

**AGRICULTURAL RESPONSES OF LAND REFORMS AND  
NEW TECHNOLOGY: A VILLAGE-LEVEL STUDY IN  
JALPAIGURI DISTRICT OF WEST BENGAL**

*Thesis Submitted for the Degree of Doctor of Philosophy (Arts) in  
Economics to the University of North Bengal.*

**CHHAI**

By

*Swapan Kanti Konar,  
Sr. Lecturer in Economics,  
Sukanta Mahavidyalaya*

**North Bengal University  
Library  
C/o. Kanchipuram**

Supervisor

*Dr. Hillol Kr. Chakrabarti,  
Professor of Economics,  
North Bengal University.*

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## Chapter - 1

### Introduction

Although West Bengal is endowed with rich natural resources such as large areas of good alluvial soil, abundant surface and ground water resources as well as climatic conditions favorable for agriculture, the agricultural economy of West Bengal has been marked by stagnation for a long period right from pre-independence era ( Blyn, 1966 ). British land policy is said to be responsible for that. It is said that the agrarian structure in pre-Independent Bengal has been largely inequitable and growth retarding. Agrarian relations, mainly semi-feudal in nature, has been characterized by highly skewed land distribution, widespread share tenancy, rack renting, sub-infeudation, usury, interlinked market transactions, forced labour and so on (Malvia, 1954; Sen, 1962). Agrarian arrangement has also been unfavourable for adoption of improved methods of cultivation. Hence, it has been felt that there should be brought a thorough change in agrarian structure. And accordingly, various programmes have been initiated to change the agrarian structure. Of the various programmes, land reform measures have been considered essential for restructuring land and agrarian relations both in the interest of liberating rural peasantry from the stranglehold of the exploitative production relations and

fostering agricultural development. Accordingly, immediately after Independence, the government of West Bengal has been found to enact a series of laws on agrarian front in consonance with the spirit of national land policy whose sole objective has been to remove obstacles of the agrarian structure inherited from colonial rule and to ensure social justice in rural economy. The policy of undertaking land reforms is consistent with this theoretical view that a change in agrarian structure can be brought about by land reforms. And such reforms would change and restructure the legal and contractual arrangement of land whereby people in farming may gain access to productive opportunities on the farm.

Though a number of land reform laws have been enacted right from the early 1950s, their implementation remains inappropriate (Bhaumik, 1993). Many loopholes have been found in the enacted laws. In fact, satisfactory implementation of land reform measures in West Bengal gain prominence since the Left front government regime from 1977 onwards (*Ibid.*).

As a part of land reform measures, the surplus land available due to imposition of ceiling has been redistributed among landless and land-poor farmers and in the process, a large number of small and marginal farmers have emerged. It is to be noted that these farmers constitute the majority of rural population (as per the Agricultural Census estimates of 1990-91, the small and marginal size holdings constitute 91.4 per cent of the total holdings of the State).

As such, it seems natural to think that rural economy should not ignore this section of rural population. In fact, rural development would largely be dependent on their productive performance. But their productive performance in the production front, can largely be taken to be conditioned by the feasibility of their access, among other things, to new technology. And hence, agriculture is likely to respond to new situation created by land reforms; and it may be relevant, in this context, to examine the impact of land reforms on small and marginal farmers in adopting new technology in agriculture.

In recent years, a number of changes have appeared in the rural scenario of West Bengal which have virtually helped eliminating 'agricultural impasse' of the 1970s, pointed out by Boyce in his seminal article published in 1987. That the agricultural impasse had already passed away, was also observed by Sen and Sengupta in 1995 when they estimated the growth rates of net value added in agriculture at constant prices in West Bengal at 6.85 per cent in the 1980s as compared to 2.3 per cent in the 1970s. This breakdown of the agricultural stagnation in the post-1970s has aroused considerable debate among the scholars in identifying the factors responsible for the decadence of '*agricultural impasse*', because the period had witnessed on the one hand, the advent of certain technological changes, popularly known as 'Green Revolution' in West Bengal agriculture, and on the other, certain sincere state efforts towards

implementing land reform measures aimed primarily at changing the agrarian structure in West Bengal.

Some scholars like Bandhyopathyay(1986), Kohli(1987), Dreze and Sen(1989), Lieten (1990), Bhaumik (1993), sen and sengupta (1995), Ghatak(1995), Bhattacharyya(1996), Saha (1996),Banerjee and Ghatak(1996), Ramachandran(1997), Rawal (1997a, 1997b), Rawal and Swaminathan (1998), Sanyal, Biswas and Bardhan (1998) had opined that the agricultural production and productivity improved substantially during the 1980s and onwards because of institutional changes. Some others like Mallick (1992), Harriss(1992,1993) opined that the observed agricultural development in West Bengal was due to application of modern inputs rather than institutional changes.

John Harriss (1992,1993) argued that agricultural growth in West Bengal in the 1980s was mainly because of growth in production of Boro paddy, and was based on an expansion of irrigation by private shallow tube-wells. The remarkable growth in agricultural output was accomplished by some growth in 'suitable technology'. The development of irrigation was driven by the availability of suitable HYVs of seeds, of credit, and a favorable fertilizer-paddy price ratio. And all these had taken place in the absence of any reforms of the agrarian structure. Harriss also pointed out that the significance of the modest agrarian reforms which had been implemented in increasing the

confidence of rural poor, cannot be discounted but the State Government had been instrumental in achieving something of a break-through in agricultural production by means of a focus on the expansion of productive forces. He put evidences of no significant changes in the agrarian structure and concluded that the reforms had not been instrumental in increasing agricultural production.

Rawal and Swaminathan (1998) argued that the evidence clearly showed that the agricultural growth in West Bengal was not merely a result of area and yield growth in Boro paddy. They had shown that over 75 percent of the overall increase in rice production could be attributed to increase in productivity, and as Boro had always been an irrigated crop based on HYVs of seed, yield had always been relatively high and yield growth had not been a major contributor to growth of output. On the contrary, an increase in gross cropped area had contributed to the growth in Boro rice cultivation. They had further pointed out that some changes in cropping pattern were also responsible for the growth of agriculture. They argued that the acceleration in agricultural growth in West Bengal occurred during and after major changes in agrarian institutions and land relations.

Sanyal, Biswas and Bardhan (1998) argued that it was very difficult to agree with Harriss' attempt to play down the role of land reform measures in accelerating agricultural production in West Bengal in recent times. They

pointed that land reform measures intensified 'state intervention in defining property rights in a more meaningful manner, narrowing the gap between ownership and operation'. The measures also widened the access of the small cultivators to technology and other inputs. Mukherjee and Sanyal (1997) argued that since the small and marginal cultivators claimed the largest share of the total holdings, the accessibility referred to above was considered extremely significant from the point of view of growth in production and productivity in the post 1970s.

Lieten (1992) pointed out that the two main components of land reforms carried out in West Bengal under the Left Front Government were tenancy reforms and the redistribution of land. The government launched 'Operation Barga' (O. B.), a programme of tenancy reform, with the support of organisations of rural workers and peasants. The programme, through the registration of the names of the bargadars, ensured security of tenure, prevented the eviction of tenants by non-cultivating landlords and made tenurial contracts more transparent. Ramachandran (1997) argued that the registration of bargadars created new rights for tenants in respect of rent payments. For example, it enabled them to have access to institutional credit from the formal banking sector. Mallick(1992), however, refuted the success of O. B., saying that the Left Front

Government manipulated estimates of the total number of sharecroppers in order to inflate its own performance. Khasnabis(1981), had raised a serious question regarding the viability of innumerable small and marginal farmers created by land reforms and claimed that O.B. was an inappropriate step in the field of tenancy. Thus, the studies of Mallick, Harriss and others questioned about the effectiveness of land reforms in bringing about agricultural transformation. Sengupta (1995), Sen and Sengupta (1995), however, found after analysing trends in input use in West Bengal agriculture, that the growth rates in the intensity of fertilizer use and the extent of adoption of HYVs were lower in the 1980s as compared to the 1970s. Saha (1996) also pointed out that the speed of adoption of HYVs of rice between 1980 and 1989 was not significantly different from that in the period 1966 to 1980, but the yield elasticity with respect to both HYVs and fertilizers was higher in the 1980s than in the 1970s. It was thus evident, he argued that better use or management of HYV and fertilizer technology was more responsible for higher yields than that of increased use of HYVs, or in other words, improved complementarity between HYVs and fertilizer was likely to have led to higher production (Sen and Sengupta (1995). Ghatak (1995) found that O.B. had significant positive effect on the rate of expansion of boro cultivation and on investment in private irrigation. Banerjee and Ghatak (1996) observed that tenancy reforms had a 'significantly

positive effect on the productivity of all crops working mainly through yields'. Bhaumik (1993) studied the effects of O. B. on agricultural production and productivity in Midnapore district and pointed out some of the ways in which O.B. provided incentives to tenants to raise production. Frisvold's (1994) findings indicated that supervision by family members was required for raising the productivity of the higher labour, but because of fragmentation of land holdings the level of supervision was low in his study area, Aurepalle, a rice growing village in the Mahbubnagar district of Andhra Pradesh. Thus at a constant supervision intensity, an increase in the ratio between hired and family labour would to loss output. Now as this relation had been seen to be a rising function of the separation between ownership and operation, barga recordings and the distribution of vested land would reduce the output loss attributable to low levels of supervision intensity. Barga operation has raised the level of ownership holdings. Available evidence suggest that the sale of land holdings in parts by the land lords to the tenants with an option for barga holdings has gone up substantially after 1978. Rawal (1997c) found that agrarian movement had a profound impact on rural markets, and in particular, on land and credit markets are argued that redistributive implications of agrarian reforms went far beyond the achievements of direct public action.

However, without going into the controversy regarding the relative importance of land reform measures and the penetration of new technology in raising

agricultural productivity and hence removing agricultural impasse, it has to be pointed out at the very outset that agriculture is likely to respond to land reforms and new technology in the event when we recognise that redistributive land reforms have created a large number of small and marginal farmers, and any attempt towards increasing agricultural productivity would largely be dependent on the feasibility of their access to new technology.

That land reforms have been followed by a strong technological response on the cultivator-beneficiaries is borne out by the study of two villages, although such a conclusion would be reinforced in any study incorporating a larger number of villages. At the same time, it is also to be pointed out that at macro-level study it seems very difficult to identify the cultivator-beneficiaries cum adopters of new technology. And hence, we have carried out an in-depth study at the village level.

To carry out the study at village level, we have taken two villages from Dhupguri Block under the District, Jalpaiguri of West Bengal to delineate agricultural responses of land reforms and new technology on the economy of two villages. The villages have been selected purposely. Those two villages are such that where new technology has become widespread and at the same time where land reform measures have been preponderant.

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A detailed village investigation has been taken on a complete enumeration basis for the collection of data we have prepared a questionnaire with an eye to the research parameters selected for the study. The data, thus collected, have been processed and analysed both on simple numerical terms as well as by applying some simple statistical and mathematical techniques. For our macro-studies, we have depended largely on the secondary data as available from various reports and records available from government sources, articles as well as published books on the theme.

To delineate agricultural responses to land reforms and new technology we have organised our analyses into the following chapters. Chapter 2 describes agricultural situation in pre independent Bengal. Chapter 3 follows this where we have analysed land reform measures and their consequences on agrarian economy of West Bengal. The chapter has given a special attention to '*Operation Barga*' programme initiated by the Government of West Bengal since seventies of the previous century. Chapter 4 deals with an analysis of the agricultural responses to land reforms and new technology in agrarian West Bengal. Chapter 5 attempts to examine such agricultural responses at the village level in order to identify as far as practicable the beneficiaries of land reforms cum adopters of new technology. We have summarised our analysis in Chapter 6. In this chapter we have also tried to suggest certain ways and means for tackling some of the problems we have referred to in our discussion with some concluding remarks.

## Chapter - 2

### Agricultural Situation in Pre-independence Period

The land system, in pre-independent undivided Bengal, was a mixture of occupancy rights and revenue obligations (Ray,1996) . In Mughal period, the peasants continued to cultivate land occupied by them and paid the government land revenue which varied between a half to a third of the gross produce and the settlement of revenue was generally made directly with the cultivator. The task of revenue collection was assigned to zamindars who often performed this function hereditarily (Sinha,1968). In the land tenure system of the Moghal period, land was held directly by a tenant who could not ordinarily be evicted from land unless he failed to pay the stipulated sum to the Zaminder (Sen 1962:55-56).

However, with the declining power of the Mughal rulers, there emerged a class of intermediaries who entrenched between the king and the cultivators. This class of rural people began to collect revenue from farmers giving one-tenth of the revenue collected to the king. These intermediaries began to claim hereditary right in land with further decline in the power of the Mughal rulers. But they could not assert an absolute right to land (Ray,1996).

The cultivators, in the Mughal period, continued to enjoy the customary right over the land occupied by them. There were two types of cultivators in the Mughal period. One is the '*Khudkasht*' ryots who enjoyed undisturbed possession of their holdings subjected to the payment of stipulated rents to the

Zamindars and the other type is the '*Paikasht*' ryots who came into the village to cultivate land temporarily and enjoyed no security of tenure (Bhaumik,1993).

A radical change in the agrarian structure began to take place with the onset of the British rule. After obtaining the Diwani of Bengal, Bihar and Orissa in 1765, the East India Company experimented with several changes in the method of revenue collection. The company insisted that there must be a system of fee for land ownership. It introduced the quin-quennial settlement (1772), the decennial settlement (1789) and the Revenue Farm Contracts on a five yearly basis where the rights of revenue collection were distributed through auction to the highest bidder. Thus, the British tried to seek a system which could ensure them a steady source of income. But all these settlements ended in extreme rack-renting, often in the forcible collection of revenue, and consequently placed an unbearable burden on the cultivating peasantry (Choudhury,1975a:2). The situation was aggravated with the great Bengal famine of 1770 which was followed by the famines in 1784, 1787 and 1790. The oppression and misery of the cultivating peasants led to peasant resistance which was expressed in the forms of the Fakir and the Sanyasi rebellions of 1772-89 (Sen, 1962:58). The agrarian situation urgently called for a settlement which would rehabilitate agriculture and stabilise revenue collection.

In 1794, the device of Permanent Settlement of revenue with Zamindars was introduced in Bengal. In the Permanent Settlement the Zamindars were given proprietary rights in land. The provisions under the Act were :

- 1) to fix permanently land -tax rates from the zamindars at 90 percent of the sum collected as rent by them from the peasants in 1794 ;
- 2) to grant to the Zamindars, the right of driving the peasants from the land and raising rents at will; and
- 3) the right to take decision regarding peasant matters by the zamindars.

The Act , at the same time stipulated that the Zamindars were to pay dues on time, failing which, their estates were liable to be sold for arrears of revenue.

As a result of this Act, the peasants became tenant farmers without rights, while the Zamindars, the erstwhile revenue collectors, become the owners of land. Being proprietors of the land and being obligated to pay stipulated land - tax to the government, the Zamindars began to farm out the collection of rents instead of taking initiative to promote capital investment in agriculture and thereby laid the foundation for the formation of a hierarchy of parasitic rent-receivers. As a result, a long hierarchy of sub-zaminadars, as the hereditary owners of all the given lands, appeared in the agrarian scene of Bengal. The Zamindary system, thus, led to a system of sub-infeudation.

The tenure-holding rights were, often, sold by the Zamindars when they became unable to manage, successfully, the collection of rent from a large and scattered estates. Besides, sometimes the estates of many Zamindars were sold

for arrears of revenue and the purchasers of such estates were generally marchants, money lenders, traders and the middle class of urban areas (Sen,1979:7).The Zamindary estates , thus, underwent fragmentation overtime and the new zaminders were interested in squeezing in high rent and often they deligated the collection of rent to the middlemen (Thorner, 1962 : 54). The peasants were often rack-rented by the local officials of the zaminders and the 'naibs' who acted as defacto zaminders. These persons imposed innumerable illegal exactions known as 'awabs' on the cultivating peasantry (Govt. of West Bengal, 1941: 34). Under the increasing burden of rent, awabs and other extractions, the pasants were left with very little means to go in for agricultural improvement. Economic motivation of the people who controled land, thus, tended towards exploitation of land resources and land operators rather than towards investment on land for improvenment of agriculture.

Under the circumstances, the regulations like the 'Haptam' regulation in 1799 and the 'Panyam' regulation in 1812 were passed which aimed at vesting unrestricted power on the Zamindars for seizing the crops and other property of the cultivators, and even to arrest them in order to realise rent arrears. The unrestricted power of the Zamindars coupled with deprival of the peasants' right to perpetual hereditary landownership, and the transformation of peasants into tenants without right, created conditions of growing unrest among the peasantry. The result was the great 'Santal' insurrection in Bengal (1855-56) (Government of West Bengal.1980).

The prevailing agrarian situation compelled the Government to formulate the first tenancy legislation, viz. The Bengal Rent Act of 1859, with the aim of improving the relation between the landlord and their tenants (Choudhury,1967:308, inserted in Bhaumik1993). The Act cancelled out all laws issued from to 1812, and prohibited the Zamindars from driving the peasants from the land or raising rent (Ulyanyvsky,1981:30-31). The main aim this act was to create stability in actual tenancy relations and for this, an attempt was made for the first time to define occupancy tenancy. The Act of 1859 classified ryots into three groups:

- (a) ryots holding at fixed rates: they were those who cultivated land continuously for 20 years prior to the demand for a higher rent by the Zamindar. Their rents were fully protected against future enhancement;
- (b) occupancy ryots: this group included those who cultivated the same plot of land for 12 years continuously. Their rents could be enhanced only on specific grounds;
- (c) non-occupancy ryots: they were those who could not prove 12 years' uninterrupted possession over land.

However, in the majority of cases rent could not be increased on those tenants who continuously held land for 12 years. The Zamindars, then, began to prevent tenants from completing cultivation for 12 uninterrupted years. Litigation and discontent began to appear and as a consequence, the Bengal Tenancy Act of 1885 was passed.

Under the Act of 1885, a ryot could acquire occupancy right by cultivating any plot of land in given village; it was not necessary for him to remain in continuous possession of the same plot of land for 12 years. Some protection was also given to non-occupancy tenant to mortgage or sublet his holdings for a period of not more than nine years. Later, the Act of 1928 provided the occupancy rights transferable by sale, subject to payment of a transfer fee to the land lord. The occupancy tenant was also given the right to mortgage his holding for a period of not more than 15 years. The right of resumption which was accorded to the occupancy tenant in 1928 was abolished in 1938 (Govt. of India, 1953a: vi, inserted in Ray, 1996).

It may be noted here that the 1885 Tenancy Act classified the peasants in undivided Bengal into the following groups:

- (i) Perpetual tenant: peasants with the right of tenure, holding of land either at a rent fixed in perpetuity or at a rate of rent in perpetuity;
- (ii) Occupancy tenant: peasants with the right of occupancy, inheritance and alienation of their rights, but without a fixed rent rate or fixed rental;
- (iii) Temporary tenant: peasants with no right of occupancy;
- (iv) Peasant sub-tenants or under-ryots;
- (v) Peasant tenants without rights.

However, all these categories of tenants established by law could not create even a relative stability in the actual tenancy relations. The real situation of some

section of the toiling peasantry did not conform with their rights and legally established place in the Bengali system of tenancy. The actual position of the bulk of the peasants was, usually much lower than that what was provided for them by the formal rights of tenure (Ibid.: 119-120).

The colonial land policy, thus, led to the emergence of a class of people as the proprietors of land (zamindars and tenure-holders) in the one hand, and a vast majority of tenants with varied legal rights on the other. Some legal rights also created a legal basis for the subletting, mortgage, sale and transfer of the raiyoti interest within the overall framework of private proprietorship of the landlord. It should be noted that subletting and alienation of raiyoti holdings were very common in Bengal.(Chatterjee,1984:24). The zamindars and tenure-holders did not practice farming on a significant scale, and as a rule, leased out land for exorbitant and oppressive rents. A class of tenants called 'jotdars' (rich peasants) were also engaged in purchasing the alienated holdings and sublet them to others and they appeared as a kind of landlord (ryoti landlord).

### **Land Use and Land Distribution in Pre-Independent Bengal**

Pre-independent Bengal was the most densely populated province in British India. According to 1931 census, Bengal had a population of 50.1 million. The population density was 646 per sq. mile and was the highest in India. About 37 million of the population in Bengal lived in agriculture; of those, 30.5 million were cultivators, 4.3 million were debt slaves or farm labourers and the rest were landlords and non-cultivating tenants. Cultivated

land totaled some 24 million acres, out of which 1.2 million acres (5 per cent) were irrigated in 1931. The irrigated area was divided as follows: Government Canals 20,700 acres; Private Canals 1,91,600 acres; Ponds 6,83,100 acres; Wells 31,800 acres, and other sources 35,800 acres.

In 1927-28, 41,59,000 acres yielded more than one harvest and nearly 5,000,000 acres were usually laid fallow. Despite the high population density, the colossal agrarian overpopulation and the extra-ordinarily crowded parcels due to the prevalence of large scale landlord estates, the exploitative role of the latter was so high that the impoverished peasant masses were unable to develop some 6.5 million acres of available uncultivated land. Useless land totaled 19.2 million acres, and the area under forests was 4.6 million acres (Ulyanovsky, 1981, Ch.4).

As regards, the distribution of land, it was found that a large part of the land in pre-Independent Bengal was in the hands of the big landowners. In the Zamindari System, the strength of landlordism was revealed quite thoroughly by a comparison of average size of peasant holdings with that of landed estates. While the average size of the peasant holdings was 2.59 acres, the average holding size of the permanent and the temporary estates were 425 acres and 813 acres respectively. And the numbers of the permanent and the temporary zamindari estates were 92,508 and 3,886 respectively (*Ibid.*:54).

According to data for the end of the nineteenth century, compiled by one of the most outstanding British economists and the historians, Baden-Powell, it was

seen that almost all the land in Bengal was monopolised by big landowners (Ibid.:54). The monopoly of landed estates is reproduced in Table 2.1 below.

Such colossal excess of land (table 2.1) in the hand of the landlords tightly restricted the availability of land to masses. Most of the peasants were land less, bonded and semi-bonded tenants of the feudal landlords and British imperialists. A lot of tenants although registered as belonging to perpetual tenants, had been reduced to the state of sharecroppers without rights. It may, hence, be clear that the distribution land was highly skewed in undivided Bengal in the pre- Independence period.

**Table-2.1 Landed Estates in Bengal.**

Area (in acres)	Number of Estates	Average area (in acres)	Total area (in million acres)
Less than 500	85,500	216	18.5
500 to 20,000	10,000	1000	10.0
Above 20,000	500	25,000	12.5
<b>Total</b>	<b>96,000</b>	<b>Nil</b>	<b>41.0</b>

Source : B. H. Baden-powell, *The Landed System of British India, Vol. 1, Oxford, 1892, inserted in Ulyanovsky, 1981, P.55*

### **The Extent of Sharecropping:**

The available data relating to the size of share cropping (popularly known as barga cultivation) is extremely fragmentory. In fact, precise measurement of the extent of barga cultivation is not an easy task. According to the estimate of the Floud Commission (1940), the extent of barga cultivation was about 23 percent of the cultivation of the villages taken as sample. In 1914, McAlpin, Director of Land Records, estimated the 'normal proportion' of the barga lands in some 'test areas' in Mymensingh, Rajshahi, Midnapore, Faridpur, Dacca and Pabna at 5 to 10 percent of the ryoti lands. The proportion of under-ryoti tenancies held on 'produce rent' was far larger ; it was about 52 percent in Midnapore, about 24 percent in Faridur, about 54 percent in Pabna and about 49 percent in Jalpaiguri. According to the findings of the District settlement officers, the proportion was about 25 percent of the total cultivation in Dinajpur and 25 percent of the 'paddy lands' in Burdwan. In fifteen villages of Birbhum district survyed in 1939, this proportion was found to be 37.1 percent . The Indian Statistical Institute also estimated the proportion at 25 percent in 1946, though 35.15 percent of the 'cultivating families' were involved in sharecropping. The 1951 census data, however, showed a smaller decline of 2.3 percent since 1940, except in Midnapore, Burdwan, Jalpaiguri, Dinajpur and Malda where the sharecropping cultivation increased in the 1940s by 1.9, 4, 6.1, 6.9 and 8.6 percent respectively. Such heavy concentration of the system of barga cultivation was observed in the regions where the cultivators mostly belonged to sheduled Castes and Scheduled Tribes. The 1951 census data show that 40.8

percent of the bargadars (sharecroppers) in West Bengal belonged to these two communities. It may, hence, be said that the size of barga cultivation in pre-Independent undivided Bengal was evidently quite considerable.

### **Forms and Terms of Sharecropping Contracts**

In British Bengal, the average Bengal peasant had his own implements, seed, livestock but had no land. The merger of labour power and implements with land was effected through various forms of sharecropping system introduced by the feudal lords. These forms were: the Utbandi system, the Barga system, the Sanja system, the Duna system and so forth. In most of the systems, rent was paid in kind and amounted to form one-third to two-thirds of the produce (Ibid.:122-126). For example, in the Sanja system, a tenant was required to pay a fixed quantity of the harvest as rent. This system was found in rice-producing areas in West Bengal. Here, the sharecroppers were mainly sub-tenants. But the Sanja sharecropper was often a perpetual tenant whose land had been taken over by a usurer landlord in case of default.

Under the Kishani system, the landlords provided everything except labour, and the tenant's share was generally one-third of the produce. Here, the tenant was often bonded by debt obligation to the landowner.

The Barga system of sharecropping was widespread in undivided Bengal. It was known as 'bhagchas' in west bengal. The landowner normally

claimed one-third of the harvest, and as much as half the harvest when the tenant was loaned seed and fertiliser.

The Duna system of sharecropping was found in the state-managed estate, the Khasmahal. In this system, the term of repayment was such that "if I take ten maunds of paddy in July, in December, I repay 20 maunds. If it is not paid then I am liable to pay 30 maunds in March, and if not paid then 35.5 maunds in July. If I still fail to pay, a mortgage is executed, the consideration money being 37.5 maunds converted into cash at the market rate and interest will be charged at 37.5 percent on that". The result of this inequitous system, was the loss of all lands and even the homestead lands of the sharecroppers (*Ibid.*,:124-125).

These were the main types of sharecropping imposed on rural peasantry in Bengal. No matter how they differed in forms and terms, they were economically oppressive (*Ibid.*).

The sharecropping contracts often led to a kind of dependency relationship between the sharecropper and the landlord (Cooper,1983). The control over land usually empowered landlords to obtain 'free labour' from sharecroppers' family. Another aspect of dependency relationship was the indebtedness of the sharecroppers. When the landlord was also creditor, the debt bondage of the sharecropper reinforced the dependency relationship. In case where the landowner acted as trader, loan transaction enabled him to seize even the produce of the sharecroppers.

To sum up, in the land tenure system, introduced in British Bengal, the peasant lost their customary rights over land, and the Zaminders, the owner of land, were involved in collecting rents from the peasants through rack-renting, usury and various other forms. The landlords did not cultivate land in any significant scale and they did not undertake investment on land for improvement of agriculture. Land occupancy rights were not secured. Subletting of land was a common practice. The rich peasants were involved in extracting surplus from poor tenants and augmented the level of their income by investing the extracted surplus on money lending and/or in purchasing the alienated peasant holdings and turning them into barga cultivation. The terms and conditions of tenancy were very stringent. The poor peasantry were left with very little means to go in for agricultural improvements. Motivation to improve economic condition of the cultivator could not exist at all under the circumstances. An insignificant proportion of land cultivated was irrigated. It was already pointed out that only 5 percent of the total area under cultivation had irrigation facility. Such limited irrigation base could not help farmers to undergo adoption of improved methods of cultivation.

All these, perhaps, indicate existence of a situation for pre-Independent Bengal in which the land resources as well as its operators were gradually impoverished. The agrarian structure and the production relations were neither conducive to improved methods of cultivation nor favourable for establishment of social of justice in rural areas. The whole agrarian situation was one of lack of enterprise on the part of all concerned, continuing

exploitation of actual cultivators and prolonged backwardness of agriculture (Sen, 1982 : 45).

The agricultural backwardness in pre-Independent Bengal is also observed from Blyn's study, conducted for the period 1891 to 1947. This study shows the stagnation in agricultural technology and production in Bengal during the closing 50 years or so of British rule. According to this study, the annual average growth of yield and output for foodgrains were -0.55 percent and - 0.73 percent respectively while the growth rate of population was 0.65 percent; the percentage of irrigated land to net cultivated land was 13.3 percent during the period from 1908-'09 to 1921-'22 which was increased only to 15.0 percent during 1922-'23 to 1945-'46; the proportion of double cropping area to net sown area was 20.0 percent during 1891-'92 to 1981-'20 to 1945-'46; the percentage of total cropped area under improved seed was only 6.2 percent in 1938-'39.

In the circumstances, a change in such an inequitable and exploitative agrarian structure is supposed necessary to create a situation favourable for adoption of improved methods of cultivation, to liberate the peasantry from feudal exploitation, and also to ensure justice to different sections of rural population involved in agrarian relations. Since, it has long been considered that a change in agrarian structure can be brought about by land reforms, which would change and restructure the legal and contractual arrangements of land and

which would enable farming communities to gain access to productive opportunities on the farm, it may be necessary to discuss land reform measures which have been undertaken after independence. Chapter III deals with an analysis of land reform measures and their consequences on the rural West Bengal.

## **Chapter - 3**

### **Land Reform Measures and Consequent Changes in Rural Front**

Since Independence a number of measures has been taken to change the land relations, inherited from British rule, in the state. Different enactments have been passed, right from the early 1950s, to provide land to the landless and to change conditions of tenancy. Some of these measures pertain to the following:

- i) Abolition of intermediaries;
- ii) Ceiling on land holdings and distribution of surplus Land;
- iii) Tenancy reforms.

The implementation of land reform measures, however, remained virtually untouched at the early stage barring abolition of intermediaries and prohibition of subletting of land. Besides, the act had many loopholes through which landowners could evade ceiling legislation. Such legal loopholes were:

- i) Exemptions from ceilings for land under orchards or religious charitable institutions;
- ii) Permission of transfer of land;
- iii) Right of resumption of land from tenant for self- cultivation, etc.

But the Government was not interested enough to plug the legal loopholes at the

early stage of implementation of land reform measures. As a result concentration of landholding could not be checked; nor did the bargadars (sharecroppers) have any protection either against eviction or for getting their due share of the crop (Bhaumik, 1993).

Incidentally, detection of ceiling surplus land is a difficult task. There are various methods by which landowners can conceal their ceiling surplus land. Some of the methods used by the landowners to evade the ceiling legislation were:

- i) deliberate suppression of ceiling;
- ii) transfer of land by anti-dated pattas, amalnamas, rent receipts etc.;
- iii) benami transfer;
- iv) change of classification of land;
- v) creation of religious and charitable trust;
- vi) civil suits;

Similarly, taking advantage of legal loopholes the landowners ejected bargadars. A large number of bargadars had been ejected during 1958-67. The ejection of tenants deprived them of any means of livelihood and converted them into agricultural labourers (Bondyopadhyay, 1980 : 26-28). As a result, agrarian struggle started and took a form of national movement. Under the circumstances, amendment of the West Bengal Land Reform Act passed in 1955 became urgent to reduce concentration of landholdings and to protect interest of

the bargadars. Accordingly, several important amendments have been effected in the Act of 1955 at different times.

However, the Left Front Government, which came into power in the state in 1977, took serious step to implement land reform measures and to plug the legal loopholes in the existing legislation. The Government laid greater emphasis on structural reforms, like land distribution, security of tenure and democratic decentralization through Panchyati system. A package of agrarian programmes was adopted by the Left Front Government to do away with all forms of concentration of land holdings and to give substantial relief to bargadars, landless peasants and agricultural workers. The package of agrarian programmes may be summerised as follows:

- i) Quick recording of the names of the sharecroppers through 'Operation Barga' and thereby securing to them the legal rights they are entitled to, under the statute.
- ii) Distribution of available surplus land among sharecroppers with small operational holding as well as among landless and sub-marginal farmers.
- iii) Drive to detect and vest more ceiling surplus land through quasi-judicial investigative machinery with the help of peasant organizations and Panchayati Raj Institutions.
- iv) Giving institutional credit cover to the sharecroppers and the assignees of vested land to irreversibly snap the ties of bondage they have with the landlords and moneylenders.

- v) Designing 'food for work' and other programmes for developing rural infrastructure, which would primarily benefit assignees of vested land and marginal farmers as well as give them sustenance during periods of distress, thus preventing re-transfer of land to the rich landowners.
- vi) Assigning permanent title for homestead purpose to all the landless agricultural workers (including sharecroppers), artisans and fishermen occupying (up to 0.08 acre) as permissive possessors.
- vii) Providing tiny sources of irrigation to the assignees of vested lands through bamboo tube-wells where underground hydrological conditions permit such technology and bank-financed tube-wells with other suitable areas with a view to inducing such assignees to go in for high value multiple cropping to improve their economic status.
- viii) Giving financial assistance in the form of subsidies to the assignees of vested land for development of their land.
- ix) Abnegation of the old revenue system which was a hangover from the Zamindari era and substituting it by a new measure under which revenue is assessed on landholding above a certain valuation on progressive rate. Small and marginal farmers have been exempted from revenue burden.

- x) Restoration of land alienated by poor and marginal farmers through distress sale, provided the purchaser himself is not a poor peasant having landholding less than 1.0 acre.

The distinctive features of the agrarian reform policy of the Left Front Government can be stated as following:

Firstly, land reform has been considered to be the main plank of the agrarian policy framework.

Secondly, the programmes have been designed on the basis of past experience, with a support system for the potential beneficiaries.

Thirdly, the development programmes are to be implemented effectively by involving panchayats and peasant organizations and by inducing the intended beneficiaries to participate actively in such programmes.

As a result of these government efforts, land reform measures have been implemented more effectively. The implementation of redistributive land reforms, after plugging legal loopholes of the earlier Acts, made possible for the state to appropriate huge amount of ceiling surplus land and their distribution among landless land-poor families. It has been reported that by December 31, 1980, about 12.12 lakh acres of surplus land were distributed among 12 lakh beneficiaries, about 57 percent of whom are from the scheduled casts and tribes.

Up to June, 1992, the state of distribution of surplus land in West Bengal was like the following:

The all-India figure of distribution of surplus land being 49.50 lakh acres up to march 1992 as per CMIE (1992) data, it appears that more than one-fifth of all ceiling surplus land distributed in India had been distributed in West Bengal.

By September 30, 1988, the cumulative area of distribution of vested agricultural land was 10.32 lakh acres and the cumulative number of beneficiaries was 25.32 lakh, about 55 per percent of who are the scheduled castes and scheduled tribes (Table-3.2)

**Table: 3.1 Distribution of Surplus Land – March 30, 1992 (West Bengal).**

Item	Value
Agricultural Land Vested	12.69 (Lakh acres)
Agricultural Land distributed	9.29 (Lakh acres)
Area Hit by Injunction	1.76 (Lakh acres)
Number of Beneficiaries of Vested Agricultural Land : Total	20.43 (Lakh)
Schedule Castes	7.60 (Lakh)
Schedule Tribes	3.92 (Lakh)

*Source: Government of West Bengal.*

On tenurial front, the state has taken measures for helping tenants and share croppers by providing security of tenure, by raising their share of produce and by enabling them to obtain institutional credit using tenancy contract as a collateral. But without bringing the tenants and share croppers (bargadars) on record, security of tenurial rights can be not ensured and they cannot get even a crop loan from credit institutions. In order to bring the tenants and sharecroppers on record, a campaign of entering the names of bargadars into revenue records was done under the active support of peasant organizations and panchayats. Such programme, styled as '*Operation Barga*' (O.B.) was launched in the state in May 1978.

The introduction of the programme, O.B. and its satisfactory implementation has made it possible for the state to bring nearly 10.42 lakh bargadars on record of revenue up to March 31, 1981. Till the end of June, 1992, about 14.39 lakh bargadars have been recorded. Among them 6.2 lakh were from scheduled castes and tribes. The figure of recording of the names of bargadars further increased and reached at about 14.86 lakh till the end of September, 1998. (Table 3.2).

It may be noted that a large number of sharecroppers were allowed to live on the landowner's plots. Whenever a sharecropper has tried to record his name, he has faced threat of eviction from the homestead plots (Bandyopadhyay, 1992). To remove this difficulty of barga recording a programme of conferring title of homestead land has been undertaken up to the limit provided by the relevant act.

It has been found that up to June, 1992, about 2.58 lakh families were provided with homestead land. Up to September, 1998, nearly 0.18 lakh acres of homestead land have been distributed to 2.92 lakh beneficiaries; out of whom 60.6 percent are belonged to Scheduled Caste and Tribe communities (Economic Review, 1998-99, Government of West Bengal).

All these measures are supposed to bring about changes in the agrarian structure of West Bengal. The structure involves the relative position of different categories of farmers with respect to number of operational holdings, operational area, tenancy, terms of tenancy etc. An attempt is, therefore, made to examine the changes in the size class distribution of operational holdings and operational area as well as tenurial relationships.

**Table: 3.2 Land Reforms: Some Relevant Information (As on September 30, 1998).**

Item		Value
1.	(a) Agricultural Land Distributed	10.32 (Lakh acres)
	(b) Homestead Land Distributed	0.18 (Lakh acres)
2.	Number of Beneficiaries of vested Agricultural Land :	
	(a) Total	25.32 (Lakh)
	(b) Scheduled Castes	8.91 (Lakh)
	(c) Scheduled Tribes	4.98 (Lakh)
3.	Number of Beneficiaries of Homestead Land	2.92 (Lakh)
4.	Number of Bargadars Recorded	
	(a) Total	14.86 (Lakh)
	(b) Scheduled Castes	4.52 (Lakh)
	(c) Scheduled Tribes	1.46 (Lakhs)
5.	Area under Barga Recording	11.0 (Lakh acres)

**Source: - Economic Review, 1988-99, Government of West Bengal.**

To compare the changes before and after the implementation of land reform measures, we have compared the initial year of the implementation of the programme (1970-71) with 1990-91 when some progress has been made in the implementation.

We, now, examine the changing pattern in the size in distribution of operational holdings in table 3.3 below. The data on the percentage distribution of operational holdings and operated area size-classes may give us an idea about relative economic position of different categories of farmers. A look at the table would reveal the following features:

- i) The largest section of rural households belongs to the category of marginal farmers, operating land below 1.0 hectare. The percentage of operational holdings increased from 59.97 in 1970-71 to 73.83 in 1990-90. Thus, over the period, marginalisation of the peasantry has increased to a substantial extent. The marginal and small holdings together constitute the largest share of total holdings and it increased from 82.31 percent in 1970-71 to 91.44 percent in 1990-91 and the area operated by them has also increased from 47.28 percent to 66.46 percent over the same period. This indicates that the access of the poor to land has been extended.

*Table: 3.3 Distribution of Operational Holdings and Operated Area by Major Size- Classes.*

Size Classes (in hectares)	Number of Holding (000)		Area Operated (000 hectare)		Average Size (Hectare)	
	1970-71	1990-91	1970-71	1990-91	1970-71	1990-91
<i>Marginal (Below 1.0)</i>	2528.5 (59.97)	4639.1 (73.83)	1089.7 (21.53)	2064.4 (36.51)	0.43	0.45
<i>Small (1.0-2.0)</i>	941.8 (22.34)	1107.0 (17.62)	13011.6 (25.75)	1694.0 (29.95)	1.38	1.48
<i>Semi-medium (2.0-4.0)</i>	558.0 (13.25)	457.2 (7.28)	11446.9 (28.69)	1269.1 (22.69)	2.59	2.77
<i>Medium (4.0-10.0)</i>	184.5 (4.37)	79.3 (1.26)	973.6 (19.33)	425.5 (7.52)	5.28	5.36
<i>Large (10.0 &amp; above)</i>	3.61 (0.09)	1.3 (0.02)	231.8 (4.7)	202.7 (3.58)	64.2	156.99
<i>Total</i>	4216.3 (100)	6283.9 (100)	5061.6 (100)	5655.9 (100)	1.2	0.90
<i>Gini-coefficient :- 1970-71 = 0.478; 1990-91 = 0.412</i>						

Notes: Figures in parentheses are percentages to total.

Sources: Agricultural Census data as reported in Agricultural Situation in India, August 1985 and February 1995.

- ii) Whereas the number as well as the proportion of semi-medium, medium and large holdings has declined, that for marginal holdings has increased largely.
- iii) The number of the small holdings has increased but their proportion to the total number of holdings has declined.
- iv) The absolute and relative share of the area operated by the marginal and small holdings have increased but the area operated by all other size-classes has declined both in absolute and relative terms.
- v) The average size of the large holdings has increased remarkably and that for the marginal holdings has increased marginally. The total number of operational holding has increased at higher rate relative to total area operated so that the average size of holding has declined from 1.02 hectares in 1970-71 to 0.9 hectare in 1990-91.
- vi) Inequality in the distribution of operated land has declined during the period 1970-71 to 1990-91 as indicated by the decline in the Gini-coefficient from 0.478 in 1970-70 to 0.412 in 1990-91.

It may be noted that in net terms, the changes in the distribution of operational holdings had gone largely in favour of the small and marginal holdings over the period 1970-71 to 1990-91 (Table-3.4). While 83.5 percent and 17.5 percent gains accrued to marginal and small holdings respectively, losses of semi-medium, medium and large holdings were 18.1 percent, 57.0 percent and 64.0 percent respectively.

**Table: 3.4 Percentage Changes in Number and Area of Operational Holdings during 1970-71 to 1990-91.**

<b>Size Classes (in hectare)</b>	<b>Holding</b>	<b>Area</b>
Marginal (Below 1.0)	83.5	89.4
Small (1.0 – 2.0)	17.5	30.1
Semi-medium (2.0 – 4.0)	-18.1	12.3
Medium (4.0-10.0)	-57.0	-56.3
Large (10.0 and above)	-64.0	-12.6
All sizes	49.0	11.7

**Source:** Calculated from Table-3.

In terms of area operated by sizes of operational holdings, the figures of the Table- 3.4 reveal that the small and marginal holdings have been better off over the period 1970- 71 to 1990-91. But the semi-medium, medium and large holdings have incurred loss over the period.

### **Extent of Tenancy Cultivation**

As a result of the strategy of agrarian transformation perused by the state, there has been some decline in tenancy cultivation. This is indicated by a decline in leased in area to net cultivated area from 7.44 per cent in 1980-81 to 5.73 per cent in 1990-91 (Table: 3.5). It is also indicated that there has been notable decline in the proportion of leased in area to the net cultivated area for

marginal, small and semi-medium classes. But the medium and large classes witnessed an increase in the proportion of leased in area to their net cultivated area. This indicates the presence of 'reverse tenancy' in the state as in some Green Revolution areas in India.

### **Status of Tenancy**

Before the recording of the bargadars, most of the leases were oral and it was very difficult for a bargadar to produce documentary evidence in favour of his claim of tenancy. Naturally, the tenants suffered from rack-renting and eviction. However, the Programme, 'Operation Barga' has enabled the state to assure tenancy for 14.39 lakh of the bargadars up to June 30, 1992. Till the end of September, 1998 nearly 14.86 lakh bargadars have been made assured for tenancy on 11.0 lakh acres of land ( Table 3.2 ). Taking into account of NSS estimates of the 37th Round (1982), the number of households leasing- in land (about 20.9 lakh), nearly 71 percent of the bargadars are appeared to have been registered in record of revenue for enjoying security of tenure up to September 30,1998.

### **Terms of Tenancy**

It has been found that produce-sharing type of tenancy was the most important form of tenancy in the state. But over the period of time the importance of produce-sharing tenancy has largely declined.

**Table: 3.5 Distribution of Leased-in Area.****(per cent)**

Size Classes (in hectare)	Leased-in Area/Net Cultivated Area		Produce Sharing/ Total Leased in Area	
	1980-81	1990-91	1980-81	1990-91
Below 1.0 (marginal)	9.03	6.21	91.52	72.12
1.0 – 2.0 (small)	9.88	6.83	91.89	77.35
2.0 – 4.0 (medium)	5.90	4.81	88.83	76.27
4.0 – 10.0 (big)	2.10	4.30	87.12	36.62
10.0 and above (large)	0.36	0.70	86.13	23.39
All size	7.44	5.70	90.88	72.57

**Source:** Agricultural Census 1980-81 and 1990-91, Government of West Bengal.

The proportion of produce sharing to total leased in area of the state declined from 90.88 percent in 1980-81 to 72.57 percent in 1990-91 (table 3.5). The terms of leasing have also moved in favour of the lessee after barga recording. According to the agricultural census estimates, there has been a decline of 19.4 percent in the produce-sharing contract by area for the marginal size class and a decline of 14.5 percent for the small size class between 1980-81 and 1990-91 (table-3.5). It may be noted that there has been gradual increase in the leased-in area under fixed cash tenancy arrangement in the State over the years. It has been found that area under tenancy for fixed cash rent contract

increased from 2.04 percent as per the NSS 37<sup>th</sup> Round (1982) to 12.4 percent in the NSS 48<sup>th</sup> Round (1992). This may be treated as a new development in the field of tenancy.

The land reform measures and their satisfactory implementation have, thus, created more equitable pattern of distribution of landholdings in the state in recent years. The redistributive land reform programmes have enabled a large section of landless poor rural people to possess land. This increased accessibility of such people to land has been instrumental in reducing rural inequality to some extent. Significant changes have also been appeared in the field of tenancy. A considerable number of bargaders have been assured heritable right of cultivation on land. There has been a decline in the practice of leasing-in land in the produce-sharing lease contract. A change in the terms of tenancy is discernible in recent years through a shift away from share-crop tenancy to fixed rent tenancy.

All these would perhaps indicate that the agrarian structure in West Bengal has undergone changes as a consequence of the implementation of land reform measures. There is, therefore, every reason to believe that agricultural production should go up. This is because of the reason that ownership of land and security of tenure may create incentives for farmers to put more labour for improvement of agriculture since they can reap fruits of benefit from that.

Besides, a change in agrarian structure is considered to be conducive to increase agricultural production.

Incidentally, the agricultural economy of West Bengal had been suffering for a long stagnation up to end of the 1970s right from the pre-Independence period. For example, Boyce (1987) estimated the growth rate of agricultural output between 1949 and 1980 as 1.74 percent per annum. Limited growth in the production of 'aman' rice, the most important crop of West Bengal, was, according to him, the root cause of agricultural stagnation. He found that between 1949 and 1980, growth in yield of 'aman' rice was only 0.24 per cent per annum and growth in area cultivated under 'aman' paddy was 0.57 per cent per annum. It is to be noted that Boyce attributed the failure to increase in agricultural productivity to institutional factors.

The situation, however, took a turn in the 1980s. Using cost of cultivation data, Sen and Sengupta (1995) found that the growth rate of net value added in agriculture at constant prices in West Bengal was 6.85 per cent in the 1980s as compared to 2.3 per cent in the 1970s. According to their estimates, West Bengal had one of the highest rates of growth of rice yields in the 1980s and a trend-break in growth was discernable.

Saha and Swaminathan (1994) estimated growth rate of food grain production using data thrown up by CMIE, 1993. They estimated the growth rate of food grain production in West Bengal at 6.5 per cent per annum between 1981-82 and

1991-92, while it was only 2.7 per cent per annum for the country as a whole. The rates of growth of aggregate agricultural production and productivity for that period, as calculated by them were 6.4 per cent per annum and 5.2 per cent per annum respectively. The growth rate of food grain production, according to their observation, was the highest among 17 major States of the Indian Union. They observed that the phenomenon of high agricultural growth was widespread and the contribution of productivity growth to total output growth was very high, and higher than the contribution of growth in area. They also observed that the period of high growth was not associated with greater instability in the levels of production.

Rawal and Swaminathan (1998) estimated growth rate of food grain production in West Bengal for the period 1950-1995. They observed that food grain production grew at the rate of 2.5 per cent a year from 1950 to 1980 and it jumped to 5.8 per cent per annum in the 1980s. According to their observation, the rate slowed down in the first half of the 1990s but the overall annual growth rate of food grains was 4.5 per cent for the period 1980 to 1995. They also found that while the area under food grain production expanded at less than 1 per cent a year in the period before and after 1980, growth rate of productivity per annum became more than doubled in the latter period.

According to an estimate of Sanyal, Biswas and Bardhan (1998), the rate of growth of all-crop production was 4.10 per cent per annum and that of yield per hectare was 4.97 per cent per annum during the period from 1977-78 to

1995-96. They also found that for total food grains, productivity grew at a higher rate than production. While the production grew at 3.6 per cent a year, productivity growth was 5.1 per cent. Growth rate of 'boro' rice production was observed to be the highest (9.4 per cent a year) among the food grain crops. They also observed that in case of rates of growth of non-food grain crops, production exceeded productivity. While the production grew at 4.7 per cent per annum, productivity growth was 3.6 per cent per annum. They estimated that substantial area was brought under cultivation of some non-food crops like potato, oilseeds etc. and this effected lowering in the growth rate of productivity. According to their observation, while production of potato and oilseeds grew at the rates of 6.9 per cent and 14.0 per cent per annum, acreage growth rates for these crops were 4.5 per cent and 10.1 per cent per annum respectively.

We have taken an attempt to observe agricultural growths in the State before and after effective implementation of land reform measures. A crop-wise analysis of growth rates of area, yield, production and productivity of major crops of West Bengal has been attempted for the same for the period from 1970-73 to 1995-98 in our following discussions. It may be noted that selected food grain crops account for nearly 98 per cent of total food grains production and all crops selected account for about 85 per cent of total agricultural production in the State.

The main sources of data are Centre for Monitoring Indian Economy (CMIE), ( September 1998 ) and Economic Review ( 1971-72, 1980-81, 1991-92 and

1998-99), Government of West Bengal. The whole period has been divided into three sub-periods, taking triennia average such that Period-1 (1970-73 to 1977-80), Period-2 (1977-80 to 1988-91) and Period-3 (1988-91 to 1995-98). The Period-1 and the Period-2 have been considered to compare the changes before and after implementation of land reform measures rigorously, while the Period-3 has been considered to observe recent trend of agricultural growths in the State. For the purpose of analysis, the data on triennia averages for the years 1970-73, 1977-80, 1988-91 and 1995-98 have been calculated and from these, the absolute change in the above parameters of the crops for the above mentioned periods have been calculated by simple growth rate.

Table 3.6 shows disaggregation of trends of growth, according to area covered by major crops in West Bengal, over the selected period. It reveals that area under rice and total food grains increased in all periods and over the whole period 1970-73 to 1995-98. Area under rice grew highest in period-2. The rate of growth of area under rice is found to be 12.93 per cent.

The rate growth of rice area was 17.44 per cent over the period 1970-71 to 1995-98. Although area sown with wheat and pulses declined in period-2, total food grains grew at the rate of 3.08 per cent during the same period. The area under rapeseed and mustard grew highest in period-2. The rate of growth of area of this crop was 245.37 per cent.

It is found that both food grains area and area under major non-food grain crops

grew over the whole period from 1970-73 to 1995-98. It is evident from the table that there had also been a change in commodity composition during the period from 1977-80 to 1988-91 (period-2).

**Table: 3.6 Triennia Average Area of Major Crops in West Bengal.**

Crops	Triennia Average Area (thousand hectare)				Simple Growth Rate (Percent)			
	1970-73	1977-80	1988-91	1995-98	1970-73 to 1977-80	1977-80 to 1988-91	1988-91 to 1995-98	1970-73 to 1995-98
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rice	5005	5032	5683	5878	0.54	12.93	3.43	17.44
Wheat	383	504	299	352	31.60	-54.56	17.74	-8.09
Pulses	584	543	315	216	-7.02	-41.99	-31.43	-63.01
Food-grains	6126	6202	6397	6523	1.24	3.08	1.97	6.48
R and M	104	108	373	325	3.58	245.37	-12.87	212.50
Jute	412	507	447	592	23.06	-11.83	32.43	43.69
Potato	70	131	197	285	87.14	50.38	44.67	307.14

Source: CMIE September 1999.

Note: R= Rapeseed

M = Mustard.

**Table: 3.7 Triennia Average Yield of Major Crops in West Bengal.**

Crops	Triennia Average Yield (thousand hectare)				Simple Growth Rate (Percent)			
	1970-73	1977-80	1988-91	1995-98	1970-73 to 1977-80	1977-80 to 1988-91	1988-91 to 1995-98	1970-73 to 1995-98
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rice	1223	1327	1877	2141	8.50	41.45	14.06	75.06
Wheat	2153	1860	1930	2249	-13.61	3.76	16.53	4.46
Pulses	564	607	655	711	7.62	7.90	8.55	26.06
Food-grains	1203	1290	1807	2095	7.23	40.08	15.94	74.15
R and M	370	443	883	786	19.73	99.32	-10.99	112.43
Jute	1290	1334	2020	2092	3.41	51.42	3.56	62.17
Potato	14023	16273	22677	24118	16.05	39.35	6.35	71.99

Source: CMIE, September 1999.

Note: R= Rapeseed, M= Mustard.

The percentage growth rates in yield of major crops in West Bengal are shown in Table 3.7. It is observed that there had been overall increase in yield of major crops during the period from 1970-73 to 1995-98. It is found that the growth rates in yield of all major crops were the highest in period-2. Although the growth rate in yield of wheat declined during period-1 and that of rapeseed

and mustard declined during period-3, overall growth rates in yield of these two crops increased during 1970-73 to 1995-98.

It is observed that during the whole period, yield growth rate was highest for rapeseed and mustard (112.43 per cent) and that of rice was 75.06 per cent.

The figures presented in Table: 3.8 show the growth rates in production of major crops in West Bengal. It is found that there had been overall increase in the production of rice, total food grains, rapeseed and mustard, jute and potato and overall decrease in the production of wheat and pulses during 1970-73 to 1995-98. The productions of rapeseed and mustard and potato grew tremendously during this period. While the percentage rate of growth of production of potato is found to be 609.16 and that of rapeseed and mustard is 571.05, the percentage rate of growth of rice production is observed to be only 105.64 during the whole period. However, the growth rate of rice production is observed to the highest during period-2.

When we turn to look into the productivity of major crops in the State it is found that over the period from 1970-73 to 1995-98, productivity increased for all major crops in the State (Table 3.9). Productivity growth rate was the highest for rapeseed and mustard (113.51). It is notable that the rates of growth of productivity were highest during 1977-80 to 1988-91 for each major crop except wheat.

**Table: 3.8 Triennia Average Production of Major Crops in West Bengal.**

Crops	Triennia Average Production (thousand hectare)				Simple Growth Rate (Percent)			
	1970-73	1977-80	1988-91	1995-98	1970-73 to 1977-80	1977-80 to 1988-91	1988-91 to 1995-98	1970-73 to 1995-98
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rice	6121	6686	10640	12587	9.23	59.14	18.30	105.64
Wheat	826	934	575	792	13.08	-38.44	3.74	-4.12
Pulses	309	284	200	152	-8.09	-29.58	-24.00	-50.81
Food- grains	7373	8025	11574	13664	8.84	44.22	18.08	85.32
R and M	38	48	329	255	26.32	585.42	-22.49	571.05
Jute	2855	3789	5010	6909	32.71	32.22	37.90	142.00
Potato	972	2117	4454	6893	117.80	110.39	54.76	609.16

Source: CMIE, September 1999.

Note : R = Rapeseed, M = Mustard.

**Table: 3.9 Triennia Average Productivity of Major crops in West Bengal.**

Crops	Triennia Average Productivity (thousand hectare)				Simple Growth Rate (Percent)			
	1970-73	1977-80	1988-91	1995-98	1970-73 to 1977-80	1977-80 to 1988-91	1988-91 to 1995-98	1970-73 to 1995-98
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rice	1.22	1.33	1.87	2.14	9.02	40.60	14.44	75.41
Wheat	2.16	1.85	1.92	2.25	-13.43	0.04	17.19	4.17
Pulses	0.53	0.52	0.63	0.70	-1.89	21.15	11.11	32.08
Food-grains	1.20	1.29	1.81	2.10	7.50	40.31	16.02	75.00
R and M	0.37	0.44	0.88	0.79	18.92	100.00	-10.23	113.51
Jute	6.93	7.47	11.21	11.67	7.79	50.07	4.10	68.40
Potato	13.89	16.16	22.61	24.19	16.34	39.91	6.99	74.15

Source: CMIE, September 1999.

Note: R = Rapeseed, M = Mustard.

It should be noted that rice is the main crop in West Bengal. It continued to be grown in the three seasons of 'aman', 'aus' and 'boro' and accounted for over 65 per cent of the gross cropped area of the State. Among these three seasons, 'aman' rice has always been the most important in terms of output and acreage.

But overtime 'boro' rice has grown in significance (Table 3.10). From the figures presented in the table it is found that while share of 'boro' rice in total area under rice was 6.69 per cent in 1980-81, it increased to 18.21 per cent in 1996-97. Similarly, the production of 'boro' rice to total production of rice increased from 11.59 per cent in 1980-81 to 26.07 per cent in 1996-97. The importance of 'aus' rice has diminished gradually both in terms of acreage and output. It is observed that during 1980-81 to 1990-91, while acreage of 'aus' rice declined, production of this crop increased. Moreover, growth of production of 'aman' rice as well as that of 'boro' rice was greater than growth of area under these crops during the period (Table 3.11). It is found that while areas under 'aman' and 'boro' rice grew at the rate of 2.18 per cent and 158.60 per cent respectively, production increased at the rate of 13.97 per cent and 207.95 per cent respectively during the same period. This indicates that productivity of all varieties of rice increased during 1980-81 to 1990-91.

It follows from our crop-wise analysis of agricultural growth that production and productivity of rice and total food grains were limited during the period from 1970-73 to 1977-80. Limited growth of total food grains production was accompanied by some higher growth in production and productivity of rapeseed and mustard, jute and potato. Our observation of agricultural growth, however, provide support for agricultural stagnation for periods prior to the 1980s as had been observed by Boyce in his meticulous study published in 1987. Substantial increase in production of rice was associated with some decline in production of wheat and pulses during 1977-80 to 1988-91.

But remarkable growth in production of rapeseed and mustard, jute and potato fairly compensated the decline in production of wheat and pulses. All these lead us to believe that the stagnation of agricultural production came to an end in the 1980s. And also that, Boyce's observation of limited growth in 'aman' rice production as one of the evidences of agricultural stagnation loses much of its validity due to growing share of 'boro' rice production in total rice production during the 1980s. However, it is important to note that there had been decline in the rate of growth of agricultural production and productivity in West Bengal for period over half of the decade of 1990s.

It follows from all these observations that the agricultural economy of West Bengal has undergone significant changes in the post-1970s. There has been not merely on agrarian structure with more equitable pattern of distribution of land holdings but also remarkable growth in agricultural production and productivity of the State. And also the observed 'agricultural impasse' had been passed away.

**Table: 3.10 Distribution of Acreage and Output of Rice by Season.**

Season	Area (thousand hectare)			Production (thousand tons)		
	1980-81	1990-97	1996-97	1980-81	1990-91	1996-97
Aus	615.1 (11.88)	610.3 (10.50)	461.7 (7.96)	576.4 (7.72)	906.3 (8.68)	775.5 (6.14)
Aman	4214.6 (81.42)	4306.5 (74.09)	4282.5 (73.84)	6024.0 (80.69)	6865.8 (65.78)	8566.4 (67.79)
Boro	346.5 (6.69)	896.1 (15.42)	1056.4 (18.21)	865.2 (11.59)	2664.4 (25.53)	3294.9 (26.07)
Total	5176.2 (100.00)	5812.9 (100.00)	5800.6 (100.00)	7456.6 (100.00)	10436.9 (100.00)	12636.8 (100.00)

Source: Economic Review, 1998-99.

Note: Figures in the parentheses are percentages to total.

**Table: 3.11 Growth of Acreage and output of Rice by Season.**

Crop	Acreage Growth Rates			Rates of Growth in Production		
	1980-81 To 1990-91	1990-91 To 1996-97	1980-81 To 1996-97	1980-81 To 1990-91	1990-91 To 1996-97	1980-81 To 1996-97
Aus	-0.78	-24.35	-24.94	57.25	-14.43	34.54
Aman	2.18	- 0.57	1.61	13.97	24.77	42.21
Boro	158.61	17.89	204.88	207.95	23.66	280.82
Total	12.30	- 0.21	12.06	39.98	21.08	69.47

Note: growth rates have been calculated from figures in Table 3.10.

## Chapter- 4

### Land Reforms and Adoption of New Technology

The analyses and discussions of the previous chapter have perhaps made it clear that land reform measures have altered to a large extent the agrarian structure of West Bengal and have to some extent achieved the objective of 'land to the tiller'. More equitable pattern of distribution of land holdings has appeared. A significant number of landless and land-poor rural households have been made owners of land. These rural households have perhaps gained access to productive opportunities on the farm. The bargadars, in a large number, have been made assured continuation of tenancy. The terms and conditions of tenancy have gone in favour of tenants. It follows from all such observations that agrarian structure of the State has undergone changes in recent years. The crop-wise analysis of growth rates of area, yield, production and productivity of major crops in West Bengal indicates that the State agricultural sector has been transformed significantly in the post-1970s.

In the circumstances, it is natural to think that agricultural transformation is somehow related to changes in the agrarian structure of the State.

As a consequence of redistributive land reforms, a large number of small and marginal farmers have been created in the state. These farmers have formed the majority of the rural population. About 90.4 percent of the total operational holdings have been found to be the small and marginal holdings (Table 3.3) and

they operate nearly 67.0 percent of the total operational holdings. And hence, any improvement in agricultural production would largely depend on the productive performance of this section of rural community. Similarly, any rural development programme cannot simply ignore this vast majority of land operators.

However, the performance of this section of rural population in increasing agricultural production and productivity would depend mostly on their accessibility to new technology, popularly known as HYV technology. Technological change in agriculture may involve two types of innovation viz. biological-chemical innovation as well as mechanical innovations. The components of chemical-biological innovations are HYV seeds, chemical fertilizer, irrigation, pesticides, insecticides etc. These are said to be scale-neutral although not capacity neutral where capacity is defined as the financial strength of the adopters. On the other hand, mechanical innovations, the components of which are tractor, power-tiller, pump-set thresher etc., are considered as neither scale-neutral nor capacity neutral. Under the circumstances, since, land reform have been consider essential, and since, any development effort in rural front cannot simply ignore this vast majority of rural population, it is pertinent to examine whether these farmers, who are basically land reform beneficiaries, have been able to gain access to new technology.

In fact, land reforms create some opportunities to the small and marginal farmers, particularly to their beneficiaries. Taking those opportunities the farmers can raise their ability adopt new technology. In this context it may be

relevant to discuss whether land reform measures have, in any way, encouraged the scope of adoption of new agricultural technology. In addition, it may also be relevant to discuss whether for agricultural development the two should be complementary to each other. The following discussion would be an endeavour to tackle the two aspects together.

The redistribution of land has given the right of ownership of land to the landless and land-poor. The ownership of land is considered important for effecting improvement in land as well as for improving the material condition of the operators. It has considerable influence on power and privilege on entitlement of a rural household. The right of land ownership may also enlarge the scope of the cultivator in getting institutional credit. This, in turn, is likely to raise ability of the cultivator to adopt new technology and to shift his cropping pattern largely towards such high valued crops, which require larger volume of purchased inputs.

Similarly, the security of tenancy or the right of tenancy assured through recording of names of the bargadars may create incentives for them to improve their production through adoption of the HYV technology. But the adoption of HYV technology requires such investment in land which a tenant farmer in most of the cases is unable to undertake without any financial support from outside. As such, recording of the names of the tenant entitles right to land, which can be used as collateral for getting low interest bearing institutional loans from banks and co-operatives.

Besides, some supportive measures, adopted for the provision of certain non-land inputs, have also raised farmer's empowerment in initiating improved farming

According to Agricultural Census of 1990-91, it found that the total area cultivated under rice in the state has been 5813 thousand hectares, of which 71.3 percent has been to be operated by the small and marginal farmers. The rice area cultivated by the small and marginal farmers appears to be 4145 thousand hectares and that by the medium, semi-medium and large farmers as 1668 thousand hectares in 1990-91. Out of the total area under rice, the area covered with HYV rice was 3257 thousand hectares (Economic Review, 1997-98). Thus, even if it is assumed that area operated by the medium, semi-medium and large farmers were all HYV rice area, still almost half of the HYV rice area has been operated by the small and marginal farmers in state in the post-1970s. It may perhaps be held that irrigation, fertiliser, credit and modern farm implements have also been accessible to the small and marginal farmers, for, cultivation of HYV rice requires large doses of these inputs.

It should be noted that the area cultivated by small and marginal farmers using modern inputs may be found to rise when areas sown with wheat, oilseeds, potato etc. are also taken into account along with HYV rice sown area.

It has also been reported that there has been quick substitution of non-HYV area by HYV area in the post-1970s. That the marginal and small farmers have

participated in a large number in HYV cultivation under the new dispensation of the post-1970s is suggested by the fact that the cropping and irrigation intensities have been found to be inversely proportional to the size-classes of cultivators (Agricultural Census, 1990-91). Thus, adoption of HYV technology has been found to be size-neutral.

We now propose to discuss the small and marginal farmers' accessibility to the irrigation input. Crop-wise distribution of irrigated area by size-class is shown in Table 4.1. The data, presented in the table, reveal the following main features:

- a) The small size-class claims the highest percentage (43.64) of net irrigated area to its total holding area in 1990-91. The position of marginal size-class is not very much different from that of the marginal size-class in this respect. The marginal size-class is found to claim 41.48 percent of net irrigated area to its total holding area. Both the classes, taken together, are observed to claim the largest area under irrigation. Hence, we may be permitted to state that the small and marginal farmers have gained wider option for crops to be grown.
- b) The proportion of irrigated rice area (RAI) to the irrigated gross cropped area (GCAI) declined for each size-group between the periods 1985-86 and 1990-91.

**Table 4.1 Crop-wise Distribution of Irrigated Area by Size-class:**

In hectare	Total holding Area (present)		Irrigated Area /GCAI For Rice(present)		Irrigated Area /GCAI (present) for total Foodgrains		Irrigated Area /GCAI (present) for non-food crops	
	1985-86	1990-91	1985-86	1990-91	1985-86	1990-91	1985-86	1990-91
<i>Upto 1.0 (marginal)</i>	32.78	41.48	62.81	62.59	71.62	70.45	15.71	18.52
<i>1.0 - 2.0 (small)</i>	34.14	43.64	67.70	65.48	76.52	73.65	17.14	17.49
<i>2.0-4.0 (semi-medium)</i>	35.51	42.37	70.58	69.08	78.87	76.29	13.44	16.66
<i>4.0-10.0 (medium)</i>	37.79	40.70	73.89	71.81	82.29	77.78	12.15	16.19
<i>10.0 and above (large)</i>	4.71	1.89	84.59	64.00	90.16	69.76	6.13	21.69
<i>All size</i>	33.62	40.85	67.46	65.54	76.09	73.23	14.26	17.64

Note: GCAI-Irrigated Gross Cropped Area.

RAI- Irrigated Rice Area.

Source: Agricultural Census, 1985-86 and 1990-91, Government of West Bengal.

- c) The proportion of RAI to GCAI declined much more for the large size-class than that for the small size-class. While the proportion fell from 84.54 percent to 64.00 for the large size-class, it fell from 67.70 percent to 65.48 percent for the small size-class. For the marginal size-class, the proportion declined marginally. It declined from 62.81 percent to 62.59 percent.

- d) In case of total food-grains, there has been severe decline in the proportion of irrigated area to irrigated gross cropped area for the large size-class between the periods 1985-86 and 1990-91. The proportion declined from 91.16 percent to 69.76 percent. But, this proportion declined, from 76.52 percent to 73.65 percent for the small size-class, and from 71.62 percent to 70.45 percent for the marginal size-class between the two periods.
- e) In case of non-food crops, the proportion of irrigated area to irrigated gross cropped area increased for each size-class from 1985-86 to 1990-91.

The large size-class is found to claim the highest percentage (21.69) of irrigated area under non-food crops to irrigated gross cropped area in 1990-91. In that respect, the position of marginal size-class is second (18.52 percent) and that of the small size-class, third (17.49 percent).

All these observations seem to indicate that the small and marginal farmers could take advantage of irrigation use considerably in their production practices, whatever be the sources and whoever be the creator of sources. It may, also be said that these farmers have responded to the changes in cropping pattern of the state as observed by some scholars recently.

It may now be relevant to discuss the extent of access of the small and marginal farmers to institutional credits. Higher is the accessibility to institutional credit higher would be the participation of farmers in HYV cultivation. And hence, if small and marginal farmers gain access to low interest bearing institutional credit, they might be encouraged to take recourse to improved farming through adoption of new technology. For, availability of formal credit would reduce dependence of the poor farmer on money lender -cum- traders and landlords for purchased improves inputs, which are mostly costly. At the same time, increased penetration and availability of formal credits to a large number of small and marginal farmers would discharge interlined market transactions very frequently observable in rural areas.

Dadibhavi (1988) examined the distribution of credit, provided by the commercial banks and co-operatives, according to size holdings of the borrowers. He collected state-wise data of outstanding credit of these two types of credit institutions as on march, 1985. Analyzing such data he arrived at a position that in West Bengal, the proportion of short-term commercial bank's credit going to the borrowers with holdings, less than 5 acres each, was more than 70 percent. And the proportion of short-term credit of co-operatives going to this class of borrowers, was more than 55 percent. His study also showed that although the proportion of short-term co-operatives' credit going to the borrowers of the small size classes was less than that of commercial bank's credit, the distribution of co-operatives' credit among the borrowers, with holdings less than 5 acres each is relatively more equal.

It should be noted here that the state government has played an important role in creating access to credit for them. The state government has been found to negotiate with the banks for extension of credit to sharecroppers and vested land assignees at differential rate of interest. The government has also introduced a scheme of paying the interest on behalf of the farmers in case the loan is repaid in time. By mutual co-operation of bank administrative machinery and panchayats, the scheme have extended credit to a large number of beneficiaries of redistributive land reforms. The panchayats have been involved effectively to ensure short-term credit to the poor farmers from the banks and co-operatives. As a result, about 31 lakh of the two categories of farmers, viz. the vested land assignees and the sharecroppers had been benefited from short-term institutional finance during the 1980s (Bandyopadhyay, 1992). Incidentally, it may be said that the Panchayat system in West Bengal, involving the poor strata of the village population, has brought about a radical transformation in the correlation of various class forces in the village society (Government of West Bengal, 1980). As a consequence, the beneficiaries are better targeted, while planning priorities and location decisions for various facilities correspond relatively more closely to the felt needs of the rural population.

An account of year-wise achievement of Kharif and Rabi lending programme for the sharecroppers and land assignees is shown in Table 4.2.

**Table 4.2 Progress of Short-term Institutional Credit to Vested Land Assignees and Sharecroppers**

<b>Year</b>	<b>No. of Beneficiaris</b>
1981-82	1,75,590
1982-83	3,04,582
1983-84	3,03,473
1984-85	3,14,105
1985-86	1,80,000
1986-87	1,96,000
1987-88	1,90,000
1988-89	1,93,452
1989-90	1,86,705

**Source: P. Bandoypadhyay, Yojana, February 29, 1992**

It is, thus, evident that the small and marginal farmers are getting access to institutional credit considerably, taking the opportunities that have been created as a result of land reform measures. Their accessibility to institutional credit has certainly been one of the reasons behind their increased capability to use larger volume of purchased inputs.

And consequently, we may be permitted to conclude that the necessity of such input utilisation has certainly been felt due to adoption of HYV technology.

In short, distributive justice requires that land should be redistributed among landless households. But redistribution would necessarily create a large volume of small and marginal farmers and hence any rural development programme should necessarily be concerned with the means to increase incomes of this section of the rural community. Incomes may be raised when productivity of this section is increased. And productivity would increase if new technology is made largely available to this section.

In this context, it may be relevant to discuss the role that public intervention has played in the case of poor farmers in the matter of adoption of new technology. It had been felt that the poor farmers, particularly the land assignees might not be able to go in for agricultural operation using modern inputs due to their poor economic position. Besides, the recorded bargadars may not obtain help from the owners of land in terms of supply of inputs after recording of their tenancies due to breakdown of old landlord-tenant relationships particularly, the cost sharing relationship (Rudra, 1981). Rudra's main objection against the barga recording programme is that the barga recording has choked the arrangement of cost sharing largely accompanied by the production advances made by the landowners. And hence, the bargadars are not in a position after recording to use more of modern inputs than before and they suffer a setback in terms of their income.

In fact, in situation when such farms are not supplied with non-land inputs, particularly modern inputs, they cannot be viable in production operations. A

number of programmes have been initiated by the state along with land reform programmes to increase the economic viability of the rural poor in the post-1970s. These may be briefly summarised as follows:

Firstly, effort has been made to provide diverse non-land inputs to assignees of vested agricultural land and other small and marginal farmers.

Secondly, a package of assistance to the rural poor families under the Integrated Rural Development Programme (IRDP) and similar schemes has been given.

Thirdly, the provision of employment for rural poor and asset creation under programmes, like the National Rural Employment Programme (NREP) and the Jawahar Rojgar Yojana (JRY), the Drought Relief Programme (DRP), the Rural Labour Employment Guarantee Programme (RLEGP) with an orientation of the schemes towards helping the rural poor.

Fourthly, in order to assist the rural poor specifically, various programmes under the Departments of Animal Husbandry, Fishery, Minor Irrigation, Cottage and Small Scale Industries and others have been initiated and resources of the State have largely been deployed for these programmes.

It is to be noted that for effective implementation of these programmes, reliance has been put on Panchayati System. Thus, the State, through this System,

It has been found to provide non-land inputs to the poor farmers in order to enable them to look for improved farm practices. For example, mini-kits containing improved seeds, fertiliser, pesticides have been supplied to poor farmers. In 1982-83, such supply has been found to be 7.1 lakh. In 1983-84, the figure has stood at 17.7 lakh.

Similarly, input loan has been distributed to the poor farmers. It is observed that in 1985-86 Kharif season, the government has distributed Rs. 9.00 crores as short-term input loans to the farmers for the purchase of seeds, fertilisers and pesticides where as such loans have accounted for Rs. 6.21 crores in 1986-87.

Moreover, the State government has helped the poorer households through IRDP in terms of 'government subsidy' and bank loans for income generating activities. It is found that in 1986-87, 1,19,459 families have been brought under assistance of the programme. The amount of credit distributed under IRDP has been Rs. 6397.87 lakh.

In addition, through the implementation of the programmes like IRDP, NREP and RLEGP, the government has increased irrigation potential of the State over the years. A cumulative total of irrigation potential created up to 1984-85 comes to 1577.85 thousand hectares. Apart from this, there are minor, medium and major irrigation schemes through which the State government has been creating additional irrigation potential every year. It has been observed that the total

additional irrigation potential created in the State has increased from 84.96 thousand hectares in 1985-86 to 88.70 thousand hectares in 1986-87.

It is, thus, evident that the major operators of land in the State, viz. the small and marginal farmers have to a large extent been entitled to use new technology. And this has been made possible as land reform programmes of the State have been found to create some opportunities for them for its adoption. Public intervention has also been instrumental in enlarging the scope of adoption of new technology for the poor farmers. The agrarian reform measures undertaken in the State in the post-1970s have, thus, created a situation for a large number of rural population to gain access to land, and at the same time, to other modern farm inputs to enable them to adopt improved methods of cultivation. The institutional changes may, then, be considered as a major factor to contribute to agricultural growth along with distributive justice in rural West Bengal in recent years.

Incidentally, land reform is a national programme launched by the Indian National Government with the objective of planned agricultural development. The declared goals of development were to bring about rapid increase in living standards, provide full employment at an adequate wage, and reduce inequalities arising from the uneven distribution of income and wealth. Successive five-year plans have emphasized the necessity to pursue all these objectives simultaneously (First Five Year Plan, 1950-51 to 1955-56, : 28).

However, while formulating the strategy of planned agricultural development, the planners were in a position to recognise that differential rewards are a necessary incentive to encourage skills, effort and enterprise (Kumar,1982:953). It was also considered that at current levels of real income, even a fully egalitarian land distribution would not be enough to eliminate rural poverty. Growth of output was, therefore, considered essential. Accordingly, the First Plan set upon the policy that while inequalities should not be condoned, it is no less important to ensure continuity of development without which in fact, whatever measures might be adopted for promoting economic equality might only end up in dislocating production and even jeopardizing the prospects of ordered growth (First Five Year Plan, 1950-51 to 1955-56: 31). And therefore, the Government of India has attempted on the basis of socialistic and democratic values of the new constitution, to set upon, a path for higher growth along with social justice through planned development with the State playing the central role. The policy of growth with social justice is, therefore, seen to be main thrust of Indian planning.

But, although land reform measures were introduced with the professed aim of removing inequality and injustice in rural society, there was no explicit emphasis on distribution of gains in the early states of planning. That is why, in the late 1960s when the Green Revolution arrived, the Indian policy makers were quick to persuade themselves that new technology held the key to the problems of slow growth as well as those of socio-economic inequalities in rural society (Rao,1992). Subsequently, doubts were raised about the 'trickling down'

of benefits of growth, and emphasis was placed on distributive justice. Indeed, a measure, which is seen as a measure of economic growth, may not work out as a measure of distributive justice as well. Land reform measures, as we like to say, should be assessed in the light of achieving growth with distributive justice in rural society.

However, to grasp properly agricultural responses to land reforms and new technology it may be relevant to examine the responses of cultivator-beneficiaries of land reforms to new technology. In our macro-study we could not separate cultivator beneficiaries from other small and marginal farmers of the state and, that is why, we could not examine the responses of these beneficiaries to new technology. In fact, land reforms beneficiaries form a part of the total number of small and marginal farmers in the State. To examine agricultural responses to land reforms and new technology it is pertinent to identify cultivator-beneficiaries cum adopters of new technology. To make such identification possible and also to discern clearly the different aspects of land reforms and their accompanying effects that likely to facilitate cultivator-beneficiaries in the matter of their response to new technology, an in-depth study at the village-level is made.

The village study might help us to understand the extent of responses of the small and marginal farmers to land reforms and new technology. It should be clearly pointed out that this micro-level study recognises the need for the co-existence between implementation of land reform programmes and the adoption of new technology so that agricultural growth is initiated along with distributive justice. Agricultural responses to land reforms and new technology discernable at the micro-level village study would enable us to examine the above proposition clearly, and to do this we turn to the next chapter.

## Chapter - 5

### VILLAGE-STUDY

For examining agricultural responses to land reforms and new technology on the village economy we have taken two villages namely Dangapara and Barohalia from Dhupguri block of Jalpaiguri district, West Bengal. These two villages are selected purposely and are such where adoption of new technology has been widespread and at the same time where land reform measures are preponderant.

Technologically advanced character of study-villages is indicated by the high percentage of cultivators devoting a substantial proportion of their cultivated area to the relatively more profitable crops like HYV-kharif, Boro paddy, potato (Appendix table A2). This is confirmed by the extensive uses of irrigation, fertiliser and modern agricultural implements such as tractor / power-tiller and pump-set which are indicated by the figures presented on the table noted above.

As regards, land reform measures in the study-villages, it has been observed that 58 percent of the total households in two villages have been benefited from such measures and from such other measures of the State which have been directed towards transforming agricultural sector. It should be noted here that the policy of agricultural transformation of the State has been related to development strategy followed in the state. The strategy is land reform based and entails provision of crucial non-land inputs like HYV seeds, irrigation, fertiliser and credit to poor farmers, so as to make them able to carry on

production activities. The operation of the decentralized district level planning in the State has permitted poor farmers through elected Panchayats to be involved in effective implementation of this strategy.

The survey covered all the 364 households in the two villages with a landholdings of 927.1 acres. It has been found that with the implementation of ceiling legislation and the distribution of surplus agricultural land among 61 landless households, a large number of households having land-ownership of less than 5 acres has been created in our Study-villages. Such measures have, at the same time, reduced landlessness in these villages substantially. It should be noted that in our study area a large number of households were a landless sharecropper prior to the distribution of surplus land. About 29 percent (105 out of 364) of the total households in two villages, taken for our Study were landless. This has, however, come down to 9.9 percent now (Table 5.1).

The ownership size class structure in the study-villages is presented in Table 5.1.

It shows that:

- i) The small and marginal size holdings constitute 74.4 percent of the total ownership holdings and the area owned by them forms 53.4 of the total area owned by households.

**Table: 5.1 Ownership Size-class Structure in Study-Villages.**

Size class (in acres)	Percentage of Holdings	Percentage of Owned area (acres)	Concentration Ratio
Landless	9.9	-	-
Marginal Up to 2.5)	52.2	24.0	0.46
Small (2.5 to 5.0)	22.2	29.4	1.32
Medium (5.0 to 10)	11.0	27.8	2.53
Big (10.0 to 15.0)	4.7	18.8	3.91
Total	100.0	100.0	-

Average size: 2.55 acres

Note: Concentration ratio is defined as the ratio of percentage of owned area to percentage of household.

Source: Field Investigation.

- ii) The small and marginal size holdings constitute 74.4 percent of the total ownership holdings and the area owned by them forms 53.4 percent of the total owned by the households.

- iii) There is some concentration of land-ownership to a few big size-class of households. It is found that one-fifth of the total owned area is in the hands of only 4.7 percent of households.

The programme of barga recording, introduced in the study-villages, along with the programme of distribution of surplus land have secured access to land for a large number of landless households. It has been observed that in our study area 60.4 percent (32 out of 53) of tenants have recorded their names as bargadars. Such bargadars, whose barga holdings were previously insecured, have been assured heritable continuation of their barga holdings. While 89.3 percent (325 out of 364) of the total households have been found to hold some land as owners, 94.5 percent (344 out of 364) households have been able to operate land. In such larger participation of households' agricultural operation, the poorer households have been able to strengthen their position. It has been found that households operating land below 5.0 acres have formed 84.3 percent of the total operational holdings in the two villages and this group of farmers has been found to claim the largest share (56.1 percent) of the total operated area of the two villages (Table 5.2).

**Table: 5.2 Operational Size Class Structure in Study-Villages**

Size Class (in acres)	Percentage of Households	Percentage of operated area	Concentration ratio
Marginal (up to 2.5)	60.8	27.9	0.46
Small (2.5 to 5.0)	23.5	28.2	1.20
Medium (5.0 to 10.0)	10.8	26.8	2.48
Big (10.0 to 15.0)	4.9	17.1	3.48
Total	100.0	100.0	-

Average size: 2.69 acres.

Note: Concentration ratio is defined as the ratio of percentage of area operated to percentage of holdings.

Source: Field Investigation.

The figures of the table above reveal that the small and marginal farmers have appeared as the major operators of land in the Study-villages. This observation is in conformity with that which has been observed in our macro-study of the State as a whole. In the circumstances, the development of the village economy, as have been argued earlier, would largely be depended on the productive performance of the major operators of land. And since their productive performance would be largely depended on their access to new technology, we

are to consider their responses to new technology. It is to be noted that such land operators are 290 in number in our Study-villages and it is also to be that all the 93 cultivator-beneficiaries (61 land assignees and 32 recorded bargadars) belong to this major land-operating group.

### **Farmers' Responses to New Technology**

We have a total of 344 farmers to produce crops in either or both season. Adoption of new technology by the farmers of the Study-villages has been quite considerable. This is perhaps clear by the data presented in Appendix Table A1. But responses of the beneficiaries of land reforms to new technology are not revealed by all those data. However, we have studied the responses of the cultivator beneficiaries to new technology. The analysis is presented separately for each season.

The degree of response to new technology has been judged by number of farmers shifting to HYV, area under HYV and shift to modern agricultural inputs. High degree of response of the cultivator-beneficiaries to new technology has been found in our Study-villages. This is perhaps indicated by shift of all such farmers to HYVs in Kharif season as well as in Rabi / Boro season (Table 5.3). We like to note that in the matter of response to HYVs in Kharif season no significant variation among farmers in our Study-villages has been found.

**Table: 5.3 HYV Growers and HYV Area in the Group**

Season	Growers to total	Per cent
		Area to total cultivated Area
Kharif	100.00	98.91
Rabi / Boro	93.55	97.40

Source: Field Investigation.

The response of these farmers to new technology has been very high is confirmed when the same is judged by proportion of area under HYV. It is observed from the above table that very high proportion of total area under cultivation in each season by these farmers has been brought under HYV cultivation. It should be noted here that some cultivators of this category have been found to lease out their own land partly or fully to some well-to-do cultivators during the rabi / boro season on fixed cash rent basis.

Modern inputs, viz. chemical fertilisers and pesticides that are crucial to the success of HYV programme, have also been considered. As regards the use of fertilisers, it has been found that all of the cultivator-beneficiaries have been found to use fertilisers and the level of their fertilisers use per acre is much high in *rabi / boro* season than that in *kharif* season. For instance, the average use of fertilisers in HYV rice cultivation has been found to be 98 kgs per acre in rabi / boro season as against 62 kgs per acre in *kharif* season.

The use of pesticides has been very common to the cultivators in our Study area. However, the proportion of the use of pesticides has been found to be 92 per cent for the cultivator-beneficiaries while the same has been calculated at 98.6 per cent for other farmers in the Study-villages. The pesticide use has been universal among farmers who cultivate HYV *boro* paddy crop.

Unlike HYV seeds, fertilisers and pesticides, investment in private irrigation facilities like pumps and tube-wells, and agro-machinery like tractor, power-tiller are indivisible. Besides, installation of these modern farm implements requires a minimum size of holding to be economic. The cultivator-beneficiaries are generally poor and they are at disadvantageous state, due to their poor economic condition, to own such costly modern inputs. In spite of all these obstacles the cultivator-beneficiaries have been found to use services from such mechanical farm inputs considerably (Table 5.4). It has been found that although the cultivator-beneficiaries could not be able to own all such costly farm implements to any significant extent, about 92.82 percent of them have been found to use pump-machine and shallow tube-well to irrigate their crop land. The percentage of the reform beneficiaries who have used tractor/power-tiller stood at about 87.28 (Table 5.4).

**Table: 5.4 Ownership and Use of Pumps and Tractors/Power-tillers by Cultivator-beneficiaries in Study-Villages.**

Item	Percentage own	Percentage of using
Pump-set/Shallow		
Tube-well	12.07	92.82
Tractor/Power-tiller	1.03	87.28

Source: Field Investigation.

It follows from all these observations that the beneficiaries of land reforms in our Study area have to a large extent responded to new technology. We like to note that our field observation does not provide evidence in support of the observation of Rudra (1981) that the bargadars, after recording of their tenancies, are not in a position to use more of modern inputs than before.

The cultivator-beneficiaries are observed to remain in very poor position (Table 5.4) in possessing modern inputs like pump-set and tractor/ power-tiller. Besides, it would be unrealistic to think that poor farmers can be accommodated to modern agriculture as owner-cultivators or as recorded tenant. Naturally, it seems important to examine as to how these farmers have been able to raise their ability to adopt new technology that requires larger volume of purchased inputs. Similarly, it is also relevant to examine as to how it has been possible for them to use mechanical inputs, in spite of the fact a large number of the users are

either small or marginal farmers without having proper means to employ such. We now try to consider these questions in the following paragraphs.

It has been observed that the cultivator-beneficiaries have been benefited from the formal credit institutions like bank and co-operatives in terms of sanction of crop loans for production purposes. To receive crop loans landed deeds were demanded by such credit institutions as collateral of loans. The 'patta' of land distributed to the assignees of surplus agricultural land as well as 'barga deeds' given to the bargadars who have recorded their barga holdings have been used as collateral of the crop loans. Land reforms have, thus, created access of the rural poor to the formal credit institutions. The availability of institutional credit has largely helped the cultivator-beneficiaries to raise their ability in purchasing inputs required for adoption of new technology.

We have also attempted to examine tenurial conditions in the Study-villages in order to understand how far the terms and conditions of tenancy have been helping to tenants in the matter of their responses to new technology after barga recording. It should be noted that the programme '*Operation Barga*' has been introduced in the State for entering the names of bargadars into revenue record in order to protect them against rent-enhancement and eviction by the landowners. The main objectives of the programme are:

- a) to provide security of tenure to tenants;
- b) to raise the share in favour of the tenants; and

c) to enable the tenants to obtain institutional credit using tenancy contract as a collateral.

In our Study-villages we have encountered 68 tenant households. We discuss terms and conditions of tenurial contracts with respect to these tenant households. We have already stated that the recorded tenants have obtained institutional credit using tenancy contracts as collateral. Now, we discuss the two other matters in the following manner.

However, before going to that discussion we like to present season-wise data about types of tenancy in these villages. The data on the proportion of different tenancy arrangements are presented in Table 5.5. It is observed that the share-crop tenancy arrangement is predominant in the *kharif* season. Fixed produce lease contract and fixed cash lease contract have been found to exist in the *kharif* season but very few amount of land has been brought under these two types of tenancy arrangements.

On the other hand, fixed cash tenancy arrangement is found to be dominant form of tenancy arrangement in the *Rabi/Boro* season in our Study area. It has been reported that fixed cash tenancy contract has been introduced in this region with the introduction of Potato and Boro paddy cultivation.

**Table: 5.5 Distribution of Leased-in Land by Types of Tenancy**

Season	Proportion of leased-in area under		
	Crop Sharing	Fixed produce contract	Fixed cash contract
Kharif	96.60	3.13	0.27
Rabi/ Boro	28.58	5.20	66.22

Source: Field Investigation.

The share-crop tenancy arrangement which has been found to be the dominant form of tenancy arrangement during the *Kharif* season has not been found to pre- dominate in *Rabi/Boro* season. Only 28.58 percent of leased-in land are under share-crop arrangement as against in *Rabi/Boro* season as against 96.60 percent in *Kharif* season. It should be noted that the crop-sharing tenancy arrangement was the single dominant form of tenancy arrangement in our Study area for all seasons before the introduction of Boro paddy and Potato cultivation. The present tenancy arrangement indicates that technological changes have a considerable influence on the type of tenancy. The emergence of fixed cash tenancy contracts is seemed one of the contributions of introduction of new technology in the Study-villages.

We may discuss now the matter of security of tenancy with respect to the tenants observed in our Study-villages. As regards the security of tenancy it may be said that tenurial security should be judged with respect to tenancy in the

traditional crop only. This is, because, the Tenancy Law of the State was enacted with a view to provide security to such tenant only. It may be noted that the term *bargadar* usually means tenant involved in cultivation of traditional crop only (Khasnabis, 1981).

Table 5.6 shows status of tenure in study villages with respect to cultivation of crops season-wise. The figures presented in the table show that 66.7 percent of tenants who produce only traditional crop have been recorded. This indicates that most of tenants have obtained security of tenure as per the enacted Tenancy Law. For traditional and Boro/rabi crops, tenurial security of 57.1 percent of tenants have been protected. It is found that tenants producing only Rabi/Boro crops have not been recorded in our Study-villages. This indicates that tenants producing only Rabi/Boro crops have not been protected from eviction.

**Table: 5.6 Status of Tenure in Study-Villages by Crop Season**

Crop Season	Recorded	Unrecorded	Total
Traditional only (Kharif)	12(66.7)	6(33.3)	18(100.0)
Traditional and Rabi/Boro	20(57.1)	15(42.9)	35(100.0)
Rabi/Boro	-	15(100.0)	15(100.0)
Total	32(47.1)	36(52.9)	68(100.0)

Note: The figures in the parentheses are percentages of row total

Source: Field Investigation.

It has been found that there has been an increase in the tenant's share of crop in our Study area. As regards the share of crop, the tenancy law stipulates that the produce will be shared between the landowner and the bargadar and the sharing arrangements are:

- (i) a share in the proportion of 50:50 (lessee : lessor) in case where the lessor supplies all inputs excepting labour; and
- (ii) a share in the proportion of 75:25 (lessee: lessor) in all other cases.

In our Study area, it has been observed that the tenants under share-crop contracts have been able to achieve larger share of the crop. It should be noted that the crop sharing proportion prevailed in the Study area before implementation of 'Operation Barga' was 40:60 (lessee:lessor). At present, the predominant pattern of crop sharing for the traditional crop in our Study area has been one where 50 per cent of the crop goes to a tenant. It may be noted here that the State's land reform effort involving rural masses has created a situation in our Study villages in which the tenants who have not been brought under record have been able to enjoy larger share of the crop. It has been found that 16 unrecorded tenants are now enjoying 50 percent of the crop and one such tenant is enjoying 75 per cent of the crop. As a whole 73.6 per cent (39 out of 53) of the tenants who produce traditional crop are now enjoying 50 per cent of the crop and 9 tenants (17 per cent) are retaining with them 75 per cent of the crop (Table 5.7). The recording of tenancy is seemed one of the causes of

improvement in crop sharing proportion. Such improvement in the crop sharing proportion has perhaps raised economic ability of the tenants significantly.

Hence, it is clear that the tenurial conditions have been improved in our Study-villages after the recording of the bargadars. The improvement in tenurial conditions has certainly raised economic ability of the tenants of the Study-villages and as a result of that they have perhaps been able to respond to new technology to the extent as has been observed earlier.

Table: 5.7 Tenant-Landlord Crop Shares in Study-Villages (For traditional crop only).

Crop-share(tenant:landlord)							
Tenant type	No share	40:60	50:50	60:40	75:25	F. P.	Total
Recorded	-	-	23	1	8	-	32
Un recorded	1	1	16	-	1	2	21
Total	1	1	39	1	9	2	53

Note: Figures in parentheses indicate percentages; F.D. denotes Fixed Produce.

Source: Field Investigation.

It has been found that Pump-sets have been found supplied by the department of agriculture, Government of West Bengal to the poor farmers, taking 5-7 such farmers in a group and sanctioning one set for each group. 16 pump-sets have, thus, been supplied in our Study-villages.

There has been created a market for supply of mechanical input services in our Study area. It has been found that some farmers hire out irrigation water and tractor/power-tiller services to others in terms of money. The poor farmers have taken opportunity of such hire market and have been able to use services of mechanical farm inputs.

Moreover, mini-kits containing improved seeds fertilisers etc. have been distributed among beneficiaries of land reforms and other small and marginal farmers. It is found that about 58 per cent of cultivators have been benefited from the mini-kits distribution.

These, among others, have perhaps helped the cultivator-beneficiaries as well as other small and marginal farmers in two villages, taken for our Study, in the matter their response to new technology. But, institutional credits available to the poor farmers have not been adequate. It has been found in our field inquiry that the smaller farmers including cultivator-beneficiaries have approached for credit to agricultural traders-cum-money lenders and village 'Arotdars' of farm produce against advance sale of their produce. The price considered on such advance sale of produce was the average price of last three-year harvesting

prices. Some of the cultivators have reported to lease out land to others particularly, in cultivation of commercial crops being failed to collect credit necessary for cultivation of such crops.

However, the provision of crucial non-land farm inputs to the beneficiaries of land reforms and other small and marginal farmers has been largely implemented in our Study-villages. The Panchayats have been effectively involved in the matter. As we have found that the provision of crucial non-land farm inputs has largely been related to land reform, it may be said that land reform programmes have helped the small and marginal farmers as well as the cultivator-beneficiaries to a large extent and in a numerous ways in adopting new agricultural technology.

## Chapter - 6

### Summary and Conclusions

One of the main objectives of initiating land reform measures was to ensure land to the landless rural people. In our study we have attempted to show that once land reform programme is undertaken, the beneficiaries should simultaneously be equipped with proper means to initiate improvements in production front. This suggests a marriage between land reforms and new technology, for in the event when redistributive land reform programme creates a large number of small and marginal farmers, agricultural production would largely be dependent on the production performance of this section of the rural people. Their performance in the production front would depend largely on their accessibility to new technology. The study proposes that mere redistribution of land would fail to deliver correct good until and unless the beneficiaries are equipped with improved means of farming. This would call for adoption of new improved technology. Thus, agricultural productivity would be expected to respond favourably when both land reform measures and new technology are found to have been implemented simultaneously. Our discussion asserts that it is discernable that land reforms should be combined with new technology to deliver the desired result in the arena of agricultural production. The land reform measures have enabled the scope of the small and marginal farmers constituting the major portion of our farmers, to adopt new technology. Implementation of land reform measures in conjunction with the adoption of the beneficiaries of new

technology would go a long way in enlarging production capacity of a vast majority of our small and marginal farmers. The study has pointed out the desirability of land reform measures towards changing the agrarian structure inherited from the past. The old agrarian structure has been found to be the main obstacle to effect proper agricultural development.

The study has sought to examine the agrarian situation of pre-independent Bengal for a better understanding of the situation that led the state to adopt land reform programmes as well as of these changes which appeared as a result of the adoption of such programmes.

It has been found that in pre-independent Bengal, the land was under ownership and control of a few persons viz. Zaminders, Sub-zaminders, tenure-holders who were principally involved in collecting rents from the cultivators. They did not generally practice farming on any significant scale. On the other, the actual cultivators, the majority of rural population, were simply tenant farmers without any customary rights over land. The peasants were subjected to rack-renting, eviction and various other form of exploitation and were left with very little means to go in for agricultural improvement. The landlords were interested

more in collecting rents than undertaking any capital investment on land for improvement in agriculture.

A class of rich peasants emerged who usually purchased alienated peasant holdings and turned them into barga (share-cropping) cultivation. These rich peasants often acted as agricultural traders and / or money-lenders. The landlords were involved in land-lease, labour and credit contracts with their tenants. The terms and conditions of tenancy were very stringent. The share of produce going to tenants was very low and the production costs were mostly borne by tenants. Irrigation facility was very insignificant and as result, the cultivators could not adopt multiple cropping practices.

The whole agrarian situation in pre-independent Bengal has been found to be one of disincentive to agricultural growth and continuing exploitation of the actual cultivators. The agrarian structure and the relations the relations of productions of pre-independent Bengal are considered to be the root causes of prolonged agricultural backwardness as had been observed by Blyn (1966).

A change in agrarian structure and relations of production is considered essential to ensure justice to rural poor and also to create a situation for improvement in agriculture. Land reform measures have been adopted in West Bengal immediately after independence for that. A number of laws have also been passed since the early 1950s. Initially the implementation of the Laws has remained unsatisfactory. Besides, the enacted Acts had many loopholes.

The implementation of the enacted acts has gained prominence since 1977 onwards. When Left Front Government took government of the states. Efforts have been made to plug legal loopholes and to implement the existing laws properly. In this matter the rural masses have been mobilised and effectively involved in favour of reforms.

The Government has stressed on distribution of vested agricultural land and recording of bargadars. The programme of '*Operation Barga*' has been launched in 1978 for quick recording of the bargadars. The implementation of land reforms has been more effective as a result of such government efforts. As a result, up to June 1992, 6.7 lakh acres of surplus land had been distributed among 12 lakh beneficiaries, of whom 57 percent are scheduled castes and scheduled tribes. Till the end of September 1998, the distribution comes to a figure of 10.32 lakh acres. Similarly, a large number of bargadars have been registered in record of revenue. Nearly 14.39 lakh bargadars were recorded up to June 30, 1992 and the figure reached at 14.86 lakh till the end of September 1998.

The distribution of surplus lands and the recording of bargadars have brought some changes in the agrarian scenario of the State recently. The changes are as follows:

- a) A huge number of rural poor have been made owners of land.
- b) The distribution of land holdings among rural households has been more equitable;

- c) The bargadars in a large number have been recorded and thus they have been assured heritable continuation of tenancy;
- d) The terms and conditions of tenancy are going in favour of tenants.

However, in the process, a large number of small and marginal farmers have been created in the state. The small holdings (small size and marginal size) have accounted for 92.45 percent of the total holdings of the state in 1990-91 and the area operated by those holdings accounts for 66.46 percent of the total area operated. These two categories of farmers claim the largest shares of the total holdings in the State.

Such changes in agrarian structure should have some positive effect on the rural economy in terms of an increase in agricultural productivity. But as the small and marginal farmers are the major operators of land, an increase in productive performance of this section rural population would create a positive impact on the state of the economy.

But, their production performance would be depended largely on the feasibility of their access to new technology, which is mostly costly. The smaller farmers, who are generally poor, might be in a disadvantageous position to make it feasible.

In our macro-study of examining the impact of land reform on the small and marginal farmers in adopting new technology, our analysis has made it

abundantly clear that this category of farmers have gained considerable access to new technology.

Access of this section of farmers to short term institutional credit to a large extent has been observed in our study area. It has been made possible through land reforms in the sense that ownership of land and tenancy deeds have helped these farmers much in getting credit from formal credit institution. The availability of institutional credit has perhaps largely helped the smaller farmers to purchase as well as to use modern farm inputs. Public intervention has also been instrumental in enlarging the scope of adoption of new technology for the poor farmers.

All such observations have led us to state that the State's land reform programmes have largely helped the small and marginal farmers in the State to get them entitled to new technology by creating some favourable conditions for them for its adoption.

We have carried out a detailed investigation in two villages taken from Dhupguri block of Jalpaiguri district, West Bengal so as to grasp properly agricultural responses of land reforms and new technology. At the micro-level of study we have examined the present position of land distribution and tenurial conditions on the heels of land reform measures undertaken in the two villages and also the responses of the smaller farmers created through the redistribution of land to new technology. At the same time we have tried to explain how far

land reforms have created favorable conditions for such farmers to respond to new technology.

Several findings emanate from this part of our study. We summarise them briefly as follows:

- a) Surplus lands have been distributed among 61 landless households of whom 85 percent (52 out of 61) belong to scheduled castes and scheduled tribes.
- b) As a consequence of imposition of ceiling and distribution of surplus land, 84.3 percent of operational holdings have been appeared as small and marginal holdings and area operated under such holdings has been 56.18 percent of the area operated in two villages.
- c) 60.4 percent of bargadars producing traditional crop and traditional rabi / boro crops have been recorded. Some tenants have been found to operate land during rabi / boro season only. Such seasonal tenants are generally well-to-do cultivators who lease-in land during this season and raise their scale of production in the crops like boro rice and potato.
- d) Crop-shares are going in favour of tenants.

However, there is evidence of much dependence of small and marginal farmers as well as cultivator beneficiaries on 'Arottdars' and traders of agricultural

produce who combine grain dealing business with credit advancement activity. These indicate that institutional credit available to such farmers falls short of credit requirement.

A favourable climate has been created for the land-poor farmers towards adopting new agricultural technology in production. Small and marginal farmers as well as cultivator-beneficiaries have responded much to modern farm input like HYV seeds, fertilizer, pesticides, irrigation etc.

There has been mass participation in HYV cultivation by these farmers. Availability of crop loans simultaneous with Government help in terms of supply of non-land farm inputs has raised their ability in adopting new technology. Besides, there has developed a market in the study area through which all such farmers hire in tractor / power tiller and pump set and there by use their services in cultivation operation. Hence, agriculture has been found to respond favourably due to land reform measures, which have made possible for the beneficiaries to adopt new agricultural technology. In other wards, once the land reform measures have been adopted, our analysis has made it abundantly clear that agriculture has responded quite effectively to new technology, the adoption of which has largely been possible through the implementation of land reform measures.

## Conclusions

The agrarian structure in pre-Independent Bengal was inequitable and was a great hindrance to agricultural development. The production relations were exploitative and contrary to justice for rural masses.

Land reform measures adopted in West Bengal in post-independence period have changed the agrarian structure as well as the relations of production to a large extent. Land distribution has become more equitable. However, as a result of land reforms a large number of small and marginal farms have been created.

The small and marginal farmers have formed the vast majority of rural population and they have appeared as the major operators of land.

Productive performance of the vast majority of rural population has been improved as a result of adoption of new technology to a considerable extent and land reforms have ensured the accessibility of this section of the rural population to new technology.

And thus social justice has largely accompanied increased agricultural productivity. In the absence of land reforms, inequality in income distribution in our rural economy would have been widened.

Growth of production along with distributive justice is highly commendable. The latter becomes a reality when accessibility of land arising out of redistributive land reform measures is also accompanied by the accessibility of such beneficiaries to new technology. Thus not only every care should be taken for the proper implementation of land reform measures, but also any obstacle faced by the poor small and marginal farmers for the proper adoption of new agricultural technology should be removed as far as practicable. Such a policy would evidently call for an immediate completion of the task of redistribution of surplus land to the landless tillers and of recording of names of bargadars.

*Along with this, such steps should be taken which would make possible agricultural inputs to remain within the reach of the farmers. Lack of capital has been found to be the main constraint in introducing certain cash crops considered necessary for enhancing income of the poor farmers.*

In addition, size of farms appears to be unfit for getting benefits of mechanised cultivation. Scarcity of capital as well as small-sized land holdings has encouraged 'reverse tenancy' and 'temporary tenancy' and have failed to effect economic upliftment of the majority of the rural poor. Right to land may remove capital constraint when land reform programme enables the beneficiaries to get

access to rural credit. Together with this, if steps be taken to bring consolidation of land through encouraging co-operatives among the tillers of the small holdings, while retaining individual ownership, land constraint can also be removed. This would go a long way towards making them self-reliant in effecting their viability in the production front.

## Appendices

### *Questionnaire*

1. Name of the Village :
2. Name of the G.P., Block and District :
3. Household's Name :
4. Caste (SC/ ST/ Others) :
5. Religion :
6. Educational Level :
7. Occupation : Agriculture / Artisan / Trade / Wage Labour

#### For Agriculturists

8. Status (landlord /tenant /share cropper /daily labour)
9. Land-holding (bighas)                      Total                      Irrigated                      Non-irrigated
  - Self owned:
  - Leased in (tenanted):
  - Leased in (share cropping):
  - Leased out:
10. Land Leased in (Bighas)                      Kharif Season                      Rabi / Boro Season
  - Share cropping
  - Fixed produce contract
  - Fixed cash contract
11. Size of : a) Ownership holding                      bighas
  - b) Operational holding                      bighas
12. Land utilisation (bighas): Cultivation -----
  - Home stead -----
  - Plantation -----
  - Fallows -----

13. Reason for fallows i. ii. iii.

14. Cropping changes

Cropping (5 years ago)			Cropping (present)		
Crop type	Sown area	Prodn./bigha	Crop type	Sown area	Prodn./bigha

15. Cropping Sequence : Season Crop(s) Sown

Pre-kharif

Kharif

Rabi

Boro

16. If share cropper, status a) whether recorded or unrecorded

b) If unrecorded, specify reason

17. Share of Crop / Share of Input

	Traditional crop	Traditional cum Rabi/Boro	Rabi/Boro
Recorded			
Unrecorded			

18. Irrigation by Sources (bighas)

Shallow	bighas
River Lift	bighas
Pond	bighas

19. Agricultural Implements: Ownership Use

- a) Tractor:
- b) Power-tiller:
- c) Sprayer:
- d) Thresher:
- e) Harvester:
- f) Wheel - hoe:

- g) Pumpset:
- h) Others (specify)

20. Fertiliser use (kg. per acre):

21. Pesticides : Whether use or not:

22. Indebtedness :

Loan outstanding			Loan Repaid		
Amount	Period	Rate of Interest	Amount	Period	Rate of Interest

a) Cash Loan-

b) Loan in Kind-

23. Loan Sources Amount Rate of Interest

- a) Relative / Friend
- b) Trader / Money lender
- c) Bank / co-operative

24. Purpose(s) of Production Loans Amount Source

- Seed / Fertiliser
- Implements purchase
- Livestock purchase
- Land purchase
- Trading capital
- Repayment of past loan

25. Whether Loan Received under IRDP : Yes / No

26. Whether Mini-kit Received: Yes / No

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**Appendix Table A1: Some Indicators of Expansion of Modern Farm Inputs  
and  
Technology in West Bengal.**

Item (1)	1980-81 (2)	1990-91 (3)	1995-96 (4)
Percentage of net irrigated area to net sown area	28.42	34.83 *	34.99
Percentage of gross irrigated area to gross sown area	20.98	28.75	27.76
Canal irrigated area of gross Cropped area	12.94	13.67	13.10
Area covered under HYV (percentage)			
Aus paddy	35.75	66.25	97.00
Aman paddy	22.91	45.43	63.00
Boro paddy	100.00	100.00	100.00
Total paddy	29.60	56.00	73.13
Wheat	100.00	100.00	100.00
Fertiliser Consumption per hectare of gross cropped area (in Kgs.)	38.51	87.91	94.52
Energisation of Pump-Sets/tws (cumulative) ('000)	28.80	89.20	101.20
Disel Pump-Set (cum) ('000)	88.50 **	190.40 ++	-
Number of Tractor per thousand hectare of gross cropped area	0.26	0.75	-
Percentages of Villages electrified	37.51	72.54	76.81
Percentages of advance to deposits of commercial banks in rural areas	30.53 +	41.70	35.90

Sources: CMIE, September 1999.

Economic Review, various years.

Statistical Abstract, various years.

Notes: \* relates to 1991-92, + relates to 1982

\*\* 1979-80, ++ 1987-88.

**Appendix Table A2: Intensity of Use of Improved Farm Inputs and  
Technology in Study-Villages.**

Item	Unit	
Farmers cultivating HYV Aman paddy	percent of total farming households	100.0
Area under HYV Aman paddy	per cent of total cropped area	98.8
Aus paddy		100.0
Boro paddy		100.0
Wheat		100.0
Total		96.1
Area under Boro/Rabi crops Boro Paddy	per cent of net sown area	87.6 19.1
Wheat	per cent of area under boro/rabi crops	11.3
Mustard		7.1
Potato		41.8
Irrigated area Area irrigated	per cent of cultivable area	86.8
By shallow tube-wells	per cent of net sown area	52.0
By river lift		31.3
By pond		3.6
Pump-set	number	88
Tractor/power-tiller	number	6
Fertilizer use (Average)		
HYV kharif	Kg. Per acre	62
HYV boro		98
Potato		182
Farmers using fertilizer	percent to	100.0
Farmers using irrigation	total farmers	97.0
Farmer using Tractor / Power-tiller		92.1

Note: 1. cultivable area means net sown area plus current fallow.

2. Aman paddy is the main crop in Study- Villages during kharif season

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