

Recent Dynamics in Small Farming in Sri Lanka: Some Evidence from Three Districts

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ABSTRACT: *This paper attempts to examine some aspects of recent changes in subsidiary food crop production in Anuradhapura, Nuwara Eliya and Jaffna districts. Gross margin analysis and the estimation of trends in production form the main analytical framework of this study. The crops selected for the analysis are chillie, potato and red onion.*

Trends in production and the extents cultivated remained positive in the Nuwara Eliya and Jaffna districts during the study period 1971–1989. Anuradhapura district, however, showed a drastic reduction in chillie production after 1977. Comparatively, higher trend in cost of production in Jaffna is explained by high cost of inputs particularly the wage rate. Further, low prices for farm products led to reduce profit margin in all the crops in the districts studied. Such a process might have accelerated the social polarization in the past.

INTRODUCTION

Sri Lanka has diverse agro-ecological zones with various farming systems, comprising different categories of small farmers. It appears that the traditional subsistence oriented farming systems in the country are in transition and moving toward a market economy. Cultivation of other field crops such as chillie, red onion and potato have contributed to this transition and given impetus to its growth since late 1960's. The import restrictions in the early 1970s, acted as a catalyst. Subsequent liberalization policies since 1977 affected the other field crops cultivation in many different ways.

The consequences of the post 1977 economic policies on the development of the agricultural sector of Sri Lanka have not been discussed adequately. Although there are different theories to explain some of these changes at the national level, case specific empirical evidence is lacking to make policy oriented recommendations. Therefore

the general objective of this paper is to examine the pattern of recent changes in the agriculture sector in Sri Lanka. The specific objectives of this study are as follows:

1. Examine the production performance of agriculture in three districts namely Jaffna, Anuradhapura and Nuwara Eliya.
2. Investigate the changes in the agricultural development process in the above mentioned districts since 1977.
3. Evaluate the impact of such changes on the well being of the small farmer.

METHOD AND DATA

The crops selected for the analysis of this study are chillie, potato, red onion, and paddy. Jaffna and Nuwara Eliya districts where land intensification has proceeded furthest and Anuradhapura district where the scope for diversification of paddy land is being intensively explored, were selected for the study. The specialized cultivation of chillie and potato in Anuradhapura and Nuwara Eliya districts respectively were compared to cropping system in Jaffna. A rigorous comparative study of production of red onion and paddy in Jaffna and other districts could not be made, since paddy and red onion are cultivated for home consumption and commercial purposes respectively in Jaffna district, while it is the reverse in the other two districts.

The secondary data published by the Department of Agriculture on the above crops (*i.e.* production, extent cultivated, cost of production and prices) during 1971 to 1989 were analyzed. Two types of gross margins for these crops were calculated. One included family labour and the other excluded family labour as a component of the cost of production. In the latter case cost of family labour was considered as an income to the farmer. The trend in the extent cultivated, production, productivity (yield/ha), prices, gross margin and cost of production were estimated using the ordinary least squares method. To capture the effect of the change of policy periods, time dummy variables were used. The linear equation used was

$$Y = a + b X + c D$$

where Y = variable for which the growth rate is estimated
 X = time variable,

D = time dummy for period before and after 1979
a = intercept, b and c = regression coefficients

Study area

Jaffna and Anuradhapura fall within the dry zone while Nuwara Eliya falls in the wet zone. Jaffna and Nuwara Eliya districts are the smallest heavily populated and intensively cultivated districts where the average holding under lowland and highland are 0.1ha and 0.3ha for Jaffna and 0.3ha and 0.4ha for Nuwara Eliya respectively. Both districts are predominantly (80%) owner cultivated with about 50% of the total farmers being part time cultivators. By contrast Anuradhapura is an area of irrigated agriculture where the holding sizes are relatively large averaging 1ha under lowland and 0.7ha under highland and is very thinly populated. Farmers are by and large full time paddy cultivators with major and minor irrigation facilities in this district, whereas paddy cultivation forms a small part of the economy of Jaffna and Nuwara Eliya districts. Nuwara Eliya district consists mainly of stream diversions for irrigation. By contrast irrigation in Jaffna is mainly provided through wells.

RESULTS AND DISCUSSION

Production

As seen in the data presented in Tables 1 and 2, it is apparent that the policy imposed on these crops during 1971 to 1977 have motivated the peasants to increase cultivation except for potato cultivation in the Jaffna district. The decrease in the extent of potato cultivation may be attributed to lower market price, high capital requirement and short supply of seed potato compared to chillie (see Fig.2). It can also be observed that during this period, the farmers in Anuradhapura increased their crop production largely through increases in the area of cultivation, while farmers in Jaffna increased their production by more intensive cultivation. Nuwara Eliya district however adopted both practices.

Comparison of the productivity of these crops reveal that though crop productivity was relatively higher in Jaffna district compared

Table 1. Districtwise total production, extent cultivated and productivity of chillie, potato, red onion and paddy - 1971, 1978 and 1988.

CHILLIE						
JAFFNA			ANURADHAPURA			
Year	Production	Area	Yield	Production	Area	Yield
ction	MT	Ha.	Kg/Ha	MT	Ha.	Kg/Ha
1971	1623.7 (22.1)	849.1 (4.9)	1912.3 (467.3)	30.5 (0.4)	120.7 (0.7)	252.5 (61.7)
1978	3475.5 (12.5)	2652.6 (07.8)	1310.2 (159.3)	3170.2 (11.4)	7599.4 (22.5)	417.2 (50.7)
1988	2480.0 (06.5)	1652.0 (05.1)	1501.2 (128.4)	1563.8 (04.1)	4049.2 (12.4)	386.2 (33.2)

POTATO						
JAFFNA			NUWARA ELIYA			
Year	Production	Area	Yield	Production	Area	Yield
	MT	Ha.	Kg/Ha	MT	Ha.	Kg/Ha
1971	11507.1 (30.2)	533.9 (21.4)	21600.0 (141.6)	11772.2 (30.9)	697.2 (27.9)	16690.0 (109.4)
1978	3897.6 (13.3)	221.8 (08.5)	17600.0 (157.2)	7258.6 (24.7)	1108.8 (42.2)	12610.0 (112.8)
1988	203.0 (0.30)	14.2 (0.8)	14300.0 (119.2)	28874.1 (36.3)	1900.9 (33.0)	15150.0 (126.3)

JAFFNA						
RED ONION			PADDY			
Year	Production	Area	Yield	Production	Area	Yield
	MT	Ha.	Kg/Ha	MT	Ha.	Kg/Ha
1971	31860.9 (70.9)	3193.2 (56.5)	19980.0 (127.3)	13784.8	8606.5	1601.7
1978	52913.5 (73.2)	3935.6 (63.1)	14350.0 (126.7)	17716.1	10978.6	1613.8
1988	60025.4 (51.8)	4368.5 (39.6)	13740.0 (130.7)	10270.5	8809.0	1772.2

Figures in parenthesis are percentages to national total/average)
Source: Department of Agriculture

Table 2. Districtwise growth rates of production, cultivated extent and productivity of chillie, potato, red onion and paddy

	1971-89	1979-83	1984-89	1971-87	1979-87
CHILLIE					
	JAFFNA			ANURADHAPURA	
Production	117.209**	682.281*	-384.691	369.304	-4740.16*
Extent	93.537**	150.968	-754.67*	707.879*	-814.791*
Yield/Ha.	-13.953	252.215	356.354	-7.222	-0.668
POTATO					
	JAFFNA			NUWARA ELIYA	
Production	-487.766*	3624.532	-3547.790	2075.76 ⁰ *	3248.797*
Extent	-24.435*	185.402*	-138.084	127.207**	105.719
Yield/Ha.	0.347	-2.115	-12.734*	0.019	2.163
RED ONION JAFFNA					
Production	3496.81**	-1250.87*	-39251.6		
Extent	86.960**	387.651*	-380.107		
Yield/Ha.	0.137	-3.153*	-4.929		
PADDY JAFFNA					
Production	-15.379	386.150*	183.820		
Extent	-134.470	2611.035*	1633.076		
Yield/Ha.	-0.628	22.090*	11.511		

** Significant at 1 percent level and
* Significant at 5 percent level

to the other districts it declined over time, whereas in the other two districts increase in productivity was observed. However, the time linear trend estimates are not statistically significant. After 1977, though the relaxation in imports has led to a reduction in domestic market price, the production trend in these crops remained positive in Jaffna and Nuwara Eliya districts, and there was also a drastic reduction in the extent cultivated under chillie (46.7%) in the Anuradhapura district. This is indicated by significant negative trends for both production and extent for this district. This may probably be due to the impact of more liberalized policies on these crops. As paddy is the most important crop in the Anuradhapura district, its higher productivity at lower input cost and the available marketing facilities encourage a majority of the peasants to concentrate more on paddy cultivation. In contrast paddy, as a rainfed crop, is cultivated mainly for consumptive purposes in the Jaffna district. As a result of flash floods and lack of high yielding varieties suitable for rain fed condition, Jaffna district experiences frequent crop failures (On an average the gross extent sown varies from the net extent harvested by over 20% per annum). Since paddy production remains practically static Jaffna farmers have to concentrate more on cash crops *i.e.* tobacco, chillie and red onion. These differences in production trends also partly reflect some development of regional specialization in these crops *viz.* paddy in Anuradhapura, potato in Nuwara Eliya and red onion and chillie in Jaffna districts.

It is very likely that due to the unrest in Jaffna district after 1983, cultivated extents of subsidiary food crops have shown a negative trend as seen in Table 2. Examining the district level contribution to national production by these crops, Nuwara Eliya increased its position in potato production from 30% to 36% in 1971 and 1988 respectively, while Jaffna district declined from 22.1%, 30.2% and 70.9% in 1971 to 6.5%, 0.3% and 51.8% in 1988 in chillie, potato and red onion production respectively. Meanwhile, Anuradhapura increased its contribution in chillie from 0.4% in 1971 to 4.1% in 1988.

Cost and other economic indices

It is found that in 1987, the per hectare cost of production(COP) of chillie in Jaffna (Rs. 75,000/= /ha.) was three times higher than that of the Anuradhapura district. In the case of potato, Jaffna district's COP was 20% less than (101,500/= /ha.) that of the Nuwara Eliya

district for the same years. A close scrutiny of cost of production for the years 1978 - 1987 reveals that the capital and labour intensive agricultural practices have been adopted in Jaffna and Nuwara Eliya districts respectively.

In addition to higher use of fertilizer and agro-chemicals and family labour in these districts, lift irrigation is the most important contributing factor that helps intensive cultivation in Jaffna district. Furthermore, the correlation coefficients between cost of production and productivity (0.7), capital outlay (Total cost - Total labour cost) and labour units (man days/ha) (0.5) and labour units and productivity (0.4) are comparatively high in Jaffna district (see Table 4). This indicates that technology adopted in this district is relatively more capital and labour intensive compared to the other districts.

Family labour, as an important component in peasant cultivation, has been declining over time in all the districts. As a result, increased demand for hired labour would have resulted in increase in wage rates. This process was much higher in the Jaffna district than in the other districts (Figure 1). The real wage rates in 1987 were Rs. 70/=, Rs. 42/= and Rs. 46/= in the Jaffna, Anuradhapura and Nuwara Eliya districts respectively. Increase in wage rate together with increase in input prices (including kerosene for irrigation) and land scarcity, have led Jaffna farmers to adopt cultivation techniques to economize labour and land. As a result, it was observed that there was a reduction in the cost of labour, fertilizer, agro-chemicals and irrigation water. Since mid 1980s the above process paved the way for farmers to make labour contractual arrangements for cultivation activities and increase size of holding through both increased owner cultivation and leasing land.

The cost of production of crops shows increasing trend in all districts with wide variations among the districts as seen in Table 3. Cost of production including family labour showed a higher trend than cost of production excluding family labour. Cost of production (Rs/kg) in Jaffna showed higher positive trend in all the crops in both cases, *i.e.* 5.80 and 4.86 in chillie and 0.72 and 0.66 in potato cultivation respectively. In red onion the trend was 0.75 when the family labour was included and it was 0.02 without family labour. Though cost of production in Anuradhapura for chillie and Nuwara Eliya for potato show positive trend when family labour is included, they were comparatively lower (0.35) than that of Jaffna.

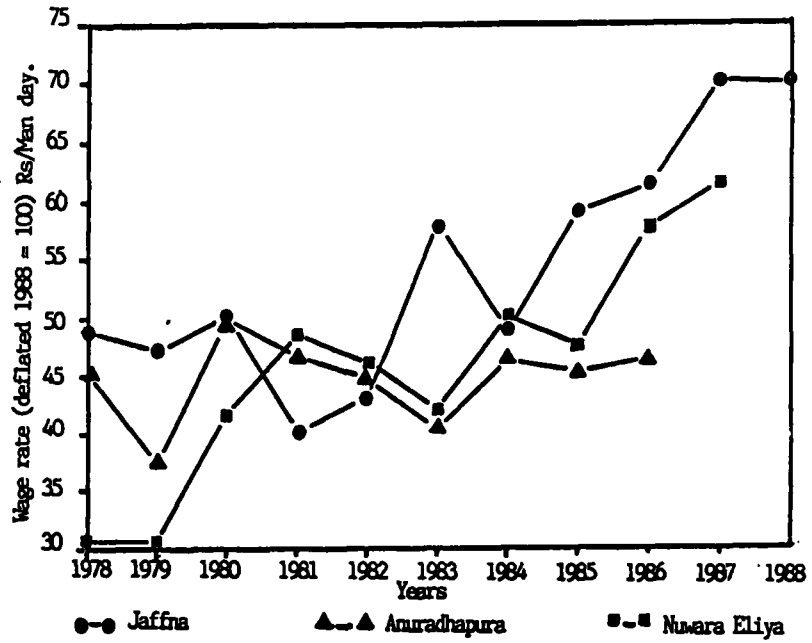


Fig. 1. Districtwise real wage rates in Jaffna, Anuradhapura and Nuwara Eliya.

Table 3. Districtwise regression coefficients of cost of production and gross margin per kilogram of chillie, potato and red onion

	1978 - 1988	1979 - 1987
CHILLIE		
	JAFFNA	ANURADHAPURA
Cost of Production		
i.f.l	5.806**	0.353
e.f.l	4.885**	-0.559*
Gross Margin		
i.f.l	-3.255**	-2.168
e.f.l	-2.137*	-1.244
POTATO		
	JAFFNA	NUWARA ELIYA
Cost of Production		
i.f.l	0.716*	0.144
e.f.l	0.658**	0.189*
Gross Margin		
i.f.l	-0.164	-0.074
e.f.l	0.003	0.177
JAFFNA RED ONION		
Cost of Production		
i.f.l	0.752	
e.f.l	0.019	
Gross Margin		
i.f.l	-0.547*	
e.f.l	-0.642**	

i.f.l = including family labour and e.f.l = excluding family labour

** significant at 1 % level and * significant at 5 % level.

Table 4. Districtwise correlation coefficients between capital outlay and labour inputs (mds), yield/ha and total cost of chillie, potato and red onion

	CHILLIE		POTATO		RED ONION
	JAFFNA	A'PURA	JAFFNA	N'ELIYA	JAFFNA
Capital Out Lay* & Labour Input(mds)	0.73	0.67	0.42	0.36	0.32
Yield/ha & Total Cost of Production /ha (i.f.l)	0.37	0.12	0.18	0.18	0.83
Yield/ha & Labour Inputs (mds)	0.44	0.28	0.27	0.07	0.56

Capital Outlay = Total Cost of Production - Total Labour Cost.

The district level real farm gate prices of chillie, potato and red onion are shown in Figure 2. It indicates a static pattern in price trends whereas production factors such as input cost particularly wage rate show a rapid increase over time (Figure 1) This resulted in erosion of the gross margin in all the districts and affected most adversely the Jaffna farmers. As seen in Table 4, the fall in gross margin (Rs/kg) is more marked in chillie (-3.26 and -2.14) and red onion (-0.55 and 0.64) cultivation and less in potato cultivation. Even when family labour is not accounted for, the negative trends in gross margins are quite large for these crops in Jaffna and Anuradhapura districts. Gross margins in potato production in both cases are insignificant. This reveals not only the reduction of gross margin but also decreasing income to farmers. The negative trends in gross margins are crucial aspect for further investigation.

The picture that emerges in market oriented cultivation in subsidiary food crops production is on the one hand a sharp increase in cost of production and on the other hand relatively stagnant prices for farm products. This paves the way for the affluent peasants to engage in subsidiary food crops cultivation while compelling others to become agricultural labourers or revert back to non cash crop cultivation.

Given the increase in wage rates, as pointed out earlier, those who become labourers may draw higher income than subsistence farmers. This is the process of pauperization which one could expect to have widened in the post 1977 period. These are crucial issues one has to analyze carefully for further policy formulation.

Given the structural diversity of peasant agriculture, it is not possible to conceptualize the agrarian structure and its changes, to a uniform concept of "peasant society" or "peasant economy" in Sri Lanka. Therefore a study on spatial pattern of peasant sector development and the rate of change of this process should be carried out. Shanmugaratnam (1985) and Gunasinghe (1985) explain these aspects theoretically in their studies on "Peasant Agrarian Systems in Sri Lanka". In this respect, Weerahewa and Abeygunawardena (1989), Abeygunawardena and Kudaligama (1990) analyzed the dry and wet zone paddy sector and pointed out that the profit margins and incomes received by peasants are showing a downward trend. They also found that the emerging trends were mainly due to lower prices of paddy and high cost of production. The evidence provided by this study too

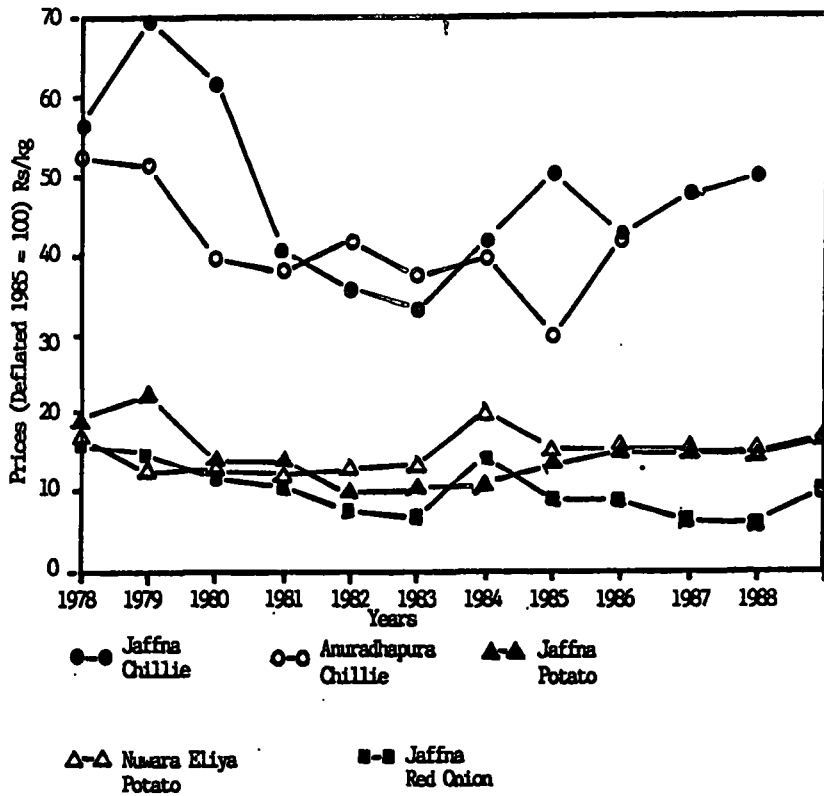


Fig. 2. Districtwise Farm Product Prices in Jaffna, Anuradhapura and Nuwara Eliya.

support a similar phenomenon for subsidiary food crops production in the districts studied.

CONCLUSION

This study reveals that the peasant sector production and the changes in gross margins significantly differ in three districts namely Jaffna, Anuradhapura and Nuwara Eliya. This may be attributed to the differences in the nature of the peasantry and agro-climatic conditions of the respective districts. The reasons for higher productivity in Jaffna district appear to be due to more cash input and intensive management activities. In spite of declining gross margins, Jaffna farmers continue to cultivate the same crops. This may be due to lack of available alternative ventures for them to earn a higher income.

Hence it is suggested that in-depth studies be conducted on adjustments of cost of production of these crops and also further investigation be conducted on the social formation processes on-going with these adjustments. Emphasis on the pauperization and proliterization of the small farming society needs to be given high priority. In terms of policy implications it is necessary to introduce either incentive schemes to improve conditions of the small farmers in more equity oriented manner to provide relief especially to those who are currently under threat or find alternative ventures to absorb the polarized lot from the rural society.

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