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NATIONAL AGRICULTURAL RESEARCH PROJECT

KERALA : NORTHERN ZONE

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PILICODE 670 353

STATUS REPORT VOL. II

Adoption Patterns and Production Constraints



REGIONAL AGRICULTURAL RESEARCH STATION

PILICODE - 670 353

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## INTRODUCTION

The ultimate aim of research and extension efforts is to increase farm output. A number of improved technologies have been developed in the recent past, but in spite of the best efforts of the extension personnel, many of these technologies remain to be adopted by the farmers at large. What are the constraints that operate against the adoption of these technologies? This formed the objective of a survey which we undertook during 1985 in the Cannanore and Kasaragode districts of the northern zone. The results of this survey are presented in this report.

The introduction of early duration, photoinsensitive fertilizer-responsive varieties in the mid sixties opened up new vistas in cereal production in our country. However, the achievement in food grain production is far less than the expectations, considering the vast production potential created by the new production technologies and modern crop varieties. A large part of the production potential remains to be realized. The disparity between the technology evolved and their nonadoption by the practicing farmers has resulted in a wide gap between the potential productivity and the realized productivity. This is mainly because of the nonadoption of newer production technologies (developed in the research stations) by the farmers owing to the existence of a large number of constraints - environmental, physical, social, cultural and economic. If this gap is narrowed down, production could be increased substantially without bringing additional land under the plough. It is essential that we identify the yield gaps and production constraints so as to help solve such constraints. A study was, therefore, undertaken in the year 1984-85 with the following broad objectives:

- (i) to study the extent of adoption of improved agricultural practices by the farmers as recommended by the Kerala Agril. University.
- (ii) to identify the major constraints responsible for nonadoption of newer technologies; and
- (iii) to suggest ways and means to overcome the constraints.

The study was confined to the 2 districts in the northern zone viz; Cannanore and Kasaragod. The size of the sample was 221 equivalent to 0.05 per cent of the total number of households in these 2 districts. The holdings were selected by a multistage stratified random sampling technique. From each Community Development Block one Panchayat was selected at random and from each selected panchayat at the required number of holdings was selected based on the criteria of probability proportional to the number of holdings in each Panchayat. The distribution of sample households among the different panchayats selected is given in Table 1.

Table - 1

Extent of adoption of newer production technologies:  
Number of households selected

District	Block	Panchayat	No. of households selected
Kasaragod	Manjeshwar	Meenja	12 (2434)
	Kasaragod	Muliyar	13 (2527)
	Kanhangad	Pullur-Pariya	16 (3284)
	Nileshwar	Kinanur	
		Karindalam	17 (3398)
Cannanore	Payyanur	Ramanthali	15 (3013)
	Taliparamba	Kurumathur	15 (3016)
	Irikkur	Payyavur	17 (3390)
	Cannanore	Chirakkal	25 (4957)
	Edakkad	Chelora	19 (3639)
	Tellicherry	Kottayam	10 (1935)
	Koothuparamba	Kunnothparamba	25 (4728)
	Iritty	Mattannur	24 (4720)
	Peravoor	Kolayad	13 (2608)
Total			221

Note: Figures in paranthesis denote the number of households in the panchayats.

Since the adoption of technologies was expected to vary amongst different categories of farmers, the selected holdings were further stratified into 4, based on the size of the holdings, as given in Table 2.

Table - 2

Extent of adoption of production technologies: Distribution of sample holdings (stratum-wise)

Code	Stratum Holding size (ha)	No. of holdings
I	Upto 0.20	29
II	0.21 - 0.60	72
III	0.61 - 1.20	66
IV	above 1.20	55
Total		221

The important crops considered for the survey were rice, coconut, cassava, banana, pepper and cashewnut. The cultivation seasons of these crops are depicted in Fig. 1. The results of the study have been summarised briefly in the following pages.

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Extent of adoption  
and  
constraints  
in the adoption of  
improved agricultural technologies

Extent of adoption

Rice

Recommendation			Adoption pattern	Rationale
(1)			(2)	(3)
<p>1. <u>Varities</u> The recommended technology is as follows</p>			<p><u>The average of high yielding varieties</u></p> <p>Only 32 per cent of the gross area is cultivated with modern rice varieties</p> <p>The extent of adoption (Precentage of farmers adopting the recommendations) is worked out as follows:</p> <p>First crop season: 28%</p> <p>Second crop season: 35%</p> <p>Third crop season: 43%</p>	<p>The lower adoption of recommended varieties is due to severe incidence of diseases and pests in the case of the improved varieties (30% of the farmers face this constraint). Non-availability of seeds also leads to lesser adoption. The tall varieties are preferred by many farmers because they yield higher amount of straw of good quality</p>
<p>1) Double crop wet lands -dry broadcasting</p>	<p>1st crop (Viruppu)</p> <p>2nd Crop (Mundakan)</p>	<p><u>Medlum duration</u> Aswathy, IR 8, Jaya, Masoori.</p> <p><u>Short duration</u> Rohini, Triveni, Jyothi, Annapoorna,</p> <p>Varities recommended for 1st crop except Rohini</p>		



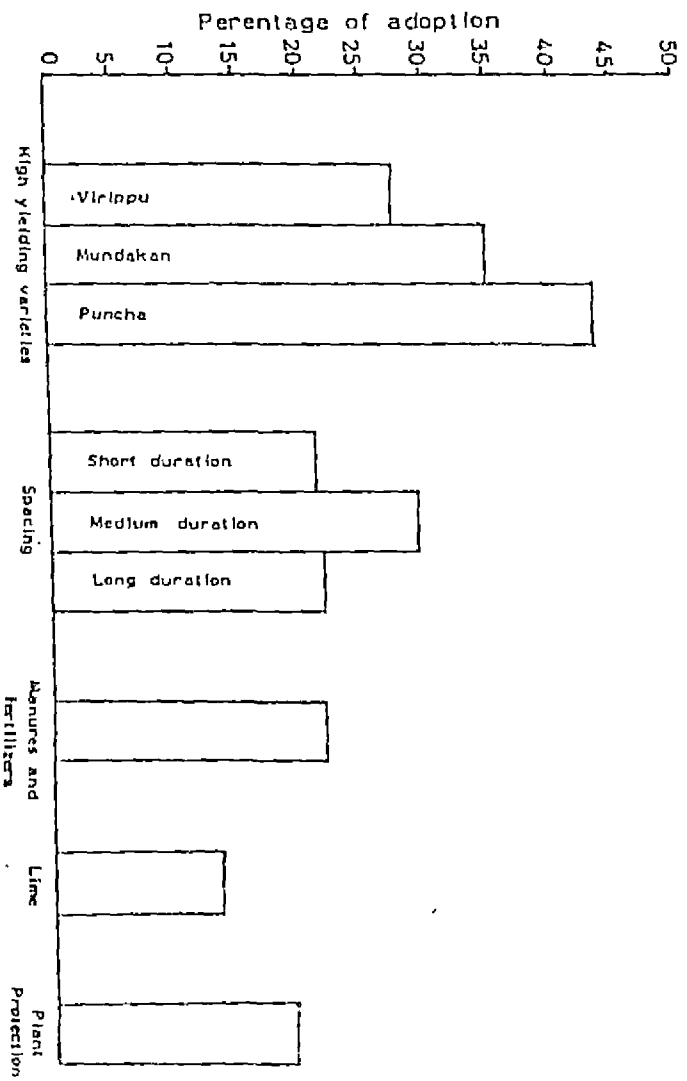


Fig.1 Extent of adoption - RICE

2) Double crop wet lands Transplanting	<u>First crop</u>	<u>Medium duration</u> Same various as in 1st crop.	The maximum extent of adoption is noticed in the highest stratum (more than 50 percent). The most popular modern variety is Jaya	If varieties suitable for the zone with more disease/pest resistance are evolved there is more chance to increase the area under high yielding modern varieties. Production and distribution of quality seeds in time is to be taken care of by the concerned agencies.
	<u>Second crop</u>	<u>Medium duration</u> Jaya, Aswathy, IR8, Sabari, Bharathi etc. <u>Short duration</u> Annapoorna, Triveni, Jyothi, Rohini	The local tall cultivars which are popular with the farmers are:  <u>First crop:</u> Allikannan, Thowan, Thonnooran	
	<u>Third crop</u>	<u>Medium duration</u> Jaya, IR8, Sabari, IR 20. <u>Short duration</u> Annapoorna, Jyothi, Triveni, Rohini,	<u>Second crop:</u> Chitteni (Ptb 20)	

(1)	(2)	(3)
-----	-----	-----

<p>2. <u>Seed rate:</u>            Transplanted crop      60-85 kg            Broadcasted crop      80-100 kg            Dibbled crop      80-90 kg</p>	<p>Adoption at the recommended rate is 46%. 53% of the farmers adopt excess seed rate. For transplanted crop on an average, the farmers use 98 kg of seed/ ha. In the case of broadcast crop, the extent of adoption is 33%. Forty percent of the farmers adopt excess seed rate. The mean seed rate adopted by farmers is 114 kg/ha.</p>	<p>The farmers are generally not convinced of the advantage of using exact seed rate. They have a feeling that more seed rate will give a dense stand of the crop and better yield.</p>
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Dibbling is not practised in the area.

3. Preparation of nursery

Wet nursery:-

Two systems: Wet and dry

In the first crop season only 15 percent of the cultivators follow the recommended technology. During the second crop season also the adoption is low (16 percent). During third crop season the extent of adoption is to an extent of 25 per cent.

The farmers are not aware of the exact recommendation for the preparation of nursery. The higher labour cost for land preparation is another factor favouring the adoption of traditional methods.

.....  
 (1) (2) (3)  
 .....

Dry nursery:

First crop season: 43 per cent follow the recommended technology.

Second crop season: 43 per cent follow the technology.

4. Age of seedlings

- a) Short duration  
 Varieties: 18 days
- b) Medium duration  
 Varieties: 20-25 days
- c) Long duration  
 Varieties: 30 days

The general recommendation is to plant at 4-5 leaf stage.

About 60% farmers follow the recommendation. The others use overaged seedlings.

The cultivators are forced to use overaged seedlings due to the late receipt of monsoon rains or lack of sufficient water at the time of transplanting.

5. Transplanting:

2-3 seedlings per hill in rows at the recommended spacing at a depth of 3-4 cm.

The cultivators generally plant a large number of seedlings per hill in bunches in order to ensure a high plant density.

Engaging untrained labourers is a constraint recommendation. The cultivators are not convinced of the benefit of planting 2-3 seedlings per hill.

(1)	(2)	(3)
-----	-----	-----

6. Spacing:-

Season	Variety	Spacing	Extent of adoption is poor.
1st crop	Medium		
	duration	20cmx15cm	Short duration : 20%
	Short		
	duration	15cmx10cm	Medium duration : 27%
2nd crop	Medium		
	duration	20cmx10cm	Long duration : 11%
3rd crop	Short		
	duration	15cmx10cm	The cultivators generally adopt planting at a wider spacing in order to cover the area within a short span of time.
3rd crop	Medium		
	duration	20cmx10cm	
	Short		
	duration	15cmx10cm	

The farmers generally employ casual labourers who have not much skill in following the recommended spacing. No marked rope is used while planting. Since this technology involves more labour, the cultivators are hesitant to follow the practice. They are also not convinced of the benefits of planting seedlings at a uniform spacing.

7. Application of manures and fertilisers

a) Application of organic manure - 5 tonnes/ha

22 per cent of the farmers follow the recommended dose. 65 per cent use lesser quantity than the recommended dose. 14 per cent follow a higher dosage.  
 Mean quantity of manures used is 3.7 tonnes/ha (75% of the recommended organic manure)

Non availability of organic manures is a constraint, especially for the first crop season when the crop is sown under semidry conditions. The high cost of organic manures is another constraint.

.....  
 ..... (1) ..... (2) ..... (3) .....

8. Application of fertilizers:- Mean quantity applied:  
Short duration varieties: Short duration: 72:48:38 kg/ha  
 N:P:K 70 : 35 : 35 kg/ha Medium duration: 45:35:38 kg/ha  
Medium duration varieties: Long duration: 27:21:17 kg/ha  
 N:P:K 90 : 45 : 45 kg/ha When analysed at various levels of  
Long duration varieties: application, the adoption pattern is as  
 N:P:K 40 : 20 : 20 kg/ha follows: (Extent of adoption as percentage  
 to total farmers)

.....

(1)	(2)			(3)
1) <u>Short duration:</u>				
	<u>Full adoption</u>	<u>Partial adoption</u>	<u>Excess adoption</u>	
Basal level	25	75	--	
Tillering stage	20	--	80	
Panicle initiation stage	17	17	66	
<u>Medium duration varieties:</u>				
Basal level	--	92	8	Farmers are not fully aware of the benefits of balanced nutrition. High cost of fertilizers is another constraint.
Tillering stage	4	--	100	
Panicle initiation state	--	74	26	
<u>Long duration varieties:</u>				
Basal level	11	66	23	
Tillering stage	--	29	71	
Panicle initiation stage	6	41	53	
The adoption pattern during different stages of growth shows much variation.				

	(1)	(2)	(3)
9. <u>Application of lime</u>	350 kg at the first ploughing and 250 kgs one month after sowing	13 per cent of farmers apply lime at a partial dose.	Farmers are not convinced of the benefit of liming.
10. <u>Plant Protection</u>	The study was restricted to know whether the cultivators were following plant protection measures or not. The correct treatment to difficult pests and diseases using the different chemicals was not brought into the purview of the study.	About 19 percent of the farmers are using recommended plant protection measures.	Many farmers do not resort to pest control measures due to ignorance or lack of finance. About 35 percent of the farmers are not aware of the recommendation. Many cultivators are not able to identify the different pests and diseases and undertake proper measures.



Production constraints

Rice

Production constraints	Technology available but to be adopted (extension gap)	Technology not available (Research gap)
1. Higher susceptibility of modern varieties to pests and disease leads to lower adoption.	There is need to educate the farmers, on pest management techniques through demonstrations, group discussions etc. The production and distribution of plant protection chemicals in time should be assured.	Varieties suitable to the specific situations of the region should be screened (both local varieties and high yielding varieties) for pest tolerance. Integrated pest management technologies should also be developed.
2. Use of excess seed rate.	Convince the farmers about the technical and economic advantages of optimum seed rate and plant population.	
3. Lower or higher plant population due to irregular planting of seedlings both affect yield.	Recommended spacings to achieve optimum population and proper water management practices need to be popularised.	
4. Imbalanced use of fertilizer nutrients at improper stages leads to waste and economic loss.	The economic and technical aspects of balanced use of fertilizers should be brought home to farmers.	Optimum fertilizer schedules for different soils and different research basis should be worked out.
5. Plant protection.	Technology for chemical control available; extension work has to be intensified.	

Extent of adoption

Coconut

Recommendation	Adoption pattern	Rationale
(1)	(2)	(3)
<b>1. <u>Varieties</u></b>		
West Coast Tall, Lakshadweep ordinary, Andaman Ordinary, Philippines, Cochin China and T x D and D x T hybrids.	Seven percent of the farmers cultivate hybrids along with local varieties. 94 percent of the farmers grow West Coast Tall only.	Though many are aware of the comparative advantages, sufficient number of seedlings are not available. Others believe that the local variety will give yield for a comparatively longer period with minimum care and management.
<b>2. <u>Selection of seedlings</u></b>		
Seedlings with early germination and rapid growth, having 6-8 leaves, 10-12 months old seedlings, 10-12 cm girth at collar and having early splitting character of leaves should be selected.	Eleven percent of the farmers adopted the selection criteria. But generally 10-12 months old seedlings are used for planting.	Since many farmers procure seedlings from fellow farmers and private agencies the scope for vigorous selection is limited.
<b>3. <u>Spacing:</u></b>		
<u>Planting system</u> Triangular	<u>Spacing</u> 7.6 m	24 percent of farmers adopt the correct spacing for planting. Among the others who Farmers adopting inadequate spacing believe that accommodating more number of palms

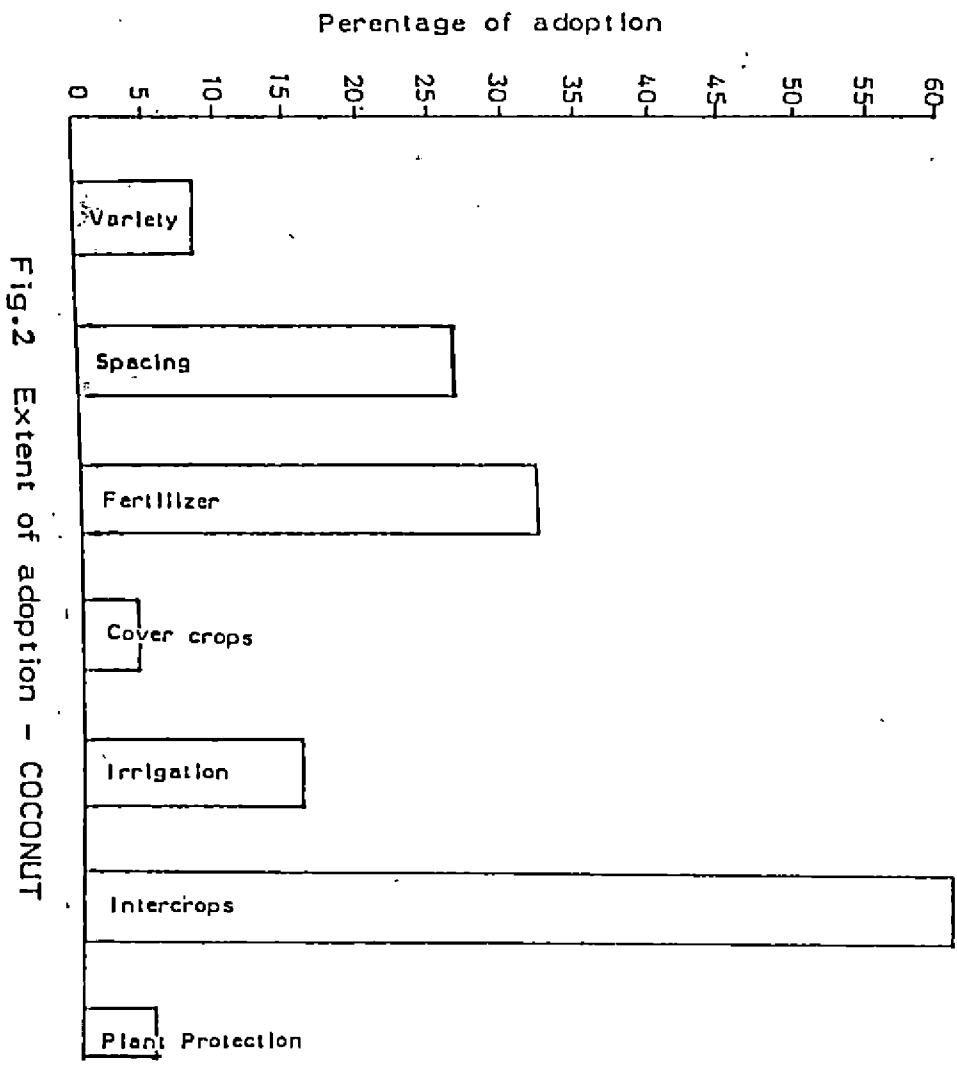


Fig.2 Extent of adoption - COCONUT

	(1)	(2)	(3)
Square Single hedge	7.6 - 9m 5m In row x 9m between rows.	are not following the correct practice, 40 per cent plant irregularly with adequate spacing and 34 percent of farmers plant irregularly with inadequate spacing.	per hectares will give higher returns.
Double hedge	5m x 5m In rows and 9m between pairs or rows.		

4. Manuring:

Organic manure at the rate of 15-25 kg/palm/year from the second year of planting onwards.

The cultivators apply organic manure and green manure at the rate of 21 kg/pit/year.

Inorganic fertilizer

application (kg/palm/year)

	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
1) Average management	0.34	0.17	0.68
ii) Good management	0.50	0.32	1.20

The farmers apply a lower dose due to economic constraint. Many farmers believe that organic manure will be sufficient for local varieties. There is lack of conviction on the benefits of fertilizer application.

.....  
 ..... (1) ..... (2) ..... (3)  
 .....

2) Hybrids and high yielding

palms (kg/palm year)

1) For Irrigated areas	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
	1.00	0.50	2.00

ii) For rain-fed condition	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
	0.50	0.32	1.20

Apply in two split doses  
 ie., June-July and October-  
 November for 3 year trees.

30 percent of the farmers  
 apply fertilizers at partial  
 level. The rest of the farmers  
 apply organic manure only. On  
 an average the farmers apply  
 178g N, 188g P and 320 g K.

5. Raising cover crops and  
 green manure crops

Sannhemp, Kollinji etc.

Only 3 percent of farmers  
 follow the technology.

For six percent of farmers  
 the practice is not applicable,  
 since the crop is raised in  
 forest soils.

6. Irrigation

600-1300 litres of water  
 with a frequency of 3-4  
 days on 7-8 days depending  
 upon soil type.

Adopted by 14 percent of the  
 farmers in laterite soils.

Non availability of water is the  
 major constraint. Many of the  
 farmers are convinced of the  
 benefits of irrigation.

(1)	(2)	(3)
<p>7. <u>Husk burial</u></p> <p>Burrial of husk in linear trenches taken 3m away in between rows of palms. Trenches should be 0.5m wide and as deep.</p>	<p>The practice is not being followed by any of the farmers in the area. The technology has not reached the farmers.</p>	
<p>8. <u>Intercropping:</u></p> <p>Cereals, legumes and pulses, tubers, fruit plants, beverage crops and fodder grasses.</p>	<p>58 per cent of farmers are cultivating intercrops like pulses and oil seeds, tubers, banana, fruit plants, plantains, vegetables etc. The most prominent intercrops cultivated by majority of farmers are plantains and vegetables followed by other tuber crops.</p>	<p>A feeling among the cultivators that intercropping affect coconut production and also lack of interest result in the lower adoption.</p>
<p>9. <u>Plant protection</u></p> <p>The exact plant protection measures are not brought into the purview of the study. Whether the farmer is adopting some plant protection measures against the pest and diseases noticed or not is only considered.</p>	<p>Only 4 percent undertake some plant protection measures against pest and disease problems. For 55 percent of the farmers, incidence of pests and diseases is not a serious problem.</p>	<p>Damages are recognised very late at which stage prevention of disease/pest using the present recommendation become impossible.</p>



Production constraints

Coconut

Production constraints	Technology available but to be adopted (extension gap)	Technology not available or needs modification (research gap)
1. Non-availability of sufficient number of quality seedlings of improved varieties.	Distribution of quality seedlings of improved varieties.	---
2. Improper spacing	The farmers should be convinced of the importance of adopting adequate spacing.	---
3. Unawareness of the correct fertilizer recommendations.	Extension work should be intensified.	
4. Suitable intercrops for each cropping situation	---	Viable and economic cropping patterns including intercrops should be suggested for each farming situation.
5. Plant protection measures	Farmers should be trained to identify various diseases and pests in the initial stages and to adopt suitable control measures.	Research work must be intensified. Technology for control of diseases like stem bleeding, rootwilt etc. are to be evolved.

Extent of adoption

Tapioca

Recommendation	Adoption pattern	Rationals
<p>1. <u>Varieties</u>  H 97, H 165, H 226, Sri Vishak (H 1687) and Sri Sahya (H 2304) and also M<sub>4</sub>, an improved variety.</p>	<p>No cultivator is cultivating hybrid varieties. All the cultivators are growing M<sub>4</sub> variety of tapioca.</p>	<p>The recommended planting material is not available in the region.</p>
<p>2. <u>Selection and preparation of planting material</u>   Mature, healthy, disease and pestfree stems. Discard about 10 cm from lower mature end and about 25-30 cm from the upper immature end. Sets should have 15-20 cm length.</p>	<p>Partial adoption by all the farmers</p>	<p>Unawareness</p>
<p>3. <u>Time of sowing</u>   April-May with the onset of South-west monsoon and September-October with the onset of North-East monsoon</p>	<p>Generally adopted</p>	

(1)	(2)	(3)
4. <u>Manures and fertilisers:</u>		
Cattle manure or compost at the rate of 12.5 tonnes per hectars during preparation of land	31 per cent of farmers apply at partial level. They apply 2.04 tonnes/ha.	High cost of oraganic manure is the constraint.
<u>Inorganic fertilizers</u>		
For M4 and other local types N : P : K at the rate of 50 : 50 : 50 Kg/ha	13 per cent apply at partial level and 4% of the farmers at excess level. Farmers apply at the rate of 25 Kg N, 25 Kg P and 40 Kg Potash for hectare. 82 percent of farmers do not apply any fertiliser.	The farmers are not convinced of the benefits of fertiliser application to tapioca. Low market price for the produce and high cost of fertilisers are the other constraints.
5. <u>Irrigation:</u>		
Provide sufficient moisture under conditions of prolonged dry periods after planting	Not at all adopted	Usual practice is not to irrigate the crop.

	(1)	(2)	(3)
6. <u>Intercropping:</u>	Intercropping in the early stage of tapioca crop up to 3-3½ months. Intercropping with groundnut recommended.	Only 4 percent of the farmers intercrop tapioca with pulses and vegetables.	Since tapioca is grown in interspaces in majority of the cases, lack of sufficient space for intercrop is a problem.
7. Plant protection		Not adopted	For majority of farmers pests and diseases do not pose serious problems in the area. Others are not convinced of the effectiveness of measures.

Production constraints

Tapioca

Production constraints	Technology available but to be adopted (extension gap)	Technology not available or needs modification (research gap)
1. Non-availability of improved planting materials	High yielding varieties should be popularised	---
2. Non-application of fertilisers	The farmers should be convinced of the advantages of fertiliser application.	---
3. No intercropping	The advantages of intercropping with suitable intercrop like groundnut and cowpea should be demonstrated	---



# Extent of Adoption

## Banana

### Recommendations

Planting distance 2m x 2m  
 12-25 cm  
 25 cm x 25 cm

### Selection and preparation of suckers

Cut back pseudostem to a length of 12-25 cm, remove the old roots, smear with cowdung solution and ash. Dry in sun for 3-4 days and store in shade upto 15 days before planting.

### 3. Spacing

2m x 2m for Neelam group

62 percent of farmers adopt the spacing recommended

Lack of awareness of the technology.

Under homestead system of cultivation wherein a variety of crops are raised it is difficult to follow correct spacing.

Recommendations	Adoption pattern	Rationale
1. <u>Preparation of land</u>		
Field preparation by ploughing or digging	78 percent of farmers prepare land as per the recommendation	---
Pit size recommended is 50 x 50 x 50 cm <sup>3</sup>		
2. <u>Selection and preparation of suckers</u>		
Cut back Pseudostem to a length of 15-25 cm, remove old roots, smear with cowdung solution and ash. Dry in sun for 3-4 days and store in shade upto 15 days before planting.	40 percent of farmers follow the technology.	Lack of awareness of the technology.
3. <u>Spacing</u>		
2m x 2m for Nendran group	65 percent of farmers adopt the spacing recommended	Under homestead system of cultivation wherein a variety of crops are raised it is difficult to follow correct spacing.

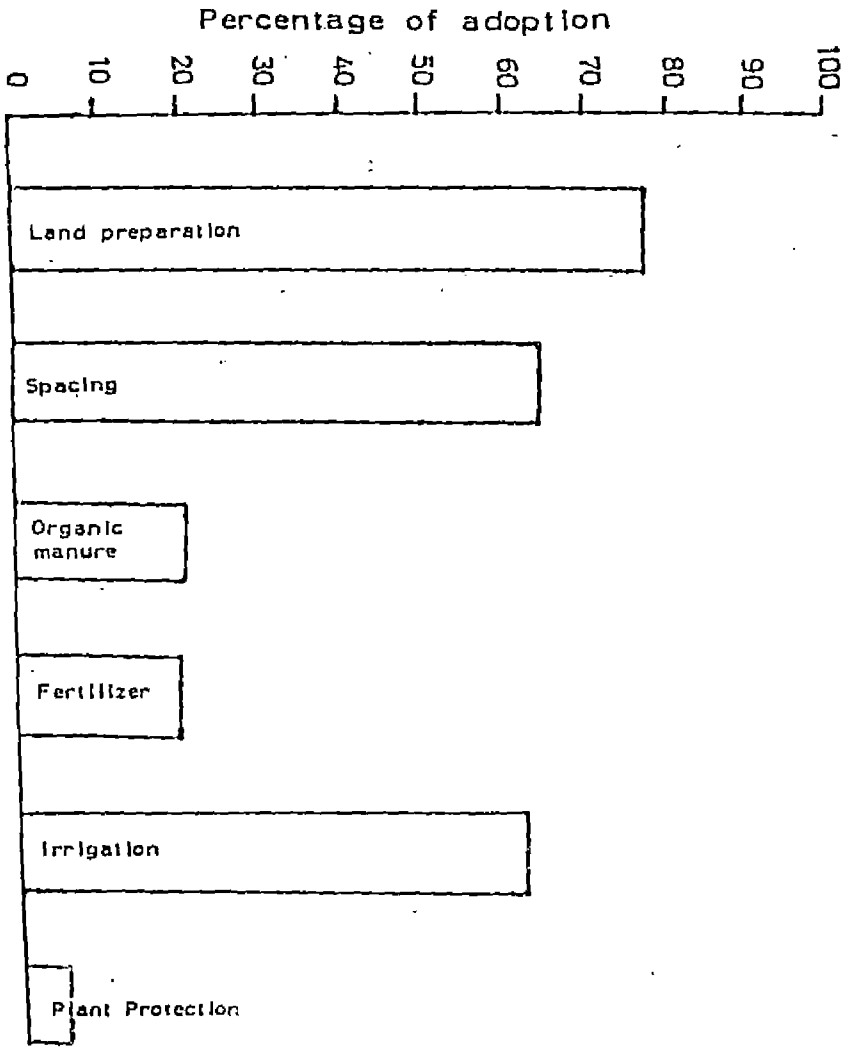


Fig.3 Extent of adoption -- BANANA

(1)	(2)	(3)
<u>Organic manures:</u>		
Wood ash at the rate of 2 kg/plt before planting. Compost, cattle manure or green leaf at the rate of 10 Kg/plant 1 month after planting	21 per cent adopt full recommendation. 61% apply in partial level and 2 per cent apply in excess quantity.	---
<u>Application of fertilisers</u>		
NPK at the rate of 200 g, 115 g and 300 g/plant/annum.	20% apply full dose. 77% apply at partial level and 21% do not apply fertilizer at all. Regarding quantity of nutrients applied, on an average the farmers apply 80 g N, 76 g P and 114 g K/Plant/annum.	---
<u>Irrigation</u>		
Once in 14 days with 200 litres of water. Mulching the basins also recommended.	63% of farmers give irrigation at the correct recommendation.	The irrigation schedule is judged by the farmer himself depending upon retentivity of moisture and season. Summer irrigation depends upon water availability. High cost of pot watering also become a problem.

(1)	(2)	(3)

7. Plant protection:

The study is restricted to know whether the cultivator is following some plant protection measures or not.

5% of farmers adopt plant protection measures against the bunchy top disease.

The symptoms of bunchy top disease are not expressed by the plant in early stages. At later stages the pesticide application does not benefit the crop. Many are unaware of the prophylactic measures.

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Production constraints

Banana

Production constraints	Technology available but to be adopted (extension gap)	Technology not available or needs modification (research gap)
1. Partial application of required nutrients.	Need for balanced fertiliser application should be demonstrated through on farm trials.	---
2. High cost of Irrigation	---	Economic irrigation schedules depending upon soil and climatic parameters should be evolved for different farming situations.
3. Plant protection	Plant protection measures, especially against bunchy top disease should be popularised.	

Extent of adoption

Pepper



Recommendation	Adoption pattern	Rationale
1. <u>Variety:</u> Panniyur-1, Karimunda, Arakulam munda, Kalluvally, Kuthiravally and Kottanadan	65% of farmers grow Karimunda, 18% hybrid Panniyur-1, 10% Kalluvally and 5% cultivate other varieties. 5% of the area under pepper is covered by Panniyur-1 and 95% by other varieties.	The hybrid variety Panniyur-1 recommended for homestead system of cultivation as it has no shade tolerance.
2. <u>Selection of site:</u> Sites with slight to moderate slope are ideal, slopes facing south are to be avoided.	25% adoption	Unawareness of the selection criteria and limited scope for selection in homestead cultivation.
3. <u>After cultivation:</u> Soil mulching, pruning of standards, shading, providing cover crops.	25-35% adoption in the cases of after cultivation operations.	Unawareness of the recommendations forms the major constraint.

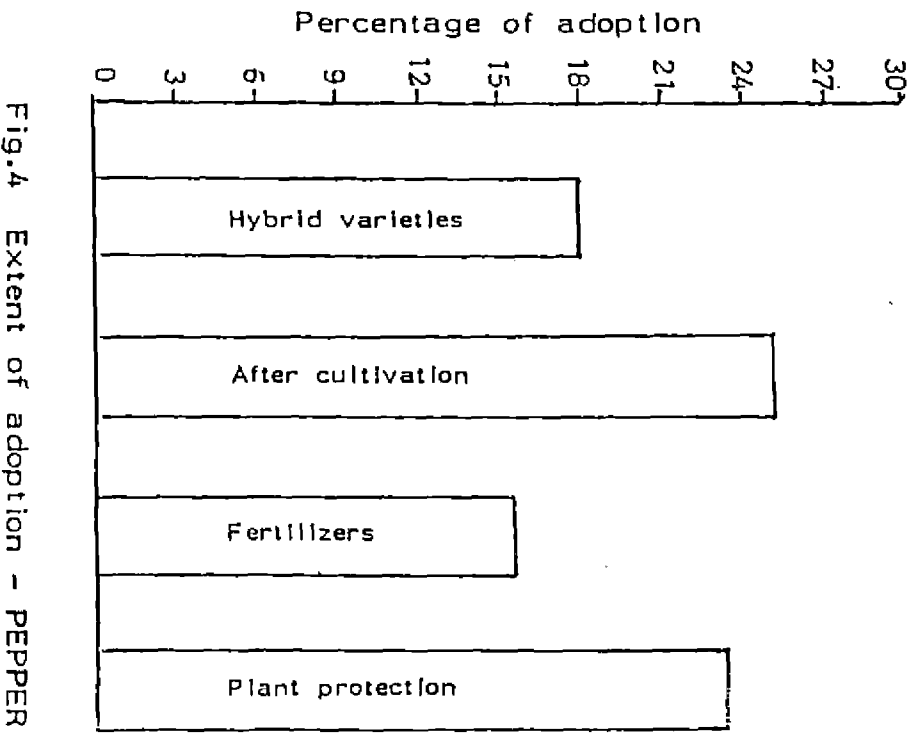


Fig.4 Extent of adoption - PEPPER

.....  
 (1) (2) (3)  
 .....

4. Manures and fertilisers:

100:40:140 gm NPK/vine/  
 year for third year on-  
 wards. One-third of full  
 dose during first and  
 two third of dose  
 during 2nd year.

During the early stages the  
 farmers are not applying fer-  
 tilizers. 15% of farmers apply  
 fertilizers at partial level and  
 5% in excess dose from third  
 year onwards. Farmers apply  
 N,P & K at the rate of 46:33:  
 84 g/plant/year.

Lower adoption due to economic  
 constraint. Many are unaware  
 of the exact recommendation.

5. Plant protection

23% of farmers adopt plant  
 protection measures.

The growers are unaware of the  
 recommended control measures  
 for various pest and disease  
 problems in pepper.

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Production constraints

Pepper

Production constraints	Technology available but to be adopted (extension gap)	Technology not available or needs modification (research gap)
1. Variety	---	Varieties suitable for shade conditions (homestead system) should be screened and technology popularised.
2. Poor adoption of after cultivation operations	Technology should be popularised	---
3. Partial adoption of fertiliser recommendation.	The farmers must be educated on the correct dose of fertilizers to be applied and advantages of split application.	
4. Plant protection	---	More effective measures should be evolved against wilt complex diseases and pollu.

Extent of adoption

Cashew

Recommendation	Adoption pattern	Rationale
1. <u>Variety:</u> NLR-2, BLA 139-1, NDR-2-1, H-3-19, H-4-7 and H-3-17	Only 5% of the farmers cultivate improved varieties.	Hybrid varieties are not at all popular in the region.
2. <u>Selection of planting material and planting:</u>  Raising seedlings in polythene bags; planting done in June-July. Seedlings or air layers used.	Only 6% followed the recommendation.	Propagation through sowing seeds or seedlings is popular.
3. <u>Fertiliser application</u>  N, P & K at the rate of 250:125:125 g/tree/annum	Not at all adopted.	Farmers do not use fertiliser because they believe that they can get some yield even without fertiliser application.
4. <u>Plant protection.</u>	Only 8% adopted some extent of plant protection in their gardens.	Unawareness and also lack of conviction of effectiveness. The farmers does not pay much personal attention in adopting plant protection measures.

Production constraints

Cashew



.....  
 Production constraints      Technology available but not      Technology not available/needs  
    adopted (extension gap)      modification (research gap)  
 .....

1. Shortage of planting material of recommended varieties.      Large scale production and distribution of planting material should be assured.      Clonally propagated plants of each released variety should be produced in large scale.
  
2. Negligence in the case of fertilizer application      Advantage of fertilizer application should be popularised.      ---

.....

Extent of adoption of improved technologies:  
an over view of the survey

\*\*\*

The study has revealed that the extent of adoption of the various improved technologies pertaining to the different crops by the farmers is relatively low. The major constraints for the poor adoption was found to be lack of awareness of recommendations, lack of conviction regarding benefits, lack of high yielding varieties to suit specific locations, non-availability of planting materials of hybrid varieties in time and high cost of production.

To overcome these difficulties it is suggested that appropriate extension techniques such as crop demonstrations, group discussions, seminars and personal contacts should be adopted to convince the farmers of the benefits of modern technologies. Seeds/planting material should be made available to the cultivators sufficiently early before the sowing seasons as shortage of seed materials has been a serious constraint in all the crops. Breeding programmes with reference to the different crops may be intensified with a view to evolve varieties tolerant to pests and diseases.

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NATIONAL AGRICULTURAL RESEARCH PROJECT

KERALA : NORTHERN ZONE

STATUS REPORT VOL. III

Annexures

REGIONAL AGRICULTURAL RESEARCH STATION

PILICODE - 670 353

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ANNEXURE 1

Northern zone: General characteristics of the zone (1981 census): area and population

District	Taluk	Geographical area (sq.km)	Area: Percentage		Population	Population percentage	
			to total of the zone	to total of the state		to total of the zone	to total of the state
Malappuram	Perinthalmanna	505.9	4.64	1.30	352,794	4.73	1.39
	Ponnani	199.4	1.83	0.51	262,676	3.53	1.03
	Tirur	664.3	6.10	1.71	842,983	11.31	3.32
	Ernad	2262.6	20.77	5.02	944,248	12.67	3.72
	District	3632.2	33.34	9.35	2,402,701	32.24	9.46
Kozhikode	Kozhikode	1026.6	9.42	2.64	1,173,499	15.75	4.62
	Quilandy	756.9	6.95	1.95	571,987	7.68	2.25
	Badagara	549.8	5.05	1.42	499,779	6.71	1.97
	District	2333.3	21.42	6.00	2,245,265	30.13	8.84
Cannanore	Tellicherry	1206.3	11.07	3.10	755,426	10.14	2.97
	Cannanore	430.8	3.95	1.11	608,959	8.17	2.40
	Taliparamba	1332.6	12.23	3.43	566,041	7.60	2.23
	District	2969.7	27.26	7.64	1,930,426	25.90	7.60
Kasaragod	Hosdurg	988.7	9.07	2.54	436,263	5.85	1.72
	Kasaragod	972.6	8.93	2.50	437,478	5.87	1.72
	District	1961.3	18.00	5.05	873,741	11.73	3.44
Zone	--	10895	--	28.03	7,452,133	--	29.34
State	--	38863	--	--	25,403,217	--	--

ANNEXURE 2

Northern zone : Population characteristics (1981 census)

District	Taluk	No. of house holds	Population	Density of Population (sq.km)	Illiteracy (%)	S.C. Population	S.T. Population
Malappuram	Tirun	1,21,499	842,983	1,269	57.8	10,192	39
	Ponnani	40,159	262,676	1,317	58.4	26,089	208
	Perinthalmanna	55,215	352,794	697	62.4	34,140	30
	Ernad	1,52,700	944,248	434	62.7	97,597	7678
		3,67,593	2,402,701	3,717	60.3	208,018	7955
Kozhikode	Kozhikode	187,388	1,173,499	1,143	72.6	90,562	2129
	Quilandy	95,611	571,987	756	69.1	58,668	214
	Badagana	79,391	199,779	909	56.6	12,485	1545
		362,390	2,245,265	957	66.1	161,715	3888
Cannanore	Tellicherry	114,704	755,426	626	71.5	12,379	13579
	Cannanore	88,305	608,959	1,414	72.6	33,829	118
	Taliparamba	94,954	566,341	426	67.1	32,075	1442
		297,963	1,930,726	561	70.4	78,283	15139
Kasaragod	Hosdurg	73,707	435,263	440	57.8	34,827	4908
	Kasaragod	70,108	437,478	480	52.3	30,634	19657
			872,741	446	55.0	65,461	24565
Zone		1,173,741	7,451,433	66,025	62.95	513,477	51547

### ANNEXURE 3

Northern zone: Soil types and their taxonomic classification.

Soil type	Order	Suborder	Great soil group
1. Laterite	Oxisol	Orthox	Eutroorthox
2. Coastal Alluvium	Entisol	Psament	Tropopsamment
3. Riverine alluvium	Entisol Inceptisol	Fluvent Tropapt	Tropofluvent Eutropept
4. Brown hydromorphic	Alfisol Inceptisol	Aqualf Aquapt	Tropaqualf Tropaquept
5. Forest loam	Mollisol Alfisol	Udoll Udalf	Hapludoll Tropudalf



ANNEXURE 4

Northern zone :Physico-chemical characteristics of soil types  
: Textural composition (%)

A.Laterite soil

(i) Arathil series (Periyaram Cannanore)

Depth (cm)	Clay	Silt	Fine sand	Coarse sand	Textural class
0-30	43.6	18.4	20.6	17.4	Clay loam
30-60	43.3	19.4	23.6	14.7	"
60-90	61.4	20.4	14.9	3.3	Clay
90-120	54.5	16.9	13.1	15.5	,,
120-150	62.9	13.9	15.3	7.8	,,
Mean	53.1	17.6	17.5	11.7	Clay

(ii) Kunnamangalam series (Kozhikode)

0-30	44.4	20.9	21.1	13.5	Clay
30-50	57.8	13.3	17.5	11.4	,,
60-90	54.8	3.5	18.4	25.2	,,
90-120	50.7	8.3	19.9	21.1	,,
120-150	51.7	6.1	22.3	18.9	,,
Mean	51.9	10.5	20.1	18.0	Clay

B. Alluvial Soil

(i) Chaliyar series (Calicut)

Depth (cm)	Clay	Silt	Fine sand	Coarse sand	Textural class
0-30	24.1	23.2	36.6	11.8	Sandy clay loam
30-60	29.8	31.7	30.1	6.1	Clay loam
60-90	30.6	31.6	30.4	5.7	" "
90-120	35.4	34.4	23.5	3.2	" "
120-150	36.5	26.7	27.9	6.0	" "
Mean	31.3	29.6	29.7	6.6	Clay loam

C. Forest loam

(1) Periya series

0-30	35.9	23.6	26.7	13.8	Clay loam
30-60	41.9	22.3	25.4	10.4	Clay
60-90	44.9	14.5	26.5	14.0	"
90-120	50.3	17.2	22.7	9.8	"
Mean:	43.2	19.4	25.3	12.0	Clay

ANNEXURE 5

Northern zone: Physico-chemical characteristics of soils:  
Bulk density and moisture retention capacity .

Soil Type	Bulk density (g/cc)		Moisture retention (%) at		Available water
	0-30 cm	0-150 cm	0.3 bar	15 bar	
A. <u>Laterite</u>					
Arathil series	1.32	1.43	15.7	12.6	3.1
Kunnamangalam series	1.80	1.89	13.2	10.3	2.9
B. <u>Alluvial</u>					
Chaliyar series	1.43	1.44	32.2	16.9	15.3
C. <u>Forest loam</u>					
Periya series	1.14	1.23	11.99	10.47	1.52

ANNEXURE 6

Northern zone: Physico-chemical characteristics of soil:  
Organic carbon content (%)

Soil type	Depth (cm)					Mean
	0-30	30-60	60-90	90-120	120-150	
A. Laterite						
Arathil series	2.30	1.14	0.58	0.44	0.31	0.95
Kunnamangalam series	1.06	0.73	0.58	0.45	0.33	0.63
B. Alluvial						
Chaliyar	0.69	0.54	0.41	0.36	0.27	0.45
C. Forest loam						
Periya series	3.02	1.27	0.79	0.84	—	1.48

## ANNEXURE 7

## Northern zone: Physico-chemical characteristics of soils:

Characteristics	Soil type				
	Laterite	Coastal alluvium	Riverine alluvium	Hydro-morphic	Forest loam
pH	5.10	6.60	5.80	5.70	5.80
Total N (%)	0.08	0.01	0.07	0.09	0.15
Total P <sub>2</sub> O <sub>5</sub> (%)	0.07	0.05	0.05	0.03	0.03
Total K <sub>2</sub> O (%)	0.03	0.04	0.03	0.05	0.24
CEC (me/100g)	4.00	3.00	3.26	8.20	10.00
Base saturation	52.50	53.33	55.82	66.56	50.91

## ANNEXURE 8

Northern zone : Monthly Rainfall (mm) and number of rainy days at Pilicode from 1980 to 1985

	Jan.	Feb.	Mar.	April	May	June	July	August	Sept.,	Oct.	Nov.	Dec.	Total (mm)
1950	0.0 0	0.0 0	0.0 0	2.3 0	222.3 5	904.5 22	1373.6 31	436.4 19	537.2 21	85.9 7	74.9 5	0.0 0	3637.1 110
1951	0.0 0	0.0 0	0.0 0	100.8 4	51.6 3	1063.5 26	797.6 27	315.2 19	234.4 10	239.0 12	107.2 6	0.0 0	2909.3 107
1952	0.0 0	4.8 1	0.0 0	27.2 2	53.9 9	1093.5 27	813.6 28	437.6 26	36.3 4	415.8 11	0.0 0	26.7 4	2909.4 112
1953	0.0 0	1.0 0	0.0 0	122.2 4	33.5 3	336.0 16	1571.8 27	389.4 18	53.1 6	349.0 17	1.0 0	0.0 0	2877.0 91
1954	5.1 1	0.0 0	34.3 3	204.5 4	100.8 6	1354.1 28	1191.3 28	799.9 20	384.3 20	169.2 10	0.0 0	23.1 2	4266.6 122
1955	0.0 0	0.0 0	0.0 0	72.1 3	815.6 14	857.5 27	868.9 25	337.1 23	515.6 15	331.0 17	47.0 5	0.0 0	3844.8 129
1956	0.0 0	0.0 0	0.0 0	75.2 4	517.4 16	1008.4 27	637.5 29	342.7 21	155.2 15	242.1 14	85.9 5	0.0 0	3064.4 131
1957	0.0 0	0.0 0	0.0 0	2.8 0	233.7 11	1227.3 28	1521.7 28	978.9 28	83.6 6	266.7 15	110.2 5	20.3 1	4445.2 122
1958	4.6 0	0.0 0	0.0 0	17.0 2	197.6 11	1252.0 20	753.9 30	409.2 25	70.9 11	124.0 9	86.4 5	0.0 0	2915.6 114

	Jan.	Feb.	Mar.	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Total (mm)
1959	0.0 0	0.0 0	0.0 0	87.1 5	463.3 20	865.1 25	1652.3 30	607.3 23	362.4 22	27.6 5	40.6 3	8.6 1	4114.3 134
1960	0.0 0	0.0 0	0.0 0	101.2 6	574.7 22	1083.9 28	1132.0 25	519.9 22	372.9 17	143.3 10	233.8 15	2.6 1	4164.3 146
1961	0.0 0	0.0 0	0.0 0	7.2 1	1076.4 13	1563.6 29	1919.2 31	1446.4 30	921.8 21	490.2 12	95.8 3	18.0 1	7538.6 141
1962	17.0 1	3.0 1	0.0 0	41.6 1	788.0 13	452.5 17	1479.4 29	1126.7 23	431.9 19	451.4 21	11.8 2	182.2 5	4989.5 132
1963	6.4 1	0.0 0	3.6 1	19.0 3	132.3 9	771.3 26	863.9 26	701.8 29	219.0 14	269.7 6	49.8 4	9.9 1	3047.5 120
1964	0.0 0	0.0 0	0.0 0	15.4 2	102.4 3	628.6 23	729.7 25	586.3 25	343.7 13	58.8 6	125.5 9	26.0 1	2616.4 107
1965	0.0 0	0.0 0	0.0 0	0.0 0	42.2 4	945.4 24	774.0 23	489.8 23	188.6 11	143.3 5	100.6 4	154.4 3	2846.3 97
1966	0.0 0	0.0 0	0.0 0	48.0 2	58.7 4	678.0 20	831.0 26	355.9 17	169.2 11	414.8 12	248.6 6	0.0 0	2846.3 98
1967	0.0 0	0.0 0	0.0 0	25.6 2	184.2 7	253.5 19	1506.5 28	1160.5 31	194.5 9	42.4 3	69.6 3	10.0 1	2804.2 103
1968	0.0 0	0.0 0	5.0 1	92.0 2	0.0 0	1813.6 19	2187.2 31	400.2 19	533.4 16	76.0 6	17.0 2	0 0	3446.8 96

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total (mm)
1969	0.0 0	0.0 0	0.0 0	8.2 1	105.9 6	672.4 22	939.8 29	300.6 19	308.6 13	108.5 9	103.0 5	48.0 3	4324.4 102
1970	0.0 0	0.0 0	0.0 0	31.3 4	338.7 9	718.0 26	1238.6 29	1206.2 27	277.5 26	222.7 15	32.0 3	0.0 0	4065.0 133
1971	0.0 0	0.0 0	3.5 1	42.6 3	488.9 8	1076.8 28	1159.2 30	529.8 21	228.0 12	106.2 9	17.2 1	25.0 2	3677.2 113
1972	0.0 0	0.0 0	0.0 0	24.8 2	366.7 14	799.2 11	1086.8 27	455.4 27	114.8 6	184.6 11	32.7 3	5.8 1	3070.8 102
1973	0.0 0	0.0 0	0.0 0	39.1 2	191.9 6	870.6 26	738.5 23	827.4 30	40.4 3	135.6 11	46.7 3	3.2 0	2893.4 104
1974	0.0 0	0.0 0	0.0 0	92.1 7	329.9 11	433.6 17	1685.5 31	710.6 19	423.8 14	128.5 8	0.0 0	0.0 0	3804.0 107
1975	0.0 0	0.0 0	36.5 2	54.6 2	108.8 6	1262.0 25	1199.7 29	887.2 27	733.6 18	274.4 17	79.5 4	0.0 0	4636.3 139
1976	0.0 0	0.0 0	1.3 0	24.4 3	128.2 3	489.0 14	1265.8 28	444.0 22	158.7 11	105.7 5	295.1 12	10.0 1	2920.2 99
1977	0.0 0	20.2 1	22.1 1	75.7 1	273.2 10	1096.7 22	1714.4 30	371.9 19	209.1 12	189.6 10	97.8 5	25.4 1	4096.1 112



	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total (mm)
1978	0.0 0	0.0 0	0.0 0	0.0 0	724.2 14	1641.4 30	1304.2 26	747.1 24	149.4 6	62.0 4	235.3 7	131.8 2	4995.4 113
1979	0.0 0	0.0 0	0.0 0	0.0 0	0.0 0	1519.5 18	1311.9 28	572.0 15	191.6 9	66.8 5	131.4 9	45.4 3	3858.6 87
1980	0.0 0	0.0 0	0.0 0	129.4 3	120.9 5	728.2 27	753.4 30	836.0 31	266.6 13	173.8 6	148.0 6	0.0 0	3156.3 121
1981	0.0 0	0.0 0	0.0 0	7.8 1	152.6 7	1284.2 26	735.4 24	729.8 26	453.2 15	210.0 11	113.6 6	0.0 0	3686.6 116
1982	0.0 0	0.0 0	4.0 1	0.0 0	84.5 8	933.2 24	1097.4 27	1163.8 26	55.5 7	127.6 6	97.6 5	0.0 0	3563.6 104
1983	0.0 0	0.0 0	0.0 0	0.0 0	9.2 1	478.8 18	1135.0 24	1027.9 25	793.8 27	51.6 6	24.6 3	14.9 2	3535.8 106
1984	9.2 1	0.0 0	97.3 4	101.9 7	194.7 6	1396.0 30	672.0 27	417.9 22	145.9 9	345.2 9	70.8 2	1.0 0	3452.7 117
1985	8.6 1	0.0 0	0.0 0	14.0 2	308.8 10	970.8 29	589.4 29	572.5 21	99.8 7	429.6 9	69.7 5	23.4 3	3086.6 116
1986	0.0 0	0.0 0	0.0 0	0.0 0	31.9 3	1332.6 27	482.7 18	436.2 14	186.8 11	41.5 7	214.6 9	3.2 1	2729.5 90

## ANNEXURE 9

Northern zone: Monthly rainfall (mm) and number of rainy days during Kharif (Virippu) season

Station	June	July	August	September	Total
Kasaragod	992.6 (24.9)	1042.2 (27.3)	598.2 (23.9)	253.7 (14.9)	2886.7 (91.0)
Hosdurg	1024.1 (25.0)	1070.4 (27.8)	606.3 (23.6)	254.8 (13.9)	2955.6 (90.3)
Nileshwar	932.5 (24.0)	1093.7 (27.8)	643.9 (23.4)	240.5 (13.2)	2910.6 (88.4)
Pilicode	965.2 (23.7)	1165.5 (27.9)	623.0 (23.2)	297.0 (13.5)	3040.7 (88.3)
Payyanur	1016.5 (25.0)	1057.7 (27.5)	592.6 (27.9)	236.7 (13.8)	2903.5 (89.2)
Taliparamba	976.1 (24.8)	1119.1 (28.1)	592.8 (23.2)	241.1 (13.9)	2929.1 (90.0)
Panniyur	981.4 (25.5)	1308.4 (29.2)	684.0 (26.0)	254.7 (16.6)	3228.5 (97.3)
Irikkur	968.5 (24.8)	1237.0 (28.1)	724.9 (24.0)	286.5 (15.4)	3216.7 (92.9)
Cannanore	924.1 (24.4)	989.1 (27.0)	509.3 (21.0)	228.6 (13.2)	2651.1 (85.6)
Tellicherry	916.4 (24.1)	980.4 (26.9)	509.8 (21.1)	221.0 (12.7)	2627.6 (84.8)

Station	June	July	August	September	Total
Badagara	954.9 (24.6)	1002.3 (27.0)	523.7 (20.8)	231.3 (12.9)	2712.2 (85.3)
Kozhikode	824.1 (24.2)	857.3 (26.6)	439.7 (19.7)	321.9 (12.3)	2343.0 (82.8)
Kuttiyadi	1027.5 (25.0)	1078.1 (28.0)	741.6 (24.5)	313.9 (15.4)	3161.1 (92.9)
Quilandy	892.2 (24.7)	949.6 (26.0)	512.5 (20.9)	224.0 (12.4)	2578.3 (84.0)
Manjeri	711.1 (22.9)	833.1 (25.2)	425.0 (19.4)	201.7 (11.7)	2170.9 (79.2)
Nilambur	636.6 (21.8)	861.5 (26.1)	432.9 (19.8)	191.3 (12.6)	2122.3 (80.3)
Perinthalmanna	650.8 (22.7)	759.2 (25.6)	393.9 (18.6)	189.5 (11.5)	1993.4 (78.4)
Ponnani	753.2 (24.3)	715.8 (24.9)	383.0 (18.4)	203.0 (11.8)	2055.0 (79.4)
Thirurangadi	760.8 (24.2)	765.5 (25.6)	390.1 (19.4)	208.6 (12.6)	2125.0 (81.8)
Mean	889.9 (24.2)	994.0 (27.0)	543.5 (21.8)	236.3 (13.4)	2664.7 (86.4)

( ) indicates the number of rainy days

## ANNEXURE 10

Northern zone: Monthly rainfall (mm) and number of rainy days during Rabi (Mundakan) season

Station	October	November	December	January	Total
Kasaragod	205.5 (9.8)	99.6 (4.6)	26.7 (1.1)	5.3 (0.3)	337.1 (15.8)
Hosdurg	198.1 (9.4)	74.5 (4.7)	24.6 (1.2)	5.6 (0.4)	322.8 (15.7)
Nileshwar	153.7 (9.2)	97.2 (4.6)	18.9 (1.2)	3.8 (0.2)	273.6 (15.2)
Pilicode	189.6 (9.9)	97.8 (4.6)	25.4 (1.2)	3.9 (0.2)	316.7 (15.9)
Payyanur	211.3 (10.4)	103.1 (5.1)	24.9 (1.3)	3.6 (0.3)	342.9 (17.1)
Taliparamba	236.7 (11.2)	115.8 (5.5)	625.4 (1.3)	4.6 (0.30)	382.5 (18.3)
Panniyur	257.3 (15.9)	130.6 (8.9)	25.1 (2.1)	0.9 (0.2)	413.9 (27.1)
Irrikkur	288.3 (13.5)	143.8 (6.8)	24.1 (1.6)	5.1 (0.5)	461.3 (22.4)
Cannanore	216.1 (10.3)	109.5 (5.2)	17.8 (1.0)	3.8 (0.3)	347.2 (16.8)
Tellicherry	221.7 (10.2)	106.7 (5.6)	23.4 (1.3)	6.9 (0.6)	358.7 (17.7)

Station	October	November	December	January	Total
Badagara	258.7 (11.2)	143.0 (6.6)	22.4 (2.8)	7.5 (0.6)	431.6 (21.2)
Kozhikode	262.7 (10.9)	155.7 (6.8)	30.6 (1.6)	11.6 (0.7)	461.6 (20.0)
Kuttiyadi	374.3 (15.5)	242.6 (9.3)	58.5 (2.8)	13.6 (0.9)	689.5 (28.5)
Quilandi	255.7 (10.9)	138.8 (6.6)	27.2 (1.7)	8.9 (0.6)	431.6 (19.8)
Manjeri	308.2 (13.3)	170.3 (7.4)	30.6 (1.6)	8.2 (0.5)	517.3 (22.8)
Nilambur	281.0 (12.9)	133.0 (7.4)	28.6 (1.8)	6.7 (0.5)	449.3 (22.6)
Perinthalmanna	320.7 (14.1)	171.8 (7.7)	30.2 (1.7)	6.4 (0.4)	529.1 (23.9)
Ponnani	286.6 (12.6)	184.9 (7.6)	28.2 (1.7)	7.2 (0.5)	566.9 (22.4)
Thirurangadi	253.2 (11.8)	159.0 (7.5)	37.4 (1.8)	5.2 (0.5)	454.8 (21.6)
Mean	251.6 (11.7)	136.8 (6.6)	27.9 (1.6)	6.3 (0.4)	422.6 (20.3)

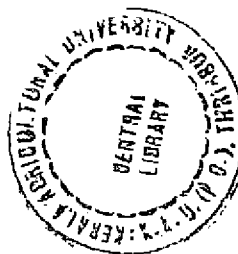
## ANNEXURE 11

Northern zone: Monthly rainfall (mm) and number of rainy days during Summer (Puncha) season

Station	February	March	April	May	Total
Kasaragod	3.3 (0.2)	14.7 (0.6)	49.3 (2.5)	186.7 (7.2)	254.0 (10.5)
Hosdurg	4.8 (0.3)	6.9 (0.4)	49.3 (2.5)	222.8 (7.6)	283.8 (10.8)
Nileshwar	1.5 (0.1)	5.9 (0.4)	37.0 (2.5)	214.0 (8.5)	258.4 (11.5)
Pilicode	1.5 (0.1)	5.1 (0.4)	53.9 (2.5)	271.8 (8.5)	332.3 (11.5)
Payyanur	5.1 (0.2)	6.9 (0.4)	44.7 (2.9)	210.1 (7.5)	266.8 (11.0)
Taliparamba	3.1 (0.2)	6.9 (0.5)	51.1 (3.0)	186.2 (7.6)	247.3 (11.3)
Panniyur	3.6 (0.2)	4.9 (0.8)	65.4 (6.1)	253.8 (12.3)	327.7 (19.4)
Irikkur	4.3 (0.3)	13.2 (0.8)	71.4 (3.9)	211.1 (8.6)	300.0 (13.6)
Cannanore	5.3 (0.2)	8.9 (0.6)	49.3 (3.0)	212.6 (8.2)	276.1 (12.0)
Tellicherry	5.3 (0.3)	9.9 (0.7)	66.8 (3.2)	235.2 (8.8)	317.2 (13.0)

Station	February	March	April	May	Total
Badagara	4.9 (0.3)	14.8 (1.0)	77.7 (4.4)	271.9 (9.6)	369.3 (15.3)
Kozhikode	8.5 (0.3)	18.6 (0.9)	86.9 (3.9)	261.6 (8.9)	375.6 (14.0)
Kuttiyadi	9.5 (0.5)	25.9 (1.6)	122.7 (6.8)	295.0 (11.3)	453.1 (20.8)
Quilandy	4.1 (0.3)	15.9 (0.9)	69.5 (3.9)	257.2 (9.2)	346.7 (14.3)
Manjeri	3.9 (0.3)	20.1 (1.0)	76.0 (4.5)	197.8 (8.2)	297.8 (14.0)
Nilambur	5.9 (0.4)	13.2 (1.1)	62.0 (4.3)	157.5 (7.6)	238.6 (13.4)
Perinthalmanna	8.7 (0.5)	25.0 (1.7)	86.9 (5.2)	190.9 (8.0)	311.5 (15.4)
Ponnani	7.7 (0.5)	24.2 (1.3)	96.5 (4.9)	266.3 (10.6)	394.7 (17.3)
Thirurangadi	6.1 (0.5)	14.2 (1.0)	72.2 (4.0)	242.0 (9.0)	334.5 (14.5)
Mean	5.1 (0.3)	13.4 (0.8)	67.8 (3.8)	278.7 (8.8)	315.0 (13.8)

( ) indicates the number of rainy days



ANNEXURE 12

Monthly rainfall (mm) and number of rainy days of the Kasaragod district during Kharif (Virippu) season

Station	June	July	August	September	Total
Kasaragod	992.6 (29.9)	1042.2 (27.3)	598.2 (23.9)	253.7 (14.9)	2886.7 (91.0)
Hosdurg	1024.1 (25.0)	1070.4 (27.8)	606.3 (23.6)	254.8 (13.9)	2955.6 (90.3)
Nileshwar	932.5 (24.0)	1093.7 (27.8)	643.9 (23.4)	240.5 (13.2)	2910.6 (88.4)
Pilicode	965.2 (23.9)	1165.5 (27.9)	623.0 (23.2)	287.0 (13.5)	3040.4 (88.3)
Mean	978.6 (24.4)	1093.0 (27.7)	617.8 (23.5)	259.0 (13.9)	2948.4 (89.5)

(.) indicates the number of rainy days



## ANNEXURE 13

Monthly rainfall (mm) and number of rainy days of the Kasaragod district during Rabi season

Station	October	November	December	January	Total
Kasaragod	205.5 (9.8)	99.6 (4.6)	26.7 (1.1)	5.3 (0.3)	337.1 (15.8)
Hosdurg	198.1 (9.4)	94.5 (4.7)	24.6 (1.2)	5.6 (0.4)	322.8 (15.2)
Nileshwar	153.7 (9.2)	97.2 (4.6)	18.9 (1.2)	3.8 (0.2)	273.6 (15.2)
Pilicode	189.6 (9.9)	97.8 (4.6)	25.4 (1.2)	3.9 (0.2)	316.7 (15.9)
Mean	186.7 (9.6)	97.3 (4.6)	23.9 (1.2)	4.6 (0.3)	312.5 (15.7)

( ) indicates the number of rainy days.

## ANNEXURE 14

Monthly rainfall (mm) and number of rainy days of the  
Kasaragod district during Summer

Station	February	March	April	May	Total
Kasaragod	3.3 (0.2)	14.7 (0.6)	49.3 (2.5)	186.7 (7.2)	254.0 (10.5)
Hosdurg	4.8 (0.3)	6.9 (0.4)	49.3 (2.5)	222.8 (7.6)	283.8 (10.8)
Nileshwar	1.5 (0.1)	5.9 (0.4)	37.0 (2.5)	214.0 (8.5)	258.4 (11.5)
Pilicode	1.5 (0.1)	5.1 (0.4)	53.9 (2.5)	271.8 (8.5)	332.3 (11.5)
Mean	2.7 (0.2)	8.2 (0.4)	47.4 (2.5)	223.8 (8.0)	282.1 (11.1)

( ) indicates the number of rainy days

## ANNEXURE 15

Monthly rainfall (mm) and number of rainy days of the Cannanore district during Kharif season

Station	June	July	August	September	Total
Payyapur	1016.5 (25.0)	1057.7 (27.5)	592.6 (22.9)	236.7 (13.87)	2903.5 (89.2)
Taliparamba	976.1 (24.8)	1119.1 (28.1)	592.8 (23.2)	241.1 (13.9)	2929.1 (90.0)
Panniyur	981.4 (25.5)	1308.4 (29.2)	684.0 (26.0)	254.7 (16.6)	3228.5 (97.3)
Irikkur	968.5 (24.8)	1237.0 (28.1)	724.9 (24.6)	286.5 (15.4)	3216.9 (92.9)
Cannanore	924.1 (24.4)	989.1 (27.0)	509.3 (21.0)	228.6 (13.2)	2651.1 (85.6)
Tellicherry	916.4 (24.1)	980.4 (26.9)	509.8 (21.1)	221.0 (12.7)	2627.6 (84.8)
Mean	963.8 (24.8)	1115.2 (27.8)	602.2 (23.1)	244.8 (14.3)	2926.0 (90)

( ) indicates the number of rainy days

ANNEXURE 16

Monthly rainfall (mm) and number of rainy days of  
Cannanore district during Rabi season

Station	October	November	December	January	Total
Payyanur	211.3 (1.4)	103.1 (5.1)	24.9 (1.3)	3.6 (0.3)	342.9 (17.1)
Taliparamba	236.7 (11.2)	115.8 (5.5)	25.4 (1.3)	4.6 (0.3)	382.5 (18.3)
Panniyur	257.3 (15.9)	130.6 (8.9)	25.1 (2.1)	0.9 (0.2)	413.9 (27.1)
Irikkur	288.3 (13.5)	143.8 (6.8)	24.1 (1.6)	5.1 (0.5)	461.3 (22.4)
Cannanore	216.1 (10.3)	109.5 (5.2)	17.8 (1.0)	3.8 (0.3)	347.2 (16.8)
Tellicherry	221.7 (10.2)	106.7 (5.6)	23.4 (1.3)	6.9 (0.6)	358.7 (17.7)
Mean	238.6 (11.9)	118.3 (6.2)	23.4 (1.4)	4.1 (2.4)	384.4 (19.9)

( ) indicates the number of rainy days

## ANNEXURE 17

Monthly rainfall (mm) and number of rainy days of the Cannanore district during Summer

Station	February	March	April	May	Total
ayyanur	5.1 (0.2)	6.9 (0.4)	44.7 (2.9)	210.1 (7.5)	266.8 (11.0)
aliparamba	3.1 (0.2)	6.9 (0.5)	51.1 (3.0)	186.2 (7.6)	247.3 (11.3)
anniyur	3.6 (0.2)	4.9 (0.8)	65.4 (6.1)	233.8 (12.3)	327.7 (19.4)
rikkur	4.3 (0.3)	13.2 (0.8)	71.4 (3.9)	211.1 (8.6)	300.0 (13.6)
Cannanore	5.3 (0.2)	8.9 (0.6)	49.3 (3.0)	42.6 (8.2)	276.1 (12.0)
Tellicherry	5.3 (0.3)	9.9 (0.7)	66.8 (3.2)	235.2 (8.8)	317.2 (13.0)
Mean	4.5 (0.2)	8.5 (0.6)	58.1 (3.7)	218.1 (8.8)	289.2 (13.3)

## ANNEXURE 18

Monthly rainfall (mm) and number of rainy days of the Kozhikode district during Kharif season

Station	June	July	August	September	Total
Badagara	954.9 (24.6)	1002.3 (27.0)	523.7 (20.8)	231.3 (12.9)	2712.2 (85.3)
Kozhikode	824.1 (24.2)	857.3 (26.6)	439.7 (19.7)	221.9 (12.3)	2343.0 (82.8)
Kuttiyadi	1027.5 (25.0)	1078.1 (28.0)	741.6 (24.5)	313.9 (15.4)	3161.1 (92.9)
Quilandy	892.2 (24.7)	949.6 (26.0)	512.5 (20.9)	224.0 (12.4)	2578.3 (84.0)
Mean	924.7 (24.6)	971.8 (26.9)	554.4 (21.5)	247.8 (13.3)	2698.7 (86.3)

( ) indicates the number of rainy days

61 ANNEXURE 19

Monthly rainfall (mm) and number of rainy days of the Kozhikode district during Rabi season

Station	October	November	December	January	Total
Badagara	258.7 (11.2)	143.0 (6.6)	22.4 (2.8)	7.5 (0.6)	431.6 (21.2)
Kozhikode	262.7 (10.9)	156.7 (6.8)	30.6 (1.6)	11.6 (0.7)	461.6 (20.0)
Kuttiyadi	374.8 (15.5)	242.6 (9.3)	58.5 (2.8)	13.6 (0.9)	589.5 (28.5)
Quilandy	256.7 (10.9)	138.8 (6.6)	27.2 (1.7)	8.9 (0.6)	431.6 (19.8)
Mean	288.2 (12.1)	170.3 (7.3)	34.7 (2.2)	10.4 (0.7)	503.6 (22.3)

( ) indicate the number of rainy days.

## ANNEXURE 20

Monthly rainfall (mm) and number of rainy days of the  
Kozhikode district during Summer

Station	February	March	April	May	Total
Badagara	4.9 (0.3)	14.8 (1.0)	77.7 (4.4)	271.9 (9.6)	369.3 (15.3)
Kozhikode	8.5 (0.3)	18.6 (0.9)	86.9 (3.9)	261.6 (8.9)	375.6 (14.0)
Kuttidiyadi	9.5 (0.5)	25.9 (1.6)	122.7 (6.8)	295.0 (11.3)	453.1 (20.2)
Quilandy	4.1 (0.3)	15.9 (0.9)	69.5 (3.9)	257.2 (9.2)	346.7 (14.3)
Mean	6.8 (0.4)	18.8 (1.1)	89.2 (4.8)	271.4 (9.7)	386.2 (16.0)

( ) indicate the number of rainy days.



ANNEXURE 21

Monthly rainfall (mm) and number of rainy days of the Malappuram districts during Kharif season

Station	June	July	August	September	Total
Manjeri	711.1 (22.9)	833.1 (25.2)	425.0 (19.4)	201.7 (11.7)	2170.9 (79.2)
Nilambur	636.6 (21.8)	861.5 (26.1)	432.9 (19.8)	191.3 (12.6)	2122.3 (80.3)
Perinthal- manna	658.8 (22.7)	759.2 (25.6)	393.9 (18.6)	189.5 (11.5)	1993.4 (78.4)
Ponnani	753.2 (24.3)	715.8 (24.9)	383.0 (18.4)	203.0 (11.8)	2055.0 (79.4)
Thiruran- gadi	760.8 (24.2)	765.5 (25.6)	390.1 (19.4)	208.6 (12.6)	2125.0 (81.8)
Mean	702.5 (23.2)	787.0 (25.5)	405.0 (19.1)	198.8 (12.0)	2093.3 (79.8)

( ) indicates the number of rainy days.

## ANNEXURE 22

Monthly rainfall (mm) and number of rainy days of the Malappuram district during Rabi season

Station	October	November	December	January	Total
Manjeri	308.2 (13.3)	170.3 (7.4)	30.6 (1.6)	8.2 (0.5)	517.3 (22.8)
Nilesnwar	281.0 (12.9)	133.0 (7.4)	28.6 (1.8)	6.7 (0.5)	449.3 (22.6)
Perinthalmanna	320.7 (14.1)	171.8 (7.7)	30.2 (1.7)	6.4 (0.4)	529.1 (23.9)
Ponnani	286.6 (12.6)	184.9 (7.6)	28.2 (1.7)	7.2 (0.5)	506.9 (22.4)
Thirurangadi	253.2 (11.8)	159.0 (7.5)	37.4 (1.8)	5.2 (0.5)	454.8 (21.6)
Mean	289.9 (12.9)	163.8 (7.5)	31.0 (1.7)	6.7 (0.5)	491.4 (22.5)

( ) Indicates the number of rainy days

## ANNEXURE 23

Monthly rainfall (mm) and number of rainy days of  
Malappuram district during summer

Station	February	March	April	May	Total
Manjeri	3.9 (0.3)	20.1 (1.0)	76.0 (4.5)	197.8 (8.2)	297.8 (14.0)
Nilambur	5.9 (0.4)	13.2 (1.1)	62.0 (4.3)	157.5 (7.6)	238.6 (13.4)
Perinthalmanna	8.7 (0.5)	25.0 (1.7)	86.9 (5.2)	190.9 (8.0)	311.5 (15.4)
Ponnani	7.7 (0.5)	24.2 (1.3)	96.5 (4.9)	266.3 (10.6)	394.7 (17.3)
Thirurangadi	6.1 (0.5)	14.2 (1.0)	72.2 (4.0)	242.0 (9.0)	334.5 (14.57)
Mean	6.5 (0.4)	19.3 (1.2)	78.7 (4.6)	210.9 (9.7)	315.4 (14.9)

( ) indicates the number of rainy days

ANNEXURE 24  
Northern zone: Land use pattern (1984-85) (area in ha)

District	Taluk	Total geog. area	Forest	land put to non agri. use	Barren and uncultivable waste	Culti- vab- vaste	Current fallows	Net area sown	Area sown more than once	Gross cropped area
Malappuram	Tirur	66,401	4,988	7,219	1,492	2,020	769	49,224	9,601	58,825
	Ponnani	19,940	--	2,812	752	1,439	175	14,754	3,404	18,160
	Perinthal- manna	50,590	7,604	1,759	1,387	2,031	7,198	29,629	7,550	37,179
	Ernad	2,26,304	90,825	7,184	4,075	8,510	3,924	1,14,568	18,645	1,33,211
	District	3,63,235	1,03,417	18,974	7,706	14,134	12,066	2,08,175	39,200	2,47,375
Kozhikode	Kozhikode	1,02,160	12,951	3,419	1,220	979	3,804	68,485	13,268	85,832
	Quilandy	75,690	10,910	5,872	420	820	3,977	39,604	14,374	56,831
	Badagara	54,980	17,080	8,693	360	1,210	4,219	51,805	16,293	60,761
	District	2,32,830	40,941	17,984	2,000	3,009	11,000	1,59,894	43,935	2,03,424
Cannanore	Tellicherry	1,20,660	32,705	6,698	3,298	5,306	1,700	85,080	4,218	96,426
	Cannanore	43,080	--	7,432	4,316	4,414	430	35,603	5,347	26,736
	Taliparamba	1,33,250	11,290	5,766	2,264	7,202	2,741	80,324	3,413	90,805
	District	2,96,990	43,995	19,896	9,878	16,922	4,871	2,01,007	12,978	2,13,967
Kasaragod	Hosdurg	98,860	8,767	6,216	12,276	11,687	1,384	57,052	8,703	65,756
	Kasaragod	97,260	7,209	6,193	7,484	8,923	7,700	60,557	9,082	69,638
	District	1,96,120	15,976	12,410	19,760	20,610	9,084	1,17,608	17,785	1,35,394
Zone		10,89,275	2,04,329	69,264	39,344	54,675	37,021	6,86,674	1,13,898	8,00,160
State		38,65,497	10,81,509	2,77,719	88,590	1,28,924	42,938	21,80,355	6,81,347	28,61,702

ANNEXURE 25  
Northern zone: Crops irrigated (area in ha), 1984-85

District	Taluk	Rice	Vegetables	Coconut	Arecanut	Banana	Others	Total
Malappuram	Tirur	4,060	143	7,242	1,866	375	1,293	14,979
	Ponnani	1,664	60	1,285	1,332	235	300	4,876
	Perinthalmanna	572	95	987	742	340	835	3,571
	Ernad	1430	240	3,560	1,500	1,007	113	8,850
District		7,726	538	13,074	5,440	1,957	2,541	32,276
Kozhikode	Kozhikode	628	--	3,484	80	259	--	4,451
	Quilandy	2,478	--	2,154	86	870	--	5,588
	Badagara	334	--	584	123	82	--	1,083
District		3,430	--	6,222	289	1,181	--	11,122
Cannanore	Tellicherry	617	173	1,615	463	597	--	3,465
	Cannanore	1,377	973	2,261	697	610	--	5,918
	Taliparamba	557	120	4,106	2,308	593	--	7,684
District		2,551	1,266	7,982	3,468	1,800	--	17,067
Kasaragod	Hosdurg	3,210	--	7,436	2,508	815	6,776	20,745
	Kasaragod	2,585	--	7,367	2,954	301	3,224	16,431
District		5,795	--	14,803	5,462	1,116	10,000	37,176
Zone		19,502	2,221	42,081	24,660	6,054	2,541	97,059

ANNEXURE 26 (a)  
Northern zone: Important crops grown (area in ha) 1984-'85)

		Rice							
District	Taluk	Kharif	Rabi	Summer	Total	Coconut	Banana	Tapoca	
Malappuram	Tirur	7,901	10,327	1,916	20,144	24,803	1,023	2,611	
	Ponnani	3,197	5,882	1,994	11,073	4,792	528	680	
	Perinthalmanna	7,396	6,128	487	14,011	6,951	707	4,880	
	Ernad	13,757	13,524	676	27,957	25,668	2,428	6,570	
District		32,251	35,861	5,073	73,185	62,214	4,686	15,741	
Kozhikode	Kozhikode	3,269	5,689	842	9,800	32,207	1,091	1,488	
	Qullandy	2,588	4,150	1,491	8,229	36,185	678	1,479	
	Badagara	1,682	1,843	230	3,755	39,108	1,630	883	
District		7,539	11,682	2,563	21,784	1,07,500	3,399	3,850	
Cannanore	Tellicherry	5,120	3,266	1,034	9,420	30,300	1,003	2,534	
	Cannanore	7,468	3,100	528	11,096	11,185	374	2,419	
	Taliparamba	8,128	4,550	390	13,068	25,718	897	3,244	
District		20,716	10,916	1,952	33,584	67,203	2,274	8,197	
Kasaragod	Hosdurg	5,178	2,654	574	8,408	15,442	913	0,490	
	Kasaragod	6,329	3,168	576	10,074	8,036	1,924	509	
District		11,507	5,822	1,150	18,476	23,478	2,837	8,999	
Zone		72,013	64,281	13,738	1,47,032	26,037	13,196	36,787	
State		3,18,611	3,26,812	84,956	7,30,379	6,87,483	51,417	2,16,742	

ANNEXURE 26 (b)  
Northern zone: Important crops grown (area in ha), 1984-85

District	Taluk	Cashew	Pepper	Sesamum	Rubber	Ginger	Mango	Jack	Cocoa	Arecanut	Vegetables
Malappuram	Tirur	1,669	687	868	183	107	1,510	1,515	60	3,213	1,222
	Ponnani	210	132	425	120	112	543	517	40	2,067	549
	Perinthalmanna	3,530	1,582	398	3,027	134	1,247	1,043	120	1,571	1,166
	District	14,582	2,218	573	15,381	337	3,015	2,110	240	4,803	990
	District	19,991	4,619	2,264	18,711	690	6,315	5,185	460	11,654	3,927
Kozhikode	Kozhikode	2,273	5,012	15	15,622	155	2,498	2,378	650	6,076	86
	Quilandy	1,262	6,217	36	1,996	415	2,477	2,177	84	4,789	214
	Badagara	654	2,125	25	2,852	153	1,869	1,869	200	2,774	139
	District	4,189	13,354	76	20,466	723	6,844	6,424	934	13,641	439
Cannanore	Tellicherry	20,678	8,345	82	12,391	332	696	1,022	192	1,684	3,100
	Cannanore	3,507	483	7	1,439	143	262	329	41	648	4,026
	Taliparamba	1,260	6,874	41	8,765	296	2,077	2,153	231	5,370	3,555
	District	25,445	15,702	130	22,595	771	3,035	3,504	464	7,702	10,601
Kasaragod	Hosdurg	20,506	4,929	143	5,411	577	1,052	1,152	297	2,020	4,930
	Kasaragod	20,107	3,138	100	1,105	70	1,070	1,078	365	2,957	1,616
	District	40,613	8,067	243	6,516	647	2,130	2,230	662	5,777	6,546
Zone		90,238	41,742	2,713	68,288	2,031	18,324	17,343	2,520	38,774	21,593
State		1,36,863	1,05,835	14,448	3,11,976	14,537	59,984	58,052	17,060	56,778	

ANNEXURE 26 (c)  
Northern zone: Important crops grown (area in ha) 1984-85

District	Taluk	Cardamom	Pulses	Tobacco	Sweet potato	Betelvine
Malappuram	Tirur	--	575	--	464	185
	Ponnani	--	164	--	50	140
	Perinthalmanna	--	260	--	100	65
	Ernad	188	474	--	686	203
District		188	1,473	--	1,300	593
Kozhikode	Kozhikode	396	520	--	1	--
	Quilandy	--	266	--	2	--
	Badagara	16	367	--	1	--
	District		412	1,153	--	4
Cannanore	Tellicherry	165	262	--	112	--
	Cannanore	--	1,846	--	96	--
	Taliparamba	214	1,000	--	69	--
	District		379	3,108	--	277
Kasaragod	Hosdurg	315	922	490	466	--
	Kasaragod	85	489	110	110	--
	District		400	1,411	600	576
Zone		1,379	7,720	600	2,157	593
State		58,769		600	4,635	1,046




ANNEXURE 27 (a)  
Northern zone: Production of Important crops (Tonnes) 1984-85

District	Taluk	Rice				Coconut (million nuts)	Banana	Tapioca
		Kharif	Rabi	Summer	Total			
Malappuram	Tirur	17,580	22,977	4,263	44,820	76.94	6,995	45,379
	Ponnani	7,113	13,087	4,437	24,637	14.86	3,610	11,818
	Perinthalmanna	16,456	13,635	1,083	3,174	21.56	4,834	84,815
	Ernad	30,609	30,091	1,504	62,204	79.62	16,600	1,31,567
	District	71,758	79,790	11,287	1,62,835	192.98	32,039	2,73,579
Kozhikode	Kozhikode	4,712	10,220	2,436	17,368	192	7,014	12,047
	Quilandy	3,712	8,260	3,790	15,762	227	4,190	11,290
	Badagara	2,676	3,086	610	6,372	256	9,635	6,270
	District	11,100	21,566	3,836	39,502	675	20,839	29,607
Cannanore	Tellicherry	8,868	5,657	1,791	16,316	148.4	6,314	38,694
	Cannanore	12,935	5,369	914	19,218	54.8	2,354	36,938
	Taliparamba	14,077	7,881	675	22,633	125.8	5,646	49,536
	District	35,880	18,907	3,380	58,167	329.0	14,314	1,25,168
Kasaragod	Hosdurg	9,229	7,279	1,109	17,617	75.65	5,747	1,29,642
	Kasaragod	14,163	6,019	1,506	21,688	39.35	12,112	7,772
	District	23,392	13,298	2,615	39,305	115.00	17,859	1,37,415
Zone		1,42,130	1,33,561	21,118	2,99,809	1312.00	85,051	5,65,769
State		5,49,027	5,39,839	1,67,050	12,55,916	3,453	3,31,192	36,94,270

ANNEXURE 27 (b)  
Northern zone : Production of Important crops (Tonnes) 1984-85

District	Taluk	Cashew	Pepper	Sesamum	Rubber	Ginger	Mango	Jack	Cocoa	Arecanut (Million nuts)	Vegetables
Malappuram	Tirur	615	111	167	93	210	6,488	2,927	19	443	11,330
	Ponnani	81	21	76	61	263	2,333	999	12	287	8,735
	Perinthalmanna	1,302	257	82	1,540	220	5,358	2,016	37	218	2,390
	Ernad	5,380	359	110	7,828	663	12,955	4,076	75	667	13,415
	District	7,378	749	435	9,522	1,357	27,135	10,018	143	1,615	35,870
Kozhikode	Kozhikode	780	951	3	7,200	223	13,574	5,630	96	705	10,884
	Qullandy	460	1,025	6	1,270	590	2,835	5,062	16	210	27,210
	Badagara	235	376	4	3,350	217	5,670	4,334	38	213	16,326
	District	1,475	2,352	13	11,820	1,030	22,079	15,026	150	1,128	54,420
Cannanore	Tellicherry	13,378	1,477	13	6,468	956	2,742	2,790	37	117.9	37,200
	Cannanore	2,269	85	1	751	412	1,032	898	8	110.2	48,312
	Talparamba	820	1,224	7	4,587	852	8,183	5,078	45	1,081.3	22,660
	District	16,467	2,786	21	11,806	2,220	11,958	9,566	90	1,309.3	1,28,172
Kasaragod	Hosdurg	13,268	872	23	2,824	1,661	4,147	3,146	71	465.4	73,950
	Kasaragod	13,009	555	16	576	201	4,249	2,944	58	488.0	24,240
	District	26,277	1,427	39	3,401	1,863	8,396	6,090	129	953.4	98,190
Zone		51,597	7,315	508	36,549	6,470	69,568	40,700	512	5,006.0	3,16,652

  
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ANNEXURE 27 (c)  
Northern zone: Production of Important crops (Tonnes) 1984-85

District	Taluk	Cardamom	Pulses	Tobacco	Sweet potato
Malappuram	Tirur	--	427	--	3,965
	Ponnani	--	122	--	427
	Perinthalmanna	--	193	--	854
	Ernad	2	352	--	5,861
	District	2	1,093	--	11,108
Kozhikode	Kozhikode	2.9	299.0	--	150
	Quilandy	--	148.0	--	200
	Badagara	0.1	151.0	--	118
	District	3.0	598	--	368.0
Cannanore	Tellicherry	5.0	157	--	1,215
	Cannanore	--	1,108	--	874
	Taliparamba	7.0	600	--	926
	District	12.0	1,865	--	3,015
Kasaragod	Hosdurg	9.7	627	882	6,990
	Kasaragod	2.6	333	198	1,650
	District	12.3	960	1,080	8,640
Zone		29.3	4,516	1,080	23,131
State		2,850	20,384	1,080	38,779

## ANNEXURE 2B

Northern zone: Agricultural machinery and implements (number), 1984 -1985

District	Taluk	Country plough	Improved plough	Sprayer	Tractor	Power tiller	Electric motor	Diesel pumpset	Other items
Malappuram	Tirur	4,065	481	807	80	22	3,405	1,439	1,344
	Ponnani	1,764	1,091	1,075	30	15	2,405	1,208	1,890
	Perinthalmanna	1,425	320	642	20	39	1,123	444	1,598
	Ernad	4,714	1,291	1,391	65	9	924	796	5,167
	District	11,968	3,183	3,915	195	85	7,857	3,887	9,999
Kozhikode	Kozhikode	3,280	301	1,229	323	27	643	303	308
	Quilandy	1,699	295	1,399	158	7	419	320	354
	Badagara	1,095	153	1,519	244	8	757	132	280
	District	6,074	669	4,147	725	42	1,869	755	942
Cannanore	Tellicherry	629	167	1,072	1	24	1,203	457	176
	Cannanore	810	194	1,560	2	10	1,805	653	78
	Taliparamba	3,347	50	3,689	13	72	1,630	846	1,045
	District	4,786	411	6,321	16	114	4,638	1,956	1,299
Kasaragod	Hosdurg	2,204	17	4,081	5	14	2,500	890	3,080
	Kasaragod	4,515	14	4,150	7	18	3,345	1,113	5,410
	District	6,719	31	8,231	12	32	5,845	2,003	8,490
Zone		29,547	4,264	22,614	948	273	20,209	8,101	20,730
State		2,28,566	33,524	35,206	1,335	3,925	74,456	24,475	62,634

ANNEXURE 29

Agroecological situations in Malappuram district.

1. Sandy nonsaline rainfed coastal tract:  
Area under crops (ha)

Crop	Tirur	Ponnani	District total
Rice	2,339	616	2,955
Coconut	6,338	558	6,896
Arecanut	499	82	581
Banana	34	26	60
Cashew	40	77	117
Sesamum	135	—	135
Pulses	140	34	174
Vegetables	150	123	273
Mango	95	30	125
Jack	3	2	5
Miscellaneous	1,007	560	1,567

This situation does not occur in Perinthalmanna and Ernad taluks.

## ANNEXURE 30

## Agroecological situations in Malappuram district

2. Sandy nonsaline irrigated coastal tract:  
Area under crops (ha)

Crop	Tirur	Ponnani	Total
Rice	183	75	258
Coconut	1,100	512	1,612
Arecanut	100	25	125
Banana	15	10	25
Sesamum	612	400	1,012
Vegetables	154	124	278
Mango	85	40	125
Bottle vine	47	23	67
Miscellaneous	306	240	546

This situation does not occur in Perinthalmanna and Ernad taluks.

## ANNEXURE 31

Agroecological situations in Malappuram district

3. Alluvial salt affected, rainfed (flood prone) tract: Area under crops (ha)

Crop	Tirur	Ponnani	Erand	District total
Rice	400	678	905	1,983
Coconut	1,360	928	130	2,418
Arecanut	—	38	15	53
Banana	55	15	—	70
Miscellaneous	235	390	159	784

This situation has not been identified in Perinthalmanna taluk.

## ANNEXURE 32

Agroecological situations in Malappuram district

4. Alluvial hydromorphic (nonsaline) irrigated tract: Area under crops (ha)

Crop	Tirur	District Total
Rice	3,860	3,860

This agroecological situation does not occur in Erand, Perinthalmanna, and Ponnani taluks.

ANNEXURE 32

Agroecological situations in Malappuram district.

4. Alluvial hydromorphic (nonsaline) irrigated tract:  
Area under crops (ha)

Crop	Tirur	District Total
Rice	3,860	3,860

This agroecological situation does not occur in Ernad, Perinthalmanna, and Ponnani taluks.



## ANNEXURE 33

## Agroecological situations in Malappuram district

## 5. Shallow high level plateau laterite nonsaline rainfed tract: Area under crops (ha)

Crop	Tirur	Ponnani	Perinth- almanna	Ernad	Total
Rice	7,548	5,158	7,625	14,259	34,590
Coconut	8,215	835	4,276	12,234	25,560
Arecanut	990	182	1,029	2,677	4,878
Banana	286	200	367	1,365	2,218
Tapioca	160	87	575	2,406	3,228
Cashew	709	65	2,430	11,165	14,369
Pepper	506	32	743	1,204	2,485
Sesamum	19	—	—	40	61
Pulses	80	95	108	138	421
Vegetables	139	135	160	306	740
Rubber	—	—	697	12,016	12,713
Sweet potato	425	20	85	670	1,200
Ginger	—	—	19	171	190
Mango	800	168	737	1,585	3,290
Jack	7	6	8	9	30
Miscellaneous	1,400	800	1,000	2,160	536

## ANNEXURE 34

## Agroecological situations in Malappuram districts

## 6. Shallow high level plateau nonsaline irrigated tract: Area under crops (ha)

Crop	Tirur	Ponnani	Perinthal- manna	Ernad	Total
Rice	1,500	1,050	1,907	3,020	7,477
Coconut	2,391	1,000	1,000	2,795	7,226
Arecanut	612	1,495	—	677	2,984
Banana	119	96	—	350	565
Tapioca	20	23	—	—	43
Cashew	20	23	—	—	43
Pepper	10	10	—	—	20
Vegetables	150	31	306	120	607
Sweet Potato	39	30	15	16	100
Mango	5	—	—	—	5
Betelvine	10	—	—	—	10
Miscellaneous	415	375	130	207	1,127

ANNEXURE -35

Agroecological situations in Malappuram district

7. Deep valley laterite nonsaline rainfed tract:  
Area under crops (ha)

Crop	Tirur	Ponnani	Perinthal- manna	Ernad	Total
Rice	3,619	2,821	3,179	6,873	16,492
Coconut	2,531	859	995	5,165	9,550
Arecanut	412	65	325	610	1,412
Banana	470	181	340	713	1,704
Tapioca	1,359	500	2,948	1,300	6,107
Cashew	900	45	1,100	3,385	5,400
Pepper	171	90	539	247	1,047
Sesamum	102	25	398	537	1,056
Pulses	25	35	40	50	150
Vegetables	121	136	500	344	1,101
Rubber	100	120	1,980	1,865	4,065
Ginger	107	112	115	166	500
Mango	190	260	310	473	1,233
Jack	509	476	575	540	2,100
Cocoa	60	40	120	240	460
Miscellaneous	531	469	520	580	2,100

## ANNEXURE 36

## Agroecological situations in Malappuram district

8. Deep valley laterite nonsaline irrigated tract:  
Area under crops (ha)

Crop	Tirur	Ponnani	Perinthal- manna	Ernad	Total
Rice	1,025	675	1,200	11,600	4,500
Coconut	2,000	100	200	146	2,446
Areca nut	600	180	217	420	1,417
Banana	44	—	—	—	44
Tapioca	268	70	85	136	559
Pulses	16	—	—	—	16
Vegetables	108	—	200	60	368
Mango	115	45	60	280	500
Betelvine	131	117	65	203	516
Miscellaneous	464	400	432	516	1,812

ANNEXURE 37

Agroecological situations in Malappuram district

9. Deep forest loam nonsaline rainfed tract:  
Area under crops (ha)

Crop	Tirur	Perinthal- manna	Ernad	Total
Rice	170	100	800	1,070
Coconut	828	480	5,200	6,508
Arecanut	—	—	204	204
Tapioca	804	1,272	3,728	5,804
Cashew	—	—	62	62
Pepper	—	300	767	1,067
Pulses	314	112	286	712
Vegetables	400	—	160	560
Rubber	83	350	1,500	1,933
Mango	220	140	677	1,037
Jack	996	493	1,561	3,050
Cardamom	—	—	188	188
Miscellaneous	400	315	4,410	5,125

This situation has not been identified in Ponnani taluk.

## ANNEXURE 38

## Agroecological situations in Calicut district

1. Sandy nonsaline rainfed coastal tract:  
Area under crops (ha)

Crop	Badagara	Quilandy	Kozhikode	Total
1. Rice	672	2,381	2,002	5,055
2. Coconut	5,200	3,600	5,362	14,162
3. Arecanut	90	130	93	313
4. Banana	70	100	130	300
5. Cashew	180	29	83	292
6. Sesamum	5	10	—	15
7. Pulses	76	97	120	293
8. Vegetables	27	35	85	147
9. Mango	300	80	30	410
10. Miscellaneous	—	—	—	92

ANNEXURE 39

Agroecological situations in Calicut district

2. Sandy nonsaline irrigated coastal tract:  
Area under crops (ha)

Crop	Badagara	Quilandy	Kozhikode	Total
Rice	304	194	179	677
Coconut	721	898	1,673	3,292
Arecanut	62	35	30	127
Banana	105	130	82	317
Vegetable	212	180	130	522
Jack	58	49	68	175
Betelvine	25	10	5	40
Miscellaneous	--	--	--	112

ANNEXURE 40

Agroecological situations in Calicut district

3. Alluvial salt affected rainfed (flood prone) tract:  
Area under crop (ha)

Crop	Badagara	Quilandy	Kozhikode	Total
1. Rice	150	70	110	330
2. Coconut	80	20	60	160
3. Miscellaneous	--	90	--	90

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## ANNEXURE 41

## Agroecological situations in Calicut district

5. Shallow plateau laterite, nonsaline rainfed tract:  
Area under crop (ha)

Crops	Badagara	Quilandy	Kozhikode	Total
Rice	2,193	2,535	3,513	8,241
Coconut	23,056	13,533	12,208	48,797
Arecanut	39	290	500	829
Banana	815	489	800	1,804
Tapioca	423	600	394	1,417
Cashew	488	875	2,015	3,375
Pepper	1,192	922	1,391	3,505
Sesamum	20	26	15	61
Pulses	160	66	297	523
Vegetable	36	400	9	445
Rubber	940	636	1,138	2,714
Sweet Potato	20	10	42	72
Ginger	30	64	29	123
Mango	600	310	1,800	2,710
Jack	200	818	169	1,187
Miscellaneous	85	100	—	185



## ANNEXURE 42

## Agroecological situations in Calicut district

## 6. Shallow high level plateau laterite nonsaline irrigated tract: Area under crops (ha)

Crops	Badagara	Quilandy	Kozhikode	Total
Rice	200	1,029	1,300	2,529
Coconut	1,058	1,800	946	3,804
Arecanut	3	5	10	18
Banana	305	51	80	436
Tapioca	70	48	26	144
Vegetable	115	368	67	550
Jack	10	10	80	100
Miscellaneous	50	40	110	200

## ANNEXURE 43

## Agroecological situations in Calicut district

7. Deep valley laterite nonsaline rainfed tract:  
Area under crops (ha)

Crops	Badagara	Quilandy	Kozhikode	Total
Rice	200	1,820	2,493	4,513
Coconut	5,210	11,990	10,038	27,238
Arecanut	764	820	1,800	3,384
Banana	203	—	—	203
Tapjoca	412	428	936	1,776
Cashew	54	34	102	190
Pepper	403	1,340	400	2,143
Pulses	69	84	59	212
Vegetables	596	847	16	1,459
Rubber	1,073	679	6,289	8,041
Ginger	100	40	1,106	1,246
Mango	300	1,900	143	2,343
Jack	208	1,300	861	2,369
Cocoa	25	25	30	80
Miscellaneous	100	100	115	315

## ANNEXURE 44

## Agroecological situations in Calicut district

8. Deep valley laterite nonsaline irrigated tract:  
Area under crops (ha)

Crops	Badagara	Quilandy	Kozhikode	Total
Rice	12	200	203	415
Coconut	473	1,664	128	2,265
Arecanut	31	102	380	513
Banana	208	—	—	208
Pepper	98	170	203	471
Pulses	30	40	50	120
Vegetables	48	298	5	385
Rubber	833	681	8,195	9,715
Jack	160	—	340	500
Cocoa	24	70	300	394
Miscellaneous	60	20	20	100

## ANNEXURE 45 .

## Agroecological situations in Calicut district

9. Deep forest loam, nonsaline rainfed tract:  
Area under crops (ha)

Crops	Badagara	Quilandy	Kozhikode	Total
Rice	24	--	--	24
Coconut	3,310	2,680	1,792	7,782
Arecanut	--	--	--	--
Banana	98	--	36	134
Tapioca	--	381	132	513
Cashew	86	173	73	332
Pepper	432	3,788	3,018	7,235
Pulses	11	--	39	50
Vegetables	5	86	29	120
Rubber	777	681	7,695	9153
Ginger	23	311	20	354
Mango	669	187	525	1,381
Jack	1,153	--	980	2,093
Cocoa	152	38	270	460
Cardamom	--	--	412	412
Miscellaneous	--	--	--	1,097

## ANNEXURE 46

## Agroecological situations in Cannanore district

## Deep forest loam, nonsaline, rainfed tract

Crop	Tellicherry	Cannanore	Taliparamba	District total
Rice	100	245	29	374
Coconut	1,107	596	3,102	4,805
Arecanut	52	75	1,505	1,632
Banana	114	—	92	206
Tapioca	1,111	1,770	1,201	4,082
Cashew	2,076	151	109	2,336
Pepper	1,251	—	894	2,145
Rubber	3,583	385	2,167	6,135
Ginger	168	62	40	270
Mango	14	—	642	656
Jack	12	5	21	38
Cocoa	24	26	164	214
Cardamom	165	—	214	379
Miscellaneous	43	24	167	234
	9,820	3,339	10,347	23,506

## ANNEXURE 47

## Agroecological situations in Cannanore district

Sandy nonsaline rainfed coastal tract:  
Area under crops, 1984-'85

Crop	Taluk			District total
	Tellicherry	Cannanore	Taliparamba	
Rice	3,294	4,798	834	8,926
Coconut	214	4,731	2,991	7,936
Arecanut	110	—	335	445
Banana	—	3	173	176
Cashew	—	—	578	578
Sesamum	74	7	29	110
Pulses	250	1,588	980	2,818
Vegetables	762	698	250	1,710
Mango	98	72	55	225
Jack	112	84	64	260
Miscellaneous	738	465	227	1,430
Total	5,652	12,446	6,516	24,614

ANNEXURE 48

Agroecological situations in Cannanore district

Alluvial (coastal) nonsaline irrigated coastal tract

Crop	Taluk			District total
	Tellicherry	Cannanore	Taliparamba	
1. Rice	71	221	439	731
2. Coconut	546	339	2,487	3,372
3. Arecanut	62	13	38	113
4. Banana	102	48	70	220
5. Vegetables	267	184	170	621
6. Mango	102	81	67	250
7. Jack	238	92	185	515
8. Miscellaneous	76	49	40	165
Total	1,464	1,027	3,496	5,987

## ANNEXURE 49

## Agroecological situations in Cannanore district

Alluvial (riverine), salt affected, rainfed  
(Flood prone) Tract

Crop	Taluk			District
	Tellicherry	Cannanore	Taliparamba	Total
Rice	1,358	1,121	633	3,112
Coconut	357	155	--	512
Arecanut	15	5	--	20
Banana	10	5	5	20
Miscellaneous	115	30	5	150
Total	1,855	1,316	643	3,814



ANNEXURE 50

Agroecological situations in Cannanore district

Shallow high level plateau, laterite, nonsaline  
 District

Crop	District			Total
	Tellicherry	Cannanore	Taliparamba	
Rice	3,382	424	8,636	12,442
Coconut	24,587	4,449	16,977	46,013
Areca nut	326	273	297	896
Banana	409	250	173	832
Tapioca	564	325	900	1,786
Cashew	18,502	3,302	508	22,312
Pepper	6,229	4,432	4,809	15,470
Sesamum	28	21	12	61
Pulses	212	168	20	400
Vegetables	1,068	1,746	1,571	4,385
Rubber	8,400	840	5,800	15,040
Sweet potato	62	96	69	227
Ginger	17	27	41	85
Mango	358	1,028	647	1,983
Jack	288	126	900	1,314
Miscellaneous	1,215	916	2,644	4,775
<b>Total</b>	<b>65,737</b>	<b>13,499</b>	<b>44,004</b>	<b>1,23,240</b>

## ANNEXURE 51

Agroecological situations in Cannanore district

Shallow high level plateau laterite, nonsaline,  
irrigated tract

Crop	Taluk			District total
	Tellicherry	Cannanore	Taliparamba	
Rice	818	1,125	460	2,403
Coconut	517	168	108	793
Arecanut	1,028	170	1,631	2,829
Banana	233	48	285	566
Tapioca	18	6	8	32
Cashew	8	6	—	14
Pepper	32	28	13	73
Vegetables	517	492	181	1,190
Mango	96	—	54	150
Jack	96	—	31	127
Miscellaneous	120	108	12	240
<b>Total</b>	<b>3,483</b>	<b>2,151</b>	<b>2,783</b>	<b>8,417</b>

## ANNEXURE 52

## Agro-ecological situation in Cannanore Districts

Deep, Valley laterite, nonsaline, rainfed tract

Crop	Taluk			District Total
	Tellicherry	Cannanore	Taliparamba	
Rice	277	2,895	1,918	5,090
Coconut	2,126	361	53	2,540
Arecanut	43	56	1,083	1,182
Banana	66	20	54	140
Tapioca	829	310	1,117	2,256
Cashew	92	43	65	200
Pepper	515	3	685	1,203
Pulses	—	62	—	62
Vegetables	114	834	1,382	2,330
Rubber	408	214	798	1,420
Ginger	104	38	184	326
Mango	6	—	9	15
Jack	245	14	941	1,200
Miscellaneous	732	306	802	1,840
<b>Total</b>	<b>5,557</b>	<b>5,156</b>	<b>9,091</b>	<b>19,804</b>

ANNEXURE 53

Agroecological situations in Cannanore district

Deep valley laterite, nonsaline, irrigated tract

Crop	Taluk			District total
	Tellicherry	Cannanore	Taliparamba	
Rice	120	267	119	506
Coconut	846	386	—	1,232
Arecanut	48	56	481	585
Banana	69	—	45	114
Tapioca	12	8	18	38
Pepper	318	9	473	800
Pulses	—	28	—	28
Vegetables	72	72	1	145
Ginger	43	16	31	90
Mango	12	—	603	615
Jack	31	8	11	50
Cocoa	168	15	67	250
Miscellaneous	88	18	59	165
<b>Total</b>	<b>1,827</b>	<b>883</b>	<b>1,908</b>	<b>4,618</b>

## ANNEXURE 54

## Agroecological situations in Cannanore district

Deep forest loam, nonsaline, rainfed tract

Crop	Tellicherry	Cannanore	Taliparamba	District total
Rice	100	245	29	374
Coconut	1,107	596	3,102	4,805
Arecanut	52	75	1,505	1,632
Banana	114	—	92	206
Tapioca	1,111	1,770	1,201	4,082
Cashew	2,076	151	109	2,336
Pepper	1,251	—	894	2,145
Rubber	3,583	385	2,167	6,135
Ginger	168	62	40	270
Mango	14	—	642	656
Jack	12	5	21	38
Cocoa	24	26	164	214
Cardamom	165	—	214	379
Miscellaneous	43	24	167	234
	9,820	3,339	10,347	23,506

ANNEXURE 55

Agroecological situations in Kasaragod district

1. Sandy nonsaline rainfed coastal tract:  
Area under crops (ha)

Crop	Taluk		District total (Area in ha)
	Hosdurg	Kasaragod	
1. Rice	556	695	1,251
2. Coconut	2,729	1,074	3,803
3. Banana	210	442	652
4. Caashew	332	320	652
5. Sesamum	59	46	105
6. Pulses	93	15	108
7. Vegetables	520	130	650
8. Mango	70	70	140
9. Jack	60	50	110
10. Miscellaneous	246	50	296

## ANNEXURE 56

## Agroecological situations in Kasaragod district

2. Sandy nonsaline irrigated coastal tract:  
Area under crops (ha)

Crop	Taluk		District total (area in ha)
	Hosdurg	Kasaragod	
1. Rice	367	458	825
2. Coconut	1,603	856	2,459
3. Arecanut	24	11	35
4. Banana	44	64	108
5. Sesamum	64	36	100
6. Pulses	12	48	60
7. Vegetables	140	50	190
8. Sweet potato	19	7	26
9. Mango	50	60	110
10. Jack	150	164	314
11. Tobacco	490	110	600
12. Miscellaneous	115	92	207

ANNEXURE 57

Agroecological situations in Kasaragod district

3. Alluvial salt affected, rainfed (flood prone) tract

Crop	Taluk		District total
	Hosdurg	Kasaragod	
1. Rice	701	876	1,577
2. Coconut	397	213	610
3. Arecanut	8.5	6.5	15
4. Banana	9	5	14
5. Miscellaneous	205	105	310



ANNEXURE 58

Agroecological situations in Kasaragod district

5. Shallow high land plateau laterite, nonsaline, rainfed tract: Area under crops (ha)

Crop	Taluk		District total
	Hosdurg	Kasaragod	
1. Rice	2,924	3,655	6,579
2. Coconut	3,884	539	4,423
3. Arecanut	62	63	125
4. Banana	77	86	163
5. Tapioca	94	31	125
6. Cashew	9,444	10,023	19,427
7. Pepper	75	79	154
8. Sesamum	20	18	38
9. Pulses	588	369	957
10. Vegetables	1,352	198	1,550
11. Rubber	820	205	1,025
12. Sweet potato	447	103	550
13. Mango	445	428	873
14. Jack	591	535	1,126
15. Miscellaneous	905	301	1,206

## ANNEXURE 59

## Agroecological situations in Kasaragod district

7. Deep valley laterite, nonsaline, rainfed tract:  
Area under crops (ha)

Crop	Taluk		Total
	Hosdurg	Kasaragod	
1. Rice	1,833	2,083	3,916
2. Coconut	5,153	1,215	6,368
3. Arecanut	617	622	1,239
4. Banana	101	126	227
5. Tapioca	2,183	3,640	5,823
6. Cashew	9,940	8,930	18,870
7. Pepper	2,089	1,614	3,703
8. Pulses	110	70	180
9. Vegetables	1,500	692	2,192
10. Rubber	3,382	568	4,040
11. Ginger	153	11	164
12. Mango	283	317	600
13. Jack	310	290	600
14. Cocoa	68	45	113
15. Miscellaneous	714	696	1,410

ANNEXURE 60

Agroecological situations in Kasaragod district

8. Deep valley laterite, nonsaline, irrigated tract:  
Area under crops (ha)

Crop	Taluk		District total
	Hosdurg	Kasaragod	
1. Rice	2,027	2,307	4,334
2. Coconut	1,676	4,138	5,814
3. Arecanut	2,210	2,154	4,364
4. Banana	472	1,201	1,673
5. Tapioca	170	668	838
6. Pepper	801	267	1,068
7. Pulses	84	23	107
8. Vegetables	873	436	1,309
9. Ginger	321	40	361
10. Mango	154	154	308
11. Jack	42	39	81
12. Cocoa	50	200	250
13. Miscellaneous	476	374	850

## ANNEXURE 61

## Agroecological situations in Kasaragod district

9. Deep forest loam, nonsaline, rainfed tract:  
Area under crops (ha)

Crop	Taluk		District total
	Hosdurg	Kasaragod	
1. Tapioca	62	2,151	2,213
2. Cashew	831	834	1,665
3. Pepper	1,964	1,178	3,142
4. Vegetables	545	110	655
5. Rubber	1,209	242	1,451
6. Ginger	101	20	121
7. Mango	51	49	100
8. Cocoa	180	120	300
9. Cardamom	315	85	400
10. Miscellaneous	484	16	500

## ANNEXURE 62

Northern zone: Important markets/shandies

District	Taluk	Important market/shandy
Malappuram	Tirur	Valancherry, Kottakai, Tirur
	Ponnani	Ponnani, Kuttippuram, Changaramkulam, Chungam
	Perinthalmanna	Perinthalmanna, Manjeri, Valancherry
Kozhikode	kozhikode	Kozhikode, Thamarasseri
	Quilandy	Quilandy
	Badagara	Badagara
Cannanore	Tellicherry	Tellicherry, Kuthuparamba, Iritty
	Cannanore	Cannanore, Iritty, Mattannur
	Taliparamba	Taliparamba, Payyanur, Alakode, Naduvil
Kasaragod	Hosdurg	Kanhangad, Nileshtar, Cheruvathur
	Kasaragod	Kumbala, Manjeshwar, Kasaragod, Badiaduka

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## ANNEXURE 63

## Northern zone: Agroservice facilities

District	Taluk	Commer- cial Banks	Co-ope- rative Banks	Selling point of ferti- lizers	Selling point of pesti- cides
Malappuram	Tirur	41	35	66	37
	Ponnani	22	17	52	38
	Perinthal- manna	17	24	58	23
	Ernad	68	64	167	60
	District	148	140	343	147
Kozhikode	Kozhikode	73	50	130	62
	Quilandy	31	29	70	40
	Badagara	33	29	62	21
	District	137	108	262	123
Cannanore	Tellicherry	50	68	150	57
	Cannanore	43	49	71	40
	Taliparamba	56	51	87	56
	District	149	168	308	153
Kasaragod	Hosdurg	28	35	78	41
	Kasaragod	47	35	80	33
	District	75	70	158	74