PROBLEMS AND PROSPECTS OF PADDY CULTIVATION

IN KUTTANAD REGION

A Case Study of Ramankari Village in Kuttanad Taluk

DRAFT REPORT

P M THOMAS

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INTRODUCTION

Even though the food habits of the people of Kerala had remarkably changed over the last few decades, rice still continues to be their staple food. The diverse topographic, climatic and soil conditions of the state enable its people to cultivate a wide variety of seasonal and perennial crops. The various crops raised within the state are broadly classified into food crops, garden crops and plantation crops[1]. An analysis of the changes in the cropping pattern in Kerala during its post formation period clearly shows that there has been a persistent shift in favour of garden crops and plantation crops at the expense of food crops. Within a period of 40 years from1960-61 to 1998-99 area under the principal food crops declined from 11.23 lakh to 5.65 lakh hectares showing an aggregate decrease of 49.69 percent. Meanwhile area under the major garden crops viz., coconut, arecanut, cashewnut and pepper increased from 6.55 lakh to 12.30 lakh hectares and area under plantation crops increased from 2.06 lakh to 6.32 lakh hectares showing overall increases of 87.79 percent and 206.83 percent respectively.

Rice accounts for nearly 95 percent of the total amount of food grains produced within the state. Over the past several decades the state government had initiated and implemented several intensive and extensive measures to increase domestic rice production. Agricultural development programmes like the Intensive Agricultural District Programme (IADP) of 1960-61, the Intensive Paddy Development Programme (Package Programme) of 1971-72, the Operational Research Project in Integrated Rice Pest Control implemented from 1975 to 1995, the Group Farming Programme of 1989-90 and the Integrated Programme for Rice Development (IPRD) of 1994-95 were designed exclusively for the development of the state's paddy farm sector. Large number of research institutions and soil testing laboratories were also set up in the major rice producing areas of the state. Nearly 20

[1] Food crops include paddy, tapioca, other cereals and millets, banana and other plantains and pulses. Crops like coconut, arecanut, cashewnut and pepper are garden crops while tea, coffee, cardamom and rubber are plantation crops.

percent of the total outlays of the Five Year Plans so far implemented in the state had been earmarked for the development of its primary sector and a major portion of the amount were spent for the promotion of paddy cultivation. Again almost all of the major and medium irrigation projects in the state were also executed with a view to facilitate both extensive and intensive paddy cultivation

In spite of the strenuous efforts of the government, the hither to performance of the paddy farm sector in the state has been quite disappointing. Since the mid seventies both the area under the crop and production of paddy had been declining in the state at alarming rates. Paddy growing areas in Kerala amounted to 33.16 percent of its total cropped area (TCA) during the year 1960-61. It declined to 18.38 percent in 1990-91 and further decreased to 12.10 percent by the year 1998-99. In this background the present study is a micro level attempt to identify the current problems in the paddy farm sector and to suggest remedial measures for its revival

1.1 Review of the Performance of Paddy Farm Sector in Kerala

According to 1961 census Kerala had a population of 16.9 millions that amounted to 3.85 percent of the country's total population. In the year 1960-61 the state accounted for 2.5 percent of the total amount of rice produced inside the country. The relative shares of the state both in area and production of rice showed positive growth trends through out that decade but began to decline since the early years of the seventies. By the year 1980-81 the state's share in area under paddy and rice production declined to 2 percent and 2.37 percent respectively. As per the 1991 census the state's population increased to 29.1 millions which was 3.45 percent of the country's total population in that year. In spite of it, the percentage share of the state in area under paddy crop had decreased to 1.31 and its share in the total rice production in the country came down to 1.46 percent during the year 1990-91. Kerala's population for the year 1999 is projected as 31.98 millions which amounts to 3.26 percent of the country's total population[2]. However, the relative shares of the

[2] GOK (1998): **Statistics Since Independence,** Department of Economics and Statistics (DES), Thiruvananthapuram, p.43, table 2.7.

state in area and production of paddy during the year 1998-99 are found to be 0.79 percent and 0.85 percent respectively. A comparison in the performance of Kerala and India in the area, production and productivity of rice during the period 1960-61 to 1998-99 is shown in table 1.1.

Table 1.1

Area, Production and Productivity of Rice in Kerala and India

Year	Area ('000 ha)		Production ('000 tones)		Productivity (kg/ha)	
	Kerala	India	Kerala	India	Kerala	India
1960 – 1961	779(2.50)	31128	1068(3.09)	34574	1371	1111
1965 – 1966	802(2.26)	35470	997(3.26)	30589	1243	862
1970 – 1971	875(2.35)	37286	1292(3.40)	38051	1477	1021
1975 – 1976	876(2.23)	39284	1331(2.81)	47361	1519	1206
1980 – 1981	802(2.00)	40152	1272(2.37)	53631	1587	1336
1985 – 1986	678(1.65)	41137	1173(1.84)	63825	1729	1552
1990 – 1991	559(1.31)	42690	1087(1.46)	74290	1942	1740
1995 – 1996	471(1.10)	42910	953(1.20)	79618	2023	1855
1998 – 1999	353(0.79)	44598	727(0.85)	85995	2061	1930

Note: Percentage share of Kerala in area and production are given in parentheses
Source: CSO (1987), **Basic Statistics Relating to Indian Economy – 1986**
SPB (various issues): **Economic Review**

In terms of the per hectare productivity of rice the state's position had been comparatively better. During the year 1960-61 the average productivity of rice in the state, which stood at 1371 kilograms per hectare, was 23 percent higher than that of the national level productivity. Thereafter the relative advantage of the state in this respect has been gradually narrowing down. The difference in rice productivity declined to 18.79 percent during the year 1980-81 and further decreased to 6.79 percent by the year 1998-99. Further it is pointed out that even though the rice productivity in the state at the current level is still higher than the national average, it lags behind the levels achieved by the major rice producing states of Punjab, Tamilnadu and West Bengal[3].

Area under the crop and its per hectare productivity can be regarded as the two pure components of rice production. On the basis of the overall performance of

[3] GOK (2001): **Economic Review 2000,** SPB, Thiruvanathapuram, p. 43.

the paddy farm sector in Kerala, the post formation era of the state can be broadly divided in to two distinct periods - first, the period prior to the mid seventies and second, the period after the mid seventies. During the first period both the area and yield effects had been positive and hence the state's rice production had also showed positive growth trends. However, even though the yield effect continued to be positive, the negative area effect had become more prominent during the second period. As a result of it, rice production began to show negative growth rates in the state since the mid seventies. Area, production and productivity of rice in Kerala during the period 1960-61 to 1999-2000 are given in table1.2.

During the decade 1960-61 to 1969-70 area under paddy crop in Kerala rose from 778.91 thousand to 874.04 thousand hectares showing an overall increase of 12.21 percent and an annual compound growth rate of 1.29 percent. The positive growth trend in area continued till the mid seventies. However, within the period 1974-75 to 1999-2000 area under the crop in the state declined from 881.47 thousand to 349.77 thousand hectares registering an aggregate loss of 531.7 thousand hectares. The annual compound growth rate in area during this period is estimated to be – 3.63 percent. A more or less similar trend pattern is discernible in the state's rice production also. Domestic production of rice in Kerala attained its peak level in 1972-73 when the state produced 13.76 lakh tonnes. In spite of a sharp decline in out put during the next year, the state was able to maintain almost the same level of production till the mid seventies. During the period 1974-75 to1999-2000 production of paddy declined from 13.33 lakh to 7.71 lakh tonnes showing an aggregate decrease of 42.16 per cent. The annual growth rate in production during this period is found to be – 2.17 percent per year. Again, it can be seen that compared to the eighties the average annual rate of decline in area and production of paddy in Kerala had become more severe during the nineties.

In most of the years during the last four decades, per hectare rice productivity in Kerala had shown positive annual growth rates. Between 1960-61 and 1999-2000 productivity of the crop in the state recorded an overall increase of 68.55 percent registering an annual growth rate of 1.35 percent. Compared to the first period (1960-61 to 1974-75), the annual growth rate in productivity is found to be higher during the

second period (1974-75 to 1999-2000). While during the first period rice productivity had increased from 1371 kilograms to 1513 kilograms per hectare showing an annual growth rate of 0.71 percent, the corresponding growth rate during the second period is found to be 1.51 percent. The relatively better average annual rice productivity during

Table 1.2
Area, Production and Productivity of rice in Kerala During the period 1960 - 61 to 1999 - 2000

Note: Annual growth rates are given in parentheses.
Source: BES (1967), **Fact Book on Agriculture 1966;**
BES (1976), **Agricultural Statistics in Kerala 1975;**

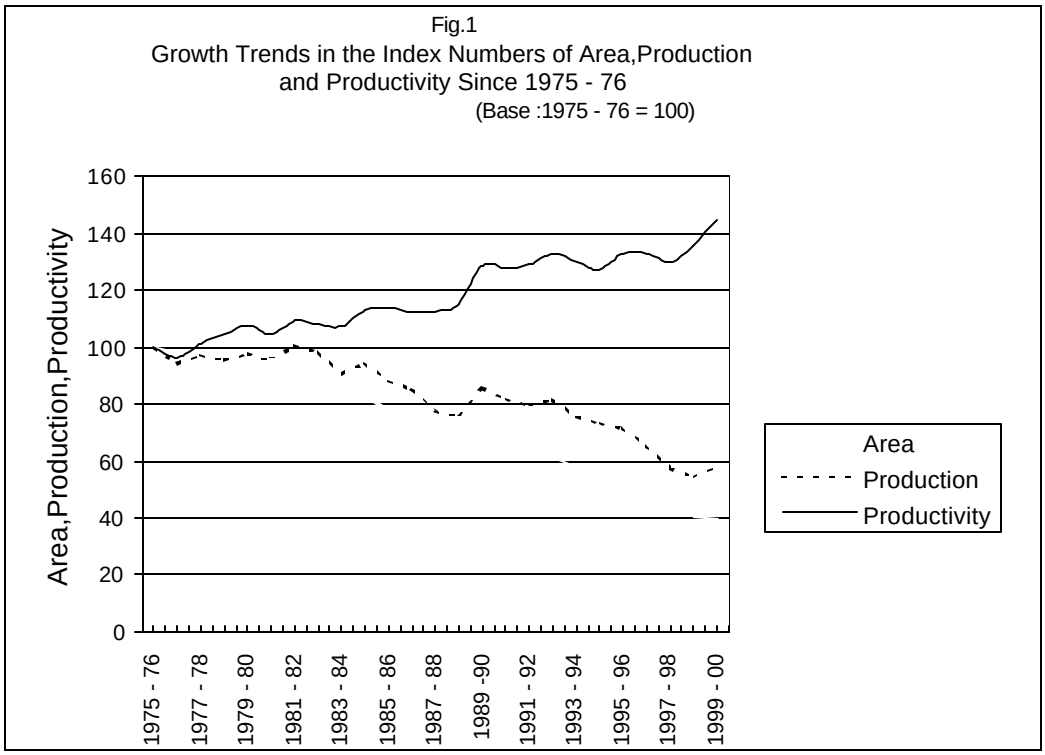
Year	Area (in '000ha)	Production (in'000tones)	Productivity (in kg. /ha)
1960 – 61	778.91(NA)	1067.53 (NA)	1371 (NA)
1961 – 62	752.69(-3.37)	1003.93(-5.96)	1334(-2.70)
1966 – 63	802.66(6.64)	1093.93(8.89)	1362(2.10)
1963 – 64	805.08(0.30)	1128.00(3.18)	1401(2.86)
1964 – 65	801.12(-0.49)	1121.38(-0.59)	1460(4.21)
1965 – 66	802.33(0.15)	997.49(-11.05)	1243(-14.86)
1966 – 67	779.44(-2.85)	1084.16(8.68)	1356(9.09)
1967 – 68	809.54(3.86)	1123.90(3.68)	1388(2.36)
1968 – 69	873.87(7.95)	1251.35(11.34)	1432(3.17)
1969 – 70	874.04(0.02)	1226.41(-2.00)	1403(-2.03)
1970 – 71	874.93(0.10)	1292.01(5.35)	1483(5.70)
1971 – 72	875.16(0.03)	1351.74(4.62)	1544(4.11)
1972 – 73	873.70(-0.17)	1376.37(1.82)	1575(2.01)
1973 – 74	874.68(0.11)	1257.67(-8.62)	1437(-8.76)
1974 – 75	881.47(0.78)	1333.03(5.99)	1513(5.29)
1975 – 76	876.02(-0.62)	1331.19(-0.14)	1520(0.46)
1976 – 77	854.37(-2.47)	1254.00(-5.80)	1468(-3.42)
1977 – 78	840.31(-1.65)	1294.64(3.24)	1541(4.97)
1978 – 79	779.24(-7.27)	1272.74(-1.69)	1592(3.31)
1979 – 80	793.27(1.80)	1299.70(2.12)	1638(2.89)
1980 – 81	801.70(1.06)	1272.00(-2.13)	1587(-3.11)
1981 – 82	806.92(0.65)	1339.87(5.34)	1660(4.60)
1982 – 83	797.89(-1.12)	1308.01(-2.38)	1639(-1.27)
1983 – 84	740.09(-7.24)	1207.92(-7.650	1632(-0.43)
1985 – 86	678.28(-7.13)	1173.05(-6.60)	1729(0.52)
1986 – 87	663.28(-2.23)	1133.79(-3.35)	1708(-0.58)
1987 – 88	604.08(-8.90)	1032.58(-8.92)	1709(0.06)
1988 – 89	577.00(-4.47)	1013.00(-1.90)	1754(2.63)
1989 – 90	583.39(1.11)	1141.23(12.66)	1956(11.52)
1990 – 91	559.49(-4.10)	1086.58(-4.79)	1943(-0.72)
1991 – 92	541.33(-3.25)	1060.35(-2.43)	1959(0.88)
1992 – 93	537.68(-0.67)	1084.88(2.31)	2018(3.01)
1993 – 94	507.68(-5.55)	1003.99(-7.46)	1977(-2.03)
1994 – 95	503.29(-0.89)	975.07(-2.88)	1937(-2.02)
1995 – 96	471.15(-6.39)	953.03(-2.26)	2023(4.44)
1996 – 97	430.83(-8.56)	871.36(-8.57)	2022(0.05)
1997 – 98	387.11(-10.15)	764.61(-12.25)	1975(-2.32)
1998 – 99	352.63(-8.91)	726.74(-4.95)	2061(4.35)
1999 – '00	349.77(-0.81)	770.69(6.05)	2203(6.89)

SPB (Various issues), **Economic Review**

the second period to a great extent can be attributed to the spurt in per hectare yields during the two terminal years of that period, especially the last year in which productivity has increased by 6.89 percent. Comparative growth trends in the index

numbers of area, production and productivity of paddy crop in Kerala during the period 1975-76 to 1999-2000 is shown in fig.1.

Fig.1
Growth Trends in the Index Numbers of Area,Production and Productivity Since 1975 - 76
(Base :1975 - 76 = 100)



1.2 Need for the Revival of Paddy Farm Sector in Kerala

Since the early seventies, per capita availability rice produced within the state had been rapidly declining in Kerala. During the year 1971, the estimated per capita daily availability of domestic rice in the state was 173.64 grams. It declined to 144.24 grams in 1981 and by the year 1991 it further decreased to 97.15 grams. The adult equivalent projected population for the year 2000 in the state is found to be 267 lakhs. As recommended by the State Nutrition Bureau the required daily balanced diet of an adult in Kerala should contain 460 grams of cereals[4]. As per this norm the total cereal requirement of the state in that year amounts to 44.83 lakh tonnes but the states realised domestic production in 1999-2000 was only 7.71 lakh tonnes. It is sufficient only to meet 17.2 percent of our expected requirements. Earlier the state

[4] Quoted in, Suseelan P (1988): *Problems and Prospects of Rice in Kerala*, Paper Presented in the VIII Five Year Plan workshop on Agricultural Development Held at Thiruvananthapuram on 6th October, p.4

Planning Board had projected the cereal requirements of the state for the year 2001 as 54.81 lakh tonnes[5]. Even if the state succeeds to retain the current level of output, the expected deficit for the year would be 86 percent.

Even though, tapioca is often considered as an inferior substitute for rice in Kerala, its popularity as a major food item has substantially lessened in recent years. Within a period of twenty years from 1980-81 to 1999-2000 annual production of tapioca in the state had declined from 40.61 lakh tonnes to 25.64 lakh tonnes and area under the crop decreased from 2.5 lakh hectares to 1.09 lakh hectares. At present a major portion of the product is sent to the neighbouring states for the production of starch used textile mills. Due to the topographic and climatic constraints, cultivation of other cereals like wheat or barley is not viable in this state. Again, in recent years the quantity of rice and wheat distributed through the so-called Public Distribution System (PDS) of the state had declined drastically. The off-take of rice and wheat distributed through the PDS in 2000 were 6.14 lakh tonnes and 0.62 lakh tonnes respectively while the corresponding amounts during the year 1998 were 16.39 lakh tonnes and 4.58 lakh tonnes[6]. Allowing the widening gap between the domestic production and requirement of rice to be filled with growing imports from other states by private individuals or even through enhanced central allotments poses a severe threat to the food security of the state's population.

Paddy crop not only provides food for the human population but is also a major source of fodder to the ever-growing bovine population in the state. Only a negligible portion of the total geographical area in Kerala is kept as permanent pastures. In the year 1998- 99 the extent of area kept as permanent pastures and grazing land in the state was merely 682 hectares which amounted to only 0.18 percent of its total geographical area. The per capita cereal intake in a country has a tendency to decline with an increase in per capita income as increase in their disposable income induces people to spend relatively more on non-cereal food items like meat, milk and egg. However, "this implies that while the demand for cereals as

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[5] GOK (1982): **Food Projection for Kerala State upto 2001 AD,** SPB, Thiruvananthapuram

[6] GOK (2001): **Economic Review 2000,** Op.cit., p.33

food decreases, its indirect demand increases as increasing milk and meat demand extends in turn a demand for cereals as livestock feed".[7]

The sluggish pace of growth of industrial development coupled with high population growth rates in many less developed countries (LACs) has made it clear that for quite some time agriculture will have to continue to provide employment to many in LACs[8]. Agricultural sector of these countries has a latent capacity to absorb more labour. This condition is of vital importance in a state like Kerala where the performance of the industrial sector had so far been dismal and the rate of unemployment is as high as 20 percent. Compared to garden crops and plantation crops, paddy crop is more labour intensive. The percentage share of labour costs in the per hectare cost of paddy cultivation is estimated to be around 65 per cent while in the case of coconut crop it is only about 50 percent. The proportion of hired labour use in paddy cultivation is also found to be comparatively higher[9]. The revival of the state's paddy farm sector will definitely help to reduce the mounting problem of rural unemployment in the state. Thus in many respects the overall development of the state's economy is closely related to the development of its paddy farm sector.

1.3 **Kuttanad Region and the State's Rice Economy**

Kuttanad region comprises of ten taluks spread over the three districts of Alapuzha, Kottayam and Pathanamthitta. More than two thirds of the total land area in this region is wetlands. Enriched by the silt deposited through the river systems of Meenachil, Pamba, Manimala and Achencoil, the loamy soil in this region is very fertile and suitable for paddy cultivation. As the wetlands in Kuttanad are submerged in water for most part of the year and due to poor drainage facilities annual and perennial crops cannot be successfully cultivated in these lands. Hence from early days paddy farming had become the principal economic activity of the local population. According to 1991 census, 11.3 percent of the total work force in this area was paddy cultivators and another 57.13 percent were agricultural labourers. Thus

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[7] Menasha J V (1996): *How Important are Changes in Taste - State Level Analysis of Food Intake* **Economic and Political Weekly,** Vol.XXXI No.50, 14 December, p.3268

[8] Ninan K N (1984): *Labour use in Agriculture – case studies of Tapioca and Paddy*, **Economic and Political weekly.**Vol.XIX, Nos.52 – 53, 22 – 29 December, pp. A – 199,200

[9] GOK (1992): **Report on the cost of Cultivation of Important crops in Kerala 1989 – 90,** DES, Thiruvananthapuram.

agricultural activity, mainly work in paddy fields, forms around 70 percent of all economic activity in Kuttanad.

Almost all of the paddy growing lowlands in Alapuzha, Kottayam and Pathanamthitta districts lie in Kuttanad region. Total area under paddy crop in this region during the year 1986-87 was 112.43 thousand hectares[10]. It amounts to 16.58 percent of the total area under crop in Kerala in that year. In the same year the region produced 210.17 thousands tonnes of rice production. The region has also helped the state to retain its relatively better position in rice productivity in the all India level. During 1986-87 the per hectare productivity of the crop in Kuttanad region is found to be 1834 kilograms which was 7.38 percent higher than the state level average productivity.

Both the area and production of paddy at the state level had shown negative growth rates during the second half of the eighties. Even though area under the crop in Kuttanad also had declined during this period, the average annual rate of decline had been comparatively lesser. As against the negative growth trends in production at the state level Kuttanad region recorded positive growth trends and the average annual growth rate in per hectare rice productivity of the region is also found to be comparatively higher during this period. The relatively better performance of the Kuttanad region in all these respects had prompted the Indo-Dutch Mission to state that the "Statistical data on acres and yields show a less disturbing picture of paddy cultivation in the Kuttanad area than for Kerala as a whole".

Kuttanad region accounted for more than 18 percent of the paddy growing areas in 1990-91. With in a period of ten years from 1990-91 to 1999-2000 area under the crop declined from 101.17 thousand to 57.87 thousand hectares. Meanwhile, the percentage share of the region in the states total area under paddy declined to 16.54 showing that the rate of decline had been sharper in this region. In the same decade total production of rice in the region decreased from 227.61 thousand tonnes to 152.16 thousand tonnes showing an aggregate decrease of 33.15 percent. The percentage share of the region in the state's total rice production had also shown a

[10] District wise figures of Alapuzha, Kottayam and Pathanamthitta were added to estimate the total area and production of rice in Kuttanad region and per hectare rice productivity is taken as the weighted arithmetic mean of the productivity of the three districts.

marginal decrease during this period. Coming to per hectare yields, Kuttanad region provides a different picture. Through out the decade the average productivity of rice in this region had been significantly higher to the state level average. The comparative advantage of the region in this respect rose from 15.6 percent to 19.38 percent in between 1990-91 and 1999-2000. Annual growth rates in area, production and productivity of paddy in Kuttanad region during this period are found to be -6.02 percent, -4.38 percent and 1.77 percent respectively while the corresponding figures are estimated as -5.08 percent, -3.74 percent and 1.41 percent. In brief the comparative analysis regarding the paddy farm sector of Kuttanad region and Kerala clearly shows that the performance of the former had been comparatively better till the end of the eighties. However, since the beginning of the nineties the performance of the region both in terms of area and production of paddy had begun to deteriorate at unprecedented levels. Area, Production and Productivity of paddy in Kuttanad region during the period 1990-2000 are given in table 1.3.

Table 1.3
Area, Production and Productivity of Rice in Kuttanad Region During the period 1990 – 91 to 1999 - 2000

Year	Area (in '000ha)	Production (in '000 tones)	Productivity (in kg/ha)
1990 – 91	101.17(18.08)	227.61(20.95)	2245(115.60)
1991 – 92	92.88(17.16)	201.63(19.02)	2170(110.77)
1992 – 93	91.78(17.07	217.81(20.08)	2373(117.59)
1994 – 95	90.92(18.07)	180.22(18.48)	1978(102.12)
1995 -96	79.82(16.94)	203.87(21.39)	2554(126.25)
1996 – 97	72.64(16.86)	152.61(17.51)	2101(103.91)
1997 – 98	65.74(16.98)	142.69(18.66)	2171(109.92)
1998 – 99	57.02(16.17)	146.81(20.20)	2547(123.58)
1999-00	57.87(16.54)	152.16(19.74)	2630(119.38)
Av.Annual	79.72(17.18)	182.57(19.64)	2306(114.61)
Compound Growth Rate	-6.02	-4.38	1.77

Note: Percentage to state level figures are given in brackets
Source: Estimated from SPB (various issues), **Economic Review**

1.4 Study Area and Its Relevance

Ramankari village, which is selected as the area of the present micro level study is situated in Kuttanad taluk. The taluk, which lies in Alapuzha district, was

formed in 1956 incorporating the low lying villages transferred from then Kottayam and Changanacherry taluks of Kottayam district and Ambalapuzha taluk of Kollam district. This taluk covers a total area of 74392 acres of which 61251 acres (82.34 percent) are wetlands, 5937 acres (7.98percent) are dry lands and the remaining 7204 acres (9.98 percent) are either non-cultivable wastelands or water bodies. Nearly 35 percent of the number of *padasekharams* and 40 percent of the total area under paddy crop in the whole Kuttanad region lie in this taluk. It is part of the *Kayal zone* of the region. As per the 1991 census there are 40794 households in Kuttanad taluk with a total population of 210004. Total number of main workers in this taluk is found to be 69462. Out of them 57.18 percent are agricultural labourers and another 11.13 percent are farmers. Thus agricultural activity provides livelihood to more than two-thirds of the populations in this taluk.

Kuttanad taluk consists of 14 villages viz., Kainakari North, Kainakari South, Nedumudi, Thakazhi, Champakulam, Pulinkunnu, Kavalam, Neelamperoor, Veliyanad, Muttar, Thalavady, Edathua, Kunnumma and Ramankari. Among them, Ramankari is located at the central part of the taluk. The village lies on both sides of the Changanacherry-Alapuzha road in between 7 km to 11.2 km from Changanacherry. It is surrounded by the villages of Veliyanad (North and East), Muttar, Edathua (South) and Champakulam (West). The village covers a total area of 2804 acres of which 2484 acres (88.59 percent) are wetlands. According to 1991 census there are 2118 occupied residential houses and 2138 households in the village with a total population of 11189 persons. Paddy farming had been an age-old occupation of a considerable section of the population in this village and even now majority of the people here depends on this crop for their livelihood.

As the residential village of the sitting MLA of Kuttanad constituency over a period of more than one decade, every nook and corner of Ramankari village are well connected by roads unlike many of the remote areas of other villages which lack proper conveyance facilities. Hence the task of primary data collection is made much easier in this village. The head office of the *Kuttanad Vikasana Smithy* - a voluntary organization which strives for the development of Kuttanad area has already established a healthy impact among the farmer and farm laborers of the region - is

also situated in Ramakari village. Considering the above factors, Ramakari village has been selected as the study area of this project.

1.5 Objectives of the Study

This study is a development oriented village level study. The major thrust of the study is on the revival and development of paddy farming sector in Kuttanad region. With this focus the study aims

a) To examine the salient features in the transformation of the rice economy of Kuttanad region,

b) To examine the socio-economic profile of paddy farmers in the study area,

c) To analyse the changes in paddy farming operations in the study area,

d) To assess the economic viability of paddy cultivation in its present level,

e) To identify the current problems in paddy farming and ,

f) To suggest appropriate measures for the development of paddy farming sector in the study area,

1.6 Methodology and Source of Data

This study is focused on the contemporary issues related to paddy cultivation in Ramakari village. Along with the conventional research methods we have adopted various Participatory Rural Appraisal (PRA) methods, which calls for the active involvement of local people in the research process. In order to establish a good rapport with the village people and thereby to elicit their co-operation in the onset of study itself we personally contacted the panchayat members and other grass root level political leaders, trade union leaders, active members of Kuttanad Vikasana Samithi, Ramakari village office staff and a large numbers of paddy farmers and farm laborers of the study area. In order to study the demographic and occupational particulars of the local population we conducted a pilot survey covering the whole study area. Through this survey we collected details regarding the family size, age composition, education and occupation status and size of owned holdings (both dry and wet) from 750 households in the village.

The pilot survey reveals that around one-third of the households in the study area own cultivating paddy fields. Based on the size of owned paddy lands, farmers of the study area had been broadly classified in to four categories viz., marginal farmers

with less than one acre, small farmers with 1 to 2.5 acres, medium farmers with 2.5 to 5 acres and large farmers with more than 5 acres. From among these different categories of paddy farmers, 90 farmers were selected as the sample units for a detailed survey on the basis of stratified sampling method. The sample consisted of 30 marginal farmers, 33 small farmers, 15 medium farmers and 12 large farmers. Later our field investigators contacted all the sample farmers in person and collected relevant data from them using a pre-tested structured interview schedule. In order to supplement the thus collected data we discussed the pertinent issues with the members of *padasekharam* committees and aged farmers and recorded their opinions and suggestions. A series of focus group discussion programmes were also held at different parts of the study area. In data analysis conventional statistical tools had been applied.

Major sources of secondary data used in this study are the publications of the State Planning Board (SPB), Department of Economics and Statistics (DES) of the state government earlier known as the Bureau of Economics and Statistics (BES), Kerala Agricultural University, Rice Research Centres, Kerala Sasthra Sahithya Parishat etc. Census Survey Reports, village office records, data collected by the Ramakari panchayat for local level planning, research papers, articles and various Commission Reports are also used in this study.

1.7 Plan of the Study

Content of this study is presented in five chapters. The introductory chapter begins with an analysis of the state's rice economy during the past four decades. It is followed by an appraisal of the growth trends in area, production and productivity of paddy crop in Kuttanad region and the significance of the region in the state's rice economy. Need for the revival of paddy cultivation, relevance of the study area and the objectives and methodology of the present study are also given in this chapter. Important land marks in the history of paddy cultivation in Kuttanad region such as the reclamation of kayal lands, introduction of the new agricultural strategy of Green Revolution and other efforts to intensify crop productivity, implementation of land reforms, spread of trade unionism and the resultant changes in agrarian relation in the region etc. are discussed in the second chapter. In chapter three, we examine the

general features of the study area, socio-economic profile of local paddy farmers, and changes in farming operations are analysed in the third chapter. Examining cost components, yield and profitability in the fourth chapter assesses economic viability of the crop. Summary of the findings of this study and suggestions for the improvement of the paddy-farming sector in the study are given in the fifth chapter.

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Chapter - 2

TRANSFORMATION OF PADDY FARMING SECTOR IN KUTTANAD REGION

2.1 Specific Features of Paddy Cultivation in Kuttanad

Kuttanad region which represents the low- lying lands measuring 25 kilometers east west and 60 kilometers north south is one of the two major rice producing areas in Kerala. The region is often termed as the *rice bowl* of the state. Originally it was part of the coastal area of the Arabian Sea, which became a shallow bay due to a geological uplift. The incessant inflow of silt carried by the rivers Meenachil, Pamba, Achencoil and Manimala over thousands of years accumulated in this shallow bay and gradually made it an extensive brackish water lagoon and backwater system extending from Alapuzha in the south to Kochi in the north. In course of time the shallow parts of the lagoon further silted up by the river systems became wet lands while the deeper parts of it still remain as backwaters[11]

Kuttanad region consists of 82 villages belonging to the taluks of Cherthala, Ambalapuzha, Kuttanad, Karthigappally, Chengannur, and Mavelikkara in Alapuzha district, 16 villages belonging to the Vaikkom and Kottayam taluks in Kottayam district and 4 villages of Thiruvalla taluk in Pathanamthitta district. It covers a total area of about 110 thousand hectares of which 31 thousand hectares are dry lands, 66 thousand hectares are wetlands and the remaining 13 thousand hectares are water areas comprising of lakes, rivers, waterways and channels. Dry lands that lie 0.5 to 2.5 meters above the mean sea level (MSL) are mainly located at the peripheral areas of the region. Wet lands consists of the low lying areas slightly above the MSL and areas lying up to 2.5 meters below the MSL, which are reclaimed from the Vembanad lake.

The soil in Kuttanad is a mixture of sand and clay in varying proportions. Generally in most of the low lying areas the soil is highly acidic and contains toxic salts.[12] Depending on the type of soil the entire wetland area of the region can be classified into *kayal* lands (13000 ha.), *karappadams* (33000 ha.) and *kari* lands (9000 ha.). Kayal lands are reclaimed beds from Vembanad lake and are mainly located in Kuttanad and Kottayam taluks. Karappadams are situated along the waterways and lakes mainly in the eastern and southern

[11] Indo-Dutch Mission (1989): **Kuttanad Water Balance Study-Main Report,** Thiruvananthapuram, p. 3
[12] GOK (1971): **Report of the Kuttanad Enquiry Commission,** Thiruvananthapuram, November, p. 10

parts of Kottayam district while kari lands are situated in the taluks of Viakom, Cherthala and Ambalapuzha.[13]

Compared to other paddy growing areas in Kerala, paddy cultivation in Kuttanad region has certain unique characteristics. Paddy lands in this region are divided into contiguous blocks called *padasekharams* bound by waterways, rivers and other natural partitions. Many of such padasekharams are man made in the sense that they are reclaimed lands from the bed of backwaters. Hence it is said that 'while god created earth, man created Kuttanad'[14]. The size of padasekharams ranges from less than one hectare to more than 1000 hectares. In this region there are 1231 padasekharams covering a total area of 59375 hectares.

As *puncha* crop (summer crop) is the traditional crop in Kuttanad during which 80 percent of the paddy fields are sown, from early days paddy cultivation in this region is called puncha cropping. The season begins from October-November when the operation of bailing out water from padasekharams starts. The other season is the *virippu* season (autumn or varsha crop) in which 40 percent of the paddy lands are cultivated. Padasekharams where the second crop is not raised are submerged under water for most part of the year. Before the completion of the Thanneermukkom Salt water Barrier, the low lying areas in this region were periodically inundated with saline water by the tidal inflows from the Arabian Sea.

Compared to the other rice producing areas in the state, productivity of paddy crop is higher in Kuttanad region. Similarly, the per hectare cost of cultivation is also found to be higher in this region. The wetland eco system of the region is helpful to the excessive growth and spread of weeds and insects. The incidence of plant diseases and rate of crop failures are relatively higher in this area. The high degree of human intervention in the natural endowment of the region coupled with the indiscriminate use of pesticides and chemical fertilizers over the past several years has caused irrevocable damage to the eco-system of Kuttanad.

Another distinct feature of Kuttanad region is the emergence and spread of aggressive trade unionism among the farm labourers, which brought out drastic changes in agrarian relations. Both the farm labourers and farmers are well organized in this area. The region had been a hotbed of several violent labour struggles starting from the so called

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[13] Ibid, p. 4

[14] Tharamangalam J (1981): **Agrarian Class Conflict – The Political Mobilisation of Agricultural Labourers in Kuttanad,** S. India, University of Vancouver, p. 32

Punnapra-Vayalar agitation to the recent agitation against the conversion and filling of paddy fields.

2.2 History of Land Reclamation

Transformation of paddy cultivation in Kuttanad region to its present form is invariably related to the history of the reclamation of *karappadams* and *kayal* lands. Reclamation activity involves the construction of outer walls called ring bunds *(puravarambu)* around the particular portion of a shallow water body and draining the enclosed area by bailing water out of that enclosed portion at the beginning of every crop season. Even centuries back the process of reclamation had begun in Kuttanad. In early reclamations small strips of land were recovered from shallow areas of backwaters and river systems in Upper Kuttanad region. By the middle of the 19th century due to the increased population pressure on land and the non-availability of shallow backwaters suitable for reclamation, people turned toward the Vembanad lake.[15]

Till the beginning of the 19th century all the swampy uncultivated wastelands in Travancore were considered as government *(sircar)* lands. In 1818 the then government issued certain regulations allowing reclamation and cultivation of such lands. Reclamation was encouraged by providing guarantee for the possession of such lands tax free for the first ten years and thereafter levying very light taxes.[16] The *Pattom proclamation*, which was issued on June 2, 1865 conferred absolute ownership rights to the riots on the reclaimed lands.

Three distinct stages can be identified in the reclamation of kayal lands from the Vembanad lake.[17] In the first stage it was carried out by private entrepreneurs with out any financial support from the part of the government. In this stage reclamation and other agricultural activities were completely under the barter system of financing in which farmers received loans from private moneylenders like the *Mancombu Brahmins* in terms of paddy and paid back their loans also in terms of paddy.[18] Financial constraints restricted large-scale reclamations involving huge capital investments and hence the reclamation activities during

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[15] Pillai V R, Panikar P G K (1965) : **Land Reclamations In Kerala,** Asia Publishing house, Bombay, p. 13

[16] Kallarackal George V (1996) : **Emergence of Land as Property – The Case of Travancore**, Unpublished M Phil Disertation, School of Social Sciences, Kottayam, p. 69

[17] G O K (1971) : **Report of the Kuttanad Enquiry Commision**, Op. cit., p. 6

[18] Geethadevi T V (1995) ; **Integrated Pest Management in Human Ecological Perspective,** Unpublished M Phil Dissertation, School of Science, Kottayam, pp. 50-51

the initial stage were largely confined to the scattered plots of shallow lands by the side of the Vembanad lake. Only about 250 hectares of land were reclaimed during this period.

The second phase of reclamation commenced in 1888 with the government decision to provide direct loans to riots for reclaiming and bringing under cultivation the portions of Vembanad backwaters along the shore within Ambalapuzha, Changanacherry, Kottayam, Ettumanur, Vaikkom and Cherthala taluks.[19] It encouraged large number of wealthy and influential farmers from different parts of Central Travancore to make huge investments in reclamation. This phase of reclamation lasted till the end of 1903 when the government considering the safety of the Cochin port interdicted further reclamation from the Vembanad lake. Meanwhile about 2000 hectares of the bed of the lake had already been reclaimed. Kayal lands like *Venad, Attumuttathu kayal, Raja Ramapuram* and *Mathi kayal* were reclaimed during this period.

The third phase of reclamation of kayal lands began with the repealing of ban on reclamation in 1912. By that time mechanized pump sets fuelled by kerosene and diesel had become popular in Kuttanad replacing the manually operated wooden wheels *(chakrams)* traditionally used for dewatering. It made the draining of vast *padasekharams* easier, quicker and economical. During the period of the first world war (1914-1918) the state experienced severe food shortage that resulted in a manifold increase in the price of paddy. The abrupt steep hike in paddy price triggered off a mad rush for further reclamation of kayal lands. However, the post war years witnessed a sharp fall in the price of rice. During the period 1924-25 to 1931-32, the price of paddy per standard *para* declined from 26 *chakrams* to 12 *chakrams* (1Re. = 28 chakrams) in Kuttanad. Showing an overall decrease of more than 50 percent.[20] As the cultivation of paddy became uneconomical, farmers in kayal lands who had invested substantial amounts of capital for reclamation either abstained from its cultivation or reduced crop intensity by keeping their lands fallow for one, two or more years. Since the early years of 1930's price of paddy began to increase and reclamation efforts also picked up momentum since 1931.

During the second world war food imports to India were disrupted. As the domestic food production was quite insufficient to meet its requirements, a famine like

[19] G O K (1971) : **Report of the Kuttanad Enquiry Commission**, Op. cit., p. 5

[20] Prakash B A (1987): **Agricultural Development of Kerala from 1800 A D – A Survey of Studies** , Working Paper No. 220, Centre for Development Studies, Thiruvananthapuram, p. 22

situation emerged through out the country. Naturally food scarcity led to a sudden and abnormal increase in the price of paddy. To control the situation government introduced the *levy system* of compulsorily collecting a portion of their produce at a fixed price from paddy farmers. These sorts of controls led to the emergence of black marketing and the large farmers in kayal lands exploited the situation.[21] The widespread use of electric pump sets from 1940 onwards in kayal lands further reduced dewatering costs and acted as a boost for reclamation activities. During the early years of the 1940's three segments of kayal lands viz., *Chithira, Marthandom* and *Rani* were reclaimed. The attached labour system that prevailed in Kuttanad in those days had been providing cheap and regular supply of labour needed for reclamation activities in the Vembanad lake. By the year 1943 this system gave way to wage labour system and henceforth reclamation efforts came to an end. During the third phase of reclamation, which lasted for four decades more than 5000 hectares of land were reclaimed from the Vembanad lake.

2.3 Efforts to Increase Intensity and Productivity of Paddy Crop

As the scope for extending the net area under paddy crop through reclamation had been completely exhausted by the mid 1940's, all the development programmes for paddy cultivation in Kuttanad region thereafter were either aimed to improve crop intensity or to enhance its productivity. It was rather impossible to raise a second crop in this region due to the flood submergence during the monsoon months and saline intrusion during the summer months. In order to tackle this problem the state government undertook three major construction projects viz., Thottappally spillway, R Block-Holland project and Thanneermukkom salt-water barrier during the period 1950 to 1975 as part of the Kuttanad Development Scheme.

(i) ***Thottappally Spillway***. Due to the accumulation of floodwaters from the river systems in Kuttanad water level used to rise beyond manageable limits soon after the onset of the southwest monsoon. The entire low lying areas of the region used to remain flooded till the end of north east monsoon making it impossible to raise a second crop during the autumn season. Detailed hydraulic surveys conducted from the early thirties had shown that this problem could be mitigated by diverting the floodwaters directly to the Arabian sea at the extreme south of the flood limit itself.

[21] Kurup K K N (1989): **Agrarian Struggles in Kerala**, C B H publications, Thiruvananthapuram, p. 11

Accordingly, the construction of a spillway was started in 1951 at Thottappally located 20 kilometers south of Alappuzha town. The maximum monthly dispatch of floods entering the Kuttanad region during the monsoon months was estimated as 69000 cusecs and the spillway was designed to discharge more than 90 percent of it directly to the sea. However, while designing the spillway the problem of piling up of water due to the raising sea level during the monsoon months and the consequent formation of sand bar on the seaward side of the spillway was not taken into account[22]. Therefore after the spillway was completed in 1955, the realized capacity of it is found to be less than one - thirds of the estimated capacity and hence fails to serve its purpose to some extent.

(ii) ***R Block - Holland Project.*** The construction of permanent outer bunds around the R Block kayal lands under the R Block - Holland Project that was started in 1961 is a landmark in the history of paddy cultivation in Kuttanad. The embankments built earlier as part of reclamation were made of mud and were not strong enough to withstand the incessant wave action. Most of them were submersible under floodwaters during the monsoon months. Under the R Block - Holland Scheme permanent and non-submersible bunds that stood six feet above the MSL with a top width of ten feet and a total length of 10.4 kilometers were erected around the R Block kayal lands[23]. Later in the 1970's the Kerala Land Development Corporation (K L D C) initiated a Bund Improvement Scheme for the repair and strengthening of ring bunds in kayal lands. However, the project had been dropped half way due to the paucity of sufficient funds.

(iii) ***Thanneermokkom Salt Water Barrier.*** From the early days of reclamation destruction of *puncha* crop due to the ingress of saline water had been a recurring phenomenon in the kayal lands of Kuttanad area. Thanneermukkom Salt Water Barrier was envisaged to mitigate the problem of saline water intrusion in to the Kayal lands located in the south of Thanneermukkom during the summer months when the fresh water inflow of the feeder river systems becomes weak. The project in

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[22] GOK (1989): **Kerala State Gazetteer**, Vol.III, Gazetteers Department, Thiruvanathapuram, p.8

[23] GOK (1971): **Report of the Kuttanad Enquiry Commission,** Op.cit.p.7

addition to protecting the summer crop from water salinity also aimed to facilitate a second crop soon after the *puncha* season. Eventhough the construction of the Bund had begun in 1958 it was commissioned only in 1975. The Barrier is built across the Vembanad kayal connecting Vechoor in the east to Thanneermukkom in the south. Every year regulators of the Bund are lowered in December to prevent the entry of saline water in to Vemband lake and remain closed till May when the discharges from feeder rivers improve with the pre monsoon rains. After the construction of this Barrier it is possible to raise a second crop in most of the *puncha* lands.

During the early sixties a *new strategy* called Green Revolution was introduced in the farm sector of the country. As part of this new strategy an Intensive Agricultural District Programme (I A D P) was initiated in which the two major rice producing districts of Palakkad and Alappuzha were included. The basic objective of this programme was to combine all the essential inputs required for intensive production in to a single package. Implementation of I A D P in Alappuzha district in which majority of the taluks in Kuttanad region lie, led to the beginning of a new era of intensive paddy cultivation using modern technology in this region. The participant farmers of the programme were provided with H Y V seeds, chemical fertilizers, pesticides and improved farm implements along with adequate credit facilities, the use of which helped them to enhance the per hectare productivity of paddy.

In order to takle the ever-growing menace of pests in Kuttanad *padasekharams* a special project called the *Operational Research Project on Integrated Rice Pest Control in Kuttanad* (O R P) was implemented in this region from 1975 to 1992. It was a joint venture of the Kerala Agricultural University and the State Agricultural Department financed by the ICAR. The project adopted a strategy of applying genetic, cultural and biological devices along with the use of chemical pesticides. Pest disease surveillance and consultancy services through *agro clinics* were the two major programmes under this project, which had been successfully carried out in six selected villages in Kuttanad. Another developmental research project initiated by the Kerala Agricultural University and successfully implemented in Kuttanad region is the Drainage Research Project on *kari* soils. It aims to provide proper drainage facilities in the marshy *kari* lands in North Kuttanad. The project, which was started

in 1982, is supervised by the Regional Agricultural Research Station Kumarakom, which also coordinates the entire agricultural research activities going on in this region.

2.4 Changes in Agrarian Relations

A system of agrestic slavery had prevailed in Kuttanad region until the middle of the nineteenth century in which landlords and riots used to possess required number of labour households as part of their assets. Practically all of the agricultural activities were performed by the agrestrc slaves who were either low caste Hindus like *Pulaya* and *Paraya* or Christian converts from the low castes. These serfs had been deprived of even the basic necessaries of life and their living conditions were deplorable. Their masters had absolute power to sell, purchase and punish them.

2.4.1 Origin and Characteristics of Attached Labour System

The slavery Abolition Proclamation of 1855 legally prohibited the sale of slaves and ended the system of slavery in Travancore. As the state had not taken any effective measures for the emancipation of the hitherto serfs they were forced to remain dependent on their former farmer masters for sustenance. The prospects of getting a permanent adode and continuous employment encouraged them to become attached labourers. They seldom changed their masters and continued to stay in the huts provided to them by their masters as hutment dwellers or *kudikidappukar*[24].

The system of attached labour was essentially a caste-based division of labour in which the hard and dirty tasks were assigned to the low caste people (untouchables). They were not allowed to own or lease in lands and the laws of *ayitham* (pollution) inhibited them from entering into any other trade, which needed interaction with high caste people. They were deployed to work in paddy fields at far away places from the residential holdings of their masters. As the Ezhavas were out of the purview of *ayitham* and untouchability, they were employed as casual labourer to work in garden lands around the houses of high caste Hindus. Both socially and economically the Ezhavas were ranked above the attached labourers[25].

Every attached labour household used to get gifts during festivals like Onam, Vishu and Karkkidaka Vavu. Similarly, whenever there was a birth, death or marriage in

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[24] Jose A V (1977): *Trade Unionism in Kerala*, **Social Scientist**, Vol.V, No.12, July, p.29.

[25] Alex George (1987): *Social and Economic Aspects of Attached Labourers in Kuttanad Agriculture,* **Economic and Political Weekly,** Vol.XXII, No.52, 26 December, p. A - 148

their families the landlords or riots to whom they were attached provided financial assistance to them. Small portion of harvested paddy was also given to them as *adayam* (income). However, they were paid relatively lower rates of wages and were expected to turn up for work whenever their masters wanted. Again, they had to work from dawn to dusk and all the children in their households had to join for work with their adults at the age of 14. The attached labour families were not given the ownership of the hutments in which they lived and could be evicted if their masters decided so. The concerned landlords and tenant farmers dictated their wage rates, work conditions, mode of payments and pattern of discipline.

2.4.2 Emergence of casual labour system

Large-scale reclamations carried out since the 1880's in and around the Vembanad lake and the resultant increase in area under paddy crop in Kuttanad had necessitated a steady and regular supply of hard working and loyal class of farm labourers and the system of attached labour served this purpose. However, the agro-climatic constraints involved in the *puncha* form of cultivation restricted all the cropping activities to be carried out to a short span of time. Thus the repair of ring bunds, dewatering, ploughing, sowing and weeding were to be done in all the vast stretch of *padasekharams* almost simultaneously. As same or similar varieties of seeds are sown in *kayal* lands the much labour absorbing activity of harvesting had also to be carried out simultaneously. Due to this particular pattern of cultivation there was huge demand for labourers during the peak season followed by no work for a long period of time[26]. Even within a single crop season the demand for male female labourers were not evenly distributed. While male labourers were largely demanded during the early weeks of the season for activities like the repair of outer bunds, dewatering, ploughing and sowing, female labourers were largely required at the end of the season for harvesting the crop.

Installation of mechanized pump sets and strengthening of ring bunds using granite along with the decline in crop intensity during the post first world war years in Kuttanad had substantially reduced the demand for farm labourers in general and that of male labourers in particular. Even though paddy farming activities had been reactivated during the period of the second world war, the situation of severe food shortage and the resultant hike in

[26] Mencher Joan P (1978): *Agrarian Relations in Two Rice Regions of Kerala*, **Economic and Political Weekly,** Vol.XIII, Nos.6, 7, February, p.350

paddy prices attracted large number of agricultural labourers from the surrounding areas to Kuttanad during the harvest seasons. Thus the shortage of local female labourers during the peak harvest season was off set by the inflow of migrant labourers in every year. Feudal landlords and tenant farmers then realized that it was quite unnecessary to retain a huge labour force permanently as attached labourers and preferred instead to use casual labourers. The pace of transition from attached labour system to a new system of casual labour gained momentum with the spread of trade unionism among farm labourers since the early 1940's.

2.4.3 Spread of trade unionism and its impact on agrarian relations

By the dawn of the twentieth century Alapuzha with its flourishing coir and oil extraction industries had become the industrial centre of the Travancore state. However, since the beginning of the 1930's the coir industry of the area began to show signs of recession. Due to systematic cut in wages and retrenchments thousands of coir factory workers became discontent and the Communist Party successfully organized trade unions among them[27]. Within a few years it became the nerve centre of trade union activities in the state. Most of the coir factory workers had been recruited from impoverished agricultural labour families of the adjoining villages. Whenever there was a strike or lockout in their factories these workers used to go back to their own villages to work in paddy fields. Their interaction with other workers resulted in the rapid spread of communist ideology among the paddy farm labourers[28].

The first agricultural labour union in the state called the Thiruvithamkoor Karshaka Thozhilali Union (T K T U) was formed in 1940 under the auspices of the Communist Party of India(C P I). In the initial stage of its formation low caste attached farm labourers were reluctant to join the union, as they were very much loyal to the landlords and tenant farmers under whom they worked. The situation changed during the second world war period when the government introduced a system of food rationing in which food articles had been distributed to ration cardholders at subsidized rates. Along with paddy farmers farm labourers were also denied ration cards on the ground that they received their wages in terms of paddy. Farmers on the other hand tried to take advantage of the abnormal hike in the price of paddy and insisted cash payments to the workers. The resultant plight of farm labourers

[27] Jose A V (1977); Op.cit. P.34

[28] Alexander K C (1973): *Emerging Farmer Labour Relations in Kuttanad,* **Economic and Political Weekly,** Vol. VII, No.14, 25 August, pp.1552 - 56

accelerated the pace of unionization and a series of organized farm labour struggles broke out. The first among them was the violent Punnapra - Vayalar Agitation of 1946. Thus the agrarian relationship in Kuttanad transformed from a *caste relationship* to a *class relationship* and the system of attached labour was replaced by a new system of wage labour in which workers were free to work under any farmer.

Since their formation agricultural labour unions had been demanding for periodic revisions in wages. After considering their representations the government appointed the Minimum wages Committee for Employment in Agriculture in 1953, which submitted its report after three years. Findings of the Committee were referred to the Minimum Wages Advisory Board and as suggested by the Board a tripatriate body called the Kuttanad Industrial Relations Committee consisting of the representatives of farmers, labour unions and government nominees was set up in 1957 for the settlement of labour disputes[29]. Prior to the formation of the first Communist ministry in Kerala, state authorities had been following a policy of police interventions in case of law breaches in the labour struggles in Kuttanad area. Contrary to this policy the Communist government adopted a new policy of *non interference in labour disputes* and thus encouraged the trade unions to achieve their goals by might and main. The functioning of the Kuttanad Industrial Relations Committee was not very effective until the first Communist ministry was dismissed in 1960 as the outcome of a mass uprising called Liberation Movement (*Vimochana Samaram)* engineered and executed mainly by the landed gentry of the Central Travancore. However, The Committee continued till 1961 when the Industrial Relations Committee (IRC) replaced it for Kuttanad.

Most of the earlier leaders of the labour movements in Travancore were either caste Hindus or Syrian Christians and their relatives were farmers. But after the split of the Communist Party of India (CPI) in 1964 most of the labour unions came under the control of CPI (M) and union leadership shifted from upper caste leaders to lower caste and economically poor *comrades.* Compared to the parent organization CPI (M) had a more radical approach and the goal of the Party in its trade union front was "the creation of highly polically oriented and committed set of workers bent on destroying capitalism amd its plenipotentiaries at the village level, the farmers"[30]. When a coalition government led by C P

[29] GOK (1971): **Report of the Kuttanad Enquiry Commission**, Op.cit. p.23.
[30] Quoted in Alexander K C (1973): Op. Cit., p.1558

I (M) came to power in the state in 1967, IRC and similar bodies set up for the mediation of industrial disputes were looked upon with suspecion and were treated as "class weapons to currupt, disorganise and to cheat the working class and our business is to see that they do not succeed"[31].

In order to face the demands of labour unions collectively and to bring their grievances before the concerned authorities, farmers of Kuttanad also formed their own unions. Akhila Kuttanad Karshaka Sangam, Kuttanad Karshaka Sangam, Karinila Karshaka Sangam, Desseeya Karshaka Sangam and North Kuttanad Agriculturists Association are some of such farmers' organizations. Initially the farmer's organizations resorted to peaceful means to protect their interests, but later they also adopted violent measures to counter the militant labour union agitations.

2.4.4 Land reforms and agrarian relations

Prior to the formation of Kerala State by unifying the erstwhile princely states of Travancore and Cochin with the British ruled Malabar district of Madras Province in 1956, Kuttanad was part of the state of Travancore. Compared to Malabar and Cochin, land tenure legislations in Travancore had been more radical[32]. When Marthanda Varma acceded to the throne of Travancore in 1729, the king's authority was so nominal that the *Ettuveettil Pillamar* and the *Madampimar* were more or less independent rulers of their own estates. Marthanda Varma successfully defeated those chieftens and in the process of the conquests the state asserted its sovereignty by annexing the territories belonging to the chieftens and converted almost all of such lands into state owned lands. By the close of the 18th century the annexations were completed and nearly half of the total cultivated land in Travancore came under the state ownership.

During the early decades of the nineteenth century most of the arable lands in Kuttanad were held by Brahmin families (*Brahmaswoms*), temple authorities (*Devaswoms*) and a few Nair chief tens (*Madampimar*). They leased out a major portion of the land in their possessions to ryots belonging to upper caste Hindu and Syrian Christian Communities. A royal edict promulgated in 1829 stated that the tenant should pay the *jenmi (*land owner) his usual dues and as long as the dues are paid, "the tenant remains in possession and enjoyment

[31] C P I (M) **Central Committee Resolution** (1968): *Tasks on the Trade Union Front*, p.47.
[32] Oommen T K (1975): *Agrarian Legislations and Movements as Sources of change –The case of Kerala*, **Economic and Political Weekly**, Vol.X, No.40, 4 October, p.1571.

of the property". Usually such tenant holdings exceeded ten acres and the large size of holdings made the ryots very powerful[33]. Large scale reclamations of kayal lands carried out by the wealthy and influential farmers of North Travancore during the second and third phases of redamation led to the emergence of a new class of landed gentry called *kayal rajakkanmar* (kayal kings) who possessed thousands of acres of paddy lands in Kuttanad. Some of the ryots used to sublease small portions of their lands to Ezhavas.

From its early days the Communist Party of India had clamoured for the transfer of ownership rights of land from feudal landlords to the tillers of the soil. Through systematically organized study classes, the Party upheld the need of a working class revolution as a panacea for the prevalent social and economic inequalities. Eventhough the concepts of *dialectical materialism* and *materialistic interpretation of history* were not comprehensible to a vast majority of the ignorant farm labourers who used to attend such study classes, the literary works of the leftist writers which invariably depicted industrialists and land lords as exploitors and class enemies, had inculcated among them the prospects of establishing an egalitarian society through class struggles. The popular verses of the 1940's and 1950's like "Nammalu koyyum vayalellam, nammudethakum painkiliye" (*All the fields that we reap, o'parrot, will be ours*) inspired thousands of farm labourers all over the state. Naturally when the party came to power in Kerala sincere efforts were made to introduce radical land reforms in the state. Accordingly, the Agrarian Relations Bill, which is often described as the most comprehensive land reforms in the Indian States, was introduced in the State Assembly in 1959. The Congress government that came to power after the dismissal of the Communist ministry in 1960 enacted the Bill[34]. The Kerala Land Reforms Act (KLRA) of 1964 that superseded the Agrarian Relations Act, granted hutment dwellers the right to own their dwelling houses and a few cents of land around it. Most of the beneficiaries of this Act were either the agrestic slaves of the feudal days or agricultural labourers. With the implementation of the Act nearly 3 lakh hutment dwellers became owners of small plots up to the extent of 10 cents.

Due to the persistent increase in the inequality of land distribution in Travancore, the proportion of households cultivating less than one acre rose from 38 percent to 52 percent

[33] Alex George (1987): Op.cit. p.A -141

[34] Oommen M A (1994): *Land Reforms and Economic change Experience and Lesson from Kerala*, in B A Prakash (ed-), **Kerala's Economy,** Sage Publications, New Delhi, p.123

during the period 1931 to 1966 - 67[35]. At the state level in the year 1970 - 71, 81.8 percent of the holdings were below one hectare and their total area amounted only 31 percent of the total cultivated area. In order to attain a more equitable distribution of operational holdings in the state, the Kerala Land Reforms (Amendment) Act was introduced in 1969. The two major objectives of the Act, which was enforced from 1st January, 1970 were (i) the total abolition of tenancy and (ii) the possession and redistribution of surplus lands among landless peasants. The Act achieved its first objective by conferring ownership rights to all types of tenants. However, with regard to the acquisition and redistribution of surplus lands it was a failure to a great extent. The long time gap between the ceiling proposal (1957) and its implementation (1970) gave enough time to land lords who had surplus lands beyond the prescribed limits to avoid its surrender through real and bogus transfers. Exemption granted to areas under plantation crops was another flaw of the Act. Similarly, concessions given to the landed properties of religious and charitable institutions were widely misused. Many farmers successfully evaded the seizure of their lands through litigation. Creation of spurious tenancies with or without the connivance of bureaucrats also defeated the very purpose of the Act to some extent. Again, as the concept of *personal cultivation*, which meant the participation in agricultural activities with physical involvement, was diluted to include *supervision* also, many absentee landowners engaged in other occupations managed to retain their holdings. Even CPI (M) has deviated from its original slogan of *land to the tiller* by upholding the right of absentee landowners and people engaged in other occupations to possess cultivating lands. The Party's Central Committee Resolution on Agrarian Issues (1973) states that, "the lands of small holders owing less than half of the ceiling but elking their livelihood in factories, small shops, schools, …. or in any other profession, even if they are not cultivating their lands shall not be taken"[36].

The extent of land declared surplus in the state as on 30-11-1988 was 160099 acres. Out of this, only 91,562 acres (57.19 percent) had been taken possession of by the government. As on 30-11-2000, 66984 acres of surplus land have been distributed among 157841 families that amount to only 41.84 percent of the declared surplus. Till that date a

[35] Krishnaji N (1979): *Agrarian Relations and the Left Movement in Kerala*, **Economic and Political Weekly**, Vol.XIV, No.9, 3 March, p.516
[36] lbid, p.519

total of 4543 acres of land had been distributed to 8434 families in Alapuzha district[37]. It includes 1959 acres of kayal lands reclaimed by Muricken, which was declared surplus and distributed among landless farm labourers in 1975.

2.4.5 Re-emergence of tenancy and present labour status

The Land Reforms (Amendment) Act of 1970 had successfully abolished the age-old system of tenancy in Kerala by providing ownership rights to the tenant cultivators. However, since the beginning of the 1980's the system had made its reappearance in the low lands of Kuttanad with certain alterations. A study conducted by E K Easwaran in Nedumudi panchayat of Kuttanad taluk during the year 1985 shows that 11 percent of the paddy land owners in that area used to lease out their land. While more than half of the lessors own five or more acres of land, 87 percent of the lessees possess only less than one acre of land[38]. The present survey shows that more than 21 percent of paddy farmers in Ramakari village lease in paddy lands and area of such leased in lands amounts to 20 percent of the total area under the crop. It is found that more than half of the lessors are marginal or small farmers with less than one hectare of land and the practice of leasing paddy lands is independent of the size of holdings.

Over the last few years agricultural labourers in Kuttanad have acquired a multiple status. With the implementation land reforms many of them had received plots of surplus lands their size not exceeding one acre. Some of them lease in additional land for personal cultivation, some others lease out their land and the rest of them sow in their newly acquired land and indulge in other activities during the non-farming seasons. The distinction between paddy farm workers, marginal farmers, inland fishermen, construction workers and casual labourers has narrowed down in the rural areas of Kuttanad as the very same person performs all these activities in different times. Eventhough the IRC for Kuttanad had upheld the freedom of farmers to fix the numbers of workers and their right to select those whom they prefer, at present the cultivators prerogative to choose specific workers is very much limited. Wages of farm labourers are periodically revised by trade unions with out even consulting the farmers. Agricultural activities like ploughing, sowing, manuring and spraying insecticides are done by work groups with strong political backing. Most of the farming

[37] GOK (2001): **Economic Review 2000**, SPB, Thiruvananthapuram, table 10.4, p.179

[38] Easwaran K K (19794**): Keralathil Veendum Patta Vyavastha - Oru Grameena Patanam** (Mal.), (Re-emergence of Tenancy in Kerala - A Village Study), **Kerala Patangal**, January – March, p.482

operations are carried out according to the convenience of labourers and not in accordance with the dictates of natural factors and agronomic practices[39]. The traditional paddy farmers in Kuttanad who had once controlled the main opportunities of work by agricultural labourers and whose strength had once grown in almost direct proportion to the growth of the militancy of agricultural labourers[40] have now become a dejected lot. While some of them try to reconcile with the already changed situation, others are turning to other occupations giving up paddy farming.

* *

[39] Thomas Joseph A, Thomas T A (1999*): Reaping Before Sowing – Agrarian Relations in Kuttanad*, in B A Prakash (ed.), **Kerala's Economic Development**, Sage Publications, New Delhi, p.215

[40] Mencher Joan P (1980): *Lessons and Non Lessons of Kerala*, **Economic and Political Weekly**, Vol.XV, Nos. 41 – 42, October, p.1785.

Chapter - 3

PADDY CULTIVATION IN RAMANKARI VILLAGE

This chapter is divided into tree parts. Salient features of the study area and its population are given in the first part. The socio-economic backgrounds of the local farmers are given in the second part and the changes in major agricultural activities related to paddy cultivation in the study area are described in the third part.

3.1 Study Area - Some General Observations

3.1.1 Location and area

Ramankari village that is selected as the area of the present study falls in the *kayal zone* of Kuttanad region. It belongs to Veliyanad block of Kuttanad taluk. The village contains all of the ten wards of Ramankari panchayat except the wards 6,7 and a small portion of 8. The village is nearly triangular in shape. The river Pamba that is one of the four major feeder rivers in Kuttanad acts as the natural boundary of the village in the northeast separating it from the nearby village of Veliyanad. Champakulam and Edathua villages are situated respectively in the west and north of the study area. From Kidangara Bridge in the east to Pallikkoottumma Bridge in the west, 4.2 kilometers of the Changanassery-Alapuzha main road passes through this village. Important localities in the village are Pallikkottumma, Manalady, Ramankari, Mampuzhakari, Settlement Colony, Oorikari and Vezhapra. The study area is purely a rural area with out any hospitals with modern facilities, affiliated colleges, technical institutions, business centres or large scale industrial units.

As per the revenue records, Ramankari village covers a total area of 1147.51 hectares out of which 845.73 hectares (73.70 percent) are wet lands, 246.36 hectares (21.47 percent) are dry lands and the remaining 55.42 hectares (4.83 percent) are uncultivable waste lands or water bodies. Every year during the monsoon months, the entire village is submerged under floodwater for two or more weeks. Compared to kayal lands in and around the Vembanad Lake, the wetlands in most part of the village are shallower. Even though, the recently introduced *rice-fish crop rotation* had been attempted by a few individual farmers, the new system has not yet become popular and paddy remains to be the only crop raised in almost all of the padasekharams in the study

area. Coconut is the major garden crop cultivated in dry lands of this area. Banana and other plantains, vegetables, pulses and tubers are also cultivated in dry lands in a limited scale. The dry lands in the study area are thickly populated and density of population is found to be 38 per hectare.

3.1.2 Demographic particulars

According to 1991 census reports, there were 2118 occupied residential houses and 2138 households in Ramankari village with a total population of 11189. Unlike the state level, male persons (5635) out numbered the female persons (5554) and the sex ratio stood at 986. Average size of households during the reference period was 5.23. By the year 1998, number of households in the village increased to 2192. Based on the survey conducted in Ramankari during the year 2000, the estimated population in the village is 11965 consisting of 5816 male persons and the estimated sex ratio is found as 997. More than 13 percent of the local populations are 60 or more years old and the percentage of children below 15 years old is found to be 22.29. Dependency rate of the village population is estimated as 35.45 percent. An estimated number of 3276 women are in the age group of 15-49. The General Fertility Rate (GFR) and the Crude Birth Rate (CBR) of the local population are calculated as 56.5 and 15.6 respectively. Age wise distribution of population from 750 households covered in the pilot survey is given in table 3.1.

Table 3.1
Age wise Distribution of Persons in Sample Households.

Age	Male	Female	Total
Less than 1	30(0.75)	32(0.81)	62(1.56)
1 – 14	430(10.82)	394(9.91)	824(2.73)
15 – 49	1126(28.33)	1121(28.21)	2247(56.54)
50 – 59	161(4.05)	157(3.95)	318(8.00)
60 and above	243(6.11)	280(7.05)	523(13.16)
Total	1990(50.08)	1984(49.92)	3924(100.00)

Source: Pilot Survey conducted in 2000 covering 750 households

Note: Percentage to total population are given in parantheses

3.1.3 Literacy rate and education status

The literacy rate in Kuttanad taluk as per the 1991 census was 86.91 percent. Compared to the rate of literacy of female persons, which was estimated as 86.23 percent, the male literacy rate, estimated as 87.61 percent, had been higher. Present study shows that 89 percent of the people in Ramankari village are literates. Rates of literacy among male and

female persons are separately calculated as 89.85 percent and 88.16 percent respectively. The effective rate of literacy, calculated after excluding children below 7 years old, of the village population is found to be 96.43 percent. At present there are 49 male and ---female illiterate persons in the sample households and their effective literacy rates are estimated as 97.24 percent and 95.63 percent respectively. Even though, adult education programmes were carried out in some parts of the village they were not very effective. It is observed that a vast majority of illiterates in the study area belong to scheduled castes.

In spite of the high rate of literacy, it is observed that only 28 percent of the people in the study area have successfully completed their school education. About 17 percent of the local people are either school dropouts at the lower primary level itself or students of that level. Even though more than one-fourths of the local people have successfully completed their high school studies only less than 4 percent of them are degree holders in any stream. The parents while sending their children for higher education show some degree of bias infavour of the stronger sex. It is evident from the fact that while 13.31 percent of the male population in the study area is having education qualifications equivalent to pre degree or above, only 11.34 percent of the female population is having the same education status. Table 3.2 shows the education status of the members of households included in the pilot survey.

Table 3.2

Distribution of Village Population on the Basis of Their Education Status

Education Status	Number of Persons		
	Male	Female	Total
Illiterate	202(10.15)	235(11.84)	437(11.00)
1 – IV	325(16.33)	340(17.14)	665(16.73)
V – VII	405(20.35)	407(20.51)	812(20.43)
VII – X	465(23.37)	471(23.74)	936(23.55)
SSLC (Pass)	328(16.48)	306(15.42)	634(15.95)
PD, XII, Diploma	86(4.32)	72(3.63)	158(3.98)
Total	1990(100.00)	1984(100.00)	3974(100.00)

Note: Percentages are given in brackets.

3.1.4 Activity status and occupation

Out of a total number of 3974 persons from the 750 households covered in our pilot survey, 2565 persons (1287 male and 1278 female persons) fall in the age group 15-59. It is found that 171 male persons and 816 female persons are voluntarily unemployed in the sense that they are neither seeking nor available for remunerative work. The total work force consists of 1578 persons out of which 259 persons (16.41 percent) are unemployed. Compared to the male labour force whose rate of unemployment is estimated as 10.57 percent, the rate of unemployment among the female labour force, which is found to be 30.52, is significantly higher. Work participation rate of the local population is estimated to be 33.19 percent during the period of the present survey. Relevant figures are given in table 3.3.

Table 3.3

Employment Status of Village Population

Activity Status	Number of Persons		
	Male	**Female**	**Total**
1. Employed	998	321	1319
2. Unemployed	118	141	259
3. Total labour force (1+2)	1116	462	1578
4. Voluntary unemployment	171	816	987
5. Unemployed as% of labour force	10.57	30.52	16.41
6. Work participation rate	50.15	16.18	33.19

The 1991 census had shown that 57.18 percent of the main workers were agricultural labourers and another 11.13 percent of them were cultivators in Kuttanad taluk. The present survey reveals that about 30 percent of the employed persons are agricultural labourers and another 8 percent of them are paddy farmers in the study area. Taken together, agricultural activity, mainly paddy farming, providers direct employment to 38.51 percent of the working population in Ramankari village. While nearly 20 percent of the employed persons are regular salaried employees in private firms and establishments both inside and outside the state, 7.58 percent of them are government employees or workers in government aided institutions. Skilled labourers like independent tailors, electricians, mechanics, toddy tappers, plumbers, drivers of own vehicles, sand miners etc., are included in the category of self employed persons who constitute the third largest category of workers. Occupation wise distribution of employed persons is given in table 3.4

Table 3.4

Occupation-wise Distribution of Employed Persons in Ramankari Village

Occupation	No. of Persons	Percentage
Farmer	109	8.26
Agricultural labour	399	30.25
Casual labour	157	11.90
Business and trade	84	6.37
Regular private service	257	19.48
Regular govt.service	100	7.58
Inland fishing	34	2.58
Self employment	179	13.57
Total	1319	100.00

3.1.5 Distribution of owned land area

Even though the Kerala Land Reforms Act of 1964 made the then landless hutment dwellers all over the state owners of their huts and small plots of land around them, the present survey shows that still a small percentage (0.67 percent) of the households in Ramankari village do not have their own houses or any land property. In recent years many of the local house holds who used to live in small thatched huts were able to rebuild or modify their houses with tiled roof making use of subsidies and housing loans provided to them under the various schemes of the state government and local bodies. At present 83.07 percent of the houses in the study area are tiled and another 7.73 percent are concrete buildings. The remaining 9.2 percent of the houses remains as thatched huts.

As mentioned above, more than 99 percent of the households in the study area are owners of dry lands. Average size of their dry lands is estimated as 25.21 cents. Wide disparities are observed in the distribution of dry land holdings among the households. While the top 9 percent of them have 50 or more cents of dry land area, the area owned by the bottom 48 percent are less than 10 cents. Even though nearly three-fourths of the total area in Ramankari village is wetlands, about two-thirds of the local households do not own any wetlands. Average size of wetland holdings of the remaining households is estimated as 181.66 cents. Distribution of village households on the basis of their owned land area is given in table 3.5 which shows the extent of the prevailing inequality in the distribution of land holdings. It is observed that, while the bottom 40 percent of the

households in the study area are either landless or own less than ten cents of land, the owned land area of the top 24.27 percent amounts to one or more acres.

Table 3.5

Distribution of Village Households on the Basis of Owned Land Area

Area (in cents)	Number of households		
	Dry land	Wet land	Total
Nil	5(0.67)	493(65.73)	5(0.67)
Less than 5	115(15.33)	----------	101(13.47)
5 – 10	243(32.40)	----------	194(25.87)
10 – 25	235(31.33)	5(0.67)	128(17.07)
25 – 50	87(11.60)	32(4.27)	59(7.87)
50 – 100	35(4.67)	62(8.27)	81(10.80)
100 – 250	25(3.33)	109(14.53)	119(15.87)
250 – 500	3(0.40)	37(4.93)	45(6.00)
500 and above	2(0.27)	12(1.60)	18(2.40)
Total	750(100.00)	750(100.00)	750(100.00)

3.2 Socio-Economic Background of Paddy Farmers

On the basis of their owned paddy cultivating lands, farmers in the study area can be classified into marginal farmers with less than 100 cents small farmers with 100 to 250 cents, medium farmers with 250 to 500 cents and large farmers with more than 500 cents. Out of the 750 households covered in our pilot survey, 257 households own paddy lands with varying sizes within a wide range of 20 to 1500 cents. Among the owners of paddy fields 99 households own less than one acre, 109 households own 1 to 2.5 acres, 37 households own 2.5 to 5 acres and 12 households own more than 5 acres of wet lands. After excluding those households, which had leased out their entire paddy fields during the last crop season, we selected 90 households by taking 30 percent each of the marginal and small farmers, 40 percent of medium farmers and cent percent of large farmers. Thus the selected sample consists of 30 marginal farmers, 33 small farmers, 15 medium farmers and 12 large farmers.

3.2.1 Religion and community wise distribution of sample households

Hinduism and Christianity are the two dominant religions in Ramankari village and all of the sample paddy farmers in the study area are either Hindus or Christians. The percentages of Christian and Hindu farmer households are found to be 52.2 and 47.8

respectively. While more than three-fourth of the marginal farmers have Hinduism as their household religion, cent percent of the sample large farmers are Christians. Number of small farmer households belonging to the above two religions are found to be more or less equal. A Community wise split up of the sample farmers shows that more than half of them are Syrian Christians, one-third are Ezhavas and 7.78 percent are Nairs. Percentage of Scheduled Caste farmers is found to be 6.67 and all them are marginal farmers. They had obtained paddy lands through the redistribution of surplus lands. As the Christian converts from Scheduled Castes had lost their caste identity, they were not given any portion of the redistributed surplus paddy lands. Community wise distribution of sample households is given in table 3.6

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Table 3.6
Community wise Distribution of Sample Households

Community	Number of households				
	Marginal	Small	Medium	Large	Total
Syrian Christian	6(20.0)	17(51.5)	11(73.3)	12(100.0)	46(51.1)
Nair	4(13.3)	2(6.1)	1(6.7)	--	7(7.8)
Ezhava	13(43.3)	14(42.4)	3(20.0)	--	30(33.3)
Scheduled caste	6(20.0)	--	--	--	6(6.7)
Pentacost	1(3.3)	--	--	--	1(1.1)
Total	30(100.0)	33(100.0)	15(100.0)	12(100.0)	90(100.0)

Note: Percentages are given in brackets

3.2.2 Households size and age composition

Compared to the entire households in Ramankari village, the average size of sample households, which is estimated as 5.48, is relatively higher. Again, unlike the whole village population, female persons out number their male counterparts in farmer households and the sex ratio is found to be 1046. More than 16 percent of the sample household members are old people of 60 or more year's age and 24 percent are children below 15 years old. The dependency load of the concerned population is estimated as 40.2 percent. There are 122 women in the age group 15-49 and the reported live births in the sample households during the reference year stood at 9. The CBR and GFR of the sample households are estimated as 18 and 50.62 respectively. Age wise distribution of the members of sample households is given in table 3.7.

Table 3.7

Age wise Distribution of Sample Household Members

Age	Number of persons		
	Male	Female	Total
Less than 1	4(0.81)	5(1.01)	9(1.83)
1 – 14	57(11.56)	52(10.55)	109(22.11)
15 – 49	122(24.75)	119(24.14)	241(48.88)
50 – 59	25(5.07)	29(5.88)	54(10.95)
60 and above	33(6.69)	47(9.53)	80(16.23)
Total	241(48.88)	252(51.12)	493(100.00)

Note: Percentage to total population is given in brackets

3.2.3 Literacy and education status

Out of the total number of 493 persons from the sample farmer households in Ramankari village 53 persons are found to be illiterate and the rate of literacy is estimated as 89.25 percent. There are only 8 adult illiterates and effective literacy rate among the members of sample households is as high as 98.18 percent. It is to be noted that among the medium and large farmer households all persons above 7 years old are literate. Taking all the four categories of households together it is observed that 35.09 percent of the members had successfully completed their high school studies and 8.52 percent of them are graduates. Compared to the entire village population, education status of farmer household members is much better. In spite of it the percentage of persons from marginal households who have education qualifications equal to SSLC or above which is found to be 29.24 percent is substantially lower than those of small, medium and large farmer households estimated respectively as 36.42 percent, 37.35 percent and 43.94 percent. Education status of sample household members is given in table 3.8.

Table 3.8

Education status of Sample Household Members

Education status	Number of persons				
	Marginal	Small	Medium	Large	Total
Illiterate	18(10.5)	20(11.6)	9(10.8)	6(9.1)	53(10.8)
Primary	44(25.7)	39(22.5)	12(14.5)	9(13.6)	104(21.1)
Secondary	59(34.5)	51(29.5)	31(37.3)	22(33.3)	163(33.1)
SSLC, PDC	43(25.1)	49(28.3)	21(25.3)	18(27.3)	131(26.5)
Degree	7(4.1)	14(8.1)	10(12.0)	11(16.7)	42(8.5)
Total	171(100.0)	173(100.0)	83(100.0)	66(100.0)	493(100.0)

Note: Percentages are given in brackets

It is also observed that out of the 90 sample paddy farmers 27 persons have passed SSLC and 5 among them are graduates. From the remaining 63 farmers, 46 farmers are school dropouts at the high school level and 17 farmers had discontinued their formal education at the primary level itself.

3.2.4 Employment status and occupation

Rate of unemployment is found to be comparatively higher among the farmer households in the study area. Out of a total workforce of 188 persons from the sample households, 32 persons are unemployed and 156 persons are employed. Number of voluntarily unemployed persons in the age group of 15 to 60 is found to be 107, which amounts to 36.27 percent of the total number of persons in this age group. It includes students, housewives and physically handicapped and mentally invalid persons. Rate of unemployment among the total work force is estimated as 17.89 percent. Compared to the marginal and large farmer households, the problem of unemployment is more severe in small and medium farmer households. Labour force status of the four categories of sample households is given in table 3.9

Table 3.9

Activity Status of Sample Household members

nployment status	arginal	nall	edium	rge	tal
Employed	60	51	25	20	156
Unemployed	10	13	7	2	32
Work force (1+2)	70	64	32	22	188
Voluntarily unemployed	43	37	16	14	110
Unemployed as% of work force	14.29	20.31	21.88	10.5	17.89

Work participation rate	35.09	29.48	30.12	30.30	31.64

Paddy cultivation is the main economic activity for nearly one-third of the 156 employed persons from the sample households while nearly two percent of them are paddy cum fish farmers. It is also found than 30 persons (19.23 percent) from the farmer households are regular salaried employees and two-thirds of them are working in private establishments. Another 16.67 percent of the employed persons are paddy farm labourers. Compared to other categories, the proportion of agricultural labourers in marginal paddy land owning households is much higher. Again, the number of self-employed persons, which includes businessmen and traders, amounts to 17.31 percent of the total number of employed persons. Occupation-wise distribution of employed persons from sample households is given in table 3.10.

Table 3.10

Occupation wise Distribution of Persons from Farmer Households

ccupation	**Number of persons**				
	Marginal	**Small**	**Medium**	**Large**	**Total**
ltivators	11(18.33)	19(37.25)	12(48.00)	12(60.00)	54(34.62)
h farming	1(1.67)	1(1.96)	1(4.00)	--	3(1.92)
ricultural labour	22(36.67)	3(5.88)	1(4.00)	--	26(16.67)
f employed	5(8.33)	13(25.49)	7(28.00)	2(10.00)	27(17.31)
nployees in private ms	6(10.00)	5(9.80)	3(12.00)	6(30.00)	20(12.82)
vt servants	3(5.00)	7(13.73)	--	--	10(6.41)
sual labour	12(20.00)	3(5.88)	1(4.00)	--	16(10.26)
tal	60(100.00)	51(100.00)	25(100.00)	20(100.00)	156(100.00)

Note: Percentages are given in brackets

3.2.5 Land assets and household debt

For most of the sample households land property is their major asset. In addition to wetlands all of them have owned dry lands. On an average a marginal farmer household in the study area possesses 85.34 cents of land of which 74.47 cents are wetlands. Meanwhile an average small farmer household owns 211.54 cents of land out of which 174.48 cents are wetlands. In the case of medium and large farmers the respective figures are estimated as 450.34 cents and 371.67 cents. Total land area owned by an average large farmer household is found to be 1087.2 cents, which is nearly 13 times greater than that of a marginal farmer's possession. Again, it is observed that an average large farmer owns 815 cents of paddy lands.

Present survey reveals that 60 percent of the farmer households in the study area bear the burden of debt. Contrary to the popular belief, it is found that the incidence of indebtedness is more severe among large farmer households compared to marginal and small farmer households. While 74 percent of the large farmers are debtors only 46.7 percent of the marginal farmers have prevailing debts. The total existing debt of the 90 sample households at the date of the survey amounted to Rs 4.64 lakhs and their per capita debt is worked out as Rs. 941. It is observed that the average debt of the debtor households in the large farmer category, which is found to be Rs. 15333, is more than three times higher than that of the marginal farmer households. However, this does not imply that the marginal farmers are financially better placed but only shows that the creditworthiness of large farmers are relatively much higher so that they can avail more loans fom financial institutions and private individuals. The current debt position of the sample households is shown in table 3.11

Table 3.11

Debt Position of Sample Farmer Households

Type of farmers	No. of debtors	Total debt	Average debt
rginal	14 (46.67)	65400	4671
all	20 (60.61)	143500	7175
dium	11(73.33)	117000	10636
rge	9 (75.00)	138000	15333
tal	54(60.00)	463900	8591

Note: Percentages to total in each category are given in brackets

3.2.6 Political leaning of sample farmers

The left political parties always supporting the paddy farm labour movements in Kuttanad had a retorting effect of driving farmers towards right parties. During the year 1965 when K M George along with leaders like, R Balakrishna Pillai and K R Saraswathyamma parted ways with the then congress chief minister R Sankar and formed a separate regional party called Kerala Congress, the new political out fit had the whole hearted support of the Central Travancore farmer's lobby. The Syrian Christian and Nair leadership of the new party could wield its influence among the rank and file of the two communities. At that time a major portion of the wetlands in Ramankari village was in the possession of the large farmers who belonged to any one of the above two communities. The Kuttanad Karshaka Sangam which was led by the late Kerala Congress leader E John Jacob turned out to be a vibrant organization to uphold the interests of paddy farmers and acted as a solid forum to counter the growing militancy among farm labour unions. The *reign of kayal rajakkanmar* (Kings) ended in the study area with the implementation of the Kerala Land Reforms (Amendment) Act in 1970, which contained provisions for the take over of surplus paddy lands from landowners. Even though, in course of time the vigour of paddy farmers organizations supported by right political parties had lost and many of them have become dormant, a vast majority of the medium and large farmers in the study area are still supporters of right parties like Indian National Congress and Kerala Congress. However, 50 percent of the marginal farmers and more than one-third of the small farmers who had revealed their allegiance to political parties are supporters of left parties like CPI (M) and CPI. One- third of the 90 respondents we had interviewed as part of the present study declined to disclose their political affinity. Table 3.12 shows the political inclination of sample farmers in the study area.

Table 3.12

Political Leaning of Sample Paddy Farmers

litical Party	**arginal**	**nall**	**edium**	**rge**	**tal**
I(M)	(36.7)	8.2)		.3)	(20.00)

I	.7)	.0)			.3)
C	(33.3)	(33.3)	3.3)	5.0)	(32.2)
CJ	0.0)	.0)	.3)	3.3)	(11.1)
t revealed	.3)	(42.4)	3.3)	3.3)	(33.3)
tal	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Note: Percentages are given in parentheses

3.3 Changes in Farming Practices in Ramankari Village

By the dawn of the nineteenth century most of the arable lands in the study area were owned by the *Mancombu Numboothiris* (Brahmins) who had gained it from the king as tax exempted lands (*karamozhivu bhoomi*). These landowners gave out most of their lands to certain Nair and Syrian Christian families on lease. In those days paddy cultivation was profitable and gradually the lessors became rich enough to purchase the leased in lands. In course of time most of the paddy growing lands in Ramankari village came under the ownership of a few rich landlords. After retaining a portion of the fields for self-cultivation these landlords used to lease out their paddy lands to other tenants. Each landlord had a supervisor called *krishikaran* to conduct the day today farm affairs. He was a regular employee of the landlord who was given 30 *paras* of paddy as monthly wages. Usually the *krishikaran* was very loyal to his landlord and was treated as a household member of the latter. In addition to the regular wages he was given other benefits like free meals and free straw as fodder to his cattle. The strenuous paddy farm works were done by agrestic slaves who belonged to the low caste *Pulaya* community under the leadership of a head worker called *thalapulayan.* Every year the landlords used to give some money or paddy as advances to their workers during the Onam season and the workers who received such advance payments were called *onapanikar*. They had to work under the landlords as bonded labourers. Practically these agrestic slaves were deprived of education and other human rights and they were so meek that they seldom looked at the face of their master (*yajamanan*).

In order to meet the cultivation costs, local farmers used to take loans from *Maancombu Pattars* (Tamil Brahmins) who had migrated to Travancore from Tamilnadu to perform *poojas* and other rites in temples. The payment and repayment of loans were in

terms of paddy and the rate of interest varied from 10 to 25 percent. For giving out loans and receiving it back different measures were used the defacto rate of interest often amounted to 50 percent. For the first time default in paying back the debt farmers had to pledge their land ownership documents as *panayadharam* to the *Pattars*. If they failed to give back the loans for a second time in succession, then the lenders were entitled to cultivate or lease out the pledged lands until all dues were cleared. In many instances unable to repay their debts farmers had to forfeit their lands by giving the permanent documents (*theeradharam*) to the moneylenders. Usually the moneylenders sold the thus appropriated lands to other farmers. During the year 1942 (M E 1117) the then Travancore Divan C P Ramaswami Iyer imposed agricultural income tax on moneylenders and gradually the barter system of lending came to an end.

Until the beginning of the second world war paddy lands in the study area had been sown once in two or three years. Houses of landlords were situated in patches of elevated dry lands called *thuruths*. During the non-crop seasons farm labourers worked in dry lands with mud dug from wetlands. The process of the conversion of wetlands into dry lands through filling was known as *kattakuthipokkal*. At the time of the formation of the United Kerala State *(Ayika Keralam)* in 1956, a major portion of the paddy lands in the study area was under the ownership of some Nair and Syrian Christian families and the prominent among them were the Thayil Menons who owned 2400 acres of paddy fields in Ramankari.

Over the past several decades paddy farming activities in Ramankari village remain more or less the same. In early days, the entire farming operations from the construction and repair of ring bunds to the harvesting of the crop were done exclusively by using manual labour. Mechanically operated pump sets using kerosene and diesel as fuel were introduced in the study area during the 1940's and it was the first step towards the process of mechanization of farming activities. Important farming operations related to paddy cultivation in the study area are the repair of outer bunds, dewatering, ploughing, clearing and levelling of fields, erection and repair of inner bunds, sowing, weeding, application of pesticides and harvesting. The changes that have taken place in the mode of these operations over the past decades are discussed in this section.

(i) Repair of ring bunds

In early days the entire low-lying areas in Ramankari village were submerged under water throughout the whole year. During the period of reclamation ring bunds have been erected around specified plots and converted the areas within the bunds into *padasekharams.* The method of erecting bunds to facilitate paddy farming is known as *varambukuthi krishi*. Early bunds in the study area are made of mud taken from the fields it self. In order to strengthen the bunds bottom part of the stalk of paddy left in the fields after harvesting *(chuvattukachi)* had been used. Due to floods and the incessant wave action ring bunds used to get damaged in non-cropping seasons. The task of the erection and repair of ring bunds had been entrusted to low caste agrestic slaves. Usually the repair works of ring bunds began after Onam. At present some of the padasekharams in the study area have permanent outer bunds strengthened with granite and the risk of breach in bunds and the resultant crop failure have been substantially reduced. Annual maintenance works of bunds are carried out by casual labourers under the supervision of padasekharam committees. Individual farmers on the basis of the proportion of area they cultivate share the cost of the work.

(ii) Dewatering

Prior to the installation of electric and diesel pump sets, manually operated wooden wheels called *chakrams* were used to bail out the excess water from padasekharams. These wheels were not of uniform size. Depending on its size the number of leaves in a wheel varied from 8 to 24. In order to operate a large size wheel having 24 leaves six healthy labourers were needed at a time. They sat in a vertical array and pushed the leaves using their legs in the rhythm of folk songs called *thekku pattu.* Usually such labourers worked in shifts of 3 hours and two shifts of labour was considered as a full day's work. Dewatering operation once began had to be continued day and night without interruption until the entire excess water is bailed out from the paddy fields. Even after the wide spread use of diesel and electric pump sets in the study area, the traditional wheels had been used in small padasekharams until a few years back.

At present in all of the padasekharams in the study area irrespective of their size, electric pump sets are used for dewatering. However, the number and

capacity of pump sets vary in accordance with the size and depth of padasekharams. In a single padasekharam called *Thekkethollayiram* at Ramankari with a total area of 90 acres 9 pump sets are installed and their capacity ranges from 25 to 50 HP. The task of dewatering is entrusted to private contractors who get the contract in auction. Like the ring bund repair charges, dewatering charges are also shared jointly by the concerned farmers in each padasekharam on the basis of their paddy land sizes. Usually dewatering operations for the summer crop begin by the end of September when the water level in padasekharams declines to manageable limits and it lasts for 3 to 5 weeks without break.

(iii) Ploughing

In early days paddy farmers in the study area used to plough their fields four times during a single crop season. In each round one lengthwise ploughing was followed by a crosswise ploughing and together it was called a *chal.* The first *chal* of ploughing was done immediately after harvesting and it was known as *podiuzhavu* (dust ploughing). Besides it three *chals* of ploughing were carried out before sowing and the practice was called *vellathil uzhavu* (water ploughing). Usually *podi uzhavu* was given to plough workers on piece rates and they used their own draught animals. Daily wages were given for *vellathil uzhavu.* Four hours of work was considered a day's work. Generally the plough labourers worked for six hours in a day and were given one and a half day's wages per day, which amounted to one and a half *para* of paddy. Rich farmers had their own draught animals.

Attempts were made to introduce tractor ploughing in the study area during the 1950's itself but it was vehemently opposed by the farm labour unions. In March 1969 a settlement between farmers and labourers was arrived at a meeting of the IRC of Kuttanad. As per the agreement at least one round of cattle ploughing is to be done after tractor ploughing. At present only 21 percent of the paddy farmers in the study area are exclusively depending on animal ploughing, another 19 percent of them use draught animals for only one round of ploughing while 46 percent use either tractors or power tillers for this purpose. The remaining farmers believe that any sort of ploughing is not needed in their fields. Now a days for both types of ploughing piece rates in terms of money are given.

(iv) Repair of inner bunds, clearing and levelling of fields

After ploughing, the paddy fields are cleared by removing the rotten weed particles and other waste materials. Then the field is subdivided in to small plots by erecting inner bunds (*idavarambu*). These small bunds with one-foot height and one to one and a half feet thickness are made up of mud taken from the field itself. In early days green leaves and shrubs had been used to strengthen the inner bunds. After the construction of inner bunds each plot inside these bunds is levelled using wooden planks called *njavari.*

(v) Sowing

Traditional varieties of seeds like *Chembavu, Kochuvithu, Vellathil Kolapala, Puncha Kolapala and Chennellu* were sown in the study area in early days. The duration of these seeds varied from 100 to 120 days. Till recently most of the paddy farmers in Ramankari used to keep a portion of their produce in each season as seeds for the next season. Utmost care had been taken in the preparation as well as preservation of seeds. Usually the seeds were dried in sun light for six consecutive days. In order to ensure uniform dryness the seeds spread on mats were stirred at regular intervals. On the seventh day the already dried seeds were once again exposed to sunlight for a short while for final drying and the final drying is called *anathu.* Finally the seeds are stored in baskets in moisture proof granaries until the next crop season.

Very often the head worker, *thalapulayan* was in charge of seed preparation. Cleanliness *(sudhavruthi)* was given prime importance during the whole process of seed preparation. Young women were not allowed to handle seeds and the man in charge of drying seeds was not allowed to leave the spot and interact with women till the prepared seeds are stored. Sowers were skilled workers who dispersed the seeds through out the fields in an even manner. They were given piece rates that amounted to 3 *kooliyans* of paddy for sowing one basket of seed (I para = 30 *kooliyans*). After the introduction of the Package Programme in the study area, traditional and native varieties of seeds gave way to high yielding varieties like *T-9, MO-1, MO-2* and *Thainan*. By the eighties other seed varieties like *Pavizham, Thriveni, Kanchana, Mo-4, Jyothi* and *Bhadra* had become popular in the study area.

At present nearly 85 percent of the paddy farmers in Ramankari village use *Jyothi* and others are using *Uma* in their fields. Over the past years the quality of sowing has considerably deteriorated due to the lack of skilled labourers.

(vi) Transplanting and weeding

Due to the poor quality of sowing paddy seeds fall in excess amounts in some parts of the field while in some other parts the rate of seed fall is much lesser than what is required. It results in the uneven distribution of seedlings and adversely affects crop productivity. Therefore the excess seedlings are transferred from the thickly growing parts to the sparsely growing parts of the field and this activity is called transplantation or *nattu.*

The exuberance of wet land weeds like *kavitta, pola, kannikapullu*, *African payal* (salvinia) and *kulavazha* (water hyacinth) had been a severe problem to local paddy farmers especially after the completion of the Thanneermukkom Bund. Until a few years back farmers in the study area used to remove weeds three times from their fields in a crop season. The first weeding was done along with transplanting and the second weeding was done within six to eight weeks after sowing. The third weeding was done in between ten to twelve weeks after sowing. Since the early years of paddy cultivation in this region farmers had been using water as an effective agent to control weeds. Ten to fifteen days after sowing they used to open the sluices in the outer bunds and allow the entry of outside water into the fields in a controlled manner until the seedlings of paddy and weeds are fully immersed. The water in the field is kept at that level for a few days and then bailed out. Meanwhile most of the seedlings of weeds decay but the seedlings of paddy survive. A more effective method of destroying seeds through inundation was later introduced by a local farmer called Venganthara John Chacko about three decades back in his 55 acre padasekharam in Mambuzhakari. After pumping out the entire water from his field for the summer crop he kept it as such for three weeks. In the already dried up field seeds of weeds germinated and grew. Then he allowed the outside water to enter and fill the field up to 3 feet depth. The water level was maintained for two weeks and mean while most of the already grown weeds were destroyed. Very soon this new method of weed destruction spread to the other areas of Kuttanad region. At present

after destroying the weeds in their paddy fields through inundation more than 80 percent of the farmers in the study area apply chemical weedicides to destroy weeds completely. This practice of the gross destruction of weeds at their early stage of growth has considerably reduced the menace of weeds in recent years. Now a days in most of the padasekharams in the study area manual weeding through hand plucking is carried out only once or twice during a crop season.

(vii) Manuring

Paddy fields in the study area are of two types viz., the traditional paddy lands called elevated fields *(pokkanilangal)* and the fields reclaimed from water bodies since the late 19th century called kayal lands. Compared to kayal lands soil in elevated fields is less fertile and in early days farmers used to apply cow dung and other organic manures only in such land. With the introduction of the New Agricultural Strategy chemical fertilizers like urea, factumfos and potash became popular in the study area. Even then some of the local farmers used to apply a mixture of powdered groundnut cake and bone meal once in every crop season before using chemical fertilizers. In those days manuring would start at early morning and three labour days were enough to apply fertilizers in ten acres of paddy fields. Depending on the financial capacity of farmers they used to apply chemical fertilizers two to three times in a single crop season. At present none of the paddy farmers use cow dung or any other farmyard manures in their fields but all of them apply chemical fertilizers and the average quantity of it exceeds 175 kilograms per acre. In addition to it about half of the local farmers use powdered lime in their field to neutralize the acidity of soil *(kattappuli).* Further a small minority of them also uses neem cake, which is regarded as manure as well as a pesticide. Manuring is done on piece rates and its cost varies from 80 to 100 rupees per acre.

(viii) Plant protection measures

Since the early days leaf rollers, rice stem borers, rice bugs and rats were the important pests that destroyed the paddy crop in the study area. Prior to the introduction of chemical pesticides and insecticides local farmers had been adopting certain crude measures to protect their crop from these pests. In order to destroy the

caterpillars of leaf rollers and rice stem borers they used to raise the water level in the pest affected fields up to the tips of the paddy plants. Then in order to escape from the slowly rising water level worms would move upwards and finally float. At this stage labourers would collect the floating worms using baskets and take them to the ring bunds where they are destroyed. This method of catching and destroying worms from paddy fields is known as *throwing baskets for worms* or *puzhuvinu kozhyerial.* Some of the paddy farmers in the study area used to adopt an occult practice called *chazhi vilakku* to control rice bugs. In this practice holy water blessed by priests is sprinkled in the affected fields. Usually a small portion of the affected field in some corner was left for rice bugs and according to the farmers all of the rice bugs in the field would accumulate in that corner sparing the other portions of the field. Many elder farmers in the study area stated that they could control rates also using a similar method called *elivilakku.*

Since the seventies local markets were flooded with a wide variety of insecticides and paddy farmers began to use them indiscreetly. Until a few years back most the farmers used to apply insecticides in their fields three to four times during a single crop season at regular intervals. The Indo-Dutch Mission had estimated the total quantity of liquid pesticides used in paddy cultivation in Kuttanad region during the year 1987-88 as 293660 litres. Along with this 190.97 tonnes of powdered pesticides were also used in that year[41]. Besides the permitted pesticides, the already banned DDT and its two derivatives DDE and DDD were frequently used in the study area even after the flowering of paddy plants. Very often farmers were not aware of the consequences of the excess use of the highly toxic pesticides and in matters regarding the quantity and variety of its use they were guided by pesticide dealers and salesmen. Recently the quantity and periodicity in pesticide application in the study area had been considerably reduced. At present nearly one-fourth of the paddy farmers do not apply any sort of pesticide or insecticide in their paddy fields. The average quantity of pesticides used in the study area during the previous summer crop is estimated as 328 milliliters per acre. Important varieties of pesticides used in the

[41] Indo- Dutch Mission (1989): Op.cit.,Annex C, Appendix 1, p.40

study area are *metacid, dimacrone, monocrotophos, nuvacron, bavastin, ecalux* and *furadan.* In addition to it some farmers apply protect their crop from plant diseases.

(ix) **Harvesting**

Harvesting involves reaping, bringing the sheaves to threshing grounds (*kalam*), threshing and winnowing. About four decades back ten fold yield was considered as economical *(nervattom vilavu)* in the sense that it was enough to the paddy farmers to get normal profits after meeting their entire cultivation costs. In those days harvesters were given one-elevenths of the yield as *patham*[42]. In addition to it outside labourers were given two *paras of paddy* as *adayam*. Harvesters used to get their *patham* only at the end of harvesting which lasted for many weeks. In 1943, farm labourers in the study area under the leadership of the Thiruvithamkoor Karshaka Thozhilali Union organized an agitation demanding subsistence wages in terms of paddy during the harvesting days. At the end of the agitation farmers agreed to give one sheath of paddy as *theerpu katta* to every labourers after two days of reaping. In those days the reapers used to bind the cut grain into sheaves and the system was called *kattaketti koyith.* Again they had to take the sheaves to distant threshing grounds for threshing and all the harvesting operations were done manually.

At present the reapers leave the cut grains in small heaps in the fields and farmers have to employ additional labourers to tie and bring the sheaves to the threshing grounds. Until a few years back large electric fans were used for winnowing. Now a days threshing machines that perform both the tasks of threshing and winnowing are used in all of the padasekharams in the study area. For harvesting labourers are given one- eights of the produce as *patham* and one-fourths of *patham* as *theerpu.* Besides it, nearly 70 percent of the sample farmers in Ramankari village give incentives to their labourers in the form of refreshments, conveyance charges etc. Even though harvesting machines are recently introduced in some parts of Kuttanad region, due to the vehement resentment of labour unions, so far it could not be used in the study area.

[42] The term patham literally means one for ten or *pathinu onnu*

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Chapter – 4

ECONOMIC VIABILITY OF PADDY CULTIVATION IN RAMANKARI VILLAGE

As rational producers, area allocation decisions of farmers are always guided by the relative profitability of various crops that can be cultivated in their fields. Profitability in turn is a function of both cultivation costs and farm level prices agricultural products. Over the past several years, the successful operation of the public distribution system in the state has acted as a price stabilizing factor of food articles and thereby it has dampened down the rate of increase in the prices of food crops in general and that of rice in particular[43]. The relatively lower growth rates in paddy prices till the late nineties had encouraged the farmers in the state to reallocate their fields for the cultivation of more remunerative cash crops.

Unlike the major rice producing areas in the state with the exception of the kole lands in Thrissur district, the low lying kayal lands cannot be used to cultivate the alternative cash crops in a large scale. Even though it is technically possible to cultivate garden crops after filling the low lying paddy lands with soil or mud and thereby bringing on its elevation higher than the MSL, it involves huge investments and is against the provisions of the Kerala Land Utilisation Act of 1970. Past experiences show that whenever paddy prices had gone up and profitability of the crop was high, farmers in Kuttanad were induced to enhance rice production either by bringing more lands under plough or by increasing crop intensity. Land reclamation activities in Kuttanad reached its peak level during the first world war period when paddy prices increased manifold. Prior to the war years farmers in this region used to sow their fields once in three or more years. The better prospects of getting abnormal profits at that time prompted almost all of the cultivators of kayal lands to resort to a system of annual cropping. However, during the post war years when paddy cultivation became uneconomical they relapsed to the earlier system. Again during the second world war paddy prices soared up and cultivation costs declined due to the wide spread use of electric pumps. Profitability of the crop increased and it resulted in the reclamation of kayal lands once again.

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[43] Thomas P M (1999): *Agricultural performance in Kerala* in B A Prakash(ed), **Kerala's Economic Development,** Op.cit., p.174

Paddy farmers in Ramankari village used to raise a second crop (*Varsha crop*) in addition to the traditional summer crop (*puncha crop*) in their fields until three or four years back. Compared to the puncha crop, per acre yield of paddy during the varsha crop season had been considerably lesser and it is more vulnerable to crop failures due to floods. Generally local farmers believe that keeping their lands fallow during the autumn and winter seasons will enhance the productivity of the crop during the summer season. The possibility of getting more profits with more consistency has induced local farmers to restrict their farming activities to the single season of puncha crop and at present in all of the padasekharams in the study area a single crop is raised annually. It has substantially reduced the gross cropped area under paddy. While a large section of the medium and large farmers in the study area are of the opinion that the raising of the second crop is uneconomical, a vast majority of the marginal farmers as well as the farm labourers believe that the second crop is also reasonably remunerative. According to them the decision of Padasekharam Committees to refrain from attempting a second crop is influenced by the opinion of rich and influential farmers who have other major sources of income. In this background we attempt to examine the profitability of the crop in the study area harvested during the summer months from February to May 2001.

In order to estimate cost of cultivation of important crops in Kerala, the Department of Economics and Statistics has used three cost concepts viz., Cost A, Cost B and Cost C. Cost A consists of cash and kind expenses (paid out costs) actually incurred by the cultivators. Cost B consists of Cost A and interest on fixed assets including land and Cost C is taken as the sum of Cost B and the imputed value of family labour[44]. In the present study cost of cultivation of paddy crop is estimated as the sum total of material costs, labour costs and miscellaneous expenses such as land lax, cost of repairing equipments etc. Per acre gross profit of the crop is calculated as the difference between paid out costs and value of the product. In order to work out net profits interest on working capital is added to paid out costs and the sum is deducted from the value of out put.

[44] GOK (1991): **Report on the Cost of cultivation of Important Crops in Kerala: 1989 – 90**, Department of Economics and Statistics, Thiruvananthapuram, pp.3-4

4.1 Cost Components

Production costs in paddy cultivation can be broadly classified into material costs, labour (human, animal and machine) costs and miscellaneous expenses. The different cost items for the marginal, small, medium and large sample farmers in the study area are separately estimated in this part of the present study.

4.1.1 Material Costs

Material costs consist of the cost of seeds, fertilizers, weedicides, insecticides and lime.

a. Cost of seeds

About in place of nearly 95 percent of the sample farmers in the study area purchased seeds during the last crop season. Nearly 25 percent of them bought seeds from co-operative societies and 18 percent bought it from seed farms at subsidised rates. More than 50 percent of the paddy farmers relied on farmers of other areas who had raised the second crop, to meet their seed requirements. Even though the farmers had to pay higher prices to purchase seeds from private farmers the quality of such seeds had been relatively better. Many of the farmers who had got seeds from co-operative societies and government seed farms at a lower price complained that the germinating rate of the seeds was very poor. There are instances in which farmers had to sow their fields for a second time due to the poor quality of the subsidised seeds. Even though the recommended quantity of seeds needed per acre is 40 kilograms, sample farmers in the study area, guided by their past experience, use 50 to 60 kilograms of seed per acre in their fields. They had to pay 7.5 to 12 rupees per kilogram for seeds. On an average a sample paddy farmer in the study area spent Rs.528.9 as the cost of seeds per acre. The per acre costs of seeds for the marginal, small, medium and large farmers are estimated as Rs.518.50, Rs.540, Rs.513.67 and Rs.542.50 respectively.

b. Fertilizer use and costs

All of the sample farmers in Ramankari village use chemical fertilizers in their fields. The average per acre use of chemical fertilizers (N + P + K) of marginal, small, medium and large farmers are estimated as 162.1, 184.3, 192.9 and 176.3 kilograms respectively and they had spent Rs.855, Rs.977, Rs.980 and Rs.870 respectively for its

purchase. On an average a sample farmer in the study area applies 178.9 kilograms of chemical fertilizers the cost of which amounts to 921 rupees. It is observed that none of the farmers at present uses farm yard manures like cow dung or ash. Agricultural research shows that the use of lime in right quantities is imperative to neutralise the high level of acidity in kayal lands. However, out of the total 90 sample farmers only 41 persons (45.6 percent) had used lime in their fields. Category wise analysis of farmers shows that 67 percent of the marginal farmers, 58 percent of the small farmers, 33 percent of the medium farmers and 42 percent of the large farmers abstained from using lime during the previous crop season. It is estimated that the average use per acre of lime in the study area amounted to 122 kilograms and compared to marginal farmers, large farmers use more than three fold quantity of lime. The cost of lime per acre is estimated to be 122 rupees. Average per acre consumption and cost of different types of fertilizers for the four categories of farmers are given in table 4.1.

Table 4.1

Consumption and Cost Fertilizers in Paddy Cultivation

Type of farmers	**Consumption** (in kg/Acre**)**					**Cost** (in Rs./Acre)		
	N	**P**	**K**	**N+P+K**	**Lime**	**N+P+K**	**Lime**	**Total**
Marginal	38.3	79.0	44.8	162.1	22.7	855	54	909
Small	47.0	87.9	49.4	184.3	45.9	977	107	1084
Medium	54.9	87.0	51.0	192.9	62.7	980	158	1138
Large	46.3	82.5	47.5	176.3	74.2	870	170	1040
Average	46.6	84.1	48.2	178.9	51.4	921	122	1043

C. Use of weedicides and insecticides and their costs

More than 80 percent of the sample paddy farmers in the study area use weedicides and its average application per acre is estimated as 352 millilitres. Over the past few years the use of weedicides is becoming increasingly popular among the sample farmers. On the other hand the extent of the use of insecticides has been declining in this area. Most of the sample farmers have either reduced the quantity of pesticides they used to apply or have completely stopped its application. Present survey reveals that only 64 percent of them had applied any varieties of pesticides or insecticides in their fields during the last puncha season. The per acre application of pesticides in the study area is found to be 310 millilitres and its cost is estimated as 151.61 rupees. Compared to the other categories of farmers, the per acre cost on weedicides is found to be higher for the

medium farmers while the cost of insecticides per acre is found to be relatively higher for marginal farmers. Due to the variations in the types of used insecticides, their total quantity and costs are not in perfect correlation. Per acre application of weedicides and pesticides and their respective costs for the different categories of farmers are given in table 4.2

Table 4.2

Use of Weedicides and Pesticides and Their Costs

(Quantity in ml/acre, Cost in Rs/acre)

Type of farmers	Weedicide		Pesticide		Total	
	Quantity	Cost	Quantity	Cost	Quantity	Cost
Marginal	342	47.70	335	172.27	677	219.54
Small	314	43.18	326	169.48	640	212.66
Medium	417	52.13	217	108.00	634	160.13
Large	333	48.83	363	156.67	696	205.10
Average	352	147.85	310	151.61	662	199.36

It is found that the average material costs per acre in the study area amounted to Rs 1770.96 and the cost of fertilizers alone accounted for more than 50 percent of it. Cost on seeds came up to 30 percent of the total material costs while the percentage shares of the costs of weedicides, insecticides and lime are estimated as 1.70, 8.56 and 6.70 respectively. Compared to marginal and large farmers, the per acre material costs of small and medium farmers are found to be higher. Relevant figures are given in table 4.3

Table 4.3

Distribution of Material Costs in Paddy Cultivation (Costs in Rs/Acre)

Cost items	Type of farmers				Average
	Marginal	Small	Medium	Large	
Seed	518.50(31.49)	540.91(29.44)	513.67(28.35)	542.50(30.34)	528.90(29.87)
Fertilizer	854.67(51.94)	977.06(53.18)	980.00(54.08)	870.00(48.66)	920.43(51.97)
Weedicide	47.27(2.87)	43.18(2.35)	52.13(2.88)	48.83(2.73)	47.85(2.70)
Insecticide	172.27(10.46)	169.48(9.22)	108.00(5.95)	156.67(8.76)	151.61(8.56)
Lime	53.67(3.26)	106.67(5.81)	158.33(8.74)	170.00(9.51)	122.17(6.70)
Total	1646.37(100.00)	1837.30(100.00)	1812.13(100.00)	788.00(100.00)	1770.96(100.00)

Note: Percentages are given in brackets

4.1.2 Labour Costs

Labour costs consists of the cost of human labour which includes the cost of hired human labour and imputed value of household labour and exchange labour, animal labour costs and costs of machine labour.

a. Human labour requirements and costs

In the study area household labour is not extensively used in paddy cultivation. Out of the 90 sample farmer households, it is found that in only 36 (40 percent) of them household members indulge in farming operations. The remaining 53 (60percent) households are exclusively depending on hired labour to meet their labour requirements. For farming operations like the levelling and removal of weeds before sowing, construction and repair of inner bunds, transplantation and weeding daily wages are given to workers. Usually daily labourers work for six hours in a day and the amount of male and female labour days needed to perform the above operations in the study area are found to be 6.8 and 19.2 respectively per acre. At the time of our survey the prevailing daily wage rates for male and female labourers were Rs.125 and Rs.60 respectively. For farming operations like sowing, harvesting, manuring and plant protection works piece rates are given. The piece rate wages for the same activity vary from one locality to another locality in the same village and in the same locality itself it shows differences based on the size of the paddy land holdings and bargaining power of the farmers. During the last summer crop season the prevailing rates per acre in the study area were Rs 60 to 80 for sowing and Rs 70 to 90 for manuring. For spraying weedicides and insecticides the existing rates per container was Rs 8 to 12 and Rs 15 to 18 respectively. For harvesting one-eighths of the reaped crop is given as *patham* and one-fourths of patham is given as *theerpu*. Together it amounts to 15.63 percent of the total harvest. In addition to normal wages, about 70 percent of the sample farmers in the study area used to give incentives to their workers in the forms of refreshments, conveyance charges etc., that amounted to 11 rupees per day per worker. All farmers on the basis of the size of area they cultivate share costs on the repair of ring bunds and dewatering. The padasekharam committee often appropriates production incentives and other subsidies provided to the farmers by the government and each farmer's share of dewatering charges (*nerma*) and the cost of repairing ring bunds are adjusted against it. After deducting production bonus, paddy

farmers in the study area had to pay 200 to 400 rupees per acre as *nerma* during the last summer crop season.

On an average the sample farmers of the study area had spent Rs 4307 per acre as human labour costs. It is found that more than 45 percent of the total human labour cost is incurred as harvesting charges. Another major human labour cost item is the cost of preparing fields for sowing which amounts to more than 20 percent of the total cost. Transplanting and weeding which are the other two major farming operations in paddy cultivation together accounts for nearly 22 percent of the total human labour costs. For other activities like the preparation of threshing yards *(kalam*) and bringing in the reaped sheaves to *kalam* if the cultivating plots are not located in its close vicinity, farmers in the study area on an average spend nearly 175 rupees per acre. Average per acre human labour costs of the marginal, small, medium and large sample farmers are separately given in table 4.4, which shows that compared to other categories, marginal farmers in the study area spend lesser amounts as human labour costs.

a. Animal labour costs

The loamy soil found in the paddy fields of Ramankari village is a mixture of clay and sand that gets hardened only when it is directly exposed to sunlight. The surface of the paddy lands in this area is immersed in water through out the year except for a short period after the dewatering operations. Even at that time the moisture of soil is retained and it never becomes hard. Hence it has become a matter of contention whether ploughing has any positive impact on the yield rate. At present a considerable section of paddy farmers are of the opinion that any sort of ploughing is quite unnecessary to maintain crop productivity. During the previous puncha season 15 percent of the sample farmers in the study area refrained from ploughing their fields. More than 21 percent of the sample farmers used drought animals to plough their fields and nearly 19 percent of them used tractors or power tillers along with oxen. On an average a sample farmer in the study area spent Rs 180 as animal labour costs per acre. The per acre costs on hired animal labour for the marginal, small, medium and large farmers are estimated as Rs.143, Rs.271.21, Rs.156.67 and Rs.150.83 respectively.

Table 4.4

Human Labour Costs in Paddy Cultivation (Cost in Rs/Acre)

Activity	Type of farmers				Average
	Marginal	Small	Medium	Large	
Land preparation	843.34 (19.78)	959.55 (21.54)	807.34 (18.89)	854.58 (20.16)	866.20 (20.11)
Sowing	84.00 (1.97)	82.03 (1.84)	81.67 (1.91)	88.13 (2.08)	84.01 (1.95)
Transplanting	446.50 (10.48)	408.03 (9.16)	412.00 (9.64)	380.00 (8.96)	411.63 (9.56)
Weeding	568.33 (13.35)	493.48 (11.08)	480.00 (11.23)	530.00 (12.50)	517.95 (12.03)
Manuring	170.67 (4.01)	196.48 (4.41)	184.67 (4.32)	199.58 (4.71)	187.85 (4.36)
Plant protection	76.50 (1.80)	98.33 (2.21)	50.67 (1.19)	77.08 (1.82)	75.65 (1.76)
Harvesting	1898.50 (44.58)	2036.67 (45.73)	2069.87 (48.42)	1952.75 (46.07)	1989.45 (46.20)
Miscellaneous	170.67 (4.01)	179.55 (4.03)	188.33 (4.41)	156.67 (3.70)	173.81 (4.04)
Total	4258.67 (100.00)	4454.12 (100.00)	4274.53 (100.00)	4239.00 (100.00)	4306.58 (100.00)

Note: Percentages are given in brackets

c. Machine labour costs

In the study area machine labour is used for dewatering, ploughing, threshing and winnowing. Dewatering operations in large padasekharams are more economical as per acre pumping expenses can be reduced by using high power electric pump sets. On an average the per acre pumping charges (*nerma*) amounted to Rs.298.35 after deducting the government subsidies. As else where in Kuttanad all of the sample farmers had hired threshing machines that performs the twin functions of both threshing and winnowing. Throughout the study area the per acre hiring charges of threshing machines was Rs.300. It is found that during the last crop season 45 percent of the sample farmers used tractors or power tillers for ploughing their fields. An average farmer in the study area had spent Rs.206.92 per acre as the hiring charges of tractors and power tillers. As 83 percent of the large farmers had adopted machine ploughing in this regard their average cost per acre is found to be relatively higher. The average per acre machine labour cost of the sample farmers in the study area is estimated as Rs.805.27. Machine labour costs of the different categories of farmers are shown in table 4.5.

Table 4.5

Distribution of Machine Labour Costs (Costs in Rs/Acre)

Cost items	Type of farmers				Average
	Marginal	Small	Medium	Large	
Tractor/tiller	211.67	182.58	156.33	277.08	206.92
Threshing	300.00	300.00	300.00	300.00	300.00
Pumping	254.00	292.73	330.00	316.67	298.35
Total	765.67	775.31	786.33	893.75	805.27

4.1.3 Other expenses

In addition to the material and labour cost, paddy cultivation in the study area involves certain miscellaneous expenses such as land tax, cost of purchase of implements like baskets, repair charges of farming implements, expenses to provide refreshments to labourers, other incentives given to farm labourers etc. During the last puncha season sample farmers of the study area on an average had spent Rs.217 as miscellaneous expenses.

The per acre total cost of paddy cultivation in the study area during the last crop season is estimated as Rs.7281. Out of it labour costs amounted to 72.8 percent and the cost of human labour alone came up to 59.2 percent. Another major cost item is the

material cost which amounted to nearly one-fourth of the total costs. Any sort of direct relationship between per acre costs and size of operational land holdings could not be detected. Cost of cultivation of paddy crop per acre is found to be the lowest for marginal farmers and highest for the small farmers. The difference between the costs of the above two categories of farmers comes only up to 7.14 percent. Consolidated statement of the various cost items for the marginal, small, medium and large farmers in the study area is shown in table 4.6.

Table 4.6

Cost of Cultivation of Paddy Crop in Ramankari Village

(Cost in Rs/Acre)

Cost items	Category of farmers				Average
	Marginal	Small	Medium	Large	
Material cost	1646(23.4)	1837(24.3)	1812(25.0)	1788(24.6)	1771(24.3)
Human labour cost	4259(60.4)	4454(59.0)	4275(58.9)	4239(58.3)	4307(59.2)
Machine labour cost	766(10.9)	775(10.3)	786(10.8)	894(12.3)	805(11.1)
Animal labour cost	143(2.0)	271(3.6)	157(2.2)	151(2.1)	181(2.5)
Miscellaneous	233(3.3)	212(2.8)	227(3.1)	196(2.7)	217(3.0)
Total	7047(100.0)	7549(100.0)	7257(100.0)	7268(100.0)	7281(100.0)

Note: Percentages are given in brackets

If the amount of interest on working capital at the annual rate of 12 percent for a period of six months is added to the paid out costs, then the average per acre cost of paddy cultivation in the study area increases to Rs.7718. After the interest amounts, the respective cultivation costs of the marginal, small, medium and large farmers become Rs.7470, rs.8002, Rs.7692 and Rs.7704 per acre.

4.2 Productivity and Value of Product

The Indo-Dutch Mission had estimated the per hectare productivity of puncha paddy in Kuttanad region during the year 1988-89 as 3800 kilograms per hectare (1520 kilograms per acre). The present study shows that the per acre paddy productivity of the summer crop in Ramankari village during the year 2000-'01 amounted to 1918

kilograms. The average productivity of the crop for the marginal, small, medium and large farmers had been separately estimated as 1818, 1955, 2009 and 1891 kilograms per acre respectively. It shows that compared to medium and small farms, per acre productivity in marginal and large farms were relatively lesser.

The selling price of paddy had shown substantial variations in the area depending on the varieties of sown seeds, time of sales and purchasers of the product. Among the two seed varieties sown in the study area viz., *Jyothi* (12-85) and *Uma*(D1), the average price of *Jyothi* had been 20630 percent higher then that of *Uma* during the harvesting season. While co-operative societies purchased paddy from farmers at the rate of Rs 650 per quintal, open market prices varied from Rs.525 to Rs.600 per quintal. About 97 percent of the marginal farmers sold their product either to local private traders or to commission agents of outside rice mills immediately after harvest and the average price they received is estimated as Rs.580 per quintal. Nearly 85 percent of the small farmers and 80 percent of the medium farmers also sold their product to private agencies and the average prices they obtained are estimated as Rs.592 and Rs.597 per quintal respectively. It is found that 25 percent of the sample large farmers had sold their paddy to co-operative societies and another 58 percent of them sold their product to commission agents. The average price they received amounted to Rs.612 per quintal. Considering all of the four categories of farmers together, 61.5 percent of the sample farmers sold their product to commission agents of outside mills, 25.6 percent sold it to local private traders and another 12.2 percent sold to co-operative societies. The average price they received is found to be Rs.595 per quintal.

While estimating the value of product, the price of straw is not considered as none of the sample farmers could sell it at any price due to the dearth of demand. More than 60 percent of the sample farmers retained a portion of their product, which ranges from 3 to 10 quintals for household consumption. The market price of paddy is taken to calculate the imputed value of the product used for self-consumption. The average value of product per acre of the sample paddy farmers in the study area for the last summer crop is estimated to be Rs 11412. A comparison among the four categories of farmers shows that the per acre value of product for marginal farmers which is estimated as Rs.10544 had been 7.6 percent less than the overall average whereas the value of the product for

medium farmers which is found to be Rs.11994 per acre was 5.1 percent higher than that of the overall average. Average per acre productivity, selling price per quintal and income from paddy cultivation for the marginal, small, medium and large farmers are given in table 4.7

Table 4.7

Productivity, Price and Value of Product of Paddy Crop in Rmankari village

(Productivity in Qtl/Ha., Price in Rs/Quintal)

Type of farmers	Productivity	Price	Value of Product
Marginal	18.18	580	10544
Small	19.55	592	11574
Medium	20.09	597	11994
Large	18.91	612	11573
Average	19.81	595	11412

4.3 Profitability of Paddy Crop in the Study Area

Per acre gross profit of the sample farmers in the study area is calculated as the difference between the average paid out production costs and value of the product whereas the net profit per acre is estimated after adding interest to the paid out costs. During the summer crop of 2000-01, the average per acre gross profit of the sample farmers amounted to Rs 4131. In this regard considerable variations are observed among the different categories of farmers. While the marginal farmers in the study area obtained Rs.3497 per acre as their gross profits the corresponding figure in the case of medium farmers was as high as Rs.4737, which is 35 percent higher than the former. After deducting the amount of interest on working capital from the gross profit, an average sample farmer in study area could get only Rs.3694 per acre as his net profit. Among the four categories of sample farmers, the average net profit of the marginal farmers, which is found to be Rs.3074 per acre, is 28.54 percent less than that of the medium farmers' net profit that amounted to Rs.4302 per acre. Details of the gross and net profits of the marginal, small, medium and large farmers are given in table 4.8.

Table 4.8

Gross and Net Profits in Paddy Cultivation in the Study Area (in Rs/Acre)

1.Type of farmers	2.Value of Product	3.Paidout cost	4.Interest	5.Total cost (3+4)	Gross profit (2-3)	Net profit (2-5)
Marginal	10544	7047	423	7470	3497	3074
Small	11574	7549	453	8002	4025	4025
Medium	11994	7257	435	7692	4737	4302
Large	11573	7268	436	7704	4305	3869
Average	11412	7281	437	7718	4131	3694

In order to produce one quintal of paddy an average farmer in the study area had spent Rs.380.The corresponding figures for the marginal, small, medium and large farmers are worked out as Rs.388, Rs.386, Rs.361 and Rs.384 respectively which shows that the variability in per quintal cost of production among the different categories of farmers is not substantial. For every 100 rupees spent for paddy cultivation an average farmer in the study area has obtained Rs.53.52 as profit. The respective profitability of an equal amount of investment for the marginal, small, medium and large farmers in the study area are estimated as Rs.46.81, Rs.50.30, Rs.61.58 and Rs.55.88 which clearly shows that paddy cultivation yields substantial rate of returns to the farmers. In the study area paddy land price ranges from 50 thousand to one lakh rupees and if the interest on land value is added to paid out costs of cultivation, paddy farming in this area is not economically viable. However, as pointed out by M A Oommen land is generally treated as a particular type of asset with fair liquidity in the state rather than a means of production that yields reasonable returns[45]. Again the opportunity cost of the paddy fields in the study area is almost zero. Hence the value of land need not be considered while examining the economic viability of paddy crop.

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[45] Oommen M A (1994): Land Reforms and Economic Change-Experience and Lesson from Kerala, in Prakash BA (ed.), Keralas Economy -Performance, Problems and Prospects, Sage Publications, New Delhi

Chapter -5

PROBLEMS OF THE PADDY FARM SECTOR IN RAMAKARI VILLAGE AND SUGGESTIONS FOR ITS IMPROVEMENT

This chapter of the present study is divided is two parts. In its first part we examine the major current problems related to paddy cultivation in the study area. Most of these problems are relevant to the paddy farm sector of the whole Kuttanad region as well. In the second part we suggest certain remedial measures for the development of paddy cultivation in this region.

5.1 Current Problems

At present the paddy farm sector in the study area is on the verge of a serious crisis and farmers are facing a host of problems like the non-availability of required number of labourers during the peak crop season, declining profitability of the crop, militant trade unionism, slow pace mechanization, lack of easy credit and proper marketing facilities, recurring crop failures, uneconomic size of holdings and so on. Four to five years back in almost all of the padasekharams in the study area farmers used to raise a second crop called the *varsha* crop in addition to the traditional *puncha* crop. Unable to withstand the ever growing problems in paddy cultivation, at present the local farmers have reduced crop intensity by dropping the second crop and their fields are kept fallow for several months after the summer harvest. Current problems related to paddy cultivation in the study area can be listed as follows.

5.1.1 Labour shortage

Compared to garden crops and plantation crops, paddy cultivation is more labour intensive. It is estimated that human labour costs amount to nearly 60 percent of the total costs involved in paddy farming. Present investigation shows that household members of 60 percent of the sample farmers in the study area do not perform any sort of manual works in their fields. It is also found that 33 percent of the marginal farmers, 67 percent of the small farmers, 80 percent of the medium farmers and 83 percent of the local farmers are exclusively depending on hired human labour. According to a vast majority of paddy farmers in this area the single biggest problem they are facing is the non-availability of sufficient farm labourers

during the harvesting season. The Indo-Dutch Mission in 1988-89 had estimated the labour shortage in the kayal lands of Kuttanad as 30.76 percent. As per the labour union records there are 2652 agricultural labourers in Ramankari panchayat and about 80 percent of them are residents of Ramankari village. It amounts to nearly half of the total number of employed persons in the study area. (Present study shows that the actual percentage of farm labourers to the total employed persons is 30.25 in Ramankari village. In spite of it, in recent years the problem of labour shortage has become so acute in the study area that the paddy farmers have to provide refreshments, travel allowances and other perks to the workers in addition to the prevailing wages. Some farmers in the study area cited their experience of giving money for toddy to the male workers to ensure their next days work during the harvest season. If the yield in a particular field turns to be poor, very often labourers refuse to harvest that crop. There are instances in which farmers had to burn their crop due to the reluctance of farm labourers to reap the harvest on account of poor productivity. The inordinate delay in the completion of harvesting operations results in wastages and increases the cost of land preparation for the next crop due to the excessive growth of weeds.

A major portion of the human labour requirements in paddy cultivation is for harvesting the crop. Until few decades back the supply of local labour during the harvest season was supplemented by outside labourers. Hundreds of outside labourers used to come to the padasekharams as harvesters and stayed in temporary sheds until the entire harvesting operations are over. In course of time as harvesting became less attractive the inflow of such labourers gradually declined and at present all of the paddy farmers are depending on locally available labourers for all farming activities. Even though the problem of labour shortage becomes more severe during the harvest season many local farmers complained that they could not complete other activities like transplanting and weeding in the right time due to the paucity of farm labourers.

The worsening situation of labour shortages can be attributes to so many inter related factors such as the growing employment opportunities for the rural workforce in other sectors, successful implementation of poverty alleviation and self

employment generating programmes like IRDP, TRRYCEM, JRY and DWCRA introduced by the government in rural areas and the growing aversion of the new generation from traditional agricultural labour families to follow their household occupation. All of the farm labourers from the study area whom we contacted invariably stated that they do not like their children to become agricultural labourers as the work in paddy fields is comparatively more strenuous and tiresome. Traditionally a major portion of the paddy farm labourers in this area belonged to scheduled castes and after the implementation of land reforms many of them had become paddy landowners. Over the past few decades the social and economic status of this segment of the rural population has considerably improved. At present a large number of persons from these families are permanent employees in other sectors capable of financially supporting their households. The successful adoption of family planning programmes and the resultant decline in the dependency load has enabled agricultural labour households to rely exclusively on the earnings of male members and their women folk refrain from farm labour works. Again after the construction of the Thanneermukkom Bund all of the padasekharams in this region are sown simultaneously and the seeds are also having almost the same duration. As a result of it farming operations like transplanting, weeding and harvesting in all of the fields are to be done at the same time and it puts more pressure on the locally available labourers aggravating the problem of labour shortage.

Unlike other farming operations, for harvesting labourers are given wages in kind as a fixed proportion of the harvested crop called *patham*. Even though the daily cash wages of farm labourers are revised every year, the rate of *patham* remains the same since the early seventies. During the period 1980-81 to 1999-2000, the average daily wage rate of male paddy farm labourers increased from 11.13 to 118.90 rupees at the annual compound growth rate of 13.27 percent. Meanwhile the average daily wage of female workers increased from 7.91 to 78.80 rupees showing the growth rate of 12.86 percent per year. However, during the same period the average price of paddy per quintal had increased from 152 to 685 rupees showing a relatively much lower growth rate of 8.25 percent per year. The lower growth rates

in the price of paddy adversely affect the real earnings of reapers. Again, payments in terms of paddy is unfavorable to farm labourers in two other respects. First, they receive their payments only after threshing and winnowing and the time gap between reaping and threshing very often goes up to 30 or more days. Second, as the price of paddy considerably decreases during the harvest season, labourers who are badly in need of money to meet their day to day expenses are forced to sell their share of paddy at the then prevailing low price. Therefore many of the paddy farm labourers in the study area are least interested in harvesting once they earn enough paddy for their household consumption and hence the problem of labour shortage becomes more acute during the harvesting season.

5.1.2 Small size of holdings and decline in the number of full time farmers

It has been pointed out that an agricultural household with 5 to 6 member needs at least 10 acres of paddy fields for its sustenance in the absence of any other source of income. However, in Kuttanad only 3 percent of the farmer households possess that much land[46]. As per the provisions of the Land Reforms Act (1969) the maximum area of paddy fields that a family can possess is restricted to ten acres. The excess land above the ceiling is declared as surplus and taken over by the government for redistribution. The redistribution of such surplus paddy lands taken over from large enterprising farmers in Kuttanad led to the formation of a new class of *absentee land owners* with less than one acre of paddy fields. Unable to conduct paddy farming successfully in their newly acquired fields, at present many of them lease out their lands to tenant farmers defeating the very purpose of land reforms.

In the study area the average profit per acre from paddy cultivation during the year 2000-'01 is estimated as 3694 rupees and the average size of a paddy-cultivating household is found to be 5.48. Again it is found that only 4.67 percent of the paddy landowners in this area are large farmers who cultivate five or more acres of land. The per capita income of the state during the year 1999-2000 is estimated as 19461 rupees at current prices[47]. In order to keep its income at par with the state level a household solely depending on paddy cultivation should

[46] Babu Ambat (1992): **Kuttanad, Sathiyavum Midhyayum** (Mal), Kerala Sastra Parishat, Kozhikode, p.129

[47] GOK (2001): **Economic Review 2000**, SPB, Thiruvananthapuram, p.19, table 2.8

cultivate at least 28.87 acres of land but none of the paddy farmers in the study area owns that much wet lands.

The distribution of sample paddy farmers on the basis of their major occupation shows that only 60 percent of them are full time farmers (table 5.1). Again the occupation wise distribution of employed persons from these households shows that only 35 percent of the 156 employed persons are pure cultivators of paddy while the rest of them are engaged in other activities. It is estimated that in more than 95 percent of the farmer households either the cultivators themselves or other members from their families have alternative sources of income. Paddy as a crop needs much personal care and strict supervision, which can be expected only from full time farmers. It is one of the major reasons for the reluctance of paddy cultivators to raise a second crop from their fields.

Table 5.1

Distribution of sample Farmers on the Basis of Their Major Occupation

Major occupation	No. of cultivators	Percentages
Paddy farming	**54**	**60.00**
Fish farming	**3**	**3.33**
Agricultural labour	**11**	**12.22**
Self employed	**10**	**11.11**
Private employment	**2**	**2.22**
Govt.employment	**2**	**2.22**
Casual labour	**8**	**8.89**
Total	**90**	**100.00**

5.1.3 Declining profitability

Material input and human labour costs together account for 83.48 percent of the total paid out costs of paddy cultivation in the study area. There had been unprecedented increase in the prices of agricultural inputs since the adoption of the New Economic Policy (N E P) in the country during the early nineties. Since July 1991 the administrated prices of nitrogenous fertilizers were increased by 30 percent in accordance with the New Fertilizer Policy of the Union government.

Increases in the prices of phosphatic and pottassic fertilizers were in tune of 250 percent from August, 1992. Within a period of nine years from 1991-92 to 1999-2000 fertilizer and pesticide prices in the country increased manifold. During this period the price of urea increased from Rs.3060 to Rs 4600 per tonne (excluding sales tax), the price of superphosphate increased from Rs.950 to Rs.2850 and the price of muriate of potash increased from Rs.1300 to Rs.4255. The overall increase in the prices of these key fertilizers during this period are found to be 50.33 percent, 200 percent and 227.31 percent respectively. Meanwhile the prices of different types of pestcides also increased substantially. For example the price of monocrotophos increased from Rs 268 to Rs 346 per litre and the price of quinalphose rose from Rs 193 to Rs 390. Within the same period the average price of paddy seeds supplied by the National Seed Corporation (NSC) increased from Rs 580 to Rs 1450 per quintal and the Stale Seed Farm price of paddy rose from Rs 300 to Rs 900 showing a three-fold increase.

The average daily wages of paddy farm labourers in the state had also been increasing considerably in recent years. During the last one decade it self the average daily wages of male farm workers increased from Rs.35.77 to Rs 118.90 showing an aggregate increase of 232.40 percent and the wage of female workers rose from Rs.21.11 to Rs 78.80 registering an overall increase of 273.28 percent. Meanwhile the increase in the farm price of paddy was only 90 percent. For six hours of work the male and female paddy farm labourers in the study area used to get Rs.110 and Rs.60 as their daily wages respectively. From 27, November 2001 the rates are revised respectively as Rs 132 and Rs 72 showing a twenty percent increase. Rapid increases in the cost of cultivation along with the relatively lower growth rates in the farm prices of paddy, in the absence of any major improvements in farm technology have adversely affected the profitability of the crop. The declining profitability in turn induces paddy farmers to reduce the extent of the application of agricultural inputs that may adversely affect the crop productivity.

5.1.4 Growing aversion of the new generation to paddy cultivation

Some decades back the middle and upper middle class households in Kuttanad considered the ownership of paddy fields as a symbol of their social

status. Owners of large paddy fields commanded much social respect and acceptance. Many well-educated youngsters from traditional farmer households used to take up paddy cultivation as their full time job even though they had ample chances to get permanent employment in various government and private services. However, at present paddy cultivation in the study area has lost its glamour. The new generation of people from farmer households is now looking for *white collar* jobs and had developed a sort of aversion to take up paddy cultivation as their full time occupation. As a well-educated and wealthy class most of the traditional paddy farmers were able to educate their children. In course of time majority of the youngsters from farmer households who had acquired higher education qualifications managed to get permanent employment in the secondary and tertiary sectors. Many of them are now working in other states and foreign countries as emigrant labourers leaving the task of paddy farming to the old generation. The mean age of the sample farmers in the study area is found to be 52 years and 10 percent of them are above 70 years old. It is also observed that more than 55 percent of them are having 50 or more year's age while the percentage of farmers below 40 years old is only 18.9 percent. Further it is found that among the 17 cultivators in the age group of 30 to 40 years only one person is a pure paddy cultivator while all the others are engaged in other activities earning a major portion of their annual income from other sources. Age distribution of sample farmers in the study area is given in table 5.2.

Table 5.2

Age Distribution of Sample Cultivators in Ramankari Village

Age	No. of cultivators	Percentage
30-40	**17**	**18.89**
40-50	**22**	**24.44**
50-60	**28**	**31.11**
60-70	**14**	**15.56**
70 and above	**9**	**10.00**
Total	**90**	**100.00**

5.1.5 High rate crop failures

Frequent crop failures due to floods, saline water intrusion, breach of bunds and plant diseases inflict heavy losses to paddy farmers in the study area. It is estimated that during the virippu season, which extends from May-June to September-October, 20000 to 25000 hectares of paddy fields in Kuttanad region are affected by floodwaters[48]. There had been wide spread crop destruction in the study area during the monsoon months of 1994, 1996 and 1997 due to the over flowing of bunds and bund breaks and it had prompted many farmers to give up the second crop. The puncha crop season begins with the retreat of northeast monsoon and most of the paddy fields in the study area are sown by the first week of December. Unexpected heavy rains after sowing in some years raise the water level in padasekharams and destroys the sprouting seeds necessitating a second time sowing. Due to the lack of timely repair at present many of the shutters of the Thanneermukkom salt-water regulator are damaged and fail to prevent the ingress of saline water in to paddy fields even if they are lowered during the puncha crop season. Some local farmers alleged that the inland fishermen put stones beneath the shutters to prevent their complete closure. As a result of it in many years the puncha crop in the northern parts of Kuttanad is destroyed due to saline water intrusion. The high incidence of plant diseases like sheath blight, blast, sheath rot and stack burn also inflicts substantial damage to paddy crop in this area. Incidence of pests like stem borers, after leaf rollers, case worms, brown plant hoppers, Siberian ducks and rodents are also adversely affecting the crop productivity in the study area.

5.1.6 Lack of Proper Marketing System

Wide temporal variations are observed in the price of paddy in Kuttanad area. Compared to non-harvesting season farm price of paddy decreases considerably during the harvesting season. In order to clear their debts and due to the lack of storage facilities a vast majority of the paddy farmers in the study area sell their marketable surplus of the product immediately after harvest at the then prevailing low prices. Nearly 85 percent of the marginal and small farmers, 73 percent of medium farmers and 58 percent of large farmers in the study area have no granaries to store paddy. It is also found that nearly 40 percent of the sample

[48] Babu Ambat (1992); Op.cit, p.54

farmers sell their entire product with out keeping any portion for self-consumption and purchase rice through out the year. Even though, the state Agricultural Department has envisaged the so-called Paddy Procurement Scheme to emancipate the farmers from middlemen exploitation, so far the scheme failed to yield the desired results. Lack of warehouses in this area is said to be main hurdle for the successful implementation of the scheme. Most of the co-operative societies, which are entrusted with the task of paddy procurement very often, fail to get enough funds in time. Usually they pay only half of the due amounts to farmers at the time of Purchase and the balance amounts are paid only after they sell the procured paddy. Again they insist on proper dryness. Therefore most of the paddy farmers sell their product either to the agents of private rice mills or to private traders. During the last crop season 61 percent of the farmers sold their paddy to the agents of private mills, 26 percent sold it to private traders and only 12 percent of them sold their product to co-operative societies even though the procurement price of paddy had been 13 percent higher than the average price offered by private agencies. Unlike the co-operative societies, agents of private mills and private traders make spot payments or even advance payments and it attracts most of the farmers towards them. Even though the state Warehousing Corporation has proposed to set up composite rice mill at Thakazhi before the summer crop in 1999, the plan was later dropped. The present procurement scheme, according to many farmers, is laden with rampant curruption, favouritism and nepotism and only a few influential rich farmers are taking benefit out of it.

5.1.7 Inadequate research and extension services

Paddy related agricultural research programmes in the state have not been much successful as far as the needs of paddy farmers in Kuttanad area are concerned. Since the introduction of the HVV seed *jyothi* (12-85) by the Pattambi Rice Research Institute in 1972, no better seed varieties have so far been developed in the state. Even though, the Kerala Agricultural University had introduced nine new varieties of paddy seeds during the Eight Plan period it self they had not

become popular as the three decade old *jyothi*, which has a short duration of 110 to 115 days and a yield capacity of 2 to 2.5 tonnes per acre. The HYV seeds developed later in the Mancombu Rice Research station like *Asha, Pavizham, Aruna, Makam* and *Kanakam* with longer duration of 115 to 120 days also have failed to give better yields. The word *jyothi* literally means light and according to many farmers the seed had come as light to brighten their dim prospects in paddy cultivation. Even though the yield capacity of the recently developed *Uma* marginally exceeds that of *Jyothi*, the stalk of the plant is weaker and by the time of harvesting most of them fall in the ground. As the quality its rice is found to be inferior it is sold at relatively lower prices.

Even though soil testing laboratories had been set up at many places in Kuttanad as part of the Package Programme majority of the farmers in the study area are not aware of the importance of testing soil from their fields. The inordinate delays in getting the results also deter a large number of them from soil testing. It is found that 81 percent of the sample farmers in the study area have never tested the soil in their paddy fields. In matters like the application of fertilizers, insecticides and pesticides farmers are not often guided by farm experts or scientists. It is also observed that a vast majority of the paddy farmers in the study area are not participating in the agricultural extension programmes conducted by the State Agricultural Department or other agencies. Thus the lack of an effective agency to coordinate and supervise paddy cultivation in Kuttanad is a severe problem. Both in the generation and dissemination of improved farm technology for the development of the paddy sector, the service of research institutions is not much commendable.

5.1.8 Trade union militancy

During the early decades of the twentieth century paddy farm labourers in Kuttanad had been loyal to the landlords and tenants to whom they were attached. With the spread of Communist ideology the farm workers became aware of their rights and the formation of labour union substantially enhanced their bargaining power. Inspired by the Marxian doctrines of *class struggle* and *dictatorship of the*

proletariat **they began to consider the traditional landlords and the agricultural entrepreneurs who had initiated large scale reclamations of kayal lands as their *class enemies.* Since the 1950's the mutual destruct and hatred emerged between farmers and farm labourers resulted in frequent violent clashes in different parts of Kuttanad. In course of time the paddy farmers in this region had to surrender to a great extent to the might of the politically backed and well organized farm labour unions as the collective bargaining power of the latter became more decisive.**

At present almost all of the paddy farming activities in the study area are carried out as per the dictates of labour union leaders and not according to the wishes of the farmers. Initially labour unions were against the introduction of any type of labour saving technology in paddy cultivation. But now a days they allow paddy farmers to use tractors and power tillers for ploughing provided the traditional plough labourers are given adequate compensation. For a permanent settlement of their claim, plough labourers in the study area are to be given their three years wage in advance that amounts to Rs.1725 per acre. Similarly unlike in the past labour union leaders are now not against the use of threshing machines if the wages of reapers are not affected. However, still they strongly oppose the use of harvesting machines. Under the prevailing circumstances more mechanization of farming activities implies higher cost production. In spite of it, a vast majority of the paddy farmers in the study area are in favour of the mechanization of farm works, especially the harvesting activities, so that they can complete the whole operations in time and can thereby avoid much wastages. As a traditional paddy farmer from the study area had sarcastically observed, "In olden days the system was *no wage for hard work*, a few decades back it was *fair wage for fair work* and now it is *good wage for no work*".

Currently piece rates are given for some of the major paddy farming activities like ploughing, sowing, manuring and spraying insecticides. These rates are arbitrarily determined and periodically revised by labour union without even consulting the concerned farmers. The privilege of farmers to supervise such activities is so limited that they cannot practically suggest any modifications to the ways in which such works are being carried out. In many cases registered head load

workers are employed to carry the reaped sheaves to threshing grounds and their rates are at par with the ordinary rates of head load workers. Even though the IRC of Kuttanad had upheld both the freedom of cultivators to fix the number of workers and their right to select those whom they prefer, at present the farmers prerogative to choose particular workers and their bargaining power in the fixation of wages have been substantially reduced. Many farmers are of the opinion that the once exploited class has now become exploiters and as one of the dejected farmers has remarked, "Any self respecting person can no more pursue this occupation suffering the humiliation from labour union *dadas* (leaders)".

5.2 Suggestions

In order to facilitate the rapid and integrated development of Kuttanad region so many studies had been conducted by expert committees, research institutions and individual researchers during the past three decades. As the overall development of the region is closely connected with the development of its paddy farm sector most of these studies suggested several measures for the development of paddy cultivation in this area. In 1971, the Kuttanad Enquiry Commission after comparing the various aspects of paddy farming in Palakkad and Thrissur with Kuttanad, had recommended the construction of permanent ring bunds and engine floors, mechanization of certain farming operations, aerial spraying of insecticides, setting up of the mobile soil testing laboratories, registration of agricultural labourers and the formation of Kuttanad Development Authority for the betterment of paddy cultivation in this region

In the year 1978, the Indian Institute for Regional Development Studies, Kottayam conducted a detailed survey in Kuttanad. In its report it recommended the control of the prices of agricultural in puts like seeds, pesticides and chemical fertilizers[49]. The study also suggested the introduction of pest resistant seeds, prawn farming in selected fields and enforcement of minimum wages and employment to farm labourers. In the same year an expert committee appointed by the Sastra Sahithya Parishat after examining the various problems and prospects of paddy

[49] Indian Institute for Regional Development Studies (1978), Kuttanad Prasanangalum, Sadhythakalum (Mal), Thiruvananthapuram.

cultivation in Kuttanad region suggested the construction of permanent outer bunds with farmers' participation, manual and mechanical removal of weeds or their destruction through the application of herbicides, introduction of more powerful pump sets, training programmes to farmers in the use of pesticides etc., for the development of paddy farming[50].

Even though the state government had failed to implement most of the recommendations of the Kuttanad Enquiry Commission, it appointed another committee chaired by A K Nambiar in 1978 to suggest proper measures for the overall development of Kuttanad region. In its report the Committee put forward 21 suggestions for the consideration of the government[51]. Important among them were the maintenance and strengthening of the leading channels of Thottappally Spillway, setting up of a permanent machinery for forecasting flood water levels in various parts of the region, strict enforcement of the K L Rao Committee recommendations regarding the opening of the Thanneermukkom Regulators[52], fixation of support price for paddy, periodic revision and timely distribution of crop subsidies, exemption to paddy farmers from income tax payments, eradication of salvina and water hyacinth, quick completion of permanent ring bunds and development of fish farming as a subsidiary occupation.

In 1986 the state government signed an agreement with the Dutch government for setting up a joint Mission to conduct a comprehensive survey in Kuttanad for its development planning. The Mission after conducting scientific studies on various aspects like agriculture, fisheries, water management and environment related to Kuttanad region submitted its report in 1989. For the development of the paddy farm sector in Kuttanad the study proposed (1) effective measures to control floods and salinity ingress, (2) more scientific planning and management in paddy cultivation, (3) implementation of sub soil drainage system in *kari* lands, (4) measures for the adequate supply of HYV seeds, (5) moderation in the

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[50] Kerala Sastra Sahithya Parishat (1978): Problems of Kuttanad Report of the Study Team in Kuttanad, Thiruvananthapuram.

[51] GOK (1978): Report on comprehensive Development of Kuttanad, Thiruvananthapuram

[52] Before the construction of Thanneermukkom Salt Water Regulator, K L Rao Committee had put forward seven conditions, which include that the shutters of the Regulator should remain open for nine months from 15, March to 14, December every year.

use of chemical fertilizers and insecticides, (6) better surveillance and control of plant diseases and pests, (7) mechanization of farming activities, (8) effective machinery to impart training to farmers and (9) diversification of crops to supplement paddy farmers' income. With the implementation of these proposals, the study anticipated that the per hectare productivity of the *puncha* and *virippu* crops in Kuttanad could be enhanced by 12.20 percent and 20.05 percent respectively.

Barely ten years after the study of the Indo-Dutch Mission, the state government appointed another expert committee under the chairmanship of K N Shyamasundaran Nair to study the various problems involved in paddy cultivation in the state. In its not yet published report the Committee observes that 'owing to increasing cost of cultivation with out any commensurate increase in out put price' paddy farmers in Kuttanad region want to supplement their income from rice cultivation and 'the present monocropping system is neither ecologically sound nor economically suitable'. Hence it recommends rice based integrated system of farming involving a short season crop of fish as an ideally suitable system for the wetlands of Kuttanad .

Earlier PGK Panikar had proposed a change in the organization of paddy cultivation in Kuttanad region so that the use of hired labour can be reduced to the minimum by the redistribution of paddy to landless agricultural labourers who might apply own labour to the maximum extent[53]. But contrary to his expectation many of the paddy farm labourers who had acquired the redistributed surplus lands are leasing out their paddy lands to others. For the development of paddy cultivation in this region Joan P Mencher had advocated the abolition of absentee land lordism and setting up of meaningful co-operative farming[54]. However, past experiences prove that co-operative farming is not a viable solution to mitigate the problems in paddy cultivation in Kuttanad. The three padasekharams of *Rani, Chithra* and *Marthandom* (Q, S, T) which had been successfully cultivated by an

[53] Panikar PGK (1971): Minute of Dissent, Report of the Kuttanad Enquiry Commission, p.39
[54] Mencher Joan (1978): Agrarian Relations in Two Rice Regions of Kerala, Economic and Political Weekly, Vol. XIII, Nos.6.7, February, p.364.

enterprising farmer since their reclamations were taken over and redistributed among landless labourers in 1975. Later they were organized as co-operative farming societies. Paddy farming carried out by the co-operative societies in these fields with the active guidance and support of the various government departments turned out to be a failure and had to be stopped in 1994. Thereafter these padasekharams are kept fallow. Our field investigations also show that majority of the paddy farmers in the study area are against the system of co-operative farming.

Considering the earlier suggestions made by experts and the prevailing realities in the padasekharams of Kuttanad we propose the following measures for the development of paddy cultivation in the study area. Temporary measures like the enhancement and timely disbursement of production bonus, reduction in power tariffs, introduction of old age pension scheme for farmers etc., may appease paddy farmers to some extent for the time being but bold and decisive steps are needed to redress their grievances permanently.

The prospects of paddy cultivation in Kuttanad is invariably related to the profitability of the crop that in turn depends on the cost of cultivation and income from farming. Compared to the other major rice producing areas in the state cultivation costs are found to be higher in Kuttanad and the difference is mainly due to higher costs on human labour. By adopting a positive approach to mechanization of farming activities the mounting cost of cultivation can be lessened and the problem of labour shortage can be reduced to a great extent. It is estimated that nearly 45 percent of costs on human labour is incurred for harvesting. By using composite harvesting machines much money and time can be saved. While in manual harvesting nearly 30 percent of the product is lost in the process, a harvesting machine takes only 20 to 40 minutes to harvest an acre of paddy crop without any waste. Aerial spraying of insecticides is also found to be more effective and economical. Time saving devices are of great importance in a region like Kuttanad where the geographic and climatic constraints restrict the span of cropping season to a very limited period. Thus mechanization should be given top priority in all the further efforts towards the development of paddy cultivation in this region.

Mechanization of farming technology and permanent land improvement activities require huge capital investments. Sincere efforts are to be made to encourage private investments by attracting agricultural entrepreneurs to the area. The two factors that inhibit large private investments in paddy cultivation in this region are the statutory ceiling to paddy land holdings and the militancy of farm labour unions. Unlike many other crops, the profit cost ratio is still high in paddy cultivation and in order to make it an economically viable occupation either the land ceiling must be raised or removed as in the case of plantation crops. Such a step will reduce the extent of illegal tenancy and absentee landlordism that exist throughout this region. Economic benefits of mechanization currently enjoyed by the farm labourers should be transferred to the farmers. Unemployment problem that many arise in this process is to be handled by the government and the prevailing system of farmers paying compensation for the loss of employment must be stopped. Farmers' prerogative in determining the number of labourers they have to use for a particular operation and their freedom to select the workers of their choice are to be protected. It effective steps are taken to curb the aggressive trade union activities private enterprises will be ready to set up modern composite rice mills in this region and many problems related to marketing the product can be reduced. At present the state government is providing pecuniary benefits to the real and bogus paddy farmers alike. Instead, it should arrange long-term loans on liberal conditions to genuine farmers to undertake permanent land improvement measures or to purchase costly farm equipments and machines.

The problem of the excessive growth of weeds like water hyacinth and salvinia can be controlled by the strict adherence to the stipulations of the V L Rao committee regarding the opening and closure of the Thanneermukkom Bund. If its shutters remain opened for nine months in every year the periodic tidal inflows from the Arabian sea will wash out most of the accumulated impurities and wastes in water ways and channels around the padasekharams. To some extent monsoon floods can be controlled by the restructuring of the Thottappally Spillway and the periodic removal of the accumulated mud from the Alapuzha-Changanacherry main canal and the other channels in this area. Local bodies may be persuaded to

set apart a portion of their funds for removing weeds and wastes from waterways, which will create additional employment opportunities to the rural work force. Effective arrangements are to be made for the surveillance and control of plant various agricultural research institutions and *krishibhavans* functioning in this area.

The wetland ecological system of Kuttanad is conducive for inland fish culture. It is found that at present after the summer crop 81 percent of padasekharams in this region are kept fallow for eight months. If a system of rice-fish rotation in which culture fishes and prawns are reared in paddy fields after the puncha crop is adopted, paddy fields become more fertile and productivity can be increased by 30 to 40 percent. Costs on weeding can be substantially reduced and ploughing costs can be avoided as the culture fishes feed of weeds and keep the soil loose. An experiences shows that the farmers can get an additional income of 10000 to 25000 rupees if the integrated method is adopted. In addition to generating 70 to 100 working days per acre the method ensures the ecological sustainability of the region by avoiding the excess application of chemical fertilizers and pesticides. As pointed out by the Shyamasundaran Nair Committee, the integration of aquaculture with traditional rice farming can be developed as a safe strategy to sustain rice production, increase profits and maintain ecological balance. Once paddy farming in this region is made economically viable, the state government can stop the pumping subsidies, production incentive bonus and similar benefits currently given to the farmers. The amount that would be saved can be used to provide basic infrastructural facilities in this area.

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