

REVIEW OF LITERATURE

P.M.Thomas “Decline of paddy cultivation in Kerala a study of economic causes” Thesis. Department of Economics , Dr. John Matthai Centre, University of Calicut , 1996

Chapter 2

REVIEW OF LITERATURE

In this chapter a brief review of earlier studies related to the performance of seasonal and annual crops in general and that of paddy in particular is given. Along with their major findings, various methods and statistical tools used in the studies are also mentioned.

This chapter is divided into four parts. In the first part, studies related to the growth rates in agricultural output and its components at the aggregate and disaggregate levels are reviewed. Second part deals with those studies which analyse the decomposition of growth rates in agricultural crop production and the third part is concerned with the studies which analyse the role of different sources of productivity in crop production. Literature related to the examination of cost, price and other factors involved in cropping pattern changes are reviewed in the fourth part.

2.1. Growth Rates in Agricultural Output and Its Disaggregation

During the second half of sixties, Indian economy witnessed the introduction of a new technology in its farm sector which is usually termed as 'Green Revolution'. Most of the earlier studies on the performance of food crops in India focus on the growth differentials between the periods before and after the introduction of Green Revolution.

Failure of Green Revolution in augmenting agricultural output growth rates in the country had been pointed out by C.H. Hanumantha Rao.¹ As part of his study the

1. Hanumantha Rao C.H. (1975), *Technological change and Distribution of Gains in Indian Agriculture*, The Macmillan Co. of India Ltd., New Delhi.

author compared the growth rates in the production and productivity of all major crops before and after the introduction of the new agricultural technology. The study observes that even in the absence of any remarkable change in technology and mode of cultivation, during 1950's agricultural growth rates showed acceleration in the country. However, inspite of the application of HYV seeds, improvements in irrigation and increase in fertilizer use, growth rates decelerated during 1960's.

In order to analyse agricultural growth rates, V.N. Reddy had applied two non parametric statistics viz., Kendell's 'K' statistic and Spearman's rank correlation coefficient 'P', along with the conventional statistical methods.² The period covered in his study was 1950-51 to 1973-74 which was further divided into six sub periods for growth rate comparisons. The study observed the phenomenon of deceleration in agricultural production in all the sub-periods except the period 1964-65 to 1973-74 during which growth rates remained constant.

Nilakantha Rath had analysed the overall performance of Indian agricultural sector for the period 1955-56 to 1977-78 by fitting exponential trend functions to the index numbers of production, area and yield of all major crops raised in the country.³ Taking 1964-65, which was the last year of good crop before the introduction of HYV seeds, as the year of separation, the author had divided the period of his study into two sub periods. Growth rates in the production of food grains, non food grains and all crops taken together were separately estimated for the two sub periods. The study shows that the growth rates of both food crops and non food crops had declined during the second period compared to the first period and with the introduction of HYV seeds only two cereals viz., wheat and ragi improved their performance, while rice production showed negative growth rates.

2. Reddy V.N. (1978), "Growth Rates", *Economic and Political Weekly*, Vol. 13, No.19, May 13, pp. 806-812.

3. Rath Nilakantha (1980), "A Note of Agricultural Production in India During 1955-78", *Indian Journal of Agricultural Economics*, Vol. 35, No. 2, April-June, pp. 94-103.

After comparing the performance of the rice economy of Kerala for the period 1951-52 to 1970-71 with some of the major rice producing states in the country, K.N. Raj, P.G.K. Panikar and T.N. Krishnan observed that the linear growth rate of rice production in Kerala during the period 1952-53 to 1964-65 was the highest in the country.⁴ According to their study, eventhough the bulk of paddy in the state remained outside the main stream of Green Revolution, a small segment of it viz., the Summer crop has shown significant increase in yield rates during the second half of 1960's.

Growth rate differences in agricultural production can be analysed by using an appropriate statistical test of significance as shown by Yoginder K. Alagh and P.S. Sharma.⁵ Inorder to examine the differences in agricultural growth rates before and after the introduction of Green Revolution, the authors had applied a 't' test. The test statistic used in their analysis is given as,

$$t = \frac{b_1 - b_2}{\sqrt{(SEb_1)^2 + (SEb_2)^2}}$$

where b_1 and b_2 are the regression coefficients for the first and second periods. Their study has shown that the relative growth rates in food crops had been higher during the period 1960-61 to 1969-70.

Eventhough various statistical curves like linear, log-linear and Gompertz are used in the analysis of growth rates, different authors analysing the same set of data may arrive at different rates of growth depending on the goodness of fit of the various curves they use. In order to solve this growth rate controversy M. Chattopadyay and G. Battacharya have used a Logistic curve in their crop-wise analysis of agricultural

4. Raj K.N. et. al. (1972), *Some Perspectives of Planning and Development With Particular Reference to Kerala - A Preliminary Paper on the Approach to the Fifth Five Year Plan*, Working Paper No. 5, Centre for Development Studies, Thiruvananthapuram.

5. Alagh Yoginder K, Sharma P.S. (1980), "Trend in Growth Rates", *Indian Journal of Agricultural Economics*, Vol. 35, No.2, April-June, pp. 104-118.

production for the period 1950-51 to 1982-83.⁶ Their study shows that except for some commercial crops, Green Revolution had no impact on inferior cereals and had little impact on superior crops. Again the HYV technology, as the study observes, had taken place in such a scattered and fragmentary way that its impact on the country as a whole was only marginal.

While dividing the whole period of study into sub-periods many of the earlier authors had assumed discontinuity in growth rates. As proved by J.K. Boyce, this assumption may result in misleading conclusions.⁷ In order to avoid the discontinuity assumption, he had introduced a kinked exponential model. In an analysis with two sub-periods, the model is given as,

$$\ln Y = a_1 + b_1 (d_1 t + d_2 K) + b_2 (d_2 t - d_2 K) + U$$

Where K is the break point, b_1 and b_2 are the growth rates for the sub periods and d_1 and d_2 are the dummy variables.

For nearly two decades since its formation overall agricultural production and its components had shown positive growth rates in Kerala. However, since mid-seventies it began to decline. This phenomenon of the retarded growth of the agricultural sector of the state economy is usually termed as 'agricultural stagnation'. In most of the state level studies conducted during the eighties and early nineties, growth rates are compared between the periods before and after mid seventies.

An exploratory analysis of the agricultural stagnation in Kerala was undertaken by K.P. Kannan and K.Pushpangadan, covering the period 1962-63 to 1985-86.⁸ Their study begins with an analysis of the changes in land use pattern and then it

6. Chattopadhyay M, Battacharya G. (1986), "Growth of Indian Agriculture - A Reappraisal", *Indian Journal of Agricultural Economics*, Vol. 42, No.I, January-March, pp.67-75.

7. Boyce J.K. (1986), "Kinked Exponential Models for Growth Rate Estimation", *Oxford Bulletin of Economics and Statistics*, p.48.

8. Kannan K.P., Pushpangadan K. (1988), "Agricultural Stagnation in Kerala - An Exploratory Analysis", *Economic and Political Weekly*, Vol.23, No.39, September-24, pp. A 120-128.

examines the growth rates in output, yield and acreage of food grain and non food grain crops. As the sources of productivity; area under irrigation, rain fall index and fertilizer use per hectare were considered. Their empirical analysis shows that, during the period 1962-63 to 1974-75 there had been an overall increase in the growth rates in area, production and yield of all major commercial crops. However, the period from 1975-76 to 1985-86 was one of near stagnation in the growth rates of aggregate area under cultivation, production and productivity.

In a disaggregate study of the rice economy of Kerala, P.S.George and Chandan Mukherjee analysed the growth trends and variability in area, yield and production of paddy during the three seasons in the major rice growing districts in the state.⁹ The period covered in their study was 1960-61 to 1982-83 which had been divided into two sub periods by taking the year 1975-76 as the break point. According to the study, during the first period rice production, its acreage and productivity had shown positive growth rates. However, during the second period rice production declined, inspite of an improvement in productivity. The study also reveals the wide disparities that exist in the compound growth rates of area, production and productivity across different regions and over the various seasons.

In order to capture the spatial and crop dimensions of agricultural stagnation, K.P. Kannan and K. Pushpangadan in another study analysed the growth performance of individual crops for the state as a whole as well as across regions.¹⁰ Growth rates were estimated by using a kinked exponential model in order to avoid the discontinuity assumption. Their analysis shows that, during the period 1962-63

9. George P.S., Mukherjee Chandan (1986), *Rice Economy of Kerala - A Disaggregate Analysis of Performance*, Working Paper No. 213, Centre for Development Studies, Thiruvananthapuram.

10. Kannan K.P., Pushpangadan K. (1990), *Dissecting Agricultural Stagnation in Kerala- An Analysis Across Crops, Seasons and Regions*, Working Paper No. 238, Centre for Development Studies, Thiruvananthapuram.

to 1974-75, seasonal crops such as paddy and tapioca had registered positive growth rates while among the perennial crops, coconut was the only one crop that showed a declining trend. During the second period, from 1975-76 to 1985-86, all seasonal and perennial crops in the state except rubber have shown declining growth trends.

A crop specific analysis of agricultural stagnation attempted by K. Pushpangadan also shows that the symptoms of stagnation had been more severe among food crops, especially paddy and tapioca.¹¹ His empirical analysis identifies the sources of stagnation as the falling demand coupled with instability in the market, resulting in loss of income to the farmers of food crops.

According to D. Narayana, most of the earlier studies on the agricultural performance of the state economy are based on methods of analysis suitable for an agrarian economy predominated by seasonal and annual crops.¹² However, as he points out, the state's agricultural sector is dominated by tree crops which are of a perennial nature. His study concludes that the period from mid seventies has not been one of agricultural stagnation in Kerala, instead, it is a period of intense investment activity in replanting, under planting and intermixed cropping.

2.2. Decomposition of Growth Trends in Agricultural Production

The first systematic attempt to decompose the agricultural growth in India was made by B.S. Minhas and A. Vaidyanathan.¹³ They have taken area, yield and cropping pattern as the pure components of output. In their additive scheme of decomposition

11. Pushpangadan K. (1990), *Agricultural Stagnation in Kerala - An Econometric Study of Tapioca*, Working Paper No. 226, Centre for Development Studies, Thiruvananthapuram.

12. Narayana D. (1990), *Agricultural Economy of Kerala in the Post Seventies - Stagnation or Cycles*, Working Paper No. 235, Centre for Development Studies, Thiruvananthapuram.

13. Minhas B.S., Vaidyanathan A. (1965), "Growth of Crop Output in India 1951-54 to 1958-61 - An Analysis of Component Elements", *Journal Indian Society of Agricultural Statistics*, Vol. 17, No. 2, December, pp. 230-252.

contributions of changes in area, yield and cropping pattern and the interaction effect of these components in growth of output were analysed. Their analysis shows that the changes in cropping pattern had contributed substantially to improving the total Agricultural output in the country during 1950's.

While analysing the growth of agricultural productivity in Rajasthan, Vidya Sagar has decomposed the changes in the value of agricultural production in terms of area, productivity and price.¹⁴ In his scheme of decomposition, price component measures the effect of inflation in the growth of output values. The productivity component is a composite of four structural components viz., cropping pattern, price structure, yield structure and their interactions.

As additive schemes of decomposition are useful only in the decomposition of linear growth rates in output, many writers have applied multiplicative models to verify the relative role of various output components.¹⁵ In his multiplicative model A. Parikh used the identity of the index number of production as a multiple of the index numbers of area, changes in cropping pattern and changes in crop yields.¹⁶ His study also accepts the hypothesis that the effect of cropping pattern changes in output is significant.

14. Sagar Vidya (1980), "Decomposition of Growth Trends and Certain Related Issues", *Indian Journal of Agricultural Economics*, Vol.35, No. 2, April-June, pp.42-59.

15. See for example,

Venkteswaralu (1965), "Growth of Agricultural Output in Andhra Pradesh During the Period 1952-53 to 1961-62", *Arthaniti*, Vol. 8, No. 2, July, p. 43.

Dayal R. (1986), "Agricultural Growth Rates and Their Components", *Indian Journal of Agricultural Economics*, Vol. 21, No. 4, October-December, pp. 125-129.

George P.S., Mukherjee Chandan (1986), *op. cit.*, p. 36.

16. Parikh Ashok (1966), "State wise Growth Rates in Agricultural Output - An Econometric Analysis", *Artha Vijnana*, Vol. 8, No. 1, March, pp. 5-10.

2.3. Sources of Productivity in Agricultural Crop Production

Role of different sources of productivity such as HYV seeds, use of fertilizer, irrigation etc., in enhancing agricultural productivity has been analysed by many authors. In order to examine the causes of inter state disparities in crop yields and agricultural growth rates, K.N Raj had compared the performance of seven major crops in different states for the period 1949-50 to 1958-59.¹⁷ Factors such as the percentage of irrigated area, size of land holdings and changes in technology were treated as the sources of productivity. Again the extent of mechanisation and fertilizer use were taken as the indicators of changes in technology. The study came to the conclusion that the use of fertilizers and the proportion of area under irrigation are positively related to agricultural productivity.

In order to examine the role of technological progress in the agricultural sector of the Kerala economy, P.P. Pillai has examined the contributions of irrigation, fertilizers, pesticides, HYV seeds and modern implements in improving farm productivity.¹⁸ According to his analysis, role of irrigation and HYV coverage in the state in improving paddy productivity is doubtful. However, the study points out that even though at the aggregate level the link between agricultural productivity and fertilizer use has been very weak during the sixties and the seventies, increase in paddy productivity recorded since the early eighties in Kerala can be partly attributed to the increase in fertilizer consumption.

Evaluation studies conducted by the State Planning Board had earlier pointed out that the cost of cultivation of HYV paddy in the state has been almost 30 percent higher than the cost of cultivation of traditional varieties and their average yield was

17. Raj K.N. (1961), "Some Features of the Economic Growth of the Last Decade in India", *Economic and Political Weekly*, Vol. 13, Annual Number, February, pp. 117-121.

18. Pillai P.P. (1994), *Kerala Economy*, Institute of Planning and Applied Economic Research, John Matthai Foundation, Aranattukara, Thrissur, pp. 59-101.

nearly 42 percent higher than that of local varieties.¹⁹ Therefore these studies had come to the conclusion that from the point of economic viability, HYV paddy has only a slight advantage over the traditional varieties and the application of HYV seeds creates only an environment for the efficient use of other inputs.

P.G.K Panikar has also made a similar attempt to examine the trends in the adoption of HYVs, their yield rates and other factors affecting its adoption in Kerala.²⁰ Findings of his study were based on field surveys conducted in Palakkad and Kuttanad, the two principal rice growing regions in the state. According to the study, yield rates of HYVs in the study areas have not shown any significant positive relationship with either the size of holding or the application of fertilizers. On the other hand, the high and rising prices of fertilizers and plant protection costs had pushed up the cost of cultivation of HYV paddy over the years. Therefore the study concludes that the rice economy of the study areas is caught in a paradox of modernisation without commensurate improvement in net returns.

It is generally believed that the infrastructural facilities needed for the adoption of HYVs are more accessible to rich farmers having large holdings and they are in a better position to bear the risk involved in the change of farm technology. As Rapporteurs Report on Economic Aspects of HYV programme puts it, "In so far as the success of HYV programme depends on the ready and adequate availability of credit, access to knowhow, markets etc, and so far as these are related to the size of

19. Government of Kerala (1976), *High Yielding Varieties Programme in Kerala (Virippu Paddy) 1973-74 - An Evaluation study.*

High Yeilding Programme in Kerala (Mundakan and Punja Paddy) 1973-74 - Evaluation Report, Evaluation Division, State Planning Board, Thiruvananthapuram.

20. Panikar P.G.K. (1981), *High Yielding Varieties of Rice - A Study of Selected Areas in Kerala*, Working Paper No. 140, Centre for Development Studies, Thiruvananthapuram.

holdings, the HYVs may benefit richer farmers to a greater extent than the poor ones".²¹ However, according to a study conducted by M.L. Dantwala the new strategy of using HYV seeds is neutral to the scale of farming as large holdings are not needed in the interest of higher production techniques in agriculture.²²

Making use of data obtained from a number of field studies conducted by the Agro Economic Research Centre in the selected districts of South India between 1966-67 and 1968-69, C. Muthiah had made an attempt to examine the participation rates of small and large farmers in HYV paddy programme.²³ He observes that small size tenant holdings are better suited to the labour intensive new varieties of seeds and therefore more favourable to the small farmers. With regard to the participation rate his analysis shows that small farmers do not lag much behind large farmers in adopting HYV programme, although their participation rate was much lower initially.

Many writers had tried to examine the role of irrigation in improving paddy productivity. In the Kerala context most of these studies assert that the proportion of irrigated area under paddy is not positively related to its productivity. A study conducted by D. Narayana to examine the impact of irrigation in the agricultural development of the state shows that the contribution of irrigation in stabilising and increasing paddy productivity in the state has been marginal.²⁴ Studies of Kannan and Pushpangadan (1988), George and Mukherjee (1986), Suseelan (1988), and Pillai (1994) also regard the role of irrigation in improving paddy productivity in the state as insignificant or marginal.

21. *Rapporteur's Report on Economic Aspects of High Yielding Varieties Programme*, (1968), as quoted in, Muthiah C. (1971), "The Green Revolution - Participation by Small Versus Large Farmers", *Indian Journal of Agricultural Economics*, Vol. 26, No. 1, p. 53.

22. Dantwala M.L. (1969), "Towards an Efficient and Just Land System", *Yojana*, Vo.13, No. 23, November, pp. 34-38.

23. Muthiah C. (1971), op. cit., pp. 53-65.

24. Narayana D. (1983), "Linking Irrigation with Development - The Kerala Experience", *Economic and Political Weekly*, Vol. 18, Nos. 45,46, July-December, pp. 1935-1939.

At the disaggregate level C.J. Joseph had examined the economic aspects of minor irrigation in Kerala on the basis of a field survey conducted at Piravam village.²⁵ Major conclusion emerged from his study is that minor irrigation has helped paddy farmers in the state to intensify cropping, increase the application of modern inputs and thereby to improve productivity.

The resource use efficiency in rice cultivation has been examined by P.K.Muraleedharan.²⁶ Findings of his study are based on a case study conducted in Thrissur district. According to his study inputs such as human labour, fertilizers and manures are not effectively used in the study area. Similarly K.N. Ninan had made an attempt to examine the relationship between labour use and productivity of tapioca and paddy crops.²⁷ The study points out that the average labour productivity in tapioca and paddy can be increased only by reducing the per acre labour input and a simultaneous increase in both employment and productivity is possible only through the upgradation of farming technology in the state.

During the last decade the proportion of Plan outlays on agriculture and allied services had shown a declining tendency both in the country and in the state. Recently A. Ganeshkumar has made an attempt to assess the consequence of falling agricultural investments in our economy.²⁸ According to his analysis even though the shifting of resources away from agriculture to non agricultural purposes may result in a faster growth of GDP, the resultant growth across sectors is likely to be uneven

25. Joseph C.J. (1984), *Economics of Minor Irrigation in Kerala - A Case Study*, unpublished Ph.D. Thesis, Calicut University.

26. Muraleedharan P.K. (1982), "Resource Use Efficiency in Rice Cultivation in Lowlying Lands in Kerala" in Pillai P.P. (ed), *Agricultural Development in Kerala*, Agricole Publishing Academy, New Delhi, pp. 147-153.

27. Ninan K.N. (1984), "Labour Use in Agriculture - Case Studies of Tapioca and Paddy", *Economic and Political Weekly*, Vol. 19, Nos. 52, 53, December 22-29, pp. A 199-204.

28. Ganeshkumar A. (1992), "Falling Agricultural Investments and Its Consequences", *Economic and Political Weekly*, Vol. 27, No.42, October 17, pp. 2307-2312.

and the decline in agricultural growth will lead to growing income inequalities in rural areas.

Relevant issues related to fertilizer subsidy in the Indian agricultural context were analysed by Ashok Gulati and G.D. Kalra.²⁹ In their paper they examined the desirability of a trade off between fertilizer subsidy and investment in irrigation. According to the findings of their study resource allocation becomes more effective by a shift in favour of irrigation. Similarly the implications of price subsidies and irrigation investment in India were analysed by D.K. Rath and Atul Sarma.³⁰ Their study concludes that investment in irrigation is better than subsidies in the long run, even though it may create some problems in the immediate future from the point of view of equity.

2.4. Cost-Price Structure and Other Factors as Determinants of Cropping Pattern Changes

Generally factors behind changes in cropping pattern can be broadly divided into price factors and non price factors. The conventional method to study the role of price factors in cropping pattern changes is to adopt the Nerlovian allocation model in which expected prices determine the allocation of area under different crops.³¹ According to K.P. Kannan and K. Pushpangadan a traditional Nerlovian model of price expectation must be modified and longterm factors must be incorporated in order to explain the acreage allocation decisions in the Kerala context.³² It is because of the

29. Gulati Ashok, Kalra G.D. (1992), "Fertilizer subsidy; Issues Related to Equity and Efficiency", *Economic and Political Weekly*, Vol. 27, No.13, July-December pp. A. 43-48.

30. Ratha D.K., Sarma Atul (1992), "Price Subsidies and Irrigation Investment in India - Macro Implications", *Economic and Political Weekly*, Vol. 27, July- December, pp. A. 117-122

31. Nerlove M. (1958), "Distributed Lags and Estimation of Supply and Demand Elasticities, Theoretical Considerations", *Journal of Farm Economics*, Vol. 40, No. 2, p. 305.

32. Kannan K.P., Pushpangadan K. (1988), *Agricultural Stagnation and Economic Growth in Kerala*, Working Paper No. 227, Centre for Development Studies, Thiruvananthapuram, p. 30.

fact that in Kerala acreage shift has been from an annual crop like paddy to perennial crops like coconut and rubber.

While examining the role of non price factors in cropping pattern changes, Dharm Narain observes that apart from the new technology, factors such as irrigation and the location of increase in cropped area play key roles in changes in the all India cropping pattern.³³ In his analysis, time series for the area under different crops were constructed by aggregating the irrigated and unirrigated area components of each crops in all of the states in a year, in order to estimate changes in cropping pattern under the isolated impact of changes in total irrigated-cum-cropped area. According to his findings, in the case of non food grain crops relative prices play an effective role in the determination of its share in the total cropped area while the extent of area under food grain crops largely depends on non price factors.

The N C A E R survey (1962), which was the pionier official attempt to assess the problems and prospects of paddy cultivation in Kerala, after examining the cost price structure of various major crops cultivated in the state, came to the conclusion that under the topographical and climatic conditions of Kerala, commercial crops are more suitable than paddy.³⁴ The Report also criticized the government policy of giving too much importance to paddy at the cost of plantation crops and cash crops.

In order to examine the cost price structure and thereby to assess the profitability of paddy cultivation in the major rice producing areas in Kerala, the Kuttanad Enquiry Commission was appointed by the state government and the Commission submitted its report to the government in November 1971.³⁵

33. Narain Dharm (1977), "Growth of Productivity in Indian Agriculture", *Indian Journal of Agricultural Economics*; Vol. 32, No. 1, January-March, pp. 1-44.

34. National Council of Applied Economics Research (1962), *Techno-Economic Survey of Kerala*, N C A E R Report, New Delhi.

35. Government of Kerala (1972), *Report of the Kuttanad Enquiry Commission*, Thiruvananthapuram.

The terms of reference of the Commission were,

- (i) the cost of cultivation of paddy in Kuttanad compared to similar areas like kole lands of Thrissur etc.,
- (ii) the prevailing wage rates of agricultural labour in Kuttanad and their relation to paddy prices in comparison with the wage structure in Palakkad district and
- (iii) other matters including methods for the reduction of cost of cultivation.

After comparing the increase in wages and paddy prices the Commission came to the conclusion that wage rates had increased at higher rates than paddy prices in the study area. For the improvement of paddy cultivation it recommended the provision of certain infrastructural facilities and the formulation of certain statutory bodies in the major rice producing areas of the state.

Many writers have attempted to identify the important price and non price factors responsible for the low level of absolute and relative profitability of paddy cultivation in Kerala and other matters that induce farmers to shift their paddy growing areas for other uses. After examining the performance of paddy crop in Kerala during the seventies, P.G.K. Panikar has noticed declining tendency in paddy growing areas since mid seventies for the two major seasons, Autumn and Winter. However, area under Summer paddy had shown a slight increase during the second half of the seventies.³⁶ According to his study, the major reasons for the declining trend in paddy cultivation were the rise in the cost of cultivation on the one hand and the simultaneous fall in the price of paddy on the other hand.

Similarly, after considering the drastic decrease in area under paddy in Kerala, V. Radhakrishnan, E.K. Thomas and Jessy Thomas single out falling profitability of the crop as the prime cause for this situation.³⁷ According to the authors,

36. Panikar P.G.K. (1980), *Recent Trends in Area Under and Production of Rice in Kerala*, Working Paper No.116, Centre for Development Studies, Thiruvananthapuram.

37. Radhakrishnan V. et.al.(1994), "Performance of Rice Crop in Kerala" in B.A. Prakash (ed), *Kerala's Economy - Performance, Problems, Perspectives*, Sage Publications New Delhi, pp. 160-179.

rice cultivation in the state can be made more attractive by adopting any one or more of the measures aimed to (i) reduce the cost of production of paddy, (ii) improve paddy productivity and (iii) subsidise paddy cultivation. In order to improve the relative profitability of paddy crop their study suggests the fixation of ceiling prices for competing crops.

M.A. Oommen had highlighted the role of absentee land owners and the high prices of land that prevail in Kerala in the decline of paddy cultivation.³⁸ According to him, following the Gulf boom, land prices have skyrocketed and far from being a means of production land has become a prominent commodity of exchange in the state. Many of the land owners have become employees in the service sector and to them farming is not an occupation but a secure asset or at best a secondary source of income. His study concludes that the system of absentee land lordism has paved the way for a shift of cropping area from seasonal crops such as paddy and tapioca to perennial crops which do not require personal supervision.

Relationship between the abnormal increase in land prices and decline in area under paddy had been pointed out by P. Venugopal.³⁹ He observes that after the crash of share market, investors in Kerala have turned to real estate investment and as a result of it land prices are shooting up in the state. According to his study, in order to take advantage of the rising demand for land, paddy field owners convert their wet lands to salable plots after filling it with soil and it results in the decline of area under paddy.

A study conducted by the Centre for Development Studies in the early seventies had pointed out that the growth of production in Kerala had been accompanied

38. Oommen M.A. (1994), "Land Reforms and Economic Change", in B.A. Prakash(ed) *Kerala's Economy*, Ibid, pp. 117-140.

39. Venugopal P. (1994), "Paddy Fields Fast Becoming Housing Plots", *The Indian Express* (Kochi), February 16.

by a significant shift of work force from the primary sector to the secondary sector, eventhough the output per worker in the agricultural sector was not relatively low.⁴⁰ While analysing the changes in cropping pattern and the resultant changes in the employment situation in Kerala, C. Gopinath and C.S. Sundaresan also observe the same phenomenon.⁴¹ According to their study the declining share of labour in agricultural sector is mainly due to the shift of cultivating area from labour intensive crops to capital intensive crops. The decline in area under paddy is attributed to a number of factors such as the reversal of the rising trend in paddy prices, marginal increase in yield and low profitability of rice.

K. Pushpangadan observes that the wide spread decline in the profitability of paddy cultivation in Kerala has uniformly reduced the rental value of paddy lands.⁴² According to his study land owners have a tendency to allocate their paddy fields for the next best use which leads to the further decline in area under paddy in the state. It also points out that the only way to reverse the trend in paddy production is through the introduction of a cost reducing innovation in production technology.

To sum up, in all of the earlier studies performance of agricultural crops are assessed by examining the growth rates in area, production and productivity of crops. Similarly area, yield and cropping pattern changes are regarded as the pure components of changes in agricultural output. Proportion of irrigated area, size of holdings, coverage of HYV seeds, extent of fertilizer use and mechanisation are taken

40. United Nations (1975), *Poverty, Unemployment and Development Policy - A Case Study of Selected Issues With Special reference to Kerala*, United Nations, New York.

41. Gopinath C., Sundaresan C.S. (1990), *Cropping Pattern Changes and Employment Effects in Selected Districts of Kerala*, Centre for Management Development, Thiruvananthapuram.

42. Pushpangadan K. (1992), *Wage Determination in a Casual Labour Market - The Case of Paddy Field Labour in Kerala*, Working Paper No. 224, Centre for Development Studies, Thiruvananthapuram.

as the major sources of productivity. Both price and non price factors are considered in the analysis of cropping pattern changes. Many of the studies point out that Green Revolution had not made much impact in the performance of kharif crops in general and that of paddy crop in particular. Various studies related to the agricultural development of the state economy show that the low profitability of crops, inadequate infrastructural facilities and environmental degradation are the major causes of agricultural stagnation in Kerala. Poor performance of paddy crop in the state since mid seventies is attributed to factors like high cost of cultivation, negative growth trends in paddy prices, low profitability of the crop compared to its alternative crops, use of paddy lands for non agricultural purposes etc.

* * * * *