



GOVERNMENT OF KERALA

**Report on the Crop Cutting Survey  
on Kumbhom Crop of Paddy  
1958  
in Kerala State**

**Department of Statistics,  
Kerala.**

**REPORT ON THE CROP CUTTING SURVEY OF  
KUMBHAM CROP OF PADDY 1958 IN  
KERALA STATE.**

This report presents a summary of the results of the Crop cutting survey conducted on Kumbham (January-April) crop of paddy 1958 which includes the Mundakan (Winter) and Punja (Summer) crops. The survey covered the whole state with the exception of Peermade, Devicolum and Udumbanchola Taluks where the wet land acreages under paddy cultivation were relatively small. For the dry land paddy cultivation in the above three Taluks reliable estimates based on local enquiries were taken.

A three stage random sampling design with stratification was adopted for the survey. The Taluks formed the strata, Village/Desom the primary units of sampling, fields the secondary units of sampling and square plots of side  $16\frac{1}{2}'$  the ultimate units of sampling. Altogether 306 Villages were selected for Crop Cutting. Six Villages were selected at random from each Taluk. A random sample of five paddy fields was chosen from each selected village/Desom and from each paddy field a square plot of side  $16\frac{1}{2}'$  was located at random and harvested.

The field operations were carried out by the Investigators and Statistical Inspectors. This work was supervised by the District Statistical Officers. Out of 1530 plots selected for harvest only 988 plots could be actually harvested. Crop-cutting experiments could not be conducted in any of the plots selected in Karunagapally, South Wynad, Cannanore, and North Wynad Taluks. In respect of these Taluks estimates of mean yield of dry paddy per acre have been framed on the basis of careful enquiries with local farmers. The perimeter of the selected kandams and the average width of the bunds were also measured in order to estimate the area occupied by bunds and thus get a reliable estimate of the net area under paddy cultivation. The weight of green, winnowed and harvested produce was noted correct to the nearest quarter of a pound. The driage factor for each Taluk was also determined based on actual driage experiments.

The analysis of the data collected by the field staff was done in the Head Office. The results are detailed in tables I to V. Table I gives the acreage under paddy, the number of experiments conducted, the estimated average yield per acre with its standard error, the total out-turn of dry paddy and rice for the Taluks and for the state as a whole. The area covered by the bunds was estimated to be 2.3% of the gross area reported under paddy. The estimated mean yield of dry paddy per acre for the State is the weighted average of the estimated, taluk mean yields; the net area sown in the taluk having been adopted as weights. Table II shows the number, the mean yield per acre and the corresponding standard error for irrigated and unirrigated fields separately. The mean yield from irrigated and unirrigated fields within a taluk are not comparable as the plots

which are included under these categories may not have been in the same villages. The table III sets out the result of the analysis of the variance of yields from irrigated and unirrigated plots. Analysis of variance of plot yields pooled for the state is given in table IV and percentage of reduction due to the driage in the various taluks in table V.

The total production of Rice in respect of the crop under reference in Kerala State is estimated as 481572 tons on the assumption that Rice is 65.7% of the weight of paddy. The mean yield of dry paddy per acre for the state during the reference crop was 17476 lb. and it had a standard error of 29 lb./acre. It is seen from table IV that there is significant difference in yield between Taluk and between Karas in the same Taluk. The production was maximum in the Palghat District.

TABLE (I)

KUMBHAM CROP OF PADDY 1958 IN KERALA STATE.

Statement showing the estimated mean yield per acre and the total out-turn of Dry Paddy &amp; Rice in the different Taluks.

No.	District and Taluk.	No. of experiments.	Net area harvested (acres)	Mean yield of dry paddy (lb. per acre)	Standard Error (lb.)	Total out-turn of dry Paddy (Ton.)	Total out-turn of Rice (Ton.)
1	2	3	4	5	6	7	8
1	Neyyattinkara	28	10668	1591	161	7577	4978
2	Trivandrum	28	10948	2040	354	9971	6551
3	Nedumangad	29	11148	2197	142	10934	7184
4	Chirayinkil	30	11549	2194	248	11312	7432
	TRIVANDRUM DISTRICT	115	44313	2012	..	39734	26145
5	Quilon	30	12409	1730	68	9584	6297
6	Kottarakara	30	14973	2678	164	17901	11761
7	Pathanapuram	29	8485	2445	112	9262	6085
8	Pathanamthitta	30	5508	2262	125	5562	3654
9	Kunnathur	30	10563	1953	128	9210	6051
10	Karunagapally	..	10564	1598	..	7536	4951
	QUILON DISTRICT	149	62502	2116	..	59055	38799

1	2	3	4	5	6	7	8
11	Karthikapally	3	2575	1254	75	14116	9471
12	Mavelikara	7	14200	1684	294	10675	7013
13	Chengannore	30	6838	2076	308	6337	4163
14	Thruvalla	30	13810	1704	97	10505	6902
15	Ambalapuzha	4	1368	1018	201	594	390
16	Kuttanad	30	41158	1791	94	32908	21621
17	Shertalai	30	9222	1756	74	7229	4750
	ALLEPPEY DISTRICT	134	112257	1649	..	82664	54310
18	Changanacherry	23	10878	2032	209	10159	6674
19	Kottayam	23	30397	1823	147	24738	16253
20	Kanjirapally	6	11	1649	55	8	5
21	Peerumade	..	..	..	..	..	..
22	Devikulam and Udumbanchola	..	30000	1794	..	24027	15786
23	Meenachil	17	5712	1856	71	4733	3110
24	Vaikom	25	23391	1335	177	13941	9159
	KOTTAYAM DISTRICT	94	100389	1732	..	77606	50987
25	Thodupuzha	7	7211	2068	98	6657	4374
26	Moovattupuzha	13	10670	2008	208	9565	6284
27	Kunnathunadu	12	30468	1662	72	22606	14852
28	Alwaye	9	25412	1559	117	17686	11620
29	Cochin	20	13380	1375	35	8213	5396
30	Kanayannoor	..	..	..	..	..	..
31	Parur	10	6279	2128	228	5965	3919
	ERNAKULAM DISTRICT	71	93420	1695	..	70692	46445

1	2	3	4	5	6	7	8
32	Cranganore	10	4152	2128	228	3944	2591
33	Mukundapuram	14	44974	1376	29	27627	18151
34	Trichur	8	53142	2378	85	56416	37065
35	Talappally	11	28217	1911	192	24073	15816
36	Chowghat	7	24159	1173	27	12651	8312
	TRICHUR DISTRICT	50	154644	1806	..	-124711	81935
	Travancore-Cochin Region	613	567555	1794	..	454522	298621
37	Chitttur	27	37272	2399	421	39918	26226
38	Palghat	30	32857	2224	162	32615	21428
39	Alathur	22	33300	2643	164	39291	25814
40	Ottapalam	29	30489	1771	180	24105	15837
41	Ponnani	30	18204	1081	103	8785	5772
42	Perinthalmanna	27	32182	1666	58	23935	15726
	PALGHAT DISTRICT	165	184304	2050	..	168649	110803
43	Ernad	24	29583	1974	29	26070	17128
44	Tirur	30	21963	1737	194	14090	9257
45	Kozhikode	28	10612	1239	110	5870	3857
46	Badagara	22	2006	1033	54	895	590
47	Quilandy	26	3837	651	148	1115	733
48	Wynad South	..	32672	1029	..	15009	9860
	KOZHIKODE DISTRICT	130	100673	1404	..	63052	41425

	2	3	4	5	6	7	8
49	Wynad North	..	18202	1750	..	14220	9342
50	Cannanore	..	4391	850	..	1666	1095
51	Telliserry	9	7347	1016	47	3332	2189
52	Taliparamba	22	15434	1149	191	7917	5201
53	Hosdurg	26	9655	1620	215	6983	4588
54	Kasargode	23	16740	1692	130	12645	8308
	CANNANORE DISTRICT	80	71769	1460	..	46763	30723
	MALABAR REGION	375	356746	1749	..	278464	182951
	KERALA STATE	988	924301	1776	29	732986	481572
	Rounded to hundred as	..	924300	..	..	733000	481600

TABLE—II

KUMBHOM CROP OF PADDY 1958.

Statement showing mean yield of dry paddy per acre with its standard error for irrigated and unirrigated fields.

Taluk.	Irrigated			Unirrigated		
	Number of experi-ments.	Mean yeild of dry paddy Lb/acre.	Standard error Lbs/acre.	Number of experi-ments.	Mean yeild of dry paddy Lbs/Acre.	Standard error Lbs.
1	2	3	4	5	6	7
1. Neyyattinkara	14	1686	134	14	1495	255
2. Trivandrum	..	..	..	28	2040	354
3. Nedumangad	..	..	..	29	2197	142
4. Chirayinkil	29	2202	252	1	1940	..
5. Quilon	5	1970	36	25	1682	58
6. Kottarakkara	..	..	..	30	2678	164
7. Pathanapuram	..	..	..	29	2445	112
8. Pathanamthitta	..	..	..	30	2262	125
9. Kunnathur	..	..	..	30	1953	128
10. Karunagappally	..	..	..	..	..	..



1	2	3	4	5	6	
11. Karthigappally	..	..	..	3	1254	75
12. Mavelikkara	..	..	..	7	1684	135
13. Chengannur	25	2197	325	5	1472	37
14. Thiruvalla	30	1704	97	..	..	..
15. Kuttanad	..	..	..	30	1791	94
16. Ambalapuzha	..	..	..	4	1018	201
17. Shertallai	..	..	..	30	1756	74
18. Changanacherry	..	..	..	23	2092	209
19. Kanjirappally	..	..	..	6	1649	55
20. Kottayam	..	..	..	23	1823	147
21. Vaikom	5	1467	141	20	1302	124
22. Mecnachil	1	1211	..	16	1897	104
23. Thodupuzha	6	2034	99	1	1976	..
24. Moovattupuzha	10	2033	323	3	1925	183
25. Kunnathunad	6	1720	85	6	1603	112
26. Alwaye	9	1559	117	..	..	..
27. Cochin	..	..	..	..	..	..
28. Kanayannur	5	1470	167	15	1343	108
29. Parur-Crangannur	..	..	..	20	2128	228
30. Mukundapuram	14	1376	29	..	..	..
31. Trichur	5	2349	374	3	2428	262
32. Thalappally	6	2071	131	5	1720	316
33. Chowghat	..	..	..	7	1173	27
34. Chittur	27	2399	421	..	..	..
35. Alathur	22	2643	164	..	..	..

1	2	3	4	5	6	7
36. Palghat	30	2224	162	20	1632	73
37. Perinthalmanna	7	1764	110	29	1771	180
38. Ottappalam	..	..	..	30	1081	303
39. Ponnani	..	..	..	28	1239	110
40. Kozhikode	..	1458	200	7	1369	500
41. Tirur	23	1974	29	..	..	..
42. Ernad	24	..	..	22	1033	54
43. Badagara	..	..	..	26	651	148
44. Quilandy	..	..	..	..	..	..
45. South Wynad	..	..	..	..	..	..
46. North Wynad	..	..	..	..	..	..
47. Cannanore	..	..	..	..	..	..
48. Tellicherry	9	1016	47	..	..	..
49. Taliparamba	..	1495	..	22	1149	191
50. Hosdurg	15	1692	306	11	1790	351
51. Kasargod	23	..	130	..	..	..

The difference between the yields in irrigated and unirrigated fields in Meenachil is due to the fact that the estimates for irrigated land is based on only one experiment.

TABLE III.

KUMBHOM CROP 1958.

Analysis of variance of Plot Yields in (LBS)<sup>2</sup> per Plot of 1/160 of an acre.

Taluku.	Irrigated Fields						Unirrigated Fields						Combined Fields			
	Between Karas			Within Karas			Between Karas			Within Karas			Between Karas		Within Karas	
	D.F.	M.S.	D.F.	M.S.	D.F.	M.S.	D.F.	M.S.	D.F.	M.S.	D.F.	M.S.	D.F.	M.S.	D.F.	M.S.
	2	3	4	5	6	7	8	9	10	11	12	13				
1																
1. Neyyattinkara	3	11.02	10	19.90	3	32.65	10	12.67	5	28.13	22	14.82				
2. Trivandrum	..	..	..	..	5	133.43	22	16.37	5	133.43	22	16.37				
3. Nedumangad	..	..	..	..	5	22.81	23	11.38	5	22.81	23	11.38				
4. Chirayinkil	5	71.75	23	18.40	..	..	..	..	5	72.25	24	17.64				
5. Quilon	..	..	4	0.25	4	3.33	20	1.62	5	5.36	24	1.40				
6. Kottarakara	..	..	..	..	5	31.62	24	11.55	5	31.62	24	11.55				
7. Pathanapuram	..	..	..	..	5	14.21	23	9.82	5	14.21	23	9.82				
8. Pathanamthitta	..	..	..	..	5	18.32	24	15.67	5	18.32	24	15.67				
9. Kunnathur	..	..	..	..	5	19.32	24	9.12	5	19.32	24	9.12				
10. Karunagappally	..	..	..	..	..	0.55	..	0.11	..	0.55	..	0.11				
11. Karthigappally	..	..	..	..	1	0.55	1	0.11	1	0.55	1	0.11				

TABLE III—(contd.)

1	2	3	4	5	6	7	8	9	10	11	12	13
12. Mavelikkara	..	93.89	..	5.20	1	5.33	5	14.57	1	5.33	5	14.57
13. Chengannur	..	11.06	19	3.72	1	0.35	3	1.38	5	11.06	24	4.36
14. Thiruvalla	..	..	24	..	..	..	..	..	5	10.33	24	3.72
15. Kuttanad	..	..	..	..	..	10.33	24	4.09	5	..	3	4.09
16. Ambalapuzha	..	..	..	..	..	6.38	3	6.33	..	6.38	24	6.33
17. Shertallai	..	..	..	..	..	35.05	24	0.51	5	35.05	24	0.51
18. Changanacherry	..	..	..	..	6	1.19	16	6.38	6	1.19	16	6.38
19. Kanjirappally	..	..	..	..	1	18.72	4	3.20	1	18.72	4	3.20
20. Kottayam	..	..	..	..	4	12.75	15	3.50	4	27.87	18	3.50
21. Vaikom	..	..	4	3.89	4	6.72	12	16.13	5	3.54	19	9.13
22. Meenachil	..	..	..	..	3	..	..	5.97	3	2.34	13	7.48
23. Thodupuzha	..	2.26	..	2.16	..	..	..	3.92	2	20.91	3	1.49
24. Muvattupuzha	..	40.77	8	7.31	..	6.19	11	2.52	2	0.97	16	6.63
25. Kanayannur	..	6.34	3	5.35	3	..	..	..	3	..	..	4.26
26. Cochin	..	..	..	..	..	..	..	..	..	..	..	..
27. Kunnathunad	..	1.38	3	0.15	1	3.45	4	5.51	3	2.49	8	2.85
28. Alwaye	..	4.23	5	1.15	..	40.51	16	..	3	4.23	5	1.15
29. Parur—Cranganore	..	..	..	..	3	..	..	11.09	3	40.51	16	11.09
30. Mukundapuram	..	0.22	10	5.02	..	..	..	..	3	0.22	10	5.02
31. Trichur	..	..	4	27.36	..	..	..	8.06	1	0.46	6	20.92
32. Talappilly	..	10.79	4	1.64	1	11.13	3	3.67	2	13.92	8	3.09
33. Chowghat	..	..	..	..	2	0.23	4	0.30	2	0.23	4	0.30
34. Chittur	..	175.26	21	14.82	..	..	..	..	5	175.26	21	14.82
35. Alathur	..	23.32	17	25.96	..	..	..	..	4	23.32	17	25.96

TABLE III- (continued)

1	2	3	4	5	6	7	8	9	10	11	12	13
36. Palghat	..	30.36	24	2.70	..	36.56	..	..	5	30.36	24	2.70
37. Ottapalam	..	..	..	..	..	12.52	23	8.94	5	36.56	23	8.94
38. Ponnani	..	..	..	..	5	4.30	24	2.34	5	12.52	24	2.34
39. Perinthalmanna	..	11.51	3	2.09	5	64.44	14	5.74	5	3.78	21	6.06
40. Tirur	..	32.47	17	3.58	2	..	4	0.83	5	44.05	24	5.70
41. Ernad	..	0.79	19	3.03	..	..	..	..	4	0.79	19	3.03
42. Kozhicode	..	..	..	..	5	12.98	22	1.33	5	12.98	22	1.33
43. Quilandy	..	..	..	..	5	17.82	20	0.21	5	17.82	20	0.21
44. Badagara	..	..	..	..	4	2.59	17	3.34	4	2.59	17	3.34
45. South Wynad	..	..	..	..	..	..	..	..	..	..	..	..
46. North Wynad	..	..	..	..	..	..	..	..	..	..	..	..
47. Tellicherry	..	..	..	..	..	..	..	..	..	..	..	..
48. Cannanore	..	0.9	7	0.65	..	..	..	..	1	0.80	7	0.65
49. Taliparamba	..	..	..	..	5	27.60	16	8.65	..	27.60	16	8.65
50. Hosdurg	..	54.84	12	15.50	2	41.58	8	16.50	5	42.90	20	15.90
51. Kasargod	..	14.86	18	7.00	..	..	..	..	4	14.86	18	7.00

TABLE IV

KUMBHOM CROP OF PADDY 1958.

Analysis of Variance of Plot Yields Pooled for the State in (lb)  
per Plot of 1/160 of an Acre.

## A. Plots which received irrigations.

Source.	Sum of Squares.	Degrees of freedom.	Variance.
Between Taluks ..	2303.79	23	100.16*
Between Karas within Taluks.	2858.37	65	43.97*
Within Karas within Taluks ..	2707.87	263	10.30
Total ..	7870.03	351	..

## B. Plots which received no irrigation.

Source.	Sum of Squares.	Degrees of freedom.	Variance.
Between Taluks ..	6363.53	36	176.76*
Between Karas, within Taluks.	3140.11	116	27.07*
Within Karas within Taluks ..	4136.90	485	8.53
Total ..	13640.54	637	..

## C. Plots of both kinds combined.

Source.	Sum of Squares.	Degrees of freedom.	Variance.
Between Taluks ..	8871.70	45	197.15*
Between Karas, within Taluks.	6106.92	178	34.31*
Within Karas, within Taluks ..	6900.81	764	9.03
Total ..	21879.43	987	..

\*Denotes significance at 1% level.

TABLE V.  
PERCENTAGE REDUCTION DUE TO DRIAGE.

Taluk.	Percentage reduction.
1. Neyyattinkara	7.2
2. Trivandrum	8.0
3. Nedumangad	7.5
4. Chirayinkil	8.5
5. Quilon	8.1
6. Kottarakara	5.8
7. Pathanapuram	5.2
8. Pathanamthitta	7.1
9. Kunnathur	7.0
10. Karunagappally	7.6
11. Karthigappally	9.6
12. Mavelikkara	7.9
13. Chengannur	7.1
14. Thiruvella	11.0
15. Kuttanad	7.5
16. Ambalapuzha	7.5
17. Sherthalai	6.6
18. Changanacherry	5.6
19. Kanjirappally	5.6
20. Kottayam	8.7
21. Vaikom	8.3
22. Meenachil	5.4
23. Thodupuzha	5.0
24. Moovattupuzha	5.0
25. Kanayannur	8.1
26. Kunnathunad	8.2
27. Alwaye	8.2
28. Parur—Crangannoor	7.0
29. Mukundapuram	5.6
30. Trichur	7.1
31. Talappally	5.3
32. Chowghat	7.5
33. Chittoor	5.4

TABLE V—contd.  
PERCENTAGE REDUCTION DUE TO DRIAGE.

Taluk.	Percentage reduction.
34. Alathur	7·0
35. Palghat	6·4
36. Ottapalam	8·1
37. Ponnani	8·7
38. Perinthalmanna	7·3
39. Tirur	5·7
40. Ernad	3·8
41. Kozicode	11·2
42. Quilandy	6·0
43. Badagara	6·7
44. Wynad South	..
45. Wynad North	7·8
46. Tellicherry	7·8
47. Cannanore	7·8
48. Taliparamba	7·8
49. Hosdurg	7·8
50. Kasargode	7·8



TABLE I

Summary of the results of the experiments

Experiment

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