



Technological Change and Its Impact on Tenancy Relation in West Bengal

Dr. B. C. Rudra, Farm Manager, Malda KVK, Uttar Banga Krishi Viswavidyalaya, Ratua, Malda, West Bengal

Dr. A. K. Pal, Ex-Associate Director of Research (Retired), Uttar Banga Krishi Viswavidyalaya, Cooch Behar

Abstract

The present study aims at examining the change of agrarian technology, an important component of forces of production in agriculture, and its impact on the changes in tenancy relation in the context of a northern district of West Bengal namely Cooch Behar where a dramatic change in agricultural production scenario has been witnessed over last one and half decade with the help of primary data collected by suitably designed schedule and questionnaire. A trend of surrendering land by the bargadars in exchange of getting ownership for a part of land thereof and thereby possibility of increasing earning as owner operator after getting ownership in foreseeable future has been elicited as a prime factor for the long sustenance of lease cultivation. From the entire analysis it comes out that with the advancement of technology, the bargaining position of the landowners vis-à-vis tenants in land lease market has been gradually favorable to the landowners and the security of tenure ensuring of getting ownership for a part of leased-in land and thereby possibility of increasing income by the tenants seems to be a compromising settlement between tenants and landowners.

Key words: Agrarian technology, technological change, tenancy relation, tenants, landowners, bargadars

Introduction:

A spectacular change has been experienced in the crop economy of West Bengal since late sixties with the introduction of HYV technology in crop production. The HYV technology introduced in the country in general and in West Bengal in particular during late sixties was centered around the cereal crops particularly rice and wheat.

Improvement of yield per unit area through introduction of HYV technology in case of maize and small millets is not found notable. Production technology of other crops namely jute, potato, pulses, oilseeds, vegetable and spice crops were recorded by and large unchanged till late eighties or early nineties as has been noticed in crop production front of West Bengal.



From early nineties production technology of pulse, oilseed, jute, sugarcane and potato has got a remarkable change which has been reflected in the improvement of yield per unit area of these crops. The first phase extending from late sixties to late eighties is marked as a period of technological change in cereal production and the second phase extending from late eighties onward as period of technological change in oilseed and pulse and more particularly in vegetable and spice crops. Unlike in other districts of West Bengal the agricultural transformation in the northern districts particularly the terai districts has been experienced at a much slower pace even after technological breakthrough in late sixties. The transformation of agriculture in terai districts in general and Cooch Behar in particular has not got momentum until late eighties.

Objectives

The present study aims at examining the change of agrarian technology, an important component of forces of production in agriculture, and its impact on the changes in tenancy relation in the context of a northern district of West Bengal namely Cooch Behar where a dramatic change in agricultural production scenario has been witnessed over last one and half decade. But the change in crops and cropping

pattern in the process of transformation is noticed somewhat different in terai districts in comparison with that of other parts of the state.

Methodology:

The data for the present study have been collected both from primary and secondary sources. The district 'Cooch Behar' has been purposively selected to gather primary information. Two clusters of villages, one agriculturally developed and the other agriculturally backward, have been selected where the extent of irrigated area, power supply, distance from the nearest wholesale market, medical facility have been taken into account as the important infrastructural facility in distinguishing developed villages from backward villages. Considering those developmental parameters two clusters of villages consisting of three villages in each cluster have been selected.

Eighty farm households have been selected from each cluster following simple random sampling without replacement with probability proportional to size (household). Following the simple random sampling without replacement with probability proportional to the population of agricultural labourers, eighty agricultural labourers' households have been selected from each cluster in the area under study.



Method of estimation of various items of cost and yield per acre of individual crops:

Estimate of cost or yield of individual crop per acre for the j^{th} cluster

$$Y_j = \frac{\sum_{k=1}^{80} Y_{jk} A_{jk}}{\sum_{k=1}^{80} A_{jk}}$$

Estimate of cost or yield for the two clusters combined

$$Y = \frac{\sum_{j=1}^2 Y_j A_j}{\sum_{j=1}^2 A_j}$$

Where,

$$j = 1 \dots 2$$

$$k = 1, 2 \dots 80$$

Y_{jk} is the cost of cultivation or yield per acre

A_{jk} is the area under individual crop

Results and Discussion:

This study deals with the tenurial status of the sample households, the nature of contract in land lease market, cost and return per unit area per unit of time according to nature of contract, and the relative efficacy of different tenurial contracts in increasing agricultural production and income of the farm families belonging to the groups of owner operator and the tenant.

It has been conspicuous that the incidence of 50:50 crops sharing with the participation of landlord in cost sharing under the items of seed, manure/fertilizer was found to prevail in the early part of the introduction of HYV technology. It has been revealed that the crop and cost sharing pattern have been changed with more and more adoption of HYV technology. There is no existence of pure tenant either in backward or advanced villages in the present day agriculture. Combining the incidence of both leasing-in and leasing-out land the lease operators are observed only 20 per cent of the total households in backward villages and 15 per cent in advanced villages with an average of 17.5 per cent. It is also revealed that the lessees both in backward and advanced villages are belonging to lower size groups as compared to their counterparts of owner operator or owner-cum-lesser.

It is found that the appearance of new pattern of leasing-in land by relatively better-off landed farmers to increase the farm size from owners of small pieces of land as observed by Rudra (1992) particularly in the villages having widespread technical change in the form of HYV paddy is unfounded in the sample villages.

It is visualized that the lease contract either annual or biennial with fixed cash per unit area and/ or crop share contract for a particular crop season and/or fixed cash or fixed crop produce contract for a particular crop season are in practice in the sample



villages. It is interesting to note that incidence of annual fixed cash contract and seasonal crop share contract is remarkably higher for backward villages than advanced villages and seasonal fixed cash or fixed crop produce contract more specifically the seasonal fixed crop produce contract in advanced villages is in preponderance while that is completely absent in backward villages.

From the above observation one can aptly come to the contention that with the advancement of agricultural production technology 50:50 crop sharing with a contract for a long uncertain period having no participation of the landowner in crop production costs have been changed by 50:50 crop sharing for a long period contract with cost participation in seed, and manure/fertilizer by the landowner with the introduction of HYV technology and thereafter that has been changed in annual/biennial fixed cash contract and crop share contract for a particular crop season in lieu of long term contract. It is also revealed by comparing the pattern of lease contract between backward and

advanced villages that fixed crop produce contract for a particular season is an emerging trend of lease contract with the growth of agriculture.

Two types of crop sharing with cost sharing for seasonal contract with respect to different crops as shown in Table 1 indicates that both 1:1 crop share with 1:1 cost share and 2:1 crop share with 1:0 cost share are by and large equally prevalent for seasonal crops like jute, potato, summer rice in backward villages while the later is noted absent in advanced villages. It is also noticed that seasonal crop share lease contract in case of winter rice is absent in advanced villages while that for winter vegetables like cauliflower is present as against its absence in the backward villages. It indicates that the seasonal crop contract is being extended toward paying crops like cauliflower with the spread of HYV technology. From this observation one can reasonably raise question whether 1:1 crop share with 1:1 cost share for seasonal contract is preferable to 2:1 crop share with 1:0 cost share with the advancement of technology.



Table 1: Frequency Distribution of Crops grown showing Fixed Produce Contract and Different Crop Share with Cost Share.

Crop	Fixed cash contract with Cent per cent cost borne by tenant	Fixed crop contract (4.8 q/acre) with cent per cent cost borne by tenant	Fixed crop contract (3.6-4.2 q/acre) with cent per cent cost borne by tenant	1:1 crop share with 1:1 cost share (Tenant: owner)	2:1 crop share with 1:0 cost share (Tenant: owner)	Total Cases	
						No	%
(1)	(2)	(3)	(4)	(5)	(6)	(7)	8
Backward Villages							
Winter rice	11	-	-	5	5	21	2.81
Jute	11	-	-	5	5	21	32.81
Potato	7	-	-	1	5	13	20.31
Summer rice	1	-	-	1	1	3	4.69
Mustard	1	-	-	1	1		34.69
Wheat	3	-	-	-	-	3	4.69
Total	34 (53.12)	-	-	13 (20.31)	17 (26.57)	64	100.0
Advanced Villages							
Winter rice	4	--	--	--	-	4	7.54
Jute	--	--	--	2	-	2	3.77
Potato	5	--	--	5	-	10	18.87
Summer rice	5	8	16	2	-	31	58.50
Cauliflower	--	--	--	5	-	5	9.43
Banana	1	--	--	--	-	1	1.89
Total	15 (28.30)	8 (15.10)	16 (30.19)	14 (26.41)	-	53	100.0
Combined							
Winter rice	15	-	-	5	5	25	21.37
Jute	11	-	-	7	5	23	19.66
Potato	12	-	-	6	5	23	19.66
Summer rice	6	8	16	3	1	34	29.06
Wheat	3	-	-	-	-	3	2.56
Mustard	1	-	-	1	1	3	2.56
Cauliflower	-	-	-	5	-	5	4.27
Banana	1	-	-	-	-	1	0.86
Total	49 (41.88)	8 (6.84)	16 (13.67)	27 (23.08)	17 (14.53)	117	100.0

Figures in parentheses indicate percentage of the respective total.



On the basis of village survey data one may, therefore, reasonably conclude that annual or long term tenurial arrangement of crop share with cost share has been changed into annual fixed cash contract and/ or seasonal crop share with cost share and/or seasonal fixed crop produce contract with the growth of agriculture. Now the question comes who are the looser and who are gainers of the two parties: landowners or tenants due to observed change in the pattern of lease contract.

It apparently conforms to the observation of win-win situation by Haque and Kiron (1974) both for

landowner and tenant in the context of West Bengal agriculture but on the basis of following discussion it unveils the win-win situation with a bent towards landowner. It is interesting to note that two types of fixed crop produce contract are only prevalent for summer rice in advanced villages. In advanced villages the crop summer rice is also grown under 1:1 crop cost sharing arrangement but the frequency of the former contract is remarkably higher. It is also revealed that tenants' return under fixed crop produce contract for summer rice is exceedingly higher as compared to that of 1:1 crop and cost sharing system (Table 2).

Table 2: Cost and Return of Summer Rice grown by the Tenant on Seasonal Fixed Produce Contract basis in the Advanced Villages (Rs./acre).

Crop	Frequ- ency	Total material cost	Total labor cost	Total prime Cost (Cost D)	Gross return	Tenant' return with cent per cent cost borne by the tenant minus landowner's share	Landowner's return with cent per cent cost borne by the tenant
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Landowner's share : 3.6-4.2 q/acre							
Summer rice	16	5281.78	4137.70	9419.48	13392.87	1582.75	2390.44
Landowner's share : 4.8 q/acre							
Summer rice	8	5376.47	4026.35	9402.82	13609.60	899.47	3307.31



Table 3 shows that if the tenants' net returns per acre per annum with alternative production possibilities (crop sequences) are calculated ignoring the imputed value of family labour at market wage rate the earning position of tenants for any type of lease contract becomes reasonable both in backward and advanced villages. From this observation one can aptly assert that under annual or seasonal lease system the tenants' family labour is not being remunerated even with the spread of HYV technology.

Table 3: Changing Tenant's Return (Rs./acre/annum) with Changing Opportunity Cost of Family Labour under Alternative Lease Contract.

Crop Sequence	Tenant's Return Over Cost A ₁ Exclusive of Land Revenue					
	Under annual fixed cash land lease contract		Under annual land lease with 1:1 crop and cost share		Under seasonal crop lease with 1:1 crop and cost share	
	Cost of family labour	Net return	Cost of family labour	Net return	Cost of family labour	Net return
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Backward Villages						
Winter rice-Fallow-Jute	3413.37	4622.70	3413.37	3939.39	3707.72	4235.31
Fallow-Potato-Jute	3792.95	7172.39	3792.95	4274.61	4317.14	4820.59
Winter rice-Potato-Fallow	2587.27	6821.11	2587.27	4577.27	3000.58	4841.22
Winter rice-Potato-Jute	4864.15	10106.66	4864.15	6493.38	5512.72	6948.56
Winter rice-Potato-Summer rice	3786.58	10564.30	3786.58	6767.69	4668.08	7282.27
Winter rice-Mustard-Jute	4415.70	4258.37	4415.70	4248.87	4961.46	4542.05
Advanced Villages						
Fallow-Potato-Summer rice	2918.00	13009.76	2918.00	8671.88	2989.85	9018.49
Combined						
Winter rice-Fallow-Jute	3413.37	4622.70	3413.37	3939.39	3707.72	4235.31
Fallow-Potato-Jute	3792.95	7172.39	3792.95	4274.61	4317.14	4820.59
Winter rice-Potato-Fallow	2587.27	6821.11	2587.27	4577.27	3000.58	4841.22
Winter rice-Potato-Jute	4864.15	10106.66	4864.15	6493.38	5512.72	6948.56
Winter rice-Potato-Summer rice	3786.58	10564.30	3786.58	6767.69	4668.08	7282.27
Winter rice-Mustard-Jute	4415.70	4258.37	4415.70	4248.87	4961.46	4542.05
Fallow-Potato-Summer rice	2918.00	13009.76	2918.00	8671.88	2989.85	9018.49



The observed trend of surrendering land by the bargadars in exchange of getting ownership of a part of land thereof is economically beneficial to the tenants under present bargaining position of tenants vis-à-vis landowners with the growth of agriculture through more and more adoption of HYV technology.

The study found that there is no significant difference in fixed resource position between the owner-cum-tenant and pure owner operator and between owner-cum-lesser or lessee-cum-lesser and pure owner operator is also visualized. This observation along with the observed trend of land surrendering of the bargadars as stated earlier keeping in view one may safely conclude that one who presently a owner-cum-tenant may be a pure owner operator in foreseeable future through the process of land surrendering. Therefore, all categories of farm families may aptly be termed as enterprising farmers.

Conclusion:

The present study is devoted to examine the changes in tenancy relations and its effects on income position of the tenants vis-à-vis the landowners in consequential with the changes in agrarian technology since the introduction of high yielding varieties. It is revealed that agrarian production in the sample area is predominated by self cultivation, only 17.50 per cent of total farm households are belonging to the category of tenant cultivators either as owner-cum-tenant or lessee-cum-lesser; existence of pure tenant cultivator is not

observed. A change in the pattern of tenancy contract with the change in production technology since the introduction of HYV is visualized. From the entire analysis it comes out that with the advancement of technology, the bargaining position of the landowners vis-à-vis tenants in land lease market has been gradually favorable to the landowners and the security of tenure ensuring of getting ownership for a part of leased-in land and thereby possibility of increasing income by the tenants seems to be a compromising settlement between tenants and landowners.

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