



GOVERNMENT OF KERALA

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**REPORT ON THE CROP CUTTING  
SURVEY ON AUTUMN CROP  
OF PADDY 1974**



GOVERNMENT OF KERALA  
1975

*BUREAU OF ECONOMICS AND STATISTICS, TRIVANDRUM*

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# CROP CUTTING SURVEY ON AUTUMN CROP OF PADDY 1974

## Introduction

The Bureau of Economics and Statistics is regularly conducting crop estimation surveys on two of the most important food crops viz., Paddy and Tapioca in the State every year. As far as Paddy is concerned the survey is conducted separately during each of the three seasons viz., Autumn (virippu) Winter (Mundakan) and Summer (Punja) in an year. In the case of Tapioca, the survey is conducted only once in an year. This report deals with the crop cutting survey conducted on Autumn crop of paddy 1974.

### 1.1 Objectives of the Survey

The important objectives of the survey conducted during Autumn 1974 were—

- (i) to estimate the average yield of paddy per hectare for each taluk,
- (ii) to estimate the average yield per hectare for the district and the State as a whole and
- (iii) to estimate the total production of rice in the State during Autumn 1974.

It was also intended to frame estimates on average yield of high yielding varieties of Paddy as well as for different cultural operations like irrigation, use of chemical manures, etc.

### 1.2 Period of the Survey

The period from August 1974 to October 1974 was fixed for the conduct of the field work of the survey. Due to the late onset of monsoon in Palghat District there was considerable delay in the sowing of the crop there. Consequently the harvest was also delayed and the field work was thus extended up to November 1974 in Palghat District.

### 1.3 Coverage and Sample Size

The survey was conducted in 53 out of 57 taluks in the State. The cultivation of Autumn paddy was reported to be negligible in Peermade, Udumbanchola, South Wynad and North Wynad taluks. Number of crop cutting experiments to be conducted in a taluk was fixed as 18.

### 1.4 Sampling Design

A stratified multi-stage random sampling design was adopted for the survey. Each taluk was treated as the stratum, census village as the first stage unit, a survey subdivision number as the second stage unit, a kandom as the third stage unit and a square plot of side 5 metres as the ultimate sampling unit. From each of the taluk growing Autumn Paddy six census villages were selected by simple random sampling method from the list of paddy growing census villages, in the taluk. From each of these selected villages a systematic sample of three survey subdivision numbers was

selected from the frame consisting of the list of wet land survey subdivision. In survey subdivisions having more than one kandom, one kandom was randomly selected and a square plot of side 5 metres was located at random in the selected kandom. The crop in the square plot was harvested, threshed, winnowed and weighed.

A sample of grain weighing 250 grams from every 5th experimental plot harvested was collected and forwarded to the District Statistical Officer for conducting drriage experiments for estimating the loss due to drriage of wet grain.

### 1.5 Sample Selection

The selection of census villages in each taluk for the conduct of the survey was done by the District Statistical Officer and the list of selected villages was forwarded to the concerned Statistical Inspectors. The selection of plots for the conduct of crop cutting experiments was done by the Statistical Inspectors. The list of selected census villages was also forwarded to the Assistant Director, National Sample Survey, Sasthamangalam, Trivandrum for facilitating inspection of the survey, especially at harvest stage by the inspecting staff of his office.

### 1.6 Field Work

The field work of the survey was attended to by the Investigators under the supervision of Statistical Inspectors and District Statistical Officers.

The total number of crop cutting experiments planned during Autumn 1974 in the State was 939. The percentage response was found to be 94. The yield in 24 out of 885 experiments analysed was reported to be zero as the entire crop in those 24 plots was reported to be lost due to heavy rain and flood. The number of experiments planned and the percentage of response in each district are given in Table 4.1 in the Appendix.

Prior harvest by cultivators (i. e. harvesting the plot before the date fixed for harvest without intimating the actual date of harvest to the Investigators) was reported to be the main reason for loss in the case of 50 out of 54 experiments lost during the season. Such instances were found to be more in Ernakulam district. The details of non-response reported from the various districts are presented in Table 4.2 in the Appendix.

The field work of the survey was allotted to 127 Investigators working in the various districts of the State. About 46% of them were allotted with 9 experiments each while about 38% of them with 6 experiments each. Three experiments each were also allotted to about 11 per cent of the Investigators. Each of the remaining Investigators were given more than 10 experiments. According to the regular programme of work only 102 Investigators were to attend to the field work of this survey. But at the peak harvesting season the District Statistical Officers usually divert Investigators from other surveys also to attend to crop cutting survey so as to prevent loss of experiments. The allocation of field work to the Investigators in the different district are given in Table 4.3 in the Appendix.

It was found that the field work was done by 126 Investigators. About 81% of them have conducted six experiments or more each while the remaining have done only 2 to 5 experiments each during the season. Two Investigators in Malappuram district, one in Ponnani and the other in Tirur Taluk have conducted all the 18 experiments to be conducted in the respective taluks. The work load of the Investigators according to the number of experiments conducted by them are given in Table 4.4 in the appendix.

Two schedules have been prescribed for field work, one preliminary schedule and a final schedule. The Investigator was asked to fill up the preliminary schedule at the time of his first visit to the selected plot while the final schedules at the time of conducting crop cutting experiment in the plot.

The field work of the survey was inspected at three stages viz. pre harvest, harvest and post harvest. About 32% of the experimental plots were inspected at the time of harvest, about 30% at the pre harvest stage and about 8% at the post harvest stage by the Statistical Inspectors and District Statistical Officers. Number of experiments inspected at the three stages with their percentages, in all the taluks of the State are presented in Table 4.5 in the appendix.

**1.7 Analysis:**

The analysis of the data collected through the survey was done at the headquarters of the Bureau by the regular staff of the Agricultural Statistics Unit.

**1.8. Procedure of estimation:**

(i) *Mean yield:* The taluk wise mean yield of dry paddy and its standard error were estimated using the following formula.

$$\text{Taluk mean yield} = \bar{x} = \frac{\sum_{i=1}^k \sum_{j=1}^{n_i} x_{ij}}{\sum_{i=1}^k n_i}$$

where  $n_i$  = number of experiments conducted in the  $i$ th village ( $i=1,2,3,\dots,k$ )

$x_{ij}$  = weight of paddy obtained from  $j$ th experiment in the  $i$ th village/kara ( $j=1, 2, 3, \dots, n_i$ )

Each cut(experiment) is taken from 5 metre square ( $\frac{1}{400}$ th of a hectare.)

Mean yield of dry paddy in Kg. per hectare =  $\bar{x} \times 400 \times d$ . where  $d$  is the drriage ratio of dry paddy to wet paddy.

(ii) Standard Error (S.E.) of the taluk mean yield :

$$\text{Variance of the taluk mean yield} = \frac{A}{N} + \frac{B-A}{m} \times \frac{\sum_{i=1}^k ni^2}{N^2}$$

Where A=Mean square within karas

B=Mean square between karas

N=Total number of experiments,

$$\left( \sum_{i=1}^k ni \right) \text{ conducted in the taluk}$$

$ni$  = number of experiments conducted in the  $i$ th village/kara

$$m = \frac{N^2 - \sum ni^2}{N(k-1)} \text{ and}$$

$k$  = Number of villages selected in the taluk.

The standard error (S.E.) is the square root of this variance. The standard error in Kg. per hectare is obtained by multiplying this root of variance with 400.

(iii) Standard error of the State Mean yield: The formula used for the purpose is indicated below :

$$\text{Standard Error of the State Mean Yield} = \sqrt{\frac{\sum (ai si)^2}{(\sum ai)^2}}$$

Where  $ai$  = Area under the crop in the  $i$ th taluk and

$si$  = the Standard error of the estimate of mean yield in the  $i$ th taluk.

The data on area under paddy in each taluk estimated from the Land Utilisation survey of this Department have been utilised to compute the production of rice.

The weight of cleaned rice is reckoned as 65.7% of dry paddy.

### 1.9 Results of the survey

The total production of rice in the State during Autumn 1974 was estimated to be 5,35,545 tonnes. The production of rice is found to be declined by about 8.6% from the Autumn season of 1973. The average yield for the State is also found to be decreased by about 207 kg. of dry paddy per hectare compared to that of the corresponding season of the previous year. A general decline of average yield is noticed in almost all the taluks in the State. It was reported that there was not adequate rainfall

at the time of sowing in some districts especially in Palghat were the sowing operation was even delayed. Autumn crop of paddy in the State is mainly a rain fed crop and its success depends largely on the south west monsoon. There was very heavy rainfall during July and August 1974 and the resultant flood caused damage to the crop, in almost all the taluks at least partially. Diversion of water was resorted to in Peechi Dam and the crops in some paddy fields of Trichur taluk was completely destroyed by the flood caused by it. The destruction by heavy rainfall and flood was reported to be more severe in certain areas of Alleppey, Idikki and Kozhikode districts. A lion share of the new crop raised in Kuttanad region during Autumn 1974 was completely destroyed by flood. The crops in 14 plots out of 119 included for analysis were reported to be completely lost due to heavy rain and flood in Alleppey District. In Idikki and Kozhikode the crops were damaged due to land slides.

No remarkable loss of crop due to the attack of pest and diseases was reported from any part of the State during the season.

The estimates on area mean yield and its standard error, production of rice together with the number of crop cutting experiments conducted in each taluk during Autumn 1974 are presented in Table 1.1 in the appendix.

As in the case of winter and summer seasons of 1974, it was found impossible to pool the estimates of mean yield of dry paddy obtained from the State series and I.A.D.P. series of experiments conducted in Alleppey district as the Statistical test for non-significance turned out to be highly significant. In Palghat, the other I.A.D.P. district in the State, the Joint Director of Agriculture has reported that the crop cutting survey on paddy under I.A.D.P. series was not conducted during Autumn 1974 due to the non co-operation of the Village Extension Officers in his district. The details of the experiments conducted under both series in Alleppey district during Autumn 1974 are indicated in the subjoined table:

Sl. No.	Items	I.A.D.P. Series	State Series
(1)	(2)	(3)	(4)
1.	No. of experiments —		
	(a) Planned	150	126
	(b) Analysed	75	119
2.	Mean yield of dry paddy (Kg /Hectare)	1843	1673
3.	Standard error	72	227

For facilitating comparison, the data on area, mean yield and production of rice in all the districts of the State during Autumn 1973 and Autumn 1974 are given in Table 1.2 in the appendix.



The analysis of variance of plot yields pooled for the state is given in table 1.3 in the appendix. As far as yield rates are concerned, significant variation was found between taluks as well as between karas within each taluk. In other words yield rates were found to be significantly different from taluk to taluk. Besides, significant difference was also found in the yield rates from kara to kara even within a taluk.

In table 1.4 in the appendix the frequency distribution of plot yields obtained through the survey in each district is provided using the wet weight of paddy of the experimental plots. The yield obtained from nearly 6% of the experimental plots was found to be either zero or near zero-less than 500 kg. of wet paddy from one hectare. This is no doubt can be treated as an indicator of the magnitude of the loss of production in the state during the season.

In the District Statistical Offices 143 out of 154 driage experiments planned during the season were conducted to estimate the driage ratio of weight of dry paddy to wet paddy. The percentage response works out to be about 93. The driage ratio for each district is presented in table 1.5, in per centages. The driage ratio for the state for Autumn 1974 was estimated to be 87.8%.

Independent estimates of mean yield of paddy for the districts and the State were also framed based on the data obtained from the experimental plots inspected by the Statistical Inspectors and the District Statistical Officers. It was programmed to conduct harvest stage inspection on 399 experimental plots but could be conducted only on 287 plots. The percentage response in this respect came to nearly 72. The un-weighted average yield estimated for each district and the state based on harvest stage inspections are presented in Table 1.6 in the appendix.

The estimated mean yield of Autumn paddy for each taluk for the, last five years from 1970 to 1974 are given in Table 1.7 in the appendix to facilitate comparison.

*High Yielding Varieties.*—The estimated area, mean yield and production of high yielding, other varieties including traditional and improved varieties and all varieties of paddy for Autumn season of 1974 for each district and the state are given in Table 2.1 in the appendix. It was estimated that about a quarter of the total production of rice in the State during Autumn 1974 was derived from the cultivation of high yielding varieties of paddy. The area under high yielding varieties of paddy in the State during the season was estimated to be only 19.6 % of total area under all varieties of paddy. But in Autumn 1973, this percentage was estimated to be 31.9. It was reported from certain parts of the state that the cultivators from their previous experience have generally avoided the cultivation of high yielding varieties of paddy and reverted back to the cultivation of traditional varieties of paddy which according to them can withstand flood or excessive rain during the Autumn season. Such sort of belief prevailing among the cultivators, though not backed by scientific evidence, might also have influenced in the reduction of area under high yielding varieties.

As in the previous Autumn season, in Palghat District the largest area was brought under high yielding varieties of paddy. The extent under high yielding varieties was found to be the smallest in Trivandrum district.

The estimated mean yield of high yielding varieties of paddy for the state came to 2347 Kgs. of dry paddy per hectare during Autumn 1974. The highest mean yield of 3288 Kgs. of dry paddy per hectare for high yielding varieties was recorded in Palghat district while the lowest yield rate was obtained for Kozhikode district.

The estimated area, mean yield and production of rice relating to high yielding varieties of paddy for all the districts and the State during Autumn 1973 and Autumn 1974 are given in Table 2.2 in the appendix.

About 19.6% of the experimental plots covered by the survey was grown with high yielding strains of Paddy. The names of high yielding varieties of paddy cultivated in the experimental plots in the different districts is given in Table 2.3 in the appendix. It can reasonably be concluded from this table that the cultivators preference of high yielding strains of paddy in their order are Jaya, IR-8 and Triveni, though all of them have not been cultivated in all the districts. Annapoorna (cul ure 28) Aswathi, Rohini, IR-20 and Taiching are the other strains of paddy found have been raised in different districts in the State during the season. Though varieties like Jyothy, Sabari, Pharathi etc., have been introduced in the state, but not found to have been spread adequately in any part of the State so far. Therefore there exists wider scope for extension work to propagate high Yielding varieties of paddy among the ryots in the State.

In Autumn 1974, nearly 15% of the experimental plots were found to have been received irrigation. About 92% of the irrigated plots were also reported to have been applied with chemical fertilisers and manures. Manures of any sort was not applied to any of the remaining irrigated plots.

Nearly 63% of the unirrigated plots were also reported to have received Chemical fertilizers while another 32% of the plots received other manures. The remaining 5% of the unirrigated plots also not received any type of manures.

It was found that about 18% of the plots with high yielding varieties received irrigation. Chemical fertilizers and manures were also applied to all those plots. The residual 82% of plots with high yielding varieties though not irrigated were applied with either chemical fertilizer or other manures. Thus it was found that no plot with high yielding varieties covered by the survey was left unmanured during Autumn 1974.

There was no report of severe attack of pests or diseases from any part of the state during the season. However it was found that 58% of plots with high yielding varieties were treated with insecticides or pesticides. But this percentage was found to be only 31 in the case of plots with other

varieties of paddy. This wide difference in percentages of plots treated with insecticides and pesticides indicates that either the incidence of attack of pests or diseases is more in the case of high yielding varieties of paddy or the cultivators raising high yielding varieties of paddy are using insecticides and pesticides as precautionary measure.

The estimated average yield of high yielding and other varieties of paddy in irrigated and un-irrigated plots manured and unmanured plots and plots treated and untreated with insecticides and pesticides together with the number of experiments obtained in the survey under each type are given in Table 2.4 in the appendix.

The estimated area, mean yield and production of rice in the State for the last 6 years from 1969-70 to 1974-75 (up to Autumn 1974) are given separately for each season in Table 3 in the appendix.

## APPENDIX

TABLE 1. 1

Estimated Area, Mean yield and production of Rice  
Autumn Crop of Paddy—1974

TALUK AND DISRICT	No. of Experi-ments.	Area in (Hect.)	Mean yield of dry paddy in Kg./H ct.	Standard Error	P. o-duction of Rice in Tonnes
(1)	(2)	(3)	(4)	(5)	(6)
1. Neyyattinkara	18	6005	2237	151	8826
2. Trivandrum	18	4096	2097	205	5643
3. Nedumangad	17	4867	1578	205	5046
4. Chirayinkil	17	3593	1941	245	4582
TRIVANDRUM DISTRICT	70	18561	1976	98	24097
5. Quilon	17	2802	1631	330	3003
6. Kottarakkara	18	6331	1579	269	6568
7. Kun. athur	18	3972	2365	130	6172
8. Pathanapuram	13	4400	2724	155	7875
9. Pathanamthitta	15	1096	2009	147	1447
10. Karunagappally	18	2560	2326	86	3912
QUILON DISTRICT	99	21161	2084	101	28977
11. Karthigappally	17	5623	2160	297	7980
12. Mavelikara	18	3736	1780	198	4369
13. Chengannur	16	2070	1396	196	1899
14. Thiruvalla	15	2002	1437	593	1890
15. Kuttanad	18	8632	1627	728	9227
16. Ambalapuzha	17	2033	1747	579	2333
17. Shertballai	18	6422	1386	234	5848
ALLEPPEY DISTRICT	119	30518	1673	227	33546
18. Changanacherry	18	1584	2233	244	2720
19. Kanjirappally	15	63	2593	196	107
20. Kottayam	18	2683	2137	446	3767
21. Vaikom	17	1412	1814	235	1683
22. Meenachil	17	2018	2408	223	3193
KOTTAYAM DISTRICT	85	8030	2174	102	11470
23. Peermade	Nil				
24. Devicualm	6	285	1766	398	331
25. Udumban-hola	Nil				
26. Thodupuzha	16	3746	2404	192	5917
IDIRKI DISTRICT	22	4031	2359	194	6248

	(1)	(2)	(3)	(4)	(5)	(6)
27.	Kothamangalam	16	3619	2194	123	5217
28.	Muvattupuzha	14	4122	2299	217	6 26
29.	Cochin	14	4043	1619	188	3237
30.	Kanayannur	15	8698	1459	221	8338
31.	Kunnathunad	15	7534	2367	274	11716
32.	Alwaye	18	6689	1853	177	8143
33.	Parur	15	3673	1427	436	3444
	ERNAKULAM DISTRICT	107	37378	1886	97	46321
34.	Cranganore	18	377	1131	79	280
35.	Mukundapuram	18	7507	1580	268	7793
36.	Trichur	18	7145	2370	207	11125
37.	Thalappally	18	16012	1984	138	20871
38.	Chowghat	18	3528	1553	142	3600
	TRICHUR DISTRICT	90	34569	1923	98	43669
39.	Chittur	18	19432	3396	241	43356
40.	Alathur	18	20289	3232	229	43082
41.	Palghat	18	26463	3372	353	58626
42.	Ottappalam	18	27641	1580	196	28693
43.	Mannarghat	18	7081	2437	196	11337
	PALGHAT DISTRICT	90	100906	2792	126	185094
44.	Perinthalmanna	17	14219	1845	120	17236
45.	Ponnani	18	6872	1295	277	5847
46.	Tirur	18	10512	1161	151	8018
47.	Ernad	17	18993	1512	176	18868
	MALAPPURAM DISTRICT	70	50596	1503	89	49969
48.	Kozhikode	16	8053	927	148	4905
49.	Quiandy	16	10785	1752	245	12414
50.	Badagara	18	6037	1134	73	4498
51.	South Wynad	Nil				
	KOZHIKODE DISTRICT	50	24875	1335	118	21817
52.	N. Wynad	Nil				
53.	Tellicherry	18	8687	1624	25	9269
54.	Cannanore	18	9175	1761	230	10615
55.	Taliparamba	16	10238	2212	313	14879
56.	Hosdurg	15	13095	2069	201	17800
57.	Kasargode	16	23107	2093	139	31774
	CANNANORE DISTRICT	83	64302	1996	88	84337
	STATE	885	394927	2064	41	535545

TABLE 1.2

## Estimated Area, Mean yield and production of Rice relating to Autumn crop of paddy 1973 &amp; 74.

Sl.No.	District	Area (Hectares)		Mean yield of dry paddy (in Kg./Hect.)		Production of Rice (tonnes)	
		1973	1974	1973	1974	1973	1974
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Trivandrum	18484	18561	2164	1976	26277	24097
2.	Quilon	21240	21161	2153	2084	30045	28977
3.	Alleppey	26542	30518	2304 (2139)	1673	40173 (37300)	33546
4.	Kottayam	7917	8030	2259	2174	11752	11470
5.	Idikki	4034	4031	2713	2359	7191	6248
6.	Ernakulam	37261	37378	1927	1886	47171	46321
7.	Trichur	35028	34569	2001	1923	46054	43669
8.	Palghat	101497	100906	2704 (3241)	2792	193638 (216121)	185094
9.	Malappuram	50636	50596	2276	1503	75720	49969
10.	Kozhikode	24969	24875	1161	1335	19040	21817
11.	Cannanore	65157	64302	2077	1996	88923	84337
	STATE	392765	394927	2271 (2347)	2064	585985 (605591)	535545

Note—Figures in bracket indicate pooled estimates of IADP series and State series of experiments.

TABLE 1.3  
 Autumn Crop of Paddy 1974—Analysis of variance of  
 plot yield pooled for the State in Kgs/Plot  
 of 1/100 of an Hectare

Source of Variation	sum of squares	Degrees of freedom	Mean sum of square (variance)	Variance ratio calculated
(1)	(2)	(3)	(4)	(5)
Between taluk	2245.85	52	43.19	10.88**
Between karas within taluk	2674.95	259	10.33	2.60**
Within kara within taluk	2273.73	573	3.97	--
All	7194.53	884	..	--

\*\* Significant at 1% level.

TABLE 1.4  
Autumn crop of paddy 1974—Frequency distribution of plot yields (wet paddy)

SI No.	Class interval (Kg/Hectare)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	State
1	Below 500	1	3	27	1	..	10	3	..	2	2	..	49	Cannanore
2	500-609	..	1	4	2	..	1	4	..	4	3	..	19	Malappuram
3	700-899	1	2	6	4	..	2	1	1	3	7	2	29	Palghat
4	900-1099	3	1	4	1	..	2	5	5	6	2	1	26	Trichur
5	1100-1299	..	5	5	3	..	1	12	1	13	8	6	58	Ernakulam
6	1300-1499	1	5	5	4	1	11	6	3	11	7	2	56	Idikki
7	1500-1699	5	3	11	7	3	8	9	2	6	5	14	73	Kottayam
8	1700-1899	5	9	7	3	2	4	5	3	9	2	13	62	Alleppey
9	1900-2099	6	5	5	7	1	12	11	2	3	3	8	60	Quilon
10	2100-2299	6	3	3	3	2	10	8	9	3	2	8	55	Trivandrum
11	2300-2499	11	7	5	7	2	7	7	8	1	3	5	65	
12	2500-2699	8	6	3	11	..	6	3	2	3	2	4	53	
13	2700-2899	6	12	4	10	4	9	5	3	..	1	3	53	
14	2900-3099	4	17	5	7	3	10	1	2	1	..	5	49	
15	3100-3299	2	7	7	4	3	7	2	3	..	..	2	39	
16	3300-3499	4	4	..	3	1	2	3	5	2	..	6	33	
17	3500-3699	2	5	3	2	..	4	..	8	..	1	..	21	
18	3700-3899	1	2	3	4	..	2	1	2	..	1	1	21	
19	3900-4099	2	2	3	2	..	1	1	6	..	1	1	20	
20	4100 and above	2	99	7	4	..	1	3	5	1	1	2	44	
21	All	70	119	85	22	22	107	90	90	70	50	83	885	



TABLE 1.5

## The results of Driage experiments—Autumn crop of paddy 1974

Sl. No.	District	No. of driage experiments		Driage ratio percentage
		Planned	Analysed	
(1)	(2)	(3)	(4)	(5)
1	Trivandrum	12	10	80.4
2	Quilon	17	16	86.6
3	Alleppey	21	18	89.7
4	Kottayam	15	14	92.4
5	Idukky	4	3	84.8
6	Ernakulam	19	16	89.4
7	Trichur	15	18	88.9
8	Palghat	15	15	85.1
9	Malappuram	12	12	89.6
10	Kozhikode	9	7	81.4
11	Cannanore	15	14	89.0
	State	154	143	87.8

TABLE 1.6

## Autumn Crop of Paddy 1974—Independent Estimate of Mean yield of paddy based on Harvest Stage inspection

Sl. No.	District	No. of experiments		Mean yield rate of paddy (Kgm./Hect.)		Driage ratio used for Col. 5 and 6.
		Planned for inspection at harvest stage	Inspected at harvest stage	Before driage	After driage	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Trivandrum	31	24	2204	1772	.804
2	Quilon	45	39	2564	2220	.866
3	Alleppey	52	27	1884	1690	.897
4	Kottayam	37	29	2520	2328	.924
5	Idukky	13	10	2664	2259	.848
6	Ernakulam	52	31	2160	1931	.894
7	Trichur	38	26	1992	1771	.889
8	Palghat	38	38	3348	2849	.851
9	Malappuram	31	12	1620	1452	.896
10	Kozhikode	24	21	1628	1325	.814
11	Cannanore	38	30	2316	2061	.890
	State	399	287	2344	2058	.878

TABLE 1.7

**Estimated Mean yield of dry paddy (Kgs./Hect.) during Autumn Seasons from 1970 to 1974**

Taluk and District		1970	1971	1972	1973	1974
(1)		(2)	(3)	(4)	(5)	(6)
1.	Neyyattinkara	2471	2769	2797	2273	2237
2.	Trivandrum	1840	2474	2633	2530	2097
3.	Nedumangad	1721	1870	1633	1645	1578
4.	Chirayinkil	2608	2711	2178	2266	1941
TRIVANDRUM DISTRICT		2158	2457	2330	2164	1976
5.	Quilon	2014	1632	1456	2276	1631
6.	Kottarakkara	1952	1670	1130	2024	1579
7.	Kunnathur	1527	2222	1628	1707	2365
8.	Pathanapuram	2017	2265	2730	2537	2724
9.	Pathanamthitta	2111	2638	1701	2068	2009
10.	Karunagappally	1754	1760	1940	2404	2326
QUILON DISTRICT		1878	1974	1724	2153	2084
11.	Karthigappally	1775	2209	1336	2382	2160
12.	Mavelikkara	2079	1928	1512	2474	1780
13.	Chengannur	2563	2433	2882	2301	1396
14.	Thiruvalla	2419	2985	2005	2562	1437
15.	Kuttanad	2100	1643	2069	2907	1627
16.	Ambalapuzha	1329	1267	1152	2379	1747
17.	Sherthallai	956	932	1281	1471	1386
ALLEPPEY DISTRICT		1717	1824	1670	2304	1673
18.	Changanacherry	2232	2783	2893	2232	2233
19.	Kanjirappally	1915	2333	2216	2093	2593
20.	Kottayam	1908	1959	1876	1849	2137
21.	Vaikom	1724	1610	1973	2529	1814
22.	Meenachil	1975	2902	2679	2670	2408
KOTTAYAM DISTRICT		1967	2327	2327	2259	2174
23.	Peermade	..	..	..	..	..
24.	Deviculam	2461	2235	2932	2948	1766
25.	Udumbanchola	..	..	..	..	..
26.	Thodupuzha	2042	2524	2032	2695	2404
IDUKKI DISTRICT		2070	2505	2092	2713	2359

TABLE 1.7—(Contd.)

	(1)	(2)	(3)	(4)	(5)	(6)
27. Kothamangalam		1935	2013	2520	2048	2194
28. Muvattupuzha		..	..	..	..	2299
29. Cochin		2214	2102	1485	2112	1619
30. Kanayannur		1635	1949	1945	1836	1459
31. Kunnathunad		1697	1525	2969	2032	2367
32. Alwaye		2028	2031	2477	1768	1853
33. Parur		2440	1415	2686	1788	1427
ERNAKULAM DISTRICT		1912	1851	2405	1927	1886
34. Cranganore		1236	1159	1188	1337	1131
35. Mukundapuram		2336	2085	1889	1962	1580
36. Trichur		1788	1693	1944	2083	2370
37. Thalppally		2103	1776	1570	2061	1984
38. Chowghat		1712	1228	1068	1721	1553
TRICHUR DISTRICT		2036	1769	1661	2001	1923
39. Chittur		2397	2504	2804	3846	3396
40. Alathur		3232	3795	3631	3371	3232
41. Palghat		2267	3293	2935	2754	3372
42. Ottappalam		2429	1992	1809	2217	1580
43. Mannarghat		1667	1243	2045	2319	2437
PALGHAT DISTRICT		2489	2740	2670	2904	2792
44. Perinthalmanna		2517	2023	2293	2613	1845
45. Ponnani		1698	2205	2260	2433	1295
46. Tirur		1698	2457	2505	2514	1161
47. Ernad		1856	2223	1946	1858	1512
MALAPPURAM DISTRICT		1969	2217	2190	2276	1503
48. Kozhikode		1199	1331	812	1209	927
49. Quilandy		789	1041	1235	1121	1752
50. Badagara		1044	1629	1367	1168	1134
51. South Wynad		..	..	..	..	..
KOZHIKODE DISTRICT		984	1285	1140	1161	1335
52. North Wynad		..	..	..	..	..
53. Tellicherry		1001	953	1379	2079	1624
54. Cannanore		1948	2331	1866	1630	1761
55. Taliparamba		2104	1573	2140	2138	2212
56. Hosdurg		2358	1167	1800	2246	2069
57. Kasargode		2304	1826	2136	2143	2093
CANNANORE DISTRICT		2045	1605	1924	2077	1996
STATE		2044	2088	2122	2271	2064

TABLE 2.1

Estimated area, Mean yield and production of high yielding and other varieties of Paddy during Autumn 1974.

Sl. No.	District	No. of experiments conducted		(4)	(5)	High Yielding Varieties		(8)	
		HYV	Total			Area (Hectares)	Mean yield (dry Paddy Kgm./Hectare)		Production of Rice (tonnes)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
1	Trivandrum	3	70	4.29	796	2376	1243		
2	Quilon	16	99	16.16	3420	2398	5388		
3	Alleppey	30	119	25.21	7694	1709	8639		
4	Kottayam	20	85	23.53	1889	2390	2966		
5	Idukki	6	22	27.27	1099	2743	1981		
6	Ernakulam	26	107	24.30	9083	2613	15593		
7	Trichur	23	90	25.56	8836	2072	12028		
8	Palghat	25	90	27.78	28032	3288	60555		
9	Malappuram	10	70	14.29	7230	1876	8911		
10	Kozhikode	5	50	10.00	2488	1307	2136		
11	Canmanore	9	83	10.84	6970	2431	11132		
	STATE	173	885	19.55	77537	2563	130572		

TABLE 2.1 (contd.)

Sl. No.	District	Other varieties				All varieties			
		Area (Hect.)	Mean yield (dry paddy Kgm./Hect.)	Production of Rice (tonnes)	Area (Hect.)	Mean yield (dry paddy Kgm./Hect.)	Production of Rice (tonnes)		
(1)	(2)	(9)	(10)	(11)	(12)	(13)	(15)		
1	Trivandrum	17765	1958	22354	18561	1976	24097		
2	Quilon	17741	2024	23589	21161	2084	28977		
3	Alleppey	22824	1661	21907	30518	1673	33546		
4	Kottayam	6141	2108	8504	8030	2174	11470		
5	Idukki	2932	2215	4267	4031	2359	6248		
6	Ernakulam	28295	1652	30728	37378	1886	46321		
7	Trichur	25733	1871	31641	34569	1923	43669		
8	Palghat	72874	2601	124539	100906	2792	185094		
9	Malappuram	43366	1441	41058	50596	1503	49969		
10	Kozhikode	22387	1338	19681	24875	1335	21817		
11	Cannanore	57332	1944	73205	64302	1996	84337		
	STATE	317390	1942	404973	394927	2064	535545		

Estimated Area, Mean yield and production of High Yielding Varieties of Paddy during Autumn 1973 and 1974.

Sl. No.	District	Area (Hect.)		Mean yield, dry paddy (Kg./hect.)		Production of Rice (tonnes)	
		1973	1974	1973	1974	1973	1974
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Trivandrum	2581	796	2401	2376	4071	1243
2	Quilon	6746	3420	2289	2398	10145	5388
3	Alleppey	13675	7694	2961	1709	26603	8639
4	Kottayam	4303	1889	2356	2390	6661	2966
5	Idukki	2497	1099	2915	2743	4782	1981
6	Ernakulam	13178	9083	1938	2613	16779	15593
7	Trichur	15486	8836	1951	2072	19850	12028
8	Palghat	46535	28032	3348	3283	102360	60555
9	Malappuram	13045	7230	2996	1876	25678	8911
10	Kozhikode	2480	2488	1358	1307	2213	2136
11	Cannanore	4766	6970	3068	2431	9607	11132
	STATE	125292	77537	2779	2563	228749	130572



District-wise yield rate for High Yielding and other Varieties of Paddy according to Cultural Practices during Autumn, 1974

District	Variety	Irrigated		Un-Irrigated		Irrigated & manured		Irrigated but not manured		Chemically manured	
		No. of experiments	Mean yield of dry paddy (Kg./Hect.)	No. of experiments	Mean yield of dry paddy (Kg./Hect.)	No. of experiments	Mean yield of dry paddy (Kg./Hect.)	No. of experiments	Mean yield of dry paddy (Kg./Hect.)	No. of experiments	Mean yield of dry paddy (Kg./Hect.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Trivandrum	H	1	3365	2	1880	1	3365	..	..	..	..
	O	24	1993	43	1926	24	1993	..	..	..	..
	T	25	2048	45	1924	25	2048	..	..	..	..
Quilon	H	..	..	16	2398	..	..	..	..	..	..
	O	6	2522	77	1983	3	2723	3	2325	67	2010
	T	6	2522	93	2054	3	2723	3	2325	81	2086
Alleppey	H	..	..	30	1709	..	..	..	..	..	..
	O	1	1472	88	1633	1	1472	..	..	..	..
	T	1	1472	118	1652	1	1472	..	..	..	..
Kottayam	H	1	3319	19	2338	1	3319	..	..	..	..
	O	..	..	65	2179	..	..	..	..	..	..
	T	1	3319	84	2214	1	3319	..	..	..	..



TABLE 2.4 (Contd)

District	Variety	Other manured		Neither irrigated nor manured		Treated in with pesticides		Not treated with pesticides	
		No. of experiments	Mean yield of dry paddy (Kg./Hect.)	No. of experiments	Mean yield of dry paddy (Kg./Hect.)	No. of experiments	Mean yield of dry paddy (Kg./Hect.)	No. of experiments	Mean yield of dry paddy (Kg./Hect.)
(1)	(2)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Trivandrum	H O T	2	1880	..	..	3	2376	..	1903
		8	1517	..	..	21	2058	46	1903
		10	1589	..	..	24	2098	46	
Quilon	H O T	2	2052	..	..	13	2346	3	2637
		10	1799	..	..	21	2519	62	1851
		12	1841	..	..	34	2453	65	1887
Alleppey	H O T	2	2387	..	..	18	2140	12	1070
		12	1160	15	1501	36	1971	53	1404
		14	1335	15	1501	54	2027	65	1342
Kottayam	H O T	..	..	..	..	19	2468	1	888
		4	1680	5	1347	39	2305	26	1987
		4	1680	5	1347	58	2358	27	1946

TABLE No. 2.4 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Idukki	{ H O T	..	..	6	2743	..	..	..	..	3	3326
		..	..	16	2037	..	..	..	..	9	2210
		..	..	22	2229	..	..	..	..	12	2489
Ernakulam	{ H O T	14	2645	12	2574	14	2646	..	..	9	2699
		22	1647	59	1658	18	1672	4	1650	28	1779
		36	2035	71	1812	32	2098	4	1650	37	2003
Trichur	{ H O T	5	2410	18	1979	5	2410	..	..	15	2093
		9	2214	58	1495	9	2214	..	..	15	1737
		14	2284	76	1609	14	2234	..	..	30	1915
Palghat	{ H O T	8	3121	17	3366	3	3121	..	..	14	3624
		23	3237	42	2278	21	3332	2	2241	28	2550
		31	3207	59	2591	29	3274	2	2241	42	2908
Malappuram	{ H O T	1	2996	9	1754	1	2996	..	..	7	2001
		3	2202	57	1332	2	2538	1	1525	14	1496
		4	2401	66	1390	3	2691	1	1525	21	1664
Kozhikode	{ H O T	..	..	5	1307	..	..	..	..	2	1425
		2	1167	43	1265	2	1167	..	..	16	1623
		2	1167	48	1269	2	1167	..	..	18	1601
Cannanore	{ H O T	1	3695	8	2275	1	3695	..	..	6	2253
		9	2090	65	1848	9	2090	..	..	28	2001
		10	2251	73	1894	10	2250	..	..	34	2045
STATE	{ H O T	31	2820	142	2243	31	2821	..	..	117	2325
		99	2250	613	1768	89	2289	10	1958	357	1991
		130	2386	755	1857	120	2426	10	1958	474	2074

TABLE No. 2.4 (Contd.)

(1)	(2)	(13)	(14)	(15)	(16)	(17)	(18)	(10)	(20)
Idukki	H	3	2160	..	..	3	3926	3	2159
	O	7	1814	..	..	6	1990	10	2065
	T	10	1917	..	..	9	2435	13	2086
Ernakulam	H	3	2209	..	..	19	2678	7	2445
	O	14	1683	17	1511	31	1926	50	1489
	T	17	1776	17	1511	50	2212	57	1606
Trichur	H	3	1399	..	..	15	2218	8	1808
	O	42	1431	1	548	19	1620	48	1581
	T	45	1429	1	548	34	1884	56	1613
Palghat	H	3	2152	..	..	4	4566	21	3043
	O	14	1731	..	..	12	2455	53	2655
	T	17	1805	..	..	16	2983	74	2765
Malappuram	H	2	888	..	..	4	1042	6	2434
	O	43	1278	..	..	14	1421	46	1360
	T	45	1260	..	..	18	1337	52	1483
Kozhikode	H	3	1229	..	802	3	1304	42	1258
	O	23	1099	4	802	3	1304	47	1263
	T	26	1114	4	802	3	1304	47	1263
Cannanore	H	2	2335	..	..	3	2827	6	2232
	O	36	1752	1	1104	21	2075	53	1801
	T	38	1783	1	1104	24	2169	59	1845
STATE	H	25	1861	..	..	101	2456	72	2196
	O	213	1477	43	1391	223	2046	489	1740
	T	238	1517	43	1391	324	2174	561	1798

H—High yielding varieties      O—Other varieties      T—All varieties

TABLE 3

Season-wise Area, Mean Yield and Production of Rice in Kerala during the period from 1969-70 to 1974-75

Agricultural year	Virippu (Autumn crop)			Mundakan (Winter crop)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Area (in hectares)	Mean yield of Paddy (kgs./hec.)	Production of rice in tonnes	Area (in hectares)	Mean yield of dry Paddy (kgs./hect.)	Production of rice in tonnes	
1969-70	393747	2016	521443	382171	2097	526570	
1970-71	394798	2077	538886	381971	2259	566934	
1971-72	395298	2126	552246	381971	2378	566808	
1972-73	391900	2237	576192	382171	2426	609234	
1973-74	392765	2347	605595	380980	2028	507755	
1974-75	394927	2064	535545	..	..	..	..

TABLE 3 (Contd.)

Agricultural year	Punja (Summer crop)						Total		
	(1)	(8)	(9)	(10)	(11)	(12)	(13)	(12)	(13)
	Area (in hectares)	Mean yield of dry paddy (kgs./hect.)	Production of rice in tonnes	Area (in hectares)	Mean yield of dry paddy (kgs./hect.)	Production of rice in tonnes			
1969-70	98141	2767	178100	874059	2136	1226413*			
1970-71	98061	2984	192185	874830	2259	1298005*			
1971-72	97888	3151	202684	875157	2351	1351738*			
1972-73	99623	2918	190941	873694	2527	1376367*			
1973-74	100930	2168	143719	874675	2187	1257069*			
1974-75									

\* Pooled estimates of State series and IADP series

TABLE 4.1

## Response Percentages—Autumn Paddy 1974

Sl.No.	District	No. of Experiments		Percentage response
		Planned	Analysed	
	(1)	(2)	(3)	(4)
1.	Trivandrum	72	70	97
2.	Quilon	108	99	92
3.	Alleppey	126	119	94
4.	Kottayam	87	83	98
5.	Idukki	24	22	92
6.	Ernakulam	126	107	85
7.	Trichur	90	90	100
8.	Palghat	90	90	100
9.	Malappuram	72	70	97
10.	Kozhikode	54	50	93
11.	Cannanore	90	83	92
	STATE	939	885	94

TABLE 4.2

## Details of Non-response—Autumn Paddy 1974

Sl.No.	District	No. of experiments		No. of experiments lost due to		
		Planned	Analysed	Primary work- ers absence (lea- ve transfer etc.)	Prior harvest by cultivators	Other reasons
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Trivandrum	72	70	2	2	1
2.	Quilon	108	93	3	6	1
3.	Alleppey	126	119	..	7	..
4.	Kottayam	87	85	..	2	..
5.	Idukki	24	22	..	2	..
6.	Ernakulam	126	107	..	19	..
7.	Trichur	90	90	..	..	..
8.	Palghat	90	90	..	..	..
9.	Malappuram	72	70	..	2	..
10.	Kozhikode	54	50	..	4	..
11.	Cannanore	90	83	..	6	1
	State	939	885	3	50	1

TABLE 4.3

## Work load of Primary workers—District-wise allocation during Autumn 1974

## No. of Primary workers

No. of experiments	No. of Primary workers													Total No. of experiments planned			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)		(14)		
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	1	3	1	..	..	3	3	2	2	..	..	15	..	..	45
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	3	13	12	1	1	..	1	9	..	..	..	..	48	..	..	288
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	6	3	5	7	2	14	7	3	2	2	..	..	59	..	..	531
12	..	..	..	..	..	..	..	1	..	1	..	..	..	2	..	..	24
15	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	15
18	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	..	36
Total	9	17	20	10	3	14	12	15	7	9	11	127	939				





TABLE 4.5  
No. of experiments inspected during Autumn 1974

Sl. No.	District	No. of experiments analysed			No. of experiments inspected at			Percentage of experiments inspected at		
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
			Harvest stage	Pre-harvest stage	Post harvest stage	Harvest stage	Pre harvest stage	Post harvest stage		
1.	Trivandrum	70	24	28	2	34.3	40.0	2.9		
2.	Quilon	99	39	19	8	38.4	19.5	8.1		
3.	Alleppey	119	27	26	10	21.7	21.8	8.4		
4.	Kottayam	85	29	23	8	34.1	27.1	9.4		
5.	Idukki	22	10	15	6	45.5	68.2	27.2		
6.	Ernakulam	107	31	31	3	29.0	29.0	2.8		
7.	Tricutur	90	26	27	4	29.9	30.0	4.4		
8.	Palghat	90	38	43	6	42.2	47.8	6.7		
9.	Malappuram	70	12	13	12	17.1	18.6	17.1		
10.	Kozhikode	50	21	8	..	42.0	16.0	..		
11.	Cannanore	83	30	28	10	36.1	33.7	12.0		
	STATE	885	287	261	69	32.4	21.5	7.8		

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