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COST OF CULTIVATION AND ECONOMICS OF

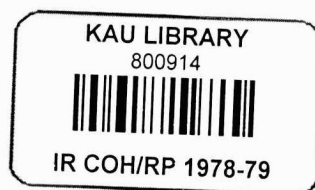
P A D D Y

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DEPARTMENT OF AGRICULTURAL ECONOMICS
KERALA AGRICULTURAL UNIVERSITY
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Introduction

Information on cost of cultivation of various agricultural commodities and economics of production are of interest to policy makers, farmers and even the general public. In a vast country like India, the conditions under which agricultural production takes place are different in different parts of the country and hence cost and returns would also vary from region to region. Thus, in order to be useful, information has to be available for different regions.

As far as Kerala is concerned, no such information based on systematic studies is available for recent years. With a view to filling this information gap, Kerala Agricultural University initiated a programme of research during the year 1978-79 on cost of cultivation. Though such studies on all major crops grown in the state need to be conducted, for want of trained manpower and other resources, the programme started with paddy. Paddy is the most important crop grown in Kerala in terms of area, covering over 29 per cent of the total cropped area in the State. A substantial proportion of agricultural employment in the state is generated through paddy cultivation.

Moreover rice is the staple food of Kerala's people. Hence economics of paddy cultivation affect the fortunes of farmers, employment of labour force in agriculture and the welfare of people in general.

Method of study and scope

This study is based on data collected from the Districts of Palghat, Trichur and Alleppey, which are the main areas in the state having marketable surplus of paddy. Multi-stage random sampling was adopted for the study. Villages were selected at random from a list of villages in each agroclimatic zone of the different districts, such that the number of villages chosen in each zone would be proportional to the area under paddy in the respective agroclimatic zone. Eight villages were selected from Palghat and seven each from Trichur and Alleppey. A list of the selected villages is given below...

List of selected villages :- District wise

Palghat District

1. ~~Alathur~~ Alhallaor
2. Breekrishnapuram
3. Ananganadi
4. Kongad
5. Kozhingampara
6. Moolathara
7. Tenkurisi
8. Tarur

Trichur District

1. Killimangalam
2. Kuttur
3. Eravu
4. Anthikad
5. Pallippuram
6. Nattika
7. Vadakkumbhagam

Alleppey district

1. Ambalapuzha
2. Nedumudi
3. Muttar
4. Kozhimukku
5. Cheruthana
6. Kandallur North
7. Kaviyoor

From the lists of paddy cultivator households in each selected village, ten cultivators were selected at random. Cost accounting method was adopted for collection of information on the various agricultural operations for the cultivation of paddy. A well structured schedule was used for this purpose. In each village a suitable educated person, having knowledge about the agricultural operations was identified and entrusted with the task of contacting the selected cultivators once in a week throughout the cultivating seasons. Intensive training was given to such persons regarding the method of data collection. Separate schedules were used to collect data

from different fragments of land operated by the same farmer. Separate schedules were also used wherever the cultivation practices as well as the seeds used differed.

After all the relevant entries have been made in the schedules and the data collection completed, the schedules were separated into two broad categories on the basis of the seed material used viz. High Yielding Varieties (HYVs) and Traditional Varieties (TVs) and the cost data have been worked out separately for high yielding and traditional varieties.

In part I of this report the analysis of the various items of cost per hectare is presented for the three districts both for the Traditional as well as High Yielding varieties. In Part II analysis has been made on the economics of paddy cultivation in the three Districts for the Traditional and the High Yielding Varieties.

The two major categories of costs are the operating costs and the fixed costs. Items included in the former are human labour, animal labour, Tractor use, Seeds/seedlings, manures, fertilizers, plant protection chemicals, Irrigation/Dewatering and interest

on working capital. Human labour was found to be predominantly wage labour and in cases where family labour was used, their wages were imputed at the rates prevailing in the village during the relevant periods. Animal labour is used for preparatory cultivation. Except in Palghat district, Animal labour was predominantly hired in. Wherever animal labour used was owned by the cultivator, such labour use was evaluated at the relevant rate that prevailed in the village. Tractor is used for ploughing operations in some parts of Alleppey, Palghat and Trichur. Since both animal labour and tractor used are for the same purpose viz. preparatory cultivation, they have been clubbed together. The hire charges paid for tractors were taken into consideration for the computation of costs. In Trichur and to some extent in Alleppey district, seedlings were purchased particularly for the second crop. These were evaluated at the relevant purchase price. Wherever seeds were used which were mainly from within the farm, they were evaluated at the market rates prevailing. Farm yard manure was evaluated at the prevailing market rate. Green manures obtained by engaging wage labour were evaluated on the basis of wage cost and the human labour cost reported in the study is exclusive of this cost. Fertilizers and pesticides were evaluated at market prices.

To compute the interest on working capital, all the cost items mentioned above (including imputed costs) have been considered.

Items normally included under the category of fixed costs are rent and depreciation on farm buildings, machinery, equipments and implements. Rent was not included as a part of this study. None of the farmers reported renting in of land for paddy cultivation. There were no farm buildings mainly or exclusively used for agricultural purposes, in the sample. None of the farmers owned any machinery. Hence in the item 'Fixed cost' only depreciation on implements were included. Depreciation on such items were worked out and allocated to paddy cultivation on the basis of relative position of paddy area in gross cultivated area of the farmer.

Districtwise total costs per hectare.

Before considering the input wise distribution of costs, a comparison of the total cost per hectare for the three districts both for the HYV's and TV's may be attempted.

Table - 1 presents the same. Detailed information is given in Appendix Table 1 to 6.

Table - 1. Total Cost of Cultivation of Paddy.

Districts	In Rs. per hectare	
	HYVs	TVs
Palghat	1742.73	1630.35
Trichur	2240.34	1905.07
Alleppey	2722.44	2059.42

The table reveals a high degree of variation in total cost of paddy cultivation among the districts. In all the three districts High Yielding Varieties were found to incur more cost than the Traditional Varieties. In Palghat the high yielding varieties incurred 3.71 per cent more cost than the traditional varieties. The corresponding hike in costs in Trichur and Alleppey districts were 17.60 per cent and 32.19 per cent. On an average, the HYVs cost 18.79 per cent more than the TVs. For both the categories, cost per hectare was the highest in Alleppey and lowest in Palghat. For HYVs cost per hectare in Trichur Dist. was 28.55 per cent more than that in Palghat and in Alleppey, it was 56.22 per cent more than that in Palghat. For the Traditional varieties the increase in cost in Trichur over that of Palghat was 15.37 per cent and it was 22.56 per cent in Alleppey. The

variation in the total cost among the districts could be explained better by analysing each of the cost components separately.

Cost Components

1. Animal labour/Tractor. The cost per hectare of Animal labour/Tractor use for the HYVs and the Traditional Varieties are given in the following table.

Table - 2. Cost of Animal Labour/Tractor use

Districts	In Rs. per hectare	
	HYV	TV
Palghat	296.80 (17.03)	314.48 (18.72)
Trichur	325.34 (14.52)	381.31 (20.02)
Alleppey	218.68 (8.03)	157.88 (7.67)

(Figures in parantheses are percentages to toal cost)

Both for the HYVs and TVs, the cost of Animal/Tractor labour was found to be lowest for Alleppey. It was Rs.218.68 for HYVs and Rs.157.88 for TVs. In Palghat, it was Rs.296.80 for HYVs and Rs.314.48 for TVs and in Trichur it was Rs.325.34 and 381.31 for HYVs and TVs respectively. On an average the cost of Animal/Tractor labour was found to be Rs.280.27 per hectare for HYVs and Rs.284.54 for TVs.

As percentage to the total cost this item of expenditure was highest in Palghat (17.03), for HYVs followed by Trichur (14.32) and Alleppey (8.03). For the TVs the highest in percentage was recorded for Trichur, (20.02), followed by Palghat (18.72 and Alleppey (7.67).

Districtwise variation in this item of cost can be explained by variations in intensity of use, variations in rates paid as also by variations in the relative importance of these two items. Generally tractor ploughing is cheaper than bullock ploughing. Animal labour use in terms of hours was 175 in Palghat, 67 in Trichur and 60 in Alleppey for HYVs. For TVs it was 178 in Palghat, 106 in Trichur and 60 in Alleppey.

2. Human Labour

In all the three districts, the largest single item of cost, both for HYVs and for TVs was found to be human labour. Table 3 below present human labour cost.

Table - 3. Cost of Human Labour

Districts	In Rs. per hectare	
	HYVs	TVs
Palghat	522.21 (29.97)	672.84 (40.04)
Trichur	573.27 (25.58)	567.93 (29.82)
Alleppey	1138.45 (41.82)	860.03 (41.76)

(Figures in parantheses are percentages to total cost)

Considerable inter-district variation existed in respect of this item of cost both for HYVs as well as for TVs. Alleppey district recorded the highest labour cost, accounting for about 42 per cent of the total cost both for HYVs and TVs. For HYVs in absolute terms this cost was the lowest in Palghat, though relatively it was the lowest in Trichur. For TVs the lowest expenditure on this item of cost was in Trichur, both absolutely as well as relatively.

It may be of interest at this stage to get some idea regarding the actual quantum of human labour used for the two types of crops in the different districts. This information is presented in Table 4.

Table-4. Human Labour Used

Districts	In hours per hectare	
	HYVs	TVs
Palghat	871	863
Trichur	546	634
Alleppey	1003	797

It may be mentioned that these figures are actual hours of work reported and they include both male and female labour.

3. Seed/seedlings

There was no uniformity with regard to the seed material used. While in some areas seeds were broadcast in other areas transplanting was found prevalent. In

many cases where seedlings were used they were purchased and not raised by the farmer concerned. Hence the cost of seed materials was found to vary considerably among the districts. Table 5 gives information on cost of seed material used.

Table : 5. Cost of Seeds/seedlings.

Districts	In Rs. per hectare	
	HYVs	TVs
Palghat	127.32 (7.31)	149.72 (8.91)
Trichur	258.64 (11.55)	238.55 (12.53)
Alleppey	235.76 (8.70)	237.82 (11.55)

(Figures in Parantheses are percentages to total)

The lowest cost for seed/seedlings was in Palghat (Rs.127.32 for HYVs and Rs.149.72 for TVs). The cost of seed material for HYVs and TVs was more or less same for all the districts. On an average, seed cost of both HYVs and TVs remained almost the same viz. Rs.207.57 for HYVs and Rs.208.73 for TVs which formed 9.29 per cent and 11.09 per cent respectively to the total expenditure for HYVs and TVs.

A comparative analysis of Animal labour, Tractor, Human labour and Seed/seedlings costs put together

The expenditures on the above three items are not strictly comparable among the three districts, since the use of one, to some extent, affect the others. For

instance, where seedlings are purchased and used, while seed cost gets inflated, animal labour/Tractor and human labour cost gets deflated. For this, reason, a comparison of the total cost on these three items is considered desirable. Such a comparison is presented in the following table.

Table No.6. Cost of Animal labour/Tractor, Human Labour and Seed material put together

Districts	In Rs. per hectare	
	HYVs	TVs
Palghat	946.33 (54.31)	1137.04 (67.37)
Trichur	1157.25 (51.35)	1187.39 (62.37)
Alleppey	1593.89 (58.55)	1255.73 (60.98)

(Figures in parantheses are percentage to total, Both for HYVs and TVs, the total cost on the above items were found to be the highest in Alleppey followed by Trichur and Palghat. The high costs at Alleppey appear to be due to the high cost of labour.

4. Manures and Fertilizers

Generally, it was found that organic manures use was less for the HYVs compared to the TVs while the use of Chemical fertilizers for the HYVs in all the districts were found to be higher than that for traditional varieties. The same trend is also seen in the proportional distribution of these costs. Table 7 gives

the costs incurred for manures and fertilizers and their percentages to total cost.

Table 7. Cost per Hectare for Manures and Fertilizers
(in Rs.)

Districts	Item of cost	HYV	Per cent to total	TV	Per cent to total
Palghat	Manures	185.86	10.66	325.69	19.38
	Fertilizers	440.02	25.25	97.87	5.82
Trichur	Manures	231.89	10.35	346.56	18.19
	Fert.	488.47	21.80	147.56	7.75
Alleppey	Manures	67.79	2.49	331.45	16.09
	Fert.	596.35	21.91	237.83	11.55

For the HYVs the cost of manures per hectare was the highest in Trichur - Rs.231.89 - constituting 10.35 per cent. In Palghat it was Rs.185.86 (10.66%) and Alleppey Rs.67.79 (2.49%). The cost on fertilizer for the HYVs was the highest in Alleppey Rs.596.35 constituting 21.91 per cent of the total cost. In Trichur the cost incurred for HYVs for this item was Rs.488.47 (21.80 per cent) and in Palghat it was Rs.440.02 (25.25 per cent).

For TV's the cost on manures was found to be more or less the same in all the three districts accounting to Rs.346.56 i.e. 18.19 per cent of the total cost in Trichur, Rs.331.45 (16.09%) in Alleppey and Rs.325.69 (19.38 per cent) in Palghat. The cost on fertilizers for TVs was lowest in Palghat Rs.97.87 (5.82%). In Trichur it was Rs.147.56 (7.75%) and in Alleppey it

was Rs.237.88 ie. (11.55%).

The cost of manures for the traditional varieties was 75.23% more than that of HYV in Palghat while in Trichur and Alleppey the same were 49.45 per cent and 388.93 per cent respectively.

A similar comparison on the fertilizers showed 49.59 per cent 231.03 per cent and 150.69 per cent more for HYVs over that for TVs in Palghat, Trichur and Alleppey respectively. It can also be observed from table 7 that the cost on Fertilizers was found to be highest in Alleppey both for High Yielding and the Traditional varieties followed by Trichur and Palghat.

In table 8 a comparison is made on the cost of manures and fertilizers combined.

Table-8. Combined Cost of Manures and Fertilizers

Districts	In Rs. per hectare	
	HYV	TV
Palghat	625.88 (35.91)	423.56 (25.20)
Trichur	720.36 (32.15)	494.12 (25.94)
Alleppey	664.14 (24.40)	569.33 (27.64)

(Figures in parentheses are percentages to total)

Both for the high yielding and the traditional varieties the combined cost on manures and fertilizers was found to be the highest for HYVs in Trichur (Rs.720.36) followed by Alleppey and Palghat. As a proportion to total cost the two items put together registered the highest percentage in Palghat for HYVs. For the Traditional varieties though in absolute terms the highest was in ~~Trichur~~ ^{Alleppey}, the highest proportion *also* was recorded at Alleppey, followed by Trichur and Palghat.

5. Plant Protection Chemicals

Table 9 gives information on these costs.

The cost on these items was either nil (as in Palghat) or negligible for the traditional varieties. For the HYVs these items cost Rs.154.28 in Alleppey (5.66 per cent) Rs.132.42 (5.91 per cent) in Trichur and Rs.17.71 i.e. 1.02 per cent in Palghat.

Table-9. Cost of Plant Protection Chemicals

Districts	In Rs. per hectare	
	HYVs	TVs
Palghat	17.71 (1.02)	---
Trichur	132.42 (5.91)	3.36 (0.17)
Alleppey	154.28 (5.66)	11.29 (0.55)

(Figures in parentheses are percentages to total)

6. Irrigation/dewatering

Irrigation was not an important item of cost because the practice of irrigating the crop was not common. Dewatering costs existed in Kuttanad area of Alleppey district and Kole area of Trichur District. For TVs the cost for Irrigation/Dewatering was found to be negligible in Palghat and Trichur accounting only 0.29 per cent and 0.34% respectively of the total while it accounted for Rs.97.66 (4.74%) in Alleppey.

For the HYVs the cost of Irrigation, Dewatering was Rs.153.14 (5.63%) in Alleppey, Rs.119.09 at Trichur and Rs.4.82 in Palghat. In both Alleppey and Trichur dewatering accounted for the bulk of the cost on this item in Kuttanad and Kole areas respectively. Table 10 represents the details on this item of expenditure.

Table-10. Irrigation/Dewatering cost

Districts	In Rs. per hectare	
	HYVs	TVs
Palghat	4.82 (0.28)	4.80 (0.29)
Trichur	119.09 (5.31)	6.58 (0.34)
Alleppey	153.14 (5.63)	97.66 (4.74)

(Figures in parenthesis are percentages to total)

7. Interest on working capital

For the purpose of calculating interest on working capital all the costs other than depreciation, including imputed costs have been considered and interest reckoned at 12 per cent per annum. The actual amount of interest for HYVs varied from Rs.86.97 in Trichur to Rs.103.04 in Alleppey which were 3.88 per cent and 3.78 per cent of total cost respectively. In Palghat interest was Rs.97.33 which was 5.58 per cent to total. For the traditional varieties interest on working capital was Rs.116.41 in Alleppey, Rs.104.31 in Trichur and Rs.93.71 in Palghat. Expenditure on this item is shown in Table 11.

Table-11. Interest on working capital

Districts	In Rs. per hectare	
	HYVs	TVs
Palghat	97.33 (5.58)	93.71 (5.57)
Trichur	86.97 (3.88)	104.31 (5.48)
Alleppey	103.04 (3.78)	116.41 (5.65)

(Figures in parenthesis are percentages to total)

8. Depreciation and Interest on fixed capital

As stated earlier, these items of cost relate to implements alone. The amount of depreciation and interest on fixed capital varied among the different

districts which reflects the extent of ownership of implements. Where implements are not owned, their use was either through borrowing from neighbours or in certain areas such as in Alleppey, they were brought by the labourers. These items of cost varied from 0.24 per cent to 4.49 per cent of total cost.

9. Miscellaneous costs

Land revenue, cess etc. are the items included here. These costs ranged from 0.16 to 1.54 per cent of the total.

Comparability of the items of cost included here with cost concepts which are generally accepted would be of some use. The latter, are, given below:

- Cost A:
- (i) Value of hired human labour
 - (ii) Value of hired bullock labour
 - (iii) Value of owned bullock labour
 - (iv) Value of seeds (farm produced and purchased)
 - (v) Value of manures, fertilizers and micro nutrients
 - (vi) Irrigation expenditure
 - (vii) Plant protection expenditure
 - (viii) Depreciation
 - (ix) Land revenue, cess etc.
 - (x) Interest on working capital

Cost B: Cost A plus rental value of owned land plus interest on fixed capital.

Cost C: Cost B plus imputed value of family labour
Cost of cultivation given in this study cannot be immediately translated into any one of the above three cost concepts. As far as costs B and C are concerned, they include rental value of owned land which we have not estimated. As for cost A, It excludes two items included by us, viz. Value of imputed family labour (which is clubbed with wage labour) and interest on fixed capital. It may however be mentioned that the contribution of family labour to paddy cultivation was found to be very insignificant and hence if we exclude the second item viz. interest on fixed capital which is separately given, what we would be getting would not be significantly different from Cost A.

Economics of Paddy Cultivation

To assess the economics of paddy cultivation, costs have to be related to the returns. Apart from paddy the main product, returns also accrue from straw the by-product

Value of straw

There was a good deal of heterogeneity in reporting the quantities of straw produced. Hence straw was evaluated on the basis of prices which prevailed in the villages in terms of the physical units reported immediately after harvest. The value of straw per hectare is presented in table 12.

Table 12. Value of Straw per Hectare

Districts	HYVs	TVs
Palghat	216.20	254.68
Trichur	563.27	359.01
Alleppey	249.27	226.42

The variation in the revenue from straw is on account of differences in price and recovery. For HYVs the revenue was highest in Trichur Rs.563.27, while in Alleppey it was 249.27 and in Palghat 216.20. The revenue in Trichur from straw for the traditional variety was Rs.359.01, Rs.254.68 in Palghat and Rs.226.42 in Alleppey.

Yield of Paddy

The yield of paddy obtained by farmers excluding the wages paid in kind for harvesting is given in table 13.

Table 13. Yield of Paddy per hectare (in quintals)

Districts	HYVs	TVs
Palghat	25.46	16.31
Trichur	21.04	14.43
Alleppey	29.42	18.59

In all the districts high yielding varieties were found to show a much higher yield per hectare than traditional varieties. The highest yield was recorded at Alleppey viz. 29.42 Quintals. In Palghat the yield was 25.46 quintals and in Trichur it was 21.04 quintals for HYVs. For TVs, yield in Alleppey was the highest (18.59 quintals), followed by Palghat (16.31 quintals) and Trichur (14.43 quintals).

Gross out put

The value of gross output from a hectare of paddy cultivated is given in Table 14. For calculating this value, paddy and straw have been evaluated at the prices which prevailed in the villages in the immediate post-harvest period.

Table 14. Value of gross output per hectare (Rs.)

Districts	High yielding varieties			Traditional varieties		
	Grain	Straw	Total	Grain	Straw	Total
Palghat	2734.65	216.20	2950.85	1839.89	254.68	2094.57
Trichur	2403.54	563.27	2966.81	1781.43	359.01	2140.44
Alleppey	3218.41	249.27	3467.68	2071.71	226.42	2298.13

For the HYV, the gross revenue was the highest in Alleppey Rs.3467.68, followed by Trichur 2966.81 and Palghat, 2950.85. The gross income in Alleppey was 16.88 per cent more than that in Trichur and 17.51 per cent more than in Palghat.

For the traditional varieties also the highest revenue was obtained in Alleppey - (Rs.2298.13), while in Trichur it was 2140.44 and in Palghat Rs.2094.57. The return at Alleppey was 7.37 per cent and 9.72 per cent more than that in Trichur and Palghat respectively.

Cost of production of paddy per hectare

Cost of production of paddy per hectare is arrived at by deducting the value of straw from the total cost of cultivation.

Table 15. Cost of Production of Paddy per hectare

District	HYV	TV
Palghat	1526.53	1425.65
Trichur	1677.07	1546.06
Alleppey	2473.17	1833.00

Cost of production of paddy both for the high yielding and traditional varieties was highest in Alleppey followed by Trichur and Palghat.

Cost of production per quintal of paddy

Per quintal cost of production is a crude measure of the efficiency of cultivation. The cost of production per quintal in the various districts is given in table 16.

Table 16. Cost of production per quintal of Grain

Districts	HYV	TV
Palghat	59.96	87.41
Trichur	79.71	107.14
Alleppey	84.06	98.60

In general the cost of production of paddy per quintal was lower for the HYVs compared to TVs in all the districts. The lowest cost per quintal for high yielding varieties recorded was Rs.59.96 in Palghat. In Trichur it was Rs.79.71 and in Alleppey it was Rs.84.06. The lowest cost per quintal for TVs was also recorded in Palghat at Rs.87.41. In Trichur the cost was Rs.107.14 and in Alleppey it was Rs.98.60.

Cost-benefit ratio

In order to determine whether it is worth-while to pursue an activity, one has to compare costs and returns. Cost benefit ratio gives the return per rupee invested on cultivation. The cost benefit ratios for the three districts are given in Table 17. Here the total returns are shown as ratios of total costs.

Table 17. Cost Benefit ratios

Districts	HYV	TV
Palghat	1.69	1.245
Trichur	1.32	1.12
Alleppey	1.27	1.12

Though a good deal of variation can be seen for the return on a rupee invested, returns were positive in all the cases. The returns on HYV's in general were higher than those from TVs. While the cost benefit ratio was the highest in Palghat both for HYVs and TVs (1.69 and 1.245 respectively), it was the lowest in Alleppey (1.27 and 1.12) for both. In Trichur the cost benefit ratio worked out to 1.32 and 1.12 respectively for HYVs and TVs.

As already mentioned, rent on land was not considered as an item of cost in this study. This was because under the conditions prevailing in the state payment of rent on land is not involved since tenants on land have been declared owners of land they cultivate. However, it may be interesting to know as to how payment of a fair rent would affect the economics of paddy cultivation by including rent as an item of expenditure. For this purpose we have reckoned one fifth of the value of gross produce as rent which was considered to be fair rent according to tenancy legislations. Costs of cultivation including rent thus imputed are shown in Table 18.

For the High Yielding Varieties and the Traditional Varieties total cost was the highest in Alleppey, Rs.3415.98 and Rs.2519.05 respectively. In Trichur the cost per hectare was Rs.2833.70 and Rs.2333.16 and in Palghat where the cost of cultivations was lowest among the three districts it was Rs.2332.90 for the HYV, and Rs.2099.24 for the traditional varieties.

Table 18. Cost of cultivation per hectare including imputed rent

	Cost of cultivation per hectare	1/5 of the value of gross produce	Total cost including rent
<u>High Yielding Variety</u>			
Palghat	1742.73	590.17	2332.90
Trichur	2240.34	593.36	2833.70
Alleppey	2722.44	693.54	3415.98
<u>Traditional Varieties</u>			
Palghat	1680.33	418.91	2099.24
Trichur	1905.07	428.09	2333.16
Alleppey	2059.42	459.63	2519.05

Cost of production per hectare and quintal of grain including rent imputed.

Cost of production of paddy per hectare including imputed rent as mentioned above can be seen from table 19 and cost per quintal can be seen from table 20.

Table 19. Cost of Production of Paddy per hectare

Including Imputed Rent
Including Imputed Rent

Districts	HYV	TV
Palghat	2116.70	1844.56
Trichur	2270.43	1974.15
Alleppey	3166.71	2292.63

Table 20. Cost of Production per Quintal of Paddy

Including Imputed Rent.

Districts	HYV	TV
Palghat	83.14	113.09
Trichur	107.91	136.81
Alleppey	107.64	123.33

The cost of production per quintal of paddy considering imputed rent shows the same was less for the High Yielding Varieties in general. While the cost per quintal remained almost the same in Trichur and Alleppey being Rs.107.91 and 107.64 respectively it was only Rs.83.14 in Palghat. Palghat also recorded lowest cost per quintal for the traditional varieties Rs.113.09. It was highest at Trichur.

Cost Benefit ratio

A cost benefit analysis taking into consideration the rent also would be of interest. Such an analysis is given in table 21.

Table 21. Cost benefit ratio for paddy including imputed rent

Districts	HYV	TV
Palghat	1.26	0.99
Trichur	1.05	0.91
Alleppey	1.02	0.91

Positive returns were recorded for the HYV's in all the three districts. Only in Palghat the return was significant. In Trichur and Alleppey, returns were marginally higher than cost. For the Traditional Variety the returns did not even off set the cost, in any of the districts. In Palghat the return was 99 paise on rupee investment which is the highest return for TV. In Trichur and Alleppey the return on a rupee investment was only 91 paise.

From the analysis of the economics of paddy cultivation it is clear that cultivation of traditional varieties resulted only a marginal gain, without accounting for rent as a cost of production. When rent is also reckoned the returns from cultivation of traditional varieties resulted in loss. The HYVs resulted a gain in both the cases, i.e., with rent and without imputing rent. The gain is substantial in all the three districts when rent on land is not accounted for. When rent is taken into account, net benefit was negligible in Trichur and Alleppey Districts.

Appendix Table 1.

Cost of cultivation per hectare of paddy (HYVs) in Palghat District in 1978-79.

Sl.No.	Items	Rs.
1	Animal labour/tractor	296.80 (17.03)
2	Human labour	522.21 (29.97)
3	Seeds/seedlings	127.32 (7.31)
4	Manures	185.86 (10.66)
5	Fertilizers	440.02 (25.25)
6	Pesticides	17.71 (1.02)
7	Irrigation/Dewatering	4.82 (0.20)
8	Interest on working capital	97.33 (5.58)
9	Depreciation	17.42 (0.99)
10	Interest on Fixed Capital	6.46 (0.37)
11	Miscellaneous	26.78 (1.54)
Total		1742.73 (100.00)

Appendix Table 2.

Cost of cultivation per hectare of paddy (HYVs) in Trichur District in 1978-79.

Sl.No	Items	Rs./ha
1	Animal labour/Tractor	325.34 (14.52)
2	Human labour	573.27 (25.58)
3	Seeds/seedlings	250.64 (11.55)
4	Manures	231.89 (10.35)
5	Fertilizers	488.47 (21.80)
6	Pesticides	132.42 (5.91)
7	Irrigation/Dewatering	119.09 (5.31)
8	Interest on working capital	86.97 (3.88)
9	Depreciation	8.67 (0.39)
10	Interest on fixed capital	3.15 (0.16)
11	Miscellaneous	12.43 (0.55)
Total		2240.34 (100.00)

Appendix Table 3

Cost of cultivation per hectare of paddy (HYVs) in Alleppey District in 1978-79

Sl.No.	Items	Rs.
1	Animal labour/Tractor	218.68 (3.03)
2	Human labour	1138.45 (41.82)
3	Seeds/seedlings	236.76 (8.70)
4	Manures	67.79 (2.49)
5	Fertilizers	596.35 (21.91)
6	Pesticides	154.28 (5.66)
7	Irrigation/Dewatering	153.14 (5.63)
8	Interest on working capital	103.04 (3.78)
9	Depreciation	22.98 (0.84)
10	Interest on fixed capital	5.60 (0.21)
11	Miscellaneous	25.37 (0.93)
	Total	2722.44 (100.00)

Appendix Table 4

Cost of cultivation per hectare of paddy (TVs) in Palghat District in 1978-79

Sl.No.	Items	Rs.
1	Animal labour/Tractor	314.48 (18.72)
2	Human labour	672.84 (40.04)
3	Seeds/seedlings	149.72 (8.91)
4	Manures	325.69 (19.38)
5	Fertilizers	97.87 (.5.82)
6	Pesticides
7	Irrigation/Dewatering	4.80 (0.29)
8	Interest on working capital	93.71 (5.57)
9	Depreciation	15.74 (0.94)
10	Interest on fixed capital	2.84 (0.17)
11	Miscellaneous	2.64 (0.16)
	Total	1680.33 (100.00)

Appendix Table 5

Cost of cultivation per hectare of paddy (TVs) in Trichur District in 1978-79

Sl.No.	Items	Rs.
1	Animal labour/Tractor	381.31 (20.02)
2	Human labour	567.93 (29.82)
3	Seeds/seedlings	238.65 (12.53)
4	Manures	346.56 (18.19)
5	Fertilizers	147.56 (7.75)
6	Pesticides	3.36 (0.17)
7	Irrigation/Dewatering	6.58 (0.34)
8	Interest on working capital	104.31 (5.48)
9	Depreciation	62.56 (3.28)
10	Interest on fixed capital	23.12 (1.21)
11	Miscellaneous	23.13 (1.21)
Total		1905.07 (100.00)

Appendix Table 6

Cost of cultivation per hectare of paddy (TVs) in Alleppey district in 1978-79

Sl.No.	Item	Rs.
1	Animal labour/Tractor	157.88 (7.67)
2	Human labour	860.03 (41.76)
3	Seeds/seedlings	237.82 (11.55)
4	Manures	331.45 (16.09)
5	Fertilizers	237.88 (11.55)
6	Pesticides	11.29 (0.55)
7	Irrigation/Dewatering	97.66 (4.74)
8	Interest on working capital	116.41 (5.65)
9	Depreciation	4.38 (0.21)
10	Interest on fixed capital	0.48 (0.03)
11	Miscellaneous	4.14 (0.20)
Total		2059.42 (100.00)