Assigned by the Ministry of Agriculture, Forestry and Fisheries

Report on the Survey of Rural Population and Agricultural Development in Asian Countries
– Bangladesh –

FEBRUARY 1990

The Asian Population and Development Association

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THE ASIAN POPULATION AND DEVELOPMENT ASSOCIATION, 1990
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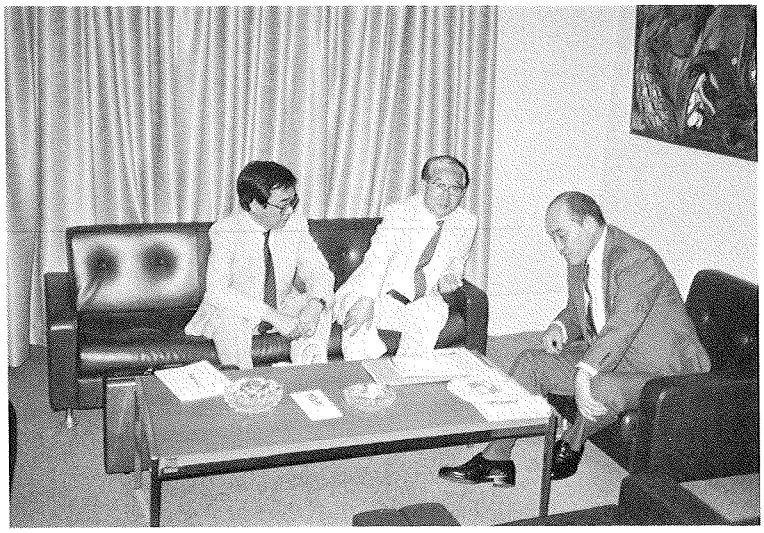
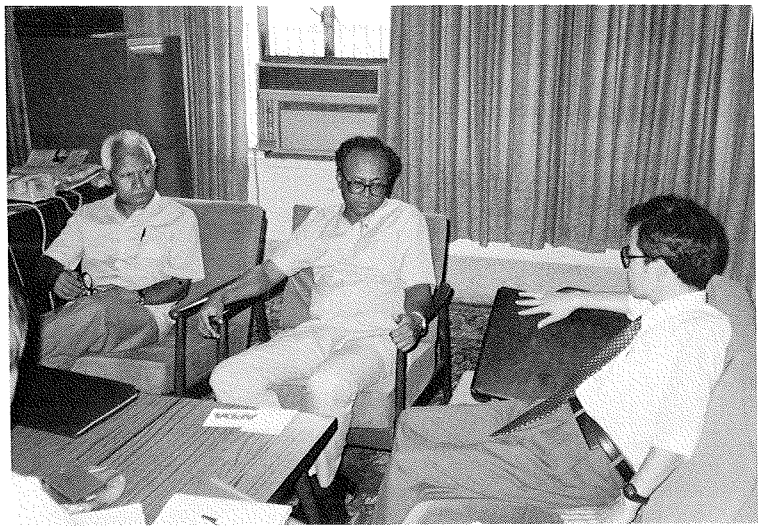


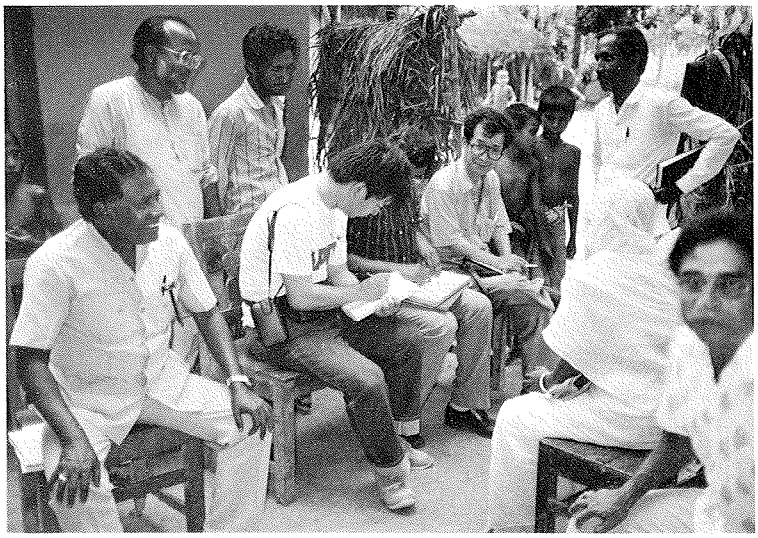
◀ Courtesy call to Embassy of Japan
From right:
Ambassador Takeo Iguchi
Mr. Tsuguo Hirose, Chief of preliminary research team
Mr. Masaaki Endo

Visit to Ministry of Agriculture ▶
From right:
Mr. A. Rahim, Director of Nutrition BARC
Dr. Yonosuke Hara, Chief of field survey team
Dr. Tomomi Otsuka
Mr. A. Hashem, Additional Secretary, Ministry of Agriculture
Mr. H. Rahman, Deputy Director of Ministry of Health and Family Planning
Mr. F. Khan, Assistant Secretary, Ministry of Agriculture

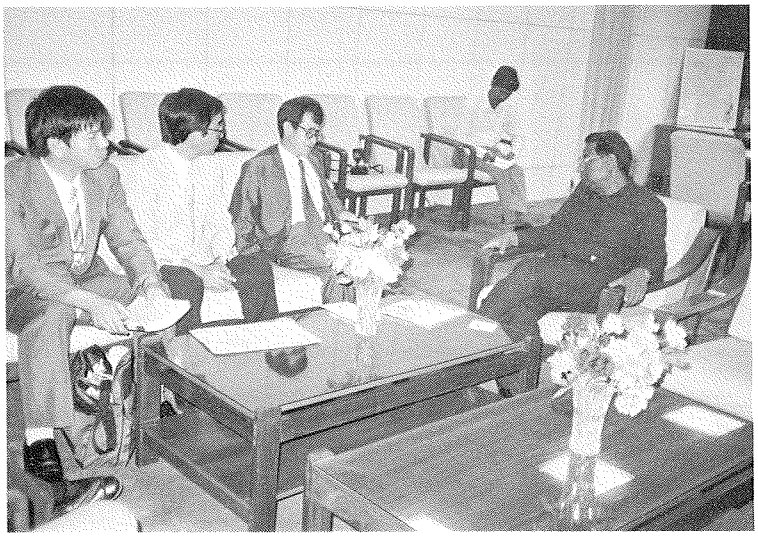


◀ Bangladesh Institute of Development Studies (BIDS)
From right:
Dr. Yonosuke Hara, Chief of field survey team
Mr. M. Hassain, Director General
Mr. A. Rahim, Director of Nutrition, BARC

◀ At Lampur village, Comilla District
Interviewing the village chief



At Paka village, Comilla District ▶
Interviewing the villagers



◀ Presentation of the report on survey result
at Ministry of Health and Family Planning
Prof. M. A. Matin, Deputy Prime Minister
Dr. Yonosuke Hara, Chief of field survey team
Mr. Masaaki Endo
Dr. Tomomi Otsuka

Foreword

The following report represents the results of a "Survey of the Rural Population and Agricultural Development in the Asian Countries," consigned by the Ministry of Agriculture, Forestry and Fisheries in 1989, and entrusted to be implemented by the Asian Population and Development Association (APDA) for Bangladesh. The survey and compilation of the results were carried out mainly by members of APDA's survey committee (Chairperson: Dr. Shigeto Kawano, Professor Emeritus, the University of Tokyo).

The survey was conducted to pursue the following objective: In extending cooperation in terms of rural and agricultural development to Asian countries, it is necessary to give due considerations to enhance productivity, to develop rural community, and to improve the standards of rural life. In particular, special note must be taken to assist in sustenance of rural population carrying capacity. For this goal, a field survey will be conducted in a model district selected from among the Asian nations to determine the rural community and agricultural development programs to be implemented, with the objective of maintaining and enhancing the population carrying capacities. The results will establish a guideline for Japan's international cooperation in the area of agriculture, forestry and fisheries.

The field survey in Bangladesh was conducted with the guidance and cooperation of Deputy Prime Minister M.A. Matin, and the members of the Japanese Embassy in Bangladesh, Mr. Takeo Iguchi, Ambassador, Mr. Minoru Nakano, First Secretary. Also, the Bangladesh Agriculture Research Council extended their support in the implementation of the survey. In Japan, members of the International Cooperation Division, Economic Affairs Bureau, the Ministry of Agriculture, Forestry and Fisheries, and Aid Policy Divisions, Economic Cooperation Bureau, the Ministry of Foreign Affairs, cooperated in the guidance of the survey substance and arrangement of the field survey. I would like to extend my deepest gratitude to these people.

I sincerely hope that this report would hopefully contribute to the advancement of the rural community and agricultural development programs in Bangladesh, as well as support the Japanese Government's cooperation there in an effective manner. Furthermore, I would like to note that this report was compiled by and is the sole responsibility of APDA, and does not reflect any views nor policies of the Ministry of Agriculture, Forestry and Fisheries or the Japanese Government.

February, 1990

Tatsuo Tanaka
Chairman
The Asian Population and
Development Association

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Chapter 1

Overview

1. LLDCs: Supported by Foreign Aid

With a population in excess of 100 million, Bangladesh is largest among the world's LLDCs (least less-developed countries). It accounts for roughly thirty percent of the entire LLDC population and its per capita GNP is a mere US$160 in 1987. Moreover, the annual growth in GNP is a meager one percent (1980-1987 annual average) as against a 2.6 percent annual increase in the population. As a result, virtually all of the increased GNP is literally offset by the swelling population.

Even this nominal economic growth is dependent on economic assistance from many foreign countries including Japan. The trade balance shows a perennial deficit, and the international balance of payments which makes up this deficit is paid for partly through remittance from overseas with the remainder financed exclusively through foreign aid. In addition, 45 percent of government expenditures, 65 percent of aggregate investment, and 55 percent of imports are accounted for by foreign aid.

The consumer price index continues to increase at around an annual 10%, (1985 - 10.7%; 1986 - 11.0%; 1987 - 9.5%), and total foreign debt, US$5,968 million in 1985, US$7,272 million in 1986, and US$8,851 million in 1987, continues to mount each year.[1)]

A number of fundamental factors can be cited as reasons for Bangladesh's heavy reliance on foreign aid, but perhaps the most pertinent is geography: Bangladesh consists for the most part of the giant delta of the Ganges River, whose frequent flooding results in a fickle and unpredictable natural changes, which holds no promise of being subdued. Major floods in 1987, and particularly in 1988, the like of which hadn't been seen in a hundred years, depleted the country's food production, and created a crisis which required a further increase in foreign assistance through the provision of food relief. The major issue concerning Bangladesh then must be how to make the best use of foreign aid in order to stabilize the economy and get the country onto a path of development.

The last three five-year plans have been devised with precisely this in mind. The most recent of these plans commenced in 1985/86 and included the following five objectives: (1) increase the growth rate of GDP to an annual 5.4% within five years; (2) achieve self-sufficiency in food production, in other words eliminate the dependency for one tenth of its food supply upon foreign assistance and imports; (3) lower the birth rate; (4) expand employment opportunities; (5) secure a minimum acceptable standard of living by achieving these four objectives.

For this purpose, the IMF and the World Bank have, since 1986/87, been working together in an attempt to carry out tax reforms aimed at

eliminating the dependence on tariffs. This is to be achieved by promoting industry, expanding exports, and streamlining administrative functions, in addition to boosting food production through policies such as increasing irrigation facilities.

2. Economic Cooperation from Japan

The balance of trade between Bangladesh and Japan has constantly and overwhelmingly been in Japan's favor. This stems from the fact that while there is very limited demand in Japan for Bangladesh's primary export commodity, much of the machinery and heavy industry products which contribute to that country's economic development, originate in Japan. Actual figures for 1988 show that Japan exported US$280 million to Bangladesh, while imports amounted to only US$85 million.

On the other hand, Japan's official development assistance to Bangladesh in 1987 totaled US$334.2 million. This put Japan in number one position among major assisting nations with a 36.7 percent share of total bilateral assistance to Bangladesh. The total figure breaks down into US$136 million in grants, and US$198 in government loans, of which grant is further broken down into voluntary funding cooperation amounting to US$125 million and technical cooperation valued at US$11.3 million.

Projects financed through onerous credits include mainly energy, cotton industry, and telecommunication projects. In the area of agriculture, the construction and repair of fertilizer plants in Chitagon, Jamna, and Gorasal is also noteworthy. Gratuitous financial assistance is applied mainly in the areas of agriculture or food supply; the most direct example is food aid in the form of rice, the provision of fertilizers and farming machinery to boost food production, and general gratuitous assistance in regard to irrigation equipment. In fiscal 1988, technical cooperation included accepting the enrollment of 1,333 trainees, as well as sending 395 specialists, 340 members of survey teams, and 1,090 overseas volunteer youths to Bangladesh.

Since 1971, food aid has been an element of Japan's foreign assistance to Bangladesh each year. For this purpose Thailand rice and the United States wheat were supplied. The construction and maintenance of irrigation equipment has received a large amount of assistance. Gratuitous assistance regarding in the form of deep-well excavation equipment in 1973 and the planning of shallow-well excavation in 1976, was reported to amount to ¥390 million and ¥920 million respectively. Also, gratuitous assistance applied towards irrigation facility rehabilitation projects in Narayanganji/Narushinji was provided amounting to ¥105 million in 1987, and ¥536 million in 1988.

Note

1) Ministry of Foreign Affairs, "Japan's ODA," 1989

Chapter 2

Outline of Agricultural Economy

1. The Importance of Agriculture to the National Economy

Agriculture is by far the most important industry in the Bangladesh economy in terms of industrial, trade and employment structure. It is the most important production sector, accounting for around 50 percent of the country's gross domestic product. Moreover, with approximately three out of four workers in Bangladesh being employed in the agricultural sector, it also plays a decisive role in providing job opportunities for Bengalis. Furthermore, since agricultural and marine products account for about 80 percent of Bangladesh's exports, it is clear that agriculture is also an important means of gaining foreign currency.

A comparison of Bangladesh with other countries at about the same stage of development reveals that it has the highest population density in terms of (1) total population per area of cultivated land; and (2) farm population per area of cultivated land (Table 3-1). It can be said that the demographic pressure on cultivated land has now reached its limit. Moreover, as the yield of paddy per area of cultivated land shows, the level of agricultural technology in Bangladesh is by no means higher than that found in other Asian countries. As will be discussed later, one of the biggest problems facing agriculture in Bangladesh is that technological innovations in this area are difficult because of the restrictions the ecosystem imposes. Moreover, the large-scale reconstruction of agriculture is also difficult because Bangladesh's ecosystem is conditioned by the existence of flood plains along the lower reaches of its two great rivers. Rainfall frequently triggers large floods and makes agricultural production unstable, which in turn strongly influences Bangladesh's economic performance. This largely accounts for the vulnerability of its national economy.

Below is a general review of the present state of agriculture in Bangladesh.

First, with regard to the scale of its domestic production, the country produces a total of about 17 million tons of grain, 15 million tons of which are in rice, and only about 1.2 million tons in wheat. Of the approximately 17 million tons of grain produced domestically, about 10 million tons are consumed by the producers; the rest (7 million tons) is distributed through the market. Of the latter, 6 million tons are in rice, and 0.7 million tons are in wheat. Meanwhile, the total domestic demand for grain is about 18.6 million tons. Thus, with domestic production, there is a shortage of about 2 million tons of grain every year, forcing Bangladesh to rely on food imports and food aid from foreign countries. These outside sources provide around 20 kgs. of grain to each person in Bangladesh. In terms of 1986 performance, 12 kgs. of grain per person were imported and the same amount per person was provided in the form of food assistance from foreign countries --

the highest level of reliance in the Asian region. The caloric intake per person is only about 1,900 kcal/day -- the lowest level among the developing countries. Approximately one out of three Bengalis is said to be suffering from malnutrition, and since about 85 percent of their caloric intake is derived from grain, they are especially undernourished in proteins and vitamins.

2. Agricultural Production Adapted to the Ecosystem

In Bangladesh, agricultural production is even now undertaken basically through passive adaptation to its peculiar ecosystem. The latter is determined by topography and rain. Hence, agriculture can not be easily changed by human efforts at reconstruction. As a result, agricultural production in Bangladesh has been traditionally based on the wisdom of its farmers and undertaken in a way which is suitable to its unique ecosystem.

Topographically, among other things, Bangladesh is characterized by flood plains that run downstream along the Ganges River and the Brahmaputra River, and by deltas and tidal deltas formed by low, swampy areas and rivers. Over this alluvial soil countless numbers of rivers, large and small, run in all directions. This region is just barely above sea level, but because the water level fluctuates considerably from the dry to wet seasons, as will be examined later, farmers in this region have devised various ways of growing rice that are adapted to even the slightest difference in the water level.

Most of Bangladesh consists of low-land deltas, as noted above. The only areas well above sea level are the hilly country of Chittagong in the east and that of Sylhet in the north. In the Chittagong hilly country, the bamboo forests that cover the slopes are periodically opened up to jim cultivation (the so-called slash-and-burn farming), and the alluvial flood plains running through the valley serve as permanent cultivated land. And along the hilly country of Sylhet and that of Chittagong are flat lowlands consisting of a clay loam layer resembling the soil of an old alluvial terrace. Since water in this area drains relatively well, the area has been developed for truck farming (Fig. 3-1, Fig. 3-2).

Annual precipitation in Bangladesh increases from 1,500 mm in the west to about 3,000 mm in the east and north, that is, in Sylhet and Chittagong, respectively. In terms of rainfall, the climate in Bangladesh can be divided into three seasons: the dry, or rabi, season, from November to March, the premonsoon, or bhadoi, season, from April to May, and the rainy aghani season, from June to October. Nearly 80 percent of Bangladesh's annual precipitation is concentrated in the rainy season. The annual rainfall varies considerably from region to

region, but by season there is no significant difference in the distribution of rainfall between the regions.

In considering agriculture in Bangladesh, the important fact is that rainfall between the premonsoon season and the beginning of the rainy season is uncertain. Extreme fluctuations in rainfall in this period make agricultural life unstable and risky. In addition, the outbreak of cyclones, floods and droughts also imposes severe restriction on the agricultural production.

(1) Rice Growing in the Delta

This section examines agricultural production activities by season in the delta plain areas, the center of Bangladesh agriculture. Agricultural production activities by season are basically influenced by the possibility of water utilization based on the distribution of rainfall by season and by the position of the farmland concerned. First, the following three rice-growing periods are observed according to the three seasonal divisions based on period and amount of rainfall (Fig. 3-3):

1) The rabi season corresponds to the dry season from the end of October to March or April. In this period, only about 30 percent of the area under cultivation is planted, but many kinds of crops are cultivated on "dry land" and irrigated land, the former by relying principally on water stored in the soil during the rainy season. During the rabi season, wheat, oil seeds, beans, vegetables and tobacco are among the farm products grown on "dry land," while boro rice is the most important product grown on irrigated land. These products are all harvested by the start of the next cultivation season.

2) The bhadoi season is when aus rice and jute are the principal products grown. It lasts from the premonsoon months (March or April to May) to the peak of the rainy season in July or August, when these products are harvested.

3) The aghani season, often referred to as the aman season for the sake of convenience, is when transplanted aman and broadcasted aman are grown from June to November or December. Both are cultivated in the field. This means that the aman season extends over both the rabi and bhadoi seasons. During this period, virtually no products are produced except aman.

In the "unfenced, open cultivated land", aus rice and jute are grown during the bhadoi season. Aus rice is especially suited for the "highlands." The seeds are sown directly into the ground in areas unaffected by floods, and harvested in August when the weather is hot and humid. Although jute can be grown in floods more than aus rice can, its grade will decline if it is cultivated in flooded ground over a long

period of time. Moreover, when a monsoon causes an unusually heavy rainfall, farmers have to harvest the jute in fields where the water is up to their waists. In regions where either aus rice or jute has been grown, farmers will sometimes plow the ground in September of the following year, or before the bhadoi season, and plant mustard seeds for making cooking oil. Since tobacco is also suited for this season, seedlings are planted in the fields nearest the farm houses. Where aus rice is planted, farmers will sometimes mix it with aman. This is done to minimize the risk involved when either of the two products fails. But with such a cultivation method neither product yields a maximum harvest.

In every farm village, most of the land is located on "level ground," or even lower, and so aman is the main product grown. The soil is usually quite hard and therefore difficult to plow before the rainy season. Thus it is first necessary to moisten the entire soil by exposing it to the rain that falls during the "premonsoon season." The best harvest is achieved with aman transplanted from seedbeds to paddy fields submerged in rainwater in the beginning of the monsoon season. This is because these paddy fields hold a sufficient amount of water containing plenty of nutrients resulting from heavy rainfalls and overflowing rivers. For the transplanted rice plants to yield a bumper crop, there must be further precipitation in October. After that, the paddy fields are dried and the rice plants are allowed to mature. Then in November and December, they are harvested. According to normal practice, an effective "cash crop" is raised by planting khesari beans and the like between the rows of matured aman. Khesari beans constitute an important food item for the beginning of the dry season.

In the lowlands, even in broadcasting aman, tall ones (i.e., long-stem type) are selected. Where aman seeds are broadcasted, the land need not be prepared as carefully as when aman is transplanted. This is because all one has to do is let aman plants take firm root and make sure that even when the field is flooded their ears remain above the water, so that the plants can continue to grow. Aman seeds will usually grow about 2.5 centimeters a day, but some species will grow more than 3.0 centimeters a day. Aman seeds of the long-stem or "floating rice" type will sometimes grow to be seven meters long, and it is not uncommon for aman plants to be seen floating in water 4.5 meters deep.

In the low and damp hinterland, the lowest region and its natural embankment, aman rice cannot be grown because the region is struck by floods early. But in many of the other regions, boro rice is grown as soon as the flood, or the rainwater collected in some locations, begins to recede. The boro rice grown in the dry season is transplanted before the paddy fields dry up, and irrigation is necessary from January to February when there is no precipitation. Up to now, tools used in providing irrigation usually included doons and doonga, and lift shovels and baskets swung with a rope. But recently low-lift diesel pumps have

also come to be used widely, and this has helped increase the production of boro rice.

(2) Introduction of Modern Irrigation

The most important task for Bangladesh is to maximize the use of its cultivated land. Since less than 50 percent of its cultivated land area is used in seasons other than the rainy season, there is still plenty of room to expand the country's total acreage, if sufficient water is supplied.

Irrigation in Bangladesh has traditionally been carried out by doons (a long conduit made by hollowing out the trunk of a tree and operated with a clay weight) and swing baskets. These are labor-intensive, inexpensive irrigation methods, and as such are suitable for the agricultural economy in Bangladesh. But with these traditional methods, it is extremely difficult to effectively increase the water supply during the dry season. Thus, in recent years, modern irrigation facilities have come to be introduced, the principal ones being the low-lift pump and the tubewell.

The precondition for using a low-lift pump is the existence of abundant surface headwaters, even during the dry season. The swamps and rivers found in the damp areas of Meghna and the southern part of Dacca, as well as the rivers of the non-saline deltas constitute the main headwaters. Of course, headwaters similar to these are found nearly everywhere in Bangladesh, but they are all small in scale.

With tubewells, it is necessary to have a sufficient underground water belt, or a water tank. In the case of Bangladesh, these are usually found in either sandy or gravelly delta alluvium.

An irrigation system using tubewells first exerted a significant impact on Bangladesh agriculture in the northern Bengali plains. The special feature of this tubewell project is that it enabled the supplying of water to farms even in the dry rabi season and the premonsoon bhadoi season by pumping underground water. As a result, 32 percent of the water used during the rabi season is now supplied through irrigation. The method of planting during the dry season has thus been altered significantly.

Due to its scale, the tubewell irrigation system can gain the cooperation of farmers more easily than larger irrigation systems can. Generally, tubewells are installed one kilometer apart from each other. Then, water pumped up with an electric pump flows through canals made of concrete until it reaches the cultivated land and irrigates it. The amount of investment per unit of irrigated area required in installing these tubewells is about eight times that required in utilizing the low-lift pumps discussed below, but they have a definite advantage: they can

ensure a supply of water at the end of every dry season.

In areas that have rivers through which water flows even during the dry season, low-lift pumps constitute the most effective and reliable means of irrigation. Indeed, they offer a very attractive means of meeting Bangladesh's urgent need to increase its food production.

In Bangladesh, irrigation using irrigation canals is far less developed than irrigation using tubewells or low-lift pumps. This is because most of the semihard bedrock in the delta plains is used to build dams for transferring the river currents to irrigations canals. Another reason is that the delta plains do not undulate very much, so that it is impossible to introduce over a wide range of area a system of supplying water utilizing the movement of such undulation. The only large-scale sluiceway project implemented so far is the Ganges-Kobadack project in the western part of Bangladesh. This project is aimed at stimulating agricultural production activities in the Kushtia district by drawing off water from the Ganges using pumps and discharging it into a network of irrigation canals. It can be argued that the growing of transplanted aman in this district has been promoted by this project.

The latest annual irrigation-related statistics in Bangladesh are shown in Table 3-2. First, the ratio of irrigated area remains low, with only 5.43 million acres, or 24 percent, of the 21. 88 million acres of net planted areas being irrigated. Next, by type of irrigation facility, the area irrigated with tubewells is the largest, followed by that irrigated with lift pumps. Compared with the area irrigated by these irrigation facilities, the area irrigated by canals is considerably smaller. Moreover, the overwhelming proportion of the area irrigated is used to grow boro rice.

With the arrival of the 1970s, high-yielding varieties of rice centering on the IR variety began to be introduced. The ratio of the area planted with high-yielding varieties to total rice acreage was only 2.6 percent in the 1969-1970 period, but rose to 15.7 percent in the 1973-1974 period. Since then, the shift to high-yielding varieties has continued to stagnate, hovering at around the 20 percent mark in recent years. The high-yielding varieties is planted in nearly all cultivated land equipped with irrigation facilities, but elsewhere the spread of high-yielding varieties is extremely limited.

A look at rate of utilization of cultivated land reveals that as of 1986/87 there were 22.84 million acres of land capable of cultivation, 21.88 million net acreage under cultivation and 34.88 million gross acreage under cultivation, and the degree of cropping intensity was 159 percent (Statistical Pocketbook of Bangladesh, 1989).

3. Rural Society: Extreme Inequality in Land Ownership

The existence of little land and excess work force -- these words sum up the social and economic features of Bangladesh's agriculture. The farming population per hectare of cultivated land reached 8.7 in 1982, making Bangladesh the country with the highest farm population density in Asia, even surpassing Indonesia with 6.1. The extent of the demographic pressure on Bangladesh's agriculture is clear even when compared with the 2.7 and 2.4 persons per hectare of cultivated land in India and Pakistan, respectively (Table 3-1).

Although there is absolutely no more room to expand the cultivated land area in the delta region, there have been no signs of a significant decline in the population growth rate. The tendency of the ratio of land to population to decline first manifests itself as a reduction in the average cultivated land area per farm household through the inheritance tradition of land by equal distribution embodied in the custom of Islamic law. The first characteristic of Bangladesh's agricultural economy is the small size of its cultivated land area per farm household.

The second characteristic of Bangladesh's agricultural economy, one which is even more important than the smallness of its cultivated land area per farm household, is the inequality in land holdings. According to the most comprehensive report on the state of land ownership in Bangladesh, except for their residential land, 32.8 percent of all farm households do not own any farmland. But if we add to this group those farm households which own only 0.5 acre of farm land -- which, economically speaking, is virtually the same as not owning any farmland -- the ratio of landless farm households will rise to 48.1 percent. In other words, nearly one out of two farm households belongs to the landless class. It is clear that the proportion of farm households with absolutely no farmland has been increasing. This is because the proportion of farmers operating relatively small farms has increased as a result of the sharp fall in the ratio of land to population, and many of these farmers are eventually forced to give up even their meager holdings and join the ranks of the landless.

Next, a glance at changes in the relationship between landlord and tenant farmer reveals that the ratio of tenant farmer households to total number of farm households is on the rise: the ratio was 3.6 percent in 1960 and also in 1967, but rose to 5.0 percent in 1967 and 1958, and to 6.8 percent in 1977. There has been a tendency for cultivated acreage per farmer to decline for all owner farmers, owner-tenant farmers and tenant farmers, but this tendency has been most pronounced among tenant farmers. The cultivated acreage per tenant farmer dropped by 50 percent over a period of less than 10 years: from 3 acres in 1968 to 1.5 acres in 1977.

While the ratio of tenant farmers to total farm households has been increasing, their average cultivated acreage has diminished. The average cultivated acreage for tenant farmers in 1977 was 3 acres, as stated above, but 23.7 percent of the tenant farmers have less than 0.8 acre of cultivated land. If we add to this tenant farmers with less than 1.5 acre of cultivated land, the figure rises to 81.8 percent. While the changes over time cannot be determined due to lack of data, the relative importance of the tenant farmers with extremely limited amounts of land is believed to be increasing every year. The fact that the area cultivated by tenant farmers is diminishing and the number of tenant farm households is increasing means that the latter's "negotiating power" against the landlord has been reduced. Specifically, this is manifested in reducing periods of tenant contracts and an increasing share of cost for inputs that tenant farmers have to pay. According to the survey report cited earlier, 31.8 percent of all tenant farmers have the contract less than one year, while 55.3 percent of all tenant farmers have the term less than two years. This leads to a vicious cycle in which tenant farmers are discharged when their contracts expire and are forced to get the contract at worse conditions. Even with regard to the cost sharing of buying necessary inputs, tenant farmers have to bear nearly all the cost of seed, fertilizer, agricultural chemicals and irrigation facilities. It is said that tenant farmers today are forced to shoulder a greater burden in obtaining these inputs than they did in the 1960s.

Inequality in ownership of cultivated land in rural societies is a serious social problem since it generates great differences in economic power among residents of rural societies. Landed or rich farmers can gain full economic benefit from irrigation projects involving low-lift pumps and tubewells. This in turn enables them to plant high-yielding varieties and thereby increase their income. In contrast, landless or poor farmers are unable to benefit from such technological innovations, and because of population increases, it is virtually impossible to change the conditions of the labor supply (wages, etc.) to their advantage. Furthermore, as real wages tend to drop because of accumulation of surplus labor force, some landlords have begun to switch from the traditional form of agricultural production based on share tenant contracts to a form of farming based on direct management by hiring wage laborers. In any case, amid increased demographic pressure on the land, it is virtually certain that inequality in ownership of cultivated land will further increase inequality in income distribution among the various classes in rural society.

4. Trends in Agricultural Production and Agricultural Policy

(1) Trends in Agricultural Production

Since the advent of the 1980s, the agricultural sector of the Bangladesh economy has grown at an annual rate of 2.6 percent. This is a sharp drop from the 3.5 percent that was recorded in the 1970s, and just barely enough to exceed the rate of population growth. In considering the importance of the agricultural sector in Bangladesh's domestic economy, such a drop in growth rate will exert an enormous influence on Bangladesh' domestic economy as a whole through, among other things, a decline in the rate of expansion of effective demand from the agricultural sector to the nonfarm sectors (included here is a decline in the amount of funds invested in agriculture). In the agricultural sector, an extremely important point at issue in examining the growth performance of agriculture will be the fact that the economic growth rate in the crop sector in particular has dropped drastically from 4.0 percent in the 1970s to 2.4 percent in the 1980s (Table 3-3).

Trends in agriculture's employment will now be examined. Since only a limited amount of employment statistics is available, we cannot examine the trends in agricultural employment during the same period that the abovementioned economic growth rate was observed. But it is possible to clarify the general trend in agricultural employment since 1960 by using the agricultural work force statistics. Employment in agriculture expanded by an annual rate of 1.3 percent from 1961 to 1974, but dropped to a negative 0.2 percent in the 10 years after 1974. Considering the reliability of the data and other factors, it can be said that employment in agriculture during this period remained virtually unchanged. By the mid-1970s, the demographic pressure on cultivated land had already reached its limit. And while agricultural development was accomplished based on the introduction of irrigational technology and high-yield varieties, this development was never effective in expanding the employment capacity of agriculture in Bangladesh. This is an extremely important point to bear in mind in considering the development of agriculture in Bangladesh (Table 3-4).

Let us now examine the trends in production of principal crops for which statistical data have been announced continuously since the mid-1970s (Table 3-5). Rice, the linchpin of agriculture in Bangladesh, was harvested from a total of 25.51 million acres of land as of 1987/88, or more than 70 percent of the 34.88 million gross acreage under cultivation. The area harvested has hardly expanded, and the production increase since 1976/77 has mainly been in terms of yield. This increase in yield has been brought about by the increased use of chemical fertilizers and modern irrigation facilities, and the spread of high-yielding varieties.

Along with rice, jute is the most famous agricultural product in Bangladesh. While significant changes have occurred in the amount of jute produced over the past 10 years, no signs have been observed that its production has increased. Its yield has also remained practically unchanged, and it can be observed that production has changed in accordance with changes in the harvested area. Flood and other natural disasters are the main causes of the changes of the harvested area. As mentioned earlier, jute is grown in competition with aus rice during the bhadoi season. Crops grown in this period are strongly influenced by the uncertainty of rainfall, and this is one reason why the jute acreage has not increased. Another is that high returns cannot be expected from planting jute because the price of jute tends to be low when compared with that of rice.

As for crops other than rice and jute, it is noteworthy that the total area of oil plants has increased since 1983/84 and their production has increased as a result. The trend toward increased production of these plants, which are indispensable to the dietary habits of the Bengalis, should be noted as an manifestation of the diversification of agriculture in Bangladesh.

(2) Changes in Agricultural Policy

The points cited below can be regarded as factors causing the economic growth rate of Bangladesh's agriculture to decline from the beginning of the 1980s.[1)]

1. Floods and other natural disasters that often struck Bangladesh from the beginning of the 1980s caused extensive damage.

2. The government's development expenditures necessary for agricultural and rural development, as well as for securing water resources, were reduced.

3. Construction of pumps and tubewells did not progress very much because the subsides to them were reduced.

4. Despite the increase in the amount of boro rice harvested, growth in the amount of aus and aman harvested, which are dependent on rainwater, has been sluggish since the advent of the 1980s, thus slowing down the growth rate in the crop sector as a whole.

It can be said that these factors combined to force the growth rate in agriculture to begin declining from the beginning of the 1980s. Of these factors, the first is a change in the natural conditions that can be regarded as a given condition of policy. The other factors are, directly or indirectly, something related to the government's agricultural development policy. Of the changes that have taken place in the agricultural policy since the start of the 1980s, the more

significant ones are discussed below.

The first is the policy of procuring products from the farmers and distributing them throughout the country. Since the Bangladesh independence, the government's policy has been to protect urban consumers rather than to offer incentives to producers. Specifically, this involved distributing rice, wheat and other grains to urban consumers at low prices by paying subsidies under the Public Food Distribution System (PFDS). At present, two-thirds of all rice and one-third of all wheat produced in the country are consumed directly by the producers, the rest are distributed within the country. Added to the grains produced and distributed domestically are those produced abroad and brought into Bangladesh in the form of imports or foreign aid. Around 20-25 percent, or 22 million tons, of all grains distributed in Bangladesh are distributed to urban consumers through the PFDS. This means that 6-7 percent of rice and around 60-80 percent of wheat are distributed through the PFDS. Moreover, up to recently, these grains were distributed to urban consumers at prices below the prices at which the government procured them from the farmers under the financial support (i.e., food subsidy) program.

But from around mid-1980s, the Bangladesh Government changed the goals of its domestic food distribution policy. In the first place, it reduced the expenditure for food subsidies: in the second place, it raised the domestic procurement prices. The former has its roots in the critical state of Bangladesh's government budget, but noteworthy here is that the policy that had generally been in favor of protecting urban consumers is now being revised. Of course, at this point it is not clear just how far this revision will advance.

A more definite movement is the trend toward higher domestic procurement prices. They were raised in 1987-1988, but because at the same time subsidies for fertlizer were reduced or abolished, it cannot be said that this was necessarily done to give more incentive to the producers. Nevertheless, it seems certain that the Bangladesh authorities has a clear intention of "supporting prices in order to increase the production of food." This is probably why the authorities began to change their policy in favor of increasing the production of food by raising the domestic procurement prices. It might be concluded that the farm product distribution policy has begun to change from protection of urban consumers towards offering incentives to increase domestic production.

The second change in the agricultural policy is the reduction or abolition of subsidies for agricultural production. In 1980-1981 subsidies for fertilizer accounted for about five percent of the total agricultural development budget, but were completely abolished by 1987-1988. Thus farmers were forced to buy fertilizer at prices set by adding distribution cost to import prices. Subsidies related to

irrigation is also expected to be abolished in stages. Even subsidies granted for deep and shallow tubewells will be reduced in stages. The subsidies to the fees which the Bangladesh's Agricultural Development Corporation (BADC) charge for leasing low-lift pumps were abolished in 1986-1987 (although the Bangladesh Government resumed granting these subsidies in 1987-1988 when the number of small-scale irrigation facilities sold to farmers declined). At any rate, the Government is clearly determined to reduce the subsidies for small-scale irrigation facilities such as tubewells and low-lift pumps, the mainstay of Bangladesh's irrigation facilities. At the same time, the government implemented the privatization of importing and distributing these irrigation materials. While the Government bears the entire cost of large-scale river irrigation programs (around 10 percent of the entire irrigated area in Bangladesh), it has recently decided to charge user fees to those who take advantage of these programs.

As the foregoing demonstrates, Bangladesh's policy regarding subsidies to agriculture is changing: the expenditures for these subsidies are being reduced or abolished and the private sector is being allowed to handle the domestic distribution of various inputs in agriculture. While these changes may in the long run enable Bangladesh to effectively utilize its irrigation facilities and fertilizer, both of which are in short supply, the possibility that the rise in the cost for the farmers may serve as a disincentive for agricultural production in the short run cannot be denied.

(3) Emergence of Long-Term Factors

It is true that the fall in the growth rate of agriculture since the start of the 1980s stems from the changes in the agricultural policy outlined above. But it is important to keep in mind that in addition to those changes there are also long-term factors that lie in the background of the decline in the growth rate.

A glance at the estimates made of the incremental capital output ratio (ICOR) in the agricultural using statistics announced by the Bangladesh Government shows that although the annual average was nearly 2.0 from 1975 to 1977, but it rose to 3.0 from 1982 to 1984. The fact that the ICOR tended to rise from the 1970s to the 1980s shows without doubt that the marginal cost required to increase one unit of a given agricultural product in Bangladesh agriculture is gradually increasing. This gradual increase in marginal cost is precisely the long-term problem confronting the Bangladesh agriculture.

In other words, amid the tendency of the demographic pressure on cultivated land to increase, the utilization rate of farm resources has reached its limit. Thus, unlike in the 1970s, it is becoming difficult to increase agricultural production by merely introducing irrigation facilities, such as low-lift pumps and tubewells, and high-yielding

varieties and fertilizers. It is particularly problematic that the cost of water rises as the scarcity of water for agricultural production increases.

Many rich farmers have been observed installing tubewells and other irrigation facilities by investing their own private funds, thereby gaining a monopolistic position concerning water supply in their local communities. In any case, it should be kept in mind that the cost of agricultural production has tended to increase since the beginning of the 1980s.

Note

1) World Bank, Adjustment in the Eighties and Short Term Perspective, Bangladesh, March, 1988.

Table 1 International Comparison of Agriculture in Bangladesh, 1982

	Total population per cultivated land area (population/ha)	Farm population per cultivated land area (population/ha)	Paddy yield (t/ha)	Irrigation ratio (%)	Amount of fertilizer used per cultivated land area (kg/ha)
Bangladesh	10.5	8.7	2.01	19.7	51.2
Burma (Myanmar)	3.9	1.9	3.17	10.4	16.7
Indonesia	10.7	6.1	3.78	27.8	75.0
Pakistan	4.6	2.4	2.61	72.4	61.6
Philippines	6.7	2.9	2.39	11.6	28.8
Thailand	2.9	2.1	1.89	17.6	18.3
India	4.3	2.7	1.85	23.9	34.6

Source: Mahabub, Hossains et. al., Fertilizer Consumption, Pricing and Foodgrain Production in Bangladesh, [IFPRI/BIDS.]

Table 2 Irrigated Land: 1986-1987 (unit: 1000 acres)

Area by type of irrigation facility	
Modern type	
Water pump	1630
Tubewell	2426
Irrigation canal	384
Traditional	
Doons	441
Swing baskets	233
Others	319
Irrigated area by crop	
Rice	
Aus	405
Aman	470
Boro	3368
Wheat	651
Potato	169
Vegetables	142
Total	5434

Source: Agricultural Statistics Wing, Bureau of Bangladesh Statistics

Table 3 Economic Growth Rate of Agricultural Sector (1973 fixed prices)

(unit: %)

	1973-1980	1981-1987
Agriculture	3.5	2.6
Crops	4.0	2.4
Others	1.6	3.0
Manufacturing sector	13.9	2.8
Construction Public utilities	7.4	9.5
Service	7.6	5.2
GDP	5.8	4.0

Source: Bangladesh Bureau of Statistics, Statistical Yearbook of Bangladesh. The figures presented are calculated from each annual edition, and the average for each item is computed for the two periods concerned.

Table 4 Agricultural Work Force

	1961	1974	1983/84	1984/85
Absolute No. (1,000)	14,239	16,839	16,389	16,706
Proportion of total work force (%)	84.6	76.6	58.6	57.7
Average annual growth rate (%)		1.3	-0.2	

Note: Direct comparison is difficult because different definitions of agricultural work force are adopted by the Population Census and the Labor Force Survey. A direct comparison is assumed possible in this report, however.

Source: Bangladesh Bureau of Statistics, Bangladesh Population Census, 1961, 1974, Report on Labor Force Survey, 1983-84, 1984-85.

Table 5 Output, Area Harvested and Yield of Principal Crops

(1) Rice

	Output (1,000t)	Area harvested (1,000 acre)	Yield (bs./acre)
1976/77	11,567	24,420	1,061
77/78	12,763	24,779	1,154
78/79	12,646	24,992	1,133
79/80	12,539	25,105	1,119
80/81	13,662	25,474	1,201
81/82	13,415	25,847	1,163
82/83	13,991	26,158	1,198
83/84	14,279	26,064	1,227
84/85	14,391	25,263	1,276
85/86	14,802	25,696	1,290
86/87	15,163	26,216	1,296
87/88	15,738	25,507	1,382

(2) Jute

	Output (1,000t)	Area harvested (1,000 acre)	Yield (bs./acre)
1976/77	858	1,603	1,200
77/78	957	1,805	1,187
78/79	1,150	2,052	1,256
79/80	1,065	1,874	1,272
80/81	883	1,569	1,260
81/82	829	1,412	1,316
82/83	872	1,425	1,368
83/84	931	1,435	1,452
84/85	913	1,671	1,224
85/86	1,546	2,614	1,324
86/87	1,206	1,908	1,416
87/88	839	1,266	1,483

(3) Sugar cane

	Output (1,000t)	Area harvested (1,000 acre)	Yield (bs./acre)
1976/77	6,401	357	18
77/78	6,670	380	18
78/79	6,828	383	18
79/80	6,340	359	18
80/81	6,495	368	18
81/82	7,023	398	18
82/83	7,242	410	18
83/84	6,850	412	17
84/85	6,769	404	17
85/86	6,535	396	17
86/87	6,877	407	17
87/88	7,093	428	17

(4) Black tea

	Output (1,000t)	Area harvested (1,000 acre)	Yield (bs./acre)
1976/77	73,980	103	718
77/78	81,620	106	775
78/79	84,448	107	797
79/80	80,710	107	756
80/81	87,541	109	804
81/82	85,480	112	766
82/83	90,247	110	820
83/84	93,031	110	845
84/85	83,550	110	759
85/86	9,421	110	866
86/87	82,880	113	732
87/88	89,546	115	781

(5) Oil and fat field crops

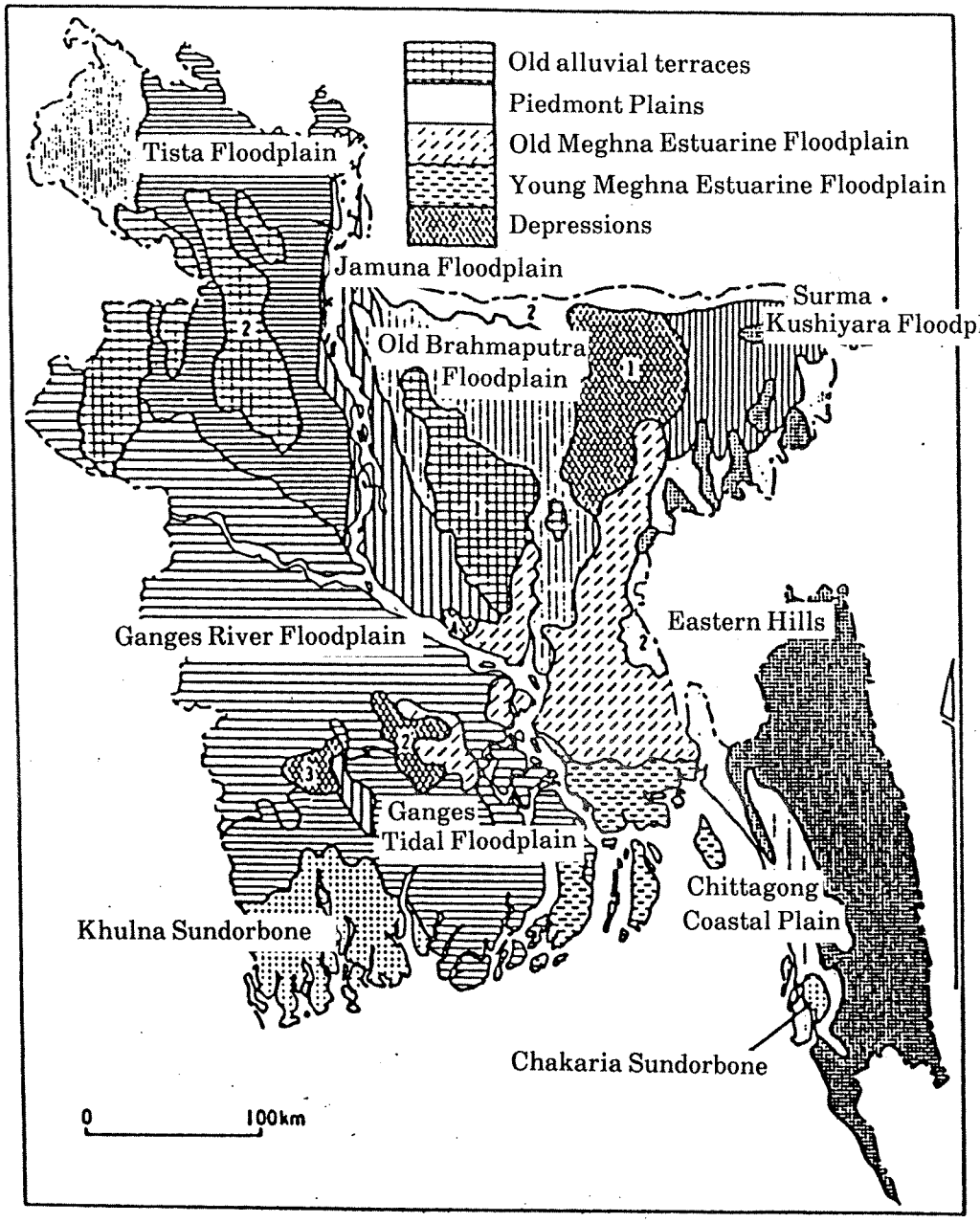
	Output (1,000t)	Area harvested (1,000 acre)	Yield (bs./acre)
1976/77	235	765	688
77/78	264	808	732
78/79	256	779	736
79/80	246	768	717
80/81	247	760	727
81/82	251	749	751
82/83	249	726	769
83/84	461	1,503	686
84/85	476	1,478	722
85/86	462	1,462	708
86/87	430	1,313	692
87/88	442	1,351	732

(6) Tobacco

	Output (1,000t)	Area harvested (1,000 acre)	Yield (bs./acre)
1976/77	63	168	833
77/78	49	137	802
78/79	43	123	784
79/80	39	111	782
80/81	47	127	823
81/82	50	136	828
82/83	50	129	860
83/84	47	128	826
84/85	49	128	848
85/86	46	132	775
86/87	39	114	770
87/88	41	117	786

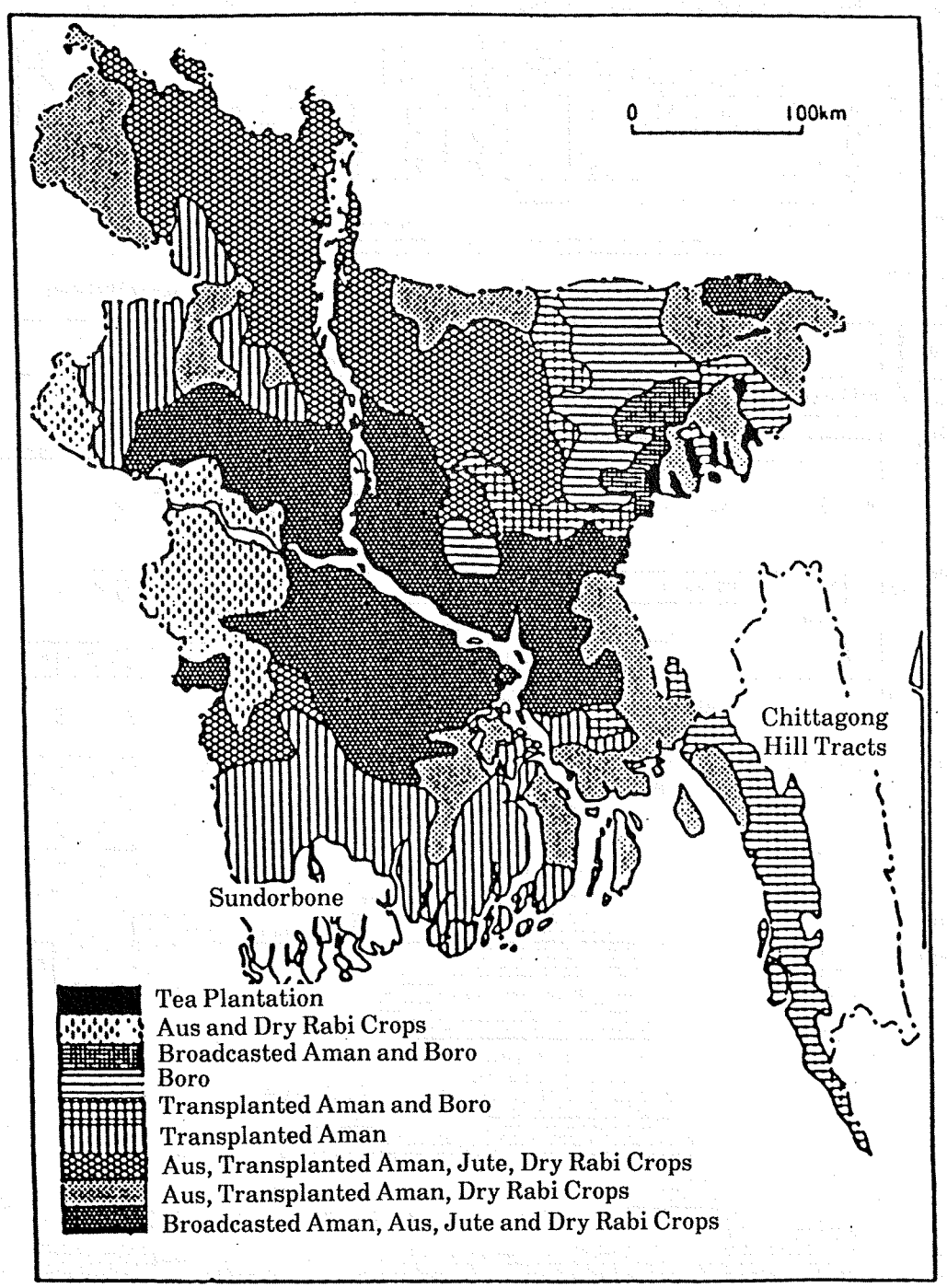
Source: Agricultural Statistics Wing, Bureau of Bangladesh Statistics

Figure 1 Physiographic Regions



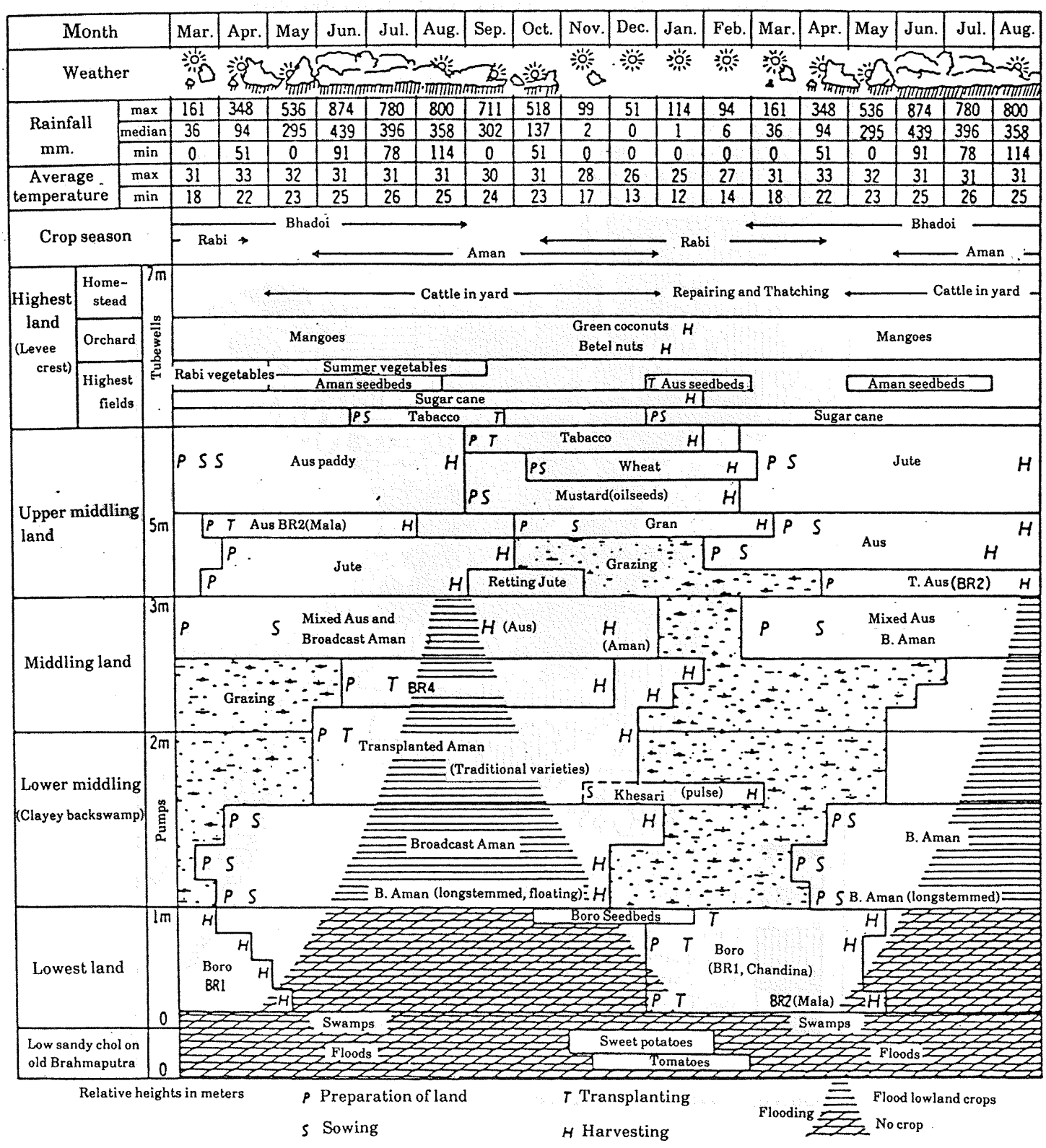
Source: B.L. C. Johnson, "Cilmate and Economy in South Asia," Vol. 2, Bangladesh

Figure 2 Generalised Crop Association Regions



Source: Same as in Figure 1

Figure 3 Cropping Calendar



Chapter 3

Farm Villages and Rural Development in Areas Surveyed

1. Comilla District and Narayanganji District

A full grasp of farm villages, where around 90 percent of the Bangladesh people live, is essential for understanding the actual situation in Bangladesh. Two rural areas were studied in the present survey: the Comilla district and the Narayanganji district. In the Comilla district Sadar Upazila and Jashpur and Lampur villages (both in Sadar Upazila) were selected. In the Narayanganji district Rupganji Upazila was selected.

The Comilla district is located in the southeastern part of the Dhaka district, where Dhaka, the capital of the Bangladesh, is situated (see map in Appendices). The total population is 3.36 million, the total number of households is 560,000. The average population size of households is 6.0. With 92 percent of all households being farming households, the Comilla district is a typical rural district. The cultivated land area per farming household is 1.5 acres (Table 1). Under the guidance of the Bangladesh Academy for Rural Development, agricultural cooperatives have spread into the local communities, performing various important functions such as constructing irrigations and wells.

The Narayanganji district is located in the eastern part of Dhaka. It has a population of 1.26 million with a total of 220,000 households, of which more than 30 percent are non-farming households. The non-agriculture sector has thus developed further in Narayanganji than in most other regions in Bangladesh. A considerable number of small to medium-scale manufacturing companies are found in this district.

As was stressed in Chapter 3, one of the major problems facing agriculture in Bangladesh is the tendency of unequal ownership of farmland. In both areas under consideration, the average cultivated land area per farming household is about 1.5 acres, but 47.3 percent of all farming households in the Comilla district and 74.6 percent of the same in the Narayanganji district own 0.5 acre and less or none at all. Moreover, a high proportion of farming households own 1 acre or less land; 65.9 percent in the Comilla district and 88.7 percent in the Narayanganji district. Since members of such farming households cannot produce sufficient income by merely running their own farm, they are compelled to work as wage workers in one form or another. In this sense, such households will here be referred to as farmer-worker households. It is noteworthy that inequality of farmland ownership is more pronounced in Narayanganji than in Comilla, and that the former is more industrialized and urbanized.

Following is a summary of the present survey of Upazila and the characteristics of its agricultural economy.

2. Areas Selected for the Survey

(1) Sadar Upazila (Jashpur and Lampur Villages)

Sadar Upazila, in the Comilla district, has a population of 414,885 and a total of 66,703 households. The average population size of household, at 6.2, is slightly larger than the average for the Comilla district as a whole. Sadar Upazila has a total area of 68,589 acres, of which 53,560 are cultivated land. The cultivated land area per household is only 0.8 acre, and households which are farm-worker households account for nearly half, or 45 percent, of the total number of farming households (Table 2). This is about the same as the total percentage (47.3%) of households with absolutely no farmland and those with 0.5 acre or less farmland as indicated in the statistics on the Comilla district.

Unequal land ownership is also confirmed for Upazila. Sadar Upazila can be regarded as a typical rural area.

With regard to the ratio of households practicing family planning in Sadar Upazila, only 42 percent of eligible couples were found to be practicing it. Unfortunately, since the data on the ratio of households in the Comilla district practicing family planning were not available, comparison with the district as a whole cannot be made. The percentage for Sadar Upazila is considerably higher than the national average (25.3% as of 1985). It can be said that Comilla is relatively blessed as a rural district.

The fundamental indices for Jashpur and Lampur, two villages in Sadar Upazila, are presented in Table 3. The two villages are different in terms of population and number of households, but in both villages the number of people per household is 5.9. The two villages have nearly the same values for such indices as the cultivated land area per household (0.6 and 0.7 acre) and the proportion of farm-worker households (50%, 49%). These two villages can be regarded as typical villages in Sadar Upazila.

Of the various indices, the most noteworthy is the proportion of farm-worker households. In both villages, reflecting the seriousness of the problem of inequality of farmland ownership in rural regions, nearly half of the households are farm-worker households. Moreover, the daily wage of a farm-worker is only 50 taka, the minimum people would need to support a family in Bangladesh. The fact that there are so many farm-worker households without cultivated land and suffering from low wages is a grave problem afflicting all rural areas in Bangladesh.

While only 10 percent of households in Lampur practice family planning, 35 percent of those in Jashpur do it. It is noteworthy that

although the percentages in the two villages differ significantly, they are lower than the average for Sadar Upazila as a whole. Although one should be careful in judging the situation in Sadar Upazila by surveying only two villages, it cannot be denied that the actual percentage of households practicing family planning may be lower than the official data given on Upazila.

Moreover, in both villages, women most often give birth in their homes, not in hospitals, and with no medical doctor or midwife being present, but in the presence of a so-called traditional birth attendant (TBA). This shows how low the living standards of the two villages are and how badly they are in need of rural development. The payment made to a TBA differs somewhat between the two villages. This is because the payments are made in the form of gifts and donations.

Agricultural production in Sadar Upazila mainly involves rice cultivation undertaken in two seasons: the transplanted aman season, and the boro season. Irrigation facilities are mainly of the following three types: (1) deep tubewells capable of supplying water over an area covering 60 to 65 acres of land; (2) shallow tubewells capable of supplying water over an area of about 10 acres; and (3) water pumps that can supply water over an area ranging from 5 to 40 acres depending on the prevailing conditions. In Upazila as a whole, there are 282 deep tubewells, 558 shallow tubewells, and 100 water pumps. Although doons and other traditional methods of irrigation are still practiced, generally speaking, modern methods such as tubewells and pumps have spread considerably.

Rice is being cultivated semi-annually: during the aman season and the boro season. Around 1966, a number of high-yielding varieties were introduced, and now these are the only kinds cultivated. The seeds for these varieties are purchased at a seed center run by the Upazila. Fertilizer is purchased from private dealers.

On the basis of polished rice, around 1.1 tons are harvested per acre of land. Farm houses possessing surplus rice market it; the selling price is between 12-15 taka per kilogram. Because the government's purchasing price is low, farmers usually avoid selling their surplus rice to the government.

Rural workers receive an average wage of 50 taka per day if no meals are offered; if meals are included, the wage is 30 taka per day. Ten years ago, the wage per day with meals was around 30 taka, but if the rise in prices in general over the past 10 years is taken into account, it cannot be said that the real wage standard has risen. It is safe to say that even in the Comilla district, where there has been excess supply due to high population growth, real wages in the agriculture sector have remained more or less unchanged.

The situation regarding irrigation was discussed earlier, but noteworthy here is the existence of the so-called water lords. In Lampur, one of the two villages in Comilla selected for the present survey, two types of deep tubewells were found to coexist, the one owned by the agricultural cooperatives and the other built by individual farmers. The fee for using the water from tubewells owned by the agricultural cooperatives was set at 1,000 taka for one crop per acre. Although we were told in our survey that the fee for using the water from individually owned tubewells was set at the same level, there were a number of cases where fees of using private tubewells were much higher. The fees for using water is apparently set at a relatively high level in villages of the Comilla district. Not only farmland itself but water has also become scarce. Under such circumstances, rich farmers are making profit by investing in irrigation facilities and selling the water to their neighbors. Apparently, these rich farmers can borrow necessary investment funds from banks at low interest rates.

Besides rice, growing vegetable has become an important production activity. During the season for growing boro rice, tomatoes, ginger, radish and peanuts are cultivated, while during the aman rice growing season, cucumbers, gourds and the like are cultivated.

The Upazila authorities have intended to promote cultivation of wheat and maize for the purpose of improving the diet of people principally in the low income bracket. The goal was to increase the production of chapati and nan for the sake of the poor by combining the two crops.

(2) Rupganji Upazila

Rupganji Upazila is part of the Narayanganji district, in the suburbs of Dhaka (see map in Appendices). In Rupganji Upazila, the total population is 293,244, the total number of households 49,405, and the number of persons per household 5.9. The total area is 57,600 acres, of which 43,200 acres are cultivated land.

The main characteristic of Rupganji is that of the 35,244 farm households, only 9,017 (26%) are farm-worker households, thus making the proportion of farm-worker households in Rupganji Upazila much smaller than in other areas. In this area, the daily wage of farm-workers at 45 taka is slightly lower than that in other areas. But in the Narayanganji district, because there are many small to medium-scale dealing in jute, there are many employment opportunities. Thus, the district can be said to be a rather wealthy district. In fact, many sons of farming families in this area work in these factories.

On the other hand, turning to the demographic aspects, one can see that, despite the fact that this district is economically blessed, as noted above, the percentage of families practicing family planning is

only around 30 percent.

In Rupganji Upazila, there are 43,200 acres of cultivated land, 5,200 acres of high land, 15,100 acres of medium high land, 18,700 acres of medium low land, 17,300 acres of low land, and 1,300 acres of bottom land. Thus, a typical delta is found in this area.

Rice is the principal crop in this area, and in the high land it is possible to plant rice three times a year. But in 60 percent of the land, the highest proportion, rice is planted twice a year. This is the medium-level land. In the low land and bottom land, boro rice is normally planted once a year. These areas account for 30 percent of the entire area of Rupganji Upazila.

A look at the irrigation facilities reveals that there are 61 deep tubewells in this area, all of which are owned by the agricultural cooperative. There are 49 shallow tubewells, but all of them are individually owned. There are 206 low-lift pumps, of which all but 16, or 206, are owned by the agricultural cooperative.

In the case of facilities owned by the agricultural cooperative, the fees for using the water supply range from 1,000 taka to 1,200 taka per crop per acre. But in the case of facilities owned by individuals, the average user fee is 1,500 taka. The existence of water lords, like those in the Comilla district, was observed in Rupganji Upazila.

In this area, there are landlords who own vast areas of land, although the nominal ownership is divided by a number of people. The landlord-tenant relationship is based on a sharing system under which both cost and yield are shared fifty-fifty.

Besides growing rice, the important production activity in Rupganji Upazila is growing vegetables. Some farming house-holds here even grow vegetables three times a year. They are capitalizing on the geographical advantage of being in the suburbs of the capital city of Dhaka where there is a larger consumer demand for vegetables. Interestingly, some farming households are even growing vegetables which are exported to the Middle East. Again, farming households in Rupganji are growing vegetables by capitalizing on geographical advantage of being a village located in the suburbs of the capital city of Dhaka.

3. Summary

The following problems can be extracted from the results of the surveys conducted in Sadar Upazila in the Comilla district and Rupganji Upazila in the Narayanganji district.

First, while farming in both districts surveyed is centered on rice cultivation, the biggest common obstacle to development is the problem of irrigation. It is widely known that the biggest problem facing agriculture in Bangladesh is the lack of irrigation facilities, but the fact that the scarcity of water resource along with that of farmland should also be stressed. The emergence of water lords, who make profit by investing private funds in tubewells and other irrigation facilities to sell water unequivocally shows how water has become a scarce resource in Bangladesh. Because those who engage in agricultural production are charged high fees for using water, lowering this user fee can be regarded as one of the most crucial problems Bangladesh has to address in its efforts to develop its agriculture.

Second, as exemplified by vegetable cultivation in Narayanganji in particular, the expansion of agricultural production other than rice, that is, diversification, has also become an important task for agriculture in Bangladesh.

The following facts become clear when one considers the issue of agricultural development from a perspective that goes beyond the two points cited above:

(1) In rural areas, nearly half of all farming households are farm-worker households. In other words, there is considerable inequality in land ownership in rural areas.

(2) The daily wage of farm-workers is only 50 taka, a level just barely enough to sustain the minimum level of living.

(3) The percentage of families practicing family planning is rather low. In other words, the birth rate in rural areas is high.

These factors basically constitute the vicious circle already discussed in the general outline. The vicious circle involves (1) the system of land inheritance under Islamic law and the sharp increase in population further aggravates the inequality in land ownership; (2) this inequality increases the number of the rural poor; (3) demographic migration from rural to urban areas is accelerated as a result of (2); and (4) the migration in turn results in accelerated urbanization and slum expansion.

In conclusion rural development is crucial to the future development of Bangladesh.

Table 1 Summary of the Two Districts Surveyed

		Comilla	Narayanganji
1.	Total population (a)[1]	3.36 million	1.26 million
2.	Rural population (b)[1]	3.08 million	.86 million
3.	Ratio of rural population (a/b)	92 %	68%
4.	Total No. of households (c)[2]	.56 million	.22 million
5.	No. of farming households (d)[2]	.45 million	.11 million
6.	Average No. of persons/household (a/d)	6.0 persons	5.7 persons
7.	Cultivated land area (e)[2]	.66 million acres	.15 million acres
8.	Cultivated land area/household (e/c)	1.5 acres	1.4 acres
9.	Ratio of farm-workers[2]	65.9 %	88.1%
(a)	Households with absolutely no farmland and those with 0.5 acre or less	47.3 %	74.6%
(b)	Households possessing 0.51 to 1.0 acre of farmland	18.6 %	13.5%

Notes: 1) Population Census 1981.
2) The Bangladesh Census of Agriculture and Live Stock, 1983-84.

Sources: Statistical Pocket Book of Bangladesh.
Development of Local Government in Bangladesh, etc.

Table 2 Social and Economic Attributes of the Two Rural Districts Surveyed[1)]

Name of Upazila	Sadar
1. Population	415,885
2. No. of households	66,703
3. Average No. of persons/household	6.2
4. Total area (a)	68,589 acres
5. Cultivated land area (b)	53,560 acres
6. Ratio of cultivated land to total area (b/a)	78 %
7. Ratio of households without farmland	45 % (approx.)
8. Cultivated land area/household	0.8 acre
9. Percentage of families practicing family planning	42 %

Note: 1) The indicators presented below were gathered from those in leadership positions in the upazila.

Table 3 Jashpur Village and Lampur Village[1)]

	Jashpur	Lampur
1. Population	2,873	838
2. No. of households	487	143
3. No. of persons/household	5.9	5.9
4. Total area (a)	522 acres	175 acres
5. Cultivated land (b)	275 acres	100 acres
6. Ratio of cultivated land to total area (a/b)	53 %	57%
7. Cultivated land area/household	0.6 acre	0.7 acre
8. No. of farmer-worker households	244 households (approx. 50%)	70 households (approx. 49%)
9. Daily wage of farm laborer	50 taka (approx.)[2)]	50 taka (approx.)[2)]
10. Ratio of families practicing family planning	35 %[3)] (172 households)	10%[4)] (15 households)
Birth Control, Pill	103 households	5-6 households
Sterilization operation	37 households	3 households[5)]
11. Remuneration for TBA	175 taka and a sari (but as a gift)	70-100 taka (but depends on family situation)
12. Main place for giving birth	home	home

Notes: 1) The indicators presented above were gathered from those in leadership positions in the village.
2) Daily wage without meal. The daily wage is about 10 taka cheaper when meals are included.
3) Ratio of eligible couples
4) Ratio of total households
5) Number of households using contraceptive pills and condoms.

Table 4 Rupganji Upazila[1)]

		Rupganji Upazila
1.	Population	293,244
2.	No. of households	49,633
3.	No. of farming households	35,244
4.	No. of persons/household	5.9
5.	Total area (a)	57,600 acres
6.	Cultivated land (b)	43,200 acres
7.	Ratio of cultivated land to total area (b/a)	75 %
8.	Cultivated land area/household	0.9 acre
9.	No. farmer-worker households	9,017 (26%)
10.	Daily wage of farm laborer	approx. 45 taka[2)]
11.	Ratio of families practicing family planning	approx. 30%
12.	Payment to TBA	1 sari

Notes: 1) The indicators presented in the table were gathered from those in leadership positions in the upazila.
2) Daily wage without meal. The daily wage is about 20 taka cheaper when meals are included.

Chapter 4

Survey Members and Itinerary

1. Survey Members

Japanese Committee

Dr. Shigeto Kawano	Professor Emeritus, The University of Tokyo (Chairman)
Dr. Yonosuke Hara	Professor, Insitute of Oriental Culture, The University of Tokyo
Dr. Tomomi Otsuka	Assistant, Faculty of Economics, Nihon University
Mr. Tsuguo Hirose	Secretary General, The Asian Population and Development Association (APDA)
Mr. Masaaki Endo	Senior Programme Officer, The Asian Population and Development Association (APDA)
Mr. Yoshio Nagai	Research Staff, The Asian Population and Development Association (APDA)

Preliminary Research Team (July 2-8, 1989)

Mr. Tsuguo Hirose	Reserach Chief (ditto)
Mr. Masaaki Endo	(ditto)

Field Research Team (July 19 - August 2, 1989)

Dr. Yonosuke Hara	Reserach Chief (ditto)
Dr. Tomomi Otsuka	(ditto)
Mr. Masaaki Endo	(ditto)

2. Cooperators

Embassy of Japan in Bangladesh

Mr. Takeo Iguchi	Ambassador
Mr. Tetsuo Itoh	Minister
Mr. Minoru Nakano	First Secretary

Government and Institute

Prof. M.A. Matin	Deputy Prime Minister, Minister of Health and Family Planning
Mr. Abul Hasham	Additional Secretary, Agricultural Division
Mr. Nurul Husain Khan	Secretary, Ministry of Food
Mr. Mahabub Hossain	Director General, Bangladesh Institute of Development Studies (BIDS)

Mr. Masihur Rahman Khan	Research Director, BIDS
Mr. Kiyoaki Kubo	Center on Integrated Rural Development for Asia and Pacific
Mr. Sharafit H. Khan	Director, Insitute of Post-graduate Studies in Agriculture
Mr. Mohammad H. Mandol	Director General, Bangladesh Agricultural Research Institute
Mr. M. A. Manoon	Director General, Bangladesh Rice Research Institute
Mr. Faisal Kader	Prgramme Officer, UNDP

Expert

Mr. Habibur Rahman	Deputy Director, Ministry of Health and Family Planning
Mr. Abdur Rahim	Director of Nutrition, Bangladesh Agriculture Research Council (BARC)

Comilla

Mr. Muhammad Abdul Quddus	Director of Administration, Bangladesh Academy for Rural Development (BARD)
Mr. Sohrab Ali	Director, Agriculture Officer, Comilla District
Mr. Hassan	Sadar Upazila Agriculture Officer, Comilla

Survey Itinerary

July 19 - August 2, 1989

July 19 (Wed) Leave Narita, arrive in Dhaka (via Bangkok)

July 20 (Thu) Discussion of the survey outline with the local experts. Visit to the Japanese Embassy. Courtesy call on Ambassador Takeo Iguchi and Mr. Tetsuro Itoh, Minister. Discussion of the survey outline with Mr. Minoru Nakano, First Secretary.

July 21 (Fri) Data collection

July 22 (Sat) Visit to the Agricultural Division. Briefing on agriculture in Bangladesh by Mr. Abul Hasham, Additional Secretary.

Visit to Ministry of Food. Briefing on food situation in Bangladesh by Mr. Nurul Husain Khan, Secretary.

Visit Bangladesh Institute of Development Studies (BIDS). Briefing on research and development programs in Bangladesh by Mr. Mahabub Hossain, Director General. Briefing on international migration in Bangladesh by Mr. Masihur Rahman Khan, Research Director.

July 23 (Sun) Move form Dhaka to Comilla

Visit the office of Sadar Upazila. Briefing on agriculture in Upazila by Mr. Hassan, Upazila Agriculture Officer.

Visit Comilla District Office. Briefing on agriculture in Comilla district by Mr. Sohrab Ali.

July 24 (Mon) Visit Bangladesh Academy for Rural Development (BARD). Briefing on BARD activities by Mr. Muhammad Abdul Quddus, Director for Administration.

Visit Sadar Upazila Office. Discussion on interview su rvey of farming households.

Visit Lampur village. Briefing on the village outline by Mr. Dein Mohammd Majumbs, Union Member.

Visit Paka Village. Visit farming households.

July 25 (Tue) Visit Sadar Upazila Office. Collect survey forms from farm household interview.

Move from Comilla to Dhaka.

July 26 (Wed) Visit Bangladesh Institue of Research and Training on Applied Nutrition. Briefing on the Institute's activities.

Visit Narayanganji district. Briefing on agriculture in the district by Mr. G.M. Nurul Hoda, Assistant Director of Agri-extention.

Visit Enayat Narayanganji Union Family Welfare Center and Health District Office

July 27 (Thu) Visit Rupgonji Upazila Agriculture Office. Briefing on agricultural situation in the district.

Visit Murapara Union Health Welfare Center.

July 28 (Fri) Day off

July 29 (Sat) Visit Bangladesh Agriculural Research Institute (BARI). Briefing on Agricultural Development in Bangladesh by Mr. Mohammad H. Mondal, Director General.

Visit Bangladesh Rice Research Institute. Briefing on rice production in Bangladesh by Mr. M.A. Mannon, Director General.

Visit Center Extention Resources for Development Institute (CERDI). Briefing on the Center's activities by Mr. M. Yussouf Majumder, Executive Director.

Institute of Postgraduate Studies in Agricuture (ISPA). Briefing on the Institute's activities by Mr. Sharafot Hossain Khan, Director.

July 30 (Sun) Data collection at the Central Bureau of Statistics

Visit UNDP. Briefing on cooperation programs in agricultural development in Bangladesh by Mr. Faisal Kadar, Programme Officer.

July 31 (Mon) Courtesy call to Prof. M.A. Matin, Deputy Prime Minister, Minister of Health and Family Planning to report on the survey results.

Visit to the Japanese Embassy for presentation of the survey report to Mr. Minoru Nakano, First Secretary

August 1 (Tue) Leave Dhaka, arrive in Bangkok

August 2 (Wed) Leave Bangkok, arrive in Narita

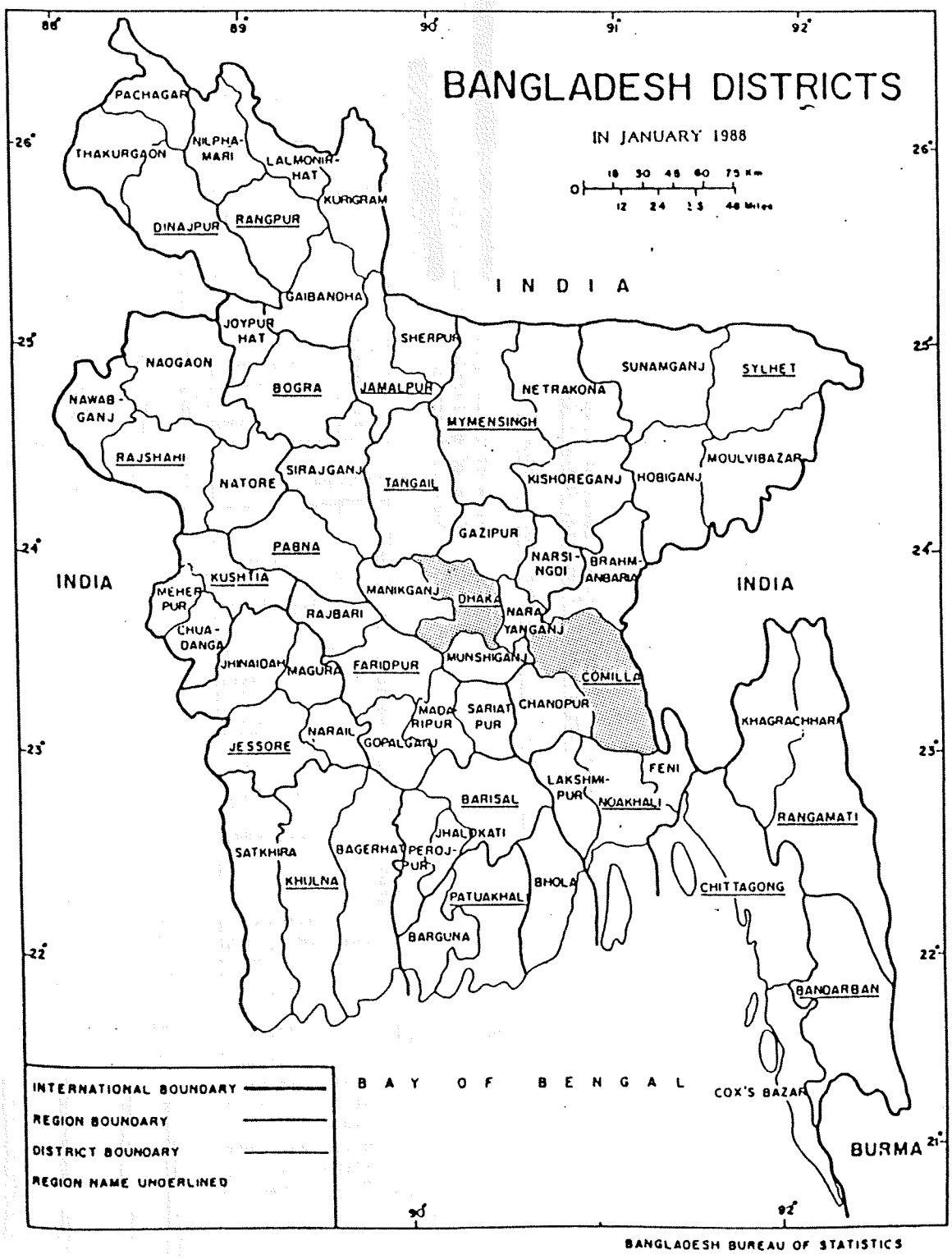
Preliminary Survey Itinerary

July 2 - 8, 1989

July 2 (Sun)	Leave Narita, arrive in Dhaka (via Hong Kong)
July 3 (Mon)	Visit Bangladesh Rice Research Institute Briefing on rice production in Bangladesh by Mr. M. A. Mannon
	Discussion of the survey method and survey areas
July 4 (Tue)	Discussion of the survey method and survey areas
July 5 (Wed)	Discussion of the survey method and survey areas
	Visit to the Japanese Embassy for discussion of the survey outline with Mr. Minoru Nakano, First Secretary
July 6 (Thu)	Courtesy call to Prof. Hon. M.A. Matin, Deputy Prime Minister, to discuss survey outline.
	Visit to the Japanese Embassy for presentation of the survey report to Ambassador Takeo Iguchi and Mr. Minoru Nakano, First Secretary
July 7 (Fri)	Leave Dhaka, arrive in Bangkok
July 8 (Sat)	Leave Bangkok, arrive in Narita

Appendices

Survey Areas



Bangladesh Agricultural Research Council
New Airport Road, Farmgate, Dhaka - 1215

Agro Socio-Economic Survey Form, 1989-90

Survey area : LAMPUR

Name of Investigator: [redacted]
Date of collection of information: 24-7-99.
Name of Respondent : [redacted]

A: Demography :

1. Population information

Sl.No.	Name of family member(s) (father, mother, children group-wise, in case of joint family).	Age	Sex	Age at marriage, if married	Family Planning devices, if in use	Vasectomy	Tubectomy	C.T.	Condom	Pill	MR	Injectables	Others	Level of education	Profession: Main	Profession: Secondary	Income (Tk./Year): Main source	Income (Tk./Year): Secondary source	Remarks
1	[redacted]	50	M	25		-	-	-	-	-	-	-	-	class 5	Krishi	-	[illegible]	-	
2	[redacted]	[illegible]	[illegible]	15		-	-	-	-	-	-	-		-	Housewife	-		-	
3	[redacted]	22	M	-		-	-	-	-	-	-	-		B.A. Student	-			-	
4	[redacted]	19	[illegible]	-		-	-	-	-	-	-	-		S.S.C student	-			-	

2. Type of latrine used :

Sanitary ✓ Katcha [ ] Open: [ ] Jungle [ ]

3. Sources of water :

Drinking purpose : Tube well [✓] well [ ] Pond [ ] River [ ] Other [ ]

Washing/Cleaning : Tube well [ ] well [ ] Pond [✓] River [ ] Other [ ]

4. No. of bed room(s) used for living purpose : 2 Room's

B : Agriculture :

1. Net land area used :

Total cultivated (acre) 3.00

Other land acre in 3.00

Own land cultivated (acre) out 00

Net land under cultivation (acre) 3.00

2. Utilization of net land for crop production :

Name(s) of crop variety	Kharif - i Area (acre) Irri.	Non-Irri	Yield (mnd)	Kharif - ii Name(s) of crop	Variety	Area(acre) Irri.	Non-Irr.	Yield (mnd)	Rabi Name(s) of crop	Variety	Area(acre) Irri.	Non-Irri.	Yield (mnd.)
Rice	—	—	—	Rice	H.Y.V.	—	3.00	150	Rice	H.Y.V.	3.00	—	150
Oilseed	—	—	—										
Pulse	—	—	—	—									
Fruit	—	—	—	—									
Vegetables	—	—	—	—									

3. Inputs used (seed, fertilizers, pesticides, irrigation) :

Name	Quantity	Price	Source	Remarks
Seed :				
Aus				
B. Aman	1-20-0	[illegible]		
T. Aman	1-20-0	[illegible]	[illegible]	
Boro				
Oilseed				
Pulse				
Fruit				
Vegetables				
Fertilizes :				
Urea	12-0-0	2.400 t	[illegible]	
TSP	6-20-0	1.350 t		
MP	2-30-0	750 t		
Zinc				
Sulphur				

Name	Quantity	Price (Tk.)	Source	Remarks
Cowdung ✓	250 [illegible]	500/-	[illegible]	-
Others				
Pesticides (Specify)				
Irrigation:				
DTW ✓		3000/-	V.S.S.	
STW				
LLP				
Others				

4. Disposal of crops :

Name(s) of crop	Variety	Used for consumption (Qnty.)	Used for seed (Qnty.)	Gift (Qnty.)	Damage (Qnty)	Sold Qnty	Remarks
Rice	[illegible]	10-0-0	1-20-0	0-20-0	-	11 S-0-0	
[illegible]	[illegible]	20-0-0	1-20-0	0-20-0	-	12 S-0-0	

C. Homestead use :

1. Area (decimal) 0.20
2. Area used for vegetables/ fruit cultivation 0.03 0.02

3. Vegetable production

Winter season :

Name (s)	Qnty	No.	Qnty sold	Qnty consumed	Gift	Remarks
bean	1-20-0		-	1-20-0	-	
pumpkin		50	-	0-80	-	

Summer season :

Name(s)	Qnty	No	Qnty sold	Qnty consumed	Gift	Remarks
Lady's	2-0-0	-	1-0-0	1-0-0	-	
bitter gourd		40	0-80	1-20-0	-	
sweet gourd		25	-	0-40	-	

4. Fruit production

Name(s) of fruit trees	No.of fruit bearing	Total Qnty. production		Qnty.			
		No.	Qnty	Consumed	Sold	Gift	Others
Mango	10	2000			-	150	
Coconut	5	300			-	50	
Jeli	3	50			-	5	

D. Livestock & poultry

1. Livestock :

Description	No.		Used for ploughing		Qnty. of milk per day, if produced.	Remarks
	Hybrid	Local breed	Hybrid	Local breed		
Bullock		2	-	2		
Cow ✓		1			0-3-0	
Milching cow ✓						
Calf ✓		1				
Buffalo						
Sheep						
Goat ✓		1				
Horse						

2. Poultry :

Description	No. Hybrid	No. Local breed	Egg production per week	No. of Egg consumed	No. of egg sold per week	Remarks
Cock ✓	—	1			—	
Hen ✓		8	2	2		120 / year
Laying hen	—					
Chicks ✓		20				
Pigeon						
Duck ✓		4	3	3	—	

E. Fisheries :

Pond/ditches	Area (decimal)	Type of ownership	Type of fish reared	Annual production (maund)	Qnty. sold	Qnty. consumed	Remarks
	5		Rai Katla Mrigel.	1-			

F. Use of credit (Last year)

Source	Amount received (Tk.)	Rate of interest

Total income/year

1. Total of A/1 Tk. .....
2. Total - B/4 Tk. .....
3. Total - C/4 Tk.....
4. Total - D/2 Tk.....
5. Total - E Tk.....

others