

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

Year	No. of Beneficiaris
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.