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Technological change and its impact on tenancy relation in West Bengal

B. C. Rudra✉

Malda Krishi Vigyan Kendra, Uttar Banga Krishi Viswavidyalaya, Malda, India.

✉Corresponding author: bankimrudra@rediffmail.com

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ABSTRACT

An attempt has been made to examine the changes in tenurial contracts in consequential to the changes in agricultural production technology in Cooch Behar district of West Bengal where a dramatic change in agricultural production scenario has been witnessed over last one and half decade. The study has been made 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.

Keywords: Agrarian technology, technological change, tenancy relation, tenants, landowners, bargadars

A remarkable change has been experienced in the agrarian production technology, crops and cropping pattern for introduction of HYV technology in crop production and this change was reflected in terms of yield per unit area particularly for cereal crops like rice and wheat during late sixties in West Bengal. While for maize and small millets it is not found notable. Improvement of yield for other crops like jute, potato, pulses, oilseeds, vegetable and spice crops was found by and large unchanged till late eighties or early nineties. The yield performance of vegetable and spice crops has showed a great leap from late eighties or early nineties due to introduction of hybrid technology. A remarkable change has also been noticed for pulses, oilseed, jute, sugarcane and potato in terms of yield per unit area from early nineties. Therefore, the entire period extending from late sixties to 2002-03 is reasonably demarkable into two phases. 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. The study, therefore, purports to examine the changes of agricultural production technology, crops and cropping pattern and its impact 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.

Table 1. Distribution of Operators according to Size Group and their Association with Land Lease Market.

Class of landowners by size group of operational holding (in acre)	No. of households entering into the land lease market						No. of households not entering into the land lease market			Total (4+7+10)
	Leasing-in land			Leasing-out land			Pure owner operator	Owner -cum- labourer	Total	
	Owner -cum- tenant	Pure tenant	Total	Owner -cum- lessor	Lessee -cum- lessor	Total				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Backward Villages										
Upto 1.50	9 (40.90) (64.28)	--	9 (40.90) (64.28)	1 (4.56) (6.67)	--	1 (4.56) (5.90)	4 (18.18) (10.81)	8 (36.36) (66.67)	12 (54.54) (24.48)	22 (100.0) (27.50)
1.51 – 3.00	5 (18.0) (35.72)	--	5 (18.0) (35.72)	6 (21.43) (40.0)	2 (7.14) (100.0)	8 (28.57) (47.05)	11(39.28) (29.73)	4 (14.29) (33.33)	15 (53.57) (30.61)	28 (100.0) (35.0)
3.01 - 4.50	--	--	0.0	4 (25.0) (26.67)	--	4 (25.0) (23.53)	12 (75.0) (32.43)	--	12 (75.0) (24.48)	16 (100.0) (20.0)
4.51-6.00	--	--	0.0	2 (25.0) (13.33)	--	2 (25.0) (11.76)	6 (75.0) (16.22)	--	6 (75.0) (12.24)	8 (100.0) (10.0)
6.01 and above	--	--	0.0	2 (33.33) (13.33)	--	2 (33.33) (11.76)	4 (66.67) (10.81)	--	4 (66.67) (8.19)	6 (100.0) (7.50)
All classes	14(17.50) (100.0)	--	14 (17.50) (100.0)	15(18.75) (100.0)	2 (2.50) (100.0)	17(21.25) (100.0)	37(46.25) (100.0)	12 (15.0) (100.0)	49 (61.25) (100.0)	80 (100.0) (100.0)
Advanced Villages										
Upto 1.50	1 (14.28) (11.11)	--	1(14.28) (11.11)	--	1 (14.28) (33.34)	1 (14.28) (7.14)	--	5 (71.44) (38.46)	5 (71.44) (8.77)	7 (100.0) (8.75)
1.51 – 3.00	4 (14.28) (44.45)	--	4(14.28) (44.45)	3 (10.71) (27.27)	1 (3.57) (33.33)	4 (14.28) (28.56)	12(42.86) (27.27)	8 (28.57) (61.54)	20 (71.44) (35.08)	28 (100.0) (35.0)
3.01 - 4.50	3 (11.11) (33.33)	--	3(11.11) (33.33)	5 (18.52) (45.46)	1 (3.70) (33.33)	6 (22.22) (42.88)	18(66.67) (40.90)	--	18 (66.67) (31.58)	27 (100.0) (33.75)

4.51-6.00	1 (9.09) (11.11)	--	1 (9.09) (11.11)	1 (9.09) (9.09)	--	1 (9.09) (7.14)	9 (81.82) (20.45)	--	9 (81.82) (15.79)	11 (100.0) (13.75)
6.01 and above	--	--	--	2 (28.57) (18.18)	--	2 (28.57) (14.28)	5 (71.43) (11.38)	--	5 (71.43) (8.78)	7 (100.0) (8.75)
All classes	9 (11.25) (100.0)	--	9(11.25) (100.0)	11(13.75) (100.0)	3 (3.75) (100.0)	14(17.50) (100.0)	44 (55.0) (100.0)	13 (16.25) (100.0)	57 (71.25) (100.0)	80 (100.0) (100.0)
Combined										
Upto 1.50	10 (34.48) (43.48)	--	10(34.48) (43.48)	1 (3.45) (3.86)	1 (3.45) (20.00)	2 (6.90) (6.45)	4 (13.79) (4.93)	13(44.83) (52.00)	17 (58.62) (16.04)	29 (100.0) (18.12)
1.51 – 3.00	9 (16.07) (39.13)	--	9 (16.07) (39.13)	9 (16.07) (34.61)	3 (5.36) (60.00)	12(21.43) (38.71)	23(41.07) (28.40)	12(21.43) (48.00)	35 (62.50) (33.02)	56 (100.0) (35.00)
3.01 - 4.50	3 (6.98) (13.04)	--	3 (6.98) (13.04)	9 (20.93) (34.61)	1 (2.32) (20.00)	10(23.25) (32.26)	30(69.77) (37.04)	--	30 (69.77) (28.30)	43 (100.0) (26.87)
4.51-6.00	1 (5.26) (4.35)	--	1 (5.26) (4.35)	3 (15.79) (11.54)	--	3 (15.79) (9.68)	15(78.95) ()18.52)	--	15 (78.95) (14.15)	19 (100.0) (11.87)
6.01 and above	-	--	--	4 (30.77) (15.38)	--	4 (30.77) (12.90)	9 (69.23) (11.11)	--	9 (69.23) (8.49)	13 (100.0) (8.14)
All classes	23(14.39) (100.0)	--	23(14.39) (100.0)	26(16.25) (100.0)	5 (3.12) (100.0)	31(19.37) (100.0)	81(50.62) (100.0)	25(15.62) (100.0)	106(66.24) (100.0)	160(100.0) (100.0)

Figures in parentheses indicate percentage of the respective total.

Methodology

The data for the present study have been collected both from primary and secondary sources. Primary data, quantitative as well as qualitative, have been collected by interviewing the selected sample respondents with the help of suitably designed schedule and questionnaire. Secondary data, cross sectional and time series, have been gathered from different official sources for the present study. Keeping the objectives of the study in view, two sets of primary data have been collected. One set is comprised of detailed agricultural information from individual farm households both in physical and money terms with reference to the crop year 2003-04. Some relevant qualitative information from the sample farm households through opinion survey are also gathered into. The second set of data relates to detailed information about the agricultural labourers in the study area. The relevant qualitative information are also accumulated in this set of data. 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.

Concepts of Cost and Profitability used in Farm Management Reports and Other Cost Studies:

There are four concepts of cost, namely, cost A_1, cost A_2, cost B and cost C which has been widely used in farm management and other cost studies conducted in India. The cash and kind expenses (or out of pocket expenses) actually incurred by an owner operator is defined as Cost A_1. Thus, this cost includes the cash and kind expenditure incurred on hired human labour, owned and hired bullock labour, farm produced or purchased seeds, farm produced or purchased manures, fertilizers, micronutrients, insecticides and fungicides, irrigation, land revenue and cesses, depreciation on non-land fixed capital, interest on working capital, and interest on crop loans. Cost A_2 comprises of Cost A_1 plus rent paid for leased-in land. This concept represents the out of pocket expenses incurred by a tenant operator. Cost B is obtained by adding Cost A_1 or A_2 as the case might be, to the imputed value of rent for owned land and interest on non-land fixed capital. Cost C is derived by adding to cost B, the imputed value of labour of the operator himself and his family. It is the most comprehensive cost and represents the estimate of farm cost when farming is considered to be a strictly commercial proposition.

Four different concepts of farm income or profitability, namely, farm business income, family labour income, net income or profit, and farm investment income have been derived from the above cost concepts. Farm business income is defined as

Table 2: Distribution of Tenants' Households and Seasonal Lease according to Nature of Contract.

Type of villages	Fixed cash contract				Seasonal contract		
	Annual		Biennial				
	No. of households	Fixed cash per acre (₹)	No. of households	Fixed cash per acre (₹)	Fixed Cash	Fixed Crop produce	crop share
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Backward Villages	12	5500-9000	2	7500-10000	-	-	30 (16)
Advanced Villages	5	10500-18000	-	-	1 (1)	24 (12)	14 (7)
Combined	17	5500 - 18000	2	7500-10000	1 (1)	24 (12)	44 (23)

Figures in parentheses indicate number of households.

the surplus of gross income over Cost A_1 (or Cost A_2 in case of tenant operator). Family labour income is obtained by deducting cost B from gross income. Net income is defined to represent the excess of gross income over cost C. Finally, farm investment income is obtained by adding imputed rent of owned land and interest on owned fixed capital to net income or profit (or loss) defined above.

Concepts of Cost and Profitability adopted in the Present Study

The conceptual framework of prime cost i.e. cost D was used in the study which has already been used by Panse, V.G. and Bokil, S.D. (1966) and also by the Madras Report for the Triennium 1954-55 to 1956-57. In conformity with Madras Report and authors noted above, prime cost in the present study designated as cost D (Krishnaji, 1975)has been defined as the cost incurred on account of total labour input, seed, manures and fertilizers, repairs and depreciation of implements and machinery, and irrigation charges. Panse and Bokil also justify the use of this concept for the principal reason that it represents the physical requirements in the production of a crop. It is not identical with cost A_1 as used in farm management studies. As land revenue and cesses are fixed to the farm as a whole so also fixed for an individual crop as well and hence should not be included in the prime cost. Madras report also clarifies that though family labor can be considered as a component of fixed cost from the point of view of the farm as a whole, it partakes of the character of variable cost like the cost of hired labour, fertilizer or seed if looked at from the stand point of individual enterprises. The report reiterates that in view of inter-crop variation in the requirement of family labour and the fact that decision to grow one crop involves the rejection of some alternative enterprises including in them even subsidiary occupation, family labour would be taken into consideration as an item of cost if the alternatives available are to be properly assessed. From this point of view, cost A_1 can not truly represent the prime cost. Rao (1965) also has pointed out that rent and tax payments are fixed for each type of land regardless of the nature of crops to be grown. On this ground rent and tax payments (for tenant operator) should not be included in the prime cost. Hence, Cost A_2 can not be the substitute of prime cost for the tenant operators. On the other hand, two constituents of Cost A_1 as defined by Farm Management Studies, namely, interest on owned working capital and interest on crop loans have not been considered in computing Cost A_1 in the present study. Estimation of interest on the working capital required the computation of interest on the working expenses incurred at different points of time during the growing period of the individual crops and this involves arbitrariness and difficulty in estimation. Interest on crop loan has not been considered for the present study as most of the sample households belonging to the group of owner operator have not taken loan and the tenant operators have reportedly taken loan from their respective owners and the agricultural input suppliers without any interest. Expenditure incurred by depreciation on implements and machinery for a individual crop is difficult to estimate because of arbitrariness to be involved in calculating the extent of use of implements and machinery on individual crops grown. The item land revenue and cesses paid by the land owner under study are reported to be very small in quantity and most of the households could not properly state the amount paid. Thus cost items like hired human labour, bullock labour, seed, manures and fertilizers, insecticides and fungicides, irrigation, have been taken into consideration in constituting Cost A_1 for the present study. Therefore, Cost D mentioned above can be defined as Cost A_1 considered in the present study exclusive of land revenue and cesses plus the imputed value of family labour.

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

$$Y_j = \sum_{k=1}^{80} YjkAjk$$

$$\sum_{k=1}^{80} Ajk$$

Estimate of cost or yield for the two clusters combined

$$Y = \sum_{j=1}^{2} YjAj$$

$$\sum_{j=1}^{2} Aj$$

Where,

$j = 1, \ldots 2$

$k = 1, 2, \ldots 80$

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

A_{jk} is the area under individual crop

Results and Discussion

To examine the impact of technological change on agrarian relations a cluster of three villages both from agriculturally backward and advanced areas have been selected from a northern district 'Cooch Behar'. 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 crop 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. In North Bengal with particular reference to Jalpaiguri and Cooch Behar district the 50:50 crop share (*Adhiari*) with bearing of full cost by the tenant and the incidence of tenurial arrangement for uncertain long period was the principal pattern of tenancy before the introduction of HYV technology. Presently, the HYV technology has been widely adopted in this part of North Bengal not only in case of paddy and wheat but for selected vegetable crops like tomato, cabbage, cauliflower and cucurbits. Now the question comes how the pattern of tenancy contract has been changed with more and more adoption of HYV technology in this part of North Bengal. To examine this probe distribution of sample households according to tenurial status and size class and the present pattern of lease contract both in backward and advanced villages are summarized in Table 1 and Table 2 respectively.

It appears that 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% of the total households in backward villages and 15% 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 (Table 1). Thus 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 (Table 2). It has been found that annual fixed cash contract and seasonal crop share contract are remarkably higher for backward villages than advanced villages. The 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. Therefore, one may aptly come to the conclusion that the 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. Thereafter, it 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. The pattern of crop sharing of seasonal lease contract and its association with cost sharing in both types of villages is cited in Table 3. In advanced villages two types of crop sharing with cost sharing i.e. 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. The later i.e. 2:1 crop share with 1:0 cost share for the said seasonal crops is 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. The tenurial arrangement of annual or long term crop sharing with cost sharing was observed by Rudra (1992), Bhowmik (1993), Chattopadhyay (1996), and Som (2001). Chattopadhyay (1996) based on village survey data from terai plains of North Bengal collected in early 1980s observed three types of crop sharing arrangement as 50:50, 75:25 and 60:40 in which 50:50 crop share with proportional cost share is predominating. He has not encountered with a single case of fixed cash or fixed produce contract during the said period. Bhowmik (1993) also observed in 1986-87 village survey data from Midnapore district of Southern Bengal a preponderance of 50:50 crop sharing with cost sharing under annual or long term contract. 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.

Before dealing with the above question it is relevant to examine whether there is difference in return per unit area between that obtained by an owner operator and a tenant. Crop-wise return per acre of tenant operated land under two different crop and cost sharing and under fixed produce contract and that of owner operated land are presented by Table 4. No remarkable differencehas been found in return per acre between the tenant operated and owner operated land irrespective of any type of lease contract, crop share with cost share or fixed produce contract. This is in conformity with the findings of Haque (1999) under West Bengal condition. The productivity difference between owner operated land and tenant operated land has also been removed by Haque (1999) due to security of the tenure ensured in West Bengal.

On the basis of the observed invariability in return per unit area of the crops grown by the tenant operator and owner operator under varying lease contract one can reasonably compare the relative gain or loss of different seasonal crop lease contract on the part of the tenant or landowner. Tenants' and landowners' return per acre of the crops under 1:1 crop share with 1:1 cost share and 2:1 crop share with 1:0 cost share are shown in Table 5 and Table 6 respectively. In view of absence of 2:1 crop share with 1:0 cost share lease contract in advanced villages the comparison is made between two lease contracts available in backward villages. It reveals from the above tables that 2:1 crop share with 1:0 cost share is more paying to the tenants for the crops winter rice and jute. These two crops are most frequently grown with seasonal lease contract under crop-cost sharing system. The crop potato is also found to be grown under seasonal lease contract with both type of crop-cost sharing arrangement.

Table 3. Frequency Distribution of Crops grown showing Fixed Produce Contract and Different Crop Share with Cost Share.

Crop	Fixed cash contract with Cent% cost borne by tenant	Fixed crop contract (4.8 q/ acre) with cent% cost borne by tenant	Fixed crop contract (3.6-4.2 q/ acre) with 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
(1)	(2)	(3)	(4)	(5)	(6)	(7)
BACKWARD VILLAGES						
Winter rice	11	-	-	5	5	21 (32.81)
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	3 (4.69)
Wheat	3	-	-	-	-	3 (4.69)
Total	34 (53.12)	-	-	13 (20.31)	17 (26.57)	64 (100.0) (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) (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) (100.0

Figures in parentheses indicate percentage of the respective total.

Table 4: Gross Returns of different crops grown under Tenant Operated Land with varying Lease Contract and Gross Return of Owner Operated Land (₹ /acre).

Crop	1:1 crop share with 1:1 share of material cost and entire labour cost borne by the tenant			2:1 crop share with total cost of cultivation borne by the tenant			3.6-4.2 q/acre fixed produce contract where total cost of cultivation borne by tenant			4.8 q/acre fixed produce contract where total cost of cultivation borne by tenant			Owner operated land		
	Backward villages	Advanced villages	Combined	Backward villages	Advanced villages	Combined	Backward villages	Advanced villages	Combined	Backward villages	Advanced villages	Combined	Backward villages	Advanced villages	Combined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Winter Rice	6988.68	-	6988.68	8103.30	-	8103.30	-	-	-	-	-	-	7465.90	-	7465.90
Jute	8198.70	10607.60	8886.95	8211.25	-	8211.25	-	-	-	-	-	-	7776.85	11002.45	9529.03
Potato	21383.70	33964.74	31867.90	21387.46	-	21387.46	-	-	-	-	-	-	26745.45	29360.83	28166.15
Summer Rice	11386.80	13415.20	12739.06	11320.70	-	11320.70	-	13392.87	13392.87	-	13609.60	13609.60	10789.61	13757.99	12402.06
Mustard	4728.80	-	4728.80	4742.00	-	4742.00	-	-	-	-	-	-	5234.71	-	5234.71
Cauliflower	-	25650.00	25650.00	-	-	-	-	-	-	-	-	-	-	26872.06	26872.06

Table 5: Cost and Return of the Individual Crops grown by the Tenant on Seasonal Contract basis with 1:1 Crop Share and 1:1 Cost Share in the Backward and Advanced Villages (Rs/acre).

Crop	Frequ-ency	Total material cost	Total labor cost	Total prime Cost (Cost D)	Gross return	Tenant' return (1/2 of total produce) with 50% of material cost and total labour cost borne by the tenant	Landowner's return (1/2 of total produce) with 50% of material cost borne by the landowner
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Backward Villages							
Winter rice	5	378.42	2372.74	2751.16	6988.68	932.39	3305.13
Jute	5	682.98	4162.86	4845.84	8198.70	- 404.80	3758.06
Potato	1	11026.00	4270.60	15296.60	21383.70	908.25	5178.85
Summer rice	1	3821.70	3009.00	6830.70	11386.80	773.55	3782.55
Mustard	1	1702.00	2460.00	4162.00	4728.80	- 947.00	1513.40
Advanced Villages							
Jute	2	1607.12	6282.78	7889.90	10607.60	- 1782.54	4500.24
Potato	5	12197.00	4887.75	17084.75	33964.74	5996.12	10883.87
Summer rice	2	5226.86	4061.65	9288.51	13415.20	32.52	4094.17
Cauliflower	5	5772.00	5673.75	11445.75	25650.00	4265.25	9939.00
Combined							
Winter rice	5	378.42	2372.74	2751.16	6988.68	932.39	3305.13
Jute	7	947.02	4768.55	5715.57	8886.95	- 798.60	3969.96
Potato	6	12001.83	4784.90	16786.73	31867.90	5148.13	9933.03
Summer rice	3	4758.47	3710.77	8469.24	12739.06	279.52	3990.30
Mustard	1	1702.00	2460.00	4162.00	4728.80	- 947.00	1513.40
Cauliflower	5	5772.00	5673.75	11445.75	25650.00	4265.25	9939.00

Table 6: Cost and Return of the Individual Crops grown by the Tenant on Seasonal Contract basis with 2:1 Crop Share and 1:0 Cost Share in the Backward and Advanced villages (Rs/acre).

Crop	Frequ-ency	Total material cost	Total labor cost	Total prime Cost (Cost D)	Gross return	Tenant' return (2/3 of total produce) with total material cost and total labour cost borne by the tenant	Landowner's return (1/3 of total produce) with cent% cost borne by the tenant
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Backward Villages							
Winter rice	5	579.28	2557.60	3136.88	8103.30	2292.33	2674.09
Jute	5	689.40	4195.60	4885.00	8211.25	616.54	2709.71
Potato	5	11024.47	4270.00	15294.47	21387.46	- 964.87	7057.86
Summer rice	1	3795.56	3016.80	6812.36	11320.70	772.51	3735.83
Mustard	1	1723.00	2432.60	4155.60	4742.00	- 978.46	1564.86
Advanced Villages							
No such contract is found							
Combined							
Winter rice	5	579.28	2557.60	3136.88	8103.30	2292.33	2674.09
Jute	5	689.40	4195.60	4885.00	8211.25	616.54	2709.71
Potato	5	11024.47	4270.00	15294.47	21387.46	- 964.87	7057.86
Summer rice	1	3795.56	3016.80	6812.36	11320.70	772.51	3735.83
Mustard	1	1723.00	2432.60	4155.60	4742.00	- 978.46	1564.86

The crop potato with 2:1 crop share and 1:0 cost share is more remunerative to the landowners in contrast to that of 1:1 crop share with 1:1 cost share. Therefore, the tenant growing potato under this crop and cost sharing arrangement is in loss if family labour is remunerated at prevailing market wage rate. But, the tenant's position in growing potato with 1:1 crop and 1:1 cost share is found to be better off because of the fact that cost of material items for potato is quite high even more than double of summer rice or cauliflower, the full amount of which is to be borne by the tenant. For other two crops namely summer rice and mustard no significant difference in returns for either tenants or landowners is recorded. The absence of 2:1 crop share with 1:0 cost share for seasonal crop lease in advanced villages indicates a trend of its abolishing with the growth of agriculture. It implies that improvement in tenants' income brought about in case of winter rice and jute by changing from 1:1 crop share with 1:1 cost share to 2:1 crop share with 1:0 cost share through bargaining between owner and tenant has been eroded in the areas where growth of agriculture is relatively higher. It is also noted that the 1:1 crop share with 1:1 cost share is in vogue for jute, potato and summer rice in both backward and advanced villages. It is interesting to state that namely winter rice is not found to be grown with 1:1 crop and cost share in advanced villages while the new vegetable crop like cauliflower is reported to be grown under 1:1 crop and cost sharing contract. It may, therefore, be concluded that 1:1 crop and cost sharing arrangement for seasonal crop lease contract is acceptable for both the tenant and the landowner with expansion of capital intensive crops like potato, summer rice and the vegetable namely cauliflower. 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

Table 7. Cost and Return of Summer Rice grown by the Tenant on Seasonal Fixed Produce Contract basis in the Advanced Villages (₹ /acre).

Crop	Frequency	Total material cost	Total labor cost	Total prime Cost (Cost D)	Gross return	Tenant' return with cent% cost borne by the tenant minus landowner's share	Landowner's return with 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

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 7). This trend of higher incidence of fixed produce contract for summer rice indicates a mutually accepted crop lease arrangement between tenants and landowners through bargaining. This finding of obtaining higher return by the tenant under fixed produce contract as compared to crop-cost sharing arrangement is corroborative with the finding of Haque (1996) in the context of West Bengal agriculture.

Now let us switch over to examine the relative position of the tenant and the landowner under annual or biennial fixed cash land lease contract vis-à-vis annual land lease contract with 1:1 crop and cost sharing arrangement. Tenants' and landowners' net return per acre per year under annual and/or biennial fixed cash land lease and under 1:1 crop and cost share are demonstrated in Table 8. In this table net returns of tenants and landlords under annual land lease contract have been worked out assuming the unchanged cost and return position as under fixed cash lease system. Considering both annual and biennial fixed cash land lease contract the crop sequence or crops grown in different agricultural season in a year are accounted for in calculating costs and return per year per acre as shown by Table 8. It appears from Table 8 that the incidence of annual fixed cash lease contract is declining with the growth of agriculture as the number of cases under annual and/or biennial fixed cash lease contract have drastically declined in advanced villages in comparison with that of backward villages. It is an indication of gradual elimination of annual and/or biennial fixed land lease contract with the growth of agriculture. By comparing col. 8 with col. 10 and col. 9 with col. 11 it has been clearly elicited that tenants' return is relatively higher under annual and/or biennial fixed cash land lease contract as compared to that under 1:1 crop-cost sharing system and the landowners' net return under 1:1 crop-cost sharing is found to be higher than that under annual and/or biennial fixed cash land lease contract. As the tenant is to bear the full cost of cultivation to obtain total produce of the crops grown in different season in a year he has also to bear production risk and the risk of timely availability of inputs while the landowner in their counterpart does not bear either of the risks. This is the possible reason for which the annual fixed land lease contract has become reportedly acceptable to both tenants and landowners.

Now one may ask in this context as to why annual and/or biennial fixed cash land lease contract is declining with the growth of agriculture instead seasonal crop lease contract with either crop and cost share or fixed produce contract are emerging. To answer this question cost and return position of the crops grown in different seasons within a year considering alternative crop sequences followed under annual and/or biennial fixed cash lease contract and net return of tenant and landowner with respect to varying lease contract have been worked out therefrom, and presented in Table 9. It reveals

Table 8: Cost and Return of Tenants and Landowners

according to Crop Sequences followed with Cent% cost borne by the Tenants under Annual and Biennial Fixed Cash Contract in Backward and Advanced Villages (₹ /acre/annum).

Crop Sequence	Freq-uency	Total material cost	Total Labour cost	Total Prime Cost (cost D)	Gross Return	Tenant's Gross return	Tenant's Net return After deducting cash rent and cost D	Landowner's net return (cash rent)	Tenant's net return (1/2 of total produce) with 50% of material cost and full labour cost borne by the tenant	Landowner's return (1/2 of total produce) with 50% of material cost borne by the landowner
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Backward Villages										
Annual Fixed Cash Contract										
Winter rice-Fallow-Jute	3	1177.60	6657.30	7834.90	15544.23	15544.23	1209.33	6500.00	526.02	7183.32
Winter rice-Wheat-Jute	3	3209.41	9068.73	12278.14	20538.02	20538.02	- 573.45	8833.33	- 404.43	8664.30
Fallow-Potato-Jute	1	11860.70	8408.50	20269.20	29644.25	29644.25	3875.05	5500.00	483.28	8891.78
Winter rice-Potato-Fallow	1	11548.00	6920.50	18468.50	29369.00	29369.00	4233.84	6666.66	1990.00	8910.50
Winter rice-Potato-Jute	1	12333.72	11037.10	22370.82	37547.35	37547.35	6076.53	8100.00	1569.72	12606.82
Winter rice-Potato-Summer rice	1	15393.28	9815.50	25208.78	40986.50	40986.50	6777.72	9000.00	2981.11	12796.61
Winter rice-Mustard-Jute	1	2997.73	9176.32	12174.05	21016.72	21016.72	- 157.33	9000.00	- 166.83	9009.49
Biennial Fixed Cash Contract										
Winter rice-Potato-Jute	1	12361.20	11031.00	23392.20	37800.70	37800.70	4408.50	10000.00	1688.75	12719.75
Fallow-Potato-Jute	1	11745.40	8439.00	20184.40	29577.00	29577.00	1892.60	7500.00	476.80	8915.80
Advanced Villages										
Annual Fixed Cash Contract										
Fallow-Potato-Summer rice	1	17726.60	9084.00	26810.26	47402.36	47402.36	10091.76	10500.00	5753.88	14837.88
Winter rice-Potato-Summer rice	4	18530.17	12271.33	30801.50	56626.36	56626.36	11949.86	13875.00	6776.76	19048.09

Note: One crop sequence has been ignored due to improper information provided by the respondent

Table 8 Contd.

Crop Sequence	Freq-uency	Total material cost	Total Labour cost	Total Prime Cost (cost D)	Gross Return	Tenant's Gross return	Tenant's Net return After deducting cash rent and cost D	Land-owner's net return (cash rent)	Tenant's net return (1/2 of total produce) with 50% of material cost and full labour cost borne by the tenant	Landowner's return (1/2 of total produce) with 50% of material cost borne by the landowner
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Combined										
Annual Fixed Cash Contract										
Winter rice-Fallow-Jute	3	1177.60	6657.30	7834.90	15544.23	15544.23	1209.33	6500.00	526.02	7183.32
Winter rice-Wheat-Jute	3	3209.41	9068.73	12278.14	20538.02	20538.02	- 573.45	8833.33	- 404.43	8664.30
Fallow-Potato-Jute	1	11860.70	8408.50	20269.20	29644.25	29644.25	3875.05	5500.00	483.28	8891.78
Winter rice-Potato-Fallow	1	11548.00	6920.50	18468.50	29369.00	29369.00	4233.84	6666.66	1990.00	8910.50
Winter rice-Potato-Jute	1	12333.72	11037.10	22370.82	37547.35	37547.35	6076.53	8100.00	1569.72	12606.82
Winter rice-Potato-Summer rice	5	17902.80	11780.16	29682.96	53498.39	53498.39	10915.43	12900.00	6017.63	17797.80
Winter rice-Mustard-Jute	1	2997.73	9176.32	12174.05	21016.72	21016.72	- 157.33	9000.00	- 166.83	9009.49
Fallow-Potato-Summer rice	1	17726.60	9084.00	26810.26	47402.36	47402.36	10091.76	10500.00	5753.88	14837.88
Biennial Fixed Cash Contract										
Winter rice-Potato-Jute	1	12361.20	11031.00	23392.20	37800.70	37800.70	4408.50	10000.00	1688.75	12719.75
Fallow-Potato-Jute	1	11745.40	8439.00	20184.40	29577.00	29577.00	1892.60	7500.00	476.80	8915.80

Note: One crop sequence has been ignored due to improper information provided by the respondent.

Table 9: Tenants' and Landowners' Net Return per acre per annum (in ₹) over Prime Cost (Cost D) under Alternative Lease Contract.

Crop Sequence	Tenants' net return under annual/biennial fixed cash land lease contract	Tenants' net return under annual/ biennial land lease contract with 1:1 crop and cost share considering cost and return position of annual/biennial fixed cash land lease contract	Tenants' net *return under seasonal crop lease with 1:1 crop share and 1:1 cost share	Landowners' net return under annual/biennial fixed cash land lease contract	Landowners' net return under annual/ biennial land lease contract with 1:1 crop and cost share considering cost and return position of annual/biennial fixed cash land lease contract	Landowners' net return under seasonal crop lease with 1:1 crop share and 1:1 cost share	Net return of Pure Owner operator
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Backward Villages							
Winter rice-Fallow- Jute	1209.33	526.02	527.59	6500.00	7183.32	7063.19	6590.05
Fallow-Potato-Jute	3379.44	481.66	503.45	6500.00	8903.79	8936.91	13263.03
Winter rice-Potato-Fallow	4233.84	1990.00	1840.64	6666.66	8910.50	8483.98	15080.64
Winter rice-Potato-Jute	5242.51	1629.23	1435.84	9050.00	12663.28	12242.04	17466.86
Winter rice-Potato-Summer rice	6777.72	2981.11	2614.19	6000.00	12796.61	12266.53	18680.53
Winter rice-Mustard-Jute	- 157.33	- 166.83	- 419.41	9000.00	9009.49	8576.59	7406.48
Advanced Villages							
Fallow-Potato-Summer rice	10091.76	5753.88	6028.64	10500.00	14837.88	14978.04	15202.28
Combined							
Winter rice-Fallow- Jute	1209.33	526.02	527.59	6500.00	7183.32	7063.19	6590.05
Fallow-Potato-Jute	3379.44	481.66	503.45	6500.00	8903.79	8936.91	13263.03
Winter rice-Potato-Fallow	4233.84	1990.00	1840.64	6666.66	8910.50	8483.98	15080.64
Winter rice-Potato-Jute	5242.51	1629.23	1435.84	9050.00	12663.28	12242.04	17466.86
Winter rice-Potato-Summer rice	6777.72	2981.11	2614.19	6000.00	12796.61	12266.53	18680.53
Winter rice-Mustard-Jute	- 157.33	- 166.83	- 419.41	9000.00	9009.49	8576.59	7406.48
Fallow-Potato-Summer rice	10091.76	5753.88	6028.64	10500.00	14837.88	14978.04	15202.28

* Net return of individual crops has been added to obtain net return of the respective crop sequence

from Table 9 by comparing col.(3) and col.(4) that the tenants' return over prime cost under 1:1 crop and cost share in annual/biennial land lease contract under alternative crop sequences would remain by and large unchanged with tenants' net return to be obtained by adding the net returns of the individual crops with 1:1 crop and cost share under seasonal crop lease contract fitted with the respective crop sequences both in backward and advanced villages. Similar revelation is found in case of landowners' net return in annual/biennial land lease contract with 1:1 crop and cost share and that of in seasonal crop lease contract with 1:1 crop and cost share (col.6 and col.7). It indicates that annual/biennial land lease contract with 1:1 crop and cost share is indifferent with the alternative seasonal crop lease contract with 1:1 crop and cost share both for tenant and landowner. But with a careful analysis one can reasonably argue that seasonal crop lease contract is more preferable to the tenant as he is able to minimize crop production risk attributable to two or three seasonal crops grown in a year by choosing seasonal crop lease contract. It is also revealed that annual/biennial fixed cash land lease contract is noted to be remarkably superior to either of the crop-cost sharing arrangement in respect of possibility of earning of the tenants per unit area per annum. The contrary is true in case of possibility of earning of landowners per unit area per annum. Here is the question of bargaining between the tenant and the landowner in choosing type of lease contract. Therefore, the tendency of declining annual/biennial fixed cash land lease contract and prevalence of seasonal crop lease contract as noted earlier is a reflection of increasing bargaining position of the landowners with the growth of agriculture. The fixed produce contract in seasonal crop lease is however superior to crop and cost sharing arrangement as observed by Haque (1996) is also founded only for seasonal crop lease of summer rice, no other crop is found to have fixed produce seasonal lease contract (Table 7). Thus, the tenants have been able to improve his earning position only for summer rice through entering into fixed produce lease contract instead of crop-cost sharing contract with the growth of agriculture.

The foregoing discussion has dealt with the change in the relative earning position of tenants and landowners by changing lease contract without making comparison between the level of earning of tenants and landowners in any lease contract. Now let us turn to the question of relative earning position of tenants and landowners under annual land lease or seasonal crop lease contract. A look to the Table 5 through Table 9 elicits the fact that landowners' earning per unit area is exceeding higher than that of tenants in any type of lease contract, be it the fixed cash land lease contract, 1:1 crop-cost share, 2:1 crop share with 1:0 cost share or fixed produce crop lease contract. And it is also highlighted that the superior income position of the landowner is being strengthened with the spread of improved agricultural production technology as the landowner's earning is recorded always higher in advanced villages in comparison to that in backward villages. Now the question comes how the tenant has been benefited by ensuring the security of tenure in West Bengal as observed by Haque (1999). A temporal analysis of crop sharing arrangement since pre-HYV era reveals that the entire labour input would have been provided by the tenant; in some rare cases (Chattopadhyay, 1996), the bullock labor cost been shared by the landowner. From earlier discussion it has also been elicited that the cost sharing by the landowner has been gradually extended with the introduction of more and more improved crop production technology : from sharing of seed and manure to the sharing of seed, manure and fertilizer and thereafter to seed, manures, fertilizers, irrigation, PP chemicals, etc. incorporating all material items. This has been due to the fact that HYV technology has its inbuilt character of requiring exceedingly higher quantity of manures, fertilizers and other chemicals and the cost of seeds is also remarkably higher for HYV. Thus, the participation of landowner in cost sharing of material items is logical. It is also the fact that high yielding variety itself necessitates higher quantity of labour input which is complementary to the use of above material inputs. But the question of sharing in the cost of additional labour input would never come in the past and also not coming even in the present when there is widespread adoption of HYV technology. It has also come out from the review of the past works and the results of the village survey that the 1:1 crop share with 1:1 cost share of material items like seed, manures and/or fertilizers was predominant at the initial adoption phase of HYV technology when those material items were principally used. And,

Table 10: Changing Tenant's Return (₹ /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

thereafter, with the widespread adoption of HYV technology the 1:1 cost share of extended material items like seed, manures and fertilizers, irrigation, PP chemicals, etc. with same 1:1 crop share is found to be predominating. It is pertinent to mention that the 1:1 crop share with full cost borne by the tenant was in vogue in pre-HYV era when use of material inputs like fertilizers, irrigation and other chemicals were almost absent. With the introduction and spread of HYV technology intensive application of the costly material items like seed, manures, fertilizers, PP chemicals, irrigation, other chemicals has come into being. The cost participation of the landowner with the same proportion of crop share on material inputs has also come with. But the cost of additional labour input in association with use of modern material inputs has been bypassed. And as a consequence of which the landowner is obtaining his share of output by paying a stipulated share of cost of material input without paying the cost of additional labour input associated with the adoption of HYV technology and thereby accruing a stipulated share of output of additional labour input without bearing the cost thereof by the landowner. Remarkable enhancement of yield per unit area with adoption of HYV technology has become favourable for the landowner to further strengthen his earning through land lease by appropriation of additional rent in the above way in addition to the rent earned by intensive use of modern inputs and ground rent. This has been reflected in the tenants' income position as discussed earlier. In this context the question of adequate remuneration of family labour of tenants engaged in leased-in land comes

Table 11: Average Size of Owned Land and the Land under Lease Contract with respect to different tenurial Status (acre/household).

Tenurial Status	Frequency	Owned land	Leased-in land	Leased-out land	Total
(1)	(2)	(3)	(4)	(5)	(6)
Backward Villages					
Pure Owner operator	37	3.71	-	-	3.71
Owner-cum-Tenant	14	1.48	0.58	-	2.06
Owner-cum-Lesser	15	3.66	-	0.47	3.19
Lessee-cum-Lesser	2	2.33	1.00	0.37	2.96
Owner-cum-Labourer	12	0.88	-	-	0.88
TOTAL	80	2.85	0.63	0.46	3.02
Advanced Villages					
Pure Owner operator	44	4.19	-	-	4.19
Owner-cum-Tenant	9	2.96	0.74	-	3.70
Owner-cum-Lesser	11	4.74	-	1.61	3.13
Lessee-cum-Lesser	3	2.22	0.50	0.44	2.27
Owner-cum-Labourer	13	1.33	-	-	1.33
TOTAL	80	3.59	0.69	1.36	2.92
Combined					
Pure Owner operator	81	3.97	-	-	3.97
Owner-cum-Tenant	23	2.06	0.64	-	2.70
Owner-cum-Lesser	26	4.12	-	0.95	3.17
Lessee-cum-Lesser	5	2.26	0.70	0.41	2.55
Owner-cum-Labourer	25	1.11	-	-	1.11
TOTAL	160	3.22	0.66	0.91	2.97

to the fore. There are various literatures where the scholars attempted to highlight zero opportunity cost of family labour under backward agriculture with lack of opportunity of alternative employment of agricultural labour force. Now let us examine whether the position of agricultural labour force have been changed with spread of modern technology in agriculture, if changed, to what extent and in what direction. For this purpose tenant's return over cost A1 exclusive of land revenue under annual fixed cash land lease contract, annual land lease contract with 1:1 crop and cost share and under seasonal crop lease contract with 1:1 crop and cost share have been calculated and presented by Table 10.

From the Table 5, 6 and 8 it is noted that the tenants' return over prime cost (Cost D) to have been negative in case of some crops under seasonal lease with crop and cost share and for some crop sequences under annual fixed cash land lease. The implication is that the labour engaged in crop cultivation from tenants' family irrespective of type of lease has not been remunerated at prevailing market wage rate. Table 10 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 are not being remunerated even with the spread of HYV technology. Now the question comes why the cultivation under annual or seasonal lease is being sustained in spite of incurring losses of tenants if the returns are calculated over prime cost (Cost D). A look to the earning position of owner operators as shown in col.8 of Table 9 reveals a possibility of higher earning per unit area per

unit of time by the owner operators as compared to landowners' earning under any type of lease contract. The miserable earning position of the tenants under any type of lease as discussed above is the possible reasons of absence of pure tenants fully dependent on the crop cultivation on leased-in land (Table 1). It is also shown that a tenant is always having only small portion of leased-in land in combination with a good amount of owned land in which he is acting as owner operator as shown in Table 11. And this dual role of owner-cum-tenant or lessee-cum-lesser makes the observed sustained existence of lease farming. In this context it is pertinent to mention the observation of Som (2001) in Cooch Behar district, a northern part of the state, where he highlighted the increasing trend of surrendering leased-in land (both by recorded and unrecorded bargadars) in exchange of securing ownership of a part of leased-in land thereof. In our village survey some of the owner operators have also reported to secure ownership of a part of land which was erstwhile under lease. In our village survey the most of the recorded and unrecorded bargardars reported the possibility of securing ownership of a part of leased-in land if it is surrendered (Table 12). Thus, 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. Now it is relevant to examine the status of tenants and landowners. The existence of five types of farmers according to tenurial status shown in Table 1 can be examined according to their status of principal fixed farm resources namely, plough, draught animal (bullock) and the stock of family labour in order to understand the degree of participation of the farm families in crop cultivation. The status of those five types of farm families with regard to strength of earning member, plough, draught animal (bullock) and family labour has also been worked out and presented in Table 13. No remarkable difference is noted in respect of strength of above

Table 12. Distribution of Tenants according to Reported Information on Possibility of Securing Ownershipof a part of Land or Any Other Thing in exchange of Surrendering Land to the Landowner in the study area.

Tenants	Possibility of securing		Total
	Ownership of a part of land	Cash or any other thing	
(1)	(2)	(3)	(4)
Backward Villages			
Recorded	9 (81.82)	2 (18.18)	11 (100.0)
Unrecorded	4 (80.00)	1 (20.00)	5 (100.0)
Total	13 (81.25)	3 (18.75)	16 (100.0)
Advanced Villages			
Recorded	6 (85.71)	1 (14.29)	7 (100.0)
Unrecorded	3 (60.00)	2 (40.00)	5 (100.0)
Total	9 (75.00)	3 (25.00)	12 (100.0)
Combined			
Recorded	15 (83.33)	3 (16.67)	18 (100.0)
Unrecorded	7 (70.00)	3 (30.00)	10 (100.0)
Total	22 (78.57)	6 (21.43)	28 (100.0)

Figures in parentheses indicate percentage of the respective total.

Table 13: Status of Farm Families in respect of Owned Fixed Farm Resources according to Tenurial Status.

Tenurial Status	No of households	No of plough owned		No of bullock pair		No of adult members		No of family labour		No of earners per family			
		Per family	Per acre	Per family	Per acre	Per family	Per acre	Per family	Per acre	Self cultivation	Service	Artisans and small business	Total
Backward Villages													
Owner-cum-tenant	14	1.00	0.48	0.86	0.41	3.50	1.70	2.28	1.10	1.50	0.00	0.28	1.78
Owner-cum-lesser	15	1.06	0.33	0.87	0.27	4.27	1.34	2.47	0.77	1.93	0.20	0.33	2.46
Lessee-cum-lesser	2	1.00	0.33	1.00	0.33	4.00	1.35	2.50	0.84	2.50	0.00	0.00	2.50
Owner-cum-labourer	12	0.58	0.66	0.42	0.47	3.80	4.35	2.83	3.22	2.50	0.00	0.00	2.50
Pure owner operator	37	1.05	0.28	1.08	0.29	4.43	1.20	2.51	0.68	1.90	0.11	0.22	2.23
Total	80	0.97	0.38	0.90	0.33	4.13	1.79	2.51	1.15	1.94	0.08	0.21	2.23
Advanced Villages													
Owner-cum-tenant	9	0.89	0.24	0.89	0.24	5.44	1.47	2.44	0.66	1.89	0.22	1.00	3.11
Owner-cum-lesser	11	0.82	0.26	0.73	0.23	3.73	1.19	1.64	0.52	1.54	0.36	0.27	2.17
Lessee-cum-lesser	3	0.67	0.28	0.67	0.28	3.00	1.25	1.00	0.42	1.00	0.00	0.67	1.67
Owner-cum-labourer	13	0.76	0.58	0.54	0.40	3.61	2.72	2.46	1.85	2.38	0.00	0.00	2.38
Pure owner operator	44	0.95	0.23	0.95	0.23	4.80	1.14	2.61	0.62	1.93	0.11	0.50	2.54
Total	80	0.88	0.29	0.84	0.26	4.46	1.44	2.37	0.80	1.91	0.13	0.45	2.49
Combined Villages													
Owner-cum-tenant	23	0.96	0.39	0.87	0.34	4.26	1.61	2.34	0.93	1.65	0.09	0.56	2.30
Owner-cum-lesser	26	0.96	0.30	0.81	0.25	4.04	1.28	2.12	0.66	1.77	0.27	0.30	2.34
Lessee-cum-lesser	5	0.80	0.30	0.80	0.30	3.40	1.29	1.60	0.59	1.60	0.00	0.40	2.00
Owner-cum-labourer	25	0.67	0.62	0.48	0.43	3.70	3.50	2.64	2.51	2.44	0.00	0.00	2.44
Pure owner operator	81	1.00	0.25	1.01	0.26	4.63	1.17	2.56	0.65	1.92	0.11	0.37	2.40
Total	160	0.93	0.34	0.87	0.30	4.30	1.62	2.44	0.98	1.93	0.11	0.33	2.36

three types of owned fixed farm resources available per unit of area under owner-cum-tenant, lessee-cum-lesser and pure owner operator (owner-cum-labourer keeping aside). It indicates that there is no remarkable difference in participation of the farm families in crop cultivation belonging to owner operator, owner-cum-tenant operator, lessee-cum-lesser and owner-cum-lesser. Here therefore, the question of absentee landlord does not arise. 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% 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. At the initial stage of introduction of HYV technology the prevalence of 50:50 crop sharing contract for a long uncertain period with no cost participation by the landowners has been changed by 50:50 crop sharing for a certain long period with cost participation of landowners in seed and manure/fertilizer with the spread of HYV technology. And thereafter, that has been changed into annual fixed cash contract and crop share contract for a particular season. It is also revealed that 2:1 crop share with 1:0 cost share contract between tenant and landowner has been changed into 1:1 crop and cost sharing contract for a particular seasonal crop. It is also noted that the proportional crop and cost sharing has been changed into fixed produce contract for particular crop like summer rice with the advancement of technology. The effects of those changes of tenancy contract with the advancement of agricultural technology on earning position of the tenants vis-à-vis landowners have been examined in detail by using the data of cost and return of sample households collected from backward and advanced cluster of villages. It is noted that tenants' net revenue over prime cost (cost D) is always exceedingly lower than that of landowners or owner operators irrespective of any type of lease contract. But tenants' net revenue in case of annual fixed cash land lease contract is relatively higher as compared to that obtained from 1:1 crop and cost share for annual contract or seasonal contract. Dwindling trend of incidence of annual fixed cash land lease contract with the advancement of technology (as it is observed in advanced villages) is an indication of eroding relatively higher possibility of earning of tenant operators. On the other hand, change in 1:1 crop-cost share contract into fixed produce contract in case of seasonal contract for summer rice shows an improvement of income position of the tenants from the extremely miserable earning with 1:1 crop-cost sharing arrangement. Non-sharing of additional labour cost attributable to the adoption of HYV technology and the surplus earning thereof over and above the surplus of intensive cultivation and ground rent appears to be one of the important factors contributing to the extremely lower earning position of the tenants in comparison with that of landowners. Factor interlocking between land, labour and credit as observed for the sample households is found to be free from any extra economic coercion but it ensures higher crop production per unit area and thereby creating possibility of earning higher surplus by the landowners. The question of long sustenance of 1:1 crop-cost sharing arrangement in spite of exceedingly lower earning position of the tenants as compared to that of landowners or owner operators out of this sharing arrangement has also been examined. The observed 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.

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