3% of the holdings are small farms, 12.1% of the holdings are medium farms and 0.7% of the holdings are large farms. The distribution of farm land are 41.2% of land owned by small farms, 50.9% of land by medium farms and 7.9% of land by large farms. The average size of small, medium and large farms are 0.33, 1.45 and 3.47 ha with cultivable land. The summarized holdings situation of the study area is as follows.

Categories	% of Family Nos.	% of owner-ship of land	Farm size (ha)
Non farm	18.9	-	-
Small farm	68.3	41.2	0.33
Medium farm	12.1	50.9	1.45
Large farm	0.7	7.9	3.47
Total	100.00	100.00	0.59

Source: Field Sample Survey, 1990 and computed from the census data 1977-84

(2) Land Tenure

Land tenure status in Bangladesh is mainly of three kinds as follows. Owner, owner cum tenant and tenant. Based on three categories the summarized land tenure situation of the study area is as follows.

In Bangladesh it is widely known that large farmer leaves out their own land to share croppers on a verbal contract against a cash payment or on share of production. The field sample survey findings show that in case of production sharing, the produce is normally shared 50:50 equally between the owner and the share-cropper, and input cost are almost supplied by share cropper without irrigation charge which is 80% supplied by land owner. In case of cash payment the leasing charge shall be paid about Tk 2,000 per ha per year to land owner. In the study area, owner farmers are dominantly 79% of the total household and operate 83% of the total cultivated area. Tenant farmers are negligible with 2%.

Land Tenure Situation in the Project Area

Category	% of farm households	% of the cultivated land
Owner	79	83
Owner-cum-tenant	19	16
Tenant	2	1
Total	100	100

Source: Field Sample Survey, 1990

(3) Farm class

Farmers can be divided into three categories by their farm size. These farmers will be further classified to three as mentioned in (2) viz. (i) owner famer, (ii) owner cum tenant, (iii) tenant. In the study area, land tenure by farm class is summarised as below.

(unit;ha)

Category	Small farmer		Medium farmer		Large farmer	
1.Owner(owen operared)	0.31	75%	1.32	84%	3.00	68%
2.Owner-cum-tenant	0.35	22%	1.84	13%	3.75	24%
Ownen operated	0.21		0.96		0.65	
Learse out (in)	0.14		0.88		3.10	
3.Tenant						
Lease out (in)	0.17	3%	0.85	3%	2.50	8%

Note: In average,small farmer leases in land and not out,medium and large farms lease out land and not in.

Source: Field Sample Survey, 1990

2.6 Upazila Parishad Annual Budget

The administrative reform carried out in 1982 has led to the establishement of Upazila and representative local govrrnment called the Upazila Parishad . A number of development functions and their administration have been tranfered to the Upazila Parishad. Corresppondingly, Upazila level field staff of the Ministries have been deputed to the Parishad budget allocattons. It has also been stipulated that the divisible components of nationally undertaken development project also are implemented by the Upazila Parishad. Their viabilty,therfore, are very important from the viewpoint of sustainability,opertation and management.

Considering MRDPPII, feeder road B and rural road improvement projects and growth center improvement projects should be mainly supported by Upazila Parishad and they shall play an important role for infrastructure maintenance.In the study area, about 10 % of Upazila expenditure is allocated to infrastructure maintenance. Upazila revenue, expenditure related the study area are summarized in Table A.2.13.

TABLES

Table A.1.1: Selected Basic Indicators

	Items	Indicators
1.	Total Area	144,000 sq. km
2.	Population (1990)/1	
	Total	113 million
	Male	58.2 million
	Female	54.8 million
	Sex ratio	106%
	Growth rate	2.16%
	Crude death rate	13.6 per thousand population
	Fertility rate	35.2 per thousand population
	Population density	784 persons/sq.km
3.	Economy	
	GNP per capita (1988-89)2/	170$
	Rate of inflation (1988)3/	9.3%
	Consumer price index (1988-89)4/	10.4% (middle income group)
	Real growth rage (1988)5/	2.6%
	Sectoral GDP share (1989)6/	
	1) Agriculture	37.8%
	2) Manufacturing	8.4%
	3) Construction	6.0%
	4) Trade	8.0%
	5) Transport & Communications	10.8%
	6) Public Administration	4.1%
	7) Banking & Insurance	2.1%
	8) Others	22.8%
	Gross Domestic Investment (1988-89)7/	12.2% (as % of GDP mkt prices)
	Gross Domestic Savings (1988-89)8/	2.0% (as % of GDP mkt prices)
	Average exchange rate (in Taka per US$ 1.00)9/	36.41 (on 22 Nov. 1990 WES rate)
4.	Employment	
	Occupation (1984-85) 10/	
	1) Agriculture	57.7%
	2) Production & Transport	16.8%
	3) Sales	22.6%
	4) Services	6.6 %
	5) Clerical	3.3%
	Total employment (1984-85) 11/	29 million
	Male	91.2%
	Female	8.8%
	Agriculture wage rate (1987-88) 12/	
	1) Nominal (Taka per day)	22.5 to 47.6 (depending on category of worker)
	2) Real (Taka per day at 1973-74 prices)	5.2 to 11.4 (depending on category of worker)
	Industrial skilled labour wage rate (1987-88) 13/	39.3 to 60.5 (depending on category of worker)

Items	Indicators
5. Development activities 14/	
Size of ADP 1988-89	45,953 million Taka
Domestic resources	8.7%
Foreign aid	91.3%
ADP expenditures (1988-89)	
1) Agriculture/Rural development	25.0%
2) Industry, power natural resources, scientific, and technological research	24.0%
3) Transport & Communication	16.2%
4) Family planning, women affairs	7.8%
5) Assistance to Upazila	4.4%
6) Others	22.6%
Aid disbursements (1987-88)	1,640 million US$
1) Food aid	18.4%
2) Commodity aid	31.0%
3) Project aid	50.6%
ODA inflow (1988-89)	1,764 million US$
ODA inflow as % GDP 1987-88	9.2%
6. Trade 15/	
Total exports (1988)	1,030 million US$
1) Jute goods	28%
2) Clothing (including leather)	42%
3) Fisheries products	15%
4) Raw jute	7%
5) Other	8%
Total imports	2,467 million US$
1) Machinery & Transport Equipment	16%
2) Fueles	11%
3) Food stuffs	22%
4) Chemicals	9%
5) Other	42%

Source : 1/Bangladesh Planning Commission
2, 3, 5, 12, 13 and 15/ Development Cooperation, Bangladesh, Oct. 1990, UNDP
4, 6, 7, 8 and 14/Statistical Yearbook of Bangladesh 1990
9/Rate Committee for Wage Earners Fund
10, 11/Labour Force Survey, 1984-85

Table A.1.2: Sectoral Growth Rate and Share of Gross Domestic Product - Agriculture -

(Based on constant market price 1984-85 ,Unit; %))

	1985-86	1986-87	1987-88	1988-89
Total agriculture				
Share	41.34	39.84	38.43	37.08
Growth rate	3.28	0.40	-0.77	-1.07
1. Crops				
Share	32.87	31.55	30.13	28.82
Growth rate	3.38	-	-1.77	-1.90
3. Livestock				
Share	2.86	2.89	2.84	2.86
Growth rete	2.94	5.52	0.95	3.30
4. Fishery				
Share	2.92	2.87	2.82	2.76
Growth rate	1.64	2.25	1.08	0.38
GDP growth rate	4.34	4.18	2.89	2.52

Source : Statistical Yearbook of Bangladesh 1990

Table A.1.3: Sectoral Growth Rate and Share of Gross Domestic Product - Inductries -

(Based on constant market price 1984-85,Unit; %)

	1985-86	1986-87	1987-88	1988-89
1. Conventional industry				
Share	9.69	10.04	9.82	9.84
Growth rate	2.60	7.89	0.63	2.79
2. Construction				
Share	5.40	5.53	6.04	6.18
Growth rate	1.73	6.81	12.28	4.88
3. Mining and Quarring				
Share	0.001	0.001	0.001	0.001
Growth rate	-25.00	33.33	-50.00	50.00
GDP Growth rate	4.34	4.18	2.89	2.52

Source : Statistical Yearbook of Bangladesh 1990

Table A.1.4: Sectoral Growth Rate and Share of Gross Domestic Product - Services -

(Based on constant market price 1984-85,Unit; %)

	1985-86	1986-87	1987-88	1988-89
1. Power, Gas Water & Sanitary Services				
Share	0.62	0.73	0.82	1.04
Growth rate	12.57	21.76	16.35	28.80
2. Transport, Storage & Communication				
Share	11.10	11.83	11.93	12.13
Growth rate	3.20	11.09	3.73	4.27
3. Trade				
Share	9.28	9.13	9.15	9.36
Growth rate	1.48	2.55	3.17	4.77
4. Housing Services				
Share	7.87	7.81	7.83	7.89
Growth rate	3.05	3.29	3.22	3.27
5. Public Administration & Defence				
Share	3.76	3.89	4.08	4.25
Growth rate	20.47	7.82	7.92	6.93
6. Banking and Insurance				
Share	2.05	2.08	2.05	2.02
Growth rate	26.29	5.52	1.44	1.13
7. Professional and Miscellaneous Services				
Share	8.89	9.12	9.85	10.21
Growth rate	8.04	6.92	11.12	6.25
GDP growth rate	4.34	4.18	2.89	2.52

Source : Statistical Yearbook of Bangladesh 1990

Table A.1.5: Financing of the Third Five Year Plan

(Million Taka)

Financing	Total	Percentage	Public	Percentage	Private	Percentage
Plan size	386,000	100	250,000	100	136,000	1000
Domestic Resources	175,000	46	59,600	24	116,120	85
External Resources	210,000	54	190,400	76	19,880	15

Source: Statistical Yearbook of Bangladesh 1990

Table A.1.6: Financing of the Fourth Five Year Plan

(Million Taka)

Financing	Total	Percentage	Public	Percentage	Private	Percentage
Plan size	672,300	100	407,300	100	265,000	100
Domestic Resources	324,700	48	104,700	26	220,000	83
External Resources	347,600	52	302,300	74	45,000	17

Source: The Fourth Five Year Plan 1990-1995, June 1990

Table A.1.7: Percentage of Sectoral Expenditure Pattern

(Unit; %)

Subsector	TFYP 1978-80	SFYD 1981-85	TFYD 1985-86	TFYD 1986-87	TFYD 1987-88	1988-89
Agriculture, water and rural development	28.9	29.1	18.9	18.6	22.2	24.0
Industries and minerals	17.0	10.4	14.4	14.8	9.0	12.4
Power and energy	16.6	20.3	22.9	18.8	21.9	16.2
Transport and Communication	18.8	13.7	7.7	10.9	12.2	16.2
Education	3.5	4.4	4.4	5.2	5.4	6.2
Health	5.7	5.6	4.8	5.4	5.5	6.7
Others	9.5	16.5	26.8	26.3	23.3	17.5
Total (percentage) :	100.0	100.0	100.0	100.0	100.0	100.0
Total (core taka) :	3932.6	15303.5	4095.5	4513.4	4050.6	5315.0

Source: Statistical Yearbook of Bangladesh 1990

Table A.1.8: Sectoral Allocation during the Fourth Five Year Plan (1990-95)

(Million Taka)

Subsector	Public Sector Allocation	Public Sector %	Private Sector Allocation	Private Sector %	Total Allocation	Total %
1. Agri. Water Resources Rural development	11,021	27.06	72.12	27.21	18,233	27.12
a) Agriculture	3,666	9.00	-	-	-	-
Crop	1,491	3.66	-	-	-	-
Livestock	581	1.43	-	-	-	-
Forestry	845	2.07	-	-	-	-
Fisheries	744	1.84	-	-	-	-
b) Water Resources	5,774	14.18	-	-	-	-
c) Rural Institutions	1,581	3.88	-	-	-	-
2. Indultry	4,180	10.26	4360	1446	8540	1270
3. Electricity, Oil, Gas & NR	8.350	2050	-	-	8350	1241
4. Transport & Communication	6,810	1072	3180	1200	9990	1487
5. Others	10,369	25.46	11,748	4,433	45,113	6,710
Total	40,730	100.00	26500	4433	45113	6710

Source: Fourth Five Year Plan 1990

Table A.1.9: Balance of Trade of Bangladesh

(Million Taka)

Year	Export	Import	Balance
1980-81	11,484	37,288	-25,804
1981-82	12,384	38729	-26,342
1982-83	18,016	45,265	-27,249
1983-83	20,136	50,874	-30,738
1984-85	26,225	68,263	-42,038
1985-86	27,396	62,929	-35,533
1986-87	33,682	68,496	-34,814
1987-88	41,161	91.588	-50,427
1988-89	42,686	95,075	-52,389

Source: Statistical Yearbook of Bangladesh 1990

Table A.1.10: Balance of Payments Situation during the Third Five Plan Period (1985-90)

(at 1984-85 prices, million US$)

Category	Projection	Actual
1. Import payments	-17,010	-17,873
a) Goods (c.i.f)	-14,677	15,484
b) Services	-2,333	-2,389
2. Export receipts	7,140	8,547
a) Goods (f.o.b)	5,834	6,844
b) Services	1,756	1,703
3. Balance of goods and services	-9,870	-9,326
4. Remittances	2,233	3,578
5. Current account balance	-7,637	-5,748
6. MLT debt repayments	-678	-815
7. Balance of payments	-8,315	-6,563
8. Aid inflow	7,245	7,772

Source: Fourth Five Year Plan 1990

Table A.1.11: Export (f.o.b) of Principal Commodities

(Million Taka)

Commodities	1985-86		1986-87		1987-88		1988-89	
		(%)		(%)		(%)		(%)
1.Clothing	5,401	19.7	10,176	30.2	14,842	36.1	14,448	33.8
2.Jute goods	8,564	31.3	8,031	23.8	8,127	19.7	7,578	17.8
3.Prawn & shrimps	3,003	11.0	3,803	11.3	4,422	10.7	4,730	11.1
4.Leather	2,362	8.6	3,653	10.8	4,585	11.1	4,514	10.6
5.Raw Jute	3,438	12.5	2,754	8.2	2,486	6.0	2,813	6.6
6.Tea	996	3.6	903	2.7	1,293	3.1	1,208	2.8
7.Frog legs	358	1.3	314	0.9	428	1.0	633	1.5
8.Handicraft	73	0.3	91	0.3	140	0.3	110	0.3
10.Others	3,201	11.7	3,957	11.7	4,838	11.8	6,652	15.6
Total	27,396	100.0	33,682	100.0	41,161	100.0	42,686	100.0

Source: Statistical Yearbook of Bangladesh 1990

Table A.1.12: Import (c.i.f.) of Principal Commodities

(Million Taka)

Commodities	1985-86		1986-97		1987-88		1988-89	
		(%)		(%)		(%)		(%)
1.Mineral Products	14,868	23.6	12,594	18.4	15,868	17.3	15,072	15.9
Cement	1,575	2.5	1,876	2.7	1,927	2.1	2,468	2.6
Petroleum oil crude	5,291	8.4	4,161	6.1	6,993	7.6	4,461	4.7
Kerosene	157	0.2	202	0.3	183	0.2	1,711	1.8
Others	7,845	12.5	6,355	9.3	6,765	7.4	6,432	6.8
2.Textiles and Textile Goods	5,700	9.1	6,978	10.2	13,337	14.6	13,478	14.2
Raw Cotton	1,615	2.6	1,200	1.8	2,103	2.3	2,493	2.6
Second Hand Clothing	332	0.5	245	0.4	255	0.3	87	0.1
Others	3,753	6.0	5,533	8.1	10,979	12.0	10,898	11.5
3.Vegetable Products	4,966	7.9	8,956	13.1	16,001	17.5	11,813	12.4
Wheat	3,820	6.1	6,078	8.9	9,712	10.6	9,105	9.6
Rice	333	0.5	1,289	1.9	3,364	3.7	325	0.3
Others	813	1.3	1,589	2.3	2,925	3.2	2,283	2.4
4.Base Metals	6,384	10.1	7,497	10.9	7,667	8.4	10,504	11.0
5.Machinary	8,246	13.1	10,365	15.1	11,176	12.2	10,247	10.8
6.Chemicals	7,275	11.6	5,436	7.9	6,658	7.3	8,318	8.7
Urea	1,124	1.8		0.0		0.0	179	0.2
TSP	1,976	3.1	484	0.7	1,199	1.3	2,097	2.2
MP	79	0.1	168	0.2	222	0.2	82	0.1
Insecticides	335	0.5	272	0.4	364	0.4	377	0.4
Others	3,761	6.0	4,512	6.6	4,873	5.3	5,583	5.9
8.Transport Equipment	3,078	4.9	3,726	5.4	3,650	4.0	7,040	7.4
9.Others	12,413	19.7	12,944	18.9	17,231	18.8	18,603	19.6
Total	62,930	100.0	68,496	100.0	91,588	100.0	95,075	100.0

Source: Statistical Yearbook of Bangladesh 1990

Table A.1.13: Consolidated Receipts and Expenditures of the Bangladesh Governent

(Million Taka)

	1985-86	1986-87	1987-88	1988-89
Total receipts	77,664	91,779	102,375	105,634
Revenue receipts	38,354	46,185	51,519	58,222
a) Tax	32,110	37,253	42,062	48328
b) Non-Tax	6,244	8,932	9,457	9,894
Development receipts	39,310	45,594	50,856	47,412
Total expenditure	70,888	78,415	87,638	108,100
Development expenditure	33,803	38,499	40,471	45,590

Source: Statistical Year Book of Bangladesh 1990

Table A.1.14: Development Expenditure of the Bangladesh Government by Sector

(Million Taka)

	1985-86		1986-87		1987-88		1988-89	
		%		%		%		%
1. Agriculture	1,983	(5.9)	2,286	(5.9)	2,487	(6.1)	2,804	(6.2)
2. Flood Control and Water Research	4,653	(13.8)	2,203	(5.7)	5,227	(12.9)	8,928	(19.6)
3. Rural Institution	768	(2.3)	624	(1.6)	807	(2.0)	992	(2.2)
4. Industry	5,462	(16.2)	7,492	(19.5)	4,615	(11.4)	6,419	(14.1)
5. Power and Natural Resources	12,086	(35.8)	15,089	(39.2)	14,139	(34.9)	9,548	(20.9)
6. Transport	3,715	(11.2)	5,052	(13.1)	5,207	(12.9)	7,095	(15.6)
7. Communication	497	(1.5)	394	(1.0)	1,208	(3.0)	2,299	(5.0)
8. Education and Training	1,281	(3.8)	2,053	(5.3)	2,376	(5.9)	2,317	(5.1)
9. Other	3,358	(9.5)	3,306	(8.7)	4,406	(10.9)	5,188	(11.3)
Total	33,803	(100.0)	38,499	(100.0)	40,472	(100.0)	45,590	(100.0)

Source: Statistical Year book of Bangladesh 1990

Table A.2.1: Selected Basic Indicators of the Study Area

	Total Area (ha) 1/	Total Land Area (ha) 2/	Administration Units 3/ Union	Mouza	Village	Projected 4/ Population 1990
Study Area						
Kachua	23,600	23,100	12	138	241	299,000
Nabinagar	33,500	31,700	19	153	210	401,000
Bacharampur	20,700	19,900	13	72	126	259,000
Debidwar	23,900	23,400	16	142	203	341,000
Total	101,750	98,100	60	505	780	1,300,000
Bangladesh	14,400,000	11,660,000	-	-	-	113,000,00

Note: 1/, 2/ Adjusted from Upazila Statistics 1985 ,Small Area Atras of Bangladesh 1989 and Water Area Statistics of Bangladesh 1986

3/ Upazila Profile 1990

4/ Projected population of study area is estimated from Table A.2.2

Projected population of Bangladesh is according to Planning Commission.

A.2.2: Population Status of the Study Area

Item	Kachua	Nabinagar	Bancharampur	Debidwar	Total
1. Population in 1981					
Total population	240,355	355,179	218,673	275,343	1,089,550
Male	117,290	181,365	112,222	138,481	548,358
Female	123,065	173,814	106,451	136,862	540,192
Sex Ratio	95	404	105	101	102
Household 1/	41,927	59,812	37,338	45,911	184,988
Person per family	5.7	5.9	5.9	6.0	5.9
Population density (persons per sq. km)	1,017	945	1,056	1,167	1,033
2. Population growth					
Population in 1961	147,136	244,809	153,897	176,175	722,017
Population in 1974	203,558	305,737	191,353	233,754	934,402
Population in 1981	240,396	355,179	218,678	275,343	1,089,588
Estimated population in 1990	299,000	401,000	259,000	341,000	1,300,000
Estimated population in 2000	372,000	499,000	310,000	424,000	1,611,000
Annual growth rate (%)					
1961-74	2.54	1.65	1.61	2.11	1.95
1974-81	2.37	2.12	1.87	2.33	2.18
1981-90 (estimated)	2.40	2.20	1.90	2.40	2.18
1990-00(estimated)	2.20	2.20	2.00	2.20	2.17

3. Population by Age (1981) in Old Comilla District

(Unit: %)

Age Group	Male	Female	Total
0-4	17.9	17.7	17.8
5-9	16.8	16.3	16.6
10-14	13.9	12.5	13.2
15-19	8.9	9.2	9.1
20-24	6.2	8.1	7.1
25-29	6.2	7.4	6.8
30-34	4.9	6.0	5.4
35-39	4.9	5.1	5.0
40-44	4.2	4.3	4.2
45.49	3.6	3.2	3.4
50-54	3.2	3.1	3.2
55-59	2.2	1.8	2.0
60-64	2.5	2.3	2.4
65-	1.6	3.0	3.8

Source: Bangladesh Population Census 1974 and 1981

1/, The Bangladesh Census of Agriculture and Livestock 1983-84.

Table A.2.3: Land Holding Size of the Study Area in 1983

Item	Unit	Kachua	Nabinagar	Bancharampur	Debidwar	Total
1. Total Household	nos.	41,927	59,812	37,338	45,911	184,988
2. Farm Holders	nos.	35,686	44,733	27,225	38,831	147,375
3. Percentage	%	87	75	73	85	80
4. Small Farm Holder	nos.	31,019	36,416	23,001	34,300	124,734
(0.05-2.49 acre)	%	85	81	84	88	85
5. Medium Farm Holder	nos.	5,186	7,803	3,969	4,390	21,348
(2.50-7.49 acre)	%	14	18	15	11	14
6. Large Farm Holder	nos.	383	514	255	141	1,293
(7.50 acre and above)	%	1	1	1	1	1

Source: The Bangladesh Census of Agriculture and Livestock 1983-84

Table A.2.4: Population and Labour Force of the Study Area 1981

	Population			Population (10 years & over)			Labour force (10 years & over)		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Bancharampur	218,673	112,222	106,451	142,819	73,385	69,434	62,496	56,760	5,736
Nabinagar	355,179	181,365	173,814	232,600	118,734	113,866	92,965	88,705	4,260
Kachua	240,355	117,290	123,065	154,653	73,649	81,004	53,749	52,389	1,360
Debidwar	275,343	138,481	136,862	181,856	90,420	91,436	64,184	61,848	2,336
Total	1,089,550	549,358	540,192	711,928	356,188	355,740	273,394	259,702	13,692

Source: Upazila Statistics, 1985

Table A.2.5: Employment Situation of the Study Area in 1981

	Kachua	Nabinagar	Bancharampur	Debidwar	Total
Cropping	39,250	64,419	28,039	47,761	179,469
Other Agricultural Activities	(73.0)	(69.3)	(44.9)	(74.4)	(65.6)
Manufacturing	460	1,331	10,391	981	13,163
	(0.9)	(1.4)	(16.6)	(1.5)	(4.8)
Business	4,931	10,005	8,589	6,202	29,727
	(9.2)	(10.8)	(13.7)	(9.7)	(10.9)
Others	8,845	15,289	13,304	8,927	46,365
	(16.4)	(16.4)	(21.3)	(13.5)	(17.0)
Sub-total	53,749	92,965	62,496	64,184	273,394
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
Household Employment	65,705	89,347	56,288	69,637	280,977
Unemployed	35,199	50,288	24,035	48,035	157,557
Total	154,653	232,600	142,819	181,856	711,928

Source: Upazila Statistics, 1985

Table A.2.6: Population Projection 1990-2010 by Union (1/4)

KACHUA UPAZILA

Union	POPULATION					
	1981	1990	1995	2000	2005	2010
1 Ashrafpur	23,100	28,600	31,900	35,600	39,600	44,200
2 Bitara	24,974	30,900	34,500	38,400	42,800	47,800
3 Dakshin Gohat (S)	17,401	21,500	24,000	26,700	29,800	33,200
4 Dakshin Kachua (S)	16,901	20,900	23,300	26,000	29,000	32,300
5 Kadla	25,393	31,400	35,000	39,000	43,500	48,500
6 Karaia	30,948	38,300	42,700	47,600	53,100	59,200
7 Paschim Pathair (W)	17,305	21,400	23,900	26,600	29,700	33,100
8 Paschim Sahaddevpur (W)	17,868	22,100	24,600	27,500	30,600	34,200
9 Purba Pathair (E)	17,387	21,500	24,000	26,700	29,800	33,200
10 Purba Sahadevpur (E)	15,815	19,600	21,900	24,400	27,200	30,300
11 Uttar Gohat (N)	16,855	20,900	23,300	26,000	29,000	32,300
12 Uttar Kachua (N)	16,408	20,300	22,600	25,200	28,100	31,400
Upazila Total	240,355	299,000	334,000	372,000	414,000	462,000

Population from1991 to 2010 is esimated on the basis in 1990 with 2.2% of annual growth rate.

Table A.2.6: Population Projection 1990-2010 by Union (2/4)

DEBIDWAR UPAZILA

Union	POPULATION					
	1981	1990	1995	2000	2005	2010
1 Dakshin Bara Shalghar (S)	13,321	16,500	18,400	20,500	22,900	25,500
2 Dakshin Barkamata (S)	18,575	23,000	25,600	28,600	31,900	35,500
3 Dakshin Dhamti (S)	16,815	20,800	23,200	25,900	28,800	32,100
4 Dakshin Gunaighar (S)	15,499	19,200	21,400	23,900	26,600	29,700
5 Dakshin Jafarganj (S)	19,036	23,600	26,300	29,300	32,700	36,500
6 Dakshin Rajamehar (S)	16,734	20,700	23,100	25,700	28,700	32,000
7 Dakshin Subil (S)	13,781	17,100	19,100	21,300	23,700	26,400
8 Debidwar	26,614	32,900	36,700	40,900	45,600	50,800
9 Fatehabad	26,765	33,100	36,900	41,100	45,900	51,200
10 Uttar Bara Shalghar (N)	13,077	16,200	18,100	20,100	22,500	25,000
11 Uttar Barkamta (N)	18,138	22,500	25,100	28,000	31,200	34,800
12 Uttar Dhamti (N)	14,799	18,300	20,400	22,700	25,400	28,300
13 Uttar Gunaighar (N)	15,104	18,700	20,800	23,200	25,900	28,900
14 Uttar Jafarganj (N)	16,986	21,000	23,400	26,100	29,100	32,500
15 Uttar Rajamehar (N)	15,778	19,500	21,700	24,200	27,000	30,100
16 Uttar Subil (N)	14,321	17,700	19,700	22,000	24,500	27,400
Upazila Total	275,343	341,000	380,000	424,000	472,000	527,000

Population from1991 to 2010 is esimated on the basis in 1990 with 2.2% of annual growth rate.

Table A.2.6: Population Projection 1990-2010 by Union (3/4)

NABINAGAR

Union	POPULATION 1981	1990	1995	2000	2005	2010
1 Bidyakot	20,242	24,600	27,400	30,600	34,100	38,000
2 Birgon	10,931	13,300	14,800	16,500	18,400	20,600
3 Bitghar	21,417	26,100	29,100	32,400	36,200	40,300
4 Dakshin Barikandi (N)	11,882	14,500	16,200	18,000	20,100	22,400
5 Ibrahimpur	17,329	21,100	23,500	26,200	29,200	32,600
6 Kaitala	19,355	23,500	26,200	29,200	32,600	36,300
7 Krishnanagar	19,531	23,800	26,500	29,600	33,000	36,800
8 Natghar	17,882	21,800	24,300	27,100	30,200	33,700
9 Paschim Junedpur (W)	13,131	16,000	17,800	19,900	22,200	24,700
10 Paschim Nabinagar (W)	12,279	14,900	16,600	18,500	20,700	23,000
11 Pashim Rasullabad (W)	16,128	19,600	21,900	24,400	27,200	30,300
12 Purba Junedpur (E)	14,261	17,300	19,300	21,500	24,000	26,700
13 Purba Nabinagar (E)	16,379	19,900	22,200	24,700	27,600	30,800
14 Purba Rasullabad (E)	12,960	15,800	17,600	19,600	21,900	24,400
15 Ratanpur	23,456	28,500	31,800	35,400	39,500	44,000
16 Shibpur	21,856	26,600	29,700	33,100	36,900	41,100
17 Shyamgram	21,501	26,200	29,200	32,600	36,300	40,500
18 Srirampur	25,308	30,800	34,300	38,300	42,700	47,600
19 Uttar Barikandi (N)	13,798	16,800	18,700	20,900	23,300	26,000
Upazila Total	355,179	401,000	447,000	499,000	556,000	620,000

Population from1991 to 2010 is esimated on the basis in 1990 with 2.2% of annual growth rate.

Table A.2.6: Population Projection 1990-2010 by Union (4/4)

BANCHARAMPUR

Union	POPULATION 1981	1990	1995	2000	2005	2010
1 Dakshin Bancharampur (S)	14,674	17,400	19,200	21,200	23,400	25,900
2 Paschim Dariadulat (W)	16,149	19,100	21,100	23,300	25,700	28,400
3 Paschim Rupasdi (W)	16,252	19,300	21,300	23,500	26,000	28,700
4 Paschim Saifullakandi (W)	19,409	23,000	25,400	28,000	31,000	34,200
5 Paschim Tejkhali (W)	9,967	11,800	13,000	14,400	15,900	17,500
6 Paschim Ujanchar (W)	15,112	17,900	19,800	21,800	24,100	26,600
7 Purba Dariadulat (E)	21,432	25,400	28,000	31,000	34,200	37,700
8 Purba Rupasdi (E)	17,376	20,600	22,700	25,100	27,700	30,600
9 Purba Saifullakandi (E)	11,375	13,500	14,900	16,500	18,200	20,100
10 Purba Tejkhali (E)	17,479	20,700	22,900	25,200	27,900	30,800
11 Purba Ujanchar (E)	14,700	17,400	19,200	21,200	23,400	25,900
12 Salimabad	26,443	31,300	34,600	38,200	42,100	46,500
13 Uttar Bancharampur (N)	18,305	21,700	24,000	26,500	29,200	32,200
Upazila Total	218,673	259,000	286,000	316,000	349,000	385,000

Population from1991 to 2010 is esimated on the basis in 1990 with 2.0% of annual growth rate.

Table A.2.7: Labour Force Potential

Unit; '000'

	1990	1995	2000	2005	2010
Bancharampur					
population	259	286	316	349	385
labour force	83	98	116	137	162
Nabinagar					
population	401	447	499	556	620
labour force	128	152	179	212	250
Kachua					
population	299	334	372	414	462
labour force	96	113	134	158	187
Debidwar					
population	341	380	424	472	527
labour force	109	129	152	180	213
Total					
population	1,300	1,447	1,611	1,791	1,994
labour force	416	492	581	687	812

Note; Labour force in 1990 was estimated as 32% of total population. Annual growth rate of labour force was assumed as 3.4% with same level of national projection.

Table A.2.8: Household and Farm Size 1983

	Non - Farm Holdings			Farm Holdings			
	With NO Operated Area	With No Cultivated Area	With Cultivated Area(ha) Up to 0.1	Small Farmer(ha) 0.1 to 1.0	Medium Farmer(ha) 1.0 to 3.0	Large Farmer(ha) 3.0 over	Total Household
Bancharanpur	185	5,084	4,844	23,001	3,969	255	37,338
%	0.5	13.6	13.0	61.6	10.6	0.7	100.0
Nabinagar	127	9,332	5,620	36,416	7,803	514	59,812
%	0.2	15.6	9.4	60.9	13.0	0.9	100.0
Kachua	104	2,525	2,712	31,017	5,186	383	41,927
%	0.2	6.0	6.5	74	12.4	0.9	100.0
Debidwar	162	3,677	3,241	34,300	4,390	141	45,911
%	0.4	8.0	7.1	74.7	9.6	0.2	100.0
Total	578	20,618	16,417	124,734	21,348	1,293	184,988
%	0.3	11.1	8.9	67.4	11.5	0.7	100.0

Source; Bangladesh Census of Agriculture and Livestock 1983-84

Table A.2.9: Household and Farm Size 1990

	Non - Farm Holdings			Farm Holdings			
	With No Operated Area	With No Cultivated Area	With Cultivated Area(ha) 1/ Up to 0.1	Small Farmer(ha) 0.1 to 1.0	Medium Farmer(ha) 1.0 to 3.0	Large Farmer(ha) 3.0 over	Total Household
Bancharanpur	-	-	11,195	27,438	4,961	307	43,900
%	-	-	25.5	62.5	11.3	0.7	100.0
Nabinagar	-	-	16,116	41,956	9,384	544	68,000
%	-	-	23.7	61.7	13.8	0.8	100.0
Kachua	-	-	6,248	39,008	6,773	473	52,500
%	-	-	11.9	74.3	12.9	0.9	100.0
Debidwar	-	-	8,179	42,770	5,680	170	56,800
%	-	-	14.4	75.3	10.0	0.3	100.0
Total	-	-	41,737	151,171	26,797	1,494	221,200
%			18.9	68.3	12.1	0.7	100.0

Note; 1/ Calculation for Non-Farm Holdings was made the total figures of Non-Form Holdings.
Source; Computed from available data 1977-83

Table A.2.10: Job Fields of Respondents and Their Family Laboures

Field	Nabinagar		Bancharampur		Kachua		Debidwar		Total	
	nos	%	nos	%	nos	%	nos	%	nos	%
Agriculture										
1) Working in Own Farm land	199	30.0	232	37.8	154	26.1	152	27.1	737	30.4
2) Hired Farm Labour	66	10.0	53	8.6	114	19.4	81	14.5	314	12.9
1)+2)	41	6.2	26	4.2	49	8.3	44	7.9	160	6.6
1)+Non-Farm	86	13.0	48	7.8	56	9.5	54	9.6	244	10.1
2)+Non-Farm	30	4.5	11	1.8	18	3.1	15	2.7	74	3.1
1)+2)+Non-Farm	16	2.4	6	1.0	6	1.0	11	2.0	39	1.6
Sub-Total	438	66.1	376	61.3	397	67.4	357	63.8	1,568	64.7
Non-Farm Activities	225	33.9	237	38.7	192	32.6	203	36.3	857	35.3
Total	663	100.0	613	100.0	589	100.0	560	100.0	2,425	100.0

Source; Field Sample Survey,1990

Table A.2.11: Working Status for Hired Farm Labour

	Nabinagar		Bancharampur		Kachua		Debidwar		Total	
	nos	%	nos	%	nos	%	nos	%	nos	%
Hired Farm Labour										
1) Paddy Transplanting	43	39.4	27	25.7	32	17.3	60	25.4	162	25.5
2) Paddy Weeding	33	30.3	28	26.7	80	43.2	63	26.7	204	32.1
3) Paddy Herbesting	18	16.5	16	15.2	53	28.6	54	22.9	141	22.2
4) Paddy Transportation	13	11.9	15	14.3	11	5.9	31	13.1	70	11.0
5) Others	2	1.8	19	18.1	9	4.9	28	11.9	58	9.1
Total	109	100.0	105	100.0	185	100.0	236	100.0	635	100.0

Source; Field Sample Survey,1990

Table A.2.12: Working Status for Non-Farm Activities

	Nabinagar		Bancharampur		Kachua		Debidwar		Total	
	nos	%	nos	%	nos	%	nos	%	nos	%
Non-Farm Activities										
1) Rural Industry	4	1.8	6	2.9	6	3.1	12	5.9	28	3.4
2) Rikishaw Pulling	9	4.0	5	2.4	19	9.9	30	14.8	63	7.6
3) Peddling	8	3.5	1	0.5	3	1.6	9	4.4	21	2.5
4) Fishery	42	18.5	11	5.3	2	1.0	1	0.5	56	6.7
5) Construction	7	3.1	12	5.7	13	6.8	25	12.3	57	6.9
6) Commerce/Business	62	27.3	28	13.4	42	21.9	47	23.2	179	21.5
7) Hadicraft	6	2.6	36	17.2	14	7.3	17	8.4	73	8.8
8) Driver	11	4.8	8	3.8	2	1.0	4	2.0	25	3.0
9) School Teacher	4	1.8	23	11.0	20	10.4	23	11.3	70	8.4
10) Public Services	36	15.9	21	10.0	26	13.5	28	13.8	111	13.4
11) Others	38	16.7	58	27.8	45	23.4	7	3.4	148	17.8
Total	227	100.0	209	100.0	192	100.0	203	100.0	831	100.0

Source: Field Sample Survey 1990

Table A.2.13: Upazila Revenue and Expenditures by Source and Amount (1988-90) (1/4)

Debidwar Upazlia

REVENUE			EXPENDITURE		
Sources	Amount (Tk.)		Head	Amount (Tk.)	
	1988-89	1989-90		1988-89	1989-90
Local Income			Regular Expenses		
Market Lease	711,345	943,200	Salary	9,825,597	12,492,007
Water Body Lease	26,000	115,260	Printing & Stationary	12,350	860
Rickshaw Lisence	6,870	10,940	Advertisement	30,939	26,230
Trade Lisence Fee	39,100	23,700	Hat & Water Body Royality	36,019	557,594
Bank Interest	7,044	5,704	Land & UP Tax	11,825	15,460
Sell of Products	52,072	16,050	Electricity Bill	17,411	36,184
Nursery Sell	22,300	76,152	Telephone Bill	-	-
Tender Form Sell	16,519	40,941	Audit Fee	16,413	17,218
House & Office Rent	543,000	307,546	Entertainment	4,223	6,819
Misc. Income	4,423	37,891	State Function	5,000	10,000
	1,428,673	1,577,384	Car O & M	125,822	91,351
			Miscelleneous	30,334	24,298
				10,115,933	13,278,021
Grant From Central Govt.					
From Revenue Budget			Infrastructure Maintenance		
Chairman Salary Grant	50,400	50,400	Market Maintenance	104,510	88,622
Car Operation & Maint.	75,822	63,878	Road Maintenance	256,190	244,336
govt. Employee	9,733,125	11,991,607	Tubewell Installation & Maintenance	24,185	31,622
Salary	-	-			
(Other Grants)	11,000	-	Building Maintenance	275,275	220,000
	9,870,347	12,105,885	Miscellenious	19,611	28,000
				679,771	612,580
From Development Budget	4,139,444	3,148,538			
			Construction		
			Road	1,977,000	833,780
			Bridge & Culvert	1,439,444	1,700,525
			Market Development	200,000	235,800
			Reexacavation	686,300	107,000
			Others	329,016	204,100
				4,631,760	3,081,205
	15,438,464	16,831,807		15,427,464	16,971,806

Source: Upazila Information 1990

Table A.2.13: Upazila Revenue and Expenditures by Source and Amount (1988-90) (2/4)

Nabinagar Upazila

REVENUE			EXPENDITURE		
Sources	Amount (Tk.)		Head	Amount (Tk.)	
	1988-89	1989-90		1988-89	1989-90
Local Income			Regular Expenses		
Market Lease	399,400	571,900	Salary	10,472,620	11,963,737
Water Body Lease	285,000	308,336	Printing & Stationary	37,882	21,991
Rickshaw Lisence	4,940	9,075	Advertisement	43,771	48,900
Trade Lisence Fee	26,811	31,300	Hat & Water Body Royality	75,000	80,000
Bank Interest	18,990	15,528	Land & UP Tax	13,626	12,818
Sell of Products	19,614	27,393	Electricity Bill	24,228	23,910
Nursery Sell	4,892	7,662	Telephone Bill	8,400	9,100
Tender Form Sell	26,821	21,257	Audit Fee	18,230	21,660
House & Office Rent	322,500	337,850	Entertainment	6,000	8,000
Misc. Income	61,000	67,000	State Function	12,000	5,000
	1,169,968	1,397,301	Car O & M	120,378	134,234
			Miscelleneous	45,780	57,341
				10,877,915	12,386,691
Grant From Central Govt.					
From Revenue Budget			Infrastructure Maintenance		
Chairman Salary Grant	50,400	50,400	Market Maintenance	101,226	94,690
Car Operation & Maint.	70,000	64,000	Road Maintenance	339,775	139,602
govt. Employee Salary	10,121,678	10,638,273	Tubewell Installation & Maintenance	87,900	108,200
(Other Grants)	-	-			
	245,000	267,000	Miscellenious	84,800	67,200
	10,487,078	11,019,673			
				613,701	409,692
From Development Budget	3,881,800	4,109,245			
			Construction		
			Road	2,136,500	2,013,921
			Bridge & Culvert	778,345	713,560
			Market Development	388,500	412,875
			Recxacavation	345,750	177,300
			Others	398,135	412,480
				4,047,230	3,730,136
	15,538,846	16,526,219		15,538,846	16,526,519

Source: Upazila Information 1990

Table A.2.13: Upazila Revenue and Expenditures by Source and Amount (1988-90) (3/4)

Kachua Upazila

REVENUE			EXPENDITURE		
Sources	Amount (Tk.)		Head	Amount (Tk.)	
	1988-89	1989-90		1988-89	1989-90
Local Income			Regular Expenses		
Market Lease	415,875	511,234	Salary	10,328,668	10,642,677
Water Body Lease	97,332	163,600	Printing & Stationary	28,344	31,992
Rickshaw Lisence	14,300	14,837	Advertisement	33,288	31,619
Trade Lisence Fee	43,218	47,459	Hat & Water Body Royality	86,436	93,222
Bank Interest	11,614	8,792	Land & UP Tax	14,220	15,798
Sell of Products	61,437	34,217	Electricity Bill	28,339	34,576
Nursery Sell	12,650	16,662	Telephone Bill	8,236	7,411
Tender Form Sell	14,784	18,333	Audit Fee	16,000	17,000
House & Office Rent	399,754	432,266	Entertainment	8,240	15,000
Misc. Income	51,748	67,970	State Function	12,000	15,000
	1,122,712	1,315,370	Car O & M	127,555	126,249
			Miscelleneous	41,993	38,205
				10,733,319	11,068,749
Grant From Central Govt.					
From Revenue Budget			Infrastructure Maintenance		
Chairman Salary Grant	50,400	50,400	Market Maintenance	139,660	147,414
Car Operation & Maint.	70,000	65,000	Road Maintenance	382,626	67,837
govt. Employee Salary	10,811,000	11,669,374	Tubewell Installation & Maintenance	49,688	31,257
(Other Grants)	86,900	51,743	Miscellenious	62,351	40,220
	11,018,300	11,836,517			
				634,325	286,728
From Development Budget	3,926,821	4,329,226			
			Construction		
			Road	1,857,836	1,531,980
			Bridge & Culvert	1,107,413	676,000
			Market Development	293,262	324,879
			Reexacavation	143,688	101,500
			Others	287,990	161,323
				3,690,189	2,795,682
	16,067,833	17,481,113		15,057,833	14,151,159

Source: Upazila Information 1990

Table A.2.13: Upazila Revenue and Expenditures by Source and Amount (1988-90) (4/4)

Bancharampur Upazila

REVENUE			EXPENDITURE		
Sources	Amount (Tk.)		Head	Amount (Tk.)	
	1988-89	1989-90		1988-89	1989-90
Local Income			Regular Expenses		
Market Lease	216,000	274,571	Salary	9,940,026	10,134,788
Water Body Lease			Printing & Stationary	59,122	
Rickshaw Lisence	19,420	56,073	Advertisement	21,610	18,363
Trade Lisence Fee			Hat & Water Body Royality		
Bank Interest	22,842	68,300	Land & UP Tax	48,038	30,198
Sell of Products			Electricity Bill	81,046	118,216
Nursery Sell			Telephone Bill	399	
Tender Form Sell	27,310	16,400	Audit Fee	19,777	
House & Office Rent	275,199	217,178	Entertainment	31,320	59,317
Misc. Income	5,900	78,773	State Function	104,800	151,625
Taxation	6,140	6,046	Car O & M	43,197	93,185
	572,811	717,341	Miscelleneous		
			Building O & M	74,122	628,618
				10,423,457	11,234,310
Grant From Central Govt.					
From Revenue Budget			Infrastructure Maintenance		
Chairman Salary Grant	50,400	50,400	Market Maintenance	88,805	80,735
Car Operation & Maint.			Road Maintenance	1,655,048	1,538,410
govt. Employee Salary			Tubewell Installation & Maintenance	716,523	216,364
(Other Grants)	312,800	218,361	Miscellenious	778,964	510,256
....	10,456,153	121,100,387	Building Rep. & Maint.	178,737	226,827
	10,819,353	121,318,748		3,418,077	2,572,592
From Development Budget	6,432,737	3,956,920	Construction		
			Road	1,312,292	1,178,113
			Bridge & Culvert	412,042	418,062
			Market Development	150,403	109,491
			Canal Re-exacavation		
			Others	2,108,630	524,091
				3,983,367	2,229,757
	17,824,901	125,993,009		17,824,901	16,036,659

Source: Upazila Information 1990

Table A.2.14: Net Value per Ha for Major Crops (1/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :B. Aus (LV)				
Gross Value				
Main Product	ton/ha	0.9	5.2	4,680
Plant Residue	ton/ha	1.6	1.1	1,760
Gross Value	Tk/ha			6,440
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	105	7.2	756
2. Chemical Fertilizer				
Urea	kg	0	5.2	0
TSP	kg	0	5.7	0
MP	kg	0	5.2	0
3.Agro-chemical				
Insecticide	kg	0	600	0
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	60		0
Hired	Man-day	60	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			68
Sub-total(1 to 7)				1,424
NET VALUE	Tk/ha			5,016
	Tk/ton			5,574
Total Labour Requirement	Man-day			120

Table A.2.14: Net Value per Ha for Major Crops (2/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :T.Aus (LV)				
Gross Value				
Main Product	ton/ha	1.1	5.2	5,720
Plant Residue	ton/ha	1.7	1.1	1,870
Gross Value	Tk/ha			7,590
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	50	7.2	360
2. Chemical Fertilizer				
Urea	kg	0	5.2	0
TSP	kg	0	5.7	0
MP	kg	0	5.2	0
3.Agro-chemical				
Insecticide	kg	0	600	0
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	90		0
Hired	Man-day	80	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			48
Sub-total(1 to 7)				1,008
NET VALUE	Tk/ha			6,582
	Tk/ton			5,984
Total Labour Requirement	Man-day			170

Table A.2.14: Net Value per Ha for Major Crops (3/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Aus (HYV)				
Gross Value				
Main Product	ton/ha	2.1	5.2	10,920
Plant Residue	ton/ha	3.0	1.1	3,300
Gross Value	Tk/ha			14,220
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	55	8.3	457
2. Chemical Fertilizer				
Urea	kg	0	5.2	0
TSP	kg	0	5.7	0
MP	kg	0	5.2	0
3.Agro-chemical				
Insecticide	kg	0.0	600	0
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	85		0
Hired	Man-day	60	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			53
Sub-total(1 to 7)				1,109
NET VALUE	Tk/ha			13,111
	Tk/ton			6,243
Total Labour Requirement	Man-day			145

Table A.2.14: Net Value per Ha for Major Crops (4/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :B. Aman (LV)				
Gross Value				
Main Product	ton/ha	1.1	5.2	5,720
Plant Residue	ton/ha	2.8	1.1	3,080
Gross Value	Tk/ha			8,800
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	90	7.3	657
2. Chemical Fertilizer				
Urea	kg	0	5.2	0
TSP	kg	0	5.7	0
MP	kg	0	5.2	0
3.Agro-chemical				
Insecticide	kg	0	600	0
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	49		0
Hired	Man-day	51	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			63
Sub-total(1 to 7)				1,320
NET VALUE	Tk/ha			7,480
	Tk/ton			6,800
Total Labour Requirement	Man-day			100

Table A.2.14: Net Value per Ha for Major Crops (5/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :T. Aman (LV)				
Gross Value				
Main Product	ton/ha	1.3	5.2	6,760
Plant Residue	ton/ha	2.5	1.1	2,750
Gross Value	Tk/ha			9,510
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	56	7.3	409
2. Chemical Fertilizer				
Urea	kg	0	5.2	0
TSP	kg	0	5.7	0
MP	kg	0	5.2	0
3.Agro-chemical				
Insecticide	kg	0	600	0
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	50		0
Hired	Man-day	50	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			50
Sub-total(1 to 7)				1,059
NET VALUE	Tk/ha			8,451
	Tk/ton			6,501
Total Labour Requirement	Man-day			100

Table A.2.14: Net Value per Ha for Major Crops (6/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP : T. Aman (HYV)				
Gross Value				
Main Product	ton/ha	2.7	5.2	14,040
Plant Residue	ton/ha	3.3	1.1	3,630
Gross Value	Tk/ha			17,670
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	52	8.3	432
2. Chemical Fertilizer				
Urea	kg	0	5.2	0
TSP	kg	0	5.7	0
MP	kg	0	5.2	0
3.Agro-chemical				
Insecticide	kg	0	600	0
4.Irrigation Water Supply	Tk/ha			2,000
5.Mannual Labour				
Family	Man-day	80		0
Hired	Man-day	75	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			152
Sub-total(1 to 7)				3,183
NET VALUE	Tk/ha			14,487
	Tk/ton			5,365
Total Labour Requirement	Man-day			155

Table A.2.14: Net Value per Ha for Major Crops (7/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP : Boro (LV)				
Gross Value				
Main Product	ton/ha	2.5	5.2	13,000
Plant residue	ton/ha	1.1	1.1	1,210
Gross Value	Tk/ha			14,210
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	54	7.2	389
2. Chemical Fertilizer				
Urea	kg	33	5.2	172
TSP	kg	16	5.7	91
MP	kg	40	5.2	208
3.Agro-chemical				
Insecticide	kg	0	600	0
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	55		
Hired	Man-day	39	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			73
Sub-total(1 to 7)				1,533
NET VALUE	Tk/ha			12,677
	Tk/ton			5,071
Total Labour Requirement	Man-day			94

Table A.2.14: Net Value per Ha for Major Crops (8/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :BORO HYV				
Gross Value				
Main Product	ton/ha	3.3	5.2	17,160
Plant residue	ton/ha	4.4	1.1	4,840
Gross Value	Tk/ha			22,000
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	55	8.3	457
2. Chemical Fertilizer				
Urea	kg	190	5.2	988
TSP	kg	120	5.7	684
MP	kg	80	5.2	416
3.Agro-chemical				
Insecticide	kg	1.0	600	600
4.Irrigation Water Supply	Tk/ha			3,000
5.Mannual Labour				
Family	Man-day	90		
Hired	Man-day	94	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			337
Sub-total(1 to 7)				7,082
NET VALUE	Tk/ha			14,918
	Tk/ton			4,521
Total Labour Requirement	Man-day			184

Table A.2.14: Net Value per Ha for Major Crops (9/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP WHEAT HYV				
Gross Value				
Main Product	ton/ha	2.3	4.4	10,120
Plant residue	ton/ha	2.8	0.5	1,400
Gross Value	Tk/ha			11,520
Gross Value (excluded Plant Residue)	Tk/ton			4,400
Production Cost				
1. Seed	kg	121	6.6	799
2. Chemical Fertilizer				
Urea	kg	85	5.2	442
TSP	kg	50	5.7	285
MP	kg	25	5.2	130
3.Agro-chemical				
Insecticide	kg	1.0	600	600
4.Irrigation Water Supply	Tk/ha			1,000
5.Mannual Labour				
Family	Man-day	70		
Hired	Man-day	50	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			193
Sub-total(1 to 7)				4,048
NET VALUE	Tk/ha			7,472
	Tk/ton			3,249
Total Labour Requirement	Man-day			120

Table A.2.14: Net Value per Ha for Major Crops (10/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Jute				
Gross Value				
Main Product	ton/ha	1.8	5.7	10,260
Plant residue	ton/ha	4.1	0.8	3,280
Gross Value	Tk/ha			13,540
Gross Value (excluded Plant Residue)	Tk/ton			5,700
Production Cost				
1. Seed	kg	8.0	70.0	560
2. Chemical Fertilizer				
Urea	kg	53	5.2	276
TSP	kg	15	5.7	86
MP	kg	5	5.2	26
3.Agro-chemical				
Insecticide	kg	0.5	600	300
4.Irrigation Water Supply	Tk/ha	0		0
5.Mannual Labour				
Family	Man-day	110		
Hired	Man-day	75	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			92
Sub-total(1 to 7)				1,939
NET VALUE	Tk/ha			11,601
	Tk/ton			6,445
Total Labour Requirement	Man-day			185

Table A.2.14: Net Value per Ha for Major Crops (11/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Poteto				
Gross Value				
Main Product	ton/ha	11	2.2	24,200
Plant residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			24,200
Gross Value (excluded Plant Residue)	Tk/ton			2,200
Production Cost				
1. Seed	kg	1,100	10.8	11,880
2. Chemical Fertilizer				
Urea	kg	170	5.2	884
TSP	kg	110	5.7	627
MP	kg	70	5.2	364
3.Agro-chemical				
Insecticide	kg	0.5	600	300
4.Irrigation Water Supply	Tk/ha	0		1,000
5.Mannual Labour				
Family	Man-day	130		
Hired	Man-day	80	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			783
Sub-total(1 to 7)				16,438
NET VALUE	Tk/ha			7,762
	Tk/ton			706
Total Labour Requirement	Man-day			210

Table A.2.14: Net Value per Ha for Major Crops (12/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Mustard				
Gross Value				
Main Product	ton/ha	0.9	9.7	8,730
Plant residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			8,730
Gross Value (excluded Plant Residue)	Tk/ton			9,700
Production Cost				
1. Seed	kg	14	13.3	186
2. Chemical Fertilizer				
Urea	kg	60	5.2	312
TSP	kg	40	5.7	228
MP	kg	30	5.2	156
3.Agro-chemical				
Insecticide	kg	0.5	600	300
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	48		
Hired	Man-day	13	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			89
Sub-total(1 to 7)				1,871
NET VALUE	Tk/ha			6,859
	Tk/ton			7,621
Total Labour Requirement	Man-day			61

Table A.2.14: Net Value per Ha for Major Crops (13/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP : Sesame				
Gross Value				
Main Product	ton/ha	0.7	10.3	7,210
Plant residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			7,210
Gross Value (excluded Plant Residue)	Tk/ton			10,300
Production Cost				
1. Seed	kg	5.0	12.5	63
2. Chemical Fertilizer				
Urea	kg	0	5.2	0
TSP	kg	0	5.7	0
MP	kg	0	5.2	0
3.Agro-chemical				
Insecticide	kg	0	600	0
4.Irrigation Water Supply	Tk/ha	0		0
5.Mannual Labour				
Family	Man-day	35		
Hired	Man-day	12	(40)	0
6.Bullocks	Pair-day	0	30	0
7.Miscellaneous	5%			3
Sub-total(1 to 7)				66
NET VALUE	Tk/ha			7,144
	Tk/ton			10,206
Total Labour Requirement	Man-day			47

Table A.2.14: Net Value per Ha for Major Crops (14/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP : Pulses (Khesheri)				
Gross Value				
Main Product	ton/ha	0.8	6.7	5,360
Plant residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			5,360
Gross Value (excluded Plant Residue)	Tk/ton			6,700
Production Cost				
1. Seed	kg	35	19.5	683
2. Chemical Fertilizer				
Urea	kg	0	5.2	0
TSP	kg	0	5.7	0
MP	kg	0	5.2	0
3.Agro-chemical				
Insecticide	kg	0	600	0
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	50		
Hired	Man-day	0	(40)	0
6.Bullocks	Pair-day	0	30	0
7.Miscellaneous	5%			34
Sub-total(1 to 7)				717
NET VALUE	Tk/ha			4,643
	Tk/ton			5,804
Total Labour Requirement	Man-day			50

Table A.2.14: Net Value per Ha for Major Crops (15/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Chilli				
Gross Value				
Main Product	ton/ha	1.2	16.1	19,320
Plant residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			19,320
Gross Value (excluded Plant Residue)	Tk/ton			16,100
Production Cost				
1. Seed	kg	10	3.9	39
2. Chemical Fertilizer				
Urea	kg	100	5.2	520
TSP	kg	150	5.7	855
MP	kg	80	5.2	416
3.Agro-chemical				
Insecticide	kg	0	600	0
4.Irrigation Water Supply	Tk/ha	0		0
5.Mannual Labour				
Family	Man-day	97		
Hired	Man-day	65	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			122
Sub-total(1 to 7)				2,552
NET VALUE	Tk/ha			16,768
	Tk/ton			13,973
Total Labour Requirement	Man-day			162

Table A.2.14: Net Value per Ha for Major Crops (16/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Vegetable				
Gross Value				
Main Product	ton/ha	11.8	4.9	57,820
Plant residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			57,820
Gross Value (excluded Plant Residue)	Tk/ton			4,900
Production Cost				
1. Seed	kg	5.0	80.0	400
2. Chemical Fertilizer				
Urea	kg	90	5.2	468
TSP	kg	70	5.7	399
MP	kg	25	5.2	130
3.Agro-chemical				
Insecticide	kg	0.5	600	300
4.Irrigation Water Supply	Tk/ha	0		0
5.Mannual Labour				
Family	Man-day	120		
Hired	Man-day	100	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			115
Sub-total(1 to 7)				2,412
NET VALUE	Tk/ha			55,408
	Tk/ton			4,696
Total Labour Requirement	Man-day			220

Table A.2.14: Net Value per Ha for Major Crops (17/17)

- Present -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Other (onion)				
Gross Value				
Main Product	ton/ha	8.1	5.5	44,550
Plant residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			44,550
Gross Value (excluded Plant Residue)	Tk/ton			5,500
Production Cost				
1. Seed	kg	6.0	90.0	540
2. Chemical Fertilizer				
Urea	kg	0	5.2	0
TSP	kg	0	5.7	0
MP	kg	0	5.2	0
3.Agro-chemical				
Insecticide	kg	0	600	0
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	100		
Hired	Man-day	110	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			57
Sub-total(1 to 7)				1,197
NET VALUE	Tk/ha			43,353
	Tk/ton			5,352
Total Labour Requirement	Man-day			210

Table A.2.15: Net Value per Ha for Major Crops (1/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :B. Aus (LV)				
Gross Value				
Main Product	ton/ha	1.5	5.2	7,800
Plant Residue	ton/ha	2.1	1.1	2,310
Gross Value	Tk/ha			10,110
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	100	7.2	720
2. Chemical Fertilizer				
Urea	kg	105	5.2	546
TSP	kg	105	5.7	599
MP	kg	40	5.2	208
3.Agro-chemical				
Insecticide	kg	1.0	600	600
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	60		0
Hired	Man-day	40	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			164
Sub-total(1 to 7)				3,436
NET VALUE	Tk/ha			6,674
	Tk/ton			4,449
Total Labour Requirement	Man-day			100

Table A.2.15: Net Value per Ha for Major Crops (2/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :T. Aus (LV)				
Gross Value				
Main Product	ton/ha	2.5	5.2	13,000
Plant Residue	ton/ha	2.4	1.1	2,640
Gross Value	Tk/ha			15,640
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	40	7.2	288
2. Chemical Fertilizer				
Urea	kg	105	5.2	546
TSP	kg	105	5.7	599
MP	kg	40	5.2	208
3.Agro-chemical				
Insecticide	kg	1.0	600	600
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	85		
Hired	Man-day	65	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			142
Sub-total(1 to 7)				2,983
NET VALUE	Tk/ha			12,657
	Tk/ton			5,063
Total Labour Requirement	Man-day			150

Table A.2.15: Net Value per Ha for Major Crops (3/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :T. Aus (HYV)				
Gross Value				
Main Product	ton/ha	3.0	5.2	15,600
Plant Residue	ton/ha	3.1	1.1	3,410
Gross Value	Tk/ha			19,010
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	40	8.3	332
2. Chemical Fertilizer				
Urea	kg	260	5.2	1,352
TSP	kg	130	5.7	741
MP	kg	66	5.2	343
3.Agro-chemical				
Insecticide	kg	2.0	600	1,200
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	85		
Hired	Man-day	65	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			228
Sub-total(1 to 7)				4,797
NET VALUE	Tk/ha			14,213
	Tk/ton			4,738
Total Labour Requirement	Man-day			150

Table A.2.15: Net Value per Ha for Major Crops (4/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :B. Aman (LV)				
Gross Value				
Main Product	ton/ha	1.8	5.2	9,360
Plant Residue	ton/ha	2.8	1.1	3,080
Gross Value	Tk/ha			12,440
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	100	7.3	730
2. Chemical Fertilizer				
Urea	kg	80	5.2	416
TSP	kg	80	5.7	456
MP	kg	40	5.2	208
3.Agro-chemical				
Insecticide	kg	1.0	600	600
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	50		
Hired	Man-day	50	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			151
Sub-total(1 to 7)				3,161
NET VALUE	Tk/ha			9,279
	Tk/ton			5,155
Total Labour Requirement	Man-day			100

Table A.2.15: Net Value per Ha for Major Crops (5/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :T. Aman (LV)				
Gross Value				
Main Product	ton/ha	2.8	5.2	14,560
Plant Residue	ton/ha	3.6	1.1	3,960
Gross Value	Tk/ha			18,520
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	40	7.3	292
2. Chemical Fertilizer				
Urea	kg	105	5.2	546
TSP	kg	105	5.7	599
MP	kg	40	5.2	208
3.Agro-chemical				
Insecticide	kg	1.0	600	600
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	80		
Hired	Man-day	70	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Mi 7.Miscellaneous	5%			142
Sub-total(1 to 7)				2,987
NET VALUE	Tk/ha			15,533
	Tk/ton			5,548
Total Labour Requirement	Man-day			150

Table A.2.15: Net Value per Ha for Major Crops (6/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP : T. Aman (HYV)				
Gross Value				
Main Product	ton/ha	4.0	5.2	20,800
Plant Residue	ton/ha	4.6	1.1	5,060
Gross Value	Tk/ha			25,860
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	40	8.3	332
2. Chemical Fertilizer				
Urea	kg	260	5.2	1,352
TSP	kg	130	5.7	741
MP	kg	66	5.2	343
3.Agro-chemical				
Insecticide	kg	2.0	600	1,200
4.Irrigation Water Supply	Tk/ha			3,000
5.Mannual Labour				
Family	Man-day	80		
Hired	Man-day	70	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			378
Sub-total(1 to 7)				7,947
NET VALUE	Tk/ha			17,913
	Tk/ton			4,478
Total Labour Requirement	Man-day			150

Table A.2.15: Net Value per Ha for Major Crops (7/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Boro (LV)				
Gross Value				
Main Product	ton/ha	3.0	5.2	15,600
Plant Residue	ton/ha	1.3	1.1	1,430
Gross Value	Tk/ha			17,030
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	40	7.2	288
2. Chemical Fertilizer				
Urea	kg	260	5.2	1,352
TSP	kg	130	5.7	741
MP	kg	66	5.2	343
3.Agro-chemical				
Insecticide	kg	1.0	600	600
4.Irrigation Water Supply	Tk/ha			3,000
5.Mannual Labour				
Family	Man-day	80		
Hired	Man-day	70		
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			346
Sub-total(1 to 7)				7,270
NET VALUE	Tk/ha			9,760
	Tk/ton			3,253
Total Labour Requirement	Man-day			150

Table A.2.15: Net Value per Ha for Major Crops (8/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Boro (HYV)				
Gross Value				
Main Product	ton/ha	4.5	5.2	23,400
Plant Residue	ton/ha	4.7	1.1	5,170
Gross Value	Tk/ha			28,570
Gross Value (excluded Plant Residue)	Tk/ton			5,200
Production Cost				
1. Seed	kg	40	8.3	332
2. Chemical Fertilizer				
Urea	kg	260	5.2	1,352
TSP	kg	130	5.7	741
MP	kg	66	5.2	343
3.Agro-chemical				
Insecticide	kg	2.0	600	1,200
4.Irrigation Water Supply	Tk/ha			4,000
5.Mannual Labour				
Family	Man-day	80		
Hired	Man-day	70		
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			428
Sub-total(1 to 7)				8,997
NET VALUE	Tk/ha			19,573
	Tk/ton			4,350
Total Labour Requirement	Man-day			150

Table A.2.15: Net Value per Ha for Major Crops (9/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP WHEAT (HYV)				
Gross Value				
Main Product	ton/ha	3.5	4.4	15,400
Plant Residue	ton/ha	5.3	0.5	2,650
Gross Value	Tk/ha			18,050
Gross Value (excluded Plant Residue)	Tk/ton			4,400
Production Cost				
1. Seed	kg	75	6.6	495
2. Chemical Fertilizer				
Urea	kg	95	5.2	494
TSP	kg	50	5.7	285
MP	kg	40	5.2	208
3.Agro-chemical				
Insecticide	kg	1.0	600	600
4.Irrigation Water Supply	Tk/ha			2,000
5.Mannual Labour				
Family	Man-day	60		
Hired	Man-day	40	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			234
Sub-total(1 to 7)				4,916
NET VALUE	Tk/ha			13,134
	Tk/ton			3,753
Total Labour Requirement	Man-day			100

Table A.2.15: Net Value per Ha for Major Crops (10/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Jute				
Gross Value				
Main Product	ton/ha	2.4	5.7	13,680
Plant Residue	ton/ha	5.8	0.8	4,640
Gross Value	Tk/ha			18,320
Gross Value (excluded Plant Residue)	Tk/ton			5,700
Production Cost				
1. Seed	kg	10.0	70.0	700
2. Chemical Fertilizer				
Urea	kg	105	5.2	546
TSP	kg	30	5.7	171
MP	kg	40	5.2	208
3.Agro-chemical				
Insecticide	kg	1.0	600	600
4.Irrigation Water Supply	Tk/ha			2,000
5.Mannual Labour				
Family	Man-day	90		
Hired	Man-day	70	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			241
Sub-total(1 to 7)				5,066
NET VALUE	Tk/ha			13,254
	Tk/ton			5,522
Total Labour Requirement	Man-day			160

Table A.2.15: Net Value per Ha for Major Crops (11/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Poteto				
Gross Value				
Main Product	ton/ha	15	2.2	33,000
Plant Residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			33,000
Gross Value (excluded Plant Residue)	Tk/ton			2,200
Production Cost				
1. Seed	kg	1,250	10.8	13,500
2. Chemical Fertilizer				
Urea	kg	280	5.2	1,456
TSP	kg	190	5.7	1,083
MP	kg	280	5.2	1,456
3.Agro-chemical				
Insecticide	kg	2.5	600	1,500
4.Irrigation Water Supply	Tk/ha	0		2,000
5.Mannual Labour				
Family	Man-day	80		0
Hired	Man-day	60	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			1,080
Sub-total(1 to 7)				22,675
NET VALUE	Tk/ha			10,325
	Tk/ton			688
Total Labour Requirement	Man-day			140

Table A.2.15: Net Value per Ha for Major Crops (12/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Mustard				
Gross Value				
Main Product	ton/ha	1.3	9.7	12,610
Plant Residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			12,610
Gross Value (excluded Plant Residue)	Tk/ton			9,700
Production Cost				
1. Seed	kg	10	13.3	133
2. Chemical Fertilizer				
Urea	kg	70	5.2	364
TSP	kg	150	5.7	855
MP	kg	50	5.2	260
3.Agro-chemical				
Insecticide	kg	1.0	600	600
4.Irrigation Water Supply	Tk/ha			2,000
5.Mannual Labour				
Family	Man-day	60		
Hired	Man-day	40	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			241
Sub-total(1 to 7)				5,053
NET VALUE	Tk/ha			7,557
	Tk/ton			5,813
Total Labour Requirement	Man-day			100

Table A.2.15: Net Value per Ha for Major Crops (13/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP : Sesame				
Gross Value				
Main Product	ton/ha	1.0	10.3	10,300
Plant Residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			10,300
Gross Value (excluded Plant Residue)	Tk/ton			10,300
Production Cost				
1. Seed	kg	5.0	12.5	63
2. Chemical Fertilizer				
Urea	kg	100	5.2	520
TSP	kg	100	5.7	570
MP	kg	20	5.2	104
3.Agro-chemical				
Insecticide	kg	0	600	0
4.Irrigation Water Supply	Tk/ha	0		0
5.Mannual Labour				
Family	Man-day	60		
Hired	Man-day	40	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			93
Sub-total(1 to 7)				1,949
NET VALUE	Tk/ha			8,351
	Tk/ton			8,351
Total Labour Requirement	Man-day			100

Table A.2.15: Net Value per Ha for Major Crops (14/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP : Pulses (Khesheri)				
Gross Value				
Main Product	ton/ha	1.2	6.7	8,040
Plant Residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			8,040
Gross Value (excluded Plant Residue)	Tk/ton			6,700
Production Cost				
1. Seed	kg	30	19.5	585
2. Chemical Fertilizer				
Urea	kg	70	5.2	364
TSP	kg	130	5.7	741
MP	kg	50	5.2	260
3.Agro-chemical				
Insecticide	kg	1	600	600
4.Irrigation Water Supply	Tk/ha			0
5.Mannual Labour				
Family	Man-day	60		
Hired	Man-day	40	(40)	0
6.Bullocks	Pair-day	20	30	0
7.Miscellaneous	5%			128
Sub-total(1 to 7)				2,678
NET VALUE	Tk/ha			5,362
	Tk/ton			4,468
Total Labour Requirement	Man-day			100

Table A.2.15: Net Value per Ha for Major Crops (15/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Chilli				
Gross Value				
Main Product	ton/ha	2.0	16.1	32,200
Plant Residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			32,200
Gross Value (excluded Plant Residue)	Tk/ton			16,100
Production Cost				
1. Seed	kg	10	3.9	39
2. Chemical Fertilizer				
Urea	kg	100	5.2	520
TSP	kg	190	5.7	1,083
MP	kg	100	5.2	520
3.Agro-chemical				
Insecticide	kg	1	600	600
4.Irrigation Water Supply	Tk/ha	0		2,000
5.Mannual Labour				
Family	Man-day	120		
Hired	Man-day	180	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			268
Sub-total(1 to 7)				5,630
NET VALUE	Tk/ha			26,570
	Tk/ton			13,285
Total Labour Requirement	Man-day			300

Table A.2.15: Net Value per Ha for Major Crops (16/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Vegetable				
Gross Value				
Main Product	ton/ha	14.0	4.9	68,600
Plant Residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			68,600
Gross Value (excluded Plant Residue)	Tk/ton			4,900
Production Cost				
1. Seed	kg	5.0	80.0	400
2. Chemical Fertilizer				
Urea	kg	150	5.2	780
TSP	kg	150	5.7	855
MP	kg	100	5.2	520
3.Agro-chemical				
Insecticide	kg	2.0	600	1,200
4.Irrigation Water Supply	Tk/ha	0		2,000
5.Mannual Labour				
Family	Man-day	120		
Hired	Man-day	180		0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			318
Sub-total(1 to 7)				6,673
NET VALUE	Tk/ha			61,927
	Tk/ton			4,423
Total Labour Requirement	Man-day			300

Table A.2.15: Net Value per Ha for Major Crops (17/17)

- Target -

Item	Unit	Quantity	Unit Price Tk/kg	Amount
CROP :Other (onion)				
Gross Value				
Main Product	ton/ha	15.0	5.5	82,500
Plant Residue	ton/ha	0.0	0	0
Gross Value	Tk/ha			82,500
Gross Value (excluded Plant Residue)	Tk/ton			5,500
Production Cost				
1. Seed	kg	6.0	90.0	540
2. Chemical Fertilizer				
Urea	kg	150	5.2	780
TSP	kg	150	5.7	855
MP	kg	100	5.2	520
3.Agro-chemical				
Insecticide	kg	2.0	600	1,200
4.Irrigation Water Supply	Tk/ha			2,000
5.Mannual Labour				
Family	Man-day	120		
Hired	Man-day	180	(40)	0
6.Bullocks	Pair-day	20	30	600
7.Miscellaneous	5%			325
Sub-total(1 to 7)				6,820
NET VALUE	Tk/ha			75,680
	Tk/ton			5,045
Total Labour Requirement	Man-day			300

Table A.2. 16 Net Value of Farm Production - Present and Target

(Unit; Tk/ha)

Crop	Present			Target		
	Gross Value	Total Cost	Net Value	Gross Value	Total Cost	Net Value
1 Rice						
B. Aus (LV)	6,440	1,424	5,016	10,110	3,436	6,674
T. Aus (LV)	7,590	1,008	6,582	15,640	2,983	12,657
T. Aus (HYV)	14,220	1,109	13,111	19,010	4,797	14,213
B. Aman (LV)	8,800	1,320	7,480	12,440	3,161	9,279
T. Aman (LV)	9,510	1,059	8,451	18,520	2,987	15,533
T. Aman (HYV)	17,670	2,133	15,537	25,860	7,947	17,913
Boro (LV)	14,210	1,533	12,677	17,030	7,270	9,760
Boro (HYV)	22,000	7,082	14,918	28,570	8,997	19,573
2 Others						
Wheat	11,520	4,048	7,472	18,050	4,916	13,134
Jute	13,540	1,939	11,601	18,320	5,066	13,254
Potato	24,200	16,438	7,762	33,000	22,675	10,325
Mustard	8,730	1,871	6,859	12,610	5,053	7,557
Sesame	7,210	66	7,144	10,300	1,949	8,351
Khesheri	5,360	717	4,643	8,040	2,678	5,362
Chilli	19,320	2,552	16,768	32,200	5,630	26,570
Vegetable	57,820	2,412	55,408	68,600	6,673	61,927
Others (Onion)	44,550	1,197	43,353	82,500	6,820	75,680

Source;Computd from Filed Survey data,1990 and Recommendation by M.O.A.

Table A.2.17 Gross Value of Farm Output - Present Condition

(Unit; TK/ha)

Crop	Main Product Prod. (Ton/ha)	Main Product Unit Price (Taka/Kg)	Sub Total Value (Taka)	Plant Residue Product (Ton/ha)	Plant Residue Unit Price (Taka/Kg)	Sub Total Value (Taka)	Gross Value (Taka)
1 Rice							
B. Aus (LV)	0.9	5.2	4,680	1.6	1.1	1,760	6,440
T. Aus (LV)	1.1	5.2	5,720	1.7	1.1	1,870	7,590
T. Aus (HYV)	2.1	5.2	10,920	3.0	1.1	3,300	14,220
B. Aman (LV)	1.1	5.2	5,720	2.8	1.1	3,080	8,800
T. Aman (LV)	1.3	5.2	6,760	2.5	1.1	2,750	9,510
T. Aman (HYV)	2.7	5.2	14,040	3.3	1.1	3,630	17,670
Boro (LV)	2.5	5.2	13,000	1.1	1.1	1,210	14,210
Boro (HYV)	3.3	5.2	17,160	4.4	1.1	4,840	22,000
2 Others							
Wheat	2.3	4.4	10,120	2.8	0.5	1,400	11,520
Jute	1.8	5.7	10,260	4.1	0.8	3,280	13,540
Potato	11	2.2	24,200	0.0	0.0	0	24,200
Mustard	0.9	9.7	8,730	0.0	0.0	0	8,730
Sesame	0.7	10.3	7,210	0.0	0.0	0	7,210
Khesheri	0.8	6.7	5,360	0.0	0.0	0	5,360
Chilli	1.2	16.1	19,320	0.0	0.0	0	19,320
Vegetable	11.8	4.9	57,820	0.0	0.0	0	57,820
Others	8.1	5.5	44,550	0.0	0.0	0	44,550

Source; Computed from Filed Survey data,1990

Table A.2. 18 Gross Value of Farm Output - Target

(Unit; TK/ha)

Crop	Main Product Prod. (Ton/ha)	Main Product Unit Price (Taka/Kg)	Sub Total Value (Taka)	Plant Residue Product (Ton/ha)	Plant Residue Unit Price (Taka/Kg)	Sub Total Value (Taka)	Gross Value (Taka)
1 Rice							
B. Aus (LV)	1.5	5.2	7,800	2.1	1.1	2,310	10,110
T. Aus (LV)	2.5	5.2	13,000	2.4	1.1	2,640	15,640
T. Aus (HYV)	3.0	5.2	15,600	3.1	1.1	3,410	19,010
B. Aman (LV)	1.8	5.2	9,360	2.8	1.1	3,080	12,440
T. Aman (LV)	2.8	5.2	14,560	3.6	1.1	3,960	18,520
T. Aman (HYV)	4.0	5.2	20,800	4.6	1.1	5,060	25,860
Boro (LV)	3.0	5.2	15,600	1.3	1.1	1,430	17,030
Boro (HYV)	4.5	5.2	23,400	4.7	1.1	5,170	28,570
2 Others							
Wheat	3.5	4.4	15,400	5.3	0.5	2,650	18,050
Jute	2.4	5.7	13,680	5.8	0.8	4,640	18,320
Potato	15	2.2	33,000	0.0	0.0	0	33,000
Mustard	1.3	9.7	12,610	0.0	0.0	0	12,610
Sesame	1.0	10.3	10,300	0.0	0.0	0	10,300
Khesheri	1.2	6.7	8,040	0.0	0.0	0	8,040
Chilli	2.0	16.1	32,200	0.0	0.0	0	32,200
Vegetable	14	4.9	68,600	0.0	0.0	0	68,600
Others	15	5.5	82,500	0.0	0.0	0	82,500

Source; Computed from Filed Survey data ,1990 and Recommendation by M.O.A

Table A.2. 19 Gross Value of Farm Input - Present Condition

Crop	Seed			Urea			TSP			MP			Chemi.	Bullocks	Irrig.	Others	Interest	Total Cost
	Qty Kg/ha	U.Price Tk/Kg	Value Tk/ha	Qty Kg/ha	U.Price Tk/Kg	Value Tk/ha	Qty Kg/ha	U.Price Tk/Kg	Value Tk/ha	Qty Kg/ha	U.Price Tk/Kg	Value Tk/ha	Tk/ha	Tk/ha	Tk/ha	Tk/ha	Tk/ha	Tk/ha
1 Rice																		
B. Aus (LV)	105	7.2	756	0	5.2	0	0	5.7	0	0	5.2	0	0	600	0	68	0	1,424
T. Aus (LV)	50	7.2	360	0	5.2	0	0	5.7	0	0	5.2	0	0	600	0	48	0	1,008
T. Aus (HYV)	55	8.3	457	0	5.2	0	0	5.7	0	0	5.2	0	0	600	0	53	0	1,109
B. Aman (LV)	90	7.3	657	0	5.2	0	0	5.7	0	0	5.2	0	0	600	0	63	0	1,320
T. Aman (LV)	56	7.3	409	0	5.2	0	0	5.7	0	0	5.2	0	0	600	0	50	0	1,059
T. Aman (HYV)	52	8.3	432	0	5.2	0	0	5.7	0	0	5.2	0	0	600	1,000	102	0	2,133
Boro (LV)	54	7.2	389	33	5.2	172	16	5.7	91	40	5.2	208	0	600	0	73	0	1,533
Boro (HYV)	55	8.3	457	190	5.2	988	120	5.7	684	80	5.2	416	600	600	3,000	337	0	7,082
2 Others																		
Wheat	121	6.6	799	85	5.2	442	50	5.7	285	25	5.2	130	600	600	1,000	193	0	4,048
Jute	8	70.0	560	53	5.2	276	15	5.7	86	5	5.2	26	300	600	0	92	0	1,939
Potato	1100	10.8	11,880	170	5.2	884	110	5.7	627	70	5.2	364	300	600	1,000	783	0	16,438
Mustard	14	13.3	186	60	5.2	312	40	5.7	228	30	5.2	156	300	600	0	89	0	1,871
Seame	5	12.5	63	0	5.2	0	0	5.7	0	0	5.2	0	0	0	0	3	0	66
Khesheri	35	19.5	683	0	5.2	0	0	5.7	0	0	5.2	0	0	0	0	34	0	717
Chilli	10	3.9	39	100	5.2	520	150	5.7	855	80	5.2	416	0	600	0	122	0	2,552
Vegetable	5	80.0	400	90	5.2	468	70	5.7	399	25	5.2	130	300	600	0	115	0	2,412
Others	6	90.0	540	0	5.2	0	0	5.7	0	0	5.2	0	0	600	0	57	0	1,197

Source; Computed from Filed Survey,1990 and Recommendation by M.O.A.

Table A.2. 20 Gross Value of Farm Input - Target

Crop	Seed			Urea			TSP			MP			Chemi.	Bullocks	Irrig.	Others	Interest	Total Cost
	Qty Kg/ha	U.Price Tk/Kg	Value Tk/ha	Qty Kg/ha	U.Price Tk/Kg	Value Tk/ha	Qty Kg/ha	U.Price Tk/Kg	Value Tk/ha	Qty Kg/ha	U.Price Tk/Kg	Value Tk/ha	Tk/ha	Tk/ha	Tk/ha	Tk/ha	Tk/ha	Tk/ha
1 Rice																		
B. Aus (LV)	100	7.2	720	105	5.2	546	105	5.7	599	40	5.2	208	600	600	0	164	0	3,436
T. Aus (LV)	40	7.2	288	105	5.2	546	105	5.7	599	40	5.2	208	600	600	0	142	0	2,983
T. Aus (HYV)	40	8.3	332	260	5.2	1,352	130	5.7	741	66	5.2	343	1,200	600	0	228	0	4,797
B. Aman (LV)	100	7.3	730	80	5.2	416	80	5.7	456	40	5.2	208	600	600	0	151	0	3,161
T. Aman (LV)	40	7.3	292	105	5.2	546	105	5.7	599	40	5.2	208	600	600	0	142	0	2,987
T. Aman (HYV)	40	8.3	332	260	5.2	1,352	130	5.7	741	66	5.2	343	1,200	600	3,000	378	0	7,947
Boro (LV)	40	7.2	288	260	5.2	1,352	130	5.7	741	66	5.2	343	600	600	3,000	346	0	7,270
Boro (HYV)	40	8.3	332	260	5.2	1,352	130	5.7	741	66	5.2	343	1,200	600	4,000	428	0	8,997
2 Others																		
Wheat	75	6.6	495	95	5.2	494	50	5.7	285	40	5.2	208	600	600	2,000	234	0	4,916
Jute	10	70.0	700	105	5.2	546	30	5.7	171	40	5.2	208	600	600	2,000	241	0	5,066
Potato	1250	10.8	13,500	280	5.2	1,456	190	5.7	1,083	280	5.2	1,456	1,500	600	2,000	1,080	0	22,675
Mustard	10	13.3	133	70	5.2	364	150	5.7	855	50	5.2	260	600	600	2,000	241	0	5,053
Seame	5	12.5	63	100	5.2	520	100	5.7	570	20	5.2	104	600	0	0	93	0	1,949
Khesheri	30	19.5	585	70	5.2	364	130	5.7	741	50	5.2	260	600	0	0	128	0	2,678
Chilli	10	3.9	39	100	5.2	520	190	5.7	1,083	100	5.2	520	600	600	2,000	268	0	5,630
Vegetable	5	80.0	400	150	5.2	780	150	5.7	855	100	5.2	520	1,200	600	2,000	318	0	6,673
Others	6	90.0	540	150	5.2	780	150	5.7	855	100	5.2	520	1,200	600	2,000	325	0	6,820

Source; Computed from Filed Survey,1990 and Recommendation by M.O.A.

ANNEX B

CROPS AND LIVESTOCK

ANNEX B CROPS AND LIVESTOCK

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1. INTRODUCTION

The crops and livestock production is the mainstay of the regional economy as well as the national economy. Within the framework of the rural development project, these production sectors will be largely encouraged.

This Annex B on Crops and Livestock deals with overview of the present agricultural conditions of the study area and the development programmes under MRDP II. The report consists of three (3) chapters, namely soils and land use, present agriculture and agricultural development plan.

Chapter 1 verifies the soils and land use conditions of the study area. Firstly, the soil characteristics and their spatial distribution patterns of the study area are clarified on the basis of the previous soil studies. Secondly, the present land use and cropping systems prevailing in the study area are described. Thirdly, the previous soil capability classification was reviewed to assess the major soil constraints and development potentials.

Chapter 2 stipulated the present conditions of crops and livestock production of the study area. Based mainly on the statistics obtained at the upazila offices, planted area, production and unit yield are analyzed for diversity of the crops. The current conditions of farm input supply are also analyzed. Apart from crop production, livestock production is studied in terms of animal population, products, feed supply, etc. Support services dealt with are composed of DAE's agricultural extension of T&V system and veterinary services.

Chapter 3 presents the detailed description of the development programmes proposed for MRDP II of which some are taken up as eligible programmes forming MRDP II. Prior to plan formulation, the development constraints and prospects are examined. The development targets are set for area expansion and enhancement of unit yields of the major crops. In line with the Government policies, the priority is placed on development of Boro rice under irrigation as well as crop diversification. The programmes are spelled out in terms of objectives, scopes, facility and equipments requirement, organization and management, etc.

2. SOILS AND LAND USE

2.1 Classification System

2.1.1 Soil Classification of Bangladesh

To trace back the history of soil survey in Bangladesh, it is noted that during the 1950s a soil survey unit was set-up under the Agricultural Chemistry Section of the Agricultural Research Laboratory (Tejgaon/Dhaka) of the then East Pakistan Agriculture Directorate. The soils of the country was divided into seven (7) soil tracts by that provincial soil survey unit, which was reclassified into 20 main physiographic units by Soil Resources Development Institute (SRDI) during the 1960s (Table B.2.1).

The soil classification system followed in Bangladesh is the USDA Soil Taxonomy. According to this classification soils have been grouped into higher categories (e.g. orders, suborders, great groups, subgroups, families). Low level of soil classification into soil series and phases have been done for correlating soils within the country. The soils of Bangladesh classified according to this USDA soil classification have been correlated with legend of FAO/UNESCO Soil Map of the World. (Table B.2.2).

Non-technical grouping of Bangladesh soils named as General Soil Types has been evolved by SRDI for easy understanding of non-technical personnels of technical/scientific departments engaged in agricultural development works. This system includes a group of soils formed in the same way and having a broad similar appearance. According to this classification the soils of the country have been classified into twenty-one General Soil Types (Table B.2.3).

2.1.2 Land Classification of Bangladesh

Land potentials for crop production are graded into five land capability classes with indicators of the Roman numerals I to V. These five classes are divided into two (2) major subclasses - seasonally flooded lands and nonflooded lands indicated by the alphabets W and D respectively. These major subclasses wetlands dry lands are further sub-divided into seven (7) sub classes in consideration of seven (7) crop production constraints, i.e. droughtiness (d), erosion hazard on slopes (e), salinity (s), toxicity (t), wetness (w), in dry lands in rainy summer season and in wetlands in dry winter season, hazard of river erosion or burial by new alluvium (x), hazard of rapid rise or flow of flood water (including storm surge hazard). Subclasses are indicated by suffixing these symbols with these indicators of major classes.

2.2 Overview of Soils and Land Use of Bangladesh

2.2.1 Landform

Bangladesh is underlain entirely by sedimentary geological formations of Tertiary and Quaternary age. The tertiary formations mainly include the hills along and northern and eastern border of the country and the Madhupur and Barind tracts in the centre and west of the country. The floodplain areas are developed on alluvial materials deposited by the main rivers and their tributaries. It is of recent age.

Bangladesh is physiographically divided into three major units such as floodplain areas, hilly areas and terrace areas which are further subdivided into twenty units and thirty-four sub-units. The names of the physiographic units and sub-units and coverages by the individual physiographic units are shown in Table B.2.4. It would be seen from the table that the areas occupied by floodplains, hills and terraces are 80%, 12% and 8% respectively. Bangladesh has got great variety of soils: 574 soil series into 1,034 soil associations. To understand the characteristics and proportions of these soils, they are grouped floodplain soils, hill soils and terrace soils.

(1) Floodplain Soils

The colour of these soils are generally grey, dark grey or grayish brown. The youngest soils are stratified alluvium. In older soils stratified alluvium is found in the substratum below a depth of 30 cm-120 cm or more. The soil body above the substratum has three layers. The first layer is the cultivated top soil which is about 10 to 18 cm thick. It is followed by the compact plough-pan layer of about 2.5 to 5 cm thick. Plough-pan layer is followed by subsoil. In case of mature soil, stratification in the alluvium is broken up and disturbed or disappeared. The properties such as mottling, porosity, and soil structure are developed.

Top soil is acid in reaction when dry, and neutral when flooded. Subsoils are mainly slightly acidic to mildly alkaline. Young Meghna estuarine floodplain soils are strongly acidic in some basin clays and on high noncalcareous floodplain ridges. Soils near the coast are somewhat saline in the dry season, and there are some areas of toxic acid sulfate soils in this zone.

Silty or locally sandy soils occur generally on ridges and clays in the basins. Sandy and loamy permeable soils predominate on the old Himalayan Piedmont Plain. Tista floodplain has sandy

and silty ridges in the north and in the depression silty soils predominate.

Old Brahmaputra, Jamuna and Karatoa - Bangali floodplains have extensive areas of silty clay loams on ridges and silty clays in the basins. Clays predominate in the Sylhet basin and on the eastern Surma - Kusiyara, middle Meghna, Ganges river and Ganges tidal floodplains with silty soils on narrow ridge tops. Old and young Meghna estuarine floodplain soils are highly silty. Predominate soils adjoining the northern and eastern hills are mainly loamy. Rut clays occupy adjoining Basins and are extensive on parts of the Chittagong coastal plain. Peat occupies some deep basins, specially in the south-west.

Almost all flood plain soils are subject to seasonal flooding. Depth of flooding varies. It is shallow in the north, west, east and south, deeper in the centre and shallower on the ridges than in basins. The highest ridges in the north and west lie above the flood level. Other ridges are normally flooded and waterlogged throughout the rainy season. They drain rapidly in October-November. Basins drain more slowly. Many basin centres remain wet for part and all of the year.

Floodplain soils, except for sandy ridge soils and some basin clays, generally retain moisture well during the first half of the dry season. Silty Tista depression soils retain moisture throughout this season. The plough-pan impedes root penetration in many soils and can cause surface waterlogging which can be harmful for dryland rabi crops. Permeability below the plough-pan is generally moderately slow to slow (exception sandy or loamy ridge soils).

(2) Terrace Soils

The major terrace soils are grey, poorly drained occupying most of the Barind tract and parts of the Madhupur tract. They have silty top soils, usually with a compact plough-pan. They overlie either red mottled, clay or grey, impervious, clay at 15 to 45 cm depth. The silty layer is acidic. The clay substratum varies from strongly acidic to calcareous in different soils. Moisture retention capacity is low. Top soils are easily puddled to retain water on the soil surface.

Red and brown, friable loams occupy most of the Madhupur tract and the north-east margin of the Barind tract. Some are deep over a red mottled, clay substratum, others are shallow over grey, impervious Madhupur clay. They are strongly acidic and have a relatively low moisture holding capacity.

Associated valleys on the Madhupur tract have either grey, silty soils or dark gray heavy clays, locally with peat layer. These soils are strongly to extremely acidic. The silty soils are seasonally shallowly flooded and droughty in the dry season. The clays are subject to deep flooding and some remain wet almost throughout the dry season.

(3) Hill Soils

The soils are mainly steep, brown and loamy over brown hard or soft rock. There are small areas of redder soils with or without a red mottled substratum mainly on level to rolling relief. All hill soils are medium to very strongly acid, moderately rapidly permeable and have a relatively low moisture storage capacity. Associated small valleys mainly are seasonally flooded, silty or sandy soils and locally peaty soils

2.2.2 Soil Conditions

(1) Floodplain Soils: Floodplain soils occupy 9,719,000 ha or 67.1% of the national land. They consist of 13 Great Soil Types of which conditions are outlined below.

1. Calcareous Alluvium (4.1%): Raw or stratified alluvium; calcareous although topsoil, subsoil & substratum or within 125 cm from surface.
2. Noncalcareous Alluvium (3.9%): Raw or stratified alluvium; not calcareous or sulphitic within 125 cm from surface.
3. Calcareous Brown Floodplain Soils (3.3%): Floodplain ridge soils, moderately well to imperfectly drained, presence of well oxidized cambric B horizon, calcareous although or within 125 cm depth from surface.
4. Calcareous Grey Floodplain Soils (1.2%): Seasonally flooded soils with a cambric B horizon, calcareous throughout or within 125 cm depth from surface.
5. Calcareous Dark Grey Floodplain Soils (9.9%): Seasonally flooded soils with a cambric B horizon, calcareous within 125 cm depth.
6. Noncalcareous Grey Floodplain Soils (23.4%): Seasonally flooded soils with a cambric B horizon, not calcareous within 125 cm depth.
7. Noncalcareous Brown Floodplain Soils (2.6%): Moderately well to imperfectly drained floodplain ridge soils. Presence of well oxidized cambric piedmont plains have a thick dark brown top soil and are transitional to Black Terrai Soils.
8. Noncalcareous Dark Grey Floodplain Soils (11.0%): Soils similar to Noncalcareous Grey Floodplain Soils but with a gray cambric B horizon and/or dark grey gleyans.

9. Black Terrai Soils (0.6%): Imperfectly to poorly drained soils with a very dark brown to black topsoil more than 25 cm thick. A brown cambric B horizon occurs in soils where the dark A horizon is less than about 90 cm thick.
10. Acid Basin Clays (2.4%): Poorly or very poorly drained. Grey or dark grey heavy clays with cambric B horizon.
11. Acid Sulfate Soils (1.6%): Poorly or very poorly drained, grey or dark grey colored with or without a cambric B horizon. Actually or acid (pH 3.5) within 125 cm depth. Associated with present or former Sunderban forest areas. Mainly saline.
12. Peat (0.9%): Very poorly drained soils. Organic matter comprises all or more than half of the upper 80 cm depth.
13. Grey Piedmont Soils (1.5%): Imperfectly to poorly drained soils in piedmont alluvium. Similar to noncalcareous grey floodplain soils.

(2) Hill Soils: Hill soils occupying 1,561,000 ha or 10.8% are represented by Brown Hill Soils as mentioned below.

14. Brown Hill Soils (10.8%): Excessively to moderately well drained. Yellow - brown to strongly brown (locally red brown) colored. Cambric or argillic B horizon except where very shallow). Overlie soft or fragmented rock at 50-100 cm depth.

(3) Terrace Soils: Terrace soils occupy 1,028,000 ha or 7.1% of the national land. They consist of 6 Great Soil Types of which main three soil groups are explained below.

15. Shallow Red-Brown Terrace Soils (0.5%) : Moderately well to imperfectly drained. Olive-yellow to strongly brown colored. Cambric or argillic B horizon overlying grey, heavy, Madhupur clay at 25-60 cm depth.
16. Deep Red-Brown Terrace Soils (1.3%): Well-drained to moderately well-drained. Red to yellowish brown colored. Cambric or argillic B horizon overlying a strongly red mottled previous clay substratum.
17. Brown Mottled Terrace Soils (0.3%): Imperfectly drained. Similar to Deep Red-Brown Terrace Soils but with a strongly mottled pale brown and red subsoil overlying the dominantly red-mottled substratum.

2.2.3 Present Land Use

The land use in Bangladesh is governed by climate, physiography (relief & drainage), hydrology and soil conditions.

The depth and duration of seasonal flooding of the soil during the rainy season determine whether wetland crops such as rice or jute or dry land crops such as tree crops, kharif (summer) vegetables, groundnuts can be grown in the monsoon season. In some areas, they determine whether kharif crops can be grown at all. Some basins are too deeply or rapidly flooded even for deep water rice, and rapid flow of flood water may damage crops on land near major rivers and in piedmont areas.

Depth of flooding mainly determines whether transplanted or broadcast (deep water) Aman rice is grown. Depth and nature of flooding also determines whether deep-water Aman is grown alone or mixed with Aus. The mixed crops are usually grown on ridges and basin, margins which are too deeply (or late) flooded for transplanted Aman to be grown following Aus or jute.

Depth and nature of flooding also influence jute cultivation. The higher quality olitorius variety is mainly grown on ridge soils that are flooded late or shallowly. The capsularis variety which is more tolerant of deeper flooding is often grown on such land too, because it has a shorter growing period and can be followed by transplanted Aman. Flood duration partly determines the kinds of dry season crops that can be grown, if any : rice; early or late rabi crops; long-term or short-term rabi crops.

Soil conditions include drainage and moisture holding capacity, ploughpan, fertility, salinity & toxic conditions. Drainage and moisture holding capacity are the most importance soil factors of crop production. As stated above, these factors partly determine whether rabi crops can be grown or not how soon they can be sown and whether long term-crops such as wheat or only short-term crops such as mustard, khesari, Linseed etc. can be grown.

Ploughpan which is present in most soils at a depth of about 5 to 10 cm below the soil surface, is a desirable soil property where transplanted Aman rice is grown, especially without irrigation (with the rain water). But it is undesirable for the cultivation of dryland rabi crops specially under irrigation. Because it obstructs both root and water penetration.

Soil fertility is seldom a factor for determining choice of crops but differences in soil fertility

influences crop yields. Salinity is generally not a major problem though reduces crop yields. Toxic conditions are of minor importance locally in former Kusthia & Jessore districts. There are minor patches of alkali soils occurring scattered in floodplain ridges in those two former districts. But they are rare in coastal areas. Toxic acid sulfate soils occur patchily in the present Cox's Bazar district and in former Khulna district coastal areas.

2.2.4 Major Soil Constraints

(1) Floodplain Soils

i. Permeability : low in basin clays and in most ridge soils which are puddled for cultivating transplanted wetland paddy. Exceptions occur in the cracking clays of the Ganges River Floodplain and in the loamy ridge soils where t paddy is cultivated without pudding the soils. These soils have moderate or rapid permeability.

ii. Moisture holding capacity : low in most basin clays, some sandy ridge soils, shallow soils overlying sands, most soils which top soils are puddled for t paddy and which are underlain by plough.

iii. Organic matter : low in recent alluvium and in most ridge soils

iv. Soil pH: Subsoils mainly are more strongly acid in some piedmont and basin soils and are more alkaline in calcareous layers of Ganges River flood soils.

v. Micro-nutrient deficiencies : commonly in sandy soils, Zn deficiencies are reported .

(2) Hill Soils

i. Permeability - moderately to rapidly permeable

ii. Moisture holding capacity-low

iii. Organic matter - low in soils that are repeatedly used for shifting (jhum cultivation.

iv. pH - strongly to extremely acid.

v. Slope - agricultural potential is limited by steep slopes which is deteriorated and aggravated by the heavy monsoon rainfall. Soil fertility is further depleted by shifting (jhum) cultivation.

vi. Terrace - Terrace making for the cultivation of field crops is difficult and impractical for most soils because of lack of suitable materials for making retaining walls and for creating the risk of land erosion through landslip and

landslides.

(3) Terrace Soils

i. Permeability - rapid in deep red and brown soils and in the subsurface layers of deep grey terrace and valley soils; moderate or slow in shallow red-brown soils; slow in shallow grey soils and in the puddled top soil of other soils which are used for paddy.
ii. Moisture holding capacity - low except for deep rooting crops on Deep Red Brown Terrace Soils under forests.
iii. Soil pH - Most soils are strongly to very strongly acid throughout; acidity decreases in the heavy clay underlying shallow soils.

2.3 Major Soils of the Study Area

2.3.1 Major Soil Associations and Soil Series of Greater Comilla

Greater Comilla comprises an area of 6,716 km^2 of which former Brahmanbaria, Comilla Sadar North & South and Chandpur subdivisions constitute 1,922 km^2 (29%), 3,090 km^2 (46%) and 1,704 km^2 (25%) respectively. According to reconnaissance soil survey carried out by SRDI, Greater Comilla is divided into 10 physiographic units as shown in Table B.2.5. The physiographic unit old Meghna estuarine floodplain/old Brahmaputra floodplain occupies the maximum area of 55% followed by Middle Meghna floodplains, Sub-recent and Recent Piedmont apron, Lower Meghna river floodplain, Sylhet basin occupying 11.8%, 7.0%, 5.4% and 4.2% respectively. In these 9 physiographic units, 96 soil associations have been shown in the soil association maps of the greater District of which Brahmanbaria composes 39, Comilla Sadar N & S 36 and Chandpur 21 soil associations. In Brahmanbaria, 54 soil series and 2 miscellaneous soil types, in Comilla Sadar N & S 38 soil series and in Chandpur 21 soil series have been recognized totaling to 115 soil series for the greater district. (Figure B.2.1)

2.3.2 Soil Associations and Soil Series of the Study Area

(1) Debidwar

Debidwar is occupied by 6 soil associations with the total area of 88.1 km^2 (Figure B.2.2). The major soil associations are number 21, 24, 11 which occupy 31.3%, 20.8% and 12.5% respectively. The important soil series are Tippera, Jalkundi and Debidwar.

Tippera Series --- Seasonally flooded, moderately well to poorly drained soils. They occur on the almost level ridges of the floodplain. They are olive to olive - gray, friable, silt loam. They are used for mixed Aus/jute and Aman - Rabi crops.

Jalkundi Series --- Seasonally flooded, poorly drained, medium to moderately fine fixture. They occur on the ridges of floodplain. They are characterized by a gray to dark gray friable silt loam to silty clay loam top soil overlying a light olive gray, mottled olive-yellow and brownish yellow, friable, silt loam or silty clay loam. They are used for mixed Aus and Aman -- Rabi crops.

Debidwar Series --- Seasonally flooded, poorly drained. They occur in shallow and deep broad basins in the floodplains. They are grey silty clay loam to silty clay top soil overlying a mixed grey and yellowish brown silty clay loam subsoil. They are used for mixed Aus and Aman - fallow.

(2) Kachua

The area occupied by the soil associations is 122.1 km^2 (Figure B.2.3). The major soil associations are number 15, 5a, 13 and 10 which occupy 62.5%, 27.4%, 23.5% areas respectively. The important soil series namely Burichang, Godnail, Nabinagar are briefly described as follows :

Nabinagar Series —-.Seasonally flooded, poorly drained. Flooded upto 150-210 cm for 5-6 months during the rainy season. They occur in the basin sites in the floodplain. Top soil is dark grey to very dark grey silty clay to clay overlying a mixed grey (or olive) and yellow-brown very firm subsoil. The are used for mixed Aus and Aman-fallow

Burichang Series —Seasonally flooded, poorly drained. Flooded upto 150-210 cm for 5-7 months during the rainy season. They occur extensively on the basin bottoms. They are dark to very dark silty clay loam to clay top soil overlying a very dark grey to very dark grayish brown silty clay loam to silty clay subsoil. The are used for B. Aman -fallow

Godnail Series --- Seasonally flooded, poorly drained. Flooded upto 240-300 cm for 5-6 months during the rainy season. They occur on the lower slopes of old levees. They are dark grey to very dark grey silt loam to silty clay loam top soil about 8-12 inches thick overlying a dark grey to olive-grey mottled yellowish brown, silt loam to silty clay loam subsoil. The are

used for mixed Aus and Aman - follow.

(3) Bancharampur

The area occupied by the 6 soil associations 30.9 km^2 (Figure B.2.4). The major soil associations are number 5, 9, 1, and 8 which occupy 42%, 30.4%, 18%, and 6.1% area respectively. The important soil series namely, Fuldi, Bancharampur, Borda are described briefly as follows :

Bancharampur Series --- Seasonally flooded, poorly drained. Flooded upto 180-210 cms for about 4.5 months in the rainy season. Sub-soil is mixed gray and brown, friable silt loam. The are used for B. Aman - Rabi crops.

Borda Series --- Seasonally flooded, poorly drained. Flooded upto 240-360 cm in the rainy season. They occur in and on the edge of broad basins in the floodplain. The subsoil is grey mottled yellowish brown and compact clay. The are used for B. Aman or jute.

Fuldi Series --- Seasonally flooded, poorly drained. Flooded upto 120-150 cms for 4-5 months during the rainy season. They occur on upper to middle slopes of levees in the floodplain. The subsoil is light grey to olive-grey, friable silt loam to silty clay loam. The are used for mixed Aus/jute and Aman-Rabi crops/follow.

(4) Nabinagar

The area occupied by the 4 soil associations is 52.4 km^2 (Figure B.2.5). The major soil associations are number 15, 6, and 1 which occupy 85%, 11.8%, and 2.5% respectively. The important soil series Barura, Dhamti are described briefly as follow :

Barura Series --- Seasonally flooded, poorly drained. Flooded upto 90-180 cm for 3-5 months during the rainy season. They occur in the ready level to very gently undulating shallow basins. They are dark grey to dark olive grey very friable silt loam top soil overlying a very dark grayish brown friable silt loam subsoil. The are used for mixed Aus and Aman/jute-Rabi crops/follow.

Dhamti Series --- Seasonally flooded, poorly drained. They are dark grey to black silt loam to silty clay loam top soil overlying a dark grey to black, friable silty clay loam subsoil. The are used for mixed Aus and broadcast Aman-rabi crops.

2.4 Present Land Use of the Study Area

2.4.1 Cropping System and Land Use

The cropping patterns, crop growth and cultivation practices are mainly influenced by the climate and topography of the area, depth and duration of flood in the monsoon season, and drainage, moisture content, salinity and fertility of the soil. The cropping patterns also depend on the selection of crops by farmers, depending on the easy availability of input supply such as irrigation water, fertilizers, and insecticides and also on the availability of credit and marketing facilities as and when required.

Paddy is the most important food crop, extensively grown in the area. In the greater Comilla district triple and double crops are mainly grown over a large area nearly 60% with some single crops growing in low-lying areas. The triple crop are Aus/Jute - T. Aman - Rabi crops, mixed Aus and Aman - Rabi crops, while the double crops are growing as mixed Aus and Aman, mixed Aus/Jute and Aman or Aus/Jute - T. Aman. The major Rabi crops grown in the district are Boro, wheat, pulses, oilseeds, potato and vegetables.

The triple and double cropping patterns are mainly grown in Chandpur and Comilla districts, covering more than 60%, while double and single cropping patterns are mainly practiced in Brahmanbaria district, occupying almost 60% of the area.

The medium high land occupies an extensive area in the greater Comilla district. It is relatively high flood plan ridge which is shallowly flooded by flood or rain water upto 30 - 90 cm deep in which case Aus - T. Aman - Rabi crops/fallow is the main common practice.

The medium low lands occupy moderately deeply flooded ridges or depressions, having 90 - 180 cm deep flooding during monsoon. Here mixed Aus and Aman /B. Aman/ Jute is the usual practice, generally followed by rabi crops, especially chilies in the northern part of the district. While in the relatively less deeply flooded ridges Aus/jute-follow is generally practiced.

Low land or very low land depression is subjected to deep flooding from 180 - 270 cm or very deep flooding from 270 - 360 cm or more in the monsoon and slow drainage in the dry season. Such land type is not very extensive and is suitable for growing B Aman/jute. Boro is locally grown in the low land where dry season irrigation is possible. Due to introduction of low-

liftpumps, it is now practiced in basin sites which normally become dry in the later part of the dry season.

2.4.2 Land Use Association

Land Use Association are the one or more combination of single, double or triple cropping systems practiced in various land patterns throughout the year. The crop patterns, initiated for this type of association, have been classified mainly on the basis of land types, depending on the flooding depth and duration, and also on the soil types, the characteristics of which mainly influence the sustenance of different crops in the area. The land use associations have been subdivided into major cropping patterns, present in a particular area, omitting the minor crops which vary from season to season in a year. The land use information has been collected, not on the basis of sample survey, but on the estimates made during the soil survey by interviewing local farmers and interpretation of aerial photos.

As many as 16 land use associations have been recognized in the surveyed area of the greater Comilla district. All these associations include one or more number of 10 different cropping patterns. The patterns are : Aus/Jute - T. Aman - Rabi, mixed Aus and Aman - Rabi, Aus/Jute - T. Aman, mixed Aus and Aman, B. Aman/Jute - Rabi, and single crops like, T. Aman, B. Aman, Boro, Rabi, Grassland. The areas and the percentages of the total area of each association have been indicated in Table B.2.6. The estimates indicate that the predominantly triple, double and single cropped land associations (each system occupying 80% and above of the unit area) occupy 10.9%, 6.8% and 3.4% respectively of the total area of the district. The mainly triple, double and single cropped land associations (each system occupying 60% to 80% of the unit area) occupy 12.2%, 4.8% and 9.0% respectively of the total area. The triple and double cropped land, triple and single cropped land, double and single cropped land, and the single and triple cropped land associations (each pattern has almost equal share of 50%) occupy, 20.6%, 1.1%, 5.2% and 3.9% respectively of the total area. The various categories of association thereby indicate that the predominantly triple and mainly triple cropped land units occupy the maximum area of 23.1%, while the triple and double cropped land unit occupies 20.6% of the total area which is more or less equal to the former land ares. The remaining 30.2% of the area has mixed cropping systems as mentioned earlier of which single crops like Boro, B. Aman are predominantly grown in 3.4% of the area.

2.4.3 Present Land Use

(1) Debidwar

The Reconnaissance Soil Survey Report at the Comilla District, published by the SRDI in 1965 indicates that in this upazila the major cropping patterns are triple and double crops (Figure B.2.6). Of the total area of the district, about 49% area is occupied by triple cropping patterns, such as Aus/Jute - T Aman - Rabi crops and mixed Aus and Aman - Rabi crops. The double cropping patterns are Aus/Jute - T Aman and mixed Aus/Aman which mainly occupy 35% of the total area. The triple cropped lands in the Debidwar upazila constitute nearly 42% of the area which are mainly good with some very good agricultural lands. The remaining triple cropped land and the entire double cropped land are mainly moderate agricultural lands.

According to the Report of the SRDI, four land use associations occur in the Debidwar upazila, namely predominantly triple cropped land, mainly triple cropped land, mainly double cropped land, and triple plus double cropped land. The triple cropped area nearly 49 %) dominate the double cropped area 35%). The main causes of the overwhelming triple cropping patterns in this upazila are due to distinctive characteristics of a major part of soils, developed in medium to moderately fine textured soils of old Brahmaputra flood plain, occupying almost level ridges to broad basins. On the shallowly flooded land, Aus or Jute followed by transplanted Aman and Rabi crops in the main practice. On the moderately deeply flooded land, mixed Aus and Aman, usually followed by Rabi crops, is the main practice, which the deeply flooded land generally produces mixed Aus/Jute and Aman.

(2) Kachua

SRDI indicated in 1965 that in this upazila the major cropping patterns, unlike the Debidwar upazila, are double and simple crops of the total area of the district, nearly 38% area is occupied by double cropping patterns, such as, Aus/Jute - T Aman and mixed Aus and Aman (Figure B.2.7). The simple cropping problems are B. Aman or Rabi crops which mainly occupy about 29% of the total area. The remaining 13% area is occupied by triple cropping patterns (Table B.2.7). The double cropped lands in the Kachua upazila are mainly good agricultural lands, extended to 36% of the total area. The simple cropped lands are mainly moderate agricultural lands, which are mainly deeply flooded and partly slow drained in the dry season. The triple cropped lands are good to moderate agricultural lands.

SRDI also indicated that five land use associations occur in the Kachua upazila, namely the main double cropped land, mainly simple cropped land, double and simple cropped land, triple and single cropped land, and triple and double cropped land. The double cropped land (about 35%) dominates the single cropped land (nearly 29%) and triple cropped land (almost 13%).

The reasons of practicing more of double cropping patterns in this upazila are due to the presence of moderately deeply flooded lands. A rare of the land has slow draining phase in the dry season and is mainly suitable for B. Aman or Rabi crop only.

(3) Bancharampur

According to the SRDI Reports, published in 1965, the major cropping pattern in this upazila is the double pattern with almost equal share of triple and single patterns (Figure B.2.8). Of the total area of the district, about 59% area is occupied by double patterns, such as, B. Aman - Rabi and Aus/Jute - T. Aman. The triple patterns occupying nearly 20% of the area, are Aus/Jute, T. Aman - Rabi and mixed Aus and Aman - Rabi. While the simple cropping patterns, extending over 22% of the total land area, is B. Aman/Jute. The double cropped land in the Bancharampur upazila are mainly moderate to poor agricultural land. Some food agricultural land with shallow flooding depth is predominantly are triple cropped lands.

There are six land use associations in the Bancharampur upazila. These are predominantly triple cropped land, mainly double cropped land with or without some triple cropped land, triple, double - single cropped land, single triple cropped land, double single cropped land (Table B.2.7). The double cropping patterns, occupying nearly 59% of the total area, exceeds the lands of triple (20%) and single (22%) patterns. The major dry area of the double cropped land is attributed due to the presence of more moderately deeply to very deeply flooded lands, subjected to flood upto 6 - 12 ft for 3 - 5 months in the monsoon season.

(4) Nabinagar

The SRDI Soil Survey Report, 1965 shows that the major cropping patterns in this upazila in the triple pattern, while the double and single patterns exist almost in equal preparation (Figure B.2.9). Of the total area of the district, nearly 42% area is covered by double crops, such as, B. Aman - Rabi or mixed Aus and Aman. The triple patterns occupying about 21% of the area area Aus/Jute, T. Aman - Rabi or mixed Aus and Aman - Rabi. The single crops occupying normal 23% of the Aus and generally grown as B. Aman, Jute or Boro crops. The lands dominated by to gather with triple crops and mainly moderate with good agricultural lands, which the lands covered by single crops are mainly poor to very poor agricultural lands.

In the Nabinagar upazila five land use associations exist. These area predominantly triple cropped land, predominantly single cropped land. Mainly double cropped land, triple and double cropped land, and single and triple cropped land (Table B.2.7). The triple cropping