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GOVERNMENT OF KERALA

CONSOLIDATED RESULTS OF
CROP ESTIMATION SURVEYS ON
PADDY AND TAPIOCA

1970 - '71



GOVERNMENT OF KERALA

1974

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TRIVANDRUM, 1974.

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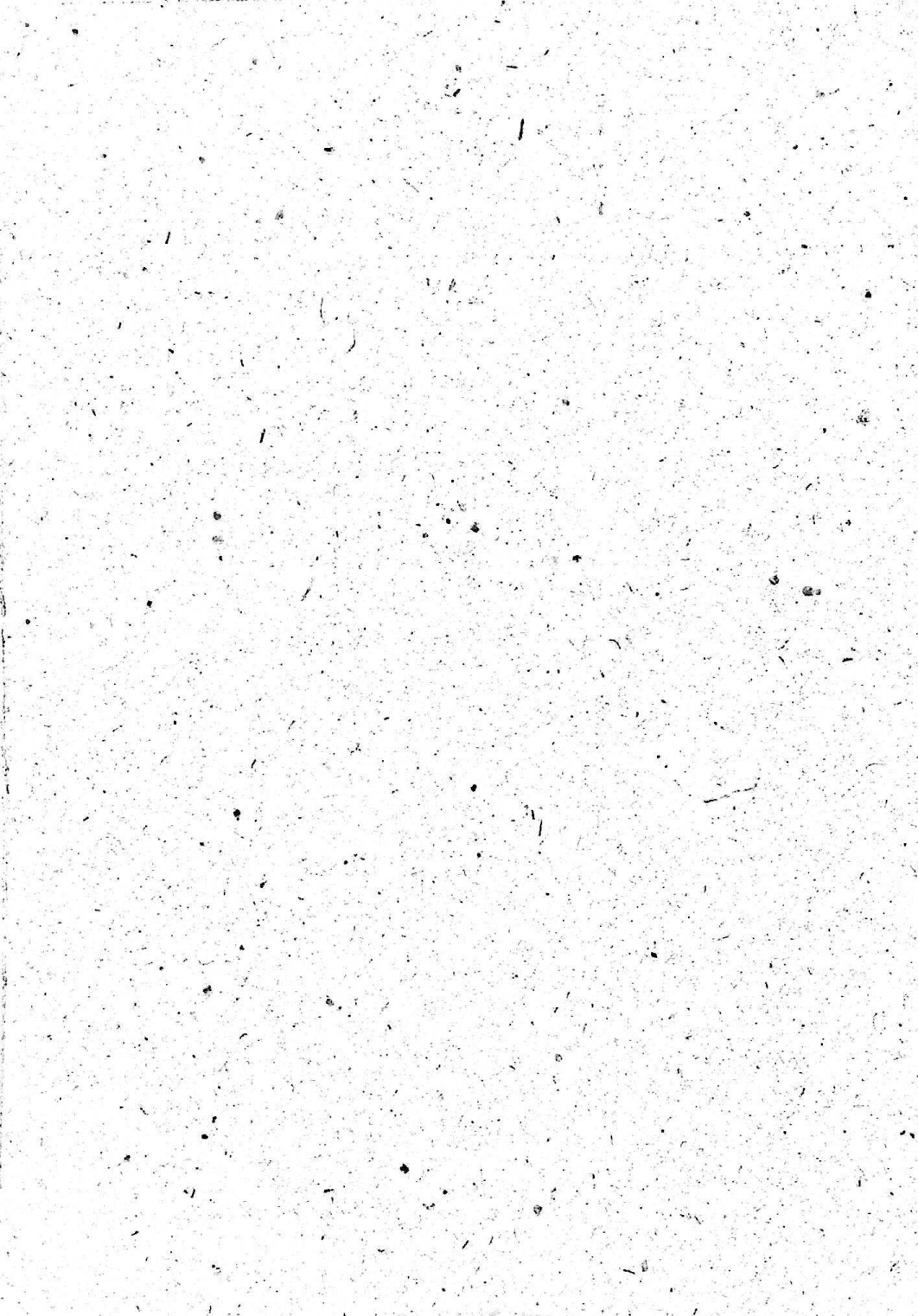


FOREWORD

This report is the 7th in the series of "Consolidated Review of Crop Estimation Surveys". The report is prepared on the basis of the recommendations made in the conference of the State Statisticians in charge of Crop Estimation Surveys to fall in line with the reports published at the All India level. The report consists of an introductory part and nine tables giving a detailed account of the crop estimation surveys on paddy and tapioca conducted by the Bureau of Economics and Statistics during the year 1970-71.

Trivandrum,
- 1972.

N. GOPALAKRISHNAN NAIR,
Director.



CONSOLIDATED RESULTS OF CROP ESTIMATION SURVEY ON PADDY AND TAPIOCA

1970-71

1. *Introduction.*

This review aims at bringing together the results of crop cutting surveys carried out during 1970-71 on paddy and tapioca in Kerala State. This review contains detailed information on the yield estimates of rice and tapioca, and the drriage 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 precise estimates of average yield per hectare of the crops mentioned above for each taluk/district and to estimate the average yield and total output of the crops 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 a randomly selected field, and harvesting, threshing and recording the weight of produce obtained from that plot. 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 all the ten 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 multistage random sampling design with the taluk as stratum, village within a stratum as first stage sampling unit, field within each selected village as the sampling unit at the second stage, and finally square plot of specified size (5 m × 5 m) in the selected field as the ultimate unit of sampling. Six villages are chosen in each stratum (taluk) by simple random sampling method, and from each selected village a sample of three plots is taken using systematic sampling method. Thus in a taluk, eighteen experiments are conducted during each paddy crop season.

In the case of tapioca, the survey is conducted in all the taluks where the crop is grown. From the list of census villages selected for the First Round of Land Utilisation Survey, 1970-71, five census villages where tapioca is largely cultivated are purposively selected. Three experiments are conducted in each of these five 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 m × 2 m 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 total number of experiments planned for the survey on paddy during 1970-71 was 2436. The season-wise split up of the total number of experiments is given below:

Period	No. of experiments planned.			Total
	Virippu (Autumn)	Mundakan (Winter)	Punja (Summer)	
1970-71	930	921	585	2436

The district-wise split up of the total 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 in the case of tapioca during the year 1970-71 was 780. The district-wise split up of the total number of experiments planned for the survey is given below :

CROP COVERAGE AND SAMPLE SIZE-TAPIOCA

Year: 1970-71

Sl. No.	District	Total number of experiments planned
1	Trivandrum	60
2	Quilon	90
3	Alleppey	75
4	Kottayam	120
5	Ernakulam	90
6	Trichur	75
7	Palghat	75
8	Malappuram	60
9	Kozhikode	60
10	Cannanore	75
	State	780

4. *Field organisation.*

The field work of the surveys comprising of selection of fields, laying out of plots for crop cutting experiments, harvesting the crops and recording the weight of the produce after the usual processing is carried out by the full time

5. Training

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

6. Response

The number of experiments planned, analysed and the percentage response in respect of paddy crop are given in Table 3, and the corresponding figures for Tapioca in Table 8.

7. Supervision

The Supervision of field work is done by the Statistical Inspectors and the District Statistical Officers. Since 1967-68, a fixed programme for inspection at harvest stage in the case of crop cutting experiments on paddy has been arranged so that in each taluk, seven out of eighteen experiments are to be inspected at harvest stage during each paddy crop season, at the rate of six experiments by the Statistical Inspector, and one by the District Statistical Officer. Besides, they have to conduct as many preharvest and post-harvest inspections as possible. During Virippu (Autumn) and Mundakan (Winter) crop seasons 22% each of the crop cutting experiments have been inspected at harvest stage. Only 17% of the experiments have been inspected at harvest stage during the Punja (Summer) crop season. The Staff of the National Sample Survey Organisation have also conducted harvest stage inspections and the independent estimates 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 the total production together with sampling error of paddy are given in Table 4.

In two districts which are covered by the 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 these two districts. The yield rate 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 9. The sampling error of 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 experiments conducted for ascertaining the percentage recovery of dry paddy (dry grains) from the harvested produce are also given in Table 6.

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 three paddy crop seasons are given in Tables 7.1, 7.2 and 7.3.

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CROP II—TAPIOCA

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TABLE I

Crop coverage and sample size—Rice (1970-71)

District	Total number of experiments planned for the year			
	Autumn	Winter	Summer	Total
(1)	(2)	(3)	(4)	(5)
Trivandrum	72	72	42	186
Quilon	108	108	60	276
Alleppey	126	108	108	342
Kottayam	84	93	63	240
Ernakulam	126	108	90	324
Trichur	90	90	78	258
Palghat	90	90	18	198
Malappuram	72	72	36	180
Kozhikode	72	72	36	180
Cannanore	90	108	54	252
STATE	930	921	585	2436

TABLE II

Supervision of field Work—Rice (1970-71) independent estimate of mean yield of paddy based on harvest stage inspection 1970-71

District	Season	No. of experiments		Mean yield rate of paddy (Kg./Hect.)		Driage ratio used for columns (5) & (6)
		Planned for inspection at harvest stage	Inspection at harvest stage	Before driage	After driage	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trivandrum	Autumn	28	26	2206	1992	0.903
	Winter	28	22	3067	2766	0.902
	Summer	14	7	1047	901	0.861
Quilon	Autumn	42	29	2426	2082	0.858
	Winter	42	30	2966	2702	0.911
	Summer	14	11	3355	2865	0.854
Alleppey	Autumn	42	12	1694	1538	0.908
	Winter	42	4	1432	1323	0.924
	Summer	42	14	3357	3088	0.920

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Kottayam	Autumn	35	29	2190	1956	0.893
	Winter	35	27	2716	2493	0.918
	Summer	21	14	3503	3272	0.934
Ernakulam	Autumn	49	29	2374	2101	0.885
	Winter	42	28	2407	2205	0.916
	Summer	35	16	2818	2547	0.904
Trichur	Autumn	35	15	2499	2332	0.833
	Winter	35	25	2094	1956	0.934
	Summer	35	22	3562	3263	0.916
Palghat	Autumn	35	15	2499	2332	0.933
	Winter	35	18	2411	2182	0.905
	Summer	..	..	..	..	..
Malappuram	Autumn	28	18	2433	2134	0.877
	Winter	28	9	2008	1775	0.884
	Summer	14	7	3666	3274	0.893
Kozhikode	Autumn	21	20	961	869	0.904
	Winter	28	16	2083	1891	0.908
	Summer	7	4	2361	2149	0.910
Cannanore	Autumn	35	8	1996	1733	0.868
	Winter	42	21	2303	2066	0.897
	Summer	14	2	2700	2398	0.888
STATE	Autumn	350	207	2241	1986	0.886
	Winter	357	200	2368	2155	0.910
	Summer	196	97	3391	3055	0.901

TABLE III
Response percentages Crop—Paddy Year 1970—71

District	Autumn				Winter				Summer				Total				
	No. of experi-ments	Percen- tage	No. of experi-ments	Percen- tage	No. of experi-ments	Percen- tage	No. of experi-ments	Percen- tage	No. of experi-ments	Percen- tage	No. of experi-ments	Percen- tage	No. of experi-ments	Percen- tage	No. of experi-ments	Percen- tage	
																	Plan- Anal- ysed
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
Trivandrum	72	66	92	72	56	78	42	35	83	186	157	84					
Quilon	108	96	89	108	99	92	60	36	60	276	231	84					
Alleppey	126	103	82	108	77	71	108	76	70	342	256	75					
Kottayam	84	82	98	93	90	97	63	49	78	240	221	92					
Ernakulam	126	109	86	108	91	84	90	75	83	324	275	85					
Trichur	90	65	72	90	80	89	78	70	90	258	215	83					
Palghat	90	73	81	90	74	82	18	..	..	198	147	74					
Malappuram	72	60	83	72	56	78	36	32	89	180	148	82					
Kozhikode	72	44	61	72	64	89	36	23	64	180	131	73					
Cannanore	90	82	91	108	101	93	54	41	76	252	224	89					
STATE	930	780	84	921	788	85	585	437	75	2436	2005	82					

TABLE IV
Yield Estimate—Rice 1970-71

District	Season	Area under crop			No. of Experiments		Response %	Estimated yield in kg./hect. of paddy.	Sampling Error %	Total production of rice in Tonnes
		Total Coverage	Planned	Analyzed	(5)	(6)					(7)	(8)	(9)	(10)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
Trivandrum	Autumn	18462	100	72	66	92	2158	3.38	26177	
	Winter	20201	100	72	56	78	2232	6.05	29630	
	Summer	833	100	42	35	83	1939	4.95	1061	
Quilon	Autumn	21324	100	108	96	89	1878	2.24	26316	
	Winter	29340	100	108	99	92	2657	4.29	51220	
	Summer	1220	100	60	36	60	2681	4.03	2149	
Alleppey	Autumn	20554	100	126	103	82	1717	4.08	23189	
	Winter	22982	100	108	77	71	2059	4.13	31098	
	Summer	41626	100	108	76	70	4082	4.18	111640	
Kottayam	Autumn	7898	100	84	82	98	1984	5.04	10296	
	Winter	24679	100	93	90	97	2565	5.61	41589	
	Summer	17456	100	63	49	78	2938	6.19	33702	
Ernakulam	Autumn	40993	100	126	109	86	1925	5.25	51848	
	Winter	42394	100	108	91	84	2191	3.97	61029	
	Summer	10304	100	90	75	83	2413	6.34	16333	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Trichur	Autumn	39112	100	90	65	72	2036	8.64	52317
	Winter	62411	100	90	80	89	2103	3.42	86224
	Summer	13744	100	78	70	90	2753	6.79	24856
Palghat	Autumn	102291	100	90	73	81	2489	4.46	167276
	Winter	79095	100	90	74	82	2556	7.59	132820
	Summer	...	...	18	...	...	...	...	...
Malappuram	Autumn	52019	100	72	60	83	1969	6.91	67303
	Winter	35510	100	72	56	78	1943	5.87	45343
	Summer	4303	100	36	32	89	2221	11.70	6280
Kozhikode	Autumn	26248	100	72	44	61	984	7.62	16962
	Winter	35654	100	72	64	89	1974	4.76	46242
	Summer	2741	100	36	23	64	2107	18.08	3794
Cannanore	Autumn	65897	100	90	82	91	2045	3.37	88541
	Winter	29705	100	108	101	93	1914	4.70	37346
	Summer	2760	100	54	41	76	2429	5.48	4404
State	Autumn	394798	100	930	780	84	2044	3.03	530225
	Winter	381971	100	921	788	85	2241	2.14	562541
	Summer	94987	100	585	437	75	3272	4.22	204219

TABLE V

Pooled Estimates of mean yield and production of rice
Year 1970-1971.

District	Autumn		Winter		Summer		Total		
	Yield of Rice in Kg./Hect.	Production of Rice in Tonnes.	Yield of Rice in Kg./Hect.	Production of Rice in Tonnes.	Yield of Rice in Kg./Hect.	Production of Rice in Tonnes.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Alleppey -	State Series	1128	23189	1353	31098	2682	111640	1948	165927
	I.A.D.P. "	1070	22011	1160	26665	2123	88362	1609	137038
	Pooled	1089	22376	1246	28628	2249	93641	1698	144645
	State "	1635	167276	1679	132820	..	..	1654	300096
Palghat	I.A.D.P. "	1750	179034	1778	140618	..	..	1762	319652
	Pooled	1728	176750	1766	139683	..	..	1745	316433
	State Series	1343	530225	1472	562541	2150	204219	1488	1296985
State	Pooled	1364	538886	1484	566934	1960	186220	1482	1292040

TABLE 6

Data on diriage [percentage recovery of final produce (dry paddy) from harvested produce] and yield from irrigated and unirrigated plots—Rice 1970-71

District	Season	Diriage experiment			Irrigated plots		Unirrigated plots	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Number planned	Number analysed	Percentage recovery	Number	Yield of dry paddy (kg./Hect.)	Number	Yield of dry paddy (Kg./Hect.)
Trivandrum	Autumn	12	12	100	35	2103	31	2185
	Winter	12	10	83	7	1631	49	2325
	Summer	8	5	63			35	1918
Quilon	Autumn	18	16	89	9	1970	87	1884
	Winter	18	16	89	17	1946	82	2766
	Summer	8	5	63	7	2559	29	2832
Alleppey	Autumn	21	18	86			103	1869
	Winter	18	8	44	26	1105	51	2469
	Summer	18	6	33	1	3269	75	3651
Kottayam	Autumn	15	15	100	15	2061	67	1954
	Winter	16	16	100	15	1933	75	2324
	Summer	12	8	67	1	900	48	3077
Ernakulam	Autumn	21	19	90	19	2146	90	1980
	Winter	18	16	89	16	1740	75	2202
	Summer	15	11	73	4	1859	71	2462

TABLE 6—(contd.)

Data on diarge [percentage recovery of final produce (dry paddy) from harvested produce] and yield from irrigated and unirrigated plots—Rice 1970-71—(Concd.)

District	Season	Diarge experiment			Irrigated plots			Unirrigated plots		
		Number planned	Number analysed	Percentage recovery.	Number	Yield of dry paddy (kg./Hect.)	Number	Yield of dry paddy (Kg./Hect.)	Number	Yield of dry paddy (Kg./Hect.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		
Trichur	Autumn	15	10	67	..	..	65	1833
	Winter	15	15	100	43	1902	37	1935		
	Summer	15	12	80	7	1803	63	3078		
Palghat	Autumn	15	14	93	28	2776	45	2148		
	Winter	15	13	87	19	2049	35	2645		
	Summer	..	..	..	..	..	..	..
Malappuram	Autumn	12	12	100	8	2452	52	1936		
	Winter	12	10	83	26	1846	30	2588		
	Summer	6	6	100	9	1397	23	2493		
Kozhikode	Autumn	9	8	89	..	..	44	992
	Winter	12	11	92	50	1478	14	2480		
	Summer	4	4	100	17	1616	6	3778		
Cannanore	Autumn	15	15	100	4	2089	78	1773		
	Winter	18	18	100	33	1780	68	1823		
	Summer	9	8	89	12	1719	29	2348		
STATE	Autumn	153	139	91	118	2277	662	1861		
	Winter	154	133	86	252	1712	535	2349		
	Summer	95	65	68	58	1773	379	2870		

TABLE 7.1

Crop Estimation Survey

Statement showing the percentage of area under different improved agricultural practices

Crop : Paddy

Season and year : Autumn 1970

District	Percentage of area under								Remarks
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		(9)
	Improved seed	Local seed	Chemical fertilisers	Other manures	Not manured	Treatment of insecticides	Untreated by insecticides		
Trivandrum	27.27	72.73	83.33	15.15	1.52	45.45	54.55		
Quilon	11.46	88.54	63.54	36.46	..	7.29	92.71		
Alleppey	7.77	92.23	46.60	44.66	8.74	9.71	90.29		
Kottayam	63.41	36.59	92.68	4.88	2.44	65.85	34.15		
Ernakulam	33.03	66.97	60.55	22.08	17.43	40.37	59.63		
Trichur	18.46	81.54	46.15	53.85	..	66.15	33.85		
Palghat	13.70	86.30	68.49	30.14	1.37	13.70	86.30		
Malappuram	26.87	73.13	61.67	36.67	1.66	31.67	68.33		
Kozhikode	9.09	90.91	18.18	81.82	..	2.27	97.73		
Cannanore	10.96	89.04	50.00	50.00	..	1.22	98.78		
STATE	22.44	77.56	60.51	35.26	4.23	28.59	71.41		

TABLE 7.2

Crop Estimation Survey

Statement showing the percentage of area under different improved agricultural practices

State : Kerala
Crop : Paddy
Season and year : Winter 1971

District	Percentage of area under						Remarks		
	(1)	(2)	(3)	(4)	(5)	(6)		(7)	(8)	(9)
	Improved seed	Local seed	Chemical fertilisers	Other manure	Not manured	Treatment of insecticides	Untreated by insecticides		
Trivandrum	39.13	60.87	82.14	17.86	..	52.57	46.43		
Quilon	1.27	98.73	84.85	15.15	..	10.10	89.90		
Alleppey	3.89	96.11	66.23	32.47	1.30	74.02	25.98		
Kottayam	31.96	68.04	71.11	22.22	6.67	65.56	34.44		
Ernakulam	19.76	80.24	70.33	29.67	..	29.67	70.33		
Trichur	16.43	83.57	47.50	46.25	6.25	40.00	60.00		
Palghat	4.72	95.28	75.68	24.32	..	14.86	85.14		
Malappuram	7.32	82.68	53.57	46.43	..	41.07	58.93		
Kozhikode	2.35	97.65	23.44	51.56	25.00	6.25	93.75		
Cannanore	9.45	90.55	72.28	27.72	..	47.52	52.48		
STATE	11.95	88.05	66.12	33.76	0.12	32.99	67.01		

TABLE 7.3

Crop Estimation Survey

Statement showing the percentage of area under different improved agricultural practices

State : Kerala

Crop : Paddy

Season and year : Summer 1971

District	Percentage of area under								Remarks
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		(9)
	Improved seed	Local seed	Chemical fertilisers	other manure	Not manured	Treatment of insecticides	Untreated by insecticides		
Trivandrum	41.42	58.58	94.29	5.71	..	74.29	25.71		
Quilon	14.59	85.41	77.78	22.22	..	91.67	8.33		
Alleppey	76.83	23.17	98.68	..	1.32	82.89	17.11		
Kottayam	70.87	29.13	97.96	2.04	..	97.96	2.04		
Ernakulam	28.95	71.05	93.34	5.33	1.33	73.33	26.67		
Trichur	46.69	53.31	90.00	10.00	..	77.14	22.86		
Palghat	..	..	..	..	..	..	..
Malappuram	47.62	52.38	78.13	21.87	..	65.63	34.37		
Kozhikode	29.26	70.74	30.43	69.57	..	26.09	73.91		
Cannanore	8.22	91.78	73.17	26.83	..	56.10	43.90		
STATE	60.38	39.62	86.72	12.82	0.46	75.29	24.71		

TABLE 8

Response—Crop—Tapioca (1970-71)

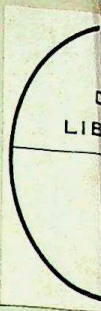
District	1970-71		Percentage response
	No. of experiments		
	Planned	Analysed	
(1)	(2)	(3)	(4)
Trivandrum	60	46	77
Quilon	90	84	93
Alleppey	75	39	52
Kottayam	120	82	68
Ernakulam	90	58	64
Trichur	75	36	48
Palghat	75	31	41
Malappuram	60	57	95
Kozhikode	60	45	75
Cannanore	75	45	60
STATE	780	523	67

TABLE 9

Yield Estimates—Tapioca (1970-71)

District	Area under crop		No. of experiments	Response percentage	per-centage	Estimated yield (Tonnes/Hect.)	Sampling error	Total production (Tonnes)
	Total area (Hect.)	Coverage %							Planned	Analysed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Trivandrum	70084	100	60	46	77	11.91	..	834700
Qulon	90965	"	90	84	93	18.13	..	1649195
Alleppey	19715	"	75	39	52	17.82	..	351321
Kottayam	37120	"	120	82	68	18.60	..	690432
Ernakulam	14500	"	90	58	64	15.36	..	222720
Trichur	8262	"	75	36	48	14.64	..	120956
Palghat	10248	"	75	31	41	10.18	..	104325
Malappuram	24141	"	60	57	95	15.15	..	365736
Kozhikode	11381	"	60	45	75	16.39	..	186535
Cannanore	7136	"	75	45	60	12.79	..	91269
STATE	293552	"	780	523	67	15.73	..	4617189

1051



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