



GOVERNMENT OF KERALA

**REPORT ON
THE TIMELY REPORTING SURVEY
OF
AGRICULTURAL STATISTICS
IN KERALA
1977-78**

Issued by
The Bureau of Economics and Statistics

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Government of Kerala
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PREFACE

This is the Third Report relating to the Establishment of an Agency for Reporting Crop Statistics (Timely Reporting Survey) and correspond to the third round of the survey in Kerala State for the year 1977-78. The first and second reports for the period 1975-76 and 1976-77 were issued earlier.

The E.A.R.C.S. introduced in the non reporting State (which is a variant of the TRS carried on in the reporting states of India) was first launched in the State during 1975-76. The sample design is a unistage random with the Revenue Village as the unit of selection, and Taluk as the stratum.

The land use particulars, area under seasonal and perennial crops, data on irrigation, etc. were collected from 10% of the villages in 1975-76 and 15% in 1976-77. In the third round (1977-78) the number of villages was increased to 20%. Crop estimation surveys were also conducted on the following crops:—

1. Paddy (For the three seasons, Autumn, Winter and Summer)
2. Tapioca
3. Coconut
4. Arecanut
5. Cashew
6. Pepper

The estimates obtained from the survey 1977-78 are presented in this report. I think that the present publication will be of use to all those interested in the Agricultural development of the state. Any suggestion for improvement of the technical content will be appreciated.

In this context I am very glad to thank the Economic and Statistical Adviser, Ministry of Agriculture and Irrigation, Government of India for the timely advice and guidance. Sri R. Raghunathan, Dy. Economic Adviser, Government of India has always been associated with the programme at every stage for the success of the scheme.

Dr. P.A. NAIR,

Director,

Bureau of Economics and Statistics.

Trivandrum.

27-2-1980.

**REPORT ON THE TIMELY REPORTING SURVEY
OF AGRICULTURAL STATISTICS IN
KERALA 1977-78**

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REPORT ON THE TIMELY REPORTING SURVEY OF AGRICULTURAL STATISTICS IN KERALA 1977-78

This report deals with the 3rd round of the EARCS Surveys conducted in the State during the agricultural year 1977-78. The reports relating to the two previous rounds i.e. in 1976-77 and 1975-76 are contained in separate volumes brought out earlier.

The EARCS was started in the State during 1975-76 as part of a scheme to improve the quality and coverage of agricultural Statistics in the State. The general all India Scheme of TRS designed to suit the conditions of the reporting States in India was adapted to the conditions of data collection in the non reporting states of Kerala, Orissa and West Bengal by establishing an agency for collection of agricultural Statistics (EARCS). Under this Scheme it is envisaged to enumerate completely all the Villages in the State over a period of six years. The details on land use, area under crops, area under irrigation etc., are collected. In the first year i.e. 1975-76 Ten per cent of the villages in the State were taken up for the Survey, in 1976-77. Fifteen per cent of the villages were taken up and for the year under report the sample size was 20%. The present report gives the results of this round of the survey.

2. Design of the Survey :

There are 57 taluks in the State. Each of them is taken as a stratum for the purpose of this survey. A Revenue village which is the smallest well defined unit of revenue administration in the State is taken as the 1st and last stage unit of sampling. During 1975-76; 132 selected revenue villages were taken up for enumeration, during 1976-77, 200 villages were taken up and during the year under report, 265 villages were taken up for the Survey. The No. of villages selected for the Survey during 1977-78 in each district of the State is given in table below.

TABLE I

Sl. No.	Name of District	No. of selected villages enumerated	Total No. of Villages
1.	Trivandrum	19	94
2.	Quilon	20	99
3.	Alleppey	20	99
4.	Kottayam	15	74
5.	Idukki	8	42
6.	Ernakulam	20	100
7.	Trichur	47	234
8.	Palghat	30	152
9.	Malapuram	24	122
10.	Kozhikode	25	123
11.	Cannanore	37	188
STATE		265	1327

3. Scheme of work :

For the purposes of estimating the parameters under area, the aggregates of data of the last stage units of selection namely the revenue village are sufficient. But for the purposes of convenience in conducting the field work, each revenue village was divided into a number of investigator units depending upon the total No. of Investigators available in each stratum, the area under dry and wet land and also the No. of crop cutting experiments to be conducted in each village. These units were as far as possible equal in extent and in all cases non overlapping with defined boundaries wherever possible. Where clear demarcation by natural or artificial boundaries were not possible the units were defined in terms of Sy. Nos. The GCES was confined to the villages selected for area enumeration.

An investigator was assigned to each unit to conduct the area enumeration and crop cutting experiments in that unit. The area enumeration in the T. C. portion of Kerala where only litho subdivisions are marked in the village maps, the area enumeration was conducted following these divisions. In the Malabar portions however where F. M. B. is available, the sub division in the F. M. B. were followed in noting the details by the Investigators.

The preliminary work of the investigator thus consisted in preparing a list of Sy. Sub division Nos. according to the basic tax register. The details required for area enumeration was collected by the investigators following these sub-division. In the case of the T. C. portion of Kerala, the lithomaps available give only litho subdivisions which may comprise of more than one subdivision in the basic tax register. In these cases the details were collected according to litho sub divisions only.

The Investigator visited the wet land three times in the agricultural year to collect data on seasonal and annual crops corresponding to Autumn, Winter and Summer seasons. In the last visit, data on land use, irrigation and perennial crops were collected. Two visits corresponding to Kharfi and Rabi seasons were programmed in the dry lands the first being intended to collect data on seasonal and annual crops. In the 2nd and last visit, data on perennial crops were to be collected. Due to shortage of field workers, the Kharif visit to dry land was not conducted, but details on kharif crops were collected by enquiry during the Rabi visit to dry land. (for the detailed programme of field work refer page 6 and 7 of instruction to field work on 1977-78)

Crop cutting experiments (GCES) were confined to the villages selected for EARCS so that the investigator posted in these villages can attend to these items of work also. During the year under report experiments on the following crops were conducted.

1. Paddy. (a) Autumn season (b) Winter season (c) Summer season.
2. Tapioca
3. Coconut

4. Arecanut
5. Cashew
6. Pepper
7. Jack
8. Banana
9. Plantain
10. Sesamum

The experiments on the last 4 crops (minor crops) were a special feature of this round which was implemented as part of a scheme for getting estimates of productivity of minor crops of the State namely Jack, Sesamum, Banana, Plantain, Mango, Ginger, Turmeric, Sweet Potato, Tamarind, Pulses, Cotton and Groundnut by organising surveys periodically, under successive rounds of EARCS. of this, crop cutting experiments on the 1st four were conducted in the year under report.

The experiments were planned in all the taluks in the case of crops covering substantial areas under them; but where the area under a crop did not cover a sizeable area, experiments were not conducted. The Table 2 (a) gives the No. of taluks in each district and the No. in which experiments were planned crop-wise. Table 2 (b) gives the No. of experiments planned and the No. actually conducted and analysed in each district. Table 2 (c) gives the No. of experiments missed according to the various causes in district-wise.

TABLE 2 (a)

Distribution of the No. of taluks in each district and the No. in which experiments were planned crop-wise

Name of Dist.	No. of Taluks where experiments were planned for each crop														
	Paddy			Summer	Tapioca	Coconut	Arcacanut	Cashew	Pepper	Jack	Minor crops				
	Autumn	Winter									Banana	Plantain	Sesa- mum		
Trivandrum	4	4	4	4	4	4	4	4	4	4	3	4	4	..	4
Quilon	6	6	5	6	6	6	6	4	4	5	4	4	4	3	4
Alleppey	7	7	6	6	7	4	2	4	2	3	3	3	3	2	3
Kottayam	5	5	4	5	4	5	5	5	5	5	5	5	5	..	5
Idukki	4	4	..	4	4	2	..	3	3	2	..	..	..	1	..
Ernakulam	7	7	6	5	7	6	3	4	3	3	5	5	5	4	4
Trichur	5	5	5	4	5	4	4	2	3	3	3	3	3	3	3
Palghat	5	5	5	5	5	2	4	2	3	3	3	3	3	2	2
Malappuram	4	4	4	4	4	3	2	2	2	3	3	3	3	4	1
Kozhikode	4	4	4	4	4	3	4	4	4	4	3	3	3	4	..
Cannanore	6	6	6	6	6	5	5	5	5	5	4	4	4	6	1
State	57	57	57	49	53	56	44	33	37	40	36	45	45	17	4

TABLE 2 (b)

No. of experiments planned in each district under each crop and analysed (1977-78)

No. of experiments planned and analysed under each crop

Name of District	Paddy						Tapioca	Coconut	Areca nut			
	Autumn		Winter		Summer							
	A	B	A	B	A	B					A	B
Trivandrum	114	113	114	111	80	71	126	125	50	47	30	30
Quilon	152	148	152	148	72	70	142	142	60	60	40	40
Alleppey	192	179	186	178	110	104	82	75	50	44	25	25
Kottayam	108	105	104	96	40	39	116	116	40	40	30	30
Idukki	36	35	54	53	..	..	42	42	17	11	8	6
Ernakulam	200	195	180	175	100	100	100	99	40	37	40	39
Trichur	140	134	140	133	94	94	100	99	40	40	50	50
Palghat	150	139	150	139	110	108	90	88	30	28	15	12
Malappuram	114	96	114	95	90	83	142	138	50	50	50	40
Kozhikode	84	84	96	56	90	89	110	107	52	52	40	40
Cannanore	150	150	162	148	130	123	180	170	60	55	70	67
State	1440	1378	1452	1332	916	881	1230	1201	489	464	398	379

(A)—Planned (B)—Analysed

TABLE 2 (b)—Contd.

No. of experiments planned in each district under each crop and analysed (1977-78)

Name of District	No. of experiments planned and analysed under each crop											
	Cashew		Pepper		Sesamum		Minor crops					
	A	B	A	B	A	B	Jack		Banana		Plantain	
	A	B	A	B	A	B	A	B	A	B	A	B
Trivandrum	20	20	20	20	..	..	20	20	10	9	15	14
Quilon	30	29	25	22	45	45	20	20	25	25	20	20
Alleppey	15	15	20	20	30	29	10	10	10	10	15	15
Kottayam	..	..	50	46	..	..	20	20	25	25	20	20
Idukki	..	..	36	36	15	15	7	6	..	..	..	..
Ernakulam	15	12	25	25	45	45	10	10	25	25	20	20
Trichur	25	25	10	10	45	45	10	10	25	25	25	25
Palghat	40	30	10	10	30	27	20	20	8	8	20	20
Malappuram	80	74	20	16	15	15	20	20	25	25	20	20
Kozhikode	15	14	60	44	..	..	30	30	20	20	20	20
Cannanore	160	152	120	98	15	11	30	28	25	21	25	25
State	400	371	396	347	240	232	197	194	198	193	200	199

(A) — Planned (B)—Analysed

TABLE 2 (c)

No. of experiments missed in each district-crop wise—1977-78

District	Number of experiments missed											
	Paddy			T. pioc	Coconut	Areca nut	Cashew	Pepper	Sesamum	Jack	Banana	Plantain
	Autumn	Winter	Summer									
Trivandrum	1	3	9	1	3	Nil	Nil	Nil	Nil	Nil	1	1
Quilon	4	4	2	Nil	Nil	Nil	1	3	Nil	Nil	Nil	Nil
Ailleppey	13	8	6	7	6	Nil	Nil	Nil	1	Nil	Nil	Nil
Kottayam	3	8	1	Nil	Nil	Nil	Nil	4	Nil	Nil	Nil	Nil
Idukki	1	1	Nil	Nil	6	2	Nil	Nil	Nil	1	Nil	Nil
Ernakulam	5	5	Nil	1	3	1	3	Nil	Nil	Nil	Nil	Nil
Trichur	6	7	Nil	1	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Palghat	11	11	2	2	2	3	10	Nil	3	Nil	Nil	Nil
Malappuram	18	19	7	4	Nil	10	6	4	Nil	Nil	Nil	Nil
Kozhikode	Nil	40	1	3	Nil	Nil	1	16	Nil	Nil	Nil	Nil
Cannanore	Nil	14	7	10	5	3	8	22	4	2	4	Nil
State	62	120	35	29	25	19	29	49	8	3	5	1

(rejected)

TABLE 2 (d)

Number of experiments missed in each district by season :

District	Paddy (autumn)				Paddy (Winter)				Paddy (Summer)				Tapioca			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Trivandrum	NIL	1	NIL	NIL	3	NIL	NIL	NIL	NIL	NIL	NIL	9	NIL	NIL	NIL	1
Quilon	"	4	"	"	"	4	"	"	"	"	"	2	"	"	"	NIL
Alleppey	"	13	"	"	"	8	"	"	6	NIL	"	"	"	"	"	7
Kottayam	"	3	"	"	"	8	"	"	1	"	"	"	"	"	"	NIL
Idukki	"	1	"	"	1	NIL	"	"	"	"	"	"	"	"	"	"
Ernakulam	"	5	"	"	5	"	"	"	NIL	NIL	NIL	NIL	"	"	"	1
Trichur	"	6	"	"	7	"	"	"	"	"	"	"	"	"	"	1
Palghat	2	9	"	"	11	"	"	"	2	"	"	"	"	"	"	2
Malappuram	15	3	"	"	12	7	"	"	7	"	"	"	"	"	"	4
Kozhikode	NIL	NIL	"	"	40	NIL	"	"	1	"	"	"	"	"	"	3
Cannanore	"	"	"	"	14	"	"	"	7	"	"	"	9	"	"	1
STATE	17	45	"	"	90	30	"	"	24	11	"	"	9	"	"	20

The experiments were allotted to each Investigator as follows :—

1. *Paddy* : Two experiments for each Investigator in a taluk during each season provided there are more than 7 Investigators, in other taluks at the rate of 3 experiments.
 2. *Tapioca* : Two plots per Investigator in taluks where crop cutting experiments are planned for the crop.
 3. Coconut
 4. Arecanut
 5. Pepper
 6. Cashew
 7. Jack
 8. Sesamum
 9. Banana
 10. Plantain
- } One plot per Investigator in Taluks where crop cutting experiments are planned for the crop.

The following table [table 2 (c)] gives the frequency distribution on the No. of Investigators according to the No. of experiments conducted.

TABLE 2 (c)

Number of Investigators according to number of experiments conducted by them (Paddy) 1977-78

No. of experiments	Number of Investigators			
	Autumn	Winter	Summer	All
1	226	244	256	726
2	244	287	132	663
3	82	79	52	213
4	28	32	24	86
5 & more	48	28	24	100
All	628	670	488	1786

4. Organisation of the Survey :

The organisation of the field work, the conduct of area enumeration and crop cutting experiments analysis and reporting etc., were the responsibility of the Bureau of Economics and Statistics. The pattern of staff both at the Headquarters and Field is given below separately (Table 3).

In order to ensure quality and timeliness of data collected three Regional Tabulation Centres were established with Headquarters at Quilon, Ernakulam and Calicut. The districts covered by each regional Office are given below.

*Regional Tabulation Centre**District Covered*

Quilon	Trivandrum, Quilon, Kottayam and Idukki.
Ernakulam	Ernakulam, Trichur, Palghat and Alleppey.
Kozhikode	Malappuram, Kozhikode and Cannanore.

Besides attending to the execution of primary field work, the Regional Tabulation Centres attended to the preliminary work in analysis of data like scrutiny, tabulation and compilation. The analysis and reporting were done at the Headquarters of the Bureau.

TABLE 3

	Centrally sanctioned under the scheme	Others	Total
A. Headquarters Staff			
<i>Category</i>	<i>No.</i>		
Joint Director	1	..	1
Assistant Director	..	1	1
Research Officer	..	3	3
Research Assistant	..	4	4
Compiler	6	2	8
B. Field Staff			
Deputy Director	3	..	3
Assistant Director	3	..	3
Regional Officer	3	..	3
Research Assistant	5	..	5
Statl. Inspectors	49	51	100
Compilers	2	9	11
Investigators	641	159	800

The Statistical Inspectors posted in each taluk looked after the field work and also the timely completion of the Surveys. There are 57 taluks in the State. Except in 14 smaller taluks there were two posts of Statistical Inspector, one posted as the regular S.I. and the other as additional S.I. Usually the additional S.I. was put in-charge of the EARCS and GCES.

This arrangement did not preclude the regular S.I. from the responsibility of carrying out the surveys properly and also supervising the field work of primary reporters. In the 14 smaller taluks (the names are given below) the responsibility of the proper conduct of the surveys was squarely with the S.I. in the taluk.

Names of taluks where there was only one S.I.

- | | |
|-------------------|------------------|
| 1. Karunagappally | 8. Udumbanchola |
| 2. Chengannoore | 9. Cochin |
| 3. Kuttanad | 10. Parur |
| 4. Ambalapuzha | 11. Crangannoore |
| 5. Kanjirappally | 12. Ponnani |
| 6. Peeramade | 13. South Wyna |
| 7. Devikulam | 14. North Wyna |

Time schedule:

The time schedule for completing each item of work relating to the survey is given on page 6 & 7 of the Instructions to field workers. The actual month/date of completion of each item of work is given below:

TABLE (4)

Schedule of Completion of various item of work

Item of work	Seasons			Remarks
	Autumn	Winter	Summer	
(1)	(2)	(3)	(4)	(5)
A. AREA ENUMERATION				
Wet land	September 1977	November 1977	March 1978	The delay was due to the belated appointment of Investigators. The work load of the Investigators is too heavy. So only one round of visits to dry land had been conducted.
Dry land	..	June 1978	..	

	(1)	(2)	(3)	(4)	(5)
B. CROP CUTTING					
1. Paddy		November 1977	February 1978	June 1978	
2. Tapioca		..	June 1978	..	
3. Coconut		..	June 1978	..	
4. Arecanut		..	June 1978	..	
5. Cashew		..	June 1978	..	
6. Pepper		..	February 1978	..	
7. Sesamum		..	May 1978	..	
8. Jack		..	June 1978	..	
9. Banana		..	June 1978	..	
10. Plantain		..	June 1978	..	

C. I.C.S.

1. Area check in wet land	..		June 1978	--	
2. Area check in dry land	..		June 1978	..	
3. Supervision of paddy c. c. experiment	November 1977		February 1978	June 1978	
4. Supervision of Tapioca crop cutting	..		June 1978	..	

Training:

Training was given to the primary workers and also the Supervisory Officers at taluk and District level. The training classes were organised at District level for two days. The training included field visits also.

Period of Survey and reference period:

The reference period of the survey was the agricultural year 1977-78 (July 1977 to June 1978). The field work was started during August 1977.

Schedules and instructions:

Schedules used in this round broadly followed the pattern in the previous round except 3A and 3B. In 3A however details of seasonal crops were to be entered and in 3B details of perennial crops were to be entered.

3A schedules therefore consisted of two types, one for wet lands and the other for drylands. Similarly two types were introduced for wet and dry lands in the case of 3B schedules also, Detailed instructions for filling up the forms etc. are given in instructions to field workers (see instructions given as appendix at the end) copies of schedules used in this survey are given at the end.

Supervision:—

(a) *Department Officers.*—As stated earlier, normal supervision by Department Officers were done in three tiers namely at the Taluk level by the Statistical Inspectors, at District level by the District Statistical Officers and Additional District Statistical Officers and at Regional level by the Officers at the Regional Centres. The Joint Director and the Director, Addl. Director, Bureau of Economics and Statistics also inspected the field work as often as they could.

(b) *Supervision by Agriculture Department Staff.*—The Supervisory staff of the Agriculture Department were requested in pursuance of the decisions at the High Level Committee Meeting to inspect 1% of the work on the collection of data on area and yield work. But the turn over in this regard was found poor. The Revenue Department in the State was not associated with the Supervision of field work of the Surveys.

(c) *Scheme for improvement of Crop Statistics.*—Under this I. C. S. Programme the State Bureau of Economics and Statistics participated in the Supervision work both with regard to area and yield estimation surveys on a 50:50 basis. Accordingly supervision in 133 villages was carried out by the Staff of the Department. The following table gives the No. of clusters/experiments supervised in each season, the due date of completion of supervision and the actual date of completion and the reasons for the delay.

TABLE 5

Number of clusters/experiments supervised by Statistical Inspectors under the scheme I. C. S. the due date of completion, the actual date of completion (1977-78)

Season	Arca enumeration			Due date of completion		Actual date of completion		Crop cutting experiments (on paddy)			Remarks **
	No. of clusters for inspection	Inspected	Wet land	Dry land	Wet land	Dry land	No. of experiments allotted	No. of experiments supervised	Date of completion		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
Autumn	532	480	30-9-77	30-6-78	30-6-78	30-6-78	160	144	21-11-77		
Winter	532	448	31-12-77	30-6-78	30-6-78	30-6-78	160	145	30-3-78		
Summer	532	436	31-4-78	30-6-78	5-7-78	15-7-78	100	89	9-6-78		
All	1596	1364					420	378			
						Tapioca	100	90	30-6-78		

** In many villages the sample check for wet land and dry land were done together and completed by the end of 30-6-1978.

Nature of field difficulties in Area Enumeration

1. Area enumeration:

The State is intensively cropped. There are two types of land; the wet land and the dry lands, paddy is the main crop in the wet lands. Usually two crops of paddy are raised in this type of land though occasionally a third crop is also raised according to the availability of water resources. The area enumeration in wet lands does not present much difficulty. However a few problems are present here also.

(i) *The shifting of crop seasons*:—Wet lands are enumerated three times in a year corresponding to three crop seasons namely Autumn, Winter and Summer. The Investigator usually will visit a field for area enumeration only once in a season. During the early period of the crop season it may happen that the crop may not have been sown, but will, if the field is usually sown and harvested in that season as revealed by local enquiry, enter the area under that season, but later due to unforeseen factors, the sowing may be delayed resulting in a shift of the area under the crop to the next season. Similarly, there are long duration and short duration paddy crop which the Investigator may not be able to distinguish. The investigator on visiting the standing crop may be misled into entering a crop under a season, but it may actually fall into the next season due to the long duration of the crop.

(ii) It has been instructed that a rough sketch may be drawn and area under season of visit marked. This is to identify the location of the patch in later visits and see whether the same patch remains uncultivated during the three seasons and in that case to record the area under current fallow. But in practice it has been found that the drawing of a sketch for the purpose is not easy as the investigator may not be able in many cases to find out the exact direction.

(iii) A lot of time is taken to identify the area in cases where conversion of wet land into dry land has taken place. The identification is difficult in cases where many contiguous Sy. Nos. belonging to one cultivator lie in one stretch without any marking like Sy. st ones etc. The problem is made more difficult if conversion has also taken place.

(iv) Where stretches of low lying wet lands where paddy is the only crop grown often get inundated by floods or breaches on bunds. The area enumeration has to be repeated to see whether the crop sown immediately preceding the floods or breach of bunds have survived. If not the cultivators may sow a second time which naturally will be delayed thus extending the harvest and crop season to the next season.

(v) In water logged area where conversion of wet land to dry land has taken place, in isolated patches the identification and measurement of area to record the extent of crops grown is a time consuming process especially when these patches are not easily accessible. The area enumeration in dry lands poses many difficulties. Some of them are discussed below.

1. *Multiplicity of crops*:—A garden land in Kerala often grows many crops, both seasonal and perennial. Except in the case of plantation areas, the enumeration of area under various crops takes a lot of time. Even in the case of crops, other stray crops both seasonal and perennial are found.

2. In the Travancore Cochin portion of Kerala, the area under crops, land utilisation etc., are recorded following the litho subdivision which is the identifiable unit. The old survey maps available are often damaged and in certain cases they are not even available. Since the last survey and settlement, arbitrary changes of boundaries have taken place, thereby making identification difficult. After identification, if it is felt that the area under a unit is different from that recorded then physical measurement has to be done to record the change. In the Malabar Region, only the village maps are available. The primary worker has therefore to go by the F.M.B. register with the village office. It has been reported that the primary reporter had to make repeated visits to the village offices to get the registers.

3. There are areas where large areas are marked by minor circuit No. S in the land survey. This is found in the case of former inaccessible areas, but since then cultivated intensely. Since in these cases, the extent under a No. will be too large for identification, the area is divided according to the extent of land in the possession of different holders. In this case, all holders have to be contacted and enumeration done according to these holdings. The tallying of the total area according to records and the units of enumeration is often found difficult.

4. The plots have in many cases a multiplicity of crops both perennial and seasonal. The allocation of area if left to the discretion of the primary worker may lead to serious errors. So the old method of annavari allocation is not followed. Instead the number of palms/standards under perennial crops are actually counted. This takes up to much time of the primary worker.

5. The number of palms/standards are converted into area by using norms of stand/hect. In plots where there are a number of crops grown and the population of trees/standards is intensive/scattered but spread out the converted area may be larger/smaller than the physical area. This anomalous situation may lead to further contradiction in the gross and net area irrigated.

II. *Crop Cutting*

1. The harvesting date of paddy given by the cultivator is often not firm with the result that the investigator has to make repeated visits to conduct an experiment. In certain localities the farmer himself cannot fix a firm date as he has to harvest on a convenient date to avoid the over crowding of labourers. Some times harvesting is done very early in the morning and in rare cases even at night.

2. In water logged areas, the fixing of pegs to mark the experimental cut is difficult.

3. The labour charges allowed for one experiment on paddy namely Rs. 2 is too inadequate. The cultivators cannot and usually do not provide labourer for harvesting as all labourers with him will be engaged in harvesting of the main field. In Kerala the labour charges are high and the Investigators are finding it difficult to engage separate labour for harvesting with the charges now in vogue as per Government Orders.

4. The Land Reforms Act in Kerala vested with the Kudiappukar, the right of ownership extending up to ten cents. Most of these Kudiappukar are agricultural labourers and they leave early for work so that the harvesting of experimental trees falling in such lands entail repeated visits. Also the nuts are plucked by them in a haphazard way depending upon their necessities. It is often difficult to get correctly the details of the number of nuts plucked, the number plucked as tender, barren and good nuts etc.

III. General

1. The work load of the primary reporter is very heavy. He has to cover about 2000 hectares, the wet land area has to be enumerated three times and dry land area two times. Besides he has to attend to crop cutting work on paddy, coconut, arecanut, cashew etc. It was found impossible to cover completely the above items of work in any year. The first visit to dry land to enumerate seasonal crop was uniformly the casualty in all the round including the round under report due to this shortage of primary workers.

2. Even though utmost vigilance has been exercised in keeping in position the sanctioned strength of primary reporters, rare instances to the contrary occurred due to certain administrative formalities which had to be observed. Any how the incidence of such cases were kept at a minimum.

3. The heavy work load it is feared may adversely affect the quality of data collected. The quality of data collected at the far end of the round when the balance quantity of work to be completed is disproportionately large leave much to be desired for. In spite of every attempt to keep the inflow of data uniform, lapses had occurred in many cases.

4. The absence of printing facilities with the Bureau has caused inconvenience in the conduct of the surveys. The Government Presses or agencies over crowded with many items of urgent work usually is not able to deliver printed materials in time.

8. Estimation Procedure:—

The following estimates were prepared from the data collected in area enumeration.

1. area under different utilisations
2. source wise area irrigated
3. area under crops.

The estimates were prepared as follows:

(a) *Land Utilisation and Irrigation*

The following notations are used.

- N = No. of villages in the stratum (taluk)
 n = No. of villages selected for area enumeration in the stratum.
 A = Area of stratum
 a = area of selected villages
 a_j = area of j th selected village
 Y_{ij} = area under the i th utilisation in the j th selected village
 Y_i = estimate of the i th utilisation
 $V(Y_i)$ = estimate of the Variance of Y_i

Then Y_i is given by

$$Y_i = \frac{\sum_{j=1}^n y_{ij} \times A}{\sum_{j=1}^n a_j}$$

$$= \frac{A}{a} \times \sum_{j=1}^n Y_{ij}$$

$$V(Y_i) = \frac{N(N-n)}{n(n-1)} \sum_{j=1}^n (Y_{ij} - R_i a_j)^2$$

Where

$$R_i = \frac{\sum_{j=1}^n Y_{ij}}{\sum_{j=1}^n a_j}$$

(b) *Area under crops*

The area under various crops are estimated as follows .

- N = No. of villages in a stratum (taluk)
 n = No. of villages selected for area enumeration
 W = wet land area of stratum
 D = dry land area of stratum
 W_j = Wet land area of j th village

- d_j = Dry land area of j th village
 Y_j = Area under the i th crop in the wet land
 X_{ij} = Area under the i th crop in the Dry land
 Y_i = estimate of area under i th crop in wet land
 X_i = estimate of area under i th crop in Dry land

$$Y_i = \frac{\sum_{j=i}^n Y_{ij}}{n} \times W$$

$$X_i = \frac{\sum_{j=i}^n x_{ij}}{n} \times D$$

$$\begin{aligned}
 V(z_i) &= V(y_i) + V(X_i) \\
 &= \frac{N(N-n)}{n(n-i)} \left\{ \sum_{j=i}^n (Y_{ij} - R_i W_j)^2 \right. \\
 &\quad \left. + \sum_{j=i}^n (x_{ij} - R_i d_j)^2 \right\}
 \end{aligned}$$

Where

$$R_i 1 = \frac{\sum_{j=i}^n Y_{ij}}{n} \text{ and}$$

$$R_i 2 = \frac{\sum_{j=i}^n x_{ij}}{n}$$

(c) The estimate of average yield is obtained as the simple average of the yield obtained from all the experiments in the stratum.

9. Survey result

(a) Land Utilisation :

The estimates of area under various utilisations for each district 1977-78 are given in Table I in the appendix. The variation between 1976-77 and 1977-78 is given in Table 3. The proportion in percentages under different utilisation for the two years are also given.

TABLE 6
Land use classification in Kerala 1977-78

Classification	1976-77 Area in (^{'00} hect.)	%	1977-78 Area in (^{'00} hect.)	%	% variation between two years	
(1)	(2)	(3)	(4)	(5)	(6)	
1. Total geographical area	38855	100.00	38855	100.00	—	
2. Forest	10815	27.83	10815	27.83	—	
3. Land under non-Agrl. uses	2604	6.70	2572	6.62	—	1.23
4. Barren and uncultivable land	788	2.03	753	1.94	—	4.44
5. Permanent pasture and grazing land	161	0.42	106	0.27	—	34.16
6. Land under miscellaneous tree crops	727	1.87	680	1.75	—	6.46
7. Cultivable waste land	1157	2.98	1183	3.04	+	2.25
8. Fallow other than current fallow	223	0.57	271	0.70	+	21.52
9. Current fallow	374	0.96	461	1.19	+	23.26
10. Net area sown	22006	56.64	22013	56.66	+	0.03

The pattern of utilisation of land in Kerala does not show any significant variation between 1976-77 and 1977-78. There is no large be way left for extensive cultivation in the state. The predominance of peennial crop in the cropping pattern adds to the stability in the area under different utilisati n.

The sown area in the state was 56.66% of the total geographical area followed by the area under reserve forests. (27.83%). The next important use in the order of area occupie i are respectively. (1) non-agriculture uses (2) cultivable waste (3) Barren and uncultivable land and (4) Land under n iscellaneous t. ee crops. The change in sown area (net) in 1977-78 is 700 hectares more than that in 1976-77.

(b) *Irrigated area:*

The estimates of area irrigated are given in Table II of the appendix. The irrigated area was 228184 hectares which is 10.4% of the sown area. The area under different sources in the Table reveal that Government Canal

accounted for the major portion of the total area irrigated (42%). Minor irrigation work accounted for 18% of the irrigated area and by private tanks and well 20% Palghat is among districts which had the largest area as well as the largest proportion of area irrigated compared to sown area.

(c) *Area under crops :*

The estimated area under different crops district-wise are given in Table III (1) to III (10) of the appendix. In the case of paddy, area under paddy classified under area under H.Y.V. and local varieties as well as area irrigated and un-irrigated are given in Tables III (11), III (12), III (13), III (14) of appendix.

The area under the important crops estimated for 1977-78 are given in table 7. Paddy and coconut are by far the most important crops in the State together occupying more than 50% of the cropped area. The area under the important crops for 1977-78 and the previous years are given in table below. The proportion of area occupied by each crop to total cropped area are given along side (in % age)

TABLE 7
Area under Important crops

Name of Crop	Area in hectares		Percentage to total cropped area	
	1976-77	1977-78	1976-77	1977-78
(1)	(2)	(3)	(4)	(5)
1. Paddy				
(Autumn)	363822	365111	12.26	12.49
(Winter)	381678	370859	12.87	12.68
(Summer)	108874	104404	3.67	3.57
Total	854374	840374	28.80	28.74
2. Coconut	694985	673479	23.43	23.03
3. Arecanut	68356	62427	2.30	2.14
4. Cashew	113326	126963	3.82	4.34
5. Pepper	108666	101045	3.66	3.46
6. Tapioca	323278	289722	10.90	9.91
7. Rubber	219723	212271	7.07	7.26
8. Banana & Plantain	51697	50100	1.74	1.71

(d) *Production of important crops:*

The important crops vis-a-vis production in the State are Paddy, Coconut, Tapioca, Rubber, Pepper, Arecanut, Plantain, Banana & Cashew. Cardamom and Cocoa are the up and coming crops. The production of important crops are given below in Table 8.

TABLE 8
Production of important crops

Name of crop	Production ('00) tons.			
	1976-77	1977-78	% increase/decrease in 1977-78 over 1976-77	
1. Paddy (Autumn)	4877	5518	13.14	increase
(Winter)	5877	5592	4.85	decrease
(Summer)	1786	1836	2.80	increase
Total (rice)	12540	12946	3.24	increase
2. Coconut (million nuts)	3348	3053	8.81	decrease
3. Tapioca	51253	41886	18.28	do.
4. Rubber	1393	1359	2.44	do.
5. Pepper	245	201	17.96	do.
6. Arecanut (million nuts)	11303	10548	6.68	do.
7. Plantain & Banana	3906	6152	57.50	increase
8. Cashew	873	847	2.98	decrease
9. Cardamom	14	29	107.14	increase

The estimates of production of the following crops given above are based on the average productivity obtained by conducting c. c. experiments.

1. Paddy (2) Coconut (3) Arecanut (4) Tapioca (5) Pepper
6. Cashewnut.

In the case of other crops conventional estimate of average yield from ad hoc surveys were used to arrive at production.

TABLE No. 1
Total area and classification of area in each District 1977-78
(Area in hectares)

District	Total geographical area according to village papers	Forest	Land put to non-agricultural uses	Barren and uncultivable land	Permanent pastures and grazing lands	Land under miscellaneous tree crops
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trivandrum	218600	49961	16640	1466	50	274
Quilon	474290	236048	24372	2802	50	401
Alleppey	182270	518	30230	650	21	231
Kottayam	219550	8141	16416	1788	152	459
Idukki	515048	260993	13570	17346	5308	17739
Ernakulam	235319	8123	27610	1561	284	2653
Trichur	299390	103619	20310	3055	267	1542
Palghat	438980	136257	32685	11273	1164	9395
Malappuram	363230	103417	16667	6930	690	2970
Kozhikode	371150	90876	21688	4073	409	11409
Cannanore	567670	83656	37038	24438	2221	20887
State	3885497	1081509	252776	75382	10616	67960

TABLE No. I (Contd.)

(Area in hectares)

District	Cultivable waste land	Fallow other than current fallow	Current fallow	Net area sown	Area sown more than once	Total cropped area
(1)	(8)	(9)	(10)	(11)	(12)	(13)
Trivandrum	2331	1557	2411	144010	82830	226840
Quilon	1217	1429	1834	206137	118453	324590
Alleppey	2792	863	5435	141530	79629	221159
Kottayam	1407	3295	3783	184109	53508	237617
Idukki	39952	1120	1149	157871	1919	159790
Ernakulam	6172	2123	4171	182622	71607	254229
Trichur	5295	1009	4501	159792	74194	233986
Palghat	20060	5358	6508	216260	101776	318036
Malappuram	13172	4449	7825	207110	70384	277494
Kozhikode	5852	1437	2495	232911	49646	282557
Cannanore	19986	4478	5999	368917	18589	387506
State	118256	27118	46111	2201269	722535	2923804

TABLE II (a)
Source-wise irrigated area-1977-78
(Area in hectares)

District	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Govt. Canal	Private canal	Govt. tanks and wells	Private tanks and wells	Minor and lift irrigation (Govt. scheme)	Other sources	Total
Trivandrum	6544	23	1425	744	945	382	10063	
Quilon	..	250	1335	1151	1809	3390	7935	
Alleppey	2667	..	423	15311	2727	3612	24740	
Kottayam	..	162	681	835	2598	2445	6721	
Idukki	..	76	232	49	218	2120	2625	
Ernakulam	18619	137	1725	6394	11867	2792	41534	
Trichur	18628	59	1498	6113	6824	4657	37779	
Palghat	44925	325	70	4516	2399	2384	54619	
Malappuram	..	361	219	6050	5928	4573	17131	
Kozhikode	4392	151	82	784	607	430	6446	
Cannanore	..	3322	367	4595	5984	4253	18521	
State	95775	4866	8057	46542	41906	31038	228184	

TABLE II (b)

Area under irrigation-Crop-wise 1977-78

(area in hectares)

District	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Paddy	Vegetables	Tubers	Coconut	Aracant	Clove, Nutmeg & Cinnamon	Other condiments & spices	Banana	Betel leaves	Sugar cane	Others	Total
Trivandrum	6183	221	34	1903	8	16	13	131	105	2	1729	10315
Quilon	2772	197	115	1578	4	56	6	55	114	170	2915	7982
Alleppey	13588	284	98	12541	147	..	1	47	83	..	1525	28314
Kottayam	4886	385	19	423	11	401	3	59	57	2	510	6756
Idukki	2859	..	..	45	..	61	..	2	..	..	18	2985
Ernakulam	65319	571	229	7244	1091	3	18	423	108	..	2844	77850
Trichur	46383	584	118	20308	5298	2	12	438	53	..	1609	75310
Palghat	71681	484	27	2357	1472	..	4	187	13	..	1301	77526
Malappuram	23528	674	161	1700	2220	..	9	1410	450	..	1356	31508
Kozhikode	4192	447	46	287	5	..	2	372	47	..	1089	6487
Cannanore	13870	1161	41	5081	6466	..	4	1017	8	..	1195	28843
State	255266	5008	888	53967	16722	539	72	4141	1038	174	16091	353906

TABLE III (1)

Area Under Principal Crops 1977-78 Paddy

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District	Area under the crop (hectare)			Percentage Sampling error			
	Autumn	Winter	Summer	Total	Autumn	Winter	Summer
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Trivandrum	16496	16048	1985	34529	4.81	4.51	7.70
Quilon	24246	25124	1013	50383	2.57	2.71	27.67
Allappee	31703	31750	27454	90907	18.03	13.56	12.09
Kottayam	15581	14393	13554	43528	9.07	10.56	5.02
Idukki	6584	6840	381	138.5	1.24	0.39	..
Ernakulam	42329	39537	17377	99243	2.62	2.71	13.24
Trichur	44479	56299	18990	119768	4.25	3.05	17.39
Palghat	86701	81039	4118	1719.8	2.93	1.46	22.72
Malappuram	42104	40516	5780	88400	5.32	4.53	14.18
Kozhikode	12822	29920	6638	49380	5.74	4.63	20.51
Cannanore	42066	29343	7114	78523	2.90	5.41	12.32
State	365111	370859	104404	840374	2.01	1.60	5.41

TABLE III (2)
Area Under Principal Crops 1977-78—Tapioca

District	Area under the crop (hectares)				Percentage sampling error				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Autumn	Winter	Summer	Total	Autumn	Winter	Summer	Total
Trivandrum	19806	22030	8832	50668	12.74	15.57	14.38	12.80	
Quilon	29254	48913	1198	79365	15.07	9.04	15.43	8.78	
Alleppey	5572	16224	1673	23469	23.45	23.70	22.64	20.05	
Kottayam	1858	28702	154	30714	31.03	15.76	36.44	15.74	
Idukki	687	8316	730	9733	38.36	23.04	20.19	22.29	
Ernakulam	3196	11207	582	14985	9.54	13.00	6.76	9.61	
Trichur	1855	5370	385	7610	20.14	20.68	24.14	15.51	
Palghat	6004	5090	1459	12553	25.40	14.42	16.71	10.90	
Malappuram	10679	11917	4893	27489	10.93	9.76	6.48	5.42	
Kozhikode	4614	5187	2006	11807	30.03	32.43	38.05	29.23	
Cannanore	1885	17938	1506	21329	30.05	24.75	18.85	21.59	
State	85410	181894	23418	289722	6.83	5.47	6.95	4.65	

TABLE III (3)
Area Under Principal Crops 1977-78—Coconut

District	Number of trees ('000)			Area (hectares)		Percentage sampling error			
	Bearing	Young	Total	Bearing	Young	Total	Bearing	Young	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Trivandrum	10311	6897	17208	75806	15.72	15.14	15.02		
Quilon	9943	8708	18651	87563	11.59	8.21	9.97		
Alleppey	9881	4186	14067	59354	8.11	10.98	8.73		
Kottayam	8368	2764	11132	51300	12.02	14.37	12.39		
Idukki	1729	766	2495	14257	32.36	11.39	25.40		
Ernakulam	7968	5040	13008	57304	12.28	5.73	9.16		
Trichur	7756	4009	11765	49641	10.56	7.35	9.26		
Palghat	2414	2074	4488	18937	11.36	9.28	10.14		
Malappuram	9640	5781	15421	65621	15.05	6.76	11.50		
Kozhikode	15893	7177	23070	99440	24.84	18.91	22.61		
Cannanore	13852	9429	23281	94256	13.07	7.19	10.48		
State	97755	56831	154586	673479	5.47	3.79	4.71		

TABLE III (4)
Area Under Principal Crops 1977-78--Arecaanut

District	Number of trees ('000)		Area (hectares)	Percentage sampling error			
	Bearing	Young		Bearing	Young		
	(2)	(3)		(6)	(7)		
(1)	(4)		(5)	(8)			
Trivandrum	5429	1348	6777	3174	18.15	5.11	15.79
Quilon	7903	4322	12225	5598	6.05	6.19	5.77
Alleppey	3887	2394	6281	2921	14.03	9.46	11.10
Kottayam	4467	1202	5669	2576	11.24	10.93	10.18
Idulki	1841	897	2738	1245	27.03	15.29	18.53
Ernakulam	13419	2716	16135	7337	61.77	16.02	51.15
Trichur	14246	2673	16919	7694	11.08	10.21	10.74
Palghat	2638	1354	3992	1874	47.08	22.00	36.90
Malappuram	14844	4943	19787	9285	11.74	8.02	10.39
Kozhikode	9676	3831	13507	6335	24.11	16.21	21.57
Cannanore	20160	6012	26172	14388	7.21	5.11	6.29
State	98510	31692	130202	62427	9.38	3.40	7.36

TABLE III (5)

Area Under Principal Crops 1977-78—Cashew

District	No. of trees (000)	Area (hectare)	Percentage sampling error
(1)	(2)	(3)	(4)
Trivandrum	1619	5396	22.45
Quilon	2826	9420	13.37
Alleppey	985	3283	23.35
Kottayam	329	1096	16.34
Idukki	260	866	27.31
Ernakulam	1443	4810	15.05
Trichur	1842	6140	10.17
Palghat	3940	13133	22.67
Malappuram	6827	22756	10.85
Kozhikode	1314	4380	21.55
Cannanore	16705	55683	19.72
State	38090	126963	9.35

TABLE III (6)

Area Under Principal Crops 1977-78—Pepper

District	No. of standards (000)	Area (hectare)	Percentage Sampling error
(1)	(2)	(3)	(4)
Trivandrum	3192	5700	21.15
Quilon	5640	10071	7.93
Alleppey	2847	5083	32.75
Kottayam	7313	13058	14.43
Idukki	5796	10350	58.32
Ernakulam	3959	7069	7.18
Trichur	1745	3116	34.74
Palghat	698	1246	17.89
Malappuram	2236	3992	9.78
Kozhikode	10222	18253	43.14
Cannanore	12940	23107	14.31
State	56588	101045	10.39

TABLE—III (7)

Area Under Plantation Crops 1977-78 (Area in hectares)

District	Rubber	Tea	Coffee	Cardamom
1	2	3	4	5
Trivandrum	8031	1070	48	164
Quilon	34759	2007	107	149
Alleppey	3865		19	..
Kottayam	55404	2327	1240	
Idukki	15721	24023	4542	43354
Ernakulam	20845	30	172	..
Trichur	8947	438	33	7
Palghat	9125	662	1643	3455
Malappuram	17594	174		184
Kozhikode	17045	3885	27671	3390
Cannanore	20935	1496	17169	1305
State	212271	36112	52644	52008

TABLE—III (8)

Area Under Annual Crops 1977-78 (Area in hectares)

District	Banana	Plantains	Sugarcane	Pinapple	Betel Laves
1	2	3	4	5	6
Trivandrum	482	4185	30	327	147
Quilon	1245	3995	1083	876	236
Alleppey	641	3088	2054	456	81
Kottayam	1440	4450	142	289	98
Idukki	155	2623	1996	380	2
Ernakulam	1253	3833	32	952	148
Trichur	1092	4296	8	485	55
Palghat	589	2363	1255	265	15
Malappuram	1297	3292	7	381	534
Kozhikode	599	3056	4	961	100
Cannanore	1586	4540	14	1113	38
State	10379	39721	6625	6485	1454

TABLE III (9)

Area Under Seasonal Crops 1977-78

(Area in hectares)

District	Pulses											
	Khariff					Rabi						
	Tur	Other	H.	Oth-	Total	Jowar	Ragi	Other	cereals & millets	Chillies	Ginger	Turmeric
1	2	3	4	5	6	7	8	9	10	11	12	
Trivandrum	..	96	10	3419	3525	..	19	..	..	..	97	11
Quilon	..	825	784	1675	3284	..	13	..	..	..	1047	98
Alleppey	..	134	113	873	1120	..	..	..	..	..	310	19
Kottayam	..	84	9	2060	2153	..	..	..	..	..	3426	936
Idukki	..	141	39	1961	2141	7	411	254	..	..	918	168
Ernakulam	..	509	33	503	1045	3	14	198	..	..	2387	1050
Trichur	..	2334	183	698	3215	..	43	70	..	..	155	106
Palghat	3019	3809	2595	896	10319	1839	879	1914	108	108	484	242
Malappuram	..	1046	28	1547	2621	..	15	45	155	155	776	120
Kozhikode	..	257	..	1175	1432	..	28	2	143	143	2159	494
Cannanore	..	32	1019	4827	5878	77	68	109	809	809	913	430
STATE	3019	9267	4813	19634	36733	1926	1490	2592	1215	1215	12672	3674

TABLE III (9)

Area Under Others Seasonal Crops 1977-78

(area in hectares)

District	Sweet Potatoes	Tubers	Lemon-grass	Vegetables	Sesamum	Ground-nut	Cotton	Tohacco
	13	14	15	16	17	18	19	20
Trivandrum	128	1399	14	309	10			..
Quilon	53	6601	36	457	4650			..
Alleppey	26	5049	14	1190	4384			..
Kottayam	56	3569	53	910	180			..
Idukki	72	1618	1694	1273*	309			..
Ernakulam	205	2934	1028	2422	2591			..
Trichur	29	2079	25	807	1706			..
Palghat	1368	2678	48	1790	1125	12655	5286	..
Malappuram	1787	2369	18	1072	2158			..
Kozhikode	159	2932	1206	337	88			..
Cannanore	1114	1677	2794	1903	348			404
STATE	4997	32905	6930	12470*	17549	12655	5286	404

* Onion is grown in Idukki district only and covers an area of 366 hectares

TABLE III (10)

Area under other Perennial Crops—1977-78

(area in hectares)

District	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Jack	Mango	Tamarind	Pappaya	Drumstick	Palmyrah	Cloves	Nutmeg	
Trivandrum	7762	7303	1440	436	2724	578	45	38	
Quilon	7038	7037	1083	822	1458	137	33	111	
Alleppey	4325	4325	236	906	948	17	24	207	
Kottayam	4454	4928	452	1057	1630	587	271	701	
Idukki	1299	1461	88	167	249	211	28	176	
Ernakulam	5236	5235	756	1446	1291	497	101	1393	
Trichur	4838	4837	1082	1241	827	806	8	294	
Palghat	5808	4927	2557	696	558	7678	1	17	
Malappuram	5480	6606	1126	1112	892	1791	1	7	
Kozhikode	7858	7864	606	1216	3431	508	2	17	
Cannanore	7692	7675	592	871	696	576	..	17	
State	61790	62198	10018	9970	14704	13386	514	2978	

TABLE III (10) (Contd.)
Area under other Perennial Crops—1977-78
(area in hectares)

District	(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
		Cinaman	Cocoa	Other fruit crops	Other oil seed trees	Fodder grass	Green man- ure crops	Other non food crops
Trivandrum	8	76	1591	544	116	212	8713	
Quilon	16	180	800	155	232	977	1330	
Alleppey	23	903	684	202	85	176	931	
Kottayam	106	1162	557	389	312	291	2244	
Idukki	41	428	2688	71	257	266	535	
Ernakulam	61	1767	571	241	60	288	3849	
Trichur	73	385	840	163	14	160	1030	
Palghat	63	101	2390	504	8	2267	10224	
Malappuram	..	43	497	18	2	4082	3578	
Kozhikode	907	296	1260	38	11	1928	2045	
Cannanore	10	716	2449	186	117	1166	11330	
State	1308	6057	14327	2511	1214	11813	45809	

TABLE III (11)

Irrigated and unirrigated area under high yielding and other varieties

(Hectares)

District	High yielding			Other varieties			Total	
	Irrigated	Unirrigated	Total	Irrigated	Unirrigated	Total	Irrigated	Unirrigated
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Trivandrum	284	1252	1536	1848	13112	14960	2132	14364
Quilon	523	3453	3976	712	19558	20270	1235	23011
Alleppey	3	13358	13361	90	18252	18342	93	31610
Kottayam	127	9789	9916	56	5609	5665	183	15398
Idukki	115	1990	2105	712	3767	4479	827	5757
Ernakulam	15400	8838	24238	6726	11365	18091	22126	20203
Trichur	2849	8812	11661	2397	30421	32818	5246	39233
Palghat	11549	47905	59454	3698	23549	27247	15247	71454
Malappuram	1804	4938	6742	5584	29778	35362	7388	34716
Kozhikode	100	2417	2517	196	10109	10305	296	12526
Cannanore	87	6536	6623	409	35034	35443	496	41570
State	32841	109288	142129	22428	200554	222982	55269	309842

TABLE III (12)

Irrigated and unirrigated area under high yielding and other varieties

(Hectares)

Winter Paddy 1977-78

District	High yielding			Other varieties			Total	
	Irrigated	Unirri- gated	Total	Irrigated	Unirri- gated	Total	Irrigated	Unirri- gated
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Trivandrum	303	750	1053	2794	12201	14995	3097	12951
Quilon	171	633	804	835	23485	24320	1006	24118
Alleppey	762	10662	11424	156	20170	20326	918	30832
Kottayam	672	8461	9133	814	4446	5260	1486	12907
Idukki	1485	762	2247	547	4046	4593	2032	4808
Ernakulam	3501	719	4220	23863	11454	35317	27364	12173
Trichur	4528	4120	8648	17914	29737	47651	22442	33857
Palghat	32524	5974	38498	21182	21409	42591	53706	27383
Malappuram	2575	3136	5711	8752	26053	34805	11327	29189
Kozhikode	327	2359	2686	476	26758	27234	803	29117
Cannanore	1326	3815	5141	8560	15642	24202	9886	19457
State	48174	41391	89565	85893	195401	281294	134067	236792

TABLE III (13)

Irrigated and Unirrigated Area under High Yielding and Other Varieties

Summer Paddy 1977-78

District	High yielding						Other varieties		Total
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
	Irrigated	Unirrigated	Total	Irrigated	Unirrigated	Total	Irrigated	Unirrigated	
Trivandrum	834	904	1738	120	127	247	954	1031	
Quilon	95	63	158	436	419	855	531	482	
Alleppey	11344	8072	19416	1233	6805	8038	12577	14877	
Kottayam	2309	10278	12587	908	59	967	3217	10337	
Idukki	..	..	..	..	381	381	..	381
Ernakulam	3425	771	4196	12404	777	13181	15829	1548	
Trichur	9305	277	9582	9395	13	9408	18700	290	
Palghat	1682	226	1908	1046	1164	2210	2728	1390	
Malappuram	2830	161	2991	1983	806	2789	4813	967	
Kozhikode	2693	741	3434	400	2804	3204	3093	3545	
Cannanore	2267	3322	5589	1221	304	1525	3488	3626	
State	36784	24815	61599	29146	13659	42805	65930	38474	

TABLE IV

District-wise Production of Important Crops

(in tonnes)

District	Rice								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Autumn	Winter	Summer	Total	Jowar	Ragi	Other Cereals & Millets	Pulses	
Trivandrum	22886	22847	1032	46765	..	16	..	1785	
Quilon	32671	38528	597	71796	..	11	..	1459	
Alleppey	42670	51285	66063	160018	..	..	..	473	
Kottayam	23401	21970	23689	69060	..	..	..	634	
Idukki	9835	12598	330	22813	3	354	152	1628	
Ernakulam	64305	51602	25530	141437	1	12	127	553	
Trichur	44590	67408	32159	144157	..	51	45	1047	
Palghat	195649	159538	5861	361048	824	607	1229	3546	
Malappuram	53639	52203	8719	114561	..	13	29	973	
Kozhikode	9736	40956	8096	58788	..	26	1	374	
Cannanore	52360	40255	11577	104192	35	101	70	3619	
State	551792	559190	183653	1294635	863	1191	1653	16091	

TABLE IV—(Contd.)

District-wise Production of Important Crops

District	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	Sugarcane (gur)	Black pepper	Dry Chillies	Dry Ginger	Cured Turmeric	Processed Cardamum	Betal nuts (No. in million nuts)	Banana	Other Plantain	Jack (No. in thousand)
Trivandrum	148	1271	..	228	11	9	386	5831	50789	25653
Quilon	4910	2689	..	2915	113	8	679	12481	43386	26132
Alleppey	10553	1027	..	728	19	..	321	7854	32214	18087
Kottayam	786	1319	..	11388	804	..	239	20614	66625	17353
Idukki	12239	1232	..	2075	172	2418	156	1811	36250	4240
Ernakulam	198	1767	..	5905	1034	..	1269	14644	52972	25316
Trichur	33	676	..	155	85	..	1574	17297	45177	18849
Palghat	8770	158	96	779	184	193	280	8107	30100	24998
Malappuram	44	687	120	1006	96	10	1619	16573	34513	38790
Kozhikode	25	5969	115	4920	477	189	1418	6906	35981	35911
Cannanore	49	3351	790	2008	552	73	2607	18561	56541	36722
State	37755	20146	1121	32107	3547	2900	10548	130679	484548	272051

TABLE IV—(Contd.)
District-wise Production of Important Crops

District	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
	Raw Cashewnut	Tapioca	Sweet Potato	Ground nut	Sesamum	Coconut (million nuts)	Cotton (Bales of 170 kg.)	Tobacco	Tea	Coffee	Rubber
Trivandrum	3923	711885	576	..	2	320	..	..	1119	18	5146
Quion	8940	1003967	239	..	1097	357	..	..	852	40	22749
Alleppey	2505	349688	117	..	789	283	..	..	..	7	2787
Kottayam	746	506167	252	..	40	192	..	..	844	468	34766
Idukki	581	187360	324	..	68	40	..	..	37506	1712	10446
Ernakulam	2506	264935	923	..	808	276	..	..	..	65	13131
Trichur	3629	139415	131	..	464	311	..	..	971	12	6133
Palghat	5883	183023	6156	13288	297	62	7369	..	1389	1380	4933
Malappuram	7373	325745	8043	..	630	266	..	..	127	..	10984
Kozhikode	5208	169785	716	..	26	524	..	..	7184	14775	11276
Canmanore	43433	346596	5013	..	210	422	..	768	1991	9168	13556
State	84727	4188566	22490	13288	4431	3053	7369	768	51983	27645	135907

