



GOVERNMENT OF KERALA

**Report on the Timely Reporting  
Survey on Agricultural  
Statistics, Kerala,  
1978-'79**



GOVERNMENT OF KERALA  
1982

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**Report on the Timely Reporting Survey on  
Agricultural Statistics, Kerala,  
1978—'79**

Report on the Survey of  
Agricultural Statistics  
1884-85

## PREFACE

This is the fourth report on the Timely Reporting Survey in Kerala under the scheme for Establishment of an Agency for Reporting Crop Statistics. It relates to the fourth round of the survey which was conducted during the year 1978-79.

The scheme E. A. R. C. S. was first launched in the State during 1975-76, as a variant of the T. R. S. carried on in the reporting States of India. Eversince the survey has continued regularly as an annual survey covering the agricultural year. Unistage random sampling has been adopted as the sample design of the survey with the Revenue village as the unit of selection and Taluk as the stratum.

Details on land use, area under seasonal and perennial crops irrigation, etc. were collected from 20% of the villages in 1978-79. The coverage during the preceeding years was 10% in 1975-76, 15% in 1976-77, and 20% in 1977-78. Crop estimation surveys were conducted on the following crops.

1. Paddy (for autumn, winter and summer).
2. Tapioca.
3. Coconut.
4. Arecanut.
5. Cashew.
6. Pepper
7. Mango.
8. Ginger.
9. Turmeric.
10. Sweet Potatoe.

The estimates obtained from the survey during 1978-79 are presented in this report. I hope that this report will be of use to all those who are interested in the agricultural development of the state. Any suggestion for improvement of this technical content will be appreciated.

In this context I am glad to thank the Economic and Statistical Advisor, Ministry of Agriculture and Irrigation, Government of India for the timely advice and guidance. Sri M. Sundara Raman, Deputy Economic Advisor, Government of India has always been associated with the programme at every stage for the success of the scheme.

**Dr. P. A. NAIR,**

*Director,*

*Directorate of Economics and Statistics.*

Trivandrum,  
27-2-1980.

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**REPORT ON THE TIMELY REPORTING SURVEY ON  
AGRICULTURAL STATISTICS,  
KERALA, 1978-79**

This report deals with the fourth round of the Timely Reporting Survey on Agricultural Statistics in Kerala State, conducted during the Agricultural year 1978-79.

The All India Scheme of Timely Reporting Survey was designed to improve the conditions of reporting Agricultural Statistics. But this scheme could not be implemented as such in the non reporting States of Orissa, West Bengal and Kerala, where proper agencies for reporting Agricultural Statistics was not in vogue. So a variant of the same, namely, the scheme for Establishment of an Agency for Reporting Crop Statistics was designed for these states for improvement in reporting Agricultural Statistics. Kerala, being a non reporting State started the scheme from 1975-76 onwards. Prior to 1975-76, estimates on the various parameters relating to Agricultural Statistics in Kerala were framed on the basis of the data collected annually through the Land Utilisation Surveys organised by the Directorate of Economics and Statistics. The estimates at the Taluk or District level so obtained could not be assured of the desired precision due to the small sampling fraction adopted for the surveys. In the case of minor crops only state level estimates could be prepared.

Crop estimation surveys to determine the yield rates of crops was confined to paddy alone. The productivity of other crops, both major and minor, used in arriving at the production figures were only conventional estimates or at the best, those arrived at from the adhoc surveys conducted by the department from time to time on some of the crops.

The quality and coverage of Agricultural Statistics thus available for the state was left much to be desired for. It was in this context that the Government of India came up to finance the scheme for Establishment of an Agency for Reporting Crop Statistics, as part of the All India Scheme for improvement of Agricultural Statistics namely the Timely Reporting Survey.

The Scheme EARCS, as it is known, is designed to collect data for estimating the various parameters under area and yield Statistics for each Agricultural year. At the same time, it is also envisaged that the entire area of the State is to be completely enumerated by the end of six rounds of the survey by completely enumerating in each round all the selected revenue villages, which were taken as the last stage units of sampling. Yield estimation surveys for a year is confined to the villages selected for area enumeration during the year.

The scheme when implemented in the State during 1975-76, ten percent of the villages (134) were completely enumerated. During 1976-77, fifteen percent of the villages (200) were selected and enumerated. In the subsequent two years, i.e. 1977-78 and 1978-79, twenty percent each (265)

of the villages were selected for enumeration. This report gives the details on land use, area under crops, area under irrigation, production of crops etc., collected during 1978-79.

## 2. Design of the survey :

During 1978-79 there were 57 Taluks in the State. Each of them was taken as a stratum for the survey. The revenue village which is the smallest well defined unit of Revenue Administration was the first stage unit of sampling for the survey. The number of sampling units in each of the districts and those selected during the year are presented in the table below.

TABLE—1  
Number of revenue villages existed in the districts  
and those selected during 1978-79

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

## 3. Scheme of work :

Eventhough the Revenue villages were taken as the last stage units for estimating the various parameters under area, for the purpose of conducting the field work conveniently, each of the selected revenue village was further divided into a number of investigator units; on the basis of the number of investigators available, the area under wet and dry lands and the number of crop cutting experiments to be conducted in each of the selected villages. The investigator units were as far as possible equal in extent, with well defined non overlapping boundaries. Where clear demarcated natural or artificial boundaries were not possible, the units were formed in terms of survey numbers.

The work in each of the investigator units formed as above was assigned to an investigator. He had to conduct the area enumeration survey in all the plots in the unit and the crop cutting experiments allotted to that units. The area enumeration in the Travancore-Cochin region of

the State, where only litho sub division are marked in the village maps, the area enumeration was conducted following these divisions. In the Malabar region where the field Measurement Book was available in sub-division in these books were followed in enumerating the details by the investigators.

The preliminary work relating to the survey was started by preparing a list of survey sub division numbers according to the basic tax register available in the village offices. The details required for area enumeration was collected by the Investigators, following the above sub division for the Travancore Cochin area, the litho maps give only litho sub divisions, which comprises of one or more sub divisions of the basic tax register. In such cases the details were collected according to the litho sub divisions only.

The Investigators visited the wet lands three times during the Agricultural year to collect data on seasonal and annual crops corresponding to Autumn, winter and summer seasons. During the last visit, data on land use, irrigation and perennial crops were collected. In dry lands, it was programmed to conduct two visits, corresponding to Khariff and Rabi seasons, the first visit to collect data on seasonal and annual crops and during the second visit data on perennial crops were to be collected. But due to shortage of field staff, the first visit to dry lands, was not conducted. The details relating to seasonal and annual crops for khariff seasons were collected during the visit of the Investigators to these lands during Rabi season by enquiry method.

Crop cutting experiments (GCES) were confined to the villages selected for EARCS, so that the investigators posted in these villages could attend to this work also. During the year under report, experiments on the following crops were conducted.

- |                  |                                    |
|------------------|------------------------------------|
| 1. Paddy         | Autumn, winter and summer seasons. |
| 2. Tapioca       |                                    |
| 3. Coconut       |                                    |
| 4. Arecanut      |                                    |
| 5. Cashew        |                                    |
| 6. Pepper        |                                    |
| 7. Mango         |                                    |
| 8. Ginger        |                                    |
| 9. Turmeric      |                                    |
| 10. Sweet potato |                                    |

The crop cutting experiments on the above crops were planned in all the taluks where the crops cover substantial area under them, but where the area under a crop did not cover a sizable area, experiments were not planned. Table (2) gives the number of taluks in each district and the number in which experiments were planned, cropwise. Table (3) gives the number of experiments planned in each district for each crop and the number of experiments, analysed under each crop. Table (4) gives the number of experiments missed in the districts and table (5) gives the number of experiments missed in the districts and state with reason.

TABLE 2

Distribution of the No. of Taluks in each District and the No. in which Experiments were planned crop-wise

Name of District	No. of Taluks where experiments were planned for each crop												
	Paddy			Paddy							Minor crops		
No. of Taluks	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Trivandrum	4	4	4	4	4	4	4	4	4	..	..	..	4
Quilon	6	6	6	5	6	6	6	3	4	..	..	1	6
Alleppey	7	7	7	6	6	7	4	4	3	..	..	..	7
Kottayam	5	5	5	4	5	4	5	..	5	4	3	..	5
Idukki	4	4	4	..	4	4	2	1	3	1	1	1	4
Ernakulam	7	7	7	6	5	7	6	3	4	2	3	..	7
Trichur	5	5	5	5	4	5	4	4	2	..	..	..	5
Palghat	5	5	5	5	5	5	3	4	2	..	4	2	5
Malappuram	4	4	4	4	4	4	3	4	2	..	..	1	4
Kozhikode	4	4	4	4	4	4	3	3	4	3	..	1	4
Cannanore	6	6	6	6	6	6	5	6	5	4	4	6	6
State	57	57	57	49	53	56	45	36	38	16	18	12	57

TABLE 3

## No. of Experiments Planned in each district under each crop and Analysed (1978-79)

District	No. of experiments planned and analysed under each crop.												
	Paddy						Other crops						
	Autumn		Winter		Summer		Tapioca		Coconut		Arecanut		
A	B	A	B	A	B	A	B	A	B	A	B	A	B
Trivandrum	114	111	114	113	92	92	132	130	50	50	32	32	32
Quilon	146	145	152	149	91	84	144	144	60	60	40	40	40
Alleppey	174	168	154	148	134	127	82	79	50	50	27	27	27
Kottayam	104	100	107	100	54	39	106	105	40	39	33	33	33
Idukki	36	36	58	57	..	..	46	46	30	25	15	15	10
Ernakulam	192	190	180	175	127	126	100	100	42	42	41	41	41
Trichur	140	138	140	136	145	138	106	87	40	40	50	50	50
Palghat	150	145	150	145	133	129	90	90	31	31	15	15	15
Malappuram	114	110	114	112	102	102	128	128	50	50	50	50	50
Kozhikode	84	80	96	94	100	96	110	103	60	60	40	40	37
Cannanore	150	149	162	161	170	170	180	180	61	61	72	72	72
State	1404	1372	1427	1390	1148	1103	1224	1192	514	508	415	415	407

(A)—Planned (B)—Analysed.

TABLE 3 (Contd.)

## Planned and analysed under each crop.

District	Minor Crops												
	Cashew		Pepper		Mango		Ginger		Turmeric		Sweet Potato		
	A	B	A	B	A	B	A	B	A	B	A	B	
Trivandrum	25	25	23	23	20	19	..	..	..	..	..	..	..
Quilon	31	31	25	24	30	30	..	..	..	..	..	..	..
Alleppey	20	20	23	23	28	28	..	..	..	..	..	..	..
Kottayam	..	..	49	49	20	20	70	70	30	30	30	30	..
Idukki	10	10	40	40	16	13	20	20	20	20	20	20	19
Ernakulam	19	19	26	26	35	35	30	30	60	60	60	60	..
Trichur	27	10	10	10	20	19	..	..	..	..	..	..	..
Palghat	40	35	10	9	20	20	..	..	40	40	40	40	40
Malappuram	75	75	20	19	16	16	20	20	..	..	..	..	20
Kozhikode	17	17	60	60	20	20	30	30	30	30	29	20	16
Cannanore	130	130	95	90	30	30	30	30	30	30	30	30	89
State	394	372	381	373	255	250	200	200	210	200	209	190	184



TABLE 4  
 No. of Experiments missed in each district cropwise—1978-79

District	Number of experiments missed												
	Paddy			Summer	Tapioca	Coconut	Arecanut	Cashew	Pepper	Mango	Ginger	Turmeric	Sweet potato
	Autumn	Winter											
Trivandrum	3	1	..	2	..	..	..	..	1	..	..	..	..
Quilon	1	3	7	..	..	..	..	..	1	..	..	..	..
Alleppey	6	6	7	3	..	..	..	..	..	..	..	..	..
Kottayam	4	7	15	1	1	..	..	..	..	..	..	..	..
Idukki	..	1	..	..	5	5	..	..	3	..	..	..	1
Ernakulam	2	5	1	..	..	..	..	..	..	..	..	..	..
Trichur	2	4	7	19	..	..	17	..	1	..	..	..	..
Palghat	5	2	4	..	..	..	5	1	..	..	..	..	..
Malappuram	4	2	..	..	..	..	..	1	..	..	..	..	..
Kozhikode	4	2	4	7	..	3	..	..	..	..	1	..	4
Cannanore	1	1	..	..	..	..	..	5	..	..	..	..	1
State	32	34	45	32	6	8	22	8	5	..	..	1	6



The number of crop cutting experiments to be conducted in a taluk for each of the crop was fixed at the headquarters. The maximum number of experiments in a taluk was fixed as 30 for paddy (during each season) and 40 for tapioca during a year.

The Regional Deputy Director fixed the number of crop cutting experiments to be conducted in an Investigator unit in consultation with the District Statistical Officer and Statistical Inspector. For this due consideration was given to the work load of the Investigator and the area under the crop in the unit. A minimum of two experiments was to be conducted in a village for paddy (each season) and tapioca.

Table (6) gives the frequency distribution on the number of Investigators according to the number of experiments on paddy conducted by them.

TABLE 6

**Number of investigators according to number of experiments conducted by them (Paddy) 1978-79**

No. of experiments	Number of Investigators			
	Autumn	Winter	Summer	All
4 experiments or less	643	692	521	1856
5 to 8 experiments	28	21	19	68
More than 8 experiments	1	2	4	7
All	672	715	544	1931

#### 4. Organisation of the survey

Conduct of the fieldwork on area enumeration, crop cutting experiments and analysis and reporting etc. relating to the survey were the responsibility of the Directorate of Economic and Statistics. The staff pattern at the Headquarters and field is given in Table 7.

TABLE 7

**Staff Pattern at the Headquarters and field**

	Staff sanctioned		Total
	Under LUS by state Government	Under EARCS by G. O. I.	
A. Headquarters.			
(i) Joint Director		1	1
(ii) Assistant Director	1		1
(iii) Research Officer	3	..	3
(iv) Research Assistant	4	..	4
(v) Compilers	2	6	8

	Staff sanctioned		Total
	Under LUS by State Government	Under EARCS by G. O. I.	
<i>B. Field Staff.</i>			
1. Deputy Director	..	3	3
2. Assistant Director	..	3	3
3. Regional Officer	..	3	3
4. Research Assistant	..	5	5
5. Statistical Inspector	51	49	100
6. Compilers	9	2	11
7. Investigators	159	641	800

The Statistical Inspectors posted at the different taluks were primarily responsible for the supervision and the timely completion of field work in the taluks. In the case of certain taluks, where the work of supervision of field work was heavy, additional Statistical Inspectors were posted and they also participated in the supervision of field work. The following table gives the distribution of Statistical Inspectors in the different taluks.

<i>District</i>	<i>Taluk</i>	<i>No. of S. I. posted</i>
(1)	(2)	(3)
Trivandrum	Neyyattinkara	2
	Nedumangad	2
	Trivandrum	2
	Chirayinkil	2
Quilon	Quilon	2
	Kottarakkara	2
	Pathanapuram	2
	Pathanamthitta	2
	Kunnathur	2
	Karunagappally	1
Alleppey	Karthikappally	2
	Mavelikkara	2
	Chengannur	1
	Thiruvalla	2
	Kuttanad	1
	Ambalapuzha	1
	Shertallai	2

(1)	(2)	(3)
Kottayam	Changanacherry	2
	Kanjirappally	1
	Kottayam	2
	Meenachil	2
	Vaikom	2
Idukki	Peermade	1
	Thodupuzha	2
	Udumbanchola	1
	Devicolam	1
Ernakulam	Cochin	1
	Kanayannur	2
	Parur	1
	Kunnathunad	2
	Moovattupuzha	2
	Kothamangalam	2
Trichur	Kodunga'lur	1
	Mukundapuram	2
	Chavakkad	2
	Trichur	2
	Thalappally	2
Palghat	Chittur	2
	Alathur	2
	Palghat	2
	Ottappalam	2
	Mannarghat	2
Malappuram	Ponnani	1
	Tirur	2
	Perinthalmanna	2
	Ernad	2
Kozhikode	Badagara	2
	Kozhikode	2
	Quilandy	2
	South Wynad	1
Cannanore	Tellicherry	2
	Cannanore	2
	North Wynad	1
	Taliparamba	2
	Hosdurg	2
	Kasargode	2

## TIME SCHEDULE

The time schedule for completing each item of work relating to the survey and the actual date of completion of these items with reasons for delay is given below.

Item	Schedule of completion of various items of work		
	Due date	Date of completion	Remarks
<i>A. Area enumeration</i>			
(i) Wet land			
a. Autumn season	August 1978	October 1978	
b. Winter season	November 1978	November 1978	
c. Summer season	March 1979	March 1979	
(ii) Dry land			
a. 1st visit		June 1979	
<i>B. Crop cutting</i>			
1. Paddy			
i. Autumn season		November 1978	
ii. Winter season		February 1979	
iii. Summer season		June 1979	
2. Tapioca		June 1979	
3. Coconut		June 1979	
4. Arecanut		June 1979	
5. Cashew		June 1979	
6. Pepper		February 1979	
7. Mango		June 1979	
8. Ginger		February 1979	
9. Turmeric		February 1979	
10. Sweet potato		March 1979	
<i>C. Sample check in Area and yield estimation surveys</i>			
1. Area check in wet land		June 1979	
2. Area check in dry land		June 1979	

- |   |   |                      |
|---|---|----------------------|
| 3. Supervision of crop cutting experiments on paddy   | } | Autumn October 1978  |
|   |   | Winter February 1979 |
|   |   | Summer June 1979     |
| 4. Supervision of crop cutting experiments on Tapioca |   | June 1979.           |
5. **Training**

Training was given to the primary workers and also the supervisory officers at Taluk and District level. The training classes were organised at the District level for two days. Field training was also given to the field workers.

### 6. **Period of survey and reference period**

The reference period of the survey was the Agricultural year 1978-79 (July 1978—June, 1979). The field work of the survey was started in August 1978.

### 7. **Schedules and Instructions**

The schedules used during the round were the same as that of the previous round.

#### *Supervision*

(a) *Departmental Officers*:—The normal supervision by Departmental Officers were done in three tiers namely at the Taluk level by the Statistical Inspectors and Additional Statistical Inspectors, District level supervision was attended to by the District Statistical Officers and Additional D.S.Os. and at the Regional level by the Regional Officers, and the Deputy Director and Assistant Director posted at Regional Tabulation Centres. The Joint Director, Addl. Director and the Director of Economics and Statistics also inspected the field work as often as they could.

(b) *Supervision by the staff of Agriculture Department*:—Eventhough the Agriculture Department were associated with the supervision of the field work relating to the survey, the quantum of inspection by the Department was considerably low.

(c) *Scheme for improvement of Crop Statistics*:—Under the scheme for improvement of crop statistics the state Directorate of Economics and Statistics also participated in the supervision work of Area enumeration and yield estimation surveys on a 50:50 basis with the National Sample Survey Organisation, Government of India. The supervision of villages was carried-out by the Department. Tables gives the details of the work carriedout by the Department.

TABLE 8

Number of Clusters/Experiments Supervised by Statistical Inspectors under the Scheme I.C.S., the due date of completion, the actual date of completion 1978-79

Season	Area Enumeration				Crop cutting expts. on paddy				Date of completion	Remarks
	No. of clusters for Inspection	No. of clusters inspected	Due date of completion Wet land (4)	Dry land (5)	Actual date of completion Wet land (6)	Dry land (7)	No. of expts. allotted (8)	No. of expts. supervised (9)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Autumn	132	132	30-9-78	30-6-79	30-6-79	30-6-79	160	139	31-10-78	
Winter	132	132	31-12-78	30-6-79	30-6-79	30-6-79	160	146	28-2-79	
Summer	132	125	30-4-79	30-6-79	30-6-79	20-7-79	120	102	9-6-79	
All	396	389					440	387		
							Tapioca			
							80	75	30-6-79	



## 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 shown, 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. stones 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 numbers in the land survey. This is found in the case of former inaccessible areas, but since then cultivated intensly. 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 let 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 too 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 spreadout 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 Kudikidappukar, the right of ownership extending up to ten cents. Most of these Kudikidappukars 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 fag 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 village

$a_j$  = 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

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

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

$$\text{Where } R_i = \frac{\sum_{j=1}^n y_{ij}}{\sum_{j=1}^n a_j}$$

## (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

$Y_{ij}$ =Area under the  $i$ th crop in the wet land

$X_{ij}$ =Area under  $i$ 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

$$y_i = \frac{\sum_{j=1}^n y_{ij}}{n} \times W$$

$$X_i = \frac{\sum_{j=1}^n x_{ij}}{n} \times D$$

$$V(z_i) = V(y_i) + V(x_i)$$

$$= \frac{N(N-n)}{n(n-1)} \left\{ \sum_{j=1}^n (Y_{ij} - R_i^1 W_j)^2 + \sum_{j=1}^n (x_{ij} - R_i^2 d_j)^2 \right\}$$

Where

$$R_i^1 = \frac{\sum_{j=1}^n Y_{ij}}{\sum_{j=1}^n w_j} \quad \text{and} \quad R_i^2 = \frac{\sum_{j=1}^n x_{ij}}{\sum_{j=1}^n d_j}$$

(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 districts for the year 1978-79 are given in table I in the appendix. The variation in utilisation for the years 1975-76 to 1978-79 and the percentage under different utilisation to the total geographical area are given in table 9.

The pattern in utilisation does not show any significant change over the years 1975-76 to 1978-79. The predominance of perennial crop in the cropping pattern adds to the stability in the area under different utilisation. The sown area in the state was 56.73 percentage to the total geographical area for the year 1978-79 and reserve forest cover an area of 27.83 percentage.

### (b) Irrigated area

The estimates of area irrigated are given in table II (a) & (b) of the appendix. The irrigated area was 244066 hectares in 1978-79 which is 11.07 percentage of the sown area. The area under different source in the table reveals that Government canal occupies the major portion of irrigated area (40.08%). Minor Irrigation accounted 21.51% and private tanks and wells 20.93 percentage of the total irrigated area. Among districts Palghat got the largest area as well as the largest portion of area irrigated compared to sown area.

### (c) Area under crops

The estimated area under different crops in each district are given in table III of the appendix with classification as High Yielding Variety and local varieties in the case of paddy.

The area under the important crops estimated for 1975-76 to 1978-79 are given in table 10. Paddy and Coconut are the most important crops in the state and it together occupying more than 50 percentage of the cropped area. The percentage distribution of different crops to total cropped area are also given.

### (d) Production of important crops

The production of important crops namely Paddy, Coconut, Tapioca, Rubber, Pepper, Arecanut, Plantain, Banana, Cashew Cardamom are given in table 11.

The estimates of production for the following crops are based on the average productivity obtained by conducting Crop Cutting Experiments. Paddy, Tapioca, Coconut, Arecanut, Cashewnut, Pepper.

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

TABLE—9

## Land use classification in Kerala 1978-79

Classification	Area in hectares (00'5)						Percentage		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		1975-76	1976-77	1977-78	1978-79	1975-76	1976-77	1977-78	1978-79
1. Total Geographical area		38855	38855	38855	38855	100.00	100.00	100.00	100.00
2. Forest		10815	10815	10815	10815	27.83	27.83	27.83	27.83
3. Land under non Agricultural uses		2592	2604	2572	3604	6.67	6.70	6.62	6.70
4. Barren and uncultivable land		785	788	753	746	2.02	2.03	1.94	1.92
5. Permanent pastures and grazing land		199	161	106	63	0.51	0.41	0.27	0.16
6. Land under mistures tree crops		842	727	680	664	2.17	1.87	1.75	1.71
7. Cultivable waste land		1134	1157	1183	1233	2.92	2.98	3.04	3.17
8. Fallow other than current fallow		230	223	271	266	0.59	0.57	0.70	0.68
9. Current fallow		356	374	461	423	0.92	0.96	1.19	1.09
10. Net area sown		21892	22006	22013	22041	56.34	56.64	56.66	56.73

TABLE—10

## Area under important crops

Name of crop	Area in hectares				Percentage to total cropped area				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	1975-76	1976-77	1977-78	1978-79	1975-76	1976-77	1977-78	1978-79	
1. Paddy									
(Autumn)	375043	363822	365111	346827	12.58	12.26	12.49	12.02	
(Winter)	396392	381678	370859	345727	13.30	12.87	12.68	11.98	
(Summer)	104587	108874	104404	106684	3.51	3.67	3.57	3.70	
TOTAL	876022	854374	840374	799238	29.39	28.80	28.74	27.70	
2. Coconut	692945	694985	673479	660628	23.24	23.43	23.03	22.89	
3. Arecanut	76618	68356	62427	62317	2.57	2.30	2.14	2.16	
4. Cashew	109057	113326	126963	136552	3.66	3.82	4.34	4.73	
5. Pepper	103251	108666	101045	106743	3.63	3.66	3.46	3.70	
6. Tapioca	326865	323278	289722	273483	10.96	10.90	9.91	9.48	
7. Rubber	206686	219723	212271	214415	6.93	7.07	7.26	7.43	
8. Banana & Plantain	52280	51697	50100	53342	1.75	1.74	1.71	1.85	



## Production of important crops

Name of crop	Production (00 ) tons				Percentage increase to the previous year			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1975-76	1976-77	1977-78	1978-79	1976-77	1977-78	1978-79	
1. Paddy								
(Autumn)	5523	4877	5518	5448	-11.70	13.14	-1.27	
(Winter)	5980	5877	5592	5300	-1.72	-4.85	-5.22	
(Summer)	1809	1786	1836	1936	-1.27	2.80	8.17	
TOTAL (rice)	13312	12540	12946	12734	-5.80	3.24	-1.64	
2. Coconut (million nuts)	3439	3348	3053	3211	-2.65	-8.81	5.18	
3. Tapioca	53902	51253	41886	40440	-4.91	-18.28	-3.45	
4. Rubber	1288	1393	1359	1237	8.15	-2.44	-8.98	
5. Pepper	246	245	201	263	-0.41	-17.96	+30.85	
6. Arecanut (million nuts)	11387	11303	10548	19919	-0.74	-6.68	3.52	
7. Plantain and Banana	2510	2157	2720	3229	-14.06	26.10	18.71	
8. Cashew	1224	873	847	842	-29.82	-2.98	-0.59	
9. Cardamom	..	14	29	29	..	107.14	..	

## APPENDIX

TABLE No. I

**Total area and classification of area in each District 1978-79**  
(Area in hectares)

District	Total Geographical area according to village papers	Forest	Land put to non agricultural uses	Barren and un cultivable land	Permanent pastures and grazing lands	Land under miscellaneous tree crops
	(1)	(2)	(3)	(4)	(5)	(6)
Trivandrum	218600	49861	16656	1720	45	241
Quilon	474290	236048	24631	2618	39	358
Alleppey	182270	518	30869	667	20	221
Kottayam	219550	8141	17537	1518	128	370
Idukki	515048	260993	13984	17346	2618	14638
Ernakulam	235319	8123	29823	1693	213	1689
Trichur	299390	103619	21146	2269	225	1416
Palghat	438980	136257	32685	11395	527	8387
Malappuram	363230	103417	16867	7507	450	2508
Kozhikode	371150	90876	20752	3783	299	19884
Cannanore	567670	83656	35493	24097	1681	16962
State	3885497	1081509	260443	74613	6245	66374

TABLE No. J. (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
	(7)	(8)	(9)	(10)	(11)	(12)
Trivandrum	2272	1646	1261	14498	80611	225509
Quilon	1491	1274	1917	205914	101302	307216
Alleppey	2434	1076	3817	142648	66391	209039
Kottayam	1109	2327	3665	184755	50517	235272
Idukki	42582	1272	1287	160328	3685	164013
Ernakulam	5497	2232	3714	182335	76311	258646
Trichur	5141	3080	4266	158228	79332	237560
Palghat	23115	4839	6429	215346	110507	325853
Malappuram	12976	3987	7883	207635	48761	256396
Kozhikode	5024	1794	2786	226252	54766	281018
Cannanore	21700	3071	5221	375789	9399	385188
State	123341	26598	42246	2204128	681582	2885710

TABLE II (a)  
Source-wise—Irrigation (Hectares)—1978-79

District	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Govt. Canal	Private Canal	Govt. tanks & wells	Private Tanks & wells	Minor and lift irrigation	Other source	Total
Trivandrum	6544	16	969	620	2122	1105	11376
Quilon	251	250	1506	1100	1768	2590	7465
Alleppey	2667	..	423	13959	6940	4574	28563
Kottayam	181	162	553	1202	795	431	3324
Idukki	63	84	206	128	108	498	1087
Ernakulam	18619	137	1240	8061	14292	4095	46444
Trichur	19316	401	989	7650	4822	1479	34657
Palghat	45262	315	104	6378	1667	413	54139
Malappuram	522	881	167	6891	4477	5859	18597
Kozhikode	4392	151	137	709	1733	927	8049
Cannanore	10	2938	252	4595	634	7393	15822
State	97827	5335	6546	51093	39358	29364	229523

Area under irrigation crop-wise (1978-79)

(Area in Hectare)

District	Paddy	Vegetables	Tubers	Coconut	Arcanutt	Cloves + Nutmeg + Cinnamon	Other condiments & spices	Banana	Betal leaves	Sugar cane	Others	Total
Trivandrum	8825	221	17	1438	7	16	..	325	..	..	1438	12287
Quilon	5219	85	58	820	3	24	..	34	31	82	1444	7800
Alleppey	11607	284	270	15745	150	81	136	135	64	95	1959	30526
Kottayam	1319	400	4	255	2	656	..	186	22	..	5/2	3416
Idukki	1316	..	..	30	1	48	17	3	..	..	17	1432
Ernakulam	65501	..	226	9571	1042	..	222	1206	108	2	3239	81117
Trichur	53264	374	76	24844	6121	255	195	1418	26	1	1786	88360
Palghat	81262	484	14	2264	1805	1	..	432	..	..	1432	87694
Malappuram	20671	843	164	1580	2417	..	70	1714	362	..	1464	29285
Kozhikode	7631	286	115	526	29	1	5	530	24	..	1229	10376
Cannanore	15481	1503	40	6883	7625	..	726	1445	35	2	1390	35130
State	272096	4480	984	63956	19202	1082	1371	7428	672	182	15970	387423

TABLE III(i)

## Area under principal crops 1978-79—(Paddy)

District	Area under the crop (in Hect.)				Percentage sampling error			
	Autumn	Winter	Summer	Total	Autumn	Winter	Summer	Total
Trivandrum	15535	16051	1494	33080	4.77	4.57	9.22	4.50
Quilon	24611	25364	840	50815	6.01	4.73	12.73	5.40
Alleppey	29071	16854	29576	75501	9.11	8.68	6.53	4.87
Kottayam	13939	13304	10206	37449	9.58	9.30	2.82	3.96
Idukki	3162	5396	274	8832	4.18	6.26	..	2.38
Ernakulam	41789	38928	19448	100165	3.78	3.66	5.44	2.25
Trichur	42441	51417	21929	115787	6.98	5.26	10.74	4.95
Palghat	87718	83219	3476	174413	2.50	2.32	16.12	1.99
Malappuram	39436	36382	5644	81462	5.62	5.83	11.26	6.27
Kozhikode	10718	30776	7415	48909	10.15	4.31	23.07	5.37
Cannanore	38407	28036	6382	72825	2.39	4.83	17.09	3.34
State	346827	345727	106684	799238	1.70	1.50	3.68	1.34

TABLE III (ii)

## Area under principal crops 1978-79—(Tapioca)

District	Area under the crop (hectare)			Total	Percentage sampling error			
	Autumn	Winter	Summer		Autumn	Winter	Summer	Total
Trivandrum	23174	23498	9124	55796	10.13	6.87	12.07	4.71
Quilon	23208	43913	1029	68150	21.03	19.11	16.45	18.14
Alleppey	3604	15268	1776	20648	27.83	20.01	22.46	19.79
Kottayam	2530	23988	439	26957	39.13	11.10	27.00	12.25
Idukki	750	8544	182	9476	42.15	19.26	38.13	17.78
Ernakulam	3572	9674	769	14015	15.25	12.70	8.48	8.42
Trichur	1136	6746	799	8681	37.36	19.60	11.35	18.55
Palghat	7829	6367	1463	15659	15.60	24.05	24.35	12.40
Malappuram	6853	13408	1543	21804	18.91	20.01	28.64	16.28
Kozhikode	3676	3897	1263	8836	18.20	22.31	15.41	16.62
Cannanore	2339	19378	1744	23461	24.12	20.91	13.76	18.89
State	78671	174681	20131	273483	7.61	6.33	6.76	5.57

TABLE III (3)  
Area under principal crops 1978-79 Coconut

District	Number of trees ('000)			Area (hectares)		Percentage sampling error		
	Bearing (2)	Young (3)	Total (4)	Total (5)	Bearing (6)	Young (7)	Total (8)	
(1)								
Trivandrum	9721	6799	16520	72775	8.70	1.10	5.50	
Quilon	10146	7188	17334	81381	15.92	8.91	12.78	
Alleppey	10346	4304	14650	61814	10.26	7.47	9.02	
Kottayam	8827	2882	11709	53959	7.31	7.99	7.26	
Idukki	1684	858	2542	14526	47.55	24.59	22.27	
Ernakulam	8408	5508	13916	61304	18.26	5.59	6.52	
Trichur	8046	3968	12014	50690	11.29	10.44	10.79	
Palghat	2439	2246	4685	19768	11.32	5.02	10.36	
Malappuram	9074	5295	14369	61145	18.14	14.59	16.59	
Kozhikode	14597	8075	22672	97725	17.07	14.54	14.12	
Cannanore	11933	9196	21129	85541	16.76	10.23	13.01	
State	95221	56319	151540	660628	4.91	3.50	3.91	



TABLE III (4)

## Area under principal crops 1978-79 (Arecanut) number of trees ('000)

District	Bearing	Young	Total	Area (hectares)	Percentage sampling error		
					Bearing	Young	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Trivandrum	5551	1405	6956	3258	14.13	8.95	12.35
Quilon	8219	3747	11966	5479	11.65	15.44	12.31
Alleppey	3948	2610	6558	3050	7.86	8.09	6.72
Kottayam	4591	1196	5787	2629	6.40	9.00	5.81
Idukki	2291	1131	3422	1556	20.39	22.34	19.30
Ernakulam	12418	2500	14918	6784	7.15	8.63	6.65
Trichur	14075	2485	16560	7531	13.61	14.54	13.38
Palghat	3209	1631	4840	2272	18.48	16.08	16.14
Malappuram	13308	4128	17436	8182	14.15	13.35	13.37
Kozhikode	10855	3003	13858	6500	23.04	8.42	18.61
Cannanore	21249	6174	27423	15076	7.06	6.12	6.57
State	99714	30010	129724	62317	4.35	3.61	3.89

TABLE No. III (5)

## Area under principal crops 1978-79 cashew

District	No. of trees (000)	Area (hectares)	Percentage sampling error
(1)	(2)	(3)	(4)
Trivandrum	1839	6130	15.72
Quilon	2807	9357	8.14
Alleppey	1003	3343	12.28
Kottayam	355	1183	9.31
Idukki	307	1023	20.41
Ernakulam	1295	4317	19.22
Trichur	2209	7363	14.89
Palghat	2837	12790	14.84
Malappuram	6666	22221	13.95
Kozhikode	1567	5222	17.21
Cannanore	19081	63603	6.91
State	40966	136552	4.42

TABLE No. III (6)

## Area under principal crops 1978-79 pepper

District	No. of standards (000)	Area (hectare)	Percentage sampling error
(1)	(2)	(3)	(4)
Trivandrum	3372	6021	16.20
Quilon	5908	10550	23.82
Alleppey	2584	4614	13.47
Kottayam	7627	13620	14.66
Idukki	6735	12026	43.52
Ernakulam	4149	7409	9.03
Trichur	1975	3527	14.67
Palghat	757	1352	24.84
Malappuram	2045	3652	14.36
Kozhikode	10730	19160	12.93
Cannanore	13895	24812	13.08
State	59777	106743	6.80

TABLE III (7)

**Area under plantation crops 1978-79 (area in hectares)**

District	Rubber	Tea	Coffee	Cardamom
(1)	(2)	(3)	(4)	(5)
Trivandrum	8153	1071	48	176
Quilon	34933	2007	109	160
Alleppey	3875	..	19	..
Kottayam	55931	2315	1252	..
Idukki	15802	24053	4587	45997
Ernakulam	21311	30	174	..
Trichur	8950	438	33	7
Palghat	9347	662	1659	3664
Malappuram	17648	174	178	193
Kozhikode	17277	3889	27946	3598
Cannanore	21188	1451	17340	1385
STATE	214415	36090	53345	55180

TABLE III (8)

**Area under annual crops 1978-79 (area in hectares)**

District	Banana	Plantains	Sugarcane	Pine-apple	Betal leaves
(1)	(2)	(3)	(4)	(5)	(6)
Trivandrum	562	5439	38	534	126
Quilon	1217	3714	790	884	186
Alleppey	853	3555	3569	345	95
Kottayam	1701	4270	178	572	59
Idukki	176	3287	1747	340	7
Ernakulam	1833	4088	183	605	95
Trichur	1445	3769	2	490	72
Palghat	879	2429	1945	154	4
Malappuram	1854	2396	17	223	487
Kozhikode	1077	3064	6	663	60
Cannanore	1921	3813	62	1128	40
STATE	13518	39824	8537	5938	1231

TABLE III (9)  
Area under Seasonal crops 1978-79 (area in hectares)

District	Pulses									
	Khariff					Rabi				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Other pulses	H. gram	Other pulses	Total	Jowar	Ragi	Other cereals and millets	Chillies	Ginger	Turmeric
Trivandrum	117	66	3313	3496	..	19	..	..	127	15
Quilon	1238	826	756	2820	..	5	..	..	1153	106
Alleppey	170	141	503	814	..	6	..	..	261	37
Kottayam	23	2	1796	1821	..	..	..	..	3331	1043
Idukki	426	..	1400	1826	25	327	250	..	870	196
Ernakulam	173	102	1238	1513	5	3	200	..	2496	1062
Trichur	2214	622	1570	4406	..	43	60	..	197	126
Palghat	3957	3144	2357	9458	1839	879	1147	71	493	168
Malappuram	392	38	2288	2718	..	9	35	87	527	81
Kozhikode	222	..	1171	1393	..	28	17	74	2281	503
Cannanore	119	758	4425	5302	42	13	108	559	977	474
STATE	9051	5699	20817	35567	1911	1332	1817	791	12713	3811

TABLE III (9) *Contd.*

## Area under other seasonal crops 1978-79 (area in hectares)

District	Sweet potatoes	Tubers	Lemon grass	Vegetable	Sesamum	Ground nut	Cotton	Tobacco
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Trivandrum	117	1752	35	358	16	..	..	..
Quilon	15	6972	41	349	3681	..	..	..
Alleppey	73	5578	8	921	4718	..	..	..
Kottayam	48	3981	18	848	114	..	..	..
Idukki	70	1920	2022	1351	209	..	..	..
Ernakulam	59	3227	603	2172	2601	..	..	..
Trichur	111	2282	115	956	1929	..	..	..
Palghat	1988	2903	96	2316	1196	13938	5354	..
Malappuram	1767	2396	135	1601	2321	..	..	..
Kozhikode	113	3251	283	455	233	..	..	..
Cannanore	1070	1626	2598	1981	540	..	..	404
STATE	5431	35888	5954	13308	17558	13938	5354	404

TABLE III (10)  
Area under other perennial crops 1978-79 (Area in hectares)

District	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Jack	Mango	Tamarind	Pappaya	Drumstick	Palmyrah	Gloves	Nutmeg
Trivandrum		7905	7754	1587	633	3018	665	73	62
Quilon		6998	6305	1008	623	1267	63	68	224
Alleppey		4172	4550	301	896	933	30	18	159
Kottayam		4554	4102	390	869	1879	601	228	592
Idukki		1999	2398	164	478	377	242	18	116
Ernakulam		4676	5305	785	1360	1207	348	96	1445
Trichur		4154	5406	1256	998	83	1114	7	272
Palghat		4068	4723	3012	532	65	8157	3	64
Malapüram		4755	5896	1147	847	862	1491	7	43
Kozhikode		8796	7682	665	1112	3111	538	1	4
Cannanore		7822	7377	625	692	789	461		525
STATE		59899	61498	10940	9041	14931	13710	519	3506

TABLE III (10) (Concl'd.)  
Area under other perennial crops—1978-79 (Area in hectares)

District	(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
		Cinnamon	Cocoa	Other fruit crops	Other oil seed trees	Fodder grass	Green manure crops	Other non food crops
Trivandrum		13	265	1240	303	162	343	2344
Quilon		33	924	1028	104	297	1067	2333
Alleppey		18	1539	1068	132	149	226	1151
Kottayam		90	3913	1247	221	465	328	2514
Idukki		27	566	2433	138	405	203	1943
Ernakulam		64	2388	765	217	70	301	3365
Trichur		65	801	853	180	112	325	2167
Palghat		238	122	2274	588	16	1690	10873
Malappuram		..	143	800	23	8	3324	3737
Kozhikode		212	1177	1021	157	109	1269	2601
Cannanore		308	931	2304	160	163	1685	12006
STATE		1068	12769	15034	2223	1956	10766	45034





TABLE III (12)

Irrigated and Unirrigated area under high yielding and other varieties  
winter paddy 1978-'79

District	(in hectares)								
	High yielding			Other varieties			Total		
	Irrigated	Unirrigated	Total	Irrigated	Unirrigated	Total	Irrigated	Unirrigated	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Trivandrum	373	685	1058	3881	11112	14993	4254	11797	11797
Quilon	657	852	1509	4086	19769	23855	4743	20621	20621
Alleppey	1209	2053	3262	135	13457	13592	1344	15510	15510
Kottayam	510	9894	10404	120	2780	2900	630	12674	12674
Idukki	450	842	1292	400	3704	4104	850	4546	4546
Ernakulam	1975	740	2715	28642	7571	36213	30617	8311	8311
Trichur	3872	2806	6678	27367	17372	44739	31239	20178	20178
Palghat	37343	2145	39488	21690	22041	43731	59033	24186	24186
Malappuram	3806	3777	7583	9535	19264	28799	13341	23041	23041
Kozhikode	102	1915	2017	875	27884	28759	977	29799	29799
Cannanore	1120	783	1903	9002	17131	26133	10122	17914	17914
STATE	51417	26492	77909	105733	162085	267818	157150	188577	188577

TABLE III (13)

**Irrigated and unirrigated area under high yielding and other varieties  
Summer Paddy 1978-'79**  
(in hectares)

District	High yielding			Other varieties			Total	
	Irrigated	Unirrigated	Total	Irrigated	Unirrigated	Total	Irrigated	Unirrigated
Trivandrum	562	292	854	586	54	640	1148	346
Quilon	52	124	176	65	599	664	117	723
Alleppey	9286	15712	24998	975	3603	4578	10261	19315
Kottayar	521	8385	8856	81	1269	1350	602	9604
Idukki	..	..	..	112	162	274	112	162
Ernakulam	4280	34	4314	14835	299	15134	19115	333
Trichur	5821	33	5854	15759	316	16075	21580	349
Palghat	1991	27	2018	1270	188	1458	3261	215
Malappuram	3005	169	3174	2306	164	2470	5311	333
Kozhikode	4234	210	4444	2420	551	2971	6654	761
Cannanore	818	122	940	4526	916	5442	5344	1038
STATE	30570	25058	55628	42935	8121	51056	73505	33179

TABLE IV

## District-wise production of important crops

(in tonnes)

District	Rice						Ragi	Other cereals and Millets	Pulses
	Autumn	Winter	Summer	Total	Jowar	(6)			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Trivandrum	25326	23895	1228	50449	..	16	..	1766	
Quilon	39191	41736	572	81499	..	4	..	1252	
Alleppey	36744	20995	78322	135561	..	5	..	318	
Kottayam	24528	19024	22111	65663	..	..	..	539	
Idukki	5400	10059	325	15784	11	281	160	1239	
Ernakulam	66922	58552	24950	150424	2	3	128	793	
Trichur	53070	68168	31795	153033	..	48	38	1401	
Palghat	186447	157841	5038	349326	827	615	734	3924	
Malappuram	54503	48040	10127	112670	..	8	22	1008	
Kozhikode	8041	44644	10758	63443	..	26	11	362	
Cannanore	43999	37550	13342	94891	19	19	69	3287	
STATE	544171	530004	198558	1272743	859	1025	1162	15889	

TABLE IV

## District-wise production of important crops (in tonnes)

District	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	Sugarcane(gur)	Black pepper	Dry chillies	Dry ginger	Curd turmeric	Processed cardamom	Betal nuts (No. in million nuts)	Banana	Other plantain	Jack No. in thousands
Trivandrum	187	1602	..	310	29	9	363	6800	660.9	26126
Quilon	3587	3123	..	3335	200	8	730	12194	40334	25984
Alleppey	18166	1047	..	637	72	..	379	10449	37079	17447
Kottayam	986	1076	..	9553	1946	..	318	24358	63922	17742
Idukki	10709	1660	..	2058	347	2418	272	2020	44506	6525
Ernakulam	1133	1304	..	6682	1968	..	1007	21629	57068	22608
Trichur	8	977	..	205	127	..	1541	22889	39650	16184
Palghat	13732	314	63	824	272	193	363	12095	30945	17509
Malappuram	107	705	77	966	126	10	1403	23935	25110	23475
Kozhikode	38	6112	59	5714	972	189	1516	12418	36063	40198
Cannanore	217	8411	520	2626	986	73	3027	22706	47472	37342
STATE	48870	26331	719	32910	7045	2900	10919	171493	488178	251140

TABLE IV (Contd.)

## District-wise production of important crops

District	(1)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)
		Mango	Raw cashewnut	Tapioca	Sweet potato	Ground nut	Sesamum	Coconut (million nuts)	Cotton (Bales of 170 kg.)	Tobacco	Tea	Coffec	Rubber
Trivandrum	24340	2973	813506	706	..	4	369	..	..	987	18	5060	
Quilon	26752	6905	988175	90	..	920	323	..	..	807	41	24060	
Alleppey	9173	2892	314263	441	..	896	349	..	..	..	7	1730	
Kottayam	26536	374	448025	290	..	25	190	..	..	657	472	32187	
Idukki	2551	316	167251	438	..	48	34	..	..	34219	1729	10140	
Ernakulam	27809	2655	229145	356	..	806	329	..	..	..	66	11421	
Trichur	20354	2025	113027	670	..	540	333	..	..	995	12	6158	
Palghat	14400	24617	233319	12654	13659	323	71	7241	..	1334	1394	4513	
Malappuram	47545	13977	271460	11892	..	766	326	..	..	..	75	95	9785
Kozhikode	24844	4460	94722	720	..	72	535	..	..	6553	14923	9323	
Cannanore	4292	42996	371153	7099	..	313	352	..	..	768	1737	9260	9300
STATE	267231	84191	4044046	35356	13659	4713	3211	7241	768	47364	38017	123677	

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