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GOVERNMENT OF KERALA

STATISTICS DEPARTMENT

Consolidated Results of  
Crop Estimation Surveys on Paddy  
and Tapioca 1967-68



GOVERNMENT OF KERALA

1969

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## FOREWARD

This report is the 4th in the series of "Consolidated Estimation Surveys". The report is prepared on the recommendations made in the conference of the State Statistic Crop Estimation Surveys to fall in line with the reports at India level. The report consists of an introductory part and 11 tables giving a detailed picture of the crop estimation surveys on principal food crops conducted by the Bureau of Economics & Statistics during the year 1967-1968.

Bureau of Economics &  
Statistics, Trivandrum,  
17-1-1969.

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# CONSOLIDATED RESULTS OF CROP ESTIMATION SURVEYS ON PADDY AND TAPIOCA 1967-68.

## 1. Introduction

This review attempts to bring together the results of C. C. surveys carried out during 1967-68 on Rice and Tapioca in Kerala State. This review is the fourth of its kind and it includes information on yield estimates of Rice and Tapioca and the driage ratios for Rice at the District level.

## 2. Objective coverage and design

The primary object of these surveys is to obtain through crop cutting experiments fairly precise estimates of average yield per hectare of the crop mentioned above for each taluk/district and these results are used to estimate the average yield and total out-turn of the crop for the State.

A crop cutting experiment usually consists of locating and marking of a plot of specified size by the principle of random sampling in randomly chosen fields, and harvesting, threshing and recording the weight of produce within it. In a sub-sample of experiments, further processing of the harvested produce is also done for determining the percentage recovery of dry grain.

The survey is conducted in respect of two important seasonal crops in the State and covers the nine Districts of the State. The criterion for selecting these two crops is that these are the two important food-crops in the State.

The Statistical design adopted for crop cutting survey on paddy is a stratified multi-stage random sampling design with the taluk as stratum, villages within a stratum as first stage sampling units, fields within each selected village as sampling units at the second stage and finally square plots of specified size (5 x 5 metres) in the selected fields as the ultimate units of sampling. Six villages are chosen in each stratum (Taluk) by simple random sampling method and in each such village 3 plots are selected using systematic sampling method. Thus in a taluk 18 experiments are conducted during each paddy season.

In the case of tapioca the survey is conducted in each taluk where the crop is grown. From the list of Census Villages selected for the 1st round of Land Utilisation Survey 1967-68, 5 Census Villages where tapioca is largely cultivated are purposively selected. 3 experiments are conducted from each of these 5 Census Villages. In each selected village the list of dry land plots is used as the frame for the survey. These plots are selected by simple random sampling method. It is essential that in each selected plot there should be a minimum area of 2 x 2 metres under tapioca. If a selected plot contains more than one patch under Tapioca satisfying the required minimum area one patch will be selected by simple random sampling method.

### 3. Sample size

The district-wise number of experiments planned for crop cutting survey on paddy during the year under review is given in table-1. The total number of experiments planned for the survey during 1967-68 is 2323. The season-wise numbers are as given below:

Total number of experiments planned;

Period	Virippu (Autumn)	Mundakan (Winter)	Punja (Summer)	Total
1967-68	891	903	529	2323

The total number of experiments planned in the case of tapioca during the year 1967-68 is 750. The District-wise number of experiments planned for the survey are given in Table-8.

### 4. Field organisation

The field work of the surveys comprising selection of fields, laying out of plots for crop cutting experiments, harvesting the crop and recording the weight of produce after the usual processing is carried out by the full-time staff appointed by this Department. The planning of the surveys, the training of the field staff and a quality check of their work and the Statistical analysis of the data collected are all done by the headquarters office of the Bureau. The field work is attended to by the Investigators under the immediate supervision of Statistical Inspectors and District Statistical Officers.

### 5. Training

A programme of training is usually arranged every year to impart refresher training to the Investigators. The Supervisory Officers are also associated with the training programme.

### 6. Response

The number of experiments planned, analysed and the percentage response regarding paddy are given in Table-3 and the corresponding figures for Tapioca are given in Table-9. The response for crop cutting survey on Tapioca in several districts is found to be very poor. The reason that can be given in this context is that as this survey was conducted along with the land utilisation survey the Investigators could not make frequent contacts with the selected cultivators at the harvest period with the result that harvests in many plots were over when the Investigator visited the plot.

### 7. Supervision

The supervision of the field work is done by the Statistical Inspectors, and District Statistical Officers. Since 1967-68 a fixed programme for inspection at harvest stage in the case of paddy crop cutting experiments has been arranged so that in each taluk 7 out of 18 experiments are to be inspected at harvest stage during each paddy season, at the rate of 6

experiments by the Statistical Inspector, and one by the District Statistical Officer. Besides, they have to conduct as many pre-harvest and post-harvest inspections as possible. 24% of Autumn 36% of Winter and 30% of Summer crop cutting experiments have been inspected at the harvest stage. The National Sample Survey staff also conduct harvest stage inspections in State samples. The details of harvest stage inspections and the independent estimate of average yield of paddy based on harvest stage inspection are given in Table-2.

### 8. Results

The survey estimates of average yield of paddy and total production together with sampling error of paddy are given in table-4.

In two districts which are covered by Intensive Agricultural District Programme in the State viz. Alleppey and Palghat, the mean yield of dry paddy obtained on the basis of experiments conducted under State series and under I. A. D. P. series are pooled together to get the final production of rice in those two districts. The yield rates and production obtained through the two series of experiments and the pooled estimates thereof are given in table-5.

The estimates of the yield rate and the total production of tapioca (raw) are given in Table-10. The sampling error for the average yield of Tapioca has not been worked out.

The survey results have been adopted for framing the final estimates of production. The results of the experiments conducted for ascertaining the percentage recovery of paddy (dry grain) from the harvested produce are also given in Table-6. The ratios are, in practice, worked out and applied at the Taluk level.

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

The statements showing the percentage of area under different improved agricultural practices during each of the 3 paddy seasons are given in Tables 7.1, 7.2 and 7.3.

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TABLE 1

Crop coverage and sample size—Rice.

District	Total number of experiments planned 1967-68			
	Autumn	Winter	Summer	Total
1	2	3	4	5
Trivandrum	72	72	40	184
Quilon	108	108	60	276
Alleppey	126	108	108	342
Kottayam	81	93	63	237
Ernakulam	126	108	90	324
Trichur	90	90	78	258
Palghat	108	108	18	234
Kozhikode	90	108	18	216
Cannanore	90	108	54	252
STATE:	891	903	529	2323



TABLE 2

SUPERVISION ON FIELD WORK—RICE—1967-68.

Independent estimate of mean yield of paddy based on harvest stage inspection 1967-68.

District	Season	No. of experiments			Mean yield rate of paddy Kgrms/Hect.		Drriage ratio used for cols. 5 and 6
		Planned for inspection at harvest stage	Inspection at harvest stage	Before drriage	After drriage		
1	2	3	4	5	6		
Trivandrum	Autumn	20	14	2575	2266	880	
	Winter	36	29	2844	2471	869	
	Summer	15	9	1550	1398	900	
Quilon	Autumn	30	20	2317	2120	915	
	Winter	54	37	2943	2708	920	
	Summer	25	20	2247	1986	884	
Alleppey	Autumn	35	22	2225	2156	969	
	Winter	54	34	1857	1636	881	
	Summer	30	29	2680	2439	910	

**TABLE 2 (Concl'd.)**

1	2	3	4	5	6	7
<b>Kottayam</b>	Autumn Winter Summer	25 44 15	20 18 5	2129 1947 2305	1818 1672 2010	854 859 872
<b>Ernakulam</b>	Autumn Winter Summer	35 54 20	27 34 18	2267 2349 2639	2111 2173 2386	931 925 904
<b>Trichur</b>	Autumn Winter Summer	25 45 35	28 43 31	2171 2460 2843	1863 2276 2678	861 925 942
<b>Palghat</b>	Autumn Winter Summer	30 54 5	30 30 ..	2857 2567 ..	2571 2416 ..	900 941 ..
<b>Kozhikode</b>	Autumn Winter Summer	25 54 5	18 28 5	1537 1817 2856	1422 1672 2702	925 920 946
<b>Cannanore</b>	Autumn Winter Summer	25 54 27	21 49 22	2121 2200 1859	1941 1916 1655	915 871 890
<b>STATE</b>	Autumn Winter Summer	250 449 177	200 302 139	2320 2404 2602	2104 2173 2355	907 904 905

TABLE 3  
Response—Crop—Paddy—1967-68

District	Autumn				Winter				Summer				Total
	No. of experi- ments		Percentage response	No. of experi- ments		Percentage response	No. of experi- ments		Percentage response	No. of experi- ments		Percentage response	
	Plan- ned	Analy- sed		Plan ned	Analy- sed		Plan- ned	Analy- sed		Plan- ned	Analy- sed		
1	2	3	4	5	6	7	8	9	10	11	12	13	
Trivandrum	72	70	97	72	69	96	40	29	73	184	168	91	
Quilon	108	101	94	108	102	94	60	46	77	276	249	90	
Alleppey	126	118	94	108	99	92	108	102	94	342	319	93	
Kottayam	81	74	91	93	80	86	63	60	95	237	214	90	
Ernakulam	126	110	87	108	94	87	90	81	90	324	285	88	
Trichur	90	87	97	90	84	93	78	74	95	258	245	95	
Palghat	108	107	99	108	103	95	18	9	50	234	219	94	
Kozhikode	90	83	92	108	101	94	18	14	78	216	198	92	
Cannanore	90	87	97	108	102	94	54	54	100	252	243	96	
STATE	891	837	94	903	834	92	529	469	89	2323	2140	92	

TABLE 4  
Yield estimate—Rice—1967-68

District	Area under crop (Hect.)		No. of experiments	Response (%)	Estimated yield per Hectare Paddy (Kg.)	Sampling error (%)	Total production (Rice in Tonnes)
	Total	Coverage (%)					
1	2	3	4	5	6	8	9
Trivandrum	18,966	100	72	70	97	6.11	24,683
	19,769	..	72	69	96	4.53	31,269
	668	..	40	29	73	13.89	714
Quilon	21,448	100	108	101	94	4.10	29,215
	27,862	..	108	102	94	3.49	45,089
	918	..	60	46	77	10.66	1,137
Alleppey	22,876	100	126	118	94	5.15	27,135
	17,103	..	108	99	92	5.63	19,955
	41,729	..	108	102	94	4.89	71,177
Kottayam	8,051	100	81	74	91	5.67	9,796
	18,654	..	93	80	86	5.61	21,854
	14,282	..	63	60	95	8.29	18,109
Ernakulam	42,161	100	126	110	87	4.72	54,566
	36,515	..	108	94	87	4.68	49,197
	7,311	..	90	81	90	6.09	9,868



TABLE 5

## Pooled estimate of mean yield and production of Rice

District	2	Autumn 1967		Winter 1968		Summer 1968		Total	
		Mean yield of dry paddy Kgs./Hect.	Production of Rice in Tonnes	Mean yield of dry paddy Kg./Hect.	Production of Rice in Tonnes	Mean yield of dry paddy Kgs./Hect.	Production of Rice in Tonnes	Mean yield of dry paddy Kg./Hect.	Production of Rice in Tonnes
1		3	4	5	6	7	8	9	10
Alleppey	State series	1805	27135	1776	19955	2596	71177	2203	118267
	I. A. D. P. series	1635	24573	1850	20788	2800	76765	2275	122126
	Pooled	1684	25310	1830	20563	2758	75613	2263	121486
Palghat	State series	2462	187090	2602	131485	2254	4517	2513	323092
	I. A. D. P. Series	2592	196998	2683	135577	..	..	2628	332575
	Pooled	2540	193046	2604	134617	..	..	2589	327663
STATE:	State Series	1972	516892	2168	466361	2349	128337	2090	1111590
	Pooled	1987	521023	2185	470101	2431	132773	2113	1123897

TABLE 6  
Data on Drirage (percentage recovery on Final From Harvested produce) and yield from Irrigated and unirrigated plots—Rice 1967-68.

District	Drirage experiment			Data on irrigation		Unirrigated plots	
	Number planned	Number analysed	Percentage	Irrigated plots		Number	Yield dry paddy Kgs./Hect.
				Number	Yield dry paddy Kgs./Hect.		
1	2.	3	4	5	6	7	8
TRIVANDRUM							
Autumn	12	10	89 <sup>3</sup>	38	2035	32	1799
Winter	12	11	92	35	2652	34	2152
Summer	4	4	100	21	1962	8	1523
QUILON							
Autumn	18	16	89	3	1782	98	1991
Winter	18	18	100	12	2145	90	2513
Summer	7	7	100	29	2139	17	1535
ALLEPPEY							
Autumn	21	14	67	2	2597	116	1880
Winter	18	14	78	11	1625	88	1593
Summer	18	14	78	61	2188	41	2432
KOTTAYAM							
Autumn	14	14	100	1	1418	73	1735
Winter	16	14	88	52	1993	28	1983
Summer	10	10	100	53	2152	7	1758

TABLE 6—(concl'd.)

1	2	3	4	5	6	7	8
<b>ERNAKULAM</b>							
Autumn	21	18	86	20	1647	90	2107
Winter	18	14	78	56	1976	38	2017
Summer	15	12	80	64	2058	17	2242
<b>TRICHUR</b>							
Autumn	15	15	100	2	4622	85	1378
Winter	15	15	100	27	2050	57	1843
Summer	13	13	100	66	2694	8	2498
<b>PALGHAT</b>							
Autumn	18	17	94	60	2642	47	2023
Winter	18	18	100	86	2518	17	2247
Summer	3	..	..	6	2016	3	2727
<b>KOZHIKODE</b>							
Autumn	15	15	100	..	..	83	1369
Winter	18	18	100	19	1800	82	1520
Summer	3	2	67	14	2274	..	..
<b>CANNANORE</b>							
Autumn	15	15	100	17	1757	70	1856
Winter	18	17	94	61	1749	41	1756
Summer	9	9	100	36	1851	18	1378
<b>STATE</b>							
Autumn	149	134	90	143	2237	694	1791
Winter	151	139	92	359	2127	475	1919
Summer	82	71	87	350	2202	119	2028



TABLE 7.1

## Statement showing the percentage of area under different improved agricultural practices

State : KERALA

Crop : PADDY

Season and year : AUTUMN 1967

District	Percentage of area under									Remarks
	Improved Seed	Local seed	Chemical fertiliser	Other manure	Not manured	Treatment of insecticides	Untreated by insecticides	8	9	
1	2	3	4	5	6	7	8	9		
Trivandrum	21.23	78.77	94.21	5.79	..	22.86	77.14			
Quilon	3.98	96.02	66.03	33.97	..	1.74	98.26			
Alleppey	8.86	91.14	51.45	45.82	2.73	9.63	90.37			
Kottayam	..	100.00	76.24	23.76	..	9.62	90.38			
Ernakulam	14.64	85.36	62.09	24.13	13.78	9.30	90.70			
Trichur	2.44	97.56	26.06	69.62	4.32	54.64	45.36			
Palghat	1.80	98.20	46.87	52.23	0.90	11.07	88.93			
Kozhikode	1.26	98.74	21.15	74.34	4.51	5.17	94.83			
Cannanore	0.82	99.18	22.36	70.69	6.95	2.65	97.35			
STATE	4.38	95.62	42.34	53.48	4.18	12.72	87.28			

TABLE 7.2

**Statement showing the percentage of area under different improved agricultural practices**

Season and year : WINTER 1968

Crop : PADDY

State : KERALA

District	Percentage of area under									Remarks
	2	3	4	5	6	7	8	9		
	Improved seed	Local seed	Chemical fertiliser	Other manure	Not manured	Treatment of insecticides	Untreated by pesticides			
1										
Trivandrum	21.63	78.37	35.22	3.19	1.59	52.41	47.59			
Quilon	27.20	72.80	87.10	11.02	1.88	12.76	87.24			
Alleppey	39.11	60.89	74.13	23.36	2.51	30.76	69.24			
Kottayam	4.77	95.23	80.10	12.77	7.13	84.50	15.50			
Ernakulam	12.61	87.39	64.25	32.63	3.12	42.61	57.39			
Trichur	4.85	95.15	49.79	39.04	11.17	36.93	63.07			
Palghat	16.21	83.79	62.27	37.73	..	19.32	80.68			
Kozhikode	2.04	97.96	43.16	55.80	1.04	13.94	86.06			
Cannanore	0.87	99.13	39.90	53.60	6.50	28.30	71.70			
STATE	12.39	87.61	61.58	34.53	3.89	31.04	68.96			

TABLE 7.3  
Statement showing the percentage of area under different improved agricultural practices  
STATE—KERALA  
CROP—PADDY SEASON AND YEAR—SUMMER 1968

District	Percentage of area under									Remarks
	2	3	4	5	6	7	8	9		
	Improved seed	Local seed	Chemical fertiliser	Other manure	Not manured	Treatment of insecticides	Untreated by pesticides			
1										
Trivandrum	36.05	63.95	82.84	17.16	..	41.52	58.48			
Quilon	8.13	91.87	86.13	13.87	..	16.27	83.73			
Alleppey	15.57	84.43	97.92	2.08	..	94.54	5.46			
Kottayam	5.41	94.59	100.00	..	..	98.55	1.45			
Ernakulam	26.58	73.42	70.70	29.30	..	43.79	56.21			
Trichur	2.50	97.50	64.99	30.10	4.91	47.59	52.41			
Palghat	11.11	88.89	11.11	88.89	..	..	100.00			
Kozhikode	7.14	92.86	78.54	21.46	..	71.40	28.60			
Cannanore	..	100.00	50.48	35.64	13.88	14.37	85.60			
STATE	12.79.	87.21	90.05	9.18	0.77	78.65	21.35			

TABLE 8

Crop Coverage and sample size — Tapioca

District	Total number of experiment
	Planned 1967-68
Trivandrum	60
Quilon	90
Alleppey	75
Kottayam	105
Ernakulam	90
Trichur	75
Palghat	90
Kozhikode	90
Cannanore	75
Total number of experiments planned	750

TABLE 9

Response—Crop—Tapioca 1967-68

District	1967-68		Percentage response
	No. of experiments		
	Planned	Analysed	
Trivandrum	60	44	73
Quilon	90	78	87
Alleppey	75	51	68
Kottayam	105	81	77
Ernakulam	90	57	63
Trichur	75	50	67
Palghat	90	60	67
Kozhikode	90	56	62
Cannanore	75	66	88
STATE	750	543	72

TABLE 10  
Yield Estimates—Tapioca (1967-68)

District	Area under Crop		No. of experiments		Response percentage	Estimated yielding error	Total production	
	Total area (Hectares)	Coverage (%)	Planned	Analysed				
1	2	3	4	5	6	7	8	9
Trivandrum	72735	100	60	44	73	14.33	1042293	
Quilon	94165	..	90	78	87	13.73	1292885	
Alleppey	25113	..	75	51	68	13.10	328980	
Kottayam	32526	..	105	81	77	18.37	597503	
Ernakulam	23072	..	90	57	63	12.73	293706	
Trichur	10278	..	75	50	67	11.38	116964	
Palghat	10757	..	90	60	67	12.85	138227	
Kozhikode	22214	..	90	56	62	12.42	275898	
Cannanore	6786	..	75	66	88	16.49	111901	
STATE	297646	..	750	543	72	14.10	4198357	

TABLE 11  
Statement of Inspection on Crop Cutting Survey  
on Tapioca—1967-68.

1	2	3	4
Name of District	No. of cuts conducted	No. of cuts inspected	% of inspection
Trivandrum	44	6	14
Quilon	78	18	23
Alleppey	51	2	4
Kottayam	81	17	21
Ernakulam	57	17	30
Trichur	50	19	38
Palghat	60	Nil	..
Kozhikode	56	3	5
Cannanore	66	6	9
STATE	543	88	16

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