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Research Paper

ECONOMIC EFFICIENCY OF CONTRACT FARMING IN NAGAPATTINAM DISTRICT OF TAMIL NADU

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ABSTRACT

The present study analyses the cost and yield in contract farming. Tenure is an important aspect of contract farming. For the study, the tenants are selected from four different types of contract farming viz., Cash Contract, Sharecropping, Mortgaging and Temple contract lands. The total cost of cultivation for an acre is high for cash tenants, sharecropping, mortgage tenants and temple contract lands respectively. The profit earned is high for temple land since it is owned and cultivated for long tenure. The cost of cultivation and rental amount for temple land is low, the profit is high. But, the other contract lands involve high cost of cultivation and high rental amount. As a result, the temple contract land is more efficient as compared to other contract lands. This is due to the tenure and security involved in temple contract lands.

KEYWORDS: *sharecropping, cost, yield, cultivating*

1. INTRODUCTION

The present study analyses the cost and yield in contract farming. Tenure is an important aspect of contract farming. The pure owner farmers have used more fertilizer than the tenants (Islam and Banarjee, 1991). In contrary, Bhowmick (1991) mentions that the tenants apply greater quantum of inputs per acre and gained better productivity. Exercising secure rights gives confidence to tenants and to be economically effective. Short term lease is an obstacle to long-term conservation (Wachter, 1992) and renters are less likely than owner-operators to use conservation tillage (Soule *et al,* 2000). After the ownership rights were conferred, the tenants undertook land improvement measures including construction of borewells, land levelling and soil conditioning (Haque, 2001 and Huffman and Fukunaga, 2008). Given this, the present study analyses the role of tenant's rights in economic efficiency and management of contract farming sustainably.

2. TYPES OF CONTRACT FARMING

In the surveyed region, contract farming includes cash contract, sharecropping, mortgage and temple contract lands. Cash contract is concern the tenant and land owner negotiate and fix the amount and tenure of contract, which the amount has to be given before initiation of the cultivation. Sharecropping is concern the cost and yield will be shared between the land owner and tenant. Since the tenant incurs the cost of cultivation, one third of the yield is given to the land owner and two third to the tenant. Land owners mortgage land for an amount and after repayment of the amount the land has to return to the land owner. Temple land is managed by the trustee and the lands are rented to the local farmers wherein the tenant can cultivate the land continuously by giving regular rental amount. The above mentioned various contract lands has its own merit and demerit in cultivating the lands.

3. METHODOLOGY

The present study is based on the primary data. For the study, the tenants are selected from four different types of contract farming viz., Cash Contract, Sharecropping, Mortgaging and Temple contract lands. In contract farming, Cash Contract, Sharecropping and Mortgage lands are cultivated in all the regions of the State whereas temple lands are found only in few districts and it is high in Nagapattinam district (Hindu Religious and Charitable Endowments Department of Tamil Nadu, 2015). Therefore, Nagapattinam district is selected for the study and from the district the blocks and villages that have more temple lands will be identified. At the next level, paddy cultivation is selected to analyse the efficiency in contract farming in terms of investment, technology adoption and input use. Selection of paddy cultivation is appropriate as the tenure of paddy cultivation is less than six month and major crop of the district is paddy. From each contract, 60 tenants will be selected and

simple random sampling method will be adopted to identify 240 tenants in total.

4. RESULT AND DISCUSSION

4.1 Cost of Plough

Tiller and tractor are used by the tenants for plough and land levelling. Plough and land levelling is the initial stage of the paddy cultivation. The table 1 examines per acre cost of plough and the cost of tiller is registered high as towards tractor. On an average, Rs. 1946 is the per acre cost of tiller wherein it is Rs. 977 for tractor. Even though the speed is high in tractor, the efficiency of tiller is comparatively high. That is, the gap between the ploughs in tiller will be very close whereas the gap of tractor plough will be more. Thus, the efficiency of tiller will be high such as the cost involved in tiller also high as compared to tractor.

Among the tenants, there is meagre variation in the cost of plough technology and the cost of tiller ranges around Rs. 1900 while for tractor it is Rs. 900. Thus, there is no wider variation in the cost involved in plough and land levelling. From the amount involved in plough is determined by the source of plough and it is determined according to the efficiency of plough and land levelling.

Table 1 Per Acre Cost of Plough Technology

Details (in Rs.)	Cash Tenancy	Share - cropping	Mortgage	Temple Land	Total
	(n=60)	(n=60)	(n=60)	(n=60)	(N=240)
Tiller	1933	1942	1973	1935	1946
Tractor	978	972	982	975	977

Source: Computed

4.2 Cost of Nursery

There are two methods of paddy cultivation, one direct sowing method and another is transplantation method. In direct sowing method, the farmers just sow paddy in the land before plough. But, transplantation method involves prior growth sow of paddy and saplings are collected and evenly transplanted on the land.

Table 2 Per Acre Cost of Nursery for Paddy Saplings

Details (in Rs.)	Cash Tenancy	Share - cropping	Mortgage	Temple Land	Total
	(n=60)	(n=60)	(n=60)	(n=60)	(N=240)
Own Farm	973	967	971	983	974
Sapling from Other Farmers	1611	1635	1647	1631	1631

Source: Computed

The direct sowing method is not recommended by the agriculturists since the yield will be largely affected. But, transplantation method reduces pest problem and plantation with enough space gives good circulation of water and air thereby high yield. Thus, majority of the farmers follow transplantation method and the surveyed tenants also follow the same.

The table 2 examines the per acre cost of nursery for paddy saplings; tenants grow sapling in their own land and some of them purchase the saplings from others. Per acre cost involved in growing sapling in the own farm is Rs. 974 and only meagre variation is observed between the tenants. But, it is Rs. 1631 for purchase of saplings from other farmers. It is obvious that the farmers grow saplings in their own land involves cost of seed as well but the tenants those purchase saplings directly. Thus, there is wide variation in the cost of nursery cost for paddy saplings between sapling growers and purchasers from others. The merits in growing sapling is a farmer/tenant can directly involve in the growth of the saplings, which will react in the yield of the crop. But, purchase of sapling does not assures the quality of the sapling.

4.3 Cost of Manure before Transplantation

The table 3 brings the per acre cost of manure used before transplantation. Cow dung, neem cake, leaves, complex and DAP are used by the farmers. The cost involved is high for cow dung (Rs. 2335) and DAP (Rs. 1216). It is to appreciate the tenants for spending more for organic manure as compared to inorganic manure.

Table 3 Per Acre Cost of Manure used before Transplantation

Details (in Rs.)	Cash Tenancy	Share - cropping	Mortgage	Temple Land	Total
	(n=60)	(n=60)	(n=60)	(n=60)	(N=240)
Cow Dung	2297	2327	2230	2487	2335
Neem Cake	0	138	76	163	94
Leaves	283	254	117	363	254
Complex	415	428	469	392	426
DAP	1263	1205	1272	1125	1216

Source: Computed

4.4 Cost of Transplantation

Transplantation of crop is the pertinent stage in paddy cultivation. Plantation of crops with required space between saplings is imperative for high yield. Transplantation is done with the help of rope for lining the crops. The table 4 examine the cost involved in transplantation for an acre and both male and female are engaged for transplantation.

Table 4 Per Acre Cost of Transplantation

Details (in Rs.)	Cash Tenancy (n=60)	Share - cropping (n=60)	Mortgage (n=60)	Temple Land (n=60)	Total (N=240)
Male Labour	1171	1102	1092	1121	1122
Female Labour	1528	1531	1526	1551	1534

Source: Computed

On an average, per acre cost of female labour is high (Rs.1534) and male labour is Rs. 1122. Since the role of female labour is high in transplantation, the cost registered is high as towards the male labour. Male labour is used for lifting and distributing the sapling from place to place. But, the female labour has to transplant all the saplings and requires more number of labours. Among the tenant groups, the cost register shows only meagre variation wherein it is around Rs. 1500 for female and Rs. 1100 for male labours. As a whole, the cost of transplantation registered is high for the female labour.

4.5 Cost of Manure after Transplantation

After transplantation, the paddy crops have to be manure for growth of crops and high yield. Urea, potash and neem cake are used as manure. On an average, per acre cost of urea is Rs. 953, Rs. 747 for potash (see table 5). Urea and potash are inorganic manure wherein neem cake is organic, which is cheap as compared to inorganic manure. The cost registered for neem cake is Rs. 35 for an acre. Difference in use of organic and inorganic manure is because the farmers/ tenants regard that inorganic manure can influence high yield.

Table 5 Per Acre Cost of Manure used After Transplantation

Details (in Rs.)	Cash Tenancy (n=60)	Share - cropping (n=60)	Mortgage (n=60)	Temple Land (n=60)	Total (N=240)
Urea	948	952	974	938	953
Potash	727	711	757	794	747
Neem Cake	44	36	0	58	35

Source: Computed

Among the tenant groups, meagre variation is found in using inorganic manure whereas the use of organic manure shows difference. The amount spent by the temple land tenants is high (Rs.58) as compared to other tenants. Thus, the farmers with secure long term rights adopt both inorganic and organic manure while tenants with insecure rights adopt mostly the inorganic manure.

4.6 Cost of Pesticides

The use of pesticide in agriculture has increased to a huge extent for high yield. In particular, the use of chemicals has increased widely and traditional method of controlling pest is not found. Neem oil is the only traditional method exists but farmers exclusively do not rely upon the neem oil. Neem oil is used with addition to the chemical pesticides because the farmers do not have confidence on organic pesticidescompletely. The table 6 examines the cost of pesticides per acre. The farmers have used Democron, Monocrotopas, Karate and Neem oil. Excluding neem oil, other pesticides are inorganic and farmers have chosen only one of the same.

The cost of Karate (Rs. 1848) is high among other inorganic pesticides. Per acre cost of Democron (Rs.1666) and Monocrotopas (Rs.1633) constitutes next. For neem oil, the cost is Rs. 118 for an acre. As compared, the cost of neem oil is very cheaper but the use among the tenants is only few. The efficiency in controlling pest is regarded highly for inorganic pesticides and the cost has increased rapidly over the period. Among the tenants, meagre variation is observed in cost of pesticide use. But, it is worth to mention that the temple land tenants have comparatively used more neem oil and lesser inorganic pesticides.

Table 6 Per Acre Cost of Pesticides

Details (in Rs.)	Cash Tenancy (n=60)	Share - cropping (n=60)	Mortgage (n=60)	Temple Land (n=60)	Total (N=240)
Democron	1698	1655	1681	1631	1666
Monocrotopas	1635	1626	1661	1611	1633
Karate	1862	1857	1866	1805	1848
Neem oil	114	98	102	157	118

Source: Computed

4.7 Per Acre Cost of Weed-Out

Weeds in land may affect the growth and yield of the crops. The weeds may grab the manure and grow fast as compared to the paddy crops. Therefore, timely weed-out may support the crops to a huge extent thereby high yield. The table 7 brings the details of per acre cost of weed-out. Traditionally, the farmers/tenants use female labour for weed-out while the use of chemicals in land have been growing by considering the cost of labour and efficiency.

Table 7 Per Acre Cost of Weed-Out

Details (in Rs.)	Cash Tenancy	Share - cropping	Mortgage	Temple Land	Total
	(n=60)	(n=60)	(n=60)	(n=60)	(N=240)
Female Labour	1103	1177	1094	1143	1129
Chemicals	415	394	427	117	338

Source: Computed

The tenants have used both female labour as well chemicals for weed-out. On an average, Rs.1129 is spent for female labour for weed-out per acre with meagre variation between the tenants. For chemicals, Rs. 338 per acre was spent wherein the temple land tenants have spent only Rs. 117 per acre and other tenants have spent around Rs. 400. Thus, the use of chemicals have to be reduced and female labour for weed-out is environment friendly approach that do not affect the land quality.

4.8 Cost of Harvesting and Irrigation

New technology in harvesting paddy is used widely by the farmers by considering its time consumption. At the same time, few of the tenants have used labour for paddy harvesting. This stage gives a wide expectation over the tenants to compute the benefits for their hard work. In the surveyed region, the tenants have mostly used harvester and few labour. On an average, Rs. 2201 is spent for harvester for an acre and Rs. 1866 for labour (see table 8). In use of harvester and labour for harvesting, around Rs. 200 varies but the demand for labour have made the agrarians to shift over the mechanical energy. Tenants those have lesser amount of land can use labour and they can enjoy few margins in using the same. But, the wastage in using the harvester is undermined by the tenants by considering the time and labour shortage. Among the tenants, only meagre variation is found in use of harvester and labour for harvesting.

Table 8 Per Acre Cost of Harvester and Irrigation

Details (in Rs.)	Cash Tenancy	Share - cropping	Mortgage	Temple Land	Total
	(n=60)	(n=60)	(n=60)	(n=60)	(N=240)
Harvester	2194	2278	2170	2161	2201
Labour	1863	1872	1833	1894	1866
Irrigation	1781	1713	1725	1646	1716

Source: Computed

Canal irrigation is the major source of irrigation in the surveyed region. Those are adjacent/nearby to the canal may utilize the irrigation without any cost. But, those are away from the canal has to use diesel engine for pumping water to their lands. Besides, few tenants own deep bore well and it involves cost. Tenants those do not own bore well purchase water for crops when canal water is insufficient. Given this, the cost of irrigation is computed and it is Rs.1716 wherein the cost of irrigation is more or less same for all the tenants except temple land tenants (Rs. 1646). Thus, all the tenant categories have spent for irrigation, which shows the tenants interest and care on agricultural activity.

4.9 Economics of Paddy Cultivation

The above discussion brought the details of per acre cost of cultivation at various stages. From plough to harvesting, the cost of paddy cultivation and nature of technologies (organic/inorganic) are analysed to study the influence of tenancy rights in agriculture. The table 9 brings the economics of paddy cultivation for an acre. Yield, cost of cultivation, rental amount for a cultivation and profit for an acre Rs. 29,066 and it varies between the tenant groups. For cash, sharecropping and mortgage, the yield ranges around Rs. 28,000 while it is high for temple land tenants (Rs. 30,515). From this, it could be understood that the long term tenancy has influenced the management of land and higher yield. As discussed earlier, temple land is long term contract and provides 90 per cent of the rights to the tenants. That is, the temple land tenants has rights to invest on lumpy technologies like bore well and right to sell/transfer their land rights to others. Thus, the yield level is comparatively better for temple land tenants.

Table 9 Economics of Per Acre Paddy Cultivation

Details (in Rs.)	Cash Tenancy	Share - cropping	Mortgage	Temple Land	Total
	(n=60)	(n=60)	(n=60)	(n=60)	(N=240)
Yield	28522	28291	28936	30515	29066
Cost of Cultivation	9334	9279	9244	9122	9245
Average rental amount per cultivation	5105	5140	5260	1500	4251
Profit	14083	13872	14432	19893	15570

Source: Computed

The total cost of cultivation for an acre is Rs.9245 wherein it is high for cash tenants (Rs. 9334), sharecropping (Rs. 9279) and mortgage tenants (Rs. 9244). But, it is comparatively less for temple land tenants (Rs. 9122). This variation is due to high amount of input use by the tenants. The temple land tenants cultivate the land for long period and input use, that is, use of chemicals are comparatively less.

The average rental amount per cultivation is Rs. 4351 and it is high for mortgage tenants (Rs. 5260), sharecropping (Rs. 5140) and cash tenants (Rs. 5105). For temple land tenants the rental amount per cultivation is Rs. 1500. For mortgage lands, interest is computed for the amount

given to the land owner. Since the land is mortgaged for huge amount, the interest is taken as proxy for rental. Sharecropping and cash tenants constitutes next. For temple land, the rental amount it is fixed by the temple trustees. Thus, the rental amount fixed is too low for the temple land by considering the welfare of rural poor and uplift their economic status.

The profit earned from the contract land is Rs. 15,570 for an acre and it is high for temple lands (Rs.19,893). Next to this, profit from mortgage (Rs.14,432), cash tenancy (Rs.14,083) and sharecropping (Rs.13,872) constitutes respectively.

5. CONCLUSION

The total cost of cultivation for an acre is high for cash tenants, sharecropping, mortgage tenants and temple contract lands respectively. The profit earned is high for temple land since it is owned and cultivated for long tenure. The cost of cultivation and rental amount for temple land is low, the profit is high. But, the other contract lands involve high cost of cultivation and high rental amount. As a result, the temple contract land is more efficient as compared to other contract lands.

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