AN ESTIMATE OF INCOMES FROM VARIOUS SIZES OF FARMS IN THE KUSHTIA DISTRICT, EAST PAKISTAN

by

Raisuddin Ahmed

A Thesis Submitted to the Faculty
of Agricultural Sciences in Partial Fulfillment of
The Requirements for the Degree of
MASTER OF SCIENCE IN AGRICULTURE

Major: Agricultural Economics - General Economics

Minor: Agronomy

Approved:

Clifton W. Loomis
In Charge of Major Work

Elias Saab

E. E. Barnard

Gordon H. Ward

H. D. Fuehring
Chairman, Graduate Committee

American University of Beirut

1964

FARM INCOMES IN EAST PAKISTAN

R. Ahmed

ACKNOWLEDGEMENT

The writer wishes to express his deep sense of gratitude to Dr. Clifton W. Loomis for his constant guidance, patient assistance, and constructive criticism in carrying this study to completion. Dr. Loomis comes from the Cornell University, New York, on sabbatical leave. The writer benefited much from his experience with research problems in the field of farm management in the Cornell University.

The writer also takes this opportunity of expressing profound gratitude to Dr. Gordon H. Ward, who, from the beginning, gave the idea of the 'frame work' of the study, provided helpful assistance, and kept constant watch over the progress till the thesis was completed.

Grateful appreciations are also due to Dr. Y.Y. Yang of the Food and Agricultural Organization of the United Nations, District Agricultural Officer, Kushtia, and the Department of Agricultural Economics and Statistics, Pakistan, for the helpful materials they sent.

Last but not the least, the writer expresses his thanks to Miss Armineh Bezdikian for typing this thesis with patience and care.

Raisuddin Ahmed

ABSTRACT

The main objective of this study is to make an estimate of incomes of an average farm family from the various sizes of farms, owned and operated by the farmer, in the Kushtia district of East Pakistan. When this is known, it becomes easier to recommend the minimum size of a farm that should be operated in the district.

The farms in East Pakistan are small and fragmented. There are too many people in agriculture. It is essential that the small fragmented farms are reorganized into desireable sizes that will yield an income sufficient for living with a reasonable standard. This level should be high enough to be similar to people with comparable skills in other sectors of the economy. To prepare any plan for achieving this objective, estimates of incomes from the various sizes of farms are basic information needed.

The farms in the Kushtia district are mainly crop farms. Livestock are maintained principally for plowing. Except for land, an average farmer possesses mainly a pair of bullocks and a plow; other farm assets are minor. Farm implements are indegenous and inefficient. Farmers apply practically no fertilizers on their crops. Protection of crops from insects and pests is uncommon.

Farming in Kushtia is entirely dependent on rainfall. Irrigation facilities have not been developed. As a result most of the cropping is limited within the kharif season, the rainy period in the year. In rabi season, the drier period, no crops are grown on about 60 percent of the lands.

Farm income in the Kushtia district is low. An average farm family owning and operating a four-acre farm earns about 1000 rupees (about 200 dollars) from the farming business. The findings of this study indicate that a farm-size of ten to twelve acres may be considered as an economic size of holding as the term is defined by the Land Reforms Commission. A farm size of over twelve acres will be needed if the money income of a farmer is aimed to be equalized with that of an industrial worker.

There is wide possibilities for increasing the income of a farmer from farming. Among other ways, increasing the per acre yield of crops through improved cultural practices and supplementing the crop enterprise with the livestock and poultry will be immediate in effect and easier to achieve.

The larger number of small farms in the district should be reorganized into suitable sizes not below ten-acres. To do this a transfer of people from agriculture to non-agricultural sectors will be necessary.

Industries, therefore, should be set up in the district to absorb the surplus labour from agriculture. Irrigation projects should be implemented so that crops can be grown in the rabi season on most of the cultivated areas. The Agricultural Extension Services should step up their efforts in educating the farmers to adopt improved cultural practices. They should encourage the supplimenting of crop farming with dairy and poultry enterprises.

Consolidation of fragmented holdings is a serious problem. Cooperative pooling of land as found successful in the Gujrat province of India might be tried on experimental basis.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

CHAPTER I

INTRODUCTION

Geographical Situation

East Pakistan is one of the two provinces of Pakistan. It lies between 27° 75' and 26° 75' North Latitude and 88° 3' and 92° 75' East Longitude. It may be divided into two main physical divisions: (1) the vast alluvial plain and (2) the bordering hills in the east and south-east[1]. The plain is watered by one of the most remarkable networks of rivers in the world, and on the surface of the plain there are well-marked topographical features of alluvial deposits that rise several feet higher than the level of the plain itself and play a positive role in the agrarian economy of the area. The plain and the hills of the province are drenched with an annual average rainfall of over 75 inches, most of which falls in the months of May, June and July. In the month of July parts of East Pakistan are flooded and an inundation of more than 100 miles in width is formed. Nothing but homesteads and a few artificially raised maunds remain above the surface of the water.

Temperatures range from 49°F to 96°F. The highest temperatures are generally recorded in the months of April and May; January is the coldest month. The humidity is generally high throughout the year. The mean daily relative humidity for the year all over East Pakistan, with the exception of the coastal area, where it is over 80 percent, ranges from 70 to 80 percent[2].

---

1. Nafis Ahmed, An Economic Geography of East Pakistan, (London: Oxford University Press, 1958), pp. 2, 11.

2. Ibid., p. 44.

Socio-economic Situation

The total area of East Pakistan is 35.4 million acres, of which 22.2 million are under cultivation. About 5.5 million acres are under forest and two million acres are culturable waste. The area not available for cultivation and covered by roads, buildings, and rivers is about five million acres. One-seventh of a million acres of land is reported as unclassified[3]. The total area under cultivation includes area under crops at a particular time, and area which is left as fallow during the year concerned. About four percent of the total area remains fallow in a year. The land is left fallow for a time in order to enable it to regain its fertility. The amount of culturable waste indicates the possibility of the opening up of additional land for cultivation through the spread of irrigation and implementation of various drainage schemes, current or prospective. Such possibilities of additional land under cultivation are very limited in East Pakistan.

The total population of East Pakistan is 50.8 million, according to the census of 1961. The density of population in the province is 922 persons per square mile and it is one of the most populated areas in the world. The cultivated area per head in East Pakistan is 0.37 acres. This may be compared with the United States where the cultivated area per head is 2.8 acres[4]. The increase in population from 41.9 million in 1951 to 50.8 million in 1961 shows an annual rate of growth of 2.12 percent[5]. This

---

3. Government of Pakistan, The Planning Commission, The Second Five-Year Plan (1960-1965), (Karachi: Govt. of Pakistan Press, 1960), p. 136.

4. F.A.O. Production Year Book, 1960, Vol. 14; (Rome: FAO of the UN, 1961), pp. 4, 16.

5. Government of Pakistan, Ministry of Home, Population Census of Pakistan, 1961, Census Bulletin No. 3, (Karachi: Govt. of Pakistan Press, 1962), p. 11.

high rate of population growth coupled with little possibility of further extension of the cultivated area worsens the already serious problem of heavy pressure on land in a predominantly agricultural province like East Pakistan. Rapid growth of population, when productivity cannot be increased correspondingly due to meagure resources or defective social institutions, may mean falling living standards with all their consequences involving an insecure existence at a low level. This is particularly true of East Pakistan.

There are 6,139,480 farm holdings in East Pakistan, according to the Agricultural Census of 1960[6]. The size of most of the farms is very small (Table 1). The average size of a farm is 3.5 acres. About 80 percent of the farms fall below five acres of size. Ninety six percent of the farms are of sizes below 12.5 acres.

The level of income in Pakistan is very low. Pakistan's average income per capita is one of the lowest in the world (Table 2). Its income at a level of 249 rupees per capita is less than half of the per capita income in Ceylon, and only one-fortieth of the per capita income of the United States.

The rate of increase in per capita income has remained slow; the increase is only one-half percent per annum for the period from 1949 to 1959[7]. In addition to other causes, rapid population growth is the main

---

6. Government of Pakistan, Ministry of Food and Agriculture, Pakistan Census of Agriculture, 1960, Vol. I (Karachi: Govt. of Pakistan Press, 1962), p. 5.

7. Government of Pakistan, Ministry of Food and Agriculture, Report of the Food and Agriculture Commission, (Karachi: Govt. of Pakistan Press, 1960), p. 26.

TABLE I.

NUMBER OF FARMS CLASSIFIED BY SIZE IN EAST PAKISTAN

Size (in Acres)	Farms (Number)	Percent of Total
Under 0.5	802,630	13
0.5 to under 1.0	689,840	11
1.0 to under 2.5	1,677,410	27
2.5 to under 5.0	1,615,020	26
5.0 to under 7.5	698,450	12
7.5 to under 12.5	442,360	7
12.5 to under 25.0	187,790	3
25.0 to under 40.0	21,370	+
40.0 and over	4,610	+
East Pakistan	6,139,480	100

+ Less than one-half of one percent

Source: Government of Pakistan, Ministry of Food and Agriculture, Pakistan Census of Agriculture, 1960, Vol. I. East Pakistan, (Karachi: Govt. of Pakistan Press, 1962), p. 5.

TABLE 2

PER CAPITA INCOME OF SOME SELECTED COUNTRIES 1957 - 58

Country	Per-Capita Income in Rupees[a]
Ceylon	552
Japan	1,205
Pakistan	249
Philippines	924
United Kingdom	4,562
United States	10,048

[a]The estimates of the incomes are at 1957-1958 price levels, and these have been converted into Pakistan currency through the United States dollar.

Source: Government of Pakistan, Ministry of Food and Agriculture, Report of the Food and Agriculture Commission, (Karachi: Govt. of Pakistan Press, 1960), p. 561.

factor accounting for such a low rate of increase.

The average per capita income of the total farming population over the last ten years is 191 rupees as against 433 rupees for the non-farming population[8]. This gap is gradually widening rather than narrowing. In a recent conference of economists, organized by the Dacca University, it was revealed that in East Pakistan the average annual income of an agricultural labourer in 1962 was 480 rupees, whereas that of an indus-

8. Ibid, p. 26.

trial worker was 1000 rupees[9]. From 1951 to 1956 the average annual earning per worker in industry was 817 rupees. The industrial workers include those who are comparatively unskilled and drawing less than 200 rupees per month. During that period the earning of an average agricul-rutal worker was 450 rupees per annum. Since then there has been no visible improvement in the earnings of the agricultural workers in comparison with that of industrial workers[10]. From all these facts we can reasonably conclude that a man working outside the agricultural sector earns twice as much as an agriculturist.

The information on the level of income presented heretofore relates to the whole of Pakistan. But there is considerable disparity in income between East and West Pakistan. Though the national income data are not broken down for the two provinces, there are relevant facts that indicate lower per capita incomes in East Pakistan. Lower levels of investment, both private and government, and the transfer of savings from East Pakistan to West Pakistan may be cited in support of this statement. Over 14 years, from 1948 through 1961, East Pakistan's total balance-of-trade surplus was about 1500 million rupees, which, together with foreign capital of 3900 million rupees, financed West Pakistan's cumulative deficit of 5400 million rupees. In addition, 1000 million rupees have been transferred to West Pakistan during the period in other forms. This gives a total transfer of 2500 million rupees for 14 years, or 180 million rupees

---

9. Anisur Rahaman, "Economic Imbalance," Proceedings of the Conference on Economic Development in Pakistan, The Pakistan Observer, Dacca, 24th August, 1963, p. 4.

10. J.R. Andrus and F.M. Azizali, Economy of Pakistan, (London: Oxford University Press, 1958), p. 440.

per year. This is more than two percent of East Pakistan's average annual income for the period as best as can be estimated[11].

Importance of Agriculture in the National Economy

Agriculture constitutes the predominant sector of the economy of Pakistan. National income estimates in 1959-60 of the country indicate that the agricultural sector contributes 12,477 million or 57 percent out of a total income of 21,897 million rupees[12]. About 75 percent of the total civilian labour force is employed in agriculture. About 90 percent of the people of the country living in the rural areas depend directly or indirectly on this occupation[13]. The bulk of the foreign exchange earning of Pakistan is provided by the export of agricultural products. Export of agricultural raw materials constitute, on a five year's average, 70 percent of the total value of exports. If manufacturers of cotton and jute are added, exports of agricultural origin constitute 80 percent of the total[14]. Foreign exchange earnings for a country like Pakistan is important because it needs imports of a large volume of capital goods like machines and equipment for its developing economy. Moreover, a high proportion of the revenues of the State, both at the central and provincial

---

11. J.H. Power, "Industrialisation of Pakistan: A case of frustrated take-off?" The Pakistan Development Review, Vol. III, No. 2, 1963; (Karachi: Institute of Development Economics, 1963), pp. 204-205.

12. Government of Pakistan, Ministry of Finance, Economic Survey, (Karachi: Govt. of Pakistan Press, 1962), p. 12.

13. Government of Pakistan, Ministry of Home, Population Census of Pakistan 1961, Census Bulletin No. 5; (Karachi: Govt. of Pakistan Press, 1961), p. 6.

14. Agriculture Commission Report, op.cit. p. 29.

levels, is derived from taxes on agricultural land and its products[15].

At the present stage of development of the economy, the importance of agriculture is greater than at any other time. Most of the industries that are developing, use agricultural raw materials produced in the country. Agriculture must feed the growing total population. Without a prosperous agricultural sector no sizeable industrial programme can be sustained, since the increased industrial products must find markets mainly within the country and particularly among the rural masses.

Importance of Such a Study

Intensive studies on farm management and production economics are essential in Pakistan at this stage when the country is going through a process of primary economic changes. The land Reform Commission of Pakistan reported:

> From the point of view of agricultural efficiency what is important is the size of the farm as a cultivation unit and the degree of coherence or contiguity of the land comprising it. If the holding, in the sense of cultivation units is small, the resources of the farmer, of family manpower and of animal and equipment are inefficiently utilized, thereby causing the cost of production to rise and reducing the net profit of the farm population[16].

The commission further remarked "Reliable statistical data on farm size,

---

15. S.M. Akhtar, Economics of Pakistan, Vol. I; (Lahore: Publishers United Ltd., 1963), p. 74.

16. Government of Pakistan, Report of the Land Reforms Commissions (Lahore: Government Printing Press, 1959), p. 16.

fragmentation and incomes from various sizes are not forthcoming. Such information are vital for the commission to arrive at some decisions".[17] One of the main objectives of the Land Reform Commission was to recommend an economic size of owner-operated farm. The economic size was defined as a unit of agricultural land which in given conditions of agricultural production, will provide a minimum income sufficient for subsistence of a farm family[18]. The commission considered 1200 rupees, the amount of money income per annum that would enable a farm family of four consumption units to have such a standard of living. In the opinion of the commission 16 acres of land in Khairpur and Hydrabad divisions and 12 1/2 acres of land elsewhere, if properly managed and cultivated, will yield such an income[19]. The income from a given size of a farm will vary greatly from place to place. This is largely because lands differ in production capability. The location of the land may also effect the income because of the fact that economic and climatic conditions vary from one place to another. Where 12 acres of land may be an economic size of holding in one place, more or lesser acres may be required to constitute an economic holding in another area, depending upon the quality of land and prevailing economic and climatic variations. The Land Reform Commission could not recommend specific sizes for economic holdings in different areas in the country because sufficient information about the incomes from various sizes of farms in different areas of the country was not available.

---

17. Ibid, p. 16.
18. Ibid, p. 65.
19. Ibid, p. 66.

The Food and Agriculture Commission of Pakistan also realised that in the long run, and not before the large number of small and fragmented farm holdings could be reorganized into viable units, the prospect of substantial rise in income of farm people is remote. The commission recommended that at the present stage the vast mass of small farms could not be reorganized into desirable units, except through creation of sufficient additional jobs and additional economic activity. But, in spite of that, there must be a long run programme of action in this direction. The commission concluded that comprehensive studies should be made to find out incomes from various sizes of farms under certain given conditions in different parts of the country and a programme of reorganization of farms into sizes yielding desirable level of income should be drawn for implementation in a number of phases[20].

The Planning Commission of Pakistan also felt the importance of such studies and in the First Five-Year Plan of Pakistan it says:

> We recommend that a country-wide farm management research programme should be carried out during the plan period. The studies should have the following objectives among others:
>
> (1) To determine the optimum size of holding for providing a satisfactory living standard to farm family under different conditions.
>
> (2) To calculate net family incomes under different systems of land tenure".[21]

---

20. Food and Agriculture Commission Report, op.cit. p. 91.

21. Government of Pakistan, National Planning Board, The First Five Year Plan (1955-60), (Karachi: Govt. of Pakistan Press, 1957), p. 209.

Data regarding incomes from various sizes of farms are also required by the government for judicious assessment of the agricultural income tax. At present, due to lack of reliable income estimates, such assessment is done on an arbitrary basis[22].

Estimation of incomes through farm management studies is essential for any farm credit system in a country. Credit agencies require income statements to be assured of the repayment capacity of the farmers and their capacity to utilize the credit extended[23].

Purpose of the Study

From the previous discussion it will appear how important it is to have detailed estimates regarding the incomes from the various sizes of farms in the country. Government policy aims at creating a strong middle class of farmers. It is desired that each of such farmers owns and operates a family farm that will give an income sufficient for living at a desirable standard. The level of income from the family farm should be such as to remove much of the disparity between the real incomes of agricultural and non-agricultural workers.

The purpose of the study is:

1) To estimate levels of income of a typical average family from various sizes of farms, owned and operated by the farmer in the Kushtia district of East Pakistan.

2) To arrive at a conclusion as to the size of farm that may be considered as an economic holding in line with the definition of the term by the Land Reform Commission.

---

22. Ibid, p. 208.

23. W.G. Murray and A.G. Nelson, Agricultural Finance, (Ames: the Iowa State University Press, 1960), p.

3) To arrive at a conclusion as to the size of a farm which will yield a money income to the farmer comparable to that of an industrial worker. The difficulty of comparing the real income of industrial workers with the real income of agriculturists is recognized. The differences in cost of living in rural areas and urban areas will cause differences in real income even if the money income is the same. But the objective in this thesis is not to go into such details of real incomes but to be limited within the comparison of money incomes.

Locafion of the Area

Kushtia is one of the 17 districts of East Pakistan and located in the Western part of the province. It is surrounded by the Rajshahi district on the north, Faridpur and Pabna districts on the east, and Jessore district on the south. It has a common border with the West Bengal province of India on the western side. The river Ganges flows along the northern border of the Kushtia district (Figure 1). Kushtia town, the district head quarter, is about 150 miles west of Dacca, the provincial capital. The district is divided into administrative divisions[24]. There are three Sub-Divisions, 12 Thanas (Police Stations), 142 Unions, and 1371 villages in the district[25].

There are two reasons for choosing the Kushtia district for the

---

24. East Pakistan is divided into four divisions, each division into a number of districts, each district into a number of sub-divisions, each sub-division into a number of Thanas (Police Stations), each Thana into a number of Unions, and each Union into a number of villages.

25. Government of East Pakistan, The Provincial Statistical Board and Bureau of Commercial and Industrial Intelligence, Statistical Abstract for East Pakistan, Vol. IV; (Dacca: E.P. Govt. Press, 1958), p. 1.

study. First, the author had experience with the farmers and the farming systems in this district. The author worked as an agricultural extension agent in this district for more than two years. Second, Kushtia district comprises an area that has tremendous possibilities of improvement in farming through execution of irrigation projects. Before implementing such irrigation projects, estimates of incomes from various sizes of farms are essential.

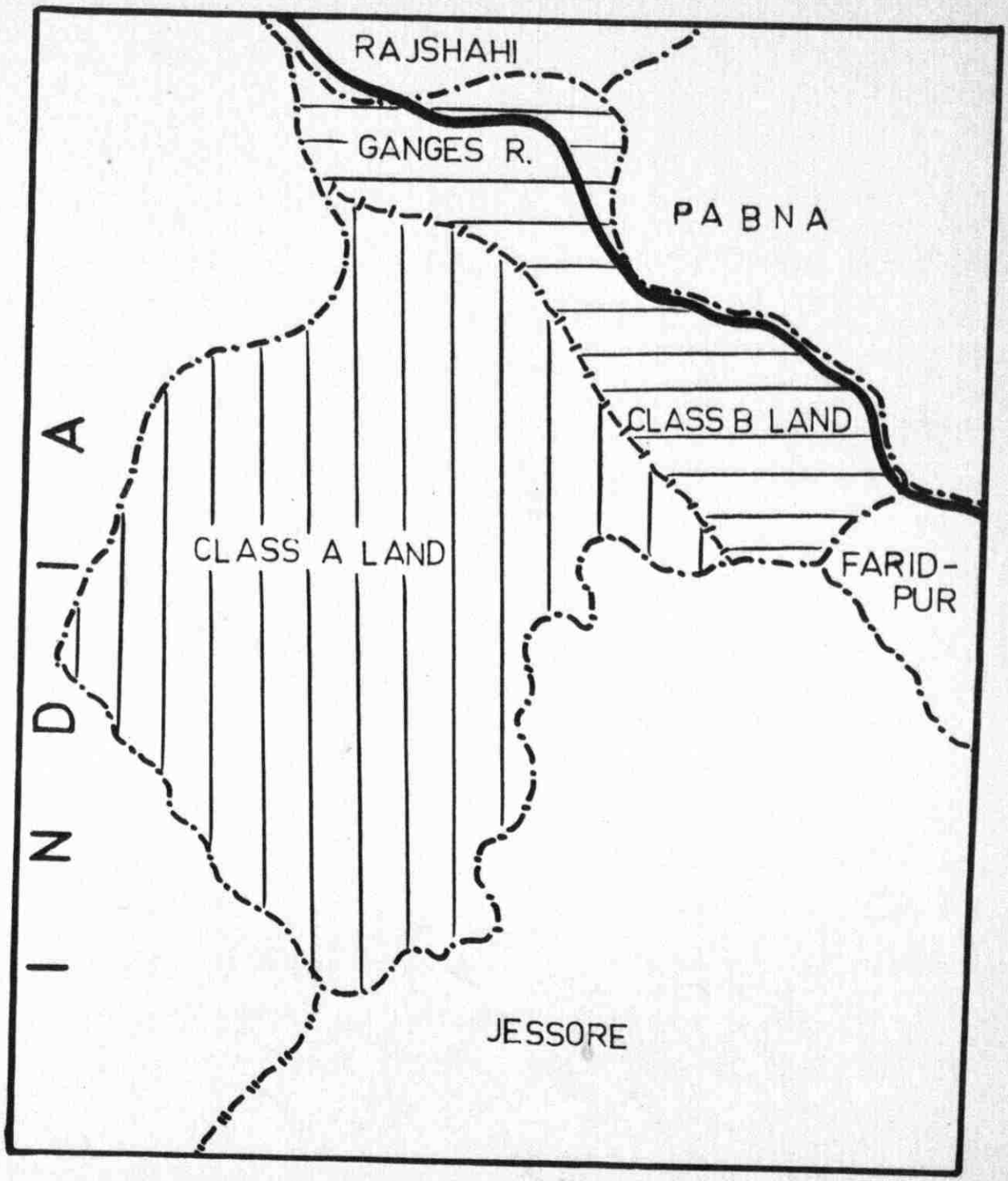

FIG. 1 MAP OF KUSHTIA DISTRICT SHOWING TWO CLASSES OF LAND

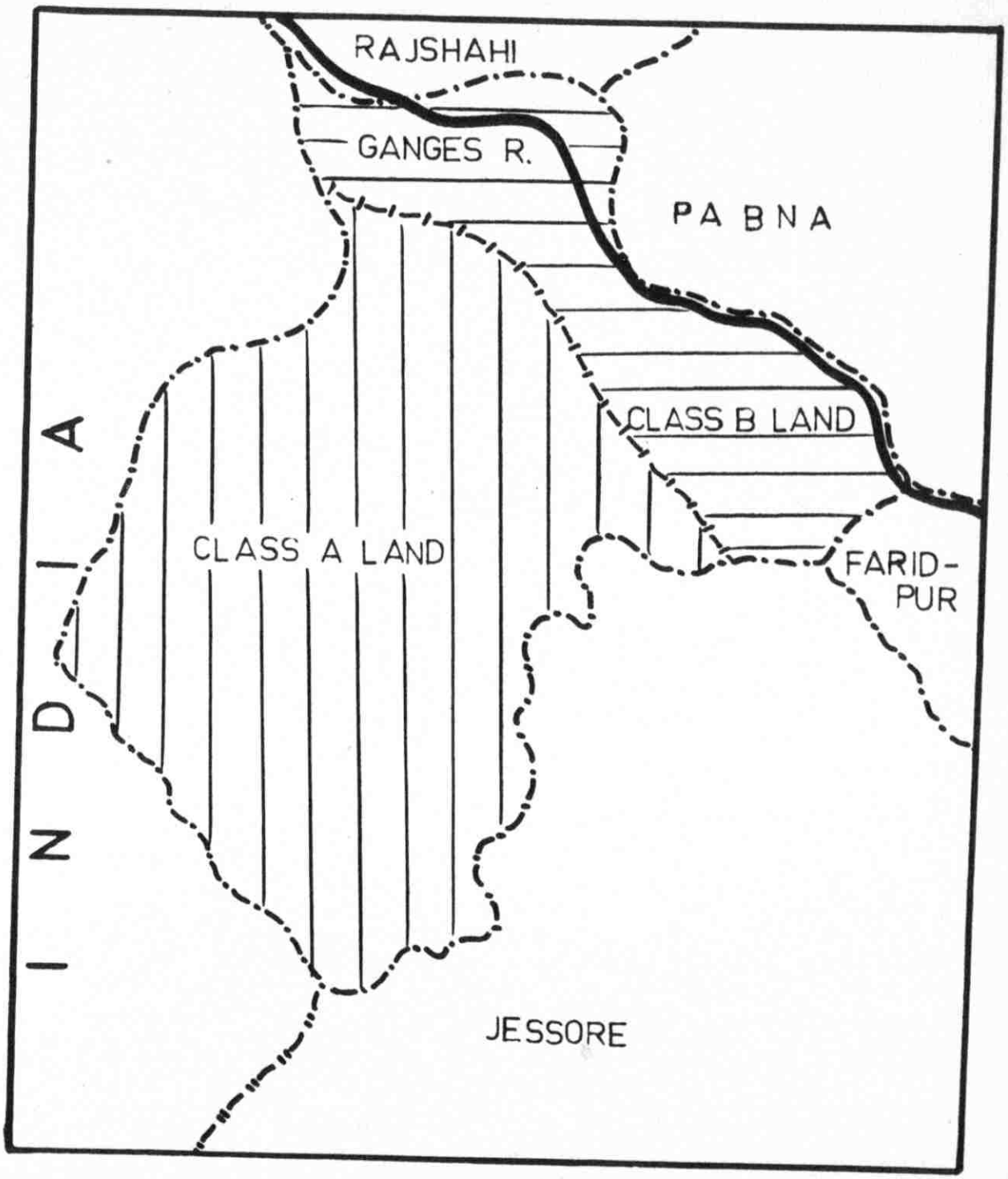

FIG. 1 MAP OF KUSHTIA DISTRICT SHOWING TWO CLASSES OF LAND

CHAPTER II

CLIMATIC AND SOCIO-ECONOMIC SITUATION IN THE KUSHTIA DISTRICT

Climate

Kushtia district falls within the monsoon climatic region. It has a tropical climate, humid and warm. The monthly average temperature varies between 65° and 85°F.[1] Temperature is more or less uniform in the summer season extending from March to September. The temperature in the winter season, from October to February, varies from 50° to 70°F; December and January are the coldest months. The monthly mean relative humidity varies from 73 to 87 percent. The period from January to April is comparatively the drier time in the year[2]. The annual rainfall fluctuates between 58 to 67 inches (Table 3).

Rainfall and Cropping

The distribution of rainfall in the different months of the year influences the cropping pattern in the district. Most of the cultivated area remains in crops during the months from April to September when there is abundant rainfall. Cropping during the drier months is limited. In general, the distribution of rainfall in the district is considered favourable to the existing type of farming. Light showers in April and May supply moisture for the preparation of land and for the sowing of

---

1. Government of East Pakistan, The Provincial Statistical Board and Bureau of Commercial and Industrial Intelligence, Statistical Abstract for East Pakistan, Vol. IV; (Dacca: E.P. Govt. Press, 1958), p. 141.

2. Ibid, pp. 158-159.

TABLE 3

AVERAGE MONTHLY AND ANNUAL RAINFALL IN INCHES IN THE METEOROLOGICAL STATIONS OF KUSHTIA, CHUADANGA, JHENAIDE, AND MAGURA, 1921-1950

Months	Kushtia	Chuadanga	Ghenaide	Magura
January	1.07	0.80	0.99	1.08
February	1.23	1.10	1.29	1.31
March	1.99	1.26	1.98	2.08
April	3.83	3.23	4.21	5.08
May	7.52	6.15	7.19	7.80
June	13.41	11.48	13.28	11.42
July	12.16	11.07	11.56	12.14
August	12.40	11.27	12.07	10.91
September	10.79	8.95	9.28	9.99
October	5.62	4.48	5.64	3.63
November	1.90	1.43	1.32	1.25
December	0.71	0.62	0.31	0.55
Average Annual Rainfall	72.63	61.84	69.12	67.24

Source: FAO, Shao-or-Ong, Interim Report to the Government of Pakistan on Farming Systems and Suggested Changes in the Ganges-Kabodak Irrigation Project Unit, FAO Report No. 8827, (Rome: FAO of the UN, 1955), p. 12.

aus[3] and jute and the planting of sugarcane. The heavy rainfall in June, July, and August is necessary for the growth and maturity of jute and paddy. The rain in September and October helps the earing and ripening of aman and the sowing of winter crops. Unlike most of the plain lands of East Pakistan, more damage to crops is done by drought than flood in this district. Growing of crops is extremely dependent on timely rainfall. If the first shower, sufficient to moisten the land, is late during the month of April, sowing is late. Late sowing affects the yield greatly. Similarly, if there is no rainfall for a period of about 20 to 30 days or more during the months of May, June, and July, the aus, jute and sugarcane crops are severely damaged, sometimes causing total crop failures. Due to this dependence on rainfall, farmers have followed a cropping system closely adapted to the distribution of rainfall.

Socio-economic Situation

Land Use Pattern

The total farm area of the Kushtia district is 618,435 acres, out of which 559,200 acres are cultivated and 38,120 acres are uncultivated (Table 4).

More than 90 percent of the area in the district is under cultivation. Only two percent of the land is culturable waste. So, the prospective area to be brought under cultivation is limited. Moreover, as the population increases, the area under cultivation may likely decrease, because more area will be taken out of cultivation for homesteads

---

3. Aus and aman are local names of autumn and winter rice.

TABLE 4

UTILIZATION OF LAND IN THE KUSHTIA DISTRICT, 1960

Land Use	Area in Acres	Percent of Total
Net area sown	538,996	87
Current fallow	20,207	3.3
Total cultivated area	559,203	90.3
Forest	9,267	1.5
Culturable waste	11,843	2.0
Uncultivated area	38,122	6.2
Total area	618,435	100.0

Source: Government of Pakistan, Ministry of Food and Agriculture, Pakistan Census of Agriculture, 1960 Vol. I, (Karachi: Govt. of Pakistan Press, 1962), p. 116.

and roads.

Most of the farms in the Kushtia district, like those in other districts of East Pakistan, are small. But the farms in this district are comparatively larger than those in other districts. The average size of farms in this district is 5.8 acres which is 2.3 acres above the provincial average[4]. Though the average size is 5.8 acres, most of the farms are smaller than the average size (Table 5).

It is evident from the table that more than 50 percent of the

4. Government of Pakistan, Ministry of Food and Agriculture, Pakistan Census of Agriculture, 1960, Vol.I; (Karachi: Govt. of Pakistan Press, 1962), p. 27.

TABLE 5

NUMBER AND AREA OF FARMS, CLASSIFIED BY SIZE IN THE KUSHTIA DISTRICT, 1960

Size of Farms (Acres)	Number of Farms	Percent of Total	Farm Area (Acres)	Percent of Total
Under 0.5	4,300	4	1,264	+
0.5 to under 1.0	5,020	5	3,499	1
1.0 to under 2.5	16,310	15	28,300	5
2.5 to under 5.0	32,050	30	118,581	19
5.0 to under 7.5	23,320	22	140,195	23
7.5 to under 12.5	16,280	15	153,910	25
12.5 to under 25.5	8,370	8	137,876	22
25.5 to under 40.0	850	1	25,209	4
40.0 and over	190	+	9,601	1

+ means less than one-half acre

Source: Government of Pakistan, Ministry of Food and Agriculture, Pakistan Census of Agriculture, 1960, Vol. I, (Karachi: Govt. of Pakistan Press, 1962), p. 31.

farms are below five acres in size, and that these farms account for only 25 percent of the total farm area. Seventy-six percent of the farms are below 7.5 acres and account for about one-half of the total farm area.

Population and Man-Land Ratio

The total population in the Kushtia district is 1,166,262 of

which 607,198 are males and 559,064 are females, according to the census of 1961[5]. Out of this total population, 1,103,026 live in rural areas. The total number of persons in the civilian labour force[6] is 365,345. The numbers of agriculturists and non-agriculturists in the total labour force are 282,642 and 82,703 respectively[7]. So the agriculturists in the labour force constitute 77 percent of the total labour force. The man-land ratio or the area per person in the district is 1.9 acres. The cultivated area per person is 0.48 acre. According to the agricultural census of 1960, the average family consists of six members[8].

Land Tenure System

The land tenure system is one of the most important factors which determines the earning of a farmer from farming. J.M. Pingle wrote about the land tenure system in the Nadia district (Kushtia district was a part of the Nadia district before the partition of India), "Many evils arise from the inequitable distribution of land ownership. One of the most significant of these is the creation of a leisured class of land owners, as locally called 'bhadralok' (gentlemen).

---

5. Government of Pakistan, Ministry of Home, Population Census of Pakistan, 1961, Census Bulletin No. 3; (Karachi: Manager of Publications, 1961), p. 46.

6. Persons above ten years of age, working or not working but looking for jobs, were included in the civilian labour force. Women doing household work only were not included in the civilian labour force.

7. Government of Pakistan, Ministry of Home, Population Census of Pakistan, 1961, Census Bulletin No. 5; (Karachi: Manager of Publications, 1961), p. 50.

8. Pakistan Census of Agriculture, 1960, op. cit., p. 114.

The interest of under-raiyats (sub-tenants) must be protected and the size of land ownership must be limited".[9] He further added, "Ninety one percent of the land is owned by 'Zeminders'(big land lords). Cash rent is collected by these zeminders. To do this the zeminders have to employ many agents and collectors. These agents harass the cultivators and extract exorbitant amounts of money or farm products in kind from the farmers illegally".[10] This was the situation everywhere in East Pakistan before 1950. In 1950, the East Bengal State Acquisition and Tenancy Act was passed. According to the provisions in this act, all intermediary rent receiving interests between the government and the peasants were to go[11]. Though there has been a great improvement in the tenure system after the enactment of the law, there are other forms of tenancy still existing. Leasing of land for cultivation and share-cropping are extensively prevalent. According to the agricultural census of 1960, 40 percent of all the farms in the Kushtia district are owner-operated, 58 percent are owner-cum-tenant-operated and two percent tenant-operated[12]. Farmers who cultivate land, taking leases from others, have to pay cash money to the owner. The term of lease is generally for one to two years. Within this short period, the tenant tries to raise as many crops as possible without attempting to improve

---

9. J.M. Pingle, Final Report on the Survey and Settlement Operations in the District of Nadia, 1918-1926, (Calcutta: Seoretariet, 1928), p. 26.

10. Ibid, p. 27.

11. Government of East Pakistan, Department of Information, Land Reform in East Pakistan, (Dacca: E.P. Govt. Press, 1959), pp. 6-7.

12. Pakistan Census of Agriculture, 1960, op. cit., p. 56.

the land or preserve its fertility. In the share-cropping system the farmer hires the land from the owner on condition that the owner will be given 50 percent of the produce with no contribution to the costs of production being made by the owner. Thirty-eight percent of the land holders and 44 percent of the total land are affected by this system in East Pakistan[13].

Fragmentation of Holdings

The problem of holdings, however, does not end at their small size. If the whole of the area cultivated by a peasant proprietor or a tenant farmer were in a single consolidated form at one place, he might be able to make a more productive use of his land and other resources. But this is not the case. The holdings are not only small but they are also fragmented. The total holding is made up of tiny plots scattered over the village area intermixed with other plots belonging to different cultivators. The state of fragmentation can easily be understood from one fact narrated by the Food and Agriculture Commission. The members of the Commission report that they had to walk one and one-half miles from a farmer's house to see his seven pieces of land having a total area of two acres[14]. The agricultural census of Pakistan, 1960, revealed that 96 percent of the farms in the Kushtia district are fragmented; ten percent have two to three fragments, ten percent four to

---

13. Government of Pakistan, Ministry of Food and Agriculture, Report of the Food and Agriculture Commission, (Karachi: Govt. of Pakistan Press, 1960), p. 38.

14. Ibid, p. 88.

five, 19 percent six to nine and 57 percent have more than nine fragments of land[15].

Small holdings are uneconomic to cultivate and the fragmented small holdings are even more so. The already poor equipment of the cultivator is wastefully utilized. Scientific cultivation with employment of labour saving and efficient machines and the introduction of more valuable crops become difficult. The cost of protecting the crops, if protection is at all possible, is higher, and much area is wasted in hedges and paths, and time is consumed in moving from plot to plot.

Fragmentation is mainly caused by the growth of population and the law of inheritance which requires division of property among all the sons and daughters of the deceased, each claiming a bit of every kind of land. Attachment of the people to landed property so that they continue to hold their shares even when they migrate to towns, is another cause of fragmentation. Indebted farmers sometimes sell their land in pieces, thus causing further fragmentation of land.

Labour Situation

Farming in this district, like most areas in the East, is labour intensive. The length of a working day on farms is eight hours. In a tropical climate, and because of local custom it is difficult for men and animals to work longer.

The normal labour requirement per acre of crops varies from

---

15. Pakistan Census of Agriculture, 1960, op.cit., p. 90.

40 to 190 man days for various crops (Table 6)[16]. The figures in the table have been compared with those made in the government farms in Dacca, Jessore, and Mymensingh, and it is clear that this estimate is reasonable.

TABLE 6

NORMAL LABOUR REQUIREMENT (IN MAN DAYS) PER ACRE OF CROPS IN THE KUSHTIA DISTRICT

Crops	Man days
Aus	77
Aman	76
Jute	148
Sugarcane	190
Pulses	50
Wheat	67
Mustard	40
Vegetables	108

Source: Shao-or-Ong, Interim Report to the Government of Pakistan on Farming Systems and Suggested Changes in the Ganges-Kabodak Irrigation Project Unit, FAO Report No. 8827, (Rome: FAO of the UN, 1955), p. 12.

Sugar cane requires the most labour with 190 man days, and jute is next with 148 man days. Winter crops require from 40 to 50 man days.

16. FAO, Shao-or-Ong, Interim Report to the Government of Pakistan on Farming Systems and Suggested Changes in the Ganges-Kabodak Irrigation Project Unit, FAO Report No. 8827; (Rome: FAO of the UN, 1955), p. 12.

Labour requirements of crops vary according to the climate, the field practices, the combination of farm enterprises and the sizes of farms. Though the total labour requirements vary considerably with the sizes of farms, labour requirements for crops per acre do not vary so much in different sizes of farms. If there are light showers in March and April the number of plowings can be reduced. Labour requirements also vary with the distance of fields from the homestead, or between the fields. Labour requirement as shown in table 6 represents average conditions.

The total cropped area, according to the census of 1960, is 848,000 acres in the Kushtia district[17]. Out of this, 15,000 acres are made up of orchards around the homesteads. These orchards require very little care and attention. Therefore, the total cropped area actually requiring man-labour is 833,000 acres. The total labour requirement for cultivation in this cropped area in the Kushtia district is 58,284,000 man days (Appendix I). According to the 1961 population census the total agricultural male labour force, over ten years of age, in the Kushtia district, is 275,000[18]. It is assumed that 20 percent of them are either too young or too old to do heavy work. The government of West Bengal, India, deducted 20 percent from the total agricultural male labour force to find out the total able-bodied agricultural male labour force in the West Bengla province[19]. This province has

---

17. Pakistan Census of Agriculture, 1960, op. cit., p. 116.

18. Population Census of Pakistan, 1961, Bulletin No. 5; op. cit., p. 50.

19. S.R. Mohnot, Indian Economic Policy, (Allahbad: Friends Book Depot, 1952), p. 156.

similar conditions to that of Kushtia district. After deducting 20 percent, the total able-bodied male agricultural labour force in this district is estimated at about 220,000persons. This is equivalent to 80300000man days (220,000 x 365), as compared with the total man labour requirement for crops of 58,284,000 man days. Moreover, there is a great woman labour potential.

Though there is a large surplus labour force in agriculture, the distribution of requirements of labour over the different months of the year is such that many farmers have to engage hired labour for farm work in the peak period. During the months from October to February, there is a very low requirement of labour and farmers remain idle, while during the months from March to September the requirement is higher. The peak period of labour requirement is generally at the time of plowing, sowing, and harvesting of rice and jute.

The daily average money wage rate of farm labour in the Kushtia district is two rupees per worker. Permanent labour employed for ten to twelve months is cheaper. The average monthly wage of an agricultural labour in this district was 45 rupees in 1963[20]. The reason that permanent hired labor is cheaper in comparison with daily labour is that the permanent labourer is assured of his employment throughout the year but the daily labourer has to remain idle in the season when farm work is light in general.

---

20. Government of East Pakistan , Office of the District Agricultural Officer Kushtia, Memo No. 6425, Dated 5th March, 1964.

Consumptive Habits

The typical diet of a Pakistani is poor and contains about 2150 calories, derived largely from cereals - rice in East Pakistan and wheat in West Pakistan. Its content of animal proteins and total proteins is low. Protein foods in the diet of a Pakistani amount to 305 calories per day. Out of this 156 calories are of animal origin; milk, eggs, meat, and fish[21]. The caloric content of a typical diet in Japan, United States, United Kingdom, and Sweden is 2100, 3100, and 3000 respectively[22]. The caloric content of a Pakistani diet compares with that of Japan but it is considerably less than those in other countries.

The farmers in the Kushtia district, like those in the remainder of the province, produce crops mainly for home consumption and sell the surplus, if any, to the market. Sometimes the need for cash to buy necessities and to pay debts compels the farmers to sell, at harvest time, part of the produce that they ought to keep for home use; this requires them to buy the same kind of produce later at higher prices. This is especially true on smaller farms. Crop and animal by-products like straw and cow dung are generally used on the farm.

Cropping Pattern

The main characteristics of farms in this district, as well as in the province as a whole, is the very high proportion of crop farms. Out of a total of 134,070 holdings, 106,690 are crop farms and 27,380

---

21. Report of the Food and Agriculture Commission op.cit., p. 18.

22. Report of the Food and Agriculture Commission op.cit., pp. 59-60.

are livestock farms[23]. The livestock farms are also very small. Though the main source of farm income of livestock farms is the herd they keep, this is not their main source of total income. They earn a major portion of their total income from off-farm work. The high pressure of population on land and related small farm-size compel the farmer to produce mainly food crops for family consumption. This is the main cause of comparatively larger number of crop farms in the district.

A study conducted by the Department of Agricultural Economics and Statistics, Government of Pakistan, in this district in 1961 showed that of the total cropped area[24], 60 percent was covered by rice, nine percent by sugar cane, four percent by oil seeds, 20 percent by pulses, two percent by wheat and five percent by other minor crops[25]. In the 1960 agricultural census of Pakistan it was found that the percentage of total cropped area under different crops did not vary with the different sizes of farms[26].

The area covered by a homestead varies from 0.20 to 0.60 acre. Generally as the size of farm increases, the area covered by the homestead also increases. The farm size has, again, relation with the family size. Family size tends to be larger with the larger farm-size.

---

23. Pakistan Census of Agriculture, 1960, op. cit., p. 31.

24. Total cropped area includes area double cropped and as such, is generally larger than the total cultivated area.

25. Government of Pakistan, Ministry of Food and Agriculture, Survey Report on Cropping Pattern and Crop Intensities in Selected Districts of Pakistan, (Rawalpindi: Department of Agricultural Economics and Statistics, 1962), p. 6.

26. Pakistan Census of Agriculture, 1960, op. cit., p. 175.

Farmers, generally, have permanent orchard around their homesteads. The trees in the orchard grow naturally with little attention from the farmer.

Cropping Season

There are two cropping seasons in the district, kharif and rabi. Kharif is the rainy season and extends from March to September. Rabi is the dry, winter season from October to February. Most of the cropping is done in the kharif season. In rabi about 70 percent of the cultivated land remains fallow[27]. The main cause of such large areas remaining fallow in the rabi season is that in this season the rainfall is very scanty. As there is no arrangement to irrigate lands in the rabi season by artificial means, cultivation has been concentrated in the kharif season when the rainfall is abundant.

Percentage of Double Cropping

According to the plot to plot survey conducted in 1944-1945, the percentage of double cropping[28] in the Kushtia district was 32[29]. Since then the intensity of cropping has increased. The survey conducted in 1960 by the Department of Agricultural Economics and

---

27. Government of Pakistan, Ministry of Agriculture, Agriculture in Pakistan, (Karachi: W.P. Govt. Press, 1959), p. 3.

28. Percentage of double cropping = $\frac{\text{Area cropped more than once in a year}}{\text{Total cultivated area}} \times 100$

29. H.S.M. Ishaque, Agricultural Statistics by Plot to Plot Enumeration in Bengal, 1944-45, Part I; (Calcutta: Bengal Govt. Press, 1946), p. 58.

Statistics showed the percentage of double cropping in this district to be 40[30]. The double cropped area generally represents the area cropped in the rabi season. The percentage of double cropping in this district is low in comparison with other districts. It is so because the area under sugar cane which is an annual crop, is comparatively higher in this district.

Cultural Practices

In growing crops, farmers in this district, generally, do not apply fertilizers to all crops. Cow dung, received as animal by-products, is partly used as fuel and partly as manure. Sugar cane is the only crop which is heavily manured. Jute is also sometimes manured with cow dung. Use of chemical fertilizer is very low in this district. In the year 1960 only 9800 maunds (402 tons) of chemical fertilizers were sold in the district and only four percent of the farmers used this quantity[31]. This was mainly used on sugar cane land.

No rotation of crops is practiced by the farmers in this district[32]. The common practice is to grow the same crop in the same field continuously for a number of years, until it is found that the crop yield does not pay for the cost of production.

Crop Yields

Crop yields vary from place to place and from year to year, due

---

30. Survey Report of Cropping Pattern and Crop Intensities, op. cit., p. 8.

31. Pakistan Census of Agriculture, 1960, op. cit., p. 152.

32. Shao-or-Ong, op. cit., p. 23.

to difference in soil, climate, varieties and management. Crop yields are very low in Pakistan; much lower than many other countries in the world (Table 7).

TABLE 7

NORMAL YIELD PER ACRE OF SOME IMPORTANT CROPS IN SOME SELECTED COUNTRIES AND KUSHTIA DISTRICT, (IN POUNDS).

Country	Crops		
	Wheat	Sugar cane	Rice
Burma	288	NA	1,210
China	938	47,188	2,246
Egypt	1,613	54,140	3,612
India	568	29,884	987
Japan	1,206	NA	3,596
Pakistan	815	17,485	1,267
(Kushtia Dist)	418	28,700	1,009
U.S.A.	987	40,144	2,246

NA = Not Available

Source: FAO, Production Year Book, 1960, Vol. 14; (Rome: FAO of the UN, 1961), pp. 33-68. Figures of the Kushtia district are from Table 8.

Yield of rice and wheaf in this district is not only lower than other countries but also lower than the normal yield of Pakistan as a whole.

A comparison of crop yields between the Kushtia district and

East Pakistan as a whole is shown in Table 8.

TABLE 8

COMPARISON OF CROP YIELDS BETWEEN KUSHTIA DISTRICT AND EAST PAKISTAN

Crops	Average yield per acre 1956-1960			
	Kushtia		East Pakistan	
	Maunds	Pounds	Maunds	Pounds
Aus (clean Rice)	8.13	667	7.77	637
Aman (clean Rice)	8.30	681	10.97	900
Pulses				
Gram	4.60	377	6.50	533
Lentils	4.80	394	7.50	615
Mustard	4.10	336	4.90	402
Wheat	5.10	418	5.90	484
Sugar cane	350.00	28,700	398.00	32,640
Jute	13.10	1,074	15.10	1,238

Source: Government of East Pakistan, Department of Agriculture, Agricultural Production Levels in East Pakistan (Dacca: E.P. Govt. Press, 1961), pp. 120-123.

The average yields cover a period of five years from 1956-1960. Kushtia district in general, has a better aus yield than that of East Pakistan as a whole, while aman yield in this district is one of the lowest among all the districts in the province.

Crop yield is a very important determinant of the level of farm income. The main causes of low yields of crops in East Pakistan in general and Kushtia district in particular, may be listed as follows[33].

1) Inadequate plowing of land,
2) Lack of improved varieties of crops and better quality seeds,
3) Very low level of use of fertilizers,
4) Drought and flood,
5) Lack of adequate plant-protection measures.

The wooden plow the farmers use to cultivate their land is inefficient. It can hardly go below five inches, and does not turn the soil well. The bullocks are weak and unsuitable for heavier plows. Until the soil is softened by water a plow can not be operated.

The farmer is growing the same varieties of crops grown by his fore fathers from time immemorial. New high yielding varieties are unfamiliar to the farmers and the seeds they use are poor in quality. They do not know how to collect and store seeds properly.

Lack of fertilization of land is an important factor contributing to lower yields. Land is being depleted of plant nutrients due to continuous raising of crops without replenishing the fertility by additional application of fertilizers.

Frequent drought and flood also cause lower yields of crops. Insects and diseases cause considerable damage to crops. Farmers do not

---

33. Government of Pakistan, Ministry of Pakistan, Report of the Agricultural Enquiry Committee, 1951-1952, (Karachi: Govt. of Pakistan Press, 1952), pp. 12-13.

know how, and have no means, to fight these menaces. When their crops are infested with insects or diseases they think that this is a curse from God.

There are tremendous possibilities for increasing the yield of crops in East Pakistan, even without making basic changes in the resources of the farmers. Research conducted by the Agricultural Research Section of the East Pakistan Agricultural Department showed that the yield of rice can be as high as 2600 pounds (about 32 maunds) per acre in East Pakistan only by judicious doeses of fertilizers[34]. The author, during his service as an agricultural extension officer in East Pakistan, observed yields of rice to vary between 40 to 60 maunds (3280 pounds to 4920 pounds) per acre on the demonstration plots. Further discussions on how to increase the yields of crops in East Pakistan will be presented in Chapter V.

Livestock

Cattle are maintained by farmers only as a draught power for plowing. Large numbers of cattle are difficult to maintain because of the poverty of farmers and insufficient availability of fodder. According to the 1960 agricultural census, there are about 232,000 work animals and 96,700 milch animals owned by 106,690 farmers in the Kushtia district. There are approximately two work animals and one milch animal per farm[35].

---

34. Government of East Pakistan, A. Alim et al., Review of Half a Century of Rice Research in East Pakistan, (Dacca: E.P. Govt. Press, 1962), p. 28.

35. Pakistan Agricultural Census, 1960, op. cit., pp. 274 and 284.

The health of cattle is poor in the district, and there is an acute shortage of fodder. Pastures are put under crops in the man and animal competition for land. Farmers, due to their poverty and poor knowledge, do not feed concentrates to their cattle except small quantities of home-produced rice bran. Comparatively richer farmers may feed their cattle small quantities of mustard cakes.

Farm Equipment

Farm equipment in East Pakistan consists of indegenous implements and tools which are primitive in design and inefficient in working. Most of the implements can be made by the farmers themselves or by village black-smith. Farm implements in East Pakistan are low in value and their life span varies from one to four years (Table 9). Improved implements and machines, like the tractor, harvester, and rotavator have not been introduced to the farmers in East Pakistan. Farmers' low income, lack of knowledge, small and fragmented holdings, lack of repairing facilities, and many other causes have prevented the introduction of improved farm mechanization in East Pakistan.

TABLE 9

FARM IMPLEMENTS AND THEIR VALUE AND USE,
KUSHTIA DISTRICT

Kind	Average Value in Rupees+	Use
Plow	12	Tillage
Yoke	2	Wooden bar placed on the neck of a pair of bullocks for plowing.
Ladder	2	Leveller, clod breaker, and weed collector.
Rake	12	Interculture implement, mulching, weeding and thinning.
Nirani	1	Interculture implement, mulching, weeding and thinning.
Sickle	1	Harvesting wheat, paddy etc.
Spade	3	Earthing up, trenching etc.
Dao	2	Cutting, harvesting sugar cane etc.
Fishing trap	2	Catching fish.
Axe	2	Cutting trees.
Khunti	2	Digging.
Winnower	1	Cleaning grains.
Cane basket	1	Carrying manures, seeds etc.
Seed bin	4	Storage of seeds.

+ Value of implements have been taken from FAO, Shao-or-Ong, Interim Report to the Government of Pakistan on Farming Systems and Suggested Changes in the Ganges-Kabodak Irrigation Project Unit, FAO No. 8827; (Rome: FAO of the UN, 1955), p. 35.

CHAPTER III

METHODOLOGY

Classification of Lands

Land characteristics vary infinitely and continuously. Variations is soil characteristics, location, topography, and climate influence cropping systems, yields of crops, and type of farming. These are important factors that affect the income from farming. Results of studies made to find the difference in income due to differences in land characteristics, in many countries have confirmed this fact. These studies indicate the importance of land classification on the basis of land capability before making a comparison of farm incomes. One of the recommendations made by the National Resources Planning Board, United States, concerning land classification was follows: "that soil types or other physically defined land types can be classified according to yield expectancy of given crops under stated types of management practices. This form of classification is especially important in farm management budget analysis, in land appraisal for taxation or for credit extension, and predicting returns from various alternative cropping systems and practices".[1] So in estimating incomes from various sizes of farms, land characteristics have to be taken into considerations.

There has been no classification of lands in East Pakistan. A few soil types have been recognized in the province and according to

---

1. W.H. Pine, A Review of Land Classifications in the United States, 1947, (Ph.D. Thesis), (Manhattan: Kansas Aril. Exptt. Station, 1961), p. 3.

these soil types East Pakistan can be divided into several soil regions. These broad soil divisions are generalised because the soil tracts overlap each other in many areas and there are numerous local variations that are difficult to depict on a map. These soil divisions are[2]:

1) The red soils (Khiar or lal mati)[3]
2) The silt or heavy silt-loams (Pali mati)
3) The clays or clayey soils (Matial mati)
4) The sandy-loams and clay-loams (Doash mati)
5) The swamp soils; peat-bog and muck soils
6) The alkaline or saline soils (Nona mati)
7) The hilly soils.

Kushtia district is covered by two categories of soils, the clay-loams and the silt-loams. The clay-loam category covers about 80 percent of the total area of land in the district[4].

On the basis of soil types, topography, percentage of double cropping, and crops grown, in this study, the land in the Kushtia district is classified into two classes, class A and class B. The comparison of the two classes of land are shown in a tabular form (Table 10).

The major difference between the class A and class B land is that the class B land is under water for a period in the year. This

---

2. Nafis Ahmed, Economic Geography of East Pakistan, (London: Oxford University Press, 1958), pp. 64-65.

3. The words within the bracket represented the local term by which the farmers recognize the type of soil.

4. Nafis Ahmed, op. cit., p. 68.

fact explains for differences in other characteristics such as soil type, crops grown, and intensity of cropping.

TABLE 10

COMPARISON OF THE TWO CLASSES OF LAND IN THE KUSHTIA DISTRICT

Class A	Class B
1. Soil is clay-loam	1. Soil is silty or silt-loam.
2. Level land, located more distant from the river. Land is medium high and is not under water during rainy season.	2. Topography is more or less level. Area mainly located along the river Ganges. It is under four to five feet of water during rainy season.
3. Percentage of double-cropping is 40.	3. Percentage of double-cropping is 50.
4. Main crops grown are rice, sugar cane, pulses, mustard, and wheat.	4. Main crops grown are rice, jute, mustard, cereals (locally called Cheena and Paira), and pulses.

Source: Adapted from Nafis Ahmed, Economic Geography of East Pakistan, (London: Oxford University Press, 1958), pp. 64-68.

Percentage of double cropping has been taken as 40 in the class A land area in accordance with the study by the Pakistan Department of Agricultural Economics and Statistics[5]. The percentage of double cropping in class B land area has been considered as 50 as is prevalent in Faridpur, the contigous district with this area and covered by the same soil type.

Sizes of Farms Taken as Models

Typical four-acre, six-acre, eight-acre, ten-acre, and twelve-acre farms have been taken as the sizes of farms for income analysis. A four-acre farm is the smallest size dealt with because it will give an idea of the income levels of a modal farm in the Kushtia district and the six-acre farm roughly corresponds to the average farm size in the district. A study conducted in 1955 by Kibria in the Dacca district showed that the average farm income for the typical 6.8-acre farm was 890 rupees[6]. In another study in 1958, the same worker in the same district but in a different place found the average farm income for the seven-acre farm size to be 824 rupees[7]. Shao-or-Ong in a study in 1954 in the Ganges-Kabodak Irrigation Project area found that the average

---

5. Government of Pakistan, Ministry of Food and Agriculture, Survey Report on Cropping Pattern and Crop Intensities in Selected Districts of Pakistan, (Rawalpindi: Deptt. of Agricultural Economics and Statistics, 1962), p. 5.

6. Q.G. Kibria, Farm Management Studies at Sholpur, Dacca, (Feni: Pakistan Library, 1955), p. 4.

7. Q.G. Kibria, Farm Management Studies, Methods and Analysis, (Feni: Pakistan Library, 1959), p. 11.

farm income for the size group seven to nine acres was 1095 rupees[8].

From the findings of the above studies it is hypothesized that the desired level of income stated in the objective of this study might be associated with the size some where within the range from six acres to 12 acres.

Farm Inventory

The number of bullocks for drawing plows is considered from the point of view of a plow-unit. A plow-unit is the maximum average that a pair of bullocks can cover in a cropping season. Four acres of land is considered to comprise a plow-unit.

Carts and boats have not been included in the inventory because only a few farmers own them. Instead, the need for carts and boats have been shown met by hiring. Further discussions on farm inventory for this study will be included in Chapter IV.

Family Size

Since the objective of this study is to estimate the income of an average farm family from various sizes of farms, the family size has been taken as constant for all sizes of farms. When this is known, it is possible to recommend the size of farm that will be thought adequate for yielding the desired level of income to the majority of the farm families.

---

8. FAO, Shao-or-Ong, Interim Report to the Government of Pakistan on Farming Systems and Suggested Changes in the Ganges-Kabodak Irrigation Project Unit, FAO Report No. 8827; (Rome: FAO of the UN , 1955), p. 17.

The family has been considered as consisting of six members. This size represents 32 percent of the farm families in the Kushtia district and 31 percent of the farm families in the whole of East Pakistan. About 80 percent of farm families in the Kushtia district have from four to eight members[9].

The family in this study consists of a farmer 40 to 45 years of age, his wife, one 20-year old son, 16-year old daughter, and two minor children. This composition of family is typical in the area[10]. The members in the family working on the farm are considered equivalent to two labour units. One labour unit corresponds to the amount of work one average male labourer in the district can perform on the farm. The farmer himself is equivalent to one labour unit. His son of 20 years of age is taken as equivalent to three-fourths of a labour unit. This is because the son, though physically able to perform the same amount of work as the father, will not do so. The son will normally pass part of his time in games and other recreational activities. The farmer's wife and daughter together constitute one-fourth of a labour unit. Generally the females in East Pakistan do not perform farm work. The farm work they do is limited to chores such as milking of cows, cleaning the barns, and rearing the poultry birds. For doing this work, two females will require about one hour a day. Though this time required may likely be greater with the larger farm size it will not be greatly

---

9. Government of Pakistan, Ministry of Food and Agriculture, Pakistan Census of Agriculture, 1960, Vol. I; (Karachi: Govt. of Pakistan Press, 1962), pp. 342 and 344.

10. Shao-or-Ong, op. cit., p. 37.

unless the farm size is very large.

For the budgeting of food consumption in this study the family is assumed to be equivalent to 4.8 consumption units. One consumption unit corresponds to the amount of food consumed by a normal adult male. This assumption is in agreement with the general concensus of India and Pakistan[11] and the recommendation of Engel[12].

Prices

In calculation of income, the average growers' price of farm products for five years is used (Appendix 2). Growers' price is the price that farmers receive for their products at the local village market. Because of violent fluctuations in the prices of jute, average prices of jute for ten years have been used. Price of sugar cane has been taken as one and three-fourth rupees per maund (one maund = 82 pounds). This price has been fixed by the government[13] and has been in operation from 1960 to the present. The price of milk has been taken as 20 rupees per maund. This was the average price of milk in the Kushtia district for three years from 1961 to 1963[14]. The price of milk does not fluctuate greatly from year to year. For the cost of labour, the

---

11. S.M. Akhtar, Economics of Pakistan, (Lahore: Publishers United LTD, 1963), p.

12. R.W. Engel, "1963 Recommended Dietary Allowance," Journal of the American Dietic Association, Vol. 44; No. 2, 1964, p. 93.

13. Government of East Pakistan, Department of Agricultural Marketing, Marketing of Sugar Cane Gur in East Pakistan, (Dacca: E.P. Govt. Press, 1959), p. 11.

14. Government of East Pakistan, Deaprtmenf of Agricultural Marketing, Report on the Marketing of Milk in East Pakistan, (Dacca: E.P. Govt. Press, 1962), p. 18.

recent average wage rates prevailing in the district has been taken. The average daily money wage for an adult male agricultural worker is two rupees and the average monthly money wage of the similar but permanent worker is 45 rupees in the Kushtia district in 1964[15]. The price of agricultural land, used in this study, is the average of 1962 and 1963 prices for medium quality land as reported by the District Agricultural Officer, Kushtia[16]. The prices of land as recorded in the Sale Registration Office were not used, because these records are based on the prices quoted in the document of land sale which are much higher than the actual price received by the sellers. This is so, because sometimes in the past, buyers had been forced by law to return land to sellers at the price the land was originally sold. To prevent the sellers from taking back the land once a transaction has been completed, it has been customary in East Pakistan for both the sellers and buyers of land to tacitly agree to quote in the sale-document a higher price than is actually paid.

Land Taxes

Farmers have to pay cash land taxes to the government annually. The average land tax for agricultural land is five rupees per acre; but for the acreage that contains the houses they pay from six to eight rupees per acre[17]. Land taxes, for this study, have been taken as six

---

15. Government of East Pakistan, Office of the District Agricultural Officer Kushtia, Memo No. 6425 Dated 5th March, 1964. p. 1.

16. Ibid., p. 1.

17. Shao-or-Ong, op. cit., p. 49.

rupees per acre. Along with the land tax the farmers pay additional surtaxes for roads and education. These surtaxes add about one-half rupee per acre to the total tax.

In addition to the cash rent and surtaxes, the local Union Boards collect fees from the cultivators on a household basis. The rates of the Union Board fee vary according to the ability of the farmer to pay. On the average, about one-half rupee per acre has to be paid per year by the farmers to the Union Boards[18].

Yields

In calculation of receipts from crops the average yields for five years as in the table have been used. The daily yield of milk per milch-cow and per working-cow, used in this study, is one seer (2.2 pounds) and one-fourth seer respectively. This is the average yield of milk in the Kushtia district[19]. The yield of vegetables have been taken as 50 maunds per acre.

Tenure System

The farms taken as models for analysis have been assumed as owner-operated. The farmers have also been assumed to be full-time farmers. By full-time farmers it is meant that there is no off-farm income to the farmers and their only source of income is the farms they own and operate.

---

18. Shao-or-Ong, op. cit., p. 50.

19. Report on the Marketing of Milk in East Pakistan, op. cit., p. 3.

Technology and Management

The adoption of improved technology on present farms has not kept pace with research developments. The objective of this study is to estimate incomes from various sizes of farms as presently operated; thus, the technology and management assumed is the level currently used in the district.

Depreciation

Only one-half of the total amount of depreciation on livestock has been included in expenses. This is because, to a degree, there is no outlay of cash money to replace the livestock. This replacement comes about through expenses for farm grown feeds fed to the livestock, and for the growing of young animals for replacements. It is assumed that approximately one-half of the total depreciation of the animals must be replaced by cash purchases.

No depreciation has been charged on farm buildings, because the farmers do not generally replace their buildings by new ones. They repair or replace parts of buildings when necessary, and it is assumed that the annual building repair costs off set the normal depreciation.

Definitions

Cash Farm Income: Is the cash farm receipts minus cash farm expenses.

Operator's Net Earnings: Is equal to the amount which the farmer earns both in cash and kind for his year of work on the farm.

Operators net earnings = (Cash farm income + value of the farm products consumed by the family + value of one year's use of

farm house) - (Value of the unpaid family labour + interest on capital).

Total Family and Capital Earnings: Is what the family and the capital earn in one year from the farming business. The total family, and capital earnings is equal to the operator's net earnings plus unpaid family labour and interest on capital.

CHAPTER IV

PHYSICAL ORGANIZATION OF FARMS

Farm Layout

It has previously been mentioned that farm land is fragmented in the Kushtia district. The diagrametic view of the scattered plots of a typical five-acre farm the author knows personally is shown in Figure 2. This farm consists of ten plots, one of which includes the homestead. The average size of a plot is one-half acre. Most of the plots are located at a distance of about one-half mile from the farmer's house. The scattered tiny plots are separated from each other by other ownerships.

Farm Inventory

The major item in the farm inventory is the land (Table 11). It constitutes from 72 to 78 percent of the total inventory value. The next most important item is the livestock. It constitutes from 11 to 13 percent of the total inventory value. Farm equipment is the item that is smallest in value and is about one percent of the total value of the inventory.

Two bullocks are considered sufficient to plow four acres of land, but for eight acres four bullocks and one working cow have been allocated. The working cow will give milk as well as replace a bullock for plowing when needed. On this basis bullocks and working cows have been allocated to other sizes of farms. The largest farm in this study has six bullocks and one working cow.

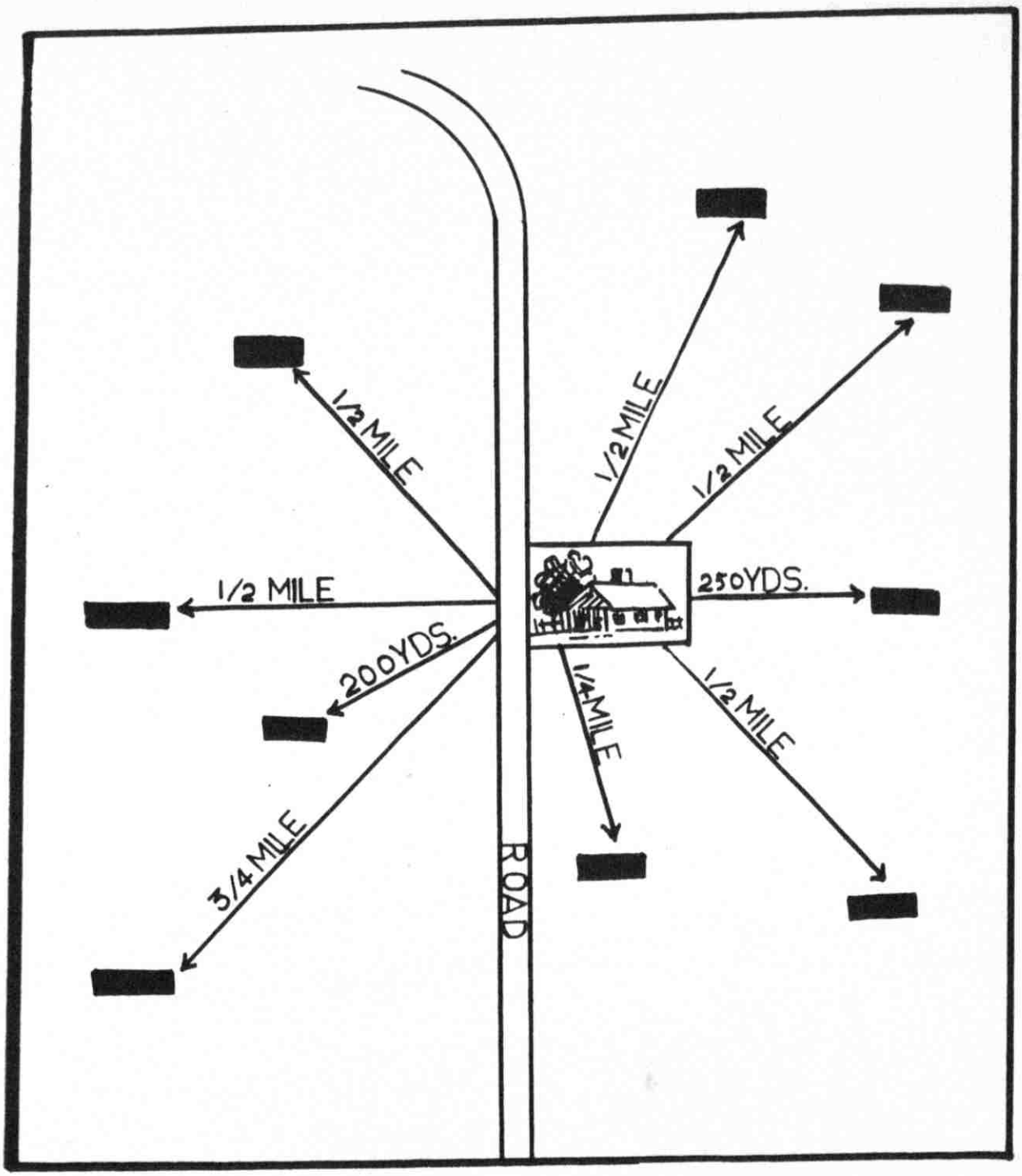

FIG. 2. DIAGRAM OF A FIVE-ACRE FARM COMPOSED OF TEN PLOTS AND SHOWING APPROXIMATE DISTANCES FROM THE FARM HOUSE.

TABLE 11

INVENTORY OF MODEL FARMS, CLASS A AND CLASS B LANDS, KUSHTIA DISTRICT

Items	Four-Acre Farm		Six-Acre Farm		Eight-Acre Farm		Ten-Acre Farm		Twelve-Acre Farm	
	Amount	Value (Rupees)	Amount	Value (Rupees)	Amount	Value (Rupees)	Amount	Value (Rupees)	Amount	Value (Rupees)
1. Land	4 acres	3,200	6 acres	4,800	8 acres	6,400	10 acres	8,000	12 acres	9,600
2. Equipment										
a) Plow	1	12	2	24	2	24	3	36	3	36
b) Ladder	1	2	1	2	2	4	2	4	3	6
c) Rake	1	12	1	12	1	12	1	12	1	12
d) Yoke	1	2	2	4	2	4	3	6	3	6
e) Spade	1	3	2	6	2	6	3	9	3	9
f) Axe	1	4	1	4	2	8	2	8	2	8
g) Dao	2	4	2	4	2	4	2	4	2	4
h) Khunti	1	2	1	2	1	2	1	2	1	2
i) Basket	2	2	3	3	3	3	4	4	4	4
j) Seed bin	1	4	2	8	2	8	3	12	3	12
k) Fishing trap	1	2	1	2	1	2	1	2	1	2
l) Nirani	2	2	3	3	4	4	5	5	6	6
m) Sickle	2	2	3	3	4	4	5	5	6	6
n) Winnower	2	2	3	3	4	4	5	5	6	6
o) Miscellaneous		15		20		25		30		35
Total		3,270		4,900		6,514		8,144		9,754

TABLE 11 Continued

Items	Four-Acre Farm		Six-Acre Farm		Eight-Acre Farm		Ten-Acre Farm		Twelve-Acre Farm	
	Amount	Value (Rupees)	Amount	Value (Rupees)	Amount	Value (Rupees)	Amount	Value (Rupees)	Amount	Value (Rupees)
3. Buildings										
a) Tin shed	1	350	1	350	2	700	2	700	2	700
b) Thatched shed	2	150	2	150	2	150	2	150	2	150
c) Barn	1	80	1	80	2	160	2	160	3	240
4. Livestock										
a) Bullocks	2	300	3	450	4	600	4	600	6	900
b) Working cow	-	-	1	80	1	80	2	160	1	80
c) Milch cow	1	150	1	150	2	300	2	300	3	450
d) Young animals	1	40	1	40	2	80	2	80	3	120
e) Sheep and goats	2	40	2	40	2	40	2	40	2	40
f) Fowls	4	8	4	8	4	8	4	8	4	8
Total		1,118		1,348		2,118		2,198		2,688
Total of Previous page		3,270		4,900		6,514		8,144		9,754
Gross Total		4,388		6,248		8,632		10,342		12,442

The most important item of farm equipment is the plow. One plow and one yoke are always associated with one pair of working cattle. One rake is all that is needed on a 12-acre farm; the four-acre farm must also keep a rake not fully utilized. Other farm equipment are minor items in the inventory and are correlated with family size as well as farm size. On this basis equipment has been assigned to various sizes of farms.

Farm buildings, except for the barn, on the four-acre and six-acre farms are equal in number and value. The situation is similar with the eight, ten and 12-acre farms. This is so because the family has been assumed to be of same size on all farms and there is no need for additional farm building for larger farms, up to a limit.

The entire inventory is assumed to be the same for both classes of land.

Land Use and Crop Distribution

The total cropped area on all farms is higher in the class B land, because the percentage of double cropping has been assumed to be higher in this class. The total cropped area on larger farms represents a higher proportion of the total farm size than it is on smaller farms. The total cropped area on a four-acre farm in the class B land area is five acres, but on an eight-acre farm it is 10.5 acres (Table 12). This is so because the area covered by the homestead on a four-acre farm is 0.45 acre, whereas the area covered by the homestead is only one-half acre on the eight-acre farm. Homesteads on different sizes of farms are of the same sizes in both the classes of land.

TABLE 12

LAND USE AND CROP DISTRIBUTION ON THE MODEL FARMS CLASS A AND CLASS B LAND AREA, KUSHTIA

	Four-Acre Farm		Six-Acre Farm		Eight-Acre Farm		Ten-Acre Farm		Twelve-Acre Farm	
Homestead	0.45 Acre		0.45 Acre		0.50 Acre		0.50 Acre		0.50 Acre	
	Class A Land									
Crops	Area in Acres (Kharif)	(Rabi)	Area in Acres (Kharif)	(Rabi)	Area in Acres (Kharif)	(Rabi)	Area in Acres (Kharif)	(Rabi)	Area in Acres (Kharif)	(Rabi)
Aus	2.00		3.00		4.20		5.40		6.50	
Aman	1.00		1.60		2.10		2.60		3.20	
Sugar cane	0.50		0.70		1.00		1.20		1.40	
Wheat		0.10		0.15		0.20		0.30		0.40
Pulse		0.80		1.30		1.70		2.20		2.60
Pulses for fodder		0.20		0.30		0.40		0.50		0.60
Mustard		0.20		0.30		0.40		0.50		0.60
Vegetables		0.20		0.35		0.50		0.60		0.80
Total	3.50	1.50	5.30	2.40	7.30	3.20	9.20	4.10	11.10	5.00
Total cropped Area	5.00		7.70		10.50		13.30		16.10	
	Class B Land									
Aus	1.60		2.50		3.40		4.30		5.20	
Aman	1.60		2.50		3.40		4.30		5.20	
Jute	0.50		0.80		1.00		1.30		1.60	
Pulse		0.80		1.30		1.80		2.30		2.80
P. for fodder		0.20		0.30		0.40		0.50		0.60
Mustard		0.20		0.30		0.40		0.50		0.60
Cereals		0.20		0.30		0.40		0.50		0.60
Vegetables		0.20		0.30		0.40		0.50		0.60
Total	3.70	1.60	5.80	2.50	7.80	3.40	9.90	4.30	12.00	5.20
Total cropped Area	5.30		8.30		11.20		14.20		17.20	

Labour Requirement

The labour requirements have been estimated for all types of work required on the farm. These include the growing of crops and care of livestock, and have been estimated on the basis of fortnightly requirements (Tables 13 to 16). In each fortnight 30 family man days are available for farm work.

In the class A land area the requirement of labour on a four-acre farm is such that during the months of March, June and July, family labour is not sufficient to cope with the farm work and hired labour is therefore engaged (Table 13). But in other months, family labour remains partly idle. In class B land family labour is fully employed by farm work on a four-acre farm in the months of May, June and July, and during other months there is insufficient farm work to keep them fully employed (Table 14). The pattern of labour requirement on six-acre and eight-acre farms is similar to that on four-acre farms in the respective classes of land (Appendices 3 to 6).

Budgeting shows that on ten-acre and 12-acre farms in both the classes of land, the hiring of permanent labour for eleven months is more economic than daily labour. It is also the author's observation that the larger farms generally meet the excess labour requirements over the supply of family labour by hiring permanent labour.

On a ten-acre farm in the class A land area the total labour requirement in the first fortnight of January is 36.5 man days (Table 15). The total family labour available during the period is 30 man days. The total labour requirement exceeds the supply of family labour by six and one-half man days. Such excess labour requirements over the supply of

TABLE 13

LABOUR REQUIREMENTS ON A FOUR-ACRE MODEL FARM CLASS A LAND, KUSHTIA DISTRICT (Man Days)

Months	Fort-night	Aus	Aman	Sugar Cane	Wheat	Pulse	Fodder	Must-ard	Vegeta-bles	Live-stock Chores	Total	Family Labour Sup-plied	Hired Labour
Jan.	1	-	3	6	0.5	-	-	0.5	1	7	18	18	-
	2	-	-	6	-	-	-	1	1.5	7	15.5	15.5	-
Feb.	1	-	-	8	-	5	-	1	-	7	21	21	-
	2	6	-	10	-	5	-	1.5	-	7	29.5	29.5	-
March	1	6	-	5	1	5	-	0.5	-	7	24.5	24.5	-
	2	6	3	15	1	4	-	-	-	7	36	30	6
April	1	6	3	7	1	-	-	-	-	7	24	24	-
	2	6	3	5	-	-	-	-	-	7	21	21	-
May	1	12	3	3	-	-	-	-	-	7	25	25	-
	2	18	3	-	-	-	-	-	-	7	28	28	-
June	1	18	3	3	-	-	-	-	-	7	31	30	1
	2	18	6	3	-	-	-	-	-	7	34	30	4
July	1	16	10	5	-	-	-	-	-	7	38	30	8
	2	12	6	5	-	-	-	-	-	7	30	30	-
August	1	12	3	-	-	-	-	-	-	7	22	22	-
	2	12	3	-	-	-	-	-	-	7	22	22	-
Sept.	1	6	3	-	-	-	-	0.5	2.5	7	19	19	-
	2	-	-	-	-	-	-	0.5	2.5	7	10	10	-
Oct.	1	-	-	-	0.5	4	1	1.5	-	7	14	14	-
	2	-	2	4	1	4	1	1	5	7	25	25	-
Nov.	1	-	1	-	0.5	4	1	-	5	7	18.5	18.5	-
	2	-	6	5	0.5	4	1	-	2	7	25.5	25.5	-
Dec.	1	-	12	-	0.5	-	-	-	1	7	20.5	20.5	-
	2	-	6	5	0.5	5	1	-	1	7	25.5	25.5	-
		142	76	95	7	40	5	8	21.5	168	577.5	558.5	19

TABLE 14

LABOUR REQUIREMENTS ON A FOUR-ACRE MODEL FARM CLASS B LAND, KUSHTIA DISTRICT (Man Days)

Months	Fort-night	Aus	Aman	Jute	Pulse	Fodder	Must-ard	Cereals	Vegeta-bles	Live-stock Chores	Total	Family Labour sup-plied	Hired Labour
Jan.	1	-	5	-	-	-	0.5	1	1	7	14.5	14.5	-
	2	-	-	-	-	-	1	-	1	7	9	9	-
Feb.	1	-	-	-	5	-	1	-	-	7	13	13	-
	2	5	-	-	5	-	1	-	-	7	18	18	-
March	1	5	-	1.5	5	-	1	2	-	7	21.5	21.5	-
	2	5	5	1.5	5	-	-	2	-	7	25.5	25.5	-
April	1	5	5	2	-	-	-	2	-	7	21	21	-
	2	4	5	3	-	-	-	-	-	7	19	19	-
May	1	10	5	6	-	-	-	-	-	7	28	28	-
	2	14.5	4	6	-	-	-	-	-	7	31.5	30	1.5
June	1	14.5	5	5	-	-	-	-	-	7	31.5	30	1.5
	2	14.5	9.5	5	-	-	-	-	-	7	36	30	6
July	1	13	16	5.5	-	-	-	-	-	7	41.5	30	11.5
	2	10	9.5	5.5	-	-	-	-	-	7	32	30	2
August	1	10	5	6	-	-	-	-	-	7	28	28	-
	2	8	5	6	-	-	-	-	-	7	26	26	-
Sept.	1	5	-	7.5	-	-	0.5	-	2.5	7	22.5	22.5	-
	2	-	-	7.5	-	-	0.5	-	2.5	7	17.5	17.5	-
Oct.	1	-	3	6	4	1	1	1	-	7	23	23	-
	2	-	1.5	-	4	1	1	2	5	7	21.5	21.5	-
Nov.	1	-	-	-	4	1	-	0.5	5	7	17.5	17.5	-
	2	-	9.5	-	4	1	-	0.5	2	7	24	24	-
Dec.	1	-	19	-	-	-	-	1	1	7	28	28	-
	2	-	9.5	-	5	1		1	1	7	24.5	24.5	-
		123.5	121.5	75	41	5	7.5	13	21	168	574.5	552	22.5

TABLE 15

LABOUR REQUIREMENTS ON A TEN-ACRE MODEL FARM CLASS A LAND, KUSHTIA DISTRICT (Man Days)

Months	Fort-night	Aus	Aman	Sugar Cane	Wheat	Pulses	Fodder	Must-ard	Vege-tables	Live-stock Chores	Total	Family Labour sup-plied	One Per-ma-nent Labor	Daily Hired Labor
	1	-	8	14.5	2	-	-	1.5	3.5	7	36.5	21.5	15	-
Jan.	2	-	-	14.5	-	-	-	3	3.5	7	28	13	15	-
	1	-	-	19	-	13	-	3	-	7	42	27	15	-
Feb.	2	16	-	24	-	13	-	3	-	7	63	30	15	18
	1	16	-	12	3	13	-	1.5	-	7	52.5	30	15	7.5
March	2	16	8	36	3	13	-	-	-	7	83	30	15	38
	1	16	8	18	3	-	-	-	-	7	52	30	15	7
April	2	17	8	11	-	-	-	-	-	7	43	28	15	-
	1	32.5	8	7	-	-	-	-	-	7	54.5	30	15	9.5
May	2	48.5	7	-	-	-	-	-	-	7	62.5	30	15	17.5
	1	48.5	8	7	-	-	-	-	-	7	70.5	30	15	25.5
June	2	48.5	15.5	7	-	-	-	-	-	7	78	30	15	33
	1	43	26	12	-	-	-	-	-	7	88	30	15	43
July	2	32.5	15.5	12	-	-	-	-	-	7	67	30	15	22
	1	32.5	8	-	-	-	-	-	-	7	47.5	30	15	2.5
August	2	32.5	8	-	-	-	-	-	-	7	47.5	30	15	2.5
	1	16	8	-	-	-	-	1.5	7	7	39.5	24.5	15	-
Sept.	2	-	-	-	-	-	-	1.5	7	7	15.5	15.5	-	-
	1	-	-	-	2	11	2.5	3	-	7	25.5	25.5	-	-
Oct.	2	-	5	11	3	11	2.5	2	15	7	56.5	30	15	11.5
	1	-	2.5	-	1	11	2.5	-	15	7	39	24	15	-
Nov.	2	-	15.5	11	1	11	2.5	-	6	7	54	30	15	9
	1	-	31	-	2	-	-	-	3.5	7	43.5	28.5	15	-
Dec.	2	-	15.5	12	1	14	3	-	3.5	7	56	30	15	11
		415.5	205.5	228	21	110	13	20	64	168	1245	657.5	330	257.5

TABLE 16

LABOUR REQUIREMENTS ON A TWELVE-ACRE MODEL FARM CLASS A LAND, KUSHTIA DISTRICT (Man Days)

Months	Fort-night	Aus	Aman	Sugar Cane	Wheat	Pulses	Fodder	Must-ard	Vegeta-bles	Live-stock Chores	Total	Family Labour Sup-plied	1.5 Per-ma-nent Labor	Daily Hired Labor
Jan.	1	-	9.5	17	2.5	-	-	2	5	7	43	20.5	22.5	-
	2	-	-	17	-	-	-	3.5	5	7	32.5	10	22.5	-
Feb.	1	-	-	22	-	15.5	-	3.5	-	7	48	25.5	22.5	-
	2	19.5	-	28	-	15.5	-	3.5	-	7	73.5	30	22.5	21
March	1	19.5	-	14	4	15.5	-	2	-	7	62	30	22.5	9.5
	2	19.5	9.5	42	4	15.5	-	-	-	7	97.5	30	22.5	45
April	1	19.5	9.5	21	4	-	-	-	-	7	61	30	22.5	8.5
	2	19.5	9.5	12.5	-	-	-	-	-	7	48.5	26	22.5	-
May	1	39	9.5	8.5	-	-	-	-	-	7	64	30	22.5	11.5
	2	58.5	9.5	-	-	-	-	-	-	7	75	30	22.5	22.5
June	1	58.5	9.5	8.5	-	-	-	-	-	7	83.5	30	22.5	31
	2	58.5	19	8.5	-	-	-	-	-	7	93	30	22.5	10.5
July	1	52	32	14	-	-	-	-	-	7	105	30	22.5	52.5
	2	39	19	14	-	-	-	-	-	7	79	30	22.5	26.5
August	1	39	9.5	-	-	-	-	-	-	7	55.5	30	22.5	3
	2	39	9.5	-	-	-	-	-	-	7	55.5	30	22.5	3
Sept.	1	19.5	9.5	-	-	-	-	2	9.5	7	47.5	25	22.5	-
	2	-	-	-	-	-	-	2	9.5	7	18.5	18.5	-	-
Oct.	1	-	-	-	2.5	13	3	3.5	-	7	29	29	-	-
	2	-	6.5	12.5	3.5	13	3	2.5	20	7	68	30	22.5	15.5
Nov.	1	-	3	-	1	13	3	-	20	7	47	24.5	22.5	-
	2	-	9.5	12.5	1	13	3	-	8	7	54	30	22.5	1.5
Dec.	1	-	38.5	-	2.5	-	-	-	5	7	53	30	22.5	0.5
	2	-	9.5	14	1.5	15.5	3.5	-	5	7	56	30	22.5	3.5
		500.5	232	266	26.5	129.5	15.5	24.5	87	168	1449.5	659	495	295.5

family labour throughout the year may be met either by hiring daily labour or by hiring one permanent labour. If no permanent hired labour is used on this farm the total daily hired labour required would be 546 man days (not shown in the table). At the rate of two rupees per man day the total labour expenses would be 1092 rupees on this farm. If, however, one permanent labourer is hired for 11 months at a charge of 495 rupees, the total hired labour expenses, due to engagement of one permanent hired labourer, is now 1009 rupees. Similarly, on a 12-acre farm in the same class of land, the total hired labour required would have been 742 man days without permanent labour (not shown in the table). This would have cost the farmer 1484 rupees for labour. Due to the appointment of one and one-half permanent labourers, one man and one boy, the daily hired labour required is 295 man days (Table 16). Under this arrangement, the total labour expenses on this farm is 1333 rupees. Similar economic advantage of engaging permanent hired labour also exists on ten-acre and 12-acre farms in the class B land area (Appendices 7 and 8).

Another important advantage of permanent hired labour is that it minimizes the risk of loss by assuring a supply of labour in time of great need. When there are natural hazards such as flood and excessive rainfall during harvest time, losses are minimized by completing harvest within a very short time. Daily hired labour may not be sufficiently available at such time, or if available may be costly. Permanent hired labour is available generally for ten or more months in a year. For period less than ten months such labour becomes more expensive.

Farm Receipts (Tables 17 and 18).

Except for vegetables and jute, farmers generally meet their requirement of seeds from farm products. Vegetable seedlings and jute seeds are bought from specialized growers. The seeding rate of mustard is low and as such, has not been deducted from the total quantity produced, to find out the value of the quantity remaining after using parts of the produce as seeds. Instead, this has been considered in calculating the quantity produced. In calculating the quantity consumed by the family 36 maunds (2952 pounds) of rice per year (at the rate of 1.70 pounds per day per consumption unit) and 15 seers (30.86 pounds) of pulses per month have been assumed to be consumed by the family. In East Pakistan, the average of all adult males consume 1.5 pounds of rice per day[1]. Since farmers generally eat more rice than city people, the assumption of 1.70 pounds per day per consumption unit seems to be reasonable. In case of the four-acre farm, the pulse is assumed to be consumed only for five months, while in the other farm sizes, it is for nine months in a year. The owners of four-acre farms sell most of their vegetables whereas other farms consume their requirements and sell the rest.

Farm Expenses (Tables 19 and 20).

Fertilizers are shown as used only on sugar cane at the rate of two maunds (164 pounds) of mustard cake and one maund (82 pounds) of urea per acre. Hiring of carts is needed for carrying sugar cane from

---

1. H.M. Farooqui, C.R. Keaton and G.W. Miller, Agricultural Marketing in Pakistan, (Karachi: Amin Book Co., 1958), p. 11.

TABLE 17

RECEIPTS FROM MODEL FARMS IN CLASS A LAND, KUSHTIA DISTRICT

Item	Four-Acre Farm					Six-Acre Farm				
Crops	Quantity Produced (Maunds)	Quantity Kept as Seeds (Maunds)	Value of Quantity Remaining (Rupees)	Value of Quantity Consumed (Rupees)	Cash Sale (Rupees)	Quantity Produced (Maunds)	Quantity Kept as Seeds (Maunds)	Value of Quantity Remaining (Rupees)	Value of Quantity Consumed (Rupees)	Cash Sale (Rupees)
Aus Rice	17.2	1.2	352	352	-	25.8	1.8	528	528	-
Aman Rice	8.8	0.3	204	204	-	14.1	0.5	326	288	38
Sugar Cane	175.0	30.0	254	-	254	245	42	355	-	355
Wheat	0.5	0.1	8	8	-	0.8	0.2	11	-	11
Pulses	3.8	0.4	54	30	24	6.1	0.6	88	50	38
Mustard	0.8	-	25	-	25	1.2	-	38	-	38
Vegetables	10.0	-	100	75	25	17.5	-	175	100	75
Orchards			20	10	10	-	-	20	15	5
Total of Crops			1017	679	338			1541	981	560
Livestocks										
Milk	5.2		104	10	94	6.6		132	25	107
Eggs			10	-	10			10	10	-
Total of Livestocks			114	10	104			142	35	107
Total of Crops and Livestocks			1131	689	442			1683	1016	667

TABLE 17 Continued

Item	Eight-Acre Farm					Ten-Acre Farm				
Crops	Quantity Produced (Maunds)	Quantity Kept as Seeds (Maunds)	Value of Quantity Remaining (Rupees)	Value of Quantity Consumed (Rupees)	Cash Sale (Rupees)	Quantity Produced (Maunds)	Quantity Kept as Seeds (Maunds)	Value of Quantity Remaining (Rupees)	Value of Quantity Consumed (Rupees)	Cash Sale (Rupees)
Aus	36.1	2.5	739	739	-	46.4	3.2	948	792	156
Aman	18.5	0.6	430	58	372	22.9	0.8	530	-	530
Sugar Cane	350	60	508	-	508	420	72	609	-	609
Wheat	1.0	0.2	15	-	15	1.5	0.3	23	-	23
Pulses	8	0.8	115	50	65	10.3	1.1	147	50	97
Mustard	1.6	-	51	-	51	2.0	-	64	-	64
Vegetables	25	-	250	100	150	30.0	-	300	100	200
Orchards			20	20	-			20	20	-
Total of Crops			2128	967	1161			2641	962	1679
Livestocks										
Milk	11.8	-	236	190	46	13.0	-	260	190	70
Eggs			10	10	-			10	10	-
Total of Livestocks			246	200	46			270	200	70
Total of Crops and Livestocks			2374	1167	1207			2911	1162	1749

TABLE 17 Continued

Item	Twelve-Acre Farm				
Crops	Quantity Produced (Maunds)	Quantity Kept as Seeds (Maunds)	Value of Quantity Remaining (Rupees)	Value of Quantity Consumed (Rupees)	Cash Sale (Rupees)
Aus	55.9	3.9	1144	792	352
Aman	28.2	1.0	653	-	653
Sugar Cane	490.0	84	710	-	710
Wheat	2.0	0.3	32	-	32
Pulses	12.2	1.3	174	50	124
Mustard	2.4	-	77	-	77
Vegetables	40	-	400	100	300
Orchards			20	20	-
Total of Crops			3210	962	2248
Livestocks					
Milk	17	-	340	190	150
Eggs			10	10	-
Total of Livestocks			350	200	150
Total of Crops and Livestocks			3560	1162	2398

TABLE 18

RECEIPTS FROM MODEL FARMS IN CLASS B LAND, KUSHTIA DISTRICT

Item	Four-Acre Farm					Six-Acre Farm				
Crops	Quantity Produced (Maunds)	Quantity Kept as Seeds (Maunds)	Value of Quantity Remaining (Rupees)	Value of Quantity Consumed (Rupees)	Cash Sale (Rupees)	Quantity Produced (Maunds)	Quantity Kept as Seeds (Maunds)	Value of Quantity Remaining (Rupees)	Value of Quantity Consumed (Rupees)	Cash Sale (Rupees)
Aus	13.8	1.0	282	282	-	21.5	1.5	440	440	-
Aman	14.1	0.5	326	326	-	22.0	0.8	509	384	125
Jute	6.6	-	145	-	145	10.5	-	231	-	231
Pulses	3.8	0.4	54	30	24	6.1	0.6	88	50	38
Mustard	0.8	-	26	-	26	1.2	-	38	-	38
Cereals	1.0	0.1	14	14	-	1.5	0.2	21	-	21
Vegetables	10	-	100	75	25	15	-	150	100	50
Orchards			20	10	10			20	15	5
Total of Crops			947	738	230			1497	989	508
Livestock Products										
Milk	5.2		104	10	94	6.6		132	25	107
Eggs	160		10	-	10			10	10	-
Total of Livestock			114	10	104			142	35	107
Total of Crops and Livestock			1061	748	334			1639	1024	615

TABLE 18 Continued

Item	Eight-Acre Farm					Ten-Acre Farm				
Crops	Quantity Produced (Maunds)	Quantity Kept as Seeds (Maunds)	Value of Quantity Remaining (Rupees)	Value of Quantity Consumed (Rupees)	Cash Sale (Rupees)	Quantity Produced (Maunds)	Quantity Kept as Seeds (Maunds)	Value of Quantity Remaining (Rupees)	Value of Quantity Consumed (Rupees)	Cash Sale (Rupees)
Aus	28.6	2.0	585	585	-	37.0	2.6	757	757	-
Aman	30	1.0	696	226	470	38.0	1.0	888	38	850
Jute	13.1	-	288	-	288	17.0	-	374	-	374
Pulses	8.5	0.9	122	50	72	10.8	1.2	154	50	104
Mustard	1.6	-	51	-	51	2.1	-	67	-	67
Cereals	2.0	0.2	29	-	29	2.6	0.3	37	-	37
Vegetables	20	-	200	100	100	25	-	250	100	150
Orchard			20	20	-			20	20	-
Total of Crops			1991	1021	1010			2547	965	1582
Livestock Products										
Milk	11.8	-	132	25	107	13.0	-	260	190	70
Eggs			10	10	-			10	10	-
Total of Livestock			246	170	46			270	200	70
Total of Crops and Livestock			2237	1191	1086			2817	1165	1652

TABLE 18 Continued

Item	Twelve-Acre Farm				
Crops	Quantity Produced (Maunds)	Quantity Kept as Seeds (Maunds)	Value of Quantity Remaining (Rupees)	Value of Quantity Consumed (Rupess)	Cash Sale (Rupees)
Aus	44.7	3.1	915	792	123
Aman	45.8	1.7	1058	-	1058
Jute	21.0	-	462	-	462
Pulses	13.2	1.4	189	50	139
Mustard	2.5	-	80	-	80
Cereals	3.1	0.3	45	-	45
Vegetables	30	-	300	100	200
Cereals			20	20	-
Total of Crops			3069	962	2107
Livestock Products					
Milk	17	-	340	190	150
Eggs			10	10	-
Total of Livestock			350	200	150
Total of Crops and Livestock			3419	1162	2257

the field to the selling centre. The average charge for a cart to carry 20 maunds (1640 pounds) is four rupees (Table 21). Hiring of boats is needed at the time of harvesting of jute and extracting of the fibre. For one acre of jute 12 boat-days[2] at a rate of three rupees per boat-day has been assumed when calculating the hiring charge.

Livestock feed in the form of mustard cake has been shown as fed to the cattle at the rate of one-half seer (1.03 pounds) per head per day for four months. Generally farmers purchase feed during these months when there is heavy pressure of field work and there is little or no green fodder in the field.

Summary of the Farm Organization

Value of the total farm inventory on different farms varies from nearly 4400 rupees on the four-acre farm to more than 12,000 rupees on the 12-acre farm (Table 21). Value of farm inventory is the same on both the classes of land.

The total cropped area on the different farms is higher in the class B land area than class A; because intensity of cropping has been assumed higher in the class B land. Labour requirement is almost the same on the farms in both the classes of land. Though the intensity of cropping is higher in the class B land area, labour requirement is not higher in this class. It is so because sugar cane grown in the class A land requires comparatively more labour than any other crops. Gross

---

2. One boat-day is the use of a boat measuring approximately 18 to 20 feet in length and five to six feet in width for eight hours. This size of a boat is considered typical in the area.

TABLE 19

FARM EXPENSES ON MODEL FARMS, CLASS A LAND, KUSHTIA DISTRICT

Items	Four-Acre Farm		Six-Acre Farm		Eight-Acre Farm		Ten-Acre Farm		Twelve-Acre Farm	
	Amount	Value (Rupees)	Amount	Value (Rupees)	Amount	Value (Rupees)	Amount	Value (Rupees)	Amount	Value (Rupees)
Hired Labour										
Permanent	-	-	-	-	-	-	1	495	1.5	743
Daily	19	38	131	262	331	662	257	514	295	590
Seeds										
Vegetable Seedlings	4000	4	7000	7	10000	10	12000	12	16000	16
Fertilizers										
Mustard cake	1 md.	8	1.4 md	11	2 mds	16	2.4md	19	2.8mds.	22
Urea	0.5	4	0.7	6	1	8	1.2	10	1.4	11
Repairs and replacement of houses		30		30		45		45		50
Hiring of carts	7	28	10	40	14	56	17	68	20	80
Livestock Feeds										
Mustard Cake	4.5 mds	36	6 mds	48	10.5mds	84	12 mds.	96	15 mds.	120
Land Taxes		28		40		52		64		76
Local Board Taxes		2		3		4		5		6
Depreciation of Livestock		31		46		67		72		98
Depreciation of Equipment		16		23		25		33		35
Miscellaneous		15		20		25		30		35
Total		240		536		1054		1463		1882

TABLE 20

FARM EXPENSES ON MODEL FARMS, CLASS B LAND, KUSHTIA DISTRICT

Items	Four-Acre Farm		Six-Acre Farm		Eight-Acre Farm		Ten-Acre Farm		Twelve-Acre Farm	
	Amount	Value (Rupees)	Amount	Value (Rupees)	Amount	Value (Rupees)	Amount	Value (Rupees)	Amount	Value (Rupees)
Hired Labour										
Permanent	-	-	-	-	-	-	1	450	1.5	687
Daily	22	44	157	314	336	672	280	560	331	662
Seeds										
Vegetable Seedlings	4000	4	6000	6	8000	8	10000	10	12000	12
Jute	0.05 md	2	0.08md	3	0.1 md.	4	0.13md	5	0.16 md.	6
Repairs and replacements of houses		30		30		45		45	19	50
Hiring of Boats	6	18	9	27	12	36	15	45	19	57
Livestock Feed										
Mustard Cake	4.5 mds.	36	6 mds.	48	10.5 mds	84	12 mds.	96	15 mds.	120
Land Taxes		28		40		52		64		76
Local Board Taxes		2		3		4		5		6
Depreciation of Livestock		31		23		25		33		35
Depreciation of Equipment		16								
Miscellaneous		15		20		25		30		35
Total		226		560		1022		1415		1844

TABLE 21

SUMMARY OF THE FARM ORGANIZATION
MODEL FARMS, KUSHTIA DISTRICT

Items	Four-Acre Farm	Six-Acre Farm	Eight-Acre Farm	Ten-Acre Farm	Twelve-Acre Farm
			Class A Land		
Inventory Value (Rs.)	4388	6248	8632	10,342	12,442
Cropped Area (Acres)	5.00	7.70	10.50	13.30	16.10
Labour Requirement (Man days)	578	791	1020	1245	1449
Gross Receipts[a] (Rs.)	1131	1683	2374	2911	3560
Total Expenses	240	536	1054	1518	1964
			Class B Land		
Inventory Value (Rs.)	4388	6248	8632	10,342	12,442
Cropped Area (Acres)	5.30	8.30	11.20	14.20	17.20
Labour Requirement (Man days)	575	808	1020	1230	1464
Gross Receipts (Rs.)	1061	1639	2237	2817	3419
Total Expenses	226	560	1022	1465	1932

a. Gross receipts include cash receipts and value of farm products consumed.

CHAPTER V

INCOME ANALYSIS

Land Classes and Income

The total family and capital earnings range from a low of 952 rupees on the four-acre farm in the class B land area to a high of 1774 rupees on the 12-acre farm in the class A land (Table 22 and Figure 3). The total family and capital earning is higher on all farms in the class A land than in the class B land. The total cropped area, however, on all farms is higher in the class B land than in the class A land. Growing of sugar cane that gives a higher net return per acre is the main cause of this higher income in the class A land area. The pattern of increase in the total family and capital earnings with the larger farm sizes is similar in both the land classes. There is a greater amount of increase in income due to increase in farm size from four to six and ten to twelve acres than the increase in income for changing size from six to eight acres and eight to ten acres. This is mostly the result of differences in the efficiency of use of labour. A six-acre farm requires comparatively lesser expenses in hired labour and the family labour is more efficiently utilized. On the twelve-acre farm the use of the permanent hired labour is more efficient than on smaller farms.

The cash farm income is lowest, only 55 rupees, on the six-acre farm in class B, and highest, 516 rupees on the twelve-acre farm in the class A land area (Table 22 and Figure 4). On both the land classes, the cash farm income is lower on the six-acre farm, than it is on a four-acre farm. The reason for this is that the family can not meet the

TABLE 22

INCOMES FROM THE VARIOUS SIZES OF FARMS, KUSHTIA DISTRICT

(In Rupees)

Items	Four-Acre Farm		Six-Acre Farm		Eight-Acre Farm		Ten-Acre Farm		Twelve-Acre Farm	
	Class A Land	Class B Land	Class A Land	Class B Land	Class A Land	Class B Land	Class A Land	Class B Land	Class A Land	Class B Land
1. Cash Receipts	442	334	667	615	1207	1086	1749	1652	2398	2257
2. Cash Expenses	240	226	536	560	1054	1022	1463	1415	1882	1844
3. Cash Farm Income	202	108	131	55	153	64	286	237	516	413
4. Less Value of unpaid Family Labour	558	552	660	652	690	684	658	656	660	668
5. Less Interest on Capital	219	219	312	312	432	432	517	517	622	622
6. Plus Value of One Year's use of House	96	96	96	96	96	96	96	96	96	96
7. Plus Value of Farm Products Consumed by Family	689	748	1016	1024	1167	1191	1162	1165	1162	1162
8. Operator's Net Earnings	210	181	271	211	294	235	369	315	492	381
9. Total Family and Capital Earnings (Item 8 Plus Item 4 Plus Item 5).	987	952	1243	1175	1416	1351	1544	1488	1774	1671

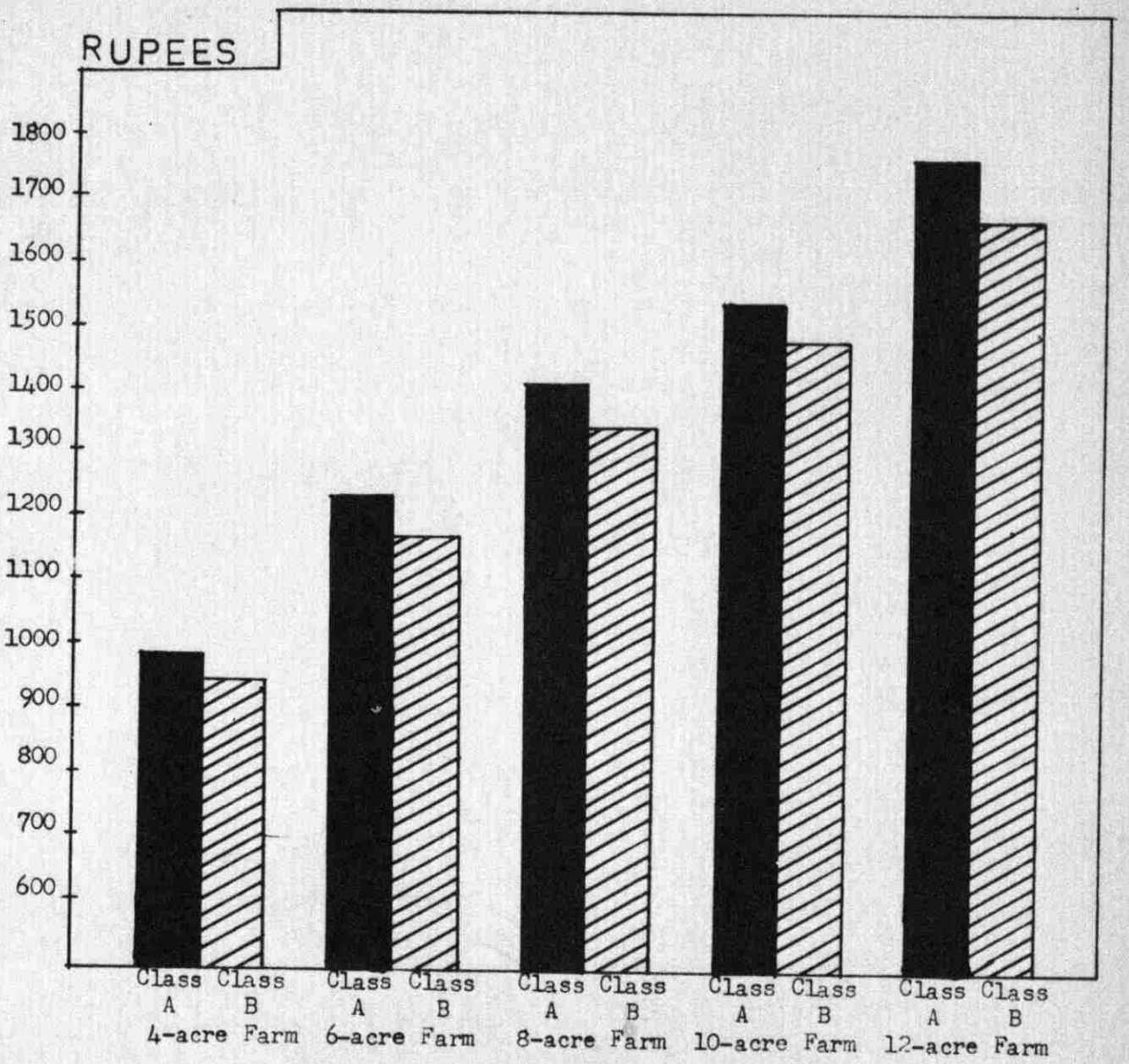

FIG. 3. FARM SIZES AND TOTAL FAMILY AND CAPITAL EARNINGS IN CLASS A AND CLASS B LAND.

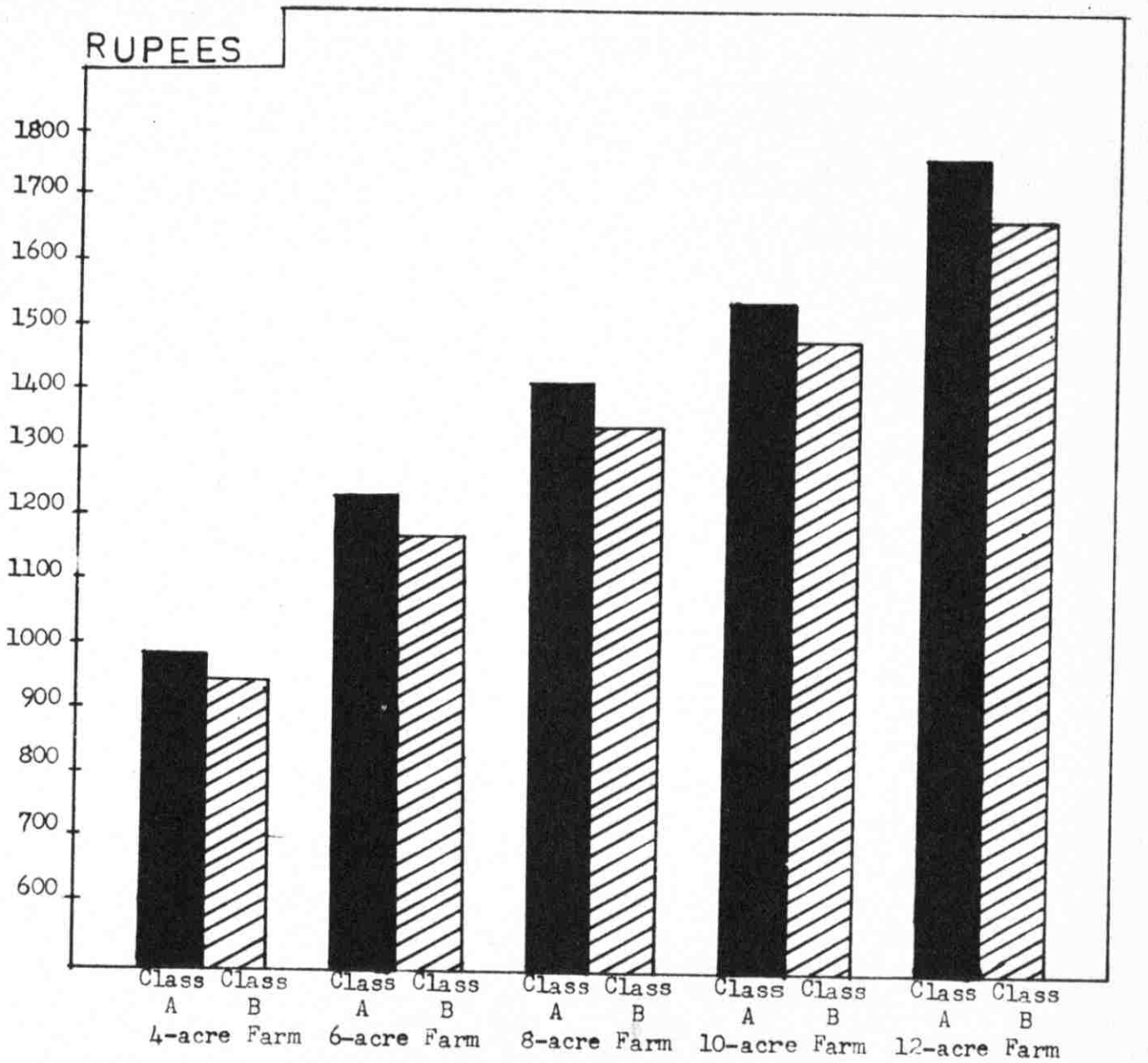

FIG. 3. FARM SIZES AND TOTAL FAMILY AND CAPITAL EARNINGS IN CLASS A AND CLASS B LAND.

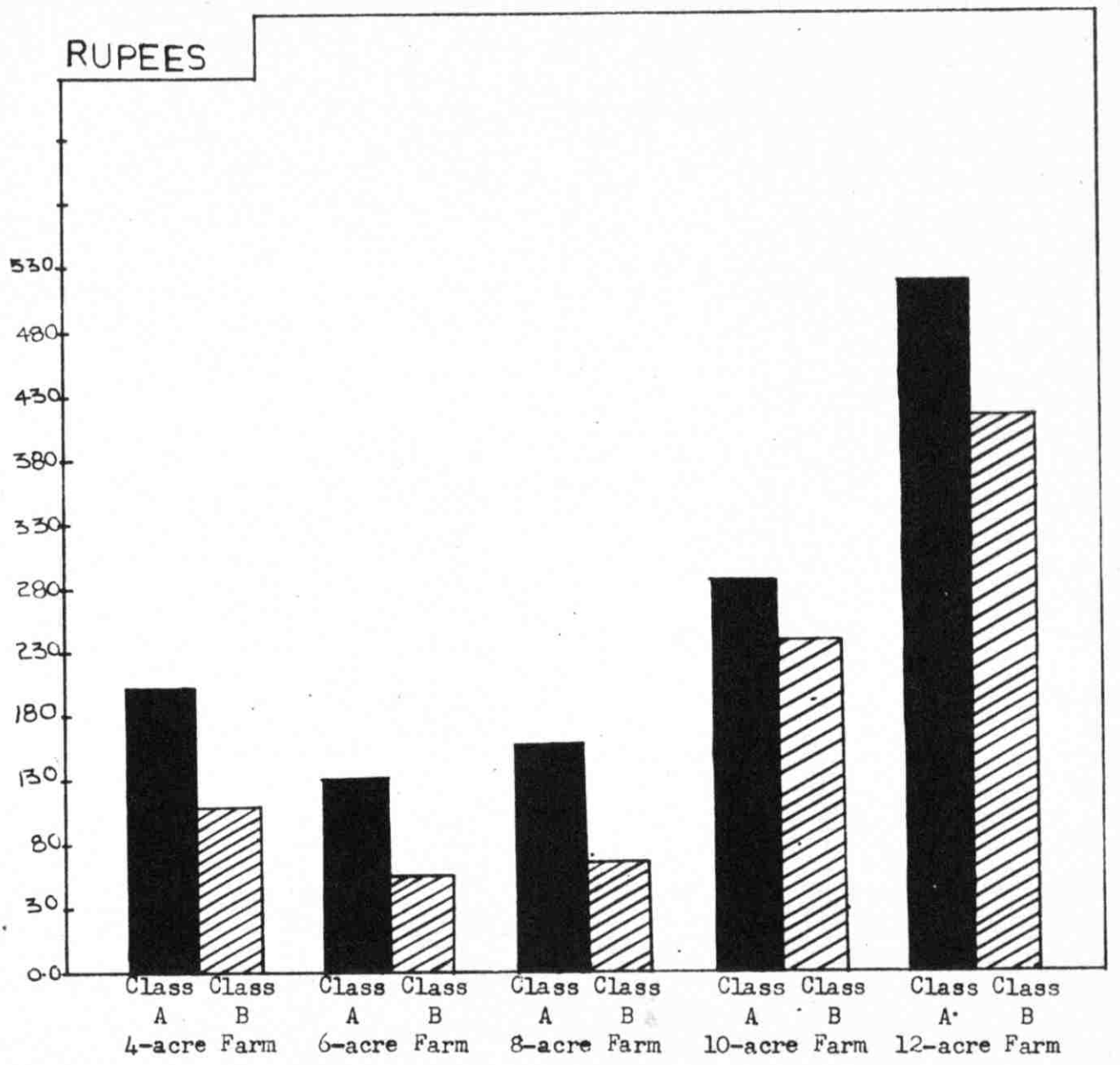

FIG. 4. FARM SIZES AND CASH FARM INCOMES IN CLASS A AND CLASS B LAND.

total requirement of rice from farm produce on a four-acre farm. Since rice is the primary food of the family it is necessary to buy the extra requirement of rice from the market. The farmer with a four-acre farm, therefore, sells a larger portion of the farm produced vegetables, pulse, and most of the animal products. Thus the farmer with a four-acre farm foregoes the consumption of most of the farm produced vegetables, pulse, and animal products to satisfy the primary needs for rice. On the six-acre farm, the total quantity of rice produced is sufficient to meet the requirement for family consumption and a small quantity is left for cash sale. As the need for rice is met from farm produce, there is no need for purchase of extra rice, and the family can afford to consume the vegetables and pulses up to full-requirement. The consumption of livestock products also increases but not up to the full-requirement; because there is still need for cash to purchase other necessities of the family. Cash farm income increases with the increase in farm size from six to eight acres. This increase is relatively small because the family is consuming more of the livestock products available on the larger farm.

The cash farm income is relatively high on a twelve-acre farm in the class A land area. This is because this farm can meet the family requirement of rice from the aus rice and can sell most of the aman rice. The aman rice has a higher price than aus.

The operator's net earnings increases from a low of 181 rupees on the four-acre farm in the class B land to 492 rupees on the twelve-acre farm in the class A land. The operator's net earnings is higher on all farms in class A land than in the class B land (Table 22 and Figure 5).

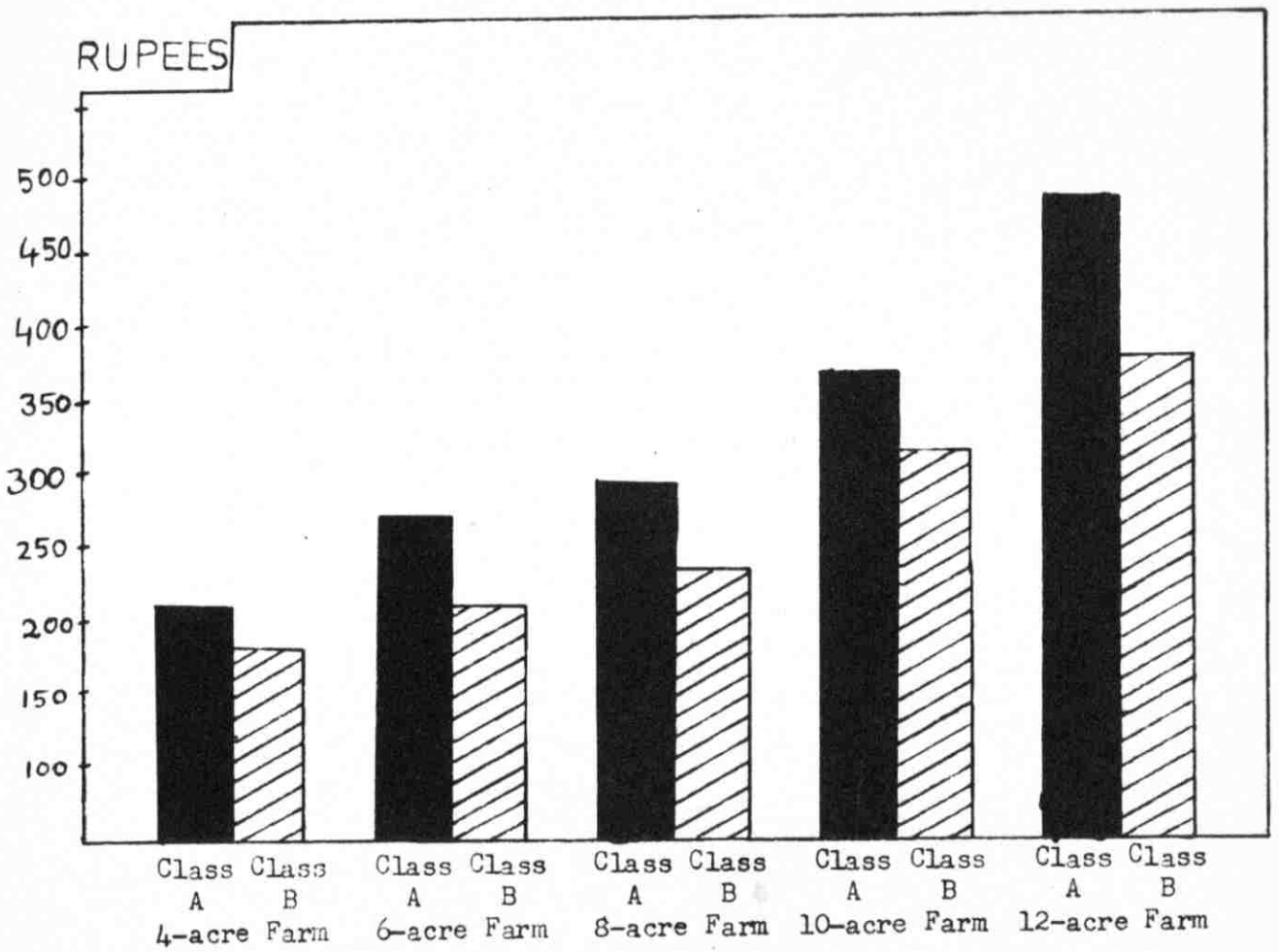

FIG.5 FARM SIZES AND OPERATOR'S NET EARNINGS IN CLASS A AND CLASS B LAND.

Average Incomes in the Kushtia District

The average incomes from the various sizes of farms in the Kushtia district as a whole is shown in table 23. In computing the average, a weight of 80 was given to the class A land area and a weight of 20 to the class B land. The weights have been chosen as such, because as mentioned earlier, 80 percent of the total area of the Kushtia district falls in the class A land and 20 percent in the class B land area.

The average cash farm income ranges from 116 rupees (24.3 dollars) on a six-acre farm to 495 rupees (103.6 dollars) on a twelve-acre farm. The average operator's net earnings is lowest, 204 rupees (42.7 dollars) on a four-acre farm and highest, 470 rupees (93.3 dollars) on a twelve-acre farm. The average family and capital earning varies from 980 rupees (205 dollars) on a four-acre farm to 1753 rupees (366.7 dollars) on a twelve-acre farm. (Table 23).

Discussion on Income

Cash income is the amount available to the family to meet necessities other than farm expenses like buying of clothes, salts, oil, meat, medicine, tobacco, and for the education of children. This source must also cover any interest and debt payments that have been incured. A family with the four-acre and six-acre farm will need this cash income to buy a considerable quality of rice because the rice produced on the farm is not sufficient to meet the requirements of the family. The family with the eight-acre farm is self sufficient in its requirements of rice, pulse, vegetables and milk. Therefore, whatever cash income is received is available for other household expenditures.

TABLE 23

AVERAGE INCOMES FROM THE VARIOUS SIZES OF FARMS, KUSHTIA DISTRICT

Items	Four-Acre Farm		Six-Acre Farm		Eight-Acre Farm		Ten-Acre Farm		Twelve-Acre Farm	
	Rupees	Dollars	Rupees	Dollars	Rupees	Dollars	Rupees	Dollars	Rupees	Dollars
Cash Farm Income	183	38.3	116	24.3	135	28.2	276	27.7	495	103.6
Operator's Net Earnings	204	42.7	259	54.2	282	59.0	358	74.9	470	98.3
Total Family and Capital Earnings	980	205	1229	257.1	1403	293.5	1533	320.7	1753	366.7

Operator's net earnings may be used as a measure for comparing the money income of a farmer with that of an industrial worker because operator's net earning is what the farmer earns for his time and work on the farm.

The total family and capital earnings represent the equivalent in money income that the farm family earns from the farm. This amount is available to the family for living and paying interest and debts. It is this total family and capital earnings that largely determine the standard of living of the family.

The income of a farm family in the Kushtia district, even with a reasonably large farm, is low. A typical family operating a 6-acre farm in this study would earn about 1230 rupees, equivalent to 257 dollars. The family and capital earning from a typical farm in Denmark in 1959 was about 3,000 dollars[1]. The size of a typical farm in Denmark is 60 acres and most of the income, about 85 percent, is derived from animal products[2].

The farm income of a typical farmer in Japan in 1960 was 608 dollars. The size of a typical farm in Japan is 2.5 acres. In addition to the income from the farm, the Japanese family earned about 530 dollars from non-farm sources. The total family income is, therefore, about 1140 dollars[3].

In a study conducted in the Mandalay district of Burma in 1961, the average family income from farming were found to be 175 dollars.

---

1. For conversion rate of local currency into dollars appendix 9 may be seen.

2. Government of Denmark, Report from the Danish National FAO Committee of the UN, (Copenhagen: n.p., 1962), pp. 30 - 45.

3. Government of Japan, Ministry of Agriculture and Forestry, Annual Report on the State of Agriculture, 1961, (Tokyo: n.p. 1961), pp. 38 - 40.

The average size of the farms was 9.2 acres[4]. This is lower than the total family and capital earning budgeted for the four-acre farm in the Kushtia district of East Pakistan. The Burmese farmers mainly grow rice and the intensity of cropping is low on Burmese farms.

In the Agra district of the United Province, India, a study was conducted in 1960 to find the family earnings from farming. It was found that an average family owing 9.4 acres of land earns 213 dollars from farming[5].

All the income figures from farming in different countries discussed heretofore represent the total family and capital earnings in the sense the term is used in this thesis.

The above discussion indicates that a typical farm family in the Kushtia district has a lower level of income than farmers in Japan and Denmark. Limited evidence indicates that the incomes from farming in the Kushtia district are similar to Indian and Burmese farmers. Japanese farms are not large in size. They are similar in size as, or even smaller than farms in East Pakistan. But income from farming in Japan is much higher than that from a farm of the same size in East Pakistan.

Some Ways to Increase Farm Income

There are at least two feasible, relatively immediate, on the farm, ways by which incomes in the Kushtia district can be increased.

---

4. University of Mandalay, Faculty of Agriculture, A Farm Management Survey Report in Mandalay District, 1960 - 61, (Mandalay: Faculty of Agriculture, 1962), pp. 12 - 14.

5. John W. Millor and T.V. Moorti, Farm Business Analysis of 30 Farms, Agra District, 1959 - 60, (Agra: The Balwant Vidyapeeth, 1960), p. 21.

These are by 1) increasing production, and 2) better management of the farm business.

Production can be increased by increasing per acre yield of crops and by increasing the area under crops. The possibility of increasing area under crops through extension of cultivated land is small in the Kushtia district. Area under crops can, however, to a limited extent, be increased through intensive cultivation by providing irrigation water in the rabi season. At present, about 60 percent of the land remains without a crop in this season. Increasing per acre yield is one of the most feasible ways that raises the income of an individual farmer. Moreover, the measures to increase per acre yield will give immediate results. Per acre yield can be increased through the following measures:

1) Use of adequate fertilizers,
2) Use of better seeds,
3) Proper plowing of land,
4) Proper sowing of seeds,
5) Proper weeding, and
6) Control of insects and pests.

Experimental evidence has shown that production of rice and sugar cane can be increased by 50 to 100 percent and 100 to 200 percent respectively in East Pakistan[6]. Yield of other crops also respond very favorably to application of fertilizers. Farmers are illeterate and they do not know the technique of proper use of fertilizers and their effect on yield.

---

6. Government of Pakistan, Ministry of Agriculture, Report of the Food and Agriculture Commission, (Karachi: Govt. of Pakistan Press, 1960), p. 75.

The use of better seed means growing superior variety and good quality seeds from the points of view of viability and freedom from foreign materials and pests. Yields of rice can be increased from 15 to 20 percent by use of better seeds in East Pakistan[7]. Plowing of land is done with a country plow that cannot pulverise the soil thoroughly. Sowing is seldom done in rows and seeds are generally broadcast. This does not facilitate weeding and other cultural practices. Weeding is not generally practiced. Weeds check the growth of crop plants and lower the yield. Damage to crops by insects and diseases is considerable, to the degree that complete crop failures are not uncommon.

The second way of increasing income from farming is by better selection of enterprises. One of the managerial decisions involves what enterprises should be included in the farming and what crops to be grown. At present, farmers are growing mostly crops. Farm income can be increased by changing the farming system by supplimenting crop enterprises with dairy and poultry enterprises. Farmers are also growing many crops from a small farm. Elimination of some of the low-returning crops and growing more of high-returning crops will help increase the income.

---

7. Food and Agriculture Commission Report, op. cit., p. 65.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Evidence presented in this thesis, in conjunction with the general knowledge and experience of the writer leads to the following 15 conclusions.

1. Most of the farms in the Kushtia district afe small in size. Nearly two-thirds of the farms are less than four acres.

2. Farm lands are fragmented and the plots on individual farms are widely scattered. Fragmented lands render farming inefficient.

3. Land is the major item in the farm investment. About 75 percent of the total investment is covered by the value of land. Farm equipment is indegenous, lower in vlaue, not very effective, and of short life.

4. Rice is the most predominant crop in this district and it occupies 60 percent of the total cropped area.

5. Livestock and poultry is not an important source of farm income in the district, but livestock constitutes the main source of farm power.

6. Farming is too dependent on rainfall. As the irrigation facility is not available to the farmers, they have to wait for rainfall for cultivating land and sowing crops. Timely and well distributed rainfall is essential for harvesting a good crop. Rainfall is concentrated in a few months in the kharif season.

7. Most of the crops are grown in the kharif season. In the rabi season, about 60 percent of the cultivated land remains fallow for want of water.

8. Though the farmers in the class B land area have a higher percentage of double cropping, farmers in this class of land have lower income. Growing of sugar cane, a high-returning crop in the class A land is the cause of this difference in income from farming.

9. Yields of crops are very low. Poor cultural practices, particularly the low use of fertilizer, are the main causes of low yields. With proper cultural practices, the prospect of higher yields are great.

10. The total man labour requirement for growing crops in the district were estimated at about 58,284,000 days which is equivalent to 72 percent of the total able-bodied male labour.

11. The average family consists of six members, in this district.

12. Farmers in the class A land area have higher income from farming than the farmers in the class B land area. But the difference in income is not great.

13. Total family and capital earning increases with the increase in farm size.

14. A ten to eleven acre farm, operated and owned by an average family in Kushtia district will be an economic size of farm-holding according to the definition of the term by the Land Reform Commission.

15. Even a twelve-acre farm does not yield sufficient money income to the operator to be equal to the average money income of an industrial worker. A farm size much larger than twelve-acres may be needed to equalise the money income of a farmer from farming with that of an industrial worker.

Recommendations

In the light of the conclusions, the following recommendations are made.

1. Government policy should be aimed at increasing farm size in the Kushtia district. The minimum size of a farm should be ten acres for an average family. The farm size cannot be increased unless the large number of small farm owners are diverted from farming to some other employment. Labour intensive industries should be developed in the district so that the large number of farmers owning uneconomic sizes of holdings may leave farming and be employed in these industries. Along with the establishment of factories, training should be given to the illeterate farmers in the skills needed by these industries. This will help the transfer of farm people from farming to industry. Government should also facilitate purchase of small farms by larger farm owners through extension of credit and enactment of law, forbidding share cropping and leasing of land under certain conditions.

2. Immediate attention should be given to increase the yield per acre. To raise the level of income of farmers from farming by increasing farm size through extension of the area under cultivation, is limited in scope. Use of fertilizers, control of insects and diseases, and better cultural practices should be the measures to increase yield. These measures will give results with immediate effect and at lesser cost. There will be little need for changing the farming system to introduce these better practices for growing crops. Adoption of these measures by the farmers will depend upon the activities of the Agricultural Extension Service. Well-planned programs to educate the farmers in these lines

should be drawn and carried out without delay. Along with the activities of the Agricultural Extension Service, sufficient fertilizers, insecticides and equipment should be made available to the farmers at the village level. The supply services should be coordinated with the Extension activities. More importance should be given to demonstration on farmers' plot.

3. Farming systems should be re-organized to create more diversification. Livestock and poultry enterprises should be added with the crop enterprises. This type of diversification will not only increase the farm income but also stabilize the income. In case of crop-damage by natural calamities, income from livestock and poultry enterprises will support the farmer and lessen the burden of a crop failure. For bringing about this change in the farming system the Agricultural Extension Service will have to carry special projects. Selected farmers should be induced to change the system and the results will be demonstrated to others. Credit facilities should be provided by the government through some suitable agencies on easy terms to bring about the desired change in the farming system. Another important aspect will be to supply better breeds of livestock and poultry to farmers and extend veterinary assistance to protect the livestocks and poultry birds from diseases. Agricultural Extension services should coordinate their activities in this regard with the veterinary agents and credit organizations both at the top and village levels.

4. The lands remaining fallow in the rabi season should be brought under crops by provision of irrigation water. Provision of irrigation water will not only bring additional land under cultivation in the

rabi season, but it will also increase the yield per acre. Dependence on rainfall for raising crops will be done away with and risk of crop damage from drought will be minimized. Through provision of irrigation water, more intensive cultivation in the kharif season may also be possible. With the execution of irrigation projects farmers should be taught about the use of water efficiently. The Ganges-Kabodak Irrigation Project aims at providing irrigation water to parts of the district. The implimentation of the project should be expedited and other sources of watef should be tapped to cover the entire district.

5. Farm management studies should be undertaken in the district to find the most profitable combinations of crops. At present, a farmer is growing many crops and the choice of crops grown are influenced greatly by the needs of the family for home consumption. Minimizing the area under unprofitable or low-profitable crops and increasing the same under high-returning crop may increase farmers incomes. As for example, potatoes are considered to be one of the high returning crops in East Pakistan. Though the soil has been found suitable for growing potatoes in the Kushtia district, very few farmers grow potatoes. Introduction of this crop may help farmers to increase his income. Detailed study is needed to find out and introduce such profitable crops in this district. The Agricultural Extension service should teach the farmers the results of such studies so that the farmers can earn a higher income from growing profitable crops.

6. The fragmented lands of a holding should be consolidated. The fragmented land and its consolidation pose a serious problem. But until some solution is found to this problem, farmers' income will

continue to be at low level. Introduction of efficient and better farming methods will become difficult without consolidation. Attempts have been made to consolidate fragmented holdings in the Denajpur district of East Pakistan through a pilot project. But this program did not succeed[1]. The government initiated the program without a previous program of educating the farmers regarding the benefit of consolidation of fragmented holdings. The government did not provide sufficient credit facilities to the farmers under this program. The program provided purchase of adjacent lands by farmers. Without financial assistance, however, this was difficult to do. These are the main causes of the failure of the program.

Any new attempt to consolidate fragmented holdings should be well thought through. Cooperative farming may be one solution for this problem. In Gujrat, India, consolidation of fragmented lands has been found to be successful through cooperative joint farming societies[2]. This type of society envisages pooling of lands by small land owners. Members work jointly on the land pooled and receive wages for their labour. The ownership of each member in his holding, however, continues and is recognized by the payment of dividend in proportion to their value of land. All the farm expenses are incurred by the society and all the farm proceeds are also received by it. These proceeds, after meeting all expenses are shared by the members in proportion to their wages.

---

1. Government of East Pakistan, Department of Information, Land Reform in East Pakistan, (Dacca: E.P. Govt. Press 1959), pp. 25 - 27.

2. The Gujrat Cooperative Farming Survey Committee, Cooperative Farming in Gujrat, (Bombay: The Indian Society of Agricultural Economics, 1959), p. 9.

However, any program of consolidation of fragmented lands must be preceeded by an intensive program of educating the farmers on consolidation and its beneficial effects on farmers' income.

APPENDICES

APPENDIX 1

TOTAL LABOUR REQUIREMENT FOR DIFFERENT CROPS
IN THE KUSHTIA DISTRICT OF EAST PAKISTAN

Crops	Estimated Acreage	Labour Requirement Per-Crop-Acre (Man-day)	Total Labour Requirement (Man-day)
Aus	320,000	77	24,640,000
Aman	139,000	76	11,564,000
Jute	2,000	148	296,000
Sugar Cane	24,000	190	4,560,000
Wheat	22,000	67	1,474,000
Fodder	12,000	25	300,000
Pulse	230,000	50	11,500,000
Mustard	25,000	40	1,000,000
Other Minor Crops	59,000	50	2,950,000
Total	833,000		58,284,000

APPENDIX 2

GROWERS' PRICES OF AGRICULTURAL PRODUCTS, KUSHTIA DISTRICT

(Prices in Rupees Per Maund)

Year	Aus Rice	Aman Rice	Wheat	Mustard	Pulses	Jute	Other Cereals (Paira)
1950-51	+	+	+	+	+	28.69	+
1951-52	+	+	+	+	+	27.06	+
1952-53	+	+	+	+	+	10.69	+
1953-54	+	+	+	+	+	15.50	+
1954-55	+	+	+	+	+	18.50	+
1955-56	+	+	+	+	+	22.50	+
1956-57	20.56	23.00	21.80	25.00	14.00	25.00	17.50
1957-58	20.20	22.50	22.00	33.50	18.00	24.00	18.25
1958-59	25.00	27.00	19.00	37.75	15.00	17.00	16.50
1959-60	20.25	22.00	16.00	32.00	14.00	37.00	14.00
1960-61	23.82	25.00	16.00	33.25	17.00	NA	14.25
Average[a]	22.00	24.00	19.00	32.00	16.00	22.00	16.00

NA means not available.
\+ means not taken purposely.
a Average has been rounded.

Source: Adapted from:

1) Government of Pakistan, Ministry of Agriculture, Agricultural Statistics of Pakistan (Rawalpindi: Deptt. of Agricultural Economics and Statistics, 1961), p. 29.

2) Government of East Pakistan, Department of Agricultural Marketing, Agricultural and Animal Resources of East Pakistan, (Dacca: E.P. Govt. Press, 1961), pp. 35, 76, 51, 39.

APPENDIX 3

LABOUR REQUIREMENT ON A SIX-ACRE MODEL FARM, CLASS A LAND, KUSHTIA DISTRICT
(Man Days)

Month	Fort-night	Aus	Aman	Sugar Cane	Wheat	Pulse	Fodder	Must-ard	Vege-tables	Live-stock	Chores	Total	Family Labour Supplied	Hired Labour
	1	-	5	8.5	1	-	-	1	2	7		24.5	24.5	-
Jan.	2	-	-	8.5	-	-	-	2	2	7		19.5	19.5	-
	1	-	-	11	-	8	-	2	-	7		28	28	-
Feb.	2	9	-	14	-	8	-	2	-	7		40	30	10
	1	9	-	7	1.5	8	-	1	-	7		33.5	30	3.5
March	2	9	5	21	1.5	7	-	-	-	7		50.5	30	20.5
	1	9	5	10	1.5	-	-	-	-	7		32.5	30	2.5
April	2	9	5	6.5	-	-	-	-	-	7		27.5	27.5	-
	1	18	4	4	-	-	-	-	-	7		33	30	3
May	2	27	5	-	-	-	-	-	-	7		39	30	9
	1	27	5	4	-	-	-	-	-	7		43	30	13
June	2	27	10	4	-	-	-	-	-	7		48	30	18
	1	24	16	7	-	-	-	-	-	7		54	30	24
July	2	18	9	7	-	-	-	-	-	7		41	30	11
	1	18	5	-	-	-	-	-	-	7		30	30	-
August	2	18	5	-	-	-	-	-	-	7		30	30	-
	1	9	5	-	-	-	-	1	4	7		26	26	-
Sept.	2	-	-	-	-	-	-	1	4	7		12	12	-
	1	-	-	-	1	6.5	1.5	2	-	7		18	18	-
Oct.	2	-	3	6.5	1.5	6.5	1.5	1	8	7		35	30	5
	1	-	1.5	-	0.5	6.5	1.5	-	8.5	7		25.5	25.5	-
Nov.	2	-	10	6.5	0.5	6.5	1.5	-	3	7		35	30	5
	1	-	19	-	1	-	-	-	2	7		29	29	-
Dec.	2	-	10	7	0.5	8	2	-	2	7		36.5	30	6.5
Total		231	127.5	132.5	10.5	65	8	13	35.5	168		791	660	131

APPENDIX 4

LABOUR REQUIREMENT ON A SIX-ACRE MODEL FARM, CLASS B LAND, KUSHTIA DISTRICT
(Man Days)

Month	Fort-night	Aus	Aman	Jute	Pulse	Fodder	Must-ard	Cereals	Vege-tables	Live-stock Chores	Total	Family Labour Supplied	Hired Labour
Jan.	1	-	7.5	-	-	-	1	2	2	7	19.5	19.5	-
	2	-	-	-	-	-	2	-	2	7	11	11	-
Feb.	1	-	-	-	8	-	2	-	-	7	17	17	-
	2	7.5	-	-	8	-	2	-	-	7	24.5	24.5	-
March	1	7.5	-	2.5	8	-	1	3	-	7	29	29	-
	2	7.5	7.5	2.5	8	-	-	3	-	7	35.5	30	5.5
April	1	7.5	7.5	3	-	-	-	3	-	7	28	28	-
	2	7.5	7.5	5	-	-	-	-	-	7	27	27	-
May	1	15	7.5	9.5	-	-	-	-	-	7	39	30	9
	2	22.5	7.5	9.5	-	-	-	-	-	7	46.5	30	16.5
June	1	22.5	7.5	8	-	-	-	-	-	7	45	30	15
	2	22.5	15	8	-	-	-	-	-	7	52.5	30	22.5
July	1	20	25	9	-	-	-	-	-	7	61	30	31
	2	15	15	9	-	-	-	-	-	7	46	30	16
August	1	15	7.5	9.5	-	-	-	-	-	7	39	30	9
	2	15	7.5	9.5	-	-	-	-	-	7	39	30	9
Sept.	1	7.5	-	12	-	-	1	-	3.5	7	31	30	1
	2	-	-	12	-	-	1	-	3.5	7	23.5	23.5	-
Oct.	1	-	5	9.5	6.5	1.5	2	2	-	7	33.5	30	3.5
	2	-	2.5	-	6.5	1.5	1	2.5	7.5	7	28.5	28.5	-
Nov.	1	-	-	-	6.5	1.5	-	1	7.5	7	23.5	23.5	-
	2	-	15	-	6.5	1.5	-	1	3	7	34	30	4
Dec.	1	-	30	-	-	-	-	2	2	7	41	30	11
	2	-	15	-	7	2	-	1	2	7	34	30	4
Total		192.5	190	118.5	65	8	13	20.5	33	168	808.5	651.5	157

APPENDIX 5

LABOUR REQUIREMENT ON AN EIGHT-ACRE MODEL FARM, CLASS A LAND, KUSHTIA DISTRICT
(Man Days)

Month	Fort-night	Aus	Aman	Sugar Cane	Wheat	Pulse	Fodder	Must-ard	Vege-tables	Live-stock Chores	Total	Family Labour Supplied	Hired
Jan.	1	-	6	12	1	-	-	1	3	7	30	30	-
	2	-	-	12	-	-	-	2.5	3	7	24.5	24.5	-
Feb.	1	-	-	16	-	10	-	2.5	-	7	35.5	30	5.5
	2	12.5	-	20	-	10	-	2.5	-	7	52	30	22
March	1	12.5	-	10	2	10	-	1	-	7	42.5	30	12.5
	2	12.5	6	30	2	10	-	-	-	7	67.5	30	37.5
April	1	12.5	6	15	2	-	-	-	-	7	42.5	30	12.5
	2	12.5	7	9	-	-	-	-	-	7	35.5	30	5.5
May	1	25	6	6	-	-	-	-	-	7	44	30	14
	2	38	6	-	-	-	-	-	-	7	51	30	21
June	1	38	6	6	-	-	-	-	-	7	57	30	27
	2	38	12.5	6	-	-	-	-	-	7	63.5	30	33.5
July	1	33.5	21	10	-	-	-	-	-	7	71.5	30	41.5
	2	25	12.5	10	-	-	-	-	-	7	54.5	30	24.5
August	1	25	6	-	-	-	-	-	-	7	38	30	8
	2	25	6	-	-	-	-	-	-	7	38	30	8
Sept.	1	12.5	6	-	-	-	-	1	6	7	32.5	30	2.5
	2	-	-	-	-	-	-	1	6	7	14	14	-
Oct.	1	-	-	-	1	8.5	2	2.5	-	7	21	21	-
	2	-	4	9	2	8.5	2	1.5	12	7	46	30	16
Nov.	1	-	2	-	0.5	8.5	2	-	13	7	33	30	3
	2	-	12.5	9	0.5	8.5	2	-	5	7	44.5	30	14.5
Dec.	1	-	25	-	1	-	-	-	3	7	36	30	6
	2	-	12.5	10	1	10	2.5	-	3	7	46	30	16
Total		322.5	163	190	13	84	10.5	15.5	54	168	1020.5	689.5	331

APPENDIX 6

LABOUR REQUIREMENT ON AN EIGHT-ACRE MODEL FARM, CLASS B LAND, KUSHTIA DISTRICT
(Man Days)

Month	Fort-night	Aus	Aman	Jute	Pulse	Fodder	Must-ard	Cereals	Vege-tables	Live-stock Chores	Total	Family Labour Supplied	Hired Labour
Jan.	1	-	10	-	-	-	1	2.5	2.5	7	23	23	-
	2	-	-	-	-	-	2.5	-	2.5	7	12	12	-
Feb.	1	-	-	-	11	-	2.5	-	-	7	20.5	20.5	-
	2	10	-	-	11	-	2.5	-	-	7	30.5	30	0.5
March	1	10	-	3	11	-	1	4	-	7	36	30	6
	2	11	10	3	11	-	-	4	-	7	46	30	16
April	1	10	10	4	-	-	-	4	-	7	35	30	5
	2	10	10	6	-	-	-	-	-	7	33	30	3
May	1	20.5	10	12	-	-	-	-	-	7	49.5	30	9.5
	2	30.5	10	12	-	-	-	-	-	7	59.5	30	29.5
June	1	30.5	10	10	-	-	-	-	-	7	57.5	30	27.5
	2	30.5	20	10	-	-	-	-	-	7	67.5	30	37.5
July	1	27	34	11	-	-	-	-	-	7	79	30	49
	2	20.5	20	11	-	-	-	-	-	7	58.5	30	28.5
August	1	20.5	10	12	-	-	-	-	-	7	49.5	30	19.5
	2	20.5	10	12	-	-	-	-	-	7	49.5	30	19.5
Sept.	1	10	-	15	-	-	1	-	5	7	38	30	8
	2	-	-	15	-	-	1	-	5	7	28	28	-
Oct.	1	-	7	12	9	2	2.5	2.5	-	7	42	30	12
	2	-	3	-	9	2	1.5	3.5	10	7	36	30	6
Nov.	1	-	-	-	9	2	-	1	10	7	29	29	-
	2	-	20	-	9	2	-	1	4	7	43	30	13
Dec.	1	-	41	-	-	-	-	2.5	2.5	7	53	30	23
	2	-	20	-	11	2.5	-	1.5	2.5	7	44.5	30	14.5
Total		261.5	255	148	91	10.5	15.5	26.5	44	168	1020	684	336

APPENDIX 7

LABOUR REQUIREMENT ON A TEN-ACRE MODEL FARM, CLASS B LAND, KUSHTIA DISTRICT
(Man Days)

Month	Fort-night	Aus	Aman	Jute	Pulse	Fodder	Must-ard	Cereals	Vege-tables	Live-stock Chores	Total	Family Labour Sup-plied	1 Perma-nent Hired Labour	Daily Hired Labor
	1	-	13	-	-	-	1.5	3	3	7	27.5	27.5	-	--
Jan.	2	-	-	-	-	-	3	-	3	7	13	13	-	-
	1	-	-	-	14	-	3	-	-	7	24	24	-	-
Feb.	2	13	-	-	14	-	3	-	-	7	37	30	-	7
	1	13	-	4	14	-	1.5	5	-	7	44.5	29.5	15	-
March	2	13	13	4	14	-	-	5	-	7	56	30	15	11
	1	13	13	5	-	-	-	5	-	7	43	28	15	-
April	2	13	13	8	-	-	-	-	-	7	41	26	15	-
	1	26	13	16	-	-	-	-	-	7	62	30	15	17
May	2	39	13	16	-	-	-	-	-	7	75	30	15	30
	1	39	13	13	-	-	-	-	-	7	72	30	15	27
June	2	39	26	13	-	-	-	-	-	7	85	30	15	40
	1	34.5	43	14	-	-	-	-	-	7	98.5	30	15	53.5
July	2	26	26	14	-	-	-	-	-	7	73	30	15	28
	1	26	13	16	-	-	-	-	-	7	62	30	15	17
August	2	13	13	16	-	-	-	-	-	7	49	30	15	4
	1	-	-	19.5	-	-	1.5	-	6	7	34	19	15	-
Sept.	2	-	-	19.5	-	-	1.5	-	6	7	34	19	15	-
	1	-	8.5	16	11.5	2	3	3	-	7	51	30	15	6
Oct.	2	-	4	-	11.5	3	2	4.5	12.5	7	44.5	29.5	15	-
	1	-	-	-	11.5	2	-	1.5	12.5	7	34.5	19.5	15	-
Nov.	2	-	26	-	11.5	3	-	1.5	5	7	54	30	15	9
	1	-	52	-	-	-	-	3	3	7	65	30	15	20
Dec.	2	-	26	-	14	3	-	2	3	7	55	30	15	10
Total		307.5	328.5	194	116	13	20	33.5	54	168	1234.5	655	300	279.5

APPENDIX 8

LABOUR REQUIREMENT ON A TWELVE-ACRE MODEL FARM, CLASS B LAND, KUSHTIA DISTRICT
(Man Days)

Month	Fort-night	Aus	Aman	Jute	Pulse	Fodder	Mustard	Cereals	Vegetables	Live-stock Chores	Total	Family Labour Supplied	1.5 Permanent Hired Labour	Daily Hired Labor
Jan.	1	-	15.5	-	-	-	2	3.5	3.5	7	31.5	30	-	1.5
	2	-	-	-	-	-	3.5	-	3.5	7	14	14	-	-
Feb.	1	-	-	-	17	-	3.5	-	-	7	27.5	27.5	-	-
	2	15.5	-	-	17	-	3.5	-	-	7	43	28	15	-
March	1	15.5	-	5	17	-	2	6	-	7	52.5	30	22.5	22.5
	2	15.5	15.5	5	16	-	-	6	-	7	65	30	22.5	12.5
April	1	15.5	15.5	6.5	-	-	-	6	-	7	50.5	28	22.5	22.5
	2	15.5	15.5	9.5	-	-	-	-	-	7	47.5	25	22.5	-
May	1	30	15.5	19	-	-	-	-	-	7	71.5	30	22.5	22.5
	2	45	15.5	19	-	-	-	-	-	7	86.5	30	22.5	34
June	1	45	15.5	16	-	-	-	-	-	7	83.5	30	22.5	31
	2	45	31	16	-	-	-	-	-	7	99	30	22.5	46.5
July	1	41	50	17	-	-	-	-	-	7	115	30	22.5	62.5
	2	31	30	17.5	-	-	-	-	-	7	85.5	30	22.5	33
August	1	31	15.5	18	-	-	-	-	-	7	71.5	30	22.5	19
	2	31	15.5	18	-	-	-	-	-	7	71.5	30	22.5	19
Sept.	1	15.5	-	24	-	-	2	-	7	7	55.5	30	22.5	3
	2	-	-	24	-	-	1.5	-	7	7	39.5	17	22.5	-
Oct.	1	-	10	19	14	3	3.5	3.5	-	7	60	30	22.5	7.5
	2	-	5	-	14	3	2.5	5.5	15	7	52	29.5	22.5	-
Nov.	1	-	-	-	14	3	-	2	15	7	41	18.5	22.5	-
	2	-	31	-	14	3	-	1.5	6	7	62.5	30	22.5	10
Dec.	1	-	60	-	-	-	-	3.5	3.5	7	74	30	22.5	21.5
	2	-	30	-	17	3.5	-	2.5	3.5	7	63.5	30	22.5	11
Total		392	386.5	233.5	140	15.5	24	40	64	168	1463.5	667.5	465	331

APPENDIX 9

INTERNATIONAL EXCHANGE RATE[a]

Country	Currency Units per US Dollar
Burmese Kyat	4.78
Danish Krone	6.9
Indian Rupee	4.78
Japanese Yen	360.00
Pakistan Rupee	4.78

a. Exchange rates are the averages of four years, from 1960 to 1963.

Source: IMF, International Financial Statistics, Vol. XVII, No. 3, 1964.

BIBLIOGRAPHY

Ahmed, Nafis. An Economic Geography of East Pakistan. London: Oxford University Press, 1958.

Andrus, J.R. and Azizali, F.M. Economy of Pakistan. London: Oxford University Press, 1958.

Akhtar, S.M. Economics of Pakistan. Vol. I. Lahore: Publishers United Ltd., 1963.

Engel, R.W. "1963 Recommended Dietary Allowances," Journal of the American Dietic Association, Vol. 44, No. 2, 1964.

Farooqui, H.M., Keaton, C.R. and Miller, G.W. Agricultural Marketing in Pakistan. Karachi: Amin Book Co., 1958.

FAO. Shao-or-Ong. Interim Report to the Government of Pakistan on Farming Systems and Suggested Changes in the Ganges-Kabodak Irrigation Project Unit, FAO Report No. 8827. Rome: FAO of the UN, 1955.

Government of Pakistan. The Planning Commission, The Second Five-Year Plan (1960 - 65). 1960.

Government of Pakistan. Ministry of Food and Agriculture, Pakistan Census of Agriculture. 1960. Vol. I, 1962.

Government of Pakistan. Ministry of Food and Agriculture, Report of the Food and Agriculture Commission. 1960.

Government of Pakistan. Ministry of Finance, Economic Survey. 1962.

Government of Pakistan. Ministry of Home, Population Census of Pakistan. 1961. Census Bulletin No. 3. 1963.

Government of Pakistan. Ministry of Home, Population Census of Pakistan. 1961. Census Bulletin No. 5. 1963.

Government of Pakistan. Report of the Land Reforms Commission, 1959.

Government of Pakistan. National Planning Board, The First Five-Year Plan (1955 - 60), 1957.

Government of Pakistan. Ministry of Food and Agriculture, Survey Report on Cropping Pattern and Crop Intensities in Selected Districts of Pakistan. 1962.

Government of Pakistan. Ministry of Food and Agriculture, Agriculture in Pakistan. 1952.

Government of Pakistan. Ministry of Food and Agriculture, Report of the Agricultural Enquiry Committee 1951 - 52. 1952.

Government of East Pakistan. The Provincial Statistical Board and Bureau of Commercial and Industrial Intelligence, Statistical Abstract for East Pakistan Vol. IV, 1958.

Government of East Pakistan. Department of Information, Land Reform in East Pakistan. 1959.

Government of East Pakistan. Office of the District Agricultural Officer Kushtia, Memo No. 6425, 5th March, 1964.

Government of East Pakistan. Alim, A., et al. Review of Half a Century of Rice Research in East Pakistan. 1962.

Government of East Pakistan. Department of Agricultural Marketing, Marketing of Sugar Cane Gur in East Pakistan. 1959.

Government of East Pakistan. Department of Agricultural Marketing, Report on the Marketing of Milk in East Pakistan. 1962.

Government of Denmark. Report from the Danish National FAO Committee to the FAO of the UN. 1962.

Government of Japan. Ministry of Agriculture and Forrestry, Annual Report on the State of Agriculture. 1961. 1961.

Ishaque, H.S.M. Agricultural Statistics by Plot to Plot Enumeration in Bengal.
Calcutta: Bengal Govt. Press, 1946.

Kibria, Q.Q. Farm Management Studies at Sholpur, Dacca.
Feni: Pakistan Library, 1955.

_____ Q.G. Farm Management Studies, Methods and Analysis.
Feni: Pakistan Library, 1959.

Murray, W.G., and Nelson, A.G. Agricultural Finance.
Ames: Iowa State University Press, 1960.

Mohnot, S.R. Indian Economic Policy.
Allahbad: Friends Book Depot, 1952.

Mellor, J.W. and Moorti, T.V. Farm Business Analysis of 30 Farms, Agra District, 1959 - 60.
Agra: The Balwant Vidyapeeth, 1960.

Power, J.H. "Industrialization of Pakistan,: A Case of Frustrated Take-off? " The Pakistan Development of Review. Vol. III, No. 2, 1963.
Karachi: Institute of Development Economics, 1963.

Pingle, J.M. Final Report on the Survey and Settlement Operations in the District of Nadia, 1918 - 1926.
Calcutta: Secreteriat, 1928.

Pine, W.H. A Review of Land Classification in the United States 1947 (Ph.D. Thesis)
Manhattan: Kansas Agricultural Experiment Station, 1961.

Rahaman, Anisur. "Economic Imbalance", Proceedings of the Conference on Economic Development in Pakistan, The Pakistan Observer.
Dacca, 24th August, 1963.

The Gujrat Cooperative Farming Survey Committee, Cooperative Farming in Gujrat.
Bombay: Indian Society of Agricultural Economics, 1959.

University of Mandalay. Faculty of Agriculture, A Farm Management Survey Report in the Mandalay District, 1960 - 61.
Mandalay: Faculty of Agriculture, 1962.