GOVERNMENT OF KERALA

Bureau of Economics and Statistics

Consolidated Results
of
Crop Estimation Survey
on Paddy and Tapioca 1968-69

PRINTED BY THE S.G.P. AT THE GOVERNMENT PRESS,
TRIVANDRUM, 1970.

Consolidated Results
of
Crop Estimation Survey on Paddy and Topioca 1968—69

37/1529/B.

FOREWORD

This Report is the 5th 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 11 tables giving a detailed account of the crop estimation surveys on principal food crops conducted by the Bureau of Economics and Statistics during the year 1968-69.

N. GOPALAKRISHNAN NAIR,
Additional Director.

Bureau of Economics and
Statistics, Trivandrum.

CONSOLIDATED RESULTS OF CROP ESTIMATION SURVEY ON PADDY AND TAPIOCA 1968-69.

1. Introduction.

This review attempts to bring together the results of crop cutting surveys carried out during 1968-69 on rice and tapioca in Kerala State. This review is the fifth in the series 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 precise estimates of average yield per hectare of the crop mentioned above for each taluk/district and to estimate the average yield and total output 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 selected filed 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 all the 9 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 unit, field within each selected village as sampling unit at the second stage and finally square plot of specified size (5 x 5 metres) in the selected field as the ultimate unit of sampling. Six villages are chosen in each stratum (taluk) by simple random sampling method and in each selected village a sample of 3 plots is taken 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 all the taluks where the crop is grown. From the list of census villages selected for the Ist round of Land Utillisation survey 1968-69, 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 total number of experiments planned for the survey on paddy during 1968-69 is 2350. The season-wise number is given below:-

Total number of experiments planned.

Period	*Viruppu (Autumn)*	*Mundakan (Winter)*	*Punja (Summer)*	*Total*
1968-69	894	903	553	2350

The District-wise number of experiments planned for cropcutting 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 1968-69 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 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 staff appointed by this Department. The planning of the survey, 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 Head-quarters 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 Topioca are in table 9. The response for crop cutting survey on Tapioca in Alleppey, Ernakulam and Trichur is found to be comparatively poor. The reasons that can be atributed are that the crop is not available in all the taluks of the above Districts and that as this survey was conducted along with the Land Utilisation Survey the Investigator could not make frequent contacts with the selected cultivators at the harvest period with the result that the harvests in many plots were over when the Investigator visited the plot again.

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 preharvest and post harvest inspections as possible. 30% of Autumn, 28% of winter and 32% of summer crop cutting experiments have been inspected at the harvest stage. The National sample survey staff have also conducted harvest stage Inspections in state samples. The details of 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 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 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 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 dry paddy (dry grains) 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 Table 7.1, 7.2 and 7.3.

LIST OF TABLES AND APPENDICES

Crop I—Paddy

Crop II—Tapioca

TABLE 1

Crop coverage and sample size—Rice

District	Total number of experiments planned 1968-69			Total
	Autumn	Winter	Summer	
(1)	(2)	(3)	(4)	(5)
Trivandrum	72	72	40	184
Quilon	103	108	60	276
Alleppey	126	108	108	342
Kottayam	84	93	63	240
Ernakulam	126	108	90	324
Trichur	90	90	78	258
Palghat	108	108	18	234
Kozhikode	90	108	42	240
Cannanore	90	108	54	252
STATE	894	903	553	2350

TABLE 2

Supervision of field work—Rice 1968-69

Independent estimate of mean yield of paddy based on harvest stage inspection 1968-69.

District	Season	No. of experiments		Mean yield rate of paddy Kgs./Hect.		Driage ratio used for cols. 5 and 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	22	2562	2191	.855
	Winter	28	25	2792	2485	.890
	Summer	18	18	1457	1107	.760
Quilon	Autumn	42	21	2002	1856	.927
	Winter	42	33	2984	2775	.930
	Summer	22	16	1679	1400	.834
Alleppey	Autumn	49	25	1289	1072	.832
	Winter	42	29	1848	1682	.910
	Summer	42	24	3066	2839	.926
Kottayam	Autumn	33	29	2141	1837	.858
	Winter	36	33	2509	2273	.906
	Summer	25	20	2981	2757	.925
Ernakulam	Autumn	42	21	1894	1506	.795
	Winter	42	27	2768	2466	.891
	Summer	31	17	3097	2738	.884
Trichur	Autumn	35	30	2120	1830	.863
	Winter	35	28	2211	1977	.894
	Summer	30	21	2576	2324	.902
Palghat	Autumn	42	19	3110	2861	.920
	Winter	42	23	2322	2157	.929
	Summer	7	7	1008	972	.964
Kozhikode	Autumn	35	34	1603	1462	.912
	Winter	42	8	1676	1582	.944
	Summer	18	13	2222	2118	.953
Cannanore	Autumn	35	33	2388	2173	.910
	Winter	42	26	2232	1980	.887
	Summer	21	14	1749	1585	.906
STATE	Autumn	341	234	2304	2018	.876
	Winter	351	232	2406	2192	.911
	Summer	214	150	2788	2490	.893

TABLE 3

Response—Crop—Paddy 1968—69

District	Autumn			Winter			Summer			Total		
	No. of experiments		Percentage response	No. of experiments		Percentage response	No. of experiments		Percentage response	No. of experiments		Percentage response
	Planned	Analysed		Planned	Analysed		Planned	Analysed		Planned	Analysed	
1	2	3	4	5	6	7	8	9	10	11	12	13
Trivandrum ..	72	63	88	72	66	92	40	34	85	184	163	89
Quilon ..	108	94	87	108	98	91	60	53	88	276	245	89
Alleppey ..	126	102	81	108	89	82	108	86	80	342	277	81
Kottayam ..	84	74	88	93	92	99	63	54	86	240	220	92
Ernakulam ..	126	102	81	108	88	81	90	63	70	324	253	78
Trichur ..	90	72	80	90	81	90	78	69	88	258	222	86
Palghat ..	108	95	88	108	98	91	18	17	94	234	210	90
Kozhikode ..	90	88	98	108	108	100	42	34	81	240	230	96
Cannanore ..	90	89	99	108	99	92	54	54	100	252	242	96
STATE ..	894	779	87	903	819	91	553	464	84	2350	2062	88

TABLE—4

Yield Estimate—Rice—1968-69.

District	Season	Area under crop (hectares)		No. of experiment		Response%	Estimated yield per hectar in paddy(Kgs.)	Sampling error%	Total production (rice in tonnes)
		Total	Coverage%	Planned	Analysed				
1	2	3	4	5	6	7	8	9	10
TRIVANDRUM	Autumn	18834	100	72	63	88	2118	6.37	26211
	Winter	20280	100	72	66	92	2239	5.00	29838
	Summer	848	100	40	34	85	1153	8.67	506
QUILON	Autumn	21234	100	108	94	87	1859	5.27	26048
	Winter	29109	100	108	98	91	2778	5.62	53136
	Summer	1352	100	60	53	88	1469	7.22	1160
ALLEPPEY	Autumn	22027	100	126	102	81	1230	7.24	17795
	Winter	22982	100	108	89	82	1723	3.48	26023
	Summer	41704	100	108	86	80	2960	10.07	91100
KOTTAYAM	Autumn	7807	100	84	74	88	1897	6.17	9729
	Winter	24555	100	93	92	99	2595	5.08	41870
	Summer	17524	100	63	54	86	2385	10.19	27432
ERNAKULAM	Autumn	41058	100	126	102	81	1764	4.93	47576
	Winter	42487	100	108	88	81	2345	5.42	65464
	Summer	10419	100	90	63	70	1943	5.07	13342
TRICHUR	Autumn	38494	100	90	72	80	1810	8.67	45778
	Winter	61499	100	90	81	90	1970	4.77	79593
	Summer	14378	100	78	69	88	2058	8.70	19440

1	2	3	4	5	6	7	8	9	10
PALGHAT	Autumn	116805	100	108	95	88	2388	4.35	183238
	Winter	89462	100	108	98	91	2666	6.64	156712
	Summer	5085	100	18	17	94	1234	9.64	2597
KOZHIKODE	Autumn	62725	100	90	88	98	1480	6.28	60996
	Winter	61231	100	108	108	100	1694	5.49	68144
	Summer	4199	100	42	34	81	2092	7.46	2750
CANNANORE	Autumn	65805	100	90	89	99	2045	5.33	88411
	Winter	29015	100	108	99	92	1833	4.47	34949
	Summer	2833	100	54	54	100	1797	11.02	3122
STATE	AUTUMN	394879	100	894	779	87	1949	2.26	505779
	WINTER	380620	100	903	819	91	2222	2.30	555731
	SUMMER	98372	100	553	464	84	2453	5.75	153449

TABLE—5

Pooled estimates of mean yield and production of rice.

District		Autumn 1968		Winter 1969		Summer 1969		Total	
1	2	3 Kgs/Hect.	4	5 Kgs/Hect.	6	7 Kgs/Hect.	8	9 Kgs/Hect.	10
Alleppey	State series	1230	17795	1723	26023	2960	81100	2193	124918
	I.A.D.P. Series	1358	19653	1865	28160	3039	83267	2301	131080
	Pooled	1322	19132	1777	26831	3026	82911	2262	128874
Palghat	State series	2388	183235	2666	156712	1234	2597	2467	342544
	I.A.D.P. Series	2587	198528	2976	174919	..	..	2758	373448
	Pooled	2572	197377	2925	171921	..	..	2725	369298
STATE	State series	1949	505779	2222	555731	2453	153449	2116	1214959
	Pooled	2009	521258	2286	571748	2450	158348	2179	1251354

TABLE No. 6

Date on Driage [percentage recovery of final produce (dry paddy) from harvested produce] and yield from irrigated unirrigated plots—Rice—1968-69

District	Season	Driage experiments			Date on irrigation irrigated plots		Unirrigated plots	
		Nubmer planned	Number Analysed	Percentage recovery	Number	Yield dry paddy (Kgs/Hect)	Number	Yield dry paddy (Kgs/Hect)
1	2	3	4	5	6	7	8	9
Trivandrum	Autumn	12	11	92	25	2004	38	2134
	Winter	12	12	100	30	2261	36	2221
	Summer	7	7	100	10	1252	24	1000
Quilon	Autumn	18	16	89	..	..	94	1859
	Winter	18	16	89	4	2035	94	2727
	Summer	8	7	88	33	1555	20	1478
Alleppey	Autumn	21	17	81	..	..	102	1230
	Winter	18	14	78	8	2581	81	1633
	Summer	18	13	72	56	2489	30	2763
Kottayam	Autumn	14	13	93	2	1877	72	1977
	Winter	16	16	100	36	2653	56	2363
	Summer	10	8	80	37	2520	17	2353

TABLE No. 6—(*concld.*)

1	2	3	4	5	6	7	8	9
Ernakulam	Autumn	21	16	76	16	2547	86	1810
	Winter	18	14	78	28	2167	60	2224
	Summer	13	10	77	60	1793	3	1294
Trichur	Autumn	15	13	87	4	1937	68	1532
	Winter	15	14	93	32	2128	49	1548
	Summer	13	13	100	68	1869	1	4438
Palghat	Autumn	18	17	94	57	2646	38	1943
	Winter	18	18	100	54	2958	44	2163
	Summer	3	3	100	17	1234	..	..
Kozhikode	Autumn	15	15	100	..	..	88	1480
	Winter	18	18	100	31	1654	77	1548
	Summer	7	6	86	17	2020	17	2581
Cannanore	Autumn	15	15	100	..	..	89	2045
	Winter	18	17	94	19	1704	80	1748
	Summer	9	9	100	14	2109	40	1638
STATE	Autumn	149	133	89	104	2434	675	1733
	Winter	151	139	92	242	2332	577	2018
	Summer	88	76	86	312	1980	152	1935

TABLE 7.1

Crop Estimation Survey

Statement showing the percentage of area under different improved Agricultural Practices

State: KERALA Crop: PADDY Season and Year: Autumn 1968

District	Percentage of area under							
	Improved	Local	Chemical	Other manure	Not manured	Treatment of insecticide	Untreated by pesticides	Remarks
1	2	3	4	5	6	7	8	9
Trivandrum	16.90	83.10	88.64	11.36	..	23.67	76.33	
Quilon	6.59	93.41	70.28	29.72	..	10.97	89.03	
Alleppey	22.39	77.61	36.91	49.38	13.71	10.11	89.89	
Kottayam	16.33	83.67	83.92	14.30	1.78	33.20	66.80	
Ernakulam	14.30	85.70	53.27	38.48	8.25	22.90	77.10	
Trichur	8.00	92.00	81.53	18.27	0.20	18.89	81.11	
Palghat	8.84	91.16	54.48	44.19	1.33	20.32	79.68	
Kozhikode	3.22	96.78	29.62	49.29	21.09	6.81	93.19	
Cannanore	0.83	99.17	15.60	82.74	1.66	4.97	95.03	
STATE	8.28	91.72	46.12	48.20	5.68	15.07	84.93	

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 1969.

District	Percentage of area under							
	Improved seed	Local seed	Chemical fertiliser	Other manure	Not manured	Treatment of insecticides	Untreated by pesticides	Remarks
1	2	3	4	5	6	7	8	9
Trivandrum ..	30.71	69.29	77.29	16.62	6.09	42.00	58.00	
Quilon ..	31.78	68.22	94.41	5.59	..	50.87	49.13	
Alleppey ..	11.15	88.85	76.88	19.21	3.91	32.92	67.08	
Kottayam ..	27.85	72.15	92.19	1.78	6.03	75.33	24.67	
Ernakulam ..	36.40	63.60	85.00	14.73	0.27	60.61	39.39	
Trichur ..	10.36	89.64	56.42	33.39	10.19	25.59	74.41	
Palghat ..	13.64	86.36	75.50	24.50	..	49.90	50.10	
Kozhikode ..	4.78	95.22	56.93	34.15	8.92	16.60	83.40	
Cannanore ..	9.08	90.92	52.14	47.86	..	37.95	62.05	
STATE ..	16.94	83.06	71.44	24.53	4.03	41.17	58.83	

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 1969.

District	Percentage of area under							
	Improved seed	Local seed	Chemical fertiliser	Other manure	Not manured	Treatment of insecticides	Untreated by pesticides	Remarks
1	2	3	4	5	6	7	8	9
Trivandrum ..	93.52	6.48	100.00	..	..	89.27	10.73	
Quilon ..	24.50	75.50	88.34	11.66	..	94.20	5.80	
Alleppey ..	55.52	44.48	100.00	..	..	88.15	11.85	
Kottayam ..	65.32	34.68	95.05	4.95	..	95.22	4.78	
Ernakulam ..	41 79	58.21	96.83	3.17	..	66.71	33.29	
Trichur ..	57.60	42.40	91.65	5.66	2.69	81.89	18.11	
Palghat ..	64.71	35.29	100.00	..	..	64.71	35.29	
Kozhikode ..	30.41	69.59	55.35	44.65	..	55.87	44.13	
Cannanore ..	5.56	94.44	53.86	46.14	..	41.32	58.68	
STATE ..	54.01	45.99	94.43	5.16	0.41	82.98	17.02	

TABLE—8

Crop Coverage and Sample Size—Tapioca

District	Total number of experiments planned 1968-69.
Trivandrum	60
Quilon	90
Alleppey	75
Kottayam	120
Ernakulam	90
Trichur	75
Palghat	75
Kozhikode	90
Cannanore	75
Total No. of experiments planned	750

TABLE—9

Response—Crop—Tapioca 1968-69

District	1968-69		Percentage response
	No. of experiments		
	Planned	Analysed	
1	2	3	4
Trivandrum	60	51	85
Quilon	90	78	87
Alleppey	75	36	48
Kottayam	120	91	76
Ernakulam	90	27	30
Trichur	75	35	47
Palghat	75	51	68
Kozhikode	90	71	79
Cannanore	75	53	71
State	750	493	66

TABLE—10

Yield Estimates—Tapioca 1968-69

District	Area under crop		No. of experiments		Response percentage	Estimated yield Tonnes/Hect.	Sampling error	Total Production (Tonnes)
	Total area (Hectares)	Coverage (%)	Planned	Analysed				
1	2	3	4	5	6	7	8	9
Trivandrum	65385	100	60	51	85	11.43	..	747351
Quilon	100889	100	90	78	87	14.38	..	1450784
Alleppey	22901	100	75	36	48	12.55	..	287408
Kottayam	37838	100	120	91	76	18.29	..	692057
Ernakulam	15181	100	90	27	30	13.76	..	208891
Trichur	7287	100	75	35	47	14.79	..	107775
Palghat	22111	100	75	51	68	13.07	..	288991
Kozhikode	16247	100	90	71	79	12.80	..	207962
Cannanore	8822	100	75	53	71	10.19	..	89896
STATE	296661	100	750	493	66	13.75	..	4081115

1109