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RESEARCH NOTE

Farm Land Conversion and Food Security: Empirical Evidences from Three Villages of Tamil Nadu

P.K. Govindaprasad and K. Manikandan*

ABSTRACT

Converting farmlands for non-agricultural purposes is increasingly taking place in the developing countries. India recorded 1.6 million hectares of decline in farm land mostly converted for non-agricultural purposes during 2001-02 to 2010-11. Tamil Nadu recorded the highest decline of 7350 hectares of agricultural land during 1992-93 to 2005-06. The drastic conversion of farmlands poses threat to agriculture. In this context this paper attempts to assess the extent of conversion and analyses the impact of farmland conversion on food security. This paper shows that one acre of farmland conversion results in loss of 1.07 tonnes of output per annum which has serious implication on food security.

Keywords: Farm land, Non-agricultural purposes, Farm land conversion, Agricultural output, Food security

JEL: Q10, Q12, Q15, R14.

I

INTRODUCTION

With the rapid increase in population and development of urbanisation, the growing demand for resources, especially for cultivated land resources, has led to the conversion among different land uses (Jiang *et al*., 2011). In India the pressure exerted by the growing economy on land and other natural resources have intensified in post-liberalisation period and in the phase of burgeoning population the demand for the conversion of farm land for non-agricultural uses increases (Bardhan and Tewari, 2010). Despite the fact that conversion of farm land has serious implication on national food security, ecological security, as well as sustainable land resource use, the conversion of farm land for non-agricultural purposes is continuing in India. The reasons are two sorts, demand side and supply side of land conversion.

On the demand side, the high population density, rapid economic growth, industrialisation, urbanisation, development of real estate, construction and speculative activity, increase the demand for farm land (Fazal, 2000, Raju and Anilkumar, 2006, Suganthi and Manikandan, 2012). On supply side the most important reason for the conversion (sale) of farm land *inter alia*, is the low income from agriculture. The net return earned from agriculture is lower and not remunerative. As such, every year a large number of farm lands are being shifted to

*Research Associate and Assistant Professor, respectively, Department of Economics, Gandhi Gram Rural Institute-DU, Gandhi Gram, Dindigul (Dt), Tamil Nadu.

non-agricultural uses in all the countries - diminishing each nation's and hence the world's stock of productive farm land (Gorecka, 1978). Studies from India lend support to this. Kannan and Pushpangadan (1990) in their study found that instability in earning and low profitability have taken away the incentive for cultivation in many areas of Kerala. Dalwai (2012) points out that the increasing marginal holdings along with poor returns from cultivation lead to conversion of agricultural land. Though land conversion occurred mostly in developed countries, now-a-days the developing countries are experiencing the highest average of farm land conversion (Balakrishnan, 1999, Gupta and Sharma, 2010).

A country level study shows that in India among all land use categories the area under non-agricultural use registered a high growth rate at the country level of 1.08 per cent per annum during the period 1992-93 to 2005-06. The decline of farm land is the highest in Tamil Nadu (7350 hectares) during the corresponding period 1992-93 and 2005-06. At the same time the share of land area under non-agricultural uses has registered the sharpest increase of 2 to 4 per cent in Tamil Nadu during the same period (Bardhan and Tewari, 2010). This increase in the area of non-agricultural uses is at the cost of agricultural lands.

There are research studies in India on trends in the extent of farm land conversion. However, little research attention has been paid to the aspect of how operation of various factors leads to the conversion of farm land and its consequences on food security in India especially in Tamil Nadu. The present study makes an attempt to fill this lacuna by conducting survey in three villages, namely, Kallikkampatti, Chettiyapatti and Pillayar Natham of Dindigul district in Tamil Nadu. As such the study focuses its attention on analysing the extent of farm land conversion, causes of farm land conversion and its impact on food security. The objectives of the study are as follows. (1) To understand the pattern of farm land conversion, (2) To assess the extent of conversion of farm land into non-agricultural uses and factors that determine such conversion, (3) To estimate loss of foodgrain production due to conversion of farm land. The study is organised in four sections. Section II describes the methodology of the study. The data collected from sample farmers in the study villages on conversion of farm land and land use dynamics are analysed in Section III. The impact of conversion on food production and food security are also examined in Section III. Section IV draws policy implications and conclusion.

II

METHODOLOGY

The study is empirical which seeks to analyse the causes and consequences of agricultural land conversion. The study relies on primary data collected from respondents who have converted/sold their farm lands for non-agricultural uses in three study villages of Dindigul district in Tamil Nadu. The villages were purposively

selected as conversion is rapidly taking place in this region. The sample size is 45 farmers comprising those who have converted farm land (15 farmers from each village). The data were collected during the month of September - October 2013. The data pertaining to the past were collected using recall method. The period considered for the study is a decade from 2003 to 2013 and the data required for the study were obtained from the farmer respondents by administering pre-tested structured interview schedule. Tabular analysis is done and Garret ranking technique is used for analysing the causes for farm land conversion.

III

RESULTS AND DISCUSSION

This section analyses the conversion of farm land vis-à-vis the socio-economic status of the respondents in the sample villages. It analyses the land conversion dynamics in terms of ownership status and extent of farm land conversion and the reasons for conversion of farm land into non-agricultural uses. Finally it makes an attempt to assess the impact of conversion on food production and food security.

Socio-Economic Status of Respondents and Farm Land Conversion

In the analysis of socio-economic status of the sample farmers and farm land conversion the aspects considered are family size, educational level, main occupation and annual income of the families. It must be noted here that all the sample farmers sold their lands in bulk (acres) to others. Conversion has taken place through sale to others and none of them have converted their land on their own like makings plots and selling or starting enterprise. So, they could not get higher benefit out of their farm land conversion.

Family Size and Farm Land Conversion

The data on the average extent of farm land conversion, average family size and average annual income of the respondents are presented in Table 1.

TABLE 1. FAMILY SIZE, AVERAGE ANNUAL INCOME OF RESPONDENT HOUSEHOLDS AND LAND CONVERSION

Village	Average family size	Average annual income (Rs.)	Average extent of farm land conversion (acres)
(1)	(2)	(3)	(4)
Kallikkampatti	4.73	53800	5.71
Chettiyapatti	5.46	116533	3.05
Pillayar Natham	3.80	86933	2.56
Total	4.67	85755	3.77

The average extent of conversion is the highest in Kallikkampatti (5.71 acres) followed by Chettiyapatti (3.05 acres) and Pillayar Natham (2.56 acres). When relating these with data to family size, a clear pattern does not emerge. However it appears that with the human resources available within the households continue to do cultivation. It is equally plausible that as the households endowed with less human resources wish to hold the land resources from conversion. It seems that households with moderate family size tend to convert more of their agricultural lands.

Income and Farm Land Conversion

The data provided in Table 1 show that the average extent of agricultural land conversion is higher among lower income households. The village Kallikkampatti records lower annual income of respondents and accounts for relatively more farm land conversion as compared to the other two villages. Although the pattern is not clear, it may be observed that the extent of conversion is relatively more among households with lower income. It is inferred that income of farming households influence land conversion.

Literacy Status and Agricultural Land Conversion

The data in Table 2 reveals that literacy status seems to influence conversion of farm land for non-agricultural purposes.

TABLE 2. AGRICULTURAL LAND CONVERSION AND LITERACY

Village	Average extent of agricultural land converted (acres)	Percentage of literate to total
(1)	(2)	(3)
Kallikkampatti	5.71	56.33
Chettiyapatti	3.05	94.99
Pillayar Natham	2.56	92.33
Total	3.77	81.20

That is, farm land conversion is less in the case of literate farmers and more in the case of less literate farmers. For instance Kallikkampatti village has the lowest proportion (56.33 per cent) of literate people but records the highest average extent of farm land conversion (5.71 acres) for non - agricultural purposes. But the percentage of literate people is higher in Chettiyapatti (94.99 per cent) and Pillayar Natham (92.33 per cent) and these villages show relatively lower average extent of conversion of farm land to non-agricultural purposes that is, 3.05 and 2.56 acres respectively. The educated farmers are inclined to get employment opportunities even in non-agricultural sectors and so have the capacity to hold their land instead of selling it. It appears that literacy level and farm land conversion are conversely related.

III

DYNAMICS OF FARM LAND CONVERSION

This section analyses the dynamics of farm land conversion in the study villages. The issues examined are extent, the causes of farm land conversion, the uses of sale proceeds of farm land by the farmers and the impact of the farm land conversion on occupation and land holding pattern of respondent households.

Reasons for Farm Land Conversion

Table 3 presents the result of Garret ranking exercise conducted so as to identify the reasons for conversion of farm land. Among the various reasons stated low income from agriculture seems to be the primary and most important reason followed by shortage of inputs and low price for output and the increasing debt burden of the farmers.

TABLE 3. GARRET RANKING OF REASONS FOR CONVERSION OF FARM LAND TO NON - AGRICULTURAL PURPOSES

Sl. no. (1)	Reason (2)	Mean score (3)	Rank (4)
1.	Low income from agriculture	61.51	I
2.	Shortage of inputs	58.66	II
3.	Low price for output	54.93	III
4.	Debt burden	53.20	IV
5.	Lack of irrigation water	50.80	V
6.	Increasing cost of cultivation	50.35	VI
7.	Fluctuation in return and yield	48.15	VII
8.	More price for land (conversion)	43.46	VIII
9.	To meet expenditure on social functions	38.06	IX
10.	Younger generation's disenchantment in agriculture	36.02	X

The farmers also faced acute shortage of inputs especially water and labour. When probed further the farmers reported that the water shortage is due to inadequate rainfall. Besides diversion of agricultural labourers to Mahatma Gandhi National Rural Employment Guarantee Programme (MGNREGP) works and to construction works, resulted in scarcity of labour in agriculture. This has given rise to increase in labour wage rate adding more to cost of cultivation. Along with this the higher fertiliser price has led to an abnormal increase in input cost in agriculture. Due to increase in cost and shortage of inputs supply farmers develop a tendency to discontinue farm cultivation. While this being so, farmers do not get a reasonable price for their produces. The high input cost and lower price for agricultural output resulting in lowering of farm income and making agriculture a non-viable proposition. Given the situation the farmers are forced to sell their farm land mostly for non-agricultural purposes.

Uses of Converted Farm Land and Sale Terms

The information was sought from the sample farmers on the purpose for which these lands were bought from them. They reported that higher proportion of non-agricultural use of converted farm land is for keeping the land for speculation (41.6 per cent) on land value appreciation. This is followed by construction of mills and factories (36.59 per cent), construction of houses (18.81 per cent) and education and health organisations (2.9 per cent). It may be noted that in the study region speculative dealings on land transfer are getting intensified in recent times. As the land value is increasing, speculative real estate transactions are taking place more and more. Lured by the price offered for land, farmers tend to sell to others who convert the agricultural lands into plots for higher profits including speculative gains.

It must be mentioned here that all the sample farmers sold their lands in acres at the existing market price only. There was no case of distress sale in terms of market price reported. Most farmers were forced to sell due to their adverse conditions as reported in the previous section. It is clear that distress sale has occurred not in terms of lower market prices but has taken place due to their adverse conditions prevailed at the time.

Utilisation of Money from Sale of Agricultural Land

The information was sought from sample farmers about the manner of use of sale proceeds of agricultural land. The major share of the sale proceeds of agricultural land was spent on repayment of debts (62.2 per cent). Only 11.1 per cent have saved in financial assets and 8.8 per cent have invested in non-agricultural activities. Another 8.8 per cent spent on social ceremonies. Two farmers have spent the money towards expenditure on education and another two who sold (only a portion of agricultural land) spent on agricultural improvement activities. Thus a major portion of the sale proceeds was used for repayment of old debts, and accounted as expenditure and not as investment or reserve for their future needs. These data lend further support to the fact that the farmers sold their land due to their adverse socio-economic conditions.

Farm Land Conversion and Change in Occupational Status

It is found that in 2003 that is before conversion the main occupation of all the sample households was only agriculture except one household which was dependent on livestock as the main source of income. But by 2013 only 46.6 per cent of respondent households were practising agriculture as the main occupation. Among the rest 24.4 per cent became daily wage labourers in non-agricultural sector, 13.3 per cent started running small and petty business and 11.1 per cent of households were employed, in government job. More than 50 per cent of respondent families have

entered into non-agricultural activities after farm land conversion. Thus farm land conversion has changed the occupational status of many rural households. This change seems not desirable. It has brought down the social status of rural households. Because, many farmers have descended to the status of landless and daily wage earners in the non-farm sector.

Land Holding Pattern before and after Farm Land Conversion

The land holding pattern before and after farm land conversion is examined based on the size classification of landholding of sample farmers into large, medium, semi-medium, small, marginal farmers and landless categories.

TABLE 4. LAND HOLDING PATTERN BEFORE AND AFTER FARM LAND CONVERSION

2003 / 2013 (1)	Landless (2)	Marginal (3)	Small (4)	Semi medium (5)	Medium (6)	Large (7)	Total (8)
Landless	-	8	8	2	0	1	19 (42.22)
Marginal	-	4	4	5	1	1	15 (33.33)
Small	-	0	2	6	0	0	8 (17.78)
Semi medium	-	0	0	0	3	0	3 (6.67)
Medium	-	0	0	0	0	0	0
Large	-	0	0	0	0	0	0
Total	0	12 (26.67)	14 (31.11)	13 (28.89)	4 (8.89)	2 (4.44)	45 (100)

Note: Figures in parentheses indicate percentage of farmers to total.

One can understand from Table 4 that most of the marginal and small farmers have become landless and most of the semi -medium farmers have become small farmers and most of the medium farmers have become semi - medium farmers after conversion of their farm land. The farm land conversion has adversely affected the status of farmers in general and marginal and small farmers in particular in the study villages. This has adverse implications on the economic and social status of the farmers.

It must, however, be noted that for two of the sample farmers who sold part of their land, their economic condition has improved. One farmer in Chettiapatti village sold 1.5 acres of land from his holding of 3.5 acres. He is a retired government employee and two of his family members are employed in non-agricultural sector. He has invested the sale proceeds in the form of fixed deposit in a commercial bank. Another farmer in Pillayar Natham village who is working as a teacher sold 1 acre of land from his holding of 1.5 acres and he also deposited the sale proceeds in a bank. In both the cases, difficulties in cultivation such as lack of irrigation water and labour shortage acted as push factors and lucrative market price for their lands as pull factor.

Now they get regular income from bank deposit which was hitherto not possible from agriculture. From these cases, it could be inferred that the conversion has helped a few to obtain exceptional gain and this is associated with those who mostly rely on non-agricultural sources of income and not on agriculture as the main occupation of their families.

Extent of Conversion and Reduction in Farm land

Farm land conversion has reduced the total size of land holdings of respondents in the three villages. The data on extent of reduction in area of farm land in the three villages are given in Table 5.

TABLE 5. CHANGES IN THE EXTENT OF FARM LAND HOLDING OF SAMPLE FARMERS

	Total cultivable land area owned (acres)		Reduction in area	
Village	2003	2013	Extent (in acre)	Percentage
(1)	(2)	(3)	(4)	(5)
Kallikkampatti	99.97	14.38	85.59	86
Chettiyapatti	75.25	29.50	45.75	61
Pillayar Natham	55.56	17.00	38.56	69
Total	230.78	60.88	169.9	74

It is clear from Table 5 that as a whole 169.9 acres of farm lands of sample farmers have been converted for non-agricultural purposes resulting in drastic reduction of farm land of about 74 per cent.

FARM LAND CONVERSION AND FOOD SECURITY NEXUS

It is likely that farm land conversion to non-agricultural uses has serious implication on food security by creating food shortage and food price increase. Food shortage would occur due to the reduction in area under cultivation and consequent decline in supply of agricultural produces. In the study villages the area under cultivation shows a declining trend and this has serious repercussion on food production and food security. In this section, an attempt is made to estimate the extent of decline in agricultural production.

Loss of Area under Food and Non-Food Crops due to Farm Land Conversion

As could be seen from Table 6 the conversion of farm land into non-agricultural purposes by sample farmers reduced the area under food crops from 166.72 acres in 2003 to 52.5 acres in 2013, showing a drastic reduction of 114.22 acres (68.51 per cent) during the study period.

In the case of non-food crops the area declined from 43 acres to 7 acres, showing a drastic (36 acres and 83.72 per cent) decline by 2013. It may be noted that loss of more agricultural land is associated with area under food crops. The decline

correspond to the lands cultivating food crops such as paddy, bajra, maize, pulses, grams, vegetables and fruits. The decline in area under non-food crops corresponds to the crops like flower, cotton and other crops.

TABLE 6. LOSS OF AREA UNDER FOOD AND NON - FOOD CROPS DUE TO FARM LAND CONVERSION

	Area under food crops (acres)		Reduction	Area under non-food crops (acres)		Reduction
Village	Before conversion	After conversion	in area (acres)	Before conversion	After conversion	in area (acres)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Kallikkampatti	68.47	14.00	54.47 (79.55)	11.50	0.00	11.50 (100)
Chettiyapatti	53.75	24.50	29.25 (54.41)	20.50	4.00	16.50 (80.48)
Pillayar Natham	44.50	14.00	30.50 (68.53)	11.00	3.00	8.00 (72.72)
Total	166.72	52.50	114.22 (68.51 per cent)	43.00	7.00	36.00 (83.72 per cent)

Note: Figures in parentheses are percentage reduction of area under food crops, non-food crops after conversion; The difference in total cultivable land area owned (Table 2) and area under crops (food and non-food) is attributed to land kept fallow.

A decline in area cultivated would lead to decline in agricultural output. The Table 5 shows the extent of decline in agricultural output in the three villages.

The data on changes in agricultural output due to conversion are given in Table 7. It may be observed from the table that there has been a decline of 182.1 tonnes of agricultural output from the lands of sample farmers in the three villages within a decade (2003-2013). Major share in decline is associated with food crops (148.1 tonnes and 81 per cent). The highest decline in the total quantity of agricultural output (food and non-food crops) is reported by the respondents in Pillayar Natham village (96 tonnes). In Chettiyapatti it is 46 tonnes and in Kalllikkampatti village 40.1 tonnes.

TABLE 7. LOSS OF AGRICULTURAL OUTPUT DUE TO AGRICULTURAL LAND CONVERSION

(*tonnes*)

	Total food grain production		Decline in	Total non-food grain production		Decline in	Decline in total
Village	Before conversion	After conversion	quantity (A)	Before conversion	After conversion	quantity (B)	quantity (A+B)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Kallikkampatti	41	1.9	39.1	1	0	1	40.1 (95)
Chettiyapatti	36	8.5	27.5	19	0.5	18.5	46 (83.6)
Pillayar Natham	91.5	10	81.5	14.5	0	14.5	96 (90.56)
Total	168.5	20.4	148.1 (81.37)	34.5	0.5	34 (18.67)	182.1 (89.70)

Note: Figures in parentheses shows the percentage of the decline in the production of food and non - food crops to the total reduction in quantity and percentage of decline total quantity of agricultural output.

An estimation of land conversion and loss of output shows that an acre of conversion leads to 1.07 tonnes reduction of agricultural output. It works out to reduction of food production by 0.87 tonnes per acre and 0.20 tonnes of non-food agricultural output. From these estimates, the actual extent of loss of agricultural output for the entire village is computed. The data collected from official sources show that the extent of agricultural land conversion for the entire study villages is 620 acres during the decade 2003-2013. Hence, the reduction in output level during the decade 2003-2013 in these three villages works out to be 663 tonnes which is very serious.

Thus it is clear from the above discussion that the selling/conversion of agricultural land into non-agricultural purposes has resulted in decline in area under food and non-food crops which in turn caused drastic reduction especially in the foodgrain production in the three study villages. The villages are certainly placed in a disadvantageous position in terms of security and self-reliance in food.

IV

POLICY IMPLICATIONS AND CONCLUSION

The study conducted in three villages in Dindigul district of Tamil Nadu reveals that the tendency to sell agricultural land is more among low income groups and illiterate farmers. The agricultural land conversion has lowered the status of most farmers into landless and marginal farmers in the study villages. The main non-agricultural uses of converted agricultural land are keeping for speculative gains, mills and factories, construction of houses and educational organisation. The farmers sell agricultural land due to low income from agriculture. In the three villages studied as a whole agricultural output has declined drastically due to agricultural land conversion. The agricultural land conversion has, in general, affected the socio-economic status of the farming community although it has helped two of the sample farmers to get exceptional gain from land conversion in the study villages. Alongside, it has adversely affected the food security and self-reliance of villages under study. In order to ameliorate the conditions the following measures could be taken up, (a) Remunerative price must be ensured to the farmers, (b) Co-operative farming involving women's self-help groups may be encouraged, (c) Location-specific agricultural development programme may be implemented by the government and other agencies, (d) Computerisation of land records and integration of this must be made across the relevant departments and institutions such as land registration office, village administration office, Village Panchayat office, block development office, department of agriculture and public works department (e) Farmer friendly, less costly and appropriate farm techniques like zero budget farming may be disseminated (f) MGNREGS and farming activities may be linked (g) Encourage research and development rescuing agriculture from loss. Besides direct government intervention is needed in respect of preventing the diversion of lands from agriculture to non-

agricultural purposes, especially for speculation, and thus retaining farmers in cultivation. This is the need of the hour. Since supply of land is fixed use of land for one purpose will be at the expense of other and when huge investments are made on land for one purpose it cannot be reverted for other uses. Hence, agricultural land which has greater implication on food security needs to be protected against indiscriminate conversion.

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