CHAPTER II
AGRICULTURAL DEVELOPMENT IN BURDWAN

2.1. Introduction
We have noted that the eastern part of Burdwan district was always agriculturally better off than the rest of Bengal. This chapter looks closely into the history of agricultural development of the region and tries to reconstruct various periods on the basis of secondary sources. It appears that the development of rice milling in the region is related to recent agricultural improvements in the district.

One of the significant factors behind this improvement has also been the recent land reform measures that were extremely successful in Burdwan. These reforms have evolved through several phases since independence and have arguably played a major role in improving agricultural productivity. Here we will deviate slightly from our main area of inquiry and examine how much of the present agricultural prosperity can be traced back to the historical perspective and whether it can be attributed to the land reforms, other recent reforms and various government policies for agricultural development.

2.2. Agricultural Development in History
In this section we have discussed the historical period under different dynasties such as Pal, Sasanka and Sen, then the time under the Mughals and finally the British period.

2.2.1. Pre-Mughal Period
There is no recorded history of Burdwan's economy of the ancient period of history. However, various literature sources such as various Mangal Kavyas dating back to this period describe the prosperity of rural Burdwan (Chakraborty, 1962). From these literature (Chowdhuri, 1994), it is known that during the period between 1095-1206 AD, that is, during the Pal dynasty and the period of Sasanka and Sen dynasties, the economy of the district was mostly dependent on agriculture. The land revenue was then about one-sixth of the total production (Chowdhuri and Sen, 1966). Burdwan had earned fame at that time for not only its agricultural produce, but also its handicrafts and river-borne trade (Stewarts, 1903).
2.2.2 Mughal Period (1206 - 1757)

During the Mughal period, Burdwan continued to remain famous for its agricultural production and economic prosperity. The farmer or the *ryot* was the actual owner of land. The rural economy was self-sufficient with agriculture and handicrafts. Surplus from rural production used to support the urban centres. But the rural production system and economy was totally under the control of *zamindars, mahajans*, merchants and big farmers called *jotdars*.

Land revenue was between one-third and half of the production (Majumdar, 1973). However, even the most oppressive Mughal rulers tried to maintain good relations with the farmers with the help of local *zamindars* in order to improve agricultural productivity to ensure continued wealth (Moreland, 1990).

The machinery of revenue collection in Burdwan under the Mughals consisted of several layers of intermediaries, bearing different names and designations. These were *rajas, talukdars, zamindars, jagirdars, chaudhuris* etc. According to Irfan Habib, the famous economic historian of Mughal India, the imperial territory was divided into two distinct parts – *khalisa* and *jagir*. In *khalisa*, the assessment and collection of revenue was made directly by government officers, while lands in *jagir* were assigned to persons designated as *jagirdars* (Bhattacharyya, 1979).

Up to the period of Akbar, Burdwan retained its agricultural prosperity because of the favourable land revenue system of Mughal rulers. During the regime of Sher Shah, the Mughal ruler who pioneered land survey, Burdwan was under *Sulemanabad*, one of the revenue regions (*subah*) of Bengal. Except for the western part, the whole district was agriculturally prosperous at that time. Another important favourable factor, besides the fertility of the land, behind the development of agriculture during this period was the right of the farmer to sell, mortgage and transfer the land after the timely payment of revenue. Akbar planned to collect the revenue directly from the farmers.

The condition of peasants and agriculture started to deteriorate under Emperor Jahangir. Instead of collecting revenue directly from the farmer, he introduced a new system called *'alat magha'*, which enabled the emperor to collect revenue from local landlords. A class of
local zamindars emerged to collect the revenue, and soon started to exploit the farmers, badly affecting the agricultural production because of its character of disincentive and disregard for variable farming conditions.

Aurangzeb divided the Bengal subah into 13 chucklas among which chuckla Burdwan was famous because of its highest amount of revenue. In each chuckla, the diwan was the chief in charge of revenue collection. Only the zamindar of Burdwan had the right of collection and deposit of revenues directly from the farmers to the government without any intermediaries. The district’s agricultural economy could prosper to a significant extent because of this favourable attitude of Mughal rulers to the zamindar of Burdwan (Sarkar, 1948).

2.2.3 British Period

The review of events prior to the arrival of the British reveals that the prosperity in Burdwan’s agriculture during the Mughal period was beyond doubt. This prosperity was to last till 1742 when the Marathas began to raid Bengal. During the first invasion the district actually became the very cockpit of small skirmishes between the raiders and the Bengal Army. The marches and counter-marches of the Bengal Nawab Alivardi’s troops and the lightning attacks of Maratha bargis reduced the district’s economy to ruins in the middle of eighteenth century (Guha and Mitra, 1956).

In the decades of 1750s and ’60s Burdwan gradually started to regain its lost agricultural prosperity and the peasantry began to rehabilitate itself. However, distress again began to pervade the district with the great famine of 1770. Hunter described: ‘Burdwan no less than Birbhum (a neighbouring district) suffered from the full measure of its impact’ (Hunter, 1877, reprinted in 1973). Burdwan could not fully recover from the effects of the famine until the beginning of the next century for several reasons, the most significant of them being the introduction of Permanent Settlement (Regulation 1 of 1793) by Lord Cornwallis, the then Governor of Bengal.

Depopulation of Burdwan villages took place on a mass scale during the period of famine, badly affecting the agricultural economy of later times. The raja of Burdwan made significant contribution to the recovery of the economy from the impact of famine with generous grants. Several rehabilitation programme and grants of baze zamin (rent-free tenure) were made to willing settlers even by the local zamindars to promote agrarian
enterprise. The East India Company, however, attempted to prohibit them since it made dents in its revenue base. As a result of the measures taken by the raja and the local zamindars, cultivation began to spread once again in Burdwan and its rich trade began to prosper once again. The distinct patronage of the Government was of course a major factor since it entered the market as the single biggest purchaser.

The East India Company’s fiscal policy was largely incompatible with the old zamindari system (Banerjee, 1980). The company’s policy was to appropriate an ever increasing share of the zamindari revenue. As a result of this policy both zamindars and the raja of Burdwan faced difficulties (Guha and Mitra, 1956). But the zamindars of Burdwan, unlike those of the other districts, survived with an amazing degree of resilience and were able to make the changeover from the old zamindari system to the new order introduced by Cornwallis with but a few cuts and scratches.

The permanent settlement act affected the agricultural economy in mostly negative ways. It was the cause of a great flux creating a new pattern of proprietorship at the cost of old and traditional tenurial system. As a result, estates changed hands from one group of zamindars to another. At the same time, this gave landed property a wider base by an ample distribution within the land-owning class itself and by absorbing the capital, which might otherwise have flown into non-agrarian channels (Bhattacharyya, 1985). Permanent settlement initiated a process of subinfeudation rather than leading to the development of English-type capitalist farmers or the tenants shaping themselves similar to French fermiers. It created a sprawling class of landed gentry earning farm revenue by virtue of tenancy rights. While other zamindars also played the same game, the Burdwan raj initiated the process, and almost perfected the structure before others could even collectively conceive it. Therefore, the Burdwan Raj model of subinfeudation under permanent settlement has been described as sui generis, the best specimen, the leading species of what developed to be a large genus (Bhattacharyya, 1985). Under the Burdwan Raj model, hierarchical layers were few, and the model was very definitive. Eventually, the East India Company had to legalize, through Regulation VIII of 1819, the creation of intermediary formations as layers.

Major changes took place in Burdwan throughout the nineteenth century: a rise in the production, prices and exports of food grains; in the rentals; in production, prices and exports of each crops; tenancy legislation; coal mines; railways expansion and growth of the market
in general; expansion and growth of the market centres; and the decay of river borne trade and river settlements with the rise of railways (Samanta, 2001).

Another aspect of agriculture, namely irrigation and embankment systems to combat droughts and floods, was seriously affected during the British Period. The old zamindars of the district used to maintain low embankments along the river course as a personal responsibility to protect the loss of agricultural production of farmers. But during the British period these embankment works began to be seriously neglected as an indirect result of permanent settlement. The old zamindari system was also committed to the charge of irrigation works. The fiscal demands of the government of the then zamindars were moderate enough to permit them to spend on these social responsibilities to increase tillage and enhance agricultural production in a way of competition among them. But the British rule in Bengal with its higher pressure of revenue and through the creation of intermediaries destroyed such old and traditional systems (Samanta, 2001).

Another important step of the British was to stop the breaches in the so-called zamindari banks to arrest floods. English rulers neglected to note that many of these breaches actually served as safety valves conducting the accumulated pressure of a rising flood into the overflow channels. Therefore, the stopping of breaches was the final blow (Willcocks, 1930) which definitely killed overflow irrigation in Burdwan as well as Bengal. The threat of inundation hung over the district every year when the rivers rose in spate (Guha and Mitra, 1956).

In spite of all the problems set by the British rulers, it is clear from Buchanan Hamilton’s description of 1822 that Burdwan was first in agricultural production in India just preceding Tanjore of Madras (Halder quoted in Choudhuri, 1990).

The rent act of 1859 was the initiation of land related law to preserve the interests of the peasantry. In this law there was a clear-cut distinction between the right of zamindar and peasantry regarding revenue collection (Ray and Palit, 1986). The issue of patta to the peasants became compulsory for the zamindars to protect farmers from displacement. This law totally banned any kind of increase in revenue (Dawn, 1992).
The agricultural economy of the district again started to regain its lost prosperity since the beginning of nineteenth century with the help of some limited welfare approach of British like rent act of 1859, land survey, and recording of the ownership of land etc. The positive step of the British in the development of agriculture of the district was the survey and records of the ownership of all the agricultural and non-agricultural land under the supervision of K.A.L. Hill between 1927 and 1931.

2.3. Land Reforms

Agrarian structures characterized by a highly skewed distribution of land ownership, widespread tenancy and poor markets have been the major constraints in the development of the agricultural economy of rural India (Ghosh, 1998). Several authors like Bhaduri (1973), Chakraborty (1984), Bandopadhyay (1986), Prasad (1987) etc. have argued that a semi-feudal agrarian structure is the cause of agricultural backwardness of India even after decades of planning in independent period. Land reforms in the form of redistribution of land holdings and land tenure systems, is the necessary precondition for meaningful agrarian improvements.

Opinions of scholars differ as to what is exactly meant by land reforms. In a narrow sense, land reforms imply a restructuring of the tenurial system so that the landless people get land. In a wider sense, on the other hand, land reforms a part of a comprehensive programme directed towards the uplifting of the entire agricultural economy. Land reform can be viewed as a policy, which reduces inequality and social injustice and enhances agricultural production (Mukhopadhyay, 1994). On the other hand, agrarian reform is an integrated programme that aims at reorganizing the institutional framework of agriculture in order to facilitate social and economic progress. It includes the redistribution of land, adjustment to tenancy conditions, regulation of rents and wages, institution of farm credit systems, co-operative organization and agricultural education. Agrarian reform is constrained without the support of successful land reforms (Samanta, 2001).

West Bengal had taken a step forward in changing the land tenurial structure. Besides the anti-feudal movements in the state during the British period, a series of acts were passed on different aspects of land reforms during the post-independence period.
According to Ghosh (1986), the important acts were as follows:

- West Bengal *Bargadar* Act, 1950;
- West Bengal Land Acquisition Act, 1953;
- West Bengal Land Reforms Act, 1955;
- West Bengal Estate Acquisition Act, 1956;
- West Bengal Land Reforms Rules, 1965;
- West Bengal Land Reforms (Amendment) Act, 1970;
- West Bengal Restoration of Alienated Land Act, 1973;
- West Bengal Acquisition of Homestead Land for Agricultural Labourers, Artisans and Fishermen Act, 1975; and
- Circular of the West Bengal Board of Revenue on *Operation Barga*, 1978.

The two United Front governments (1967-'68 and 1969-'70) took enthusiastic measures to implement land reforms in spite of limitations imposed by the Constitution of India. These governments, while enacting legislation and implementing other measures to meet the immediate problems of peasantry, involved the *kishans* and their organizations in a massive way in the implementation of land reforms (Konar, 1976). The most notable advance concerned acquiring the surplus land after imposing a land ceiling and its subsequent distribution. In 1969, about 2.3 lakh acres of land were distributed to about 2.38 lakh landless and land-poor peasants (Dey and Jana, 1997). During the period 1967-'70, more than one-fourth of the total surplus land distributed all over India belonged to the state of West Bengal (375 thousand hectares out of 1256 thousand hectares in India).

### 2.3.1. Land Reforms During British Period

During more than a century of colonial rule, the British adopted various forms of feudal and semi-feudal systems of tenure and introduced many changes in them to suit their needs. The various forms of tenure that took shape under them generally fall into three groups namely *zamindari*, *ryotwari* and *mahalwari*.

During 1885 another law known as 'Bengal Peasant Status Law' to protect slightly the *ryot* against the exploitation of *zamindari* intermediaries. By the advocacy of the above law, land records and maps were prepared for the first time, known as the Cadastral Settlement (C.S). This C.S record acts as a basis for latter land reform programmes. In case of Burdwan district
this was done in two phases: first during 1918-1921 and the second phase during 1927-1934 for other parts of the district. The main objective of this settlement was to determine the category in which to include the status of the ryot. To evaluate the situation that evolved after permanent settlement and to recommend any necessary change, the ‘Floud Commission’ was established in 1938. The then Maharajadhiraj of Burdwan was an important member of this commission.

In the pre-independence period (between 1936 and 1947), significant anti-feudal and anti-imperialist movements took place in different isolated parts of Bengal through the active participation of hundreds of peasants. Burdwan took a leading role in these struggles. The All India Kishan Sabha and its various units played a significant role in directing these movements. Among these movements, the Tebhaga movement of Bengal, fought in 1946-'47 was a significant one focussing on the two-thirds crop demand by the sharecroppers. These movements resulted in reforms; the West Bengal Bargadar Act of 1950 was one major outcome of this struggle (Surjeet, 1992).

2.3.2. Land Reforms Since Independence

Immediately after independence the Congress government took necessary steps to change the agrarian structure through several land reform measures. A series of bills and amendments were passed to remove the constraints posed by the agrarian structure on agricultural productivity.

The land reforms measures taken up by the Congress government at that time fall into four groups namely:

(1) Abolition of all intermediary interests between the state and the ryot or tiller of the land;
(2) Tenancy reforms which include regulation of tenants, conferring security of tenure and eventually ownership rights;
(3) Ceiling laws on agricultural holdings and distribution of surplus land; and
(4) Consolidation of holdings.

In spite of recognizing the need of land reform and passing several laws to implement it during the early years of planning, the all-India scenario of agrarian structure did not change remarkably because of the lack of initiative to actually implement the land reform measures
(Konar, 1978). Still, some notable successes were achieved especially in respect of abolition of intermediaries and imposition of ceiling on land holding in some states especially in West Bengal and Kerala (Rawal and Swaminathan, 1998).

2.3.2.1. W.B.E.A/Act, 1953

Following the end of the World War II a powerful mass peasant movement spread throughout the country. It was anti-feudal and anti-imperialist. The *Tebhaga movement* of Bengal (1946-'47) focussed on one of the major demands of the share croppers – that they should be given two-thirds of the crop, that the landlords should not make undue deductions from the produce before its sharing, and that the sharing be done in the barn of the sharecropper and not in the courtyard of landlord.

Facing the peasant agitation, Florence Commission recommended the abolition of intermediaries. Following this recommendation after independence, a new act West Bengal *Zamindari Acceptance Act*, 1953 was introduced focussing on the *two* themes:

1. to abolish all types of intermediaries by providing compensation, and
2. to return excess land to government, which exceeds the ceiling limit.

As a result, in Burdwan district up to 1996, the total number of abolished intermediaries and total number of identified zamindars/jotdars was 2,89,983 and 3,825 respectively. At the same time there was about 1.5 lakh acres of land already returned to the government, of this 56 thousand acres was cultivated land and 65 thousand acres was land with forest. (Source: District Land and Land Reforms Office).

Although the zamindars or big landholders did not always cooperate with the government, the law of 1953 has been called (District Land and Land Reforms Officer, 1997) 'a giant step' towards land reforms of West Bengal.

2.3.2.2. West Bengal Land Reforms Act, 1955 (W.B.L.R. Act, 1955)

To accelerate the momentum of land reforms a new act W.B.L.R. Act, 1955 was passed with the following objectives:

1. to preserve the rights, duties and loyalties of ryots/bargadars,
2. to distribute land returned to government among the landless peasants, and
3. to conduct other rights upon land.
In the 1972 Chief Minister's conference, an important amendment to the 1955 Act was brought in by introducing a land-ownership ceiling per family. Up to June, 1996, the number of patta holders (those who were considered eligible for getting land) was 1,79,281 (S.C 75430, S.T 37,915 and Others 65,936) and the amount of distributed khas land was 49,388.48 acres (District Land and Land Reforms Officer, 1997).

2.3.2.3 Remission of Revenue of Small Landholders

The 1955 West Bengal Land Reforms Act, made a provision for the remission of revenue of small land holder having up to 4 acres irrigated land and up to 6 acres non-irrigated land of each ryot family. This was meant to provide additional support to poor and small farmers. In Burdwan district up to June, 1996, The number of small landholder families whose revenue has been recommended for remission was over 1.4 lakhs. Certainly such measures have been effective to some extent in improving the rural economy.

2.3.3. Impact of Land Reforms on the Productivity of Land

‘Operation Barga’, initiated by the Left Front Government of West Bengal elected in 1977, assumed the dimension of a movement in the countryside within a few months of its launching in October, 1978. It is discussed in detail in section 2.4.5. Hasty recordings of the names of bargadars to grant them legal rights to cultivate land was a major incentive for the marginal and small peasants in raising production (Sanyal, Biswas and Bardhan, 1998). Provisions were also made for institutional credit and subsidies to the sharecroppers and assignees of the vested land to remove their dependency on landlords or moneylenders. The impact of these provisions was felt in agricultural investment and output growth in the 1980s. According to Saha and Swaminathan (1994) the growth rate in percentage of all crops in respect of area, production, and productivity per annum from 1977-78 to 1995-96 in Burdwan district was about 1, 4, and 4.5 respectively.

Institutional changes have been hailed (Sanyal, Biswas and Bardhan, 1998) to be responsible for nearly 5 per cent annual growth of all crop productivity, sustained for a period of more than one and a half decades (1977-'95), marking the end of ‘agrarian impasse’ in West Bengal. Clearly, Boyce’s emphasis (1987) on low aman yields as evidence of stagnation in agricultural output growth loses much its validity with the growing share of boro production the total rice output in recent times.
Productivity of land is not only singly determined by land reforms but also by other factors like irrigation water, H.Y.V. seed, agricultural credit, crop preservation, selling crops at reasonable price at market.

Sanyal, Biswas and Bardhan (1998) have estimated the rank correlation between the output growth and the incidence of tenancy shown by the area under produce-sharing rental arrangements for each district based on the Agricultural Census data for 1980-'81 and 1990-'91. Since output growth is negatively correlated with the incidence of tenancy, the impact of barga operation on the agricultural performance of Burdwan district as well as the state has been favourable.

Security of tenure, an outcome of barga operation, has altered the credit relations that formerly trapped the peasants in debt cycles (Bagchi, 1998). Boyce (1987) had found that the small farmer's cropping pattern favours labour-intensive crops meant for subsistence. With increasing access to institutional credit, primarily in terms of input loan, the peasant has now been able to put more land under HYV cultivation of food grains reduces crop duration and raises the number of crop cycles. Changes in cropping pattern in response to market forces were previously (Saha and Swaminathan, 1994) limited by differential access to technological inputs across size-classes of cultivators.

2.4. Other Factors

West Bengal deserves special mention among the Indian states in the successful implementation of agricultural land reform measures. Besides land reforms, a host of other factors were responsible for agricultural development in Burdwan. These include the provision of canalized irrigation, intensive agricultural initiatives by the central government, a people-friendly government at the helm of affairs in the state, proper distribution of ceiling surplus land, Operation Barga, and above all a successful Panchayati Raj. These are discussed in this section.

2.4.1. Role of Irrigation

Agriculture in India still largely depends on nature. Burdwan is no exception and agriculture here depends on the monsoon in spite of widespread development of irrigation. Regular and timely rainfall may assure a bumper production while in some years rainfall is irregular and
scarce causing drought, or excessive causing flood. The irrigation system of this district is well developed. Among the various irrigation systems, the impact of the Damodar Valley Corporation (DVC) has been the greatest. The amount of agricultural land under irrigation facilities during different seasons is listed in Table 2.1.

<table>
<thead>
<tr>
<th>Sources of irrigation</th>
<th>Kharif ('000 hectare)</th>
<th>Rabi</th>
<th>Boro</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Canal (D.V.C)</td>
<td>250</td>
<td>10</td>
<td>35</td>
<td>295</td>
</tr>
<tr>
<td>2. Deep tube well</td>
<td>11</td>
<td>81</td>
<td>06</td>
<td>98</td>
</tr>
<tr>
<td>3. River lifting</td>
<td>11</td>
<td>06</td>
<td>06</td>
<td>23</td>
</tr>
<tr>
<td>4. Shallow, Submersible</td>
<td>50</td>
<td>84</td>
<td>63</td>
<td>197</td>
</tr>
<tr>
<td>5. Pond, Tank etc.</td>
<td>30</td>
<td>99</td>
<td>40</td>
<td>169</td>
</tr>
</tbody>
</table>

Source: District Agricultural Office, 1999-2000

2.4.2. Contributions of the Damodar Valley Corporation

The Damodar, flowing through the region, has played a vital role in the development of agricultural economy of the region. Since the remote past, people of Burdwan tried to tune their agricultural economy with the successful utilization of the water resources of Damodar (Willcocks, 1930).

The agricultural economy of the region received a significant thrust with the inception of Damodar Valley Corporation, a multipurpose river valley project, immediately after independence. D.V.C came formally into existence on the 7th July, 1948 through the D.V.C Act. The barrage on the Damodar at Durgapur and a vast network of new canals, under whose direct command area our study region belongs, were constructed between 1952-55 creating immense opportunities for the development of agriculture. Among the multiple objectives of the project, flood control and irrigation received top priority.

In West Bengal, the D.V.C command area (3,770 square miles) sprawls over four districts namely Burdwan, Hooghly, Bankura and Midnapore. About 57.64 per cent of the total command (as above) area, that is 2,173 square miles belong to the jurisdiction of Burdwan district.
In spite of many problems, the positive impacts of the D.V.C irrigation network on the agricultural economy of the region are beyond any doubt. The production and productivity of agriculture of the region have improved dramatically. Among the different crops of the region, the most remarkable improvement has been achieved by paddy, which generates larger income for the farmers. The higher income has increased the demand for both producer and consumer goods. Associated economic activities like agro-processing (husking units and rice mills), trade and transport have developed in the region in association with the agricultural development bringing economic prosperity to the region.

2.4.3. Intensive Agricultural District Programme (IADP)

The development of agricultural economy of the region in post-independence period was also favoured by the implementation of IADP in Burdwan as one of the 16 selected districts in India. This programme was inaugurated in the district in 1962. It was a package programme including the use of high-yielding variety of seeds, chemical fertilizers and pesticides, more sophisticated and mechanized implements, and scientific soil and water management methods based on latest research. The programme was meant to demonstrate the potential for increasing food production through a multi-pronged, concentrated and co-ordinated approach in areas, which can quickly respond to such production efforts (Choudhuri et al., 1994).

The IADP package programme was also an educational process, which helped cultivators and their families, villagers and agricultural labourers in learning modern agricultural techniques and improving their skills as well. The programme intended to help the development of co-operative organizations to ensure the supply of essential inputs like fertilizers, pesticides, improved farm implements and other equipment as well as the market for agricultural products. Participation of cultivators in farm planning and the utilization of local manpower are other vital aspects of the programme (Samanta, 2001).

Till 1970-'71, 24 blocks out of 33 of the district were covered under this programme and the package of agricultural practices have since been developed for all the important crops. A soil testing laboratory for giving recommendations for better cropping and fertilizer use and a seed-testing laboratory to ensure farmers the supply of quality seeds have been set up in the district.
The development of two-tier co-operative societies (fertilizer co-operatives, marketing co-operatives etc) has also been remarkable in the region, and contributed greatly to the growth of agricultural activities. While the primary societies are functioning at thana (Police Station) or village level, the thana level societies are attached to two zonal societies located in Burdwan and Memari. The entire region is thus covered by these societies. In addition, there are co-operative banks providing agricultural credit as well as rural co-operative credit societies and grameen branches of nationalized banks. Though the co-operative societies have been criticized for not being able to make much progress in the matter of outright purchase and sale of paddy or rice (Kar, 1998a), their overall impact on agriculture of the district has been significant.

2.4.4. Role of the Left Front Government

Immediately after coming into power in 1977, the Left Front Government (LFG) had initiated several measures of land reforms. According to Surjeet (1992) the major thrust of LFG on land reform measures was on the following aspects:

- formulation and passing of a land reform (amendment) bill plugging the loopholes in the earlier acts;
- *Operation Barga* and the recording of sharecroppers as the beneficiaries;
- further acquisition and distribution of surplus land;
- providing necessary infrastructure and support to assignees of land and sharecroppers;
- democratic decentralization and institutions in the administration of land reforms; and
- permanent titles to homestead land to landless agricultural labourers, artisans and fishermen.

The role of LFG has been assessed by different scholars and observers. In assessing the rural development policy of LFG, Lieten (1996) mentioned ‘In its rural development policy, the LFG since 1977 has focussed on three interrelated types of intervention: modification of the relations of production and the forces of production, reconstitution of the political power structure through the revival of the *panchayat* bodies, elected along party lines, and playing its political cards expediently so as to maintain a stable and orderly regime for a period unsurpassed in Indian history. He also observes ‘The revitalization and democratization of the *panchayat* system was one of the first initiatives taken by the LFG after it was voted into office in 1977. More consequentially, the LFG coordinated the constitution of the new
panchayats with a massive campaign of land distribution and tenancy reforms. The axiom informing the pleas for land reforms, in addition to considerations of social justice and efficiency, has been the strategic necessity of breaking the socio-political as well as economic power block of landlords-cum-moneylenders’ (Lieten, 1996; p. 51).

On the other side, there are a number of arguments made by different scholars like Mallick (1993) Atul Kohli (1987), Mukherjee and Bandopadhyay (1993) and Rudd (1994) against the positive role of LFG in improving the agricultural scenario of the district. There are also publications (Bandopadhyay, 1995; Dasgupta, 1995; Bhaumik, 1993; Chandrasekhar, 1993; Nossiter, 1988; Ghosh, 1986 etc.) crediting the LFG for bringing economic benefits in terms of agrarian process and the discontinuation of the feudal relations of production.

2.4.5. Operation Barga

Operation barga is undoubtedly the most important agricultural reform in West Bengal by the Left Front government. Operation barga (recording of the names of bargadars or sharecroppers), a programme of tenancy reform, was launched in October 1978. This Programme reached its climax during 1978-’80 period. There is no actual data recorded about the total number of bargadars in Burdwan district at that time. According to K.L. Hill (I.C.S. 1927-32 Settlement Officer of Burdwan district) about one-fourth of the cultivable land was ploughed under Barga system in Burdwan district. The success of the programme was to record these share croppers' names and legalize their tenancy rights over cultivable land.

David Grigg (1978) has explained the reason behind the contribution of the operation barga in raising agricultural production in West Bengal. According to him, the farmers who own the land is more likely to adopt new methods than the farmer who has to give half of his harvest to the landlords and much of the rest to the local money-lenders.

Under this programme, about 12 lakh bargadars were recorded in West Bengal till December, 1984. In district-wise performance Burdwan ranked third with the recording of 1.04 lakh bargadars after Midnapore (2.11 lakh) and 24-Paraganas (1.64 lakh) up to this period. The West Bengal figure of recorded bargadars increased to 13.94 lakh in 1988 (out of which 5.84 lakh belonged to the scheduled caste and scheduled tribe communities). By 1990, the names of 14.5 lakh sharecroppers were registered in the land records (Lieten, 1992). In Burdwan district, up to 1996 about 1,25,958 bargadars were recorded in
approximately 1.10 lakh acres of land. This registration created new rights for tenants like rent payments and access to credit from formal banking sectors (Ramachandran, 1997). The provision for institutional credit to the sharecroppers gave these small operators access to technological inputs. With the removal of tenurial insecurity the small operators started taking viable production decisions (Sanyal, Biswas and Bardhan, 1998). In some areas (for example the eastern part of Burdwan district and Hooghly), the cropping pattern of even small farms changed from labour-intensive subsistence crops to commercial crops in response to market forces. Boyce (1987), however, observes that broadly the smaller farms’ cropping pattern still favours valuable labour intensive crops in West Bengal.

In studying the effects of tenancy reforms on aspect of production, Ghatak (1995) observes that Operation Barga had a significant positive effect on the rate of expansion of boro cultivation as well as output, adoption of HYV seeds and investment in private irrigation.

2.4.6. Distribution of Ceiling Surplus Land

Another big success of the Left Front government in West Bengal was the implementation of ceiling laws on land holdings including vesting of land and consequent redistribution of land among the rural poor. In respect of state-wise achievement in land ceiling the performance of West Bengal is much higher than the other states. In West Bengal, 12.63 lakh acres of land out of 73.28 lakh acres in India declared surplus, of which 11.43 lakh acres were acquired by the government by 1991 (source: Proceeding of the conference of Revenue Ministers, 14th March, 1992). Out of the 11.43 lakh acres of acquired land, about 9.13 lakh acres were distributed among 19.94 lakh landless households, the majority of which belonged to the scheduled castes and scheduled tribes communities. West Bengal having only 3.58 per cent of the country’s cultivated land, has contributed 20.77 per cent of the total ceiling-surplus land distributed in the entire country (Kar, 1998a).

In addition to these land reform measures, the LFG has made remarkable progress in fixing and implementation of minimum wages for agricultural labourers. There has been substantial increase in agricultural wages in West Bengal since 1980s. West Bengal had the highest compound rate of growth of real daily wage of male agricultural labourers between 1979-'80 and 1992-'93 (280 per cent) among all the states of India (Rawal and Swaminathan, 1998). Another important effort of West Bengal government was supporting the assignees of surplus
land and share croppers with provision for loans, inputs, bullocks through widely expanding network of commercial banks in rural areas.

According to a number of scholars (Kar, 1998a; Tornquist, 1991; Baruah, 1990; Westergaard, 1986 etc.) the land reforms in West Bengal is incomplete. Baruah (1990) mentioned that land reforms in West Bengal, instead of being a programme capable of bringing about a regime of viable peasant proprietorship, has amounted to the de facto abandonment of the concern with viability. He further claims that the allocation of tiny plots was done not with view to creating viable farms, but to provide a large number of landless with a limited amount of economic security and survival capability. Westergaard (1986) made the argument that, in its focus on land reforms, the LFG has not paid sufficient attention to technological changes and has not tackled the problems of a stagnant agriculture. Tornquist observes ‘the communist emphasized the struggle for political power while immediate popular efforts to develop production would have to wait’ (1991, p. 69). Harriss believes there has not been brought about ‘any really significant change’ in the agrarian structure (1993, p. 1246).

However, Kar (1998a) has noted that land reforms in West Bengal, though they resulted in remarkable initial success, have failed to achieve the desired targets because of the inability to provide non-land inputs to poor peasants who are the major beneficiaries of this programme. Such non-land inputs are as follows.

1. **Irrigation water** - In spite of constructing the D.V.C canals, the government has failed to supply cheap irrigation water to the farmers of the region. Therefore, a considerable proportion of land in the hands of small and marginal peasants cannot be utilized for double and multiple cropping enhancing production.

2. **Co-operative movement** - Distribution of surplus land to the poor have created numerous small land holdings even below the size of 0.5 acres, which are uneconomical in their scale of production. The use of sophisticated implements is also restricted by the small and fragmented size of lands. To make these uneconomic holdings into an economical one, the government should encourage the peasants to form co-operatives for better management and increased production. In Burdwan region, the co-operative movement has remained rather limited with fertilizer and marketing co-operatives.
3. **Financing** - On an average, the agricultural community’s exposure to technological innovation is still marginal owing to financial constraints. Sometimes poor landholders are compelled to transfer their land to those owning pump sets, power thrashers and such other non-land inputs. Commercial banks in the rural areas are engaged in providing loan for non-land inputs to individual farmers. The poor farmers cannot use that finance properly for production and repay the loan to the banks. Their poverty compelled them to use that money for their basic needs. Unless the state adopts a comprehensive programme of changing these uneconomic holdings into economic ones by forming co-operatives, land reforms will remain an incomplete dream for the poor peasants.

4. **Storage and marketing** - Storage and marketing facilities are also not yet adequately developed to the extent to cater to the need of the development in agriculture. Storage infrastructure must be upgraded to enable a farmer to derive the maximum return from his field. Lack of proper marketing infrastructure and well-integrated road network compelled the farmers sometimes to depend on middlemen.

To achieve maximum benefit of land reforms, all these loopholes should be mended with more initiative to providing non-land inputs to the small and marginal farmers.

2.4.7. **Panchayati Raj**

Besides land reforms, West Bengal experienced another important socio-political change in its rural landscape during the left front rule. This is the reorganization and ré-vitalization of democratic institutions of local governance at three levels – *gram panchayat* or GP at the village level, the *panchayat samiti* at the rural development (RD) block level and the *Zilla Parishad* (ZP) at the district level.

Under the West Bengal *Panchayat* Act 1973, the *panchayats* already had a vast range of responsibilities, among which irrigation, promotion of cooperative farming, the planning and implementation of developmental and infrastructural works etc. are important for agricultural development. Further, *Panchayats* were closely involved in the implementation of land reform measures among which *Operation barga* was the top priority.
Assessments of panchayti raj do, however, vary considerably. Some researchers (Rudd, 1999; Williams, 1999; Mallick, 1992 etc.) have been far more critical of the effectiveness of the programme. Mukherjee and Bandopadhyay (1993) also questioned about the efficient functioning of panchayats in West Bengal. They observe many unfinished tasks in the areas of land distribution, barga registration, and agricultural marketing and cooperative credit. However, it has to be admitted that the panchayats have brought about a redistribution of political power in rural areas of districts like Burdwan and have created a high degree of social and political awareness among all sections of people. This is because of the especially strong presence of LFG in panchayats at various levels in Burdwan.

2.5. Land Reforms in the Region

Burdwan remained ahead of other districts of West Bengal in the implementation of land reform. The movement of Krishak Sabha was strong enough and provided generous voluntary help to panchayats and government institutions to acquire vested ceiling surplus land, distribute those lands and to record the name of bargadars. An eminent Marxist leader of Krishak Sabha, Mr. Harekrishna Konar had led the Operation barga in the region.

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Vesting of ceiling surplus land (acres)</th>
<th>Vested non-agricultural land (acres)</th>
<th>Vested non-agricultural land set for agriculture (acres)</th>
<th>Number of patta holders</th>
<th>Number of recorded bargadars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Burdwan – I</td>
<td>2,747.36</td>
<td>699.12</td>
<td>224.8</td>
<td>4,356</td>
<td>3,038</td>
</tr>
<tr>
<td>2. Burdwan – II</td>
<td>2,761.62</td>
<td>574.18</td>
<td>144.58</td>
<td>5,814</td>
<td>3,866</td>
</tr>
<tr>
<td>Region (Total)</td>
<td>5,508.98</td>
<td>1,273.30</td>
<td>369.38</td>
<td>10,170</td>
<td>6,904</td>
</tr>
<tr>
<td>Burdwan District</td>
<td>1,86,480.41</td>
<td>31,319.34</td>
<td>5,081.92</td>
<td>1,91,059</td>
<td>1,28,000</td>
</tr>
</tbody>
</table>

Source: District Land Revenue Department, Burdwan

Table 2.2 clearly states the progress of different aspects of land reform both in the region as well as the district up to June, 1999. About 1.86 lakh acres of ceiling surplus land have been vested in the district of which 5,509 (approximately) acres belong to our region. These ceiling surplus lands have been distributed among 1.91 lakh and 10,170 beneficiaries in the district and the region respectively. The amounts of total vested non-agricultural land in the district and in the region stands at 31,319.34 acres and 1,273.30 acres respectively up to
June'99. According to the survey done by District Land Revenue Department, about 16 per cent of the total vested non-agricultural land was found suitable for agriculture. The conversion of this non-agricultural land into agricultural one can be taken as a positive step.

The beneficiaries of the distribution of ceiling surplus land have been provided with patta (the legal recognition of land-ownership). But the recording of patta-holders is yet to be complete. The recording of patta-holders has been done for about 58 per cent of the patta-holders in the district. The achievement is slightly higher in the region with about 60 per cent of patta holders recording their names in the government register. The recording of bargadars has also been done efficiently in the district (1.28 lakh up to June, 1999). During this time there were 6,904 bargadars in the region who have recorded their names in the government register.

Lieten had done a village level study in Memari blocks of the region in 1996. He credited the implementation of land reforms and efficient functioning of panchayati institutions for the improvement in agrarian production as well as the socio-economic condition of the poor.

2.6. Agricultural Development

Our study region has its geographical advantages and a long history of agricultural prosperity. Burdwan received in full measure all the post-independence initiatives for agricultural development – DVC canals, IADP and the ‘new’ technology package, and land reforms. These have undoubtedly transformed the single cropping land into a multiple cropping one.

Let us now take a brief look at the emerging agricultural situation in the state of West Bengal and in Burdwan.

2.6.1. West Bengal

In the post-independence period the state of West Bengal has passed through an eventful period in the history of agriculture. From a situation of low and less than all India average growth, the state has moved to a high agricultural growth path (Rawal and Swaminathan, 1998). In the last two decades, there has been a major institutional change in agricultural economy of the state, which are closely linked to the changes in production and productivity (Banerjee and Ghatak, 1995). Before that, in a landmark study of agricultural performance in
West Bengal, James Boyce had estimated that the growth rate of agricultural output between 1950 and 1980 was only 1.74 per cent per annum (Boyce, 1987). The cause of such low growth rate of production was studied also by the Reserve Bank of India (1984), which identified the chief constraints as the lack of adequate and controlled supply of water, inadequacy in the supply of fertilizers, modern varieties of seeds, electricity, credit facilities and infrastructure for market. A noteworthy change began to occur in the 1980s in both the production and productivity of all crops specially rice and potato (Saggar and Raghavan, 1989). However, there is a debate regarding the various effects of institutional reform as factors explaining this agricultural take off in West Bengal (Gazdar and Sengupta, 1999). Both Sen and Sengupta (1995) and Banerjee and Ghatak (1995) find some evidence of a positive correlation between tenancy reform and agricultural growth. Lieten (1996, p. 78) observes that the agricultural productivity in West Bengal started to climb sharply only after the ascent of LFG in 1977.

Between 1981 and 1991, rates of growth of agricultural production increased in all the eastern states and among them West Bengal grew fastest (Dutt Ray, 1994). The compound annual growth rate of food grain production between 1981-'82 and 1991-'92 in West Bengal was 6.5 which was much higher than the all-India average that is 2.7 (Saha and Swaminathan, 1994). This unprecedented rate of growth of food crops was chiefly due to the increase in both the production and productivity of rice specially boro. Traditionally, the aman crop has been the most important of the three rice growing seasons (aus, aman and boro) in terms of output and acreage. Over time, the boro crop has grown in significance and the production of total rice produced in the boro season doubled during the 1980s. The exponential growth rates of boro crop between 1977-'78 and 1993-'94 in West Bengal were 8.37, 9.38 and 2.86 per cent per annum in area, production and productivity respectively (Samanta, 2001).

John Harriss (1992, 1993) argued that the remarkable growth of agricultural production in the 1980s was based on an expansion of irrigation by private shallow tube well. Between 1976-'77 and 1985-'86 the total increase in net irrigated area in West Bengal was 74.0 per cent against the all-India average of 19.7 per cent. In this expansion of irrigation the area irrigated by tubewells during the same period increased by as much as 575.4 per cent in West Bengal as compared to about 59.7 per cent in India (Rawal and Swaminathan, 1998). The role of land reform measures in accelerating agricultural production was also immense in West
Bengal in the last two decades (Sanyal, Biswas and Bardhan, 1998). The measures intensified state intervention in defining property rights in a more meaningful manner, thus narrowing the gap between ownership and operation and widening the access of the small cultivators to technology and other inputs. Since the small and marginal cultivators constitute the largest share of the total holdings, the land reforms were extremely significant from the point of view of growth in production and productivity in recent times (Mukherjee and Sanyal, 1997). Several studies (Rawal, 1997; Sengupta and Gazdar, 1996) have shown that the institutional changes have had a variety of direct and indirect positive effects on recent agricultural development in West Bengal, and especially Burdwan district.

2.6.2. Burdwan District

Burdwan (Figure 2.1), with a cropping intensity of 169 per cent (1992), was the pioneer one among the districts of West Bengal in agricultural development. At present the net cropped area occupies nearly 56 per cent of the total gross cropped area of the district. Cropping intensity of a region is calculated by dividing the gross cropped area by net cropped area multiplied by 100 that is cropping intensity

\[
\text{Cropping intensity} = \frac{\text{Gross cropped area}}{\text{Net cropped area}} \times 100
\]

About 88 per cent of the gross cropped area is irrigated annually taking three seasons (kharif, rabi and summer) together. The relative percentage shares of irrigated area to the net-cropped area are about 75, 40 and 35 per cent during the kharif, rabi and summer seasons respectively. The following table has been compiled from data taken from a special report ‘Recommendations for crop rotation for increasing cropping intensity’ prepared by the Agricultural Department, Burdwan. The later reports are no so detailed; for example the overall cropping intensity in the district in 2000-2001 (as per Annual Plan in Agriculture, Burdwan) is has risen to 179, but neither the plan nor any data is available at the block level.
Figure 2.1
Table 2.3: Crop Intensity and Percentage of Irrigated Area to Cultivable Area, Burdwan District

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Crop intensity, 1992. (in percentage)</th>
<th>Irrigated area to cultivable area, 2001 (in percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burdwan</td>
<td>206</td>
<td>95</td>
</tr>
<tr>
<td>Ausgram I</td>
<td>165</td>
<td>85</td>
</tr>
<tr>
<td>Ausgram II</td>
<td>125</td>
<td>85</td>
</tr>
<tr>
<td>Bhatar</td>
<td>172</td>
<td>95</td>
</tr>
<tr>
<td>Galsi II</td>
<td>185</td>
<td>95.5</td>
</tr>
<tr>
<td>Jamalpur</td>
<td>225</td>
<td>90</td>
</tr>
<tr>
<td>Khandaghosh</td>
<td>147</td>
<td>90</td>
</tr>
<tr>
<td>Memari I</td>
<td>219</td>
<td>85</td>
</tr>
<tr>
<td>Memari II</td>
<td>201</td>
<td>85</td>
</tr>
<tr>
<td>Raina I</td>
<td>159</td>
<td>90</td>
</tr>
<tr>
<td>Raina II</td>
<td>155</td>
<td>90</td>
</tr>
<tr>
<td>Kalna I</td>
<td>190</td>
<td>80</td>
</tr>
<tr>
<td>Kalna II</td>
<td>199</td>
<td>95</td>
</tr>
<tr>
<td>Purbasthali I</td>
<td>185</td>
<td>100</td>
</tr>
<tr>
<td>Purbasthati II</td>
<td>200</td>
<td>95</td>
</tr>
<tr>
<td>Monteswar</td>
<td>147</td>
<td>95</td>
</tr>
<tr>
<td>Katwa I</td>
<td>178</td>
<td>80</td>
</tr>
<tr>
<td>Katwa II</td>
<td>146</td>
<td>80</td>
</tr>
<tr>
<td>Ketugram I</td>
<td>156</td>
<td>85</td>
</tr>
<tr>
<td>Ketugram II</td>
<td>150</td>
<td>85</td>
</tr>
<tr>
<td>Mongolkote</td>
<td>156</td>
<td>85</td>
</tr>
<tr>
<td>Faridpur</td>
<td>101</td>
<td>20</td>
</tr>
<tr>
<td>Kanksa</td>
<td>135</td>
<td>45</td>
</tr>
<tr>
<td>Asansol</td>
<td>115</td>
<td>25</td>
</tr>
<tr>
<td>Galsi I</td>
<td>190</td>
<td>85</td>
</tr>
<tr>
<td>Barabani</td>
<td>115</td>
<td>12</td>
</tr>
<tr>
<td>Hirapur</td>
<td>117</td>
<td>25</td>
</tr>
<tr>
<td>Jamuria I</td>
<td>115</td>
<td>10</td>
</tr>
<tr>
<td>Jamuria II</td>
<td>114</td>
<td>10</td>
</tr>
<tr>
<td>Kulti</td>
<td>113</td>
<td>11</td>
</tr>
</tbody>
</table>
The average percentage share of net irrigated area to net cultivable area in the eastern part of the district is about 89 per cent whereas the same average is about 22 per cent in the western part. Very high level of percentage share of irrigated area is found in five blocks namely Burdwan, Bhatar, Kalna II, Purbastali II and Monteswar, all of which are located in the eastern part. On the other hand, very low level (below 30 per cent) of irrigation intensity is found in nine blocks (Table 2.3, Figure 2.2.a) all of which are located in the western part. The other blocks with high level of irrigation also belong to the eastern part of the district (Figure 2.2a).

Though the intensity of cropping has been remarkable in some selected block of Burdwan district, it is not so throughout the district. The average cropping intensity of this district is 169 per cent. Very high cropping intensity (>200) is observed in 3 blocks: Burdwan sadar, Jamalpur and Memari I. High cropping intensity (176-200) is prevalent Galsi I, Galsi II, Katwa I, Purbasthali I and II, Kalna I and II, Memari II block. Medium cropping intensity (151-175) is found in Ketugram I, Mangalkote, Bhatar, Ausgram I, Raina I and Raina II block. Cropping intensity is low (126-150) at Ketugram II, Katwa II, Monteswar, Khandaghosh, and Kanksa block. Cropping intensity is very low (101-125) at rest of the blocks, that is, the entire western part and Ausgram II, which has a large area under forests. In general, cropping intensities are higher in eastern part than in the western part of the district.

The spatial pattern of cropping intensity is correlated with the proportion of irrigated area over the entire district. As for example Burdwan block has very high level of irrigated area as well as high level of cropping intensity. The other blocks of high level of cropping intensity like Memari I, Memari II, Jamalpur etc. (Figure 2.2a and 2.2b) are also associated with high level of irrigation intensity.
PERCENTAGE OF IRRIGATED AREA TO CULTIVABLE AREA
BURDWAN DISTRICT (2000-2001)

Irrigated area to Cultivable area in percentage

- 90 and above (Very high)
- 80 - 89 (High)
- 71 - 79 (Medium)
- 20 - 30 (Low)
- < 20 (Very low)

Source: Based on data from Annual Plan on Agriculture, Burdwan, 2001-2002

CROP INTENSITY
BURDWAN DISTRICT (1992)

Crop Intensity in percentage

- above 200 (Very high)
- 176 - 200 (High)
- 151 - 175 (Medium)
- 126 - 150 (Low)
- 101 - 125 (Very low)

Source: Based on data from special report on cropping intensity, Burdwan, 1993.

Figure 2.2a

Figure 2.2b
Table 2.4: Expansion of Net Cropped, Net Irrigated Areas and the Area Sown More than once Burdwan District (1910-11 to 2001-2002)

<table>
<thead>
<tr>
<th>Year</th>
<th>Net cropped area in '000 hectares</th>
<th>Net Irrigated area in '000 hectares</th>
<th>Area sown more than once in '000 hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910-11</td>
<td>343.72</td>
<td>N.A</td>
<td>N.A</td>
</tr>
<tr>
<td>1930-31</td>
<td>221.58</td>
<td>N.A</td>
<td>85.71</td>
</tr>
<tr>
<td>1950-51</td>
<td>470.85</td>
<td>131.06</td>
<td>27.72</td>
</tr>
<tr>
<td>1970-71</td>
<td>458.89</td>
<td>322.59</td>
<td>107.40</td>
</tr>
<tr>
<td>1990-91</td>
<td>464.49</td>
<td>348.15</td>
<td>345.42</td>
</tr>
<tr>
<td>2000-2001</td>
<td>471.63</td>
<td>371.34</td>
<td>372.54</td>
</tr>
</tbody>
</table>


The table 2.4 clearly explains the trend of areal expansion under different aspects of agriculture and irrigation in twenty-first century (1910-11 to 2000-2001). The increase in the district’s net irrigated area has been quite high in the post-independence period. Between 1950-51 and 1970-71, the net irrigated area increased at the rate of about 10,000 hectares per annum. This expansion of irrigation facility is chiefly due to the development of canal irrigation under the D.V.C. The rate of expansion decreased to 1,200 hectares per annum between 1970-71 and 1990-91. However, if we consider the gross irrigated area (total of irrigated areas during kharif, rabi and summer seasons), as 693.57 thousand hectares, then the rate of expansion becomes nearly double (19,000 hectares per annum) of the previous two decades and the total credit goes to the development of deep and shallow tubewells. Most of the tube well irrigation, again, is owned privately by individual farmers (Lahiri, 1986), and the government’s role is insignificant. Therefore, the recent irrigation development is not only non-canalized, it is also in the private domain as against the 1960s. Between 1990-91 and 2000-2001, the net irrigated area increased at a lower rate of about 2,300 hectares per annum.

However, in response to the expansion of irrigation, the net-cropped area of the district has increased from 343.72 thousand hectares in 1910-11 to 471.63 thousand hectares in 2000-2001. The most remarkable increase is also found in the areal expansion of double and
multiple cropping (12,000 hectares per annum) which is a consequence of expansion of irrigation during *rabi* and summer seasons.

Table 2.5: Increase in the Area, and Productivity (Selected Crops of Burdwan District 1965-66 and 1996-97)

<table>
<thead>
<tr>
<th>Crops</th>
<th>Area ('000 hectares)</th>
<th>Yield (Kg/hectares)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65-66</td>
<td>80-81</td>
</tr>
<tr>
<td>Rice</td>
<td>456.4</td>
<td>493.0</td>
</tr>
<tr>
<td>Aus</td>
<td>23.6</td>
<td>23.8</td>
</tr>
<tr>
<td>Aman</td>
<td>429.9</td>
<td>435.3</td>
</tr>
<tr>
<td>Boro</td>
<td>2.9</td>
<td>33.9</td>
</tr>
<tr>
<td>Wheat</td>
<td>3.8</td>
<td>8.3</td>
</tr>
<tr>
<td>Oil Seeds</td>
<td>3.6</td>
<td>54.6</td>
</tr>
</tbody>
</table>


From the above table we can analyze the developmental trend of agriculture in the district with the help of the data on the increase in area and yield of some selected crops of the region. Rice is the predominant crop of the district, which is cultivated intensively in three seasons (*kharif, rabi, summer*). Therefore, we shall analyze the trend of three types of rice (*aus, aman, boro*) individually besides the total of them.

The temporal trend of areal expansion and yield for the selected crops is analyzed for a period of 30 years (1965-66 to 1996-97) in Table 2.5. Between 1965-66 and 1996-97, rice-producing area has increased by 37.20 per cent. A remarkable increase (1,267 kilograms/hectare) has taken place in the productivity of rice. While *aman* yields have increased with improved seeds and fertilizer use, it is the dry season *boro* paddy cultivation enabled by shallow tube wells, which has been the real base for the rapid growth in food grain production in the district in the 1980s and early 1990s (Webster, 1999).

Among the 3 rice crops a remarkable increase in area has occurred in case of *boro*. During the period of 30 years, the areal expansion of *boro* paddy is 167 thousand hectares. The productivity of *boro* (3,407 kilograms/hectare) is also highest among the three rice crops.
Therefore, a very high rate of growth of boro production has made a significant contribution to the growth in rice production in Burdwan (Sanyal, Biswas and Bardhan, 1998). Wheat and oilseeds are loosing their importance compared to paddy in the agricultural economy of the district. However, the yield is high for both the crops.

Table 2.6: Paddy Production in Burdwan District, 1947-2001
(Production in Metric Tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>Aman</th>
<th>Aus</th>
<th>Boro</th>
</tr>
</thead>
<tbody>
<tr>
<td>1947-48</td>
<td>370960.8</td>
<td>21048.48</td>
<td>1567.44</td>
</tr>
<tr>
<td>1956-57</td>
<td>484713.5</td>
<td>20104.70</td>
<td>1421.13</td>
</tr>
<tr>
<td>1965-66</td>
<td>626200.0</td>
<td>27500.00</td>
<td>3500.00</td>
</tr>
<tr>
<td>1974-76</td>
<td>888761.1</td>
<td>86100.80</td>
<td>325824.9</td>
</tr>
<tr>
<td>1983-84</td>
<td>832460.0</td>
<td>47140.00</td>
<td>302770.0</td>
</tr>
<tr>
<td>1992-93</td>
<td>1035370</td>
<td>72240.00</td>
<td>298720.0</td>
</tr>
<tr>
<td>2000-2001</td>
<td>1606334.77</td>
<td>1468459.61</td>
<td>750500.79</td>
</tr>
</tbody>
</table>

Source: Up to 1983-84, unpublished thesis of Ms Saswati Barman

We analyzed the production trend of 3 types of rice (aus, aman and boro) in the district since 1947-48 (Table 2.6, Figure 2.3). There is an overall increasing trend of production of 3 types of rice over the period with the exceptional year of 1983-84. This fall in paddy production is associated with the bad monsoon, which is very usual phenomenon in India. Over this long period of time highest achievement is found in aman production with an increase of about 12 lakhs metric tons. The average rate of increase in production is about 23,000 metric tons per annum. However, the remarkable increase in paddy production is achieved by boro crop. From a very low base of 1.5 thousand metric tons in 1947-48, the production of boro paddy has been increased to 7.5 lakhs metric tons in 2000-2001. This increase in boro production can be attributed to the extension of irrigation facilities through shallow and submersible pumps.

In a nutshell it can be said that agricultural development of the district has progressed much due to the IADP programme and DVC canals in the 1960s, adoption of new technology in the 1970s, successful land reforms in the late 1970s and early 1980s, and lastly the expansion of private irrigation by deep, shallow and submersible tubewells in the late 1980s and early 1990s together.
GROWTH IN PADDY PRODUCTION
BURDWAN DISTRICT, 1947-2001

BORO

\[ Y_c = 328 (3.32)^x \]

AMAN

\[ Y_c = 309742 (1.24)^x \]

AUS

\[ Y_c = 13122 (1.37)^x \]

Source: Based on data collected from unpublished thesis of Saswati Barman and from P.A.O., Burdwan.

Figure 2.3
2.6.3. The Region
Our study region (though the entire blocks of Burdwan I and Burdwan II are not considered for studying agro-processing industries) is a major contributor to the agricultural production of the district. Its physical environment, including plain land, fertile soil, sufficient surface and underground water and the favourable climate, provided the ideal basis for the development of agriculture in the region. The adoption of technological inputs assisted by the extension of irrigation (under both public and private ownership) has brought remarkable increase in both the production and productivity in all agricultural crops especially rice in the region since 1980s.

2.7. Summary
We had apparently deviated slightly in this chapter from our main objective of studying the agro-processing industries of Burdwan. However, a detailed study of the agricultural development scenario was considered to be utterly necessary to establish our study region and its economy in context. Often in this chapter we had to talk about either the whole district or its eastern part, without focusing on Burdwan and its surrounding region in particular. This was not only because of data constraints; it was also a deliberate effort on our part to establish the distinctiveness of Burdwan’s rural economy. However, availability of recent quantitative data at the micro-level on all aspects of agriculture was rather limited forcing us to depend more on secondary sources.

In this chapter we have examined the historical evolution of agriculture in the historical past in Burdwan area starting from Pre-Mughal days when no records were kept. Mainly secondary sources were used to give an overall view of the agricultural setting. We have shown the traditional prosperity of this sector and the recent contributions of various technological and institutional measures initiated by the government. On the one hand, British colonial administration’s policies entrenched exploitative institutional systems in the rural areas; on the other since independence several steps tried to ameliorate the past defects. Major incentives in increasing agricultural productivity were both technological and institutional. In Burdwan, these two were not mutually exclusive but went hand in hand. For example, the supply of canal water from DVC came at a time when Burdwan was selected as one of the sixteen IADP districts in India.
Going back to history once again, the Mughal and British periods were discussed in greater detail, using secondary references again, to establish the rich agricultural heritage of the district. We have outlined the gradual evolution of land revenue, tenancy and tenure systems in the region. Some colonial reports were consulted and quoted in this section, especially those of Hunter and Paterson. Above all, Burdwan is well known for the way Permanent Settlement of 1793 gave rise to land-based intermediaries through an innovation of the Burdwan Maharajas. We have discussed the implications of the growth of these intermediaries in the economy of Burdwan. In fact, the land-based middle peasantry played an important role in establishing the processing industries in the region with the capital drawn from agriculture. However, we have told the story of Burdwan’s rising agricultural prosperity since the independence of India in detail in this chapter. Among the measures that have been adopted by the Government of India and by the Government of West Bengal, the most effective was the coincidental introduction of canalized irrigation and seed-fertilizer technology, later on creating a demand for artificial water supply during the drier months that was primarily met through the innovation of shallow and deep tube wells. Land reform measures such as Operation Barga was no less significant in revolutionizing the political economy of the countryside in Burdwan. Above all, the Panchayati Raj was most successful in institutionalizing governance at the grassroots level. The impact on productivity has been considerable. Hence Burdwan’s rural areas have begun to see unprecedented prosperity since late 1960s or early 1970s. In Burdwan, all these measures that actually were taken up for the entire state, were more successful and yielded greater results in terms of agricultural productivity than any other district of the state because of its rich history of rural prosperity. At the same time, some amount of redistribution of political decision-making power has been vested in the hands of poor farmers in Burdwan have produced far-reaching changes in the countryside and have broken its isolation to a great extent.

All these have prepared the scene for flourishing of the agro-based industries, mainly rice milling, in the area surrounding Burdwan utilizing the locational and existing infrastructural advantages of the urban centre. Such became the agglomeration here that the rice mills of Burdwan began to use not only local raw materials but districts surrounding it also supplied these rice mills with raw paddy. The agricultural surplus has also spawned a new breed of capitalist-farmers described (Sau, 1988) as ‘cowdung’ capitalists of green revolution in India. These are offspring of gentlemen farmers, operating in an intermediate zone of agriculture and industry, based on their accumulated surplus from agriculture. In our later chapters, we
will see how the agro-based industries have flourished as informal units in the region under the stewardship of such men.

Notes
1. *Aman*: Traditional winter rice crop. Seedling transplantation is during June and July, and harvesting is in November and December. Suitable soil is sticky clay and loamy. The average production rate is 2,000 - 2,800 kilograms per hectare. *Aman* paddy cultivation is suitable for muddy lowlands. On higher ground, it requires irrigation.

2. *Aus*: Broadcasting of this paddy is done during pre-monsoon period and harvesting takes place in September to October. It is cultivated on both types of land - rain-fed and irrigated. Highland with good drainage facility and loamy or sandy soil are favourable for *aus* cultivation. The average *aus* production is 1,200 - 1,250 kilograms per hectare. This paddy matures faster than *aman*.

3. *Boro*: Early summer rice crop. Seedling transplantation occurs at the end of the spring (November and December) and harvesting is done in summer (March and April). *Boro* requires minimum number of days (only 60) to mature, but it is often considered to be inferior in quality. Irrigation water is the prime requisite for *boro* cultivation. Average production is 2,000 - 2,200 kilograms per hectare. In fact *boro* rice crop has changed the face of the countryside in Burdwan and was largely responsible for rural revitalization.