

National Agricultural Research Project

STATUS REPORT

OF THE
SPECIAL ZONE OF PROBLEM AREAS

Vol. II & III



KERALA AGRICULTURAL UNIVERSITY

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English

**NARP
STATUS REPORT
Special Zone
Vol. II & III**

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FOREWORD

The National Agricultural Research Project was launched in the early 1980's to strengthen the research capabilities of the State Agricultural Universities. The development of regional research stations in the different agroclimatic zones in terms of research manpower and infrastructure facilities was the essential feature of the NARP. The eligibility of the Kerala Agricultural University to the project was approved by the ICAR in May, 1980. The project has completed its first phase in all the five agroclimatic zones of the state. The second phase of the project was launched in March, 1989.

The essential pre-requisite for starting the NARP is the preparation of the Status Report. It is a basic document embodying all the valuable information on the agricultural sector of the state in general and the specific agroclimatic zones in particular. The first status report of the State was published in May, 1984 in 5 volumes, each volume pertaining to one agroclimatic zone. Since then, several changes have taken place both in the area and production of crops and new field problems have cropped in necessitating the revision of the Status Report.

The present revised Status Report is published in 3 volumes for each of the five agroclimatic zones in Kerala State. The volume-I gives a comprehensive account of the general agricultural characteristics of the State and the concerned zone, in addition to the research extension linkages and research priorities and strategies of the zone. The volume II embodies the conclusions drawn from the field surveys on adoption patterns and production constraints of improved agricultural technologies. The data referred to in the narrative part of the Status Report viz., vol. I, are presented in vol. III.

A number of State Departments and organisations have collaborated with the Kerala Agricultural University in the revision of the Status Report. The Zonal Associate Directors and their team of scientists have spent considerable time and energy in collecting the details and pruning the information to the present form. I congratulate them for their sincere and devoted efforts.

The status report is perhaps the first of its kind bringing together a wealth of information on Kerala Agriculture. I trust that this will be of immense use to all those who are concerned with agriculture and planning, especially as we are in the midst of formulating the VIIIth Five Year Plan as the perspectives for 2000 A. D.

E. G. SILAS
Vice-Chancellor
Kerala Agricultural University

PREFACE

The first Status Reports of all the Five Agro-climatic Zones of Kerala were prepared in the year 1984. The Kerala Agricultural University has successfully implemented the Phase-I of the NARP. The NARP Phase-II was sanctioned by the Indian Council of Agricultural Research in the year 1988 and the sub-projects started functioning with effect from 20-4-1988.

The necessity for the revision of the Status Report prepared earlier was emphasised by the ICAR and the World Bank, incorporating further details. The revision of the Status Reports of the five regions was therefore taken up and the present publication incorporates the details collected as per the guidelines of ICAR/World Bank. The revised Status Report consists of three volumes. The Volume I contains details on the general agricultural characteristics of the State, the Zones, Agro-ecological situations, research and extension linkages and research priorities and strategies. The Volume II is mainly concerned with the adoption pattern and production constraints of different crops, while statistical data are presented in the volume III. Considerable efforts have been made by several scientists of KAU to collect data available on the agricultural scenario of the State from all available sources and to present in an informative manner.

It is hoped that this publication will be of considerable use to the scientists working in the five agro-climatic zones of the KAU as well as in evolving strategies for agricultural research and development in the State of Kerala.

The Associate Directors of Research of the five regions and their teams of scientists and other staff deserve appreciation for the painstaking efforts, they have made to bring out this compilation. The encouragement given by Dr. E. G. Silas, Vice-Chancellor, KAU and the guidance given by Dr. A. R. Sheshadri, Consultant, World Bank in the preparation of the Status Report, is gratefully acknowledged.

Our sincere thanks are due to Dr. A. G. G. Menon, Director of Extension, Shri. K. Rajappan, Press Manager and all the members of the staff of the KAU Press for their co-operation in the arranging the printing of the publication in record time.

Kerala Agricultural University,
Vellanikkara,
13-07-1989

(Sd/-)
M. ARAVINDAKSHAN
Director of Research

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Introduction

Problem zone comprising the Onattukara, Kuttanad, Pokkali and Kole tracts are exposed to several adversities of nature. The cultivation in this zone is generally risky, hazardous and uneconomical due to several climatic and soil factors. The lands lie below mean sea-level in Kuttanad, Pokkali and Kole. Water-logging takes place during the monsoon season and salinity occurs during the summer season. The Onattukara tract is generally poor in soil fertility and is prone to flood during monsoon season and water scarcity during summer months. Cultivation under such situations will be under several constraints and the adoption of agricultural technologies will be partial or incomplete. The Chapter makes a review of the production constraints and the adoption pattern of different recommended technologies for rice, coconut, sesamum and banana and the reasons for the partial or non-adoption of the recommended practices. The details were collected from the officers of the Agricultural Department in the T & V Workshop and by interviewing experienced farmers. The data generated have been tabulated for different crops grown under different situations, as production constraints and rationale and given in this volume.

Adoption Pattern

Situation-I (Onattukara)

Rationale

Crop : Rice

Recommendation

Adoption pattern

Varieties:

First crop (April-May to September-October)

(Direct sown crop)

Medium duration : Jaya, IR-8, Sabari, Bharathy, Aswathi, Karthika.

Some farmers use unidentified H. Y. varieties with some desirable characters. They also use local varieties.

Short duration : Annapurna, Triveni, Jyothi, Rohini, Bhagya, Onam and Pt-23.

90% adoption

Second crop : (September-October to December-January)

(Mainly transplanted)

Medium duration : Jaya, IR-8, Aswathi, Sabari, Bharathy, IR-20, Karthika.

10% adoption

Quite often flooding will be there at the time of transplanting. The seedlings of HYV which are normally dwarf cannot thrive under this situation. Further, the late stages of this crop suffer from moisture stress.

Recommendation	Adoption pattern	Rationale
Short duration : Annapurna, Triveni and Jyothi.		This will adversely affect the high yielding varieties. Farmers prefer varieties which will yield more straw.
<i>Seed rate</i>		
Transplanting — 60-85 kg/ha	50% adoption	50% farmers use excess seed rate.
Broadcasting — 80-100 „	85% adoption	35% farmers use excess seed rate.
Dibbling — 80-100 „	90% adoption	10% farmers use excess seed rate since they believe that a higher seed rate reduces weed growth and compensates other losses under field conditions.
<i>Preparation and Nursery</i>		—
(1000 square metres to plant one ha)	Adopted fully	
Seed treatment with fungicides	Partially adopted	Farmers change seeds once in three years. They get the seeds from NSC or DOA.
Application of organic manures at the rate of 1 kg/m ² .	Adopted in full	Farmers usually manure the nursery area with organic manures.
Application of N at the rate of 1 kg/100 m ² if growth of seedlings is poor, 10 days prior to uprooting the seedlings.	Adopted in full	If the growth of the seedlings is good farmers do not apply nitrogenous fertilizers as it may encourage disease and pest incidence even in the nursery.
Plant protection in the nursery against pests and diseases.	Need based full adoption	As and when pest attack or disease incidence is noticed farmers follow the recommendation.

Recommendation	Adoption pattern	Rationale
Main field		
<p>Transplanting : Age of seedlings 18-20 days for short, 20-25 days for medium and 25-40 days long duration varieties.</p>	<p>Generally adopted except in certain adverse situation.</p>	<p>Farmers are aware that over aged seedlings will reduce yield. Under adverse situations they give a closer spacing and apply an additional quantity of nitrogenous fertilizers (10-15 kg/ha).</p>
<p>Spacing : For medium duration 20 x 10 cm and short duration 15 x 10 cm.</p>	<p>Generally the farmers take care to see a population of 50 hills/m² in the case of medium duration and 65 hills per m² in the case of short duration varieties, by thinning or gap filling 20-25 days after sowing.</p>	<p>Transplanting is practiced only during the second crop (Mundakan). Line planting is seldom practiced due to high cost and scarcity of labour.</p>
<p>Planting 2-3 seedlings per hill to a depth of 3-4 cm.</p>	<p>The recommendation is adopted in case of depth of planting. Only partial adoption for number of seedlings/hill.</p>	<p>Farmers use more number of seedlings per hill so as to compensate adverse situations. However, transplanting is not practiced generally.</p>
<p><i>Application of Manures and fertilizers</i></p>		
<p>Application of organic manure @ 5 tons per ha as basal.</p>	<p>Only partially adopted. On an average farmers apply about 1 ton of FYM/ha.</p>	<p>The benefit of organic manuring is well known to the farmers. Non-availability of organic manures together with high cost prevent the farmers from adopting this recommendation.</p>

Recommendation	Adoption pattern	Rationale
<i>Fertilizer dose NPK (kg/ha)</i>		
Short duration 70:35:35	Seventy per cent of the farmers adopt the recommendation. Remaining 30% use either higher or lower doses.	The benefits of balanced manuring is well accepted. Higher doses are applied by over enthusiastic farmers. For the rest, it is a question of availability of finance.
<i>Time of fertilizer application</i>		
50% N, full P ₂ O ₅ and 50% K as basal	Partially adopted	During 1st crop season there may be lack of moisture and during second crop season there will be flooding. As such farmers are not fully adopting the recommendation.
25% N and 25% K at tillering stage	Full adoption	-do-
25% N and 25% K at P.I. stage.	Adopted fully	-do-
<i>Liming</i>		
600 kg/ha in two splits where the soil pH is below 5.5	Only partial adoption	Because of high cost and low returns, farmers use a lesser quantity.
Plant protection measures against stem borer, gall midge, rice bug, leaf roller, BPH, Rice swarming caterpillar, Blast, sheath blight and Sheath rot.	Full adoption on need basis	Since the losses due to the incidence of pests and diseases are well known to the farmers, they take immediate steps to control them with the recommended methods.

Production constraints and extension/research gaps

Crop : Rice

Situation-1 (Onattukara)

Production constraints	Technology available but to be adopted (extension gap)	Technology not available or need modification (research gap needs)
1 Lack of tall photosensitive high yielding varieties for 2nd crop with high straw yield.	—	Tall high yielding photosensitive varieties have to be evolved. Work in this line has already been taken up at RRS Kayamkulam and the rice cultures evolved are in the advanced stages of breeding.
2 Flooding during the later stages of first crop and early stages of second crop.	By the commissioning of the Kallada Irrigation Project these problems can be solved to an appreciable extent.	—
3 Lack of rain during early stages of first crop and later stages of second crop.	-do-	—
4 Incidence of sheath blight and BPH.	Correct control measures have to be popularised.	Varieties more tolerant to these constraints have to be evolved for which work has already been initiated.
5 Untimely and irregular pre-monsoon showers and delayed onset of monsoon.	—	Research to evolve a suitable cropping pattern including the possibilities of transplanting 1st crop has to be intensified. The possibility of adjusting sowing time utilising the irrigation water from Kallada Project has to be tested.

Production constraints	Technology available put to be adopted (extension gap)	Technology not available or need modification (research gap/needs)
6 Very poor organic matter content of the soil and its effects.	—	Green manuring programme needs to be intensified. Methods have to be evolved for the use of organic waste materials. The use of biofertilizers like azolla has to be popularised.
7 Lack of proper technology for manuring the crop during adverse situations.	—	Suitable technology like use of slow release fertilizers, deep placement of fertilizers, foliar nutrition, use of nitrification inhibitors etc. will have to be developed for such situations.
8 Lack of drainage due to conversion of paddy lands into garden lands and blocking of canals by roads.	Awareness to be created among farmers on the need for providing drainage systems for each field.	—
9 Menace due to the widespread occurrences of the trailing weed <i>/schaemum</i> .	—	Development of proper control measures to irradiate the weed.
10 Iron toxicity problem in certain areas of Onattukara.	—	Varieties tolerant to iron toxicity has to be screened out. Management practices to reduce the ill effects may also be developed.

Adoption Pattern

Situation—1 (Onattukara)

Crop : Sesamum

Recommendation	Adoption pattern	Rationale
<p><i>Season</i> : January-February to March-April</p> <p><i>Varieties</i> : Kayamkulam-1 Kayamkulam-2 and Soma</p> <p><i>Seed rate</i> : 5 kg/ha</p> <p><i>Method of sowing</i> : Broadcasting followed by harrowing and processing with wooden planks.</p> <p><i>Manures and fertilizers</i></p> <p>Organic manure : 5 tons/ha Fertilizer : NPK @ 30:15:30 kg/ha in 2 split dose viz., 75% N, full P₂O₅ and full K₂O as basal and 25% N as top preferably foliar.</p> <p>Intercultivation : Twice 15 DAS and 25 DAS.</p> <p><i>Irrigation</i> : Two irrigations one in vegetative phase and the other in the beginning of flowering.</p>	<p>Full adoption</p> <p>Full adoption</p> <p>Full adoption</p> <p>Less than 20% adoption 50% adoption for fertilizer dose and less than 20% for foliar application of N.</p> <p>Full adoption for 15 DAS and partial adoption for 25 DAS.</p> <p>Adopted wherever irrigation facilities are available.</p>	<p>Grown in rice fallows during summer after the second crop of rice utilizing the left over (residual) soil moisture.</p> <p>More farmers use Kayamkulam-1 as it has all the important agronomic traits for a good variety. Coverage of Soma is less for want of sufficient seed material.</p> <p>The soil is disturbed to the minimum so as to conserve moisture to the maximum.</p> <p>Non-availability of organic manures and its high cost. Being a summer crop fertilizer application depends upon soil moisture. Some farmers raise sesamum as a catch crop.</p> <p>High labour cost prevents farmers from inter-cultivation at 25 DAS.</p> <p>There is severe water scarcity in most of the areas. Hence, the question of irrigation does not arise in such areas.</p>

Production constraints and extension research gap

Crop : Sesamum

Situation-I (Onattukara)

Production constraints	Technology available but to be adopted (Extension gap)	Technology not available or needs modification (Research gap)
1. Non availability of soil moisture.	Irrigation facilities have to be created. Sprinkler irrigation methods and similar methods have to be popularised. With the commissioning of Kallada Irrigation Project, more area in the situation will be benefitted.	—
2. Lack of detailed information on water management practices.	—	Water management practices have to be evolved by proper research.

Adoption Pattern

Crop : Coconut	Adoption pattern	Rationale
<p style="text-align: center;">Recommendation</p> <p>Varieties : West Coast Tall, Lakshadweep Ordinary, Andaman Ordinary and Hybrids supplied by Government agencies.</p> <p>Land preparation</p> <p>Pits of size : 75x75x75 cm. Pits to be filled with top soil to a height of 60 cm below ground level.</p> <p>A spacing of 7.6x7.6 m is given to accommodate about 175 seedlings/ha.</p>	<p style="text-align: center;">Full adoption</p> <p style="text-align: center;">Full adoption</p> <p style="text-align: center;">Partial adoption, only 35% farmers adopt this.</p>	<p style="text-align: center;">—</p> <p>The Government agencies cater to the needs of only 42% of the farmers. The others use varieties supplied by private agencies.</p> <p style="text-align: center;">—</p> <p>Generally farmers adopt a closer spacing to accommodate more seedlings/ha, 200 to 250 seedlings per ha.</p>

Recommendation		Adoption pattern	Rationale
<i>Manures and manuring</i>			
N	P ₂ O ₅	K ₂ O	MgSO ₄ , kg/palm
0.50	0.30	1.00	0.50
<i>Time of application</i>			
3 months		1	2
old year		1/9	2/9
April-June	1/10	1/9	2/9
September-October	—	2/9	4/9
3 year		2/3	3 year
year onwards		1/3	— do —
Lime application 1 kg/palm/year			
<i>Raising green manure crop</i>			
Sannhemp, Kolinchi etc. (seeds sown in April-May and incorporated in August-September).			
<i>Inter culture operations</i>			
Forming mounds during September-October and levelling them in November-December.			
<i>Irrigation</i>			
Basin irrigate during summer @ 600 litres once in 3-4 days.			
<i>Intercrops</i>			
Tubercrops like Tapioca, Yams, spices like Ginger, Nutmeg, Fruit plants like Cocoa.			
<i>Plant protection</i>			
Appropriate plant protection measures against rhinoceros, red palm weevil, black headed caterpillar, mealy bug, coreid bug, rodents (pests), bud rot, stem bleeding, root (wilt) (diseases).			
Partial adoption		Partial adoption	
— do —		Only 5% adoption	
— do —		Full adoption	
— do —		50% adoption	
— do —		50% adoption. Main crops raised are tubers, fruit plants and spices and cocoa.	
— do —		50% adoption. Certain farmers practice it regularly, others do.	
The recommendation for April-June is often skipped over due to the uncertainty of pre-monsoon showers. Further, fertilizers are applied only after opening the basins in June-July. The entire dose of fertilizers is applied in August-September while covering the basins.			
Farmers practice this only in alternate years.			
High cost of seeds and high cost of labour are reasons for poor adoption.			
—			
Lack of availability of irrigation water during summer prevents farmers from adopting irrigation.			
Non availability of labour and difficulty in rodent attack.			
Difficulty to get skilled men to attend to plant protection work is the most important constraint.			

Production constraints and extension/research gap

Situation-1 (Onattukara)

Crop : Coconut

Production constraints	Technology available but to be adopted (Extension gap)	Technology available, or need modification (Research gap/needs)
1 Incidence of root (wilt)	Management practices already evolved will have to be popularised. Further, the use of coconut seedlings obtained from disease affected areas will have to be discouraged.	Studies on the etiology and management of the disease are to be continued.
2 Incidence of bud rot, leaf caterpillar, coreid bug etc.	The recommended control measures have to be popularised.	—
3 Occurrence of new disease-Quick Yellow decline, Sudden wilt.	—	Research on the etiology and control of the diseases will have to be undertaken.
4 Low income from diseased coconut gardens.	Intercropping, mixed cropping, and mixed farming systems will have to be popularized.	The most suitable crop combinations will have to be identified.
5 Lack of proper manual schedule for the coconut based cropping system.	—	A project to standardise the manual schedule suited to this situation is to be undertaken.
6 Lack of information on water management in the coconut based intercropping system.	—	Research programmes in these lines will have to be taken up.

Adoption Pattern

Situation-I (Onattukara)

Crop : Tapioca

Recommendation	Adoption pattern	Rationale
<i>Planting</i> : Season: April/May to September/October	Well adopted	Eventhough other varieties are available because of the good cooking quality and disease tolerance, M4 variety is preferred by farmers.
<i>Varieties</i> : M4		
<i>Spacing</i> : Non branching type: 75 x 75 cm when planted during September-October.	Low adoption	Farmers feel that wider spacing gives better yield.
Branching : 90 x 90 cm		
<i>Planting type</i> : Depth of planting : 4-6 cm	Full adoption	—
Length of setts : 15-20 cm		
<i>Manures and fertilizers</i>		
Organic manure @ 1 kg/pit	Full adoption	Fertilizer application depends on the market price of the specific produce. Farmers are also not convinced of the benefit of split application.
Fertilizers : 50:50:50-P full as basal and N and K in two splits.		
<i>Plant protection</i>		
In order to secure disease-free setts for the next season, mark out disease free stems.	Low adoption	Farmers are not convinced of the benefits. They select good quality stems at the time of planting.
<i>Rodent control</i>		
Integrated rodent control measures	Medium adoption	Eventhough there is adoption for this recommendation perfect control is not fully obtained since rodents came from adjoining areas. Hence, this items must be taken up in a larger area basis.

Production constraints and extension/research gap

Crop : Tapioca

Situation-I (Onattukara)

Production constraints	Technology available but to be adopted (Extension gap)	Technology not available or needs modification (Research gap/needs)
1 Lack of short duration and shade tolerant varieties of tapioca.	—	Research work on the development of short duration varieties suited for 'thara' lands and shade tolerant varieties for growing as an intercrop in coconut gardens has to be intensified.
2 Incidence of rodent attack.	The need for integrated rodent control measures on a wider area basis adopting all extension strategies have to be emphasised and an awareness on the seriousness of the situation created.	—
3 Non-adoption of the recommended spacing.	'On farm' demonstrations will have to be conducted.	—

Adoption Pattern

Crop : Rice

Situation-II (Kayal)

Recommendation	Adoption pattern	Rationale
<p>Season: October-January (Puncha); May-September (Additional crop)</p> <p>Selection of varieties</p> <p>Medium duration: Jaya, IR-8, Sabari, IR-20, Bharathy, Asa, Bhadra and Pavizham.</p> <p>Short duration: Annapurna, Rohini, Triveni, and Jyothy.</p> <p>Seed rate: 80-100 kg/ha, normally and enhanced up to 125 kg/ha provided excess plants are removed and optimum populated maintained.</p> <p>Seeds and sowing</p> <p>Sprouted seeds are sown broadcast.</p> <p>Land preparation</p> <p>Ploughing, levelling and removal stubbles etc. after pumping out water.</p> <p>Lime @ 350 kg per ha when the pH is below 5.5.</p> <p>Manures and fertilizers</p> <p>Medium duration: 90:45:45 (kg NPK/ha)</p> <p>Short duration: 70:35:35 (" ")</p>	<p>Full adoption</p> <p>20% follow recommendations and 80% use excess seed rate.</p> <p>Full adoption</p> <p>Full adoption</p> <p>Full adoption</p> <p>50% adoption</p> <p>-do-</p>	<p>In addition to the recommended varieties, farmers use unidentified high yielding dwarf varieties.</p> <p>The farmers believe that a higher seed rate is required so as to reduce weed growth and to compensate for other losses under field conditions.</p> <p>—</p> <p>—</p> <p>Because of high cost and low benefit farmers use a lesser quantity (100 kg) of lime.</p> <p>High cost and low prices of the produce are the reasons for partial adoption.</p>

Adoption Pattern

Crop : Rice

Situation-II (Kayal)

Recommendation	Adoption pattern	Rationale
<i>Time of application</i>		
Basal P ₂ O ₅ , 45 kg/ha. 1st top dressing (15 DAS): 45 kg N, 22 kg K ₂ O/ha. 2nd top dressing (30-35 DAS): 22.5 kg N/ha, 3rd top dressing (P. I. stage): 22.5 kg N and 22.5 kg K ₂ O/ha.	50% follow recommendation, 50% do not follow the proportion recommended.	The farmers prefer to use complex fertilizers and consequently the recommended proportion is seldom maintained. Further, top dressing of complex fertilizers leads to wastage of plant nutrients.
<i>Weed control</i>		
For <i>Eichnochloa</i> control: Propanil at 2-3 leaf stage of grass (12-15 DAS) @ 5 l/ha in 500 lit. water (water to be drained out before application of weedicide and irrigated after 48 hrs). Broad leaved weeds: 2,4-D sodium salt @ 1 kg ai/ha 20-25 DAS.	40% adoption 70% adoption	Lack of timely availability of propanil (Stam F 34) is the major constraint. Some farmers are not fully convinced of the benefits of chemical weeding. Hand weeding, therefore, continues to be popular eventhough, the labour cost is high.
<i>Plant protection</i>		
Pests like stem borer, leaf roller, BPH, gall midge, case worm, thrips and diseases like blast, sheath blight and sheath rot.	Full adoption (Need based)	Farmers often apply fungicides and insecticides together even when only one malady is seen resulting in the excess usage and wastage of chemicals.

Production constraints and extension/research gap

Crop : Rice	Situation—II (Kayal lands)		
Production constraints	Technology available but to be adopted (Extension gap)	Technology not available or needs modification (Research gap)	
1 Weed infestation in the wet direct-sown rice fields.	Existing technology may be popularised.	Newer chemicals may be tested.	
2 High acidity.	Application of lime and its beneficial effect on soil should be popularised.	A long term lime experiment will have to be planned and conducted for getting information on the beneficial effects of lime under this situation.	
3 Lack of information on the problem of incidence of pests, epidemiology and control of insect pests and diseases.	The available technology should be popularised.	The existing research programmes to collect information on epidemiology of pests and diseases (prevalent in the situation may be strengthened)	
4 Lack of suitable varieties resistant to BPH and sheath blight.	—	Suitable varieties will have to be evolved by breeding.	
5 Lack of discipline in cultivation consequent on the commissioning of Thanneermukkom bund.	A proper agency should be constituted to decide the closure and opening of Thanneermukkom bund and develop discipline in cultivation. Staggered sowings will have to be discouraged.	—	

Adoption Pattern

Situation—II (Kayal)

Crop : Coconut	Recommendation	Adoption pattern	Rationale																				
	<p><i>Varieties:</i> West Coast Tall, Lakshadweep Ordinary Andaman Ordinary and Hybrids supplied by Government agencies</p> <p><i>Land preparation and planting:</i> Making shallow pits and raising the ground level by adding silt and sand as the palm grows. Raising mounds or bunds for planting.</p> <p><i>Spacing:</i> 5 m between plants and 9 m between rows (bunds), 7.6x7.6 m if on mounds.</p> <p>Manures and Manuring</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">N</td> <td style="text-align: center;">P₂O₅</td> <td style="text-align: center;">K₂O</td> <td style="text-align: center;">MgSO₄</td> </tr> <tr> <td colspan="4" style="text-align: center;">(kg palm per year)</td> </tr> <tr> <td style="text-align: center;">General</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.35</td> <td style="text-align: center;">0.9</td> </tr> <tr> <td style="text-align: center;">Hybrids</td> <td style="text-align: center;">0.50</td> <td style="text-align: center;">0.32</td> <td style="text-align: center;">1.2</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;">0.50</td> </tr> </table> <p>Lime application: 1 kg during April-May</p> <p>Application of fertilizer when the water table recedes in single dose or in two splits as conditions permit.</p>	N	P ₂ O ₅	K ₂ O	MgSO ₄	(kg palm per year)				General	0.25	0.35	0.9	Hybrids	0.50	0.32	1.2				0.50	—	—
N	P ₂ O ₅	K ₂ O	MgSO ₄																				
(kg palm per year)																							
General	0.25	0.35	0.9																				
Hybrids	0.50	0.32	1.2																				
			0.50																				
		Full adoption	—																				
		Partial adoption	—																				
		-do-	—																				
		-do-	—																				
		Full adoption	—																				

Generally farmers adopt a closer spacing to accommodate more seedlings/ha.

Farmers apply silt and sand annually in basis of palms which may supply nutrients. So they apply a lesser quantity of fertilizers than recommended.

Farmers are reluctant to incur additional expenses.

Recommendation	Adoption pattern	Rationale
<p><i>Plant protection:</i> Appropriate plant protection measures against rhinoceros, red palm weevil, black headed caterpillar, mealy bug, coreid bug, and rodents (pests), bud rot, leaf rot, stem bleeding (diseases).</p>	<p>50% adoption. Certain farmers practice it regularly; others do only on need basis.</p>	<p>Difficulty to get skilled men and materials for pesticide application.</p>

Production Constraints

Crop : Coconut	Production constraints	Technology available but to be adopted (extension gap)	Situation—II (Kayal)
<p>1 Lack of information on the application of silt and sand in combination with different doses of fertilizers in increasing yield of coconut.</p> <p>2 Problem of root (wilt) disease.</p>	—	Technology available but to be adopted (extension gap)	<p>Experiments will have to be conducted to generate information on this aspect.</p>
	—		<p>Management practices will have to be standardised for increasing production of coconut. Etiology and control of the disease will be studied according to programme described elsewhere.</p>

Adoption Pattern

Situation-III (Karappadams)

Crop : Rice	Recommendation	Adoption pattern	Rationale
	<p><i>Varieties : Puncta : Medium duration : Jaya, Sabari, Bharathy, Bhadra and Pavizham.</i></p> <p><i>Short duration : Annapurna, Rohini, Triveni and Jyothy.</i></p> <p><i>Additional crop : Medium duration Jaya, Sabari, Bharathy, Asa and Karthika.</i></p> <p><i>Short duration : Annapurna, Rohini, and Jyothy.</i></p> <p><i>Seed rate : 80-100 kg/ha normally and enhanced upto 125 kg/ha provided excess plants are removed and ideal population maintained.</i></p> <p><i>Seeds and sowing : Sowing sprouted seeds</i></p> <p><i>Land preparation : Ploughing and levelling after pumping out water.</i></p> <p><i>Lime @ 350 kg/ha when the pH is below 5.5.</i></p>	<p>Full adoption</p> <p style="text-align: center;">-do-</p> <p style="text-align: center;">-do-</p> <p>20 % follow recommendations and 80% use excess seed rate.</p> <p>Full adoption</p> <p style="text-align: center;">-do-</p> <p>50% adoption</p>	<p>In addition to the recommended varieties, farmers use varieties brought from other states also.</p> <p style="text-align: center;">-do-</p> <p style="text-align: center;">-do-</p> <p>The farmers believe that a higher seed rate is required to reduce weed growth and to compensate for other losses under field conditions.</p> <p style="text-align: center;">—</p> <p style="text-align: center;">—</p> <p>Because of high cost and low benefit farmers use a lesser quantity (100 kg) of lime.</p>

Recommendation	Adoption pattern	Rationale
<i>Manures and fertilizers</i>		
Medium duration : 90:45:45 (NPK kg/ha)	-do-	Adoption of the recommended doses depends primarily on the price of the produce.
Short duration : 70:35:35 (" ")		
<i>Time of application</i> : Basal : P_2O_5 45 kg/ha 1st top dressing (15 DAS) 45 kg N, 22.5 kg K_2O /ha; 2nd top dressing (30-35 DAS) : 22.5 kg N/ha; 3rd top dressing : 22.5 kg N, 22.5 kg K_2O /ha.	50% follow the recommendation 50% do not follow the proportion recommended.	The farmers prefer to use complex fertilizers and consequently an erratic NPK proportion results in fertilizer application. They even use complex fertilizers for top dressing resulting in the wastage of P_2O_5 .
<i>Weed control</i>		
Eichnochloa control : Propanil at 2-3 leaf stage of weed (12-15 DAS) @ 51/ha in 500 lit. water.	40% adoption	Propanil (Stam F 34) is not freely available in the market.
Broad leaved weeds : 2,4-D sodium salt @ 1 kg ai/ha 20-25 DAS.	70% adoption	Some farmers still believe in hand weeding even though the labour cost is high.
<i>Plant protection</i>		
Posts like stem borer, leaf roller, BPH, gall midge, case worm, thrips and diseases like blast, sheath blight and sheath rot.	Full adoption (Need based)	Farmers usually apply both fungicides and insecticides when any one of the maladies is seen resulting in excess usage and wastage of chemicals.

Production Constraints

Crop : Rice	Situation-III (Karappadam)
Production constraints	Technology available but to be adopted (Extension gap)
1 Lack of suitable rice varieties tolerant to BPH and sheath blight	Technology not available or needs modification (Research gap/needs)
2 Lack of varieties having dormancy for use in the additional crop season since the crop comes to harvest during rainy season.	Work on breeding varieties tolerant to BPH and sheath blight have to be intensified on location basis. Research programmes started already at R.R.S., Moncompu have to be continued.
3 Weed infestation in the wet direct sown rice fields.	—
4 Lack of information on the losses of nutrients while draining the field after each irrigation.	Investigations to be conducted to generate information and to find out necessary technology to obtain maximum yield by optimum fertilization. A long term lime experiment is proposed to be conducted.
5 Problem of acidity.	—
6 Problem of incidence of pests and diseases prevalent in the situation	Pests and disease surveillance have to be intensified, and a pest and disease model developed for the area.
7 Problem of rodents.	—
	The existing control measures against pest and diseases should be strictly followed. An integrated rodent control measure is to be taken up on a padasekharam basis.

Recommendation	Adoption pattern	Rationale
Lime application: 1 kg during April-May.	-do-	Farmers are reluctant to take up additional expenses.
Time of application of fertilizers: Single dose or in two splits as conditions permit.	Full adoption	—
Raising green manure crops	Only 5% adoption	High cost of seeds, high cost of labour and lack of conviction of the benefits are reasons for poor adoption.
Sannhemp, Kolinchi, etc. (Seeds sown in April-May and incorporated in August-September).	10% adoption	Scarcity of labour during the period combined with the high cost involved prevent farmers from practicing.
Irrigation: Irrigation during summer in basins around palms @ 900 litres per palm once in 5 days.	50% adoption. Main crops raised are tubers, fruit plants, spices and cocoa.	Non-availability of labour difficulty in marketing.
<i>Intercrops:</i> Tubercrops like tapioca and yams; spices like ginger and nutmeg; fruit plants like banana and beverages like cocoa.	50% adoption. Certain farmers practice it regularly, others do only on need basis.	Difficulty to get skilled men for applying pesticides.
<i>Plant protection:</i> Appropriate plant protection measures against rhinoceros, red palm weevil, black headed caterpillar, mealy bug, coreid bug, rodents etc. Bud rot, leaf rot, stem bleeding.		

Production Constraints

Crop : Coconut

Situation—III (Karappadam)

Production constraints	Technology available but to be adopted (extension gap)	Technology not available or needs modification (Research gap/needs)
1 Lack of information on the application of silt and sand in combination with different doses of fertilizers in increasing the yield of coconut.	—	An experiment will have to be conducted to generate information on this aspect.
2 Problem of root (wilt) disease	—	Management practices will have to be standardized for increasing production of coconut. Research on the etiology and control of the disease to be intensified.
3 Lack of information on the integrated farming system with coconut - livestock, coconut - fish and coconut-poultry.	—	Research work to identify the most profitable farming system has to be initiated.

Adoption Pattern

Situation—III (Karappadam)

Crop : Banana (Nendran)

Recommendation	Adoption pattern	Rationale
<p>Season (for planting)</p> <p>Irrigated : August-September Rainfed : April-May</p> <p>Selection of suckers</p> <p>Select 3-4 month-old disease-free sword suckers.</p>	50% adoption	<p>A good number of farmers use their own suckers with proper selection. But farmers who are purchasing suckers from other sources are not able to exercise proper selection.</p>
<p>Preparation of suckers</p> <p>Smearing rhizomes with cowdung slurry mixed with BHC 50%, drying in under sun for 3-4 days and storing in shade upto 15 days before planting.</p> <p>Planting: Planting suckers upright in the centre of pits of size 50 x 50 x 50 cm. with 5 cm of pseudostem above soil level.</p> <p>Manures and fertilizers: Application of organic manure @ 10 kg pit one month after planting.</p>	Full adoption 80% adoption	— —

Recommendation	Adoption pattern	Rationale
Fertilizers: NPK @ 190 : 115 : 300 g/plant	80% adoption	Some farmers apply fertilizers in excess of the recommended dose
Time of application		
Two splits - 2 months and 4 months after planting	Low adoption	Farmers give fertilizers in several splits upto flowering stage or even after flowering
<i>Desuckering</i> : Destroy side suckers produced till the emergence of flowers	Full adoption	
<i>Plant protection</i> : Bunchy top disease control: Phorate @ 75 g/plant in 3 equal instalments: 1st : 20-30th day; 2nd : 95 day and 3rd: 165th day after planting	30% adoption	High cost of the pesticide and non-availability

Production Constraints

Crop : Banana (Nendran)

Situation—III (Karappadam)

Production constraints

Technology available but to be adopted (extension gap)

Technology not available or needs modification (research gap needs)

1 Lack of sufficient number of ideal planting materials

Seeds multiplication and distribution to be taken up by a Government agency

Adoption Pattern

Crop : Rice

Situation—IV (Kari lands)

Recommendation	Adoption pattern	Rationale
Selection of varieties		
<i>Medium duration:</i> Jaya, IR-8, Sabari, IR-20, Bharathy, Asa, Bhadra and Pavizham	Full adoption	In addition to recommended varieties farmers use unidentified high yielding dwarf varieties.
<i>Short duration:</i> Annapurna, Rohini, Triveni, and Jyothy.		
<i>Seed rate:</i> 80-100 kg/ha normally and enhanced upto 125 kg/ha provided excess plants are removed and ideal population maintained.	20% follow recommendations and 80% use excess seed rate.	The farmers believe that a higher seed rate is required so as to reduce weed growth and to compensate for other losses under field conditions.
Seeds and sowing		
Sprouted seed sown broadcast	Full adoption	—
<i>Land preparation:</i> Levelling of plots lime @ 350 kg/ha when the pH is below 5.5.	50% adoption	Because of high cost and low benefit farmers use a lesser quantity (100 kg) of lime.
Manures and fertilizers		
Medium duration: 90:45:45 (NPK kg/ha)	-do-	Farmers use a lower dose of fertilizers as the returns are not assured.
Short duration varieties: 70:35:35 (NPK kg/ha)		

Recommendation	Adoption pattern	Rationale
<p><i>Time of application</i></p> <p>Basal : P₂O₅ 45 kg/ha 1st top dressing (15 DAS) 45 kg N, 22.5 kg K₂O/ha; 2nd top dressing (30-35 DAS): 22.5 kg N per ha; 3rd top dressing (P.I.stage): 22.5 kg N, 22.5 kg K₂O/ha.</p>	<p>50% follow recommendation, 50% do not follow the correct proportion N:P:K.</p>	<p>The farmers prefer to use complex fertilizers and consequently the correct proportion is not maintained (N:P:K). They even use complex fertilizers as top dressing at tillering stages which result in the wastage of P.</p>
<p><i>Weed control</i></p> <p>For <i>Echinochloa</i> control: Propanil at 2-3 leaf stage of weed (12-15 DAS) @ 5 lit/ha in 500 litre water. Broad leaved weeds : 2,4-D sodium salt @ 1 kg ai/ha 20-25 DAS.</p>	<p>40% adoption</p> <p>70% adoption</p>	<p>Non-availability of propanil in the market.</p> <p>Some farmers still believe in hand weeding even though the labour cost is high.</p>
<p><i>Plant protection</i></p> <p>Pests like stem borer, leaf roller; BPH, gall midge, case worm, thrips and diseases like blast, sheath blight, sheath rot.</p>	<p>Full adoption (Need based)</p>	

Production Constraints

Crop : Rice

Situation-IV (Kari lands)

Production constraints	Technology available but to be adopted (extension gap)	Technology not available or needs modification (research gap/needs)
1 Lack of information on the losses of nutrients while draining the field after each irrigation.	—	Investigations have to be conducted to generate information and to find out necessary technology to obtain maximum yield by optimum fertilizer application.
2 Problem of acidity.	—	A long term lime experiment is proposed to be conducted so as to study the role of lime in correcting acidity.
3 Iron and aluminium toxicity to rice crop is a common phenomenon.	—	Varieties tolerant to excess iron and aluminium in the soil have to be identified or technology developed to bring down the contents of Fe and Al to tolerant levels.
4 Problem of incidence of pests and disease.	Existing control measures against specific pest or diseases has to be strictly followed.	Pest and disease surveillance has to be intensified a pest and disease model have to be developed for the area.
5 Problem of rodents.	An integrated rodent control measure is to be taken up on padasekharam basis.	—

Adoption Pattern

Crop : Coconut

Situation-IV (Kari lands)

Recommendation	Adoption pattern	Rationale															
<p>Varieties: West Coast Tall, Lakshadweep Ordinary, Andaman Ordinary and Hybrids supplied by Government agencies.</p> <p>Land preparation and planting Taking shallow pits and raising the ground level by adding silt and sand as the palms grow. Raising mounds or bunds for planting.</p> <p>Spacing: 5 m between plants and 9 m between rows (bunds), 7.6x7.6 m if on mounds</p> <p>Manures and manuring</p> <table border="1"> <thead> <tr> <th></th> <th>N</th> <th>P₂O₅</th> <th>K₂O</th> <th>MgSO₄</th> </tr> </thead> <tbody> <tr> <td>General</td> <td>0.25</td> <td>0.35</td> <td>0.9</td> <td>—</td> </tr> <tr> <td>Hybrids</td> <td>0.50</td> <td>0.30</td> <td>1.0</td> <td>0.50</td> </tr> </tbody> </table> <p>Lime application : 1 kg during April-May</p> <p>Time of application of fertilizers: In single dose or in splits as conditions permit.</p>		N	P ₂ O ₅	K ₂ O	MgSO ₄	General	0.25	0.35	0.9	—	Hybrids	0.50	0.30	1.0	0.50	<p>Full adoption</p> <p>Full adoption</p> <p>Partial adoption</p> <p>-do-</p> <p>-do-</p>	<p>The Government agencies cater to the needs of only 42% of the farmers. The others use varieties supplied by private agencies.</p> <p>—</p> <p>Generally farmers adopt a closer spacing to accommodate more palms/ha.</p> <p>Farmers apply silt and sand annually in the basins of palms which may supply nutrients. So they are applying a lesser quantity than the recommended one. Farmers are reluctant to invest more money on fertilizers due to low price the produce fetches in the open market.</p>
	N	P ₂ O ₅	K ₂ O	MgSO ₄													
General	0.25	0.35	0.9	—													
Hybrids	0.50	0.30	1.0	0.50													

Recommendation	Adoption pattern	Rationale
<i>Plant protection</i>		
Appropriate plant protection measures against rhinoceros, red palm weevil, black headed caterpillar, mealy bug, coreid bug and rodents bud rot, leaf rot, stem bleeding diseases.	50% adoption. Certain farmers practice it regularly, others do only on need based.	Difficulty to get skilled men and materials to apply plant protection chemicals.

Production Constraints

Crop : Coconut

Situation-IV (Kari lands)

Production constraints Technology available but to be adopted (extension gap) Technology not available or needs modification (research gap)

- 1 Lack of information on the application of silt and sand in combination with different doses of fertilizers in increasing the yield of coconut. — An experiment will have to be conducted to generate information on this aspect.
- 2 Problem of root (wilt) disease — Management practices will have to be standardised for increasing production of coconut. Research on the etiology and control of the disease will have to be intensified.
Research work to identify the most profitable farming systems has to be intensified.
- 3 Lack of information on the integrated farming systems like Coconut-Livestock, Coconut-Fish and Coconut-Poultry-fish. —

Recommendation	Adoption pattern	Rationale
<i>1st top dressing</i>		
20 kg N and 10 kg K ₂ O/ha on the mounds one month after sowing.	20% adoption	The regular occurrence of flood during the 2nd and 3rd top dressing (40-75 DAS) prevent the farmers from applying fertilizers during those periods. As such they apply the dose only at the time of dismantling and spreading when there will be a low water level. The cost benefit ratio will also be very low according to the farmers.
2nd top dressing : 10 kg N/ha 10 days after dismantling the mounds (45 DAS).	10% adoption	
3rd top dressing : 10 kg N and 10 kg K ₂ O/ha at 70-75 DAS.	30% adoption	
<i>Weed control</i>		
Hand weeding from mounds one month after sowing.	Full adoption	—
<i>Weeding and liming for Mundakan</i>		
Weeding after harvest of virippu crop and the lime @ 250 kg/ha.	80% adoption	—
1st top dressing for Mundakan: After 10-15 days of liming 20 kg N and 10 kg K ₂ O/ha.	15% adoption	Lack of awareness or conviction of benefits.
2nd top dressing for Mundakan: 45-50 days of harvest of Virippu. 10 kg N and 10 kg K ₂ O/ha.	10% adoption	-do- Farmers think that the residual effect of fertilizer applied earlier will be sufficient for Mundakan also.

Production Constraints

Crop : Rice	Production constraints	Technology available but to be adopted (Extension gap)	Situation-V (Koottumundakan)
1	Lack of varieties suited to Koottumundakan areas.	—	Technology not available or needs modification (Research gap/needs)
2	Lack of specific fertilizer recommendation for Koottumundakan rice	—	Breeding programme may be intensified to evolve varieties suited to the system.
3	Lack of effective control measures against the weed spirogyra.	—	A fertilizer recommendation for the system may be evolved. Weedicidal trials will have to be taken up to find out suitable control measures.

Adoption Pattern

Crop : Rice	Recommendation	Adoption pattern	Situation-VI (Pokkali)	Rationale
<i>Variety</i> Vytila-1, Vytila-2, Vytila-3.		50% adoption	Non availability of sufficient seed material.	
<i>Seed rate</i> : 100 kg/ha		Full adoption		
<i>Land preparation</i> : Draining out water from field, digging the field and forming mounds (About 2500 mounds/ha).		Full adoption		
<i>Liming</i> Lime @ 500 kg/ha on the top of mounds.		20% adoption		High cost of lime and labour. The C/B ratio is low according to farmers view.
<i>Sowing</i> Sowing sprouted seeds on the mounds		Full adoption		

Production Constraints

Crop : Rice

Situation-VI (Pokkali)

Production constraints	Technology available, but to be adopted (Extension gap)	Technology not available or needs modification (Research needs)
1 Lack of saline resistant, high yielding short duration varieties to suit the situation.	—	Work to evolve a saline resistant, short duration and high yielding variety to suit the situation may be intensified at Vyttila.
2 Lack of knowledge on the uptake, utilization, time of application and method of application of fertilizers for Pokkali crop.	—	Research work on optimum fertilizer use (including straight and complex fertilizers and also to fix the exact time and method of application) will have to be taken up.
3 Problem due to tidal effects on soil properties.	—	The research work to find out the tidal effect on the physico-chemical properties of the soils is to be intensified.
4 Problem associated with the application of fertilizers and insecticides to paddy crop and its ill-effects on the subsequent prawn culture.	—	Suitable studies on the effect of fertilizers and insecticides on fish culture may be taken up.
5 Difficulties associated with germination of seeds.	Technology developed at RRS Vyttila may be popularised.	
6 Problem of pest infestation.	—	Pesticides safer to fish fauna are to be screened. Use of indigenous plant products for insect control has to be further investigated. A plant protection strategy for rice-cum-fish culture has to be evolved.

Adoption Pattern

Crop : Coconut

Situation-VI (Pokkali)

Technology recommended	Adoption pattern	Rationale
<p><i>Preparation of land for planting seedlings</i></p> <p>Size of pits: In sandy areas 0.75 m³ and in laterite soils 1 m³, and under water logged conditions, mounds should be taken instead of pits. Spacing: 7.5 m x 7.5 m.</p> <p><i>Planting</i></p> <p>Half of the pit may be filled with Top soil and plant the seedlings. Also apply 10% BHC around the nut, and cover with top soil so that the collar region should be made visible.</p> <p><i>Application of manures and fertilizers</i></p> <p>1) 20 kg FYM and 1 kg lime per pit.</p> <p>2) Taking basins and applying 110 g N, 60 g 'P' and 230 g 'K' as the 1st dose.</p> <p>3) 230 g 'N', 110 g 'P' and 450 g 'K' per palm as the 2nd dose during August-September.</p> <p><i>Irrigation</i></p> <p>Frequency of irrigation depends upon the type of soil: 3-9 days.</p>	65% adoption	—
	62% adoption	—
	50% adoption	Being a sandy tract climatic conditions are not favourable for the 1st dose application.
	30% adoption	High cost of labour and fertilizers are the main constraints noticed.
	45% adoption	-do-
	70% adoption	—

Production Constraints

Crop : Coconut	Situation-VI (Pokkali-uplands)
Production constraints	Technology available but to be adopted (extension gap)
<p>1 Lack of suitable intercrops in coconut garden in Pokkali region.</p>	<p>Technology not available or to be modified (research gap/needs)</p> <p>A research programme to develop an ideal cropping pattern suited to the area may be taken up.</p>
<p>2 Lack of information on the application of silt and sand in combination with different doses of fertilizers in increasing the yield of coconut.</p>	<p>An experiment will have to be conducted to generate information on this aspect.</p>
<p>3 Problem of root (wilt) disease.</p>	<p>Management technology will have to be standardised for increasing production of coconut. Etiology and control of the disease will have to be studied.</p>
<p>4 Lack of information on integrated farming systems like cocount-livestock, coconut-fish and coconut-poultry-fish.</p>	<p>Research work to identify the most profitable farming systems has to be initiated.</p>

Adoption Pattern

Crop : Rice	Recommendation	Adoption pattern	Rationale
<i>Regular crop—Puncha</i>	<p><i>Varieties:</i> Annapoorna, Triveni, Jyothi</p> <p><i>Seed rate in nursery :</i> 2—2.5 kg/40m²</p> <p><i>Preparation of nursery:</i> Forming nursery beds of 1.5 m width and convenient length and applying organic matter @ 1 kg/m².</p>	<p>Full adoption</p> <p>Full adoption</p> <p>Full adoption</p>	<p>—</p> <p>—</p> <p>—</p>
<i>Fertilizer application in the nursery</i>	<p>400 g of urea/40 m² at about 10 days prior to uprooting seedlings (if the seedlings are short in growth)</p>	Full adoption	—
<i>Age of seedlings</i>	<p>Medium duration varieties : 25 days</p> <p>Short duration varieties : 20 days</p>	<p>Full adoption if dewatering of main field is completed in time otherwise it goes up to 30-35 days.</p>	<p>Timely dewatering is a problem in this area.</p>
<i>Transplanting</i>	<p>Spacing for medium duration varieties: 20 x 10 cm²</p> <p>Short duration varieties : 15 x 10 cm²</p> <p>Number of seedlings per hill : 4-5</p> <p>Depth of planting : 3-4 cm</p>	Full adoption	<p>Generally farmers practice more shallow planting.</p>

Recommendation	Adoption pattern	Rationale
<i>Manures and fertilizers</i>		
Lime : 350 kg/ha at last ploughing	Low adoption. Most farmers apply lime but at a lower rate.	High cost of lime, low cost/benefit ratio
Organic manure : FYM at 5 t/ha	Very low adoption	High cost of labour and organic manures prevent the farmers from applying organic manures.
<i>Fertilizer dose recommended</i>		
<i>Medium duration Short duration</i>		
<i>N P K (kg/ha) N P K (kg/ha)</i>		
Basal	45:45:22.5 47:35:17.5	Full adoption
1st top dressing (at 20-25 DAP)	22.5 — — — — —	Full adoption
2nd top dressing (at P. I. stage)	22.5 — 22.5 23 — 17.5	Full adoption
<i>Plant protection</i>		
Pests like stem borer (Nursery), Rice case worm, rice bug, BPH and diseases like blast blight, sheath blight, (need based application of chemicals)	Full adoption	Farmers follow prophylactic measures especially against BPH as the area is endemic to BPH.

Production Constraints

Crop : Rice	Production constraints	Technology available but to be adopted (extension gap)	Situation-VII (Kole areas)
1	Problem of submergence, flood and lack of drainage.	—	Technology not available or to be modified (research gap/needs) A project for constructing permanent bunds in kole region is in progress (KLDC).
2	Lack of irrigation for summer crop	—	Drought tolerant varieties evolved elsewhere needs to be tested and suitable one selected.
3	Lack of suitable short duration varieties for Kole region.	A trial with existing short duration varieties and cultures can be taken up to select the most suitable one.	—
4	Problems of low germination of seeds.	Technology developed at RRS Vyttila may be tried.	Suitable trial may be taken up.
5	Problems of weed infestation	—	Herbicide may be screened and best one selected.
6	Lack of specific recommendation of fertilizer in kole area.	—	An experiment to study the different levels of Nitrogen, P and K has to be taken up.
7	Lack of saline resistant, short/medium duration varieties	—	Suitable varieties have to be identified and popularized.
8	Severe acidity and iron toxicity resulting in stunted growth, reduced tillering, root decay, discoloration of leaves, and unfilled grain.	—	Varieties tolerant to stress situations and management practices to suit such situations have to be developed.

Recommendation	Adoption pattern	Rationale																				
<i>Manures and fertilizers (main field):</i>																						
Lime : 350 kg/ha at last ploughing	Low adoption. Most farmers apply lime but at a lower rate.	High cost of lime and low cost benefit ratio.																				
Organic manure : 5 t/ha at land preparation.	Very low adoption.	High cost of man and materials prevent farmers from application of organic manures.																				
<i>Fertilizers :</i>																						
<table border="0"> <thead> <tr> <th colspan="2"><i>Medium duration</i></th> <th colspan="2"><i>Short duration</i></th> </tr> <tr> <th>N</th> <th>P</th> <th>N</th> <th>P</th> </tr> <tr> <th colspan="2">kg/ha</th> <th colspan="2">kg/ha</th> </tr> </thead> <tbody> <tr> <td>45</td> <td>45</td> <td>22.5</td> <td>47.5</td> </tr> <tr> <td></td> <td></td> <td>35</td> <td>17.5</td> </tr> </tbody> </table>			<i>Medium duration</i>		<i>Short duration</i>		N	P	N	P	kg/ha		kg/ha		45	45	22.5	47.5			35	17.5
<i>Medium duration</i>		<i>Short duration</i>																				
N	P	N	P																			
kg/ha		kg/ha																				
45	45	22.5	47.5																			
		35	17.5																			
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1st top dressing (at 20-25 DAP)	22.5 — — — — — Full adoption																					
2nd top dressing (at P.I. stage)	22.5 — 22.5 22.5 — 17.5 —do—																					
<i>Plant protection.</i> Posts like stem borer (Nursery) rice case worm, rice bug, BPH and diseases like blast, blight, sheath blight (need based application of chemicals).		Farmers follow prophylactic measures especially against BPH as the area is endemic to BPH.																				

Recommendation	Adoption pattern	Rationale
Lime : 1 kg/palm	10% adoption	Availability and cost of lime are main reasons for non adoption.
<i>Irrigation</i> (during summer only) : once in 3 days in sandy soils, once in 7 days in loam soils and once in 9 days in clayey soils.	Full adoption	—
Burying coconut husk in trenches in June-July for moisture conservation.	1% adoption	High cost and non-availability of husk prevent farmers from practicing this recommendation
<i>Plant protection</i> Appropriate plant protection measures against the insect pests like, rhinoceros beetle, red palm weevil, black headed caterpillar, cock chaffer beetle, coreid bug, mealy bug, and diseases like bud rot, leaf rot, root (wilt) and stem bleeding.	50% adoption	High cost of chemicals, and labour, lack of capital and lack of awareness of the recommendation are the main constraints.

Production Constraints

Crop : Coconut	Production constraints	Situation—VII (Kole areas)
		Technology not available or to be modified (research gap/needs)
1 Lack of suitable intercrop in coconut gardens of the kole region.	Technology available but to be adopted (extension gap)	Research programme may be taken up to develop an ideal cropping system suited for the region.
2 Incidence of stem breeding.	Available technology may be popularised.	Studies on management aspects of the disease has to be taken up.

Annexure 1

District-wise distribution of Administrative, Development Divisions of Kerala

Item	Unit	Reference Year	Trivandrum	Quilon	Pathanamthitta	Alleppey	Kottayam	Idukki	Ernakulam	Trichur	Palghat	Malappuram	Kozhikode	Wynad	Cannanore	Kasaragode	State
Taluks	Nos.	1985	4	5	5	6	5	4	7	5	5	4	3	3	3	2	61
Blocks	Nos.	1985	12	12	10	12	11	8	15	17	12	14	12	3	9	4	151
Municipalities/ Corporations/Town- ships.	Nos.	1985	5	2	2	5	4	2	8	7	3	4	2	—	3	2	49
Census towns	Nos.	1985	6	5	2	6	4	2	16	25	4	4	6	—	25	2	107
Panchayats	Nos.	1985	84	76	56	65	73	51	85	98	91	95	77	25	85	37	1000

(Source : Progress of Kerala in three Decades; 1956-1985—Department of Economics & Statistics, Trivandrum)

Note : One Panchayat viz. Kuttappuzha in Pathanamthitta district was merged with the nearby Tiruvalla Municipality in 1987.

1	2	3	4	5	6	7	8	9	10	11	12	13
22	Tirur	Tirur	48	117	117	—	155	165	—	60	60	—
23	Bharathapuzha	Bharathapuzha	209	6186	4400	1786	7478	6540	938	4146	3349	797
24	Keecheri	Keecheri	51	635	635	—	1024	1924	—	345	345	—
25	Puzhakkal											
26	Karuvannur	Karuvannur	48	1054	1054	—	1887	1887	—	963	963	—
27	Chalakudy	Chalakudy	130	1704	1404	300	3121	2541	580	2033	1539	494
28	Periyar	Periyar	244	5398	5284	114	11607	11341	266	8230	8004	226
29	Muvattupuzha	Muvattupuzha	121	2004	2004	—	3814	3814	—	1812	1812	—
30	Meenachil	Meenachil	78	1272	1272	—	2349	2349	—	1110	1110	—
31	Manimala	Manimala	90	847	847	—	1829	1829	—	1108	1108	—
32	Pamba	Pamba	176	2235	2235	—	4641	4641	—	3164	3164	—
33	Achancoil	Achancoil	129	1484	1484	—	2287	2287	—	1249	1249	—
34	Pallikkal		42	1919	1919	—	2770	2770	—	1368	1368	—
35	Kallada	Kallada	121			—			—			—
36	Ithikkara	Ithikkara	56	642	642	—	761	761	—	429	429	—
37	Vamanapuram		88			—			—			—
38	Ayroor	Vamanapuram	17	867	867	—	1324	1324	—	889	889	—
39	Memom		27			—			—			—
40	Karamana	Karamana	68	703	703	—	836	836	—	462	462	—
41	Neyyar	Neyyar	56	497	497	—	433	433	—	229	229	—
	Total			40112	35469	4643	71981	64263	7718	43226	36712	6514
<i>East flowing</i>												
1	Kabbini	Kabbini		1920	1920	—	4333	4333	—	4333	4333	—
2	Bhavani	Bhavani		562	562	—	1019	1019	—	1019	1019	—
3	Pambar	Pambar		384	384	—	708	708	—	708	708	—
	Total			2866	2866	—	6060	6060	—	6060	6060	—
	Grand Total			42978	38335	4643	78041	70323	7718	49286	42772	6514

Source : Water Resources of Kerala, P. W. D., Government of Kerala, June, 1974.

(Land Resources and Land Use in Kerala—State Land Use Board, Trivandrum, December, 1980).

Annexure 3

Characteristics of the surface soil of the important soil types of Kerala

Characteristics	Soil types (location)										
	Red loam (Thiruvallam)	Laterite (Koduvally)	Coastal alluvium (Azhoor)	Riverine alluvium (Parappur)	Onattukara alluvium (Krishnapuram)	Brown hydro-morphic (Naduvattom)	Saline hydro-morphic (Elamkunnapuzha)	Kayal (Vechoor)	Kuttanad alluvium (Karappadam)	Black soil (Kozhijampara)	Forest loam (Manikulam)
pH	5.10	6.20	6.60	5.80	6.20	5.70	6.90	5.40	5.30	8.00	5.80
Gravel %	5.07	73.92	—	—	—	—	—	—	—	2.13	5.80
Coarse sand %	40.70	37.12	70.00	24.25	60.00	13.00	13.60	0.20	18.30	5.10	33.60
Fine sand %	25.30	11.32	12.00	32.00	23.10	13.20	16.30	50.20	24.50	14.50	7.10
Silt %	18.00	18.32	3.50	26.10	5.00	25.00	20.20	19.20	16.60	16.40	36.00
Clay %	12.40	30.45	11.00	16.03	10.00	50.50	45.50	28.10	31.00	61.70	21.50
Total N %	0.04	0.08	0.01	0.07	0.07	0.09	0.13	0.15	0.41	0.03	0.15
Organic Carbon %	0.49	0.66	0.14	0.64	1.00	1.17	2.26	0.75	6.50	0.48	2.10
Total CaO %	0.02	0.17	0.02	0.01	0.04	0.02	0.24	0.31	0.12	1.10	0.04
Total P ₂ O ₅ %	0.07	0.08	0.05	0.05	0.05	0.03	0.06	0.05	0.04	0.02	0.03
Total K ₂ O %	0.03	0.19	0.04	0.03	0.11	0.05	0.23	0.02	0.32	0.23	0.24
P ₂ O ₅ %	11.00	20.00	—	9.25	14.43	9.59	29.30	35.35	32.50	12.50	9.00
Fe ₂ O ₃ %	5.56	11.84	—	3.72	4.46	3.60	3.40	3.21	6.75	2.15	3.64
CEC, me/100 g	4.00	5.60	3.00	3.26	2.22	8.20	20.20	16.10	13.80	31.20	10.00
TEMC me/100 g	2.10	3.00	1.60	1.82	—	4.72	11.85	8.55	6.50	18.10	5.55
Base saturation	52.50	53.53	53.33	55.82	—	67.56	58.66	52.13	47.10	58.01	50.91
WHC %	—	—	—	33.30	—	—	39.68	40.00	38.80	51.80	35.00
EC mmhos/cm	—	—	—	—	—	—	3.00	0.50	0.20	0.37	—

Source: Soils of Kerala; Soil Survey Branch, Department of Agriculture, Kerala (1978).

Annexure 4

Fertilizer recommendation based on soil test values followed in Kerala

Soil fertility Class No.	% organic C		Clayey loamy	Recommendation of N, as % to general recommendation	Available P (kg/ha)	Exchangeable K (kg/ha)	Recommendation of P & K, as % to general recommendation
	Sandy	loamy					
0	0.09-0.10	0.99-0.16		128	0.0-3.0	0-35	128
1	0.11-0.20	0.17-0.33		117	3.1-6.5	38-75	117
2	0.21-0.30	0.34-0.50		106	6.6-10.0	76-115	106
3	0.31-0.45	0.51-0.75		97	10.1-13.5	116-155	94
4	0.46-0.60	0.76-1.00		91	13.6-17.0	156-195	83
5	0.61-0.75	1.01-1.25		84	17.1-20.5	196-235	71
6	0.76-0.90	1.26-1.50		78	20.6-24.0	236-275	60
7	0.91-1.10	1.51-1.83		71	24.1-27.5	276-315	48
8	1.11-1.30	1.84-2.16		63	27.6-31.0	316-355	37
9	1.31-1.50	2.17-2.50		54	31.1-34.5	356-395	25

Source: Department of Agriculture, Kerala.

Annexure 5

Fertilizer consumption in Kerala (tonnes)

Year	N	P ₂ O ₅	K ₂ O	Total
1960-61	5314	4703	2032	12049
1961-62	6264	8461	2248	16973
1962-63	8295	9033	7948	25277
1963-64	10148	9452	8853	28952
1964-65	12746	11210	10252	34208
1965-66	15251	12773	11305	39329
1966-67	21106	13373	11030	45419
1967-68	24000	15689	11853	51542
1968-69	28574	20442	21514	70530
1969-70	30120	20347	21543	72010
1970-71	26335	14183	16139	56655
1971-72	31257	15670	18044	64971
1972-73	31484	22314	20470	74268
1973-74	31691	22609	24524	78824
1974-75	32143	17187	18032	67362
1975-76	31654	14374	16643	62671
1976-77	33533	15796	20157	69486
1977-78	36995	19167	26394	82556
1978-79	45689	23382	30766	99837
1979-80	46341	25402	33872	105615
1980-81	41697	23402	32431	97530
1981-82	40612	23214	30935	94761
1982-83	45233	26555	38065	109853
1983-84	62480	31178	35819	129477
1984-85	57657	32642	37346	127645
1985-86	59263	34412	47652	141327

Source : Fertiliser Association of India

Annexure 6

Soil testing laboratories other than those under the State Department of Agriculture

Location	Organization	Capacity samples/annum
Kanjirappally	Kerala State Rubber Marketing Federation	1,200
Meppadi	UPASI Tea Advisory Service	2,000
Munnar	-do-	3,000
Myladumpara	Indian Cardamom Research Institute	3,500
Puthupally	Rubber Research Institute of India, Kottayam	2,000
-do- (Mobile)	-do-	3,000
Udyogamandal	FACT	30,000
-do- (Mobile)	-do-	10,000
Vandiperiyar	UPASI Tea Research Sub Station	2,000

Source : Fertilizer Association of India

Annexure 7

Fertilizer consumption in Kerala predicted upto 2000 AD based on linear regression models fitted to actual fertilizer consumption (in tonnes) for the period 1960-61 to 1985-86

Year	N	P ₂ O ₅	K ₂ O	Total
1986-87	64434	31931	47727	144092
1987-88	67612	33140	50247	150999
1988-89	70867	34370	52832	158069
1989-90	74193	35623	55481	165302
1990-91	77605	36898	58195	172698
1991-92	81039	38196	60974	180259
1992-93	84649	39516	63818	187983
1993-94	88286	40859	66726	195871
1994-95	92000	42224	69699	203923
1995-96	95790	43612	72737	212139
1996-97	99656	45022	75840	220518
1997-98	103599	46554	79008	229061
1998-99	107618	47909	82240	237767
1999-2000	111714	49386	85538	246638
2000-2001	115887	50886	88900	255673

Source : Dr. A. I. Jose, Strategy for meeting fertilizer use target in Kerala by 2000 AD -Conference on *Fertilizer Technology*, ICAR, New Delhi.

Annexure 8

Station-wise Climatological data, Calicut: Lat. 11° 15' N, Long. 75° 47' E, MSL 5m.
(Based on observations 1931-1960)

Station	Daily Max. °C	Daily Min. °C	RH %		Rainfall	
			8.30 AM	17.30 PM	Monthly total mm	No. of Rainy days
J	31.7	22.0	74	64	5.9	0.4
F	31.9	23.1	76	66	11.1	0.3
M	32.6	24.7	74	69	21.0	0.7
A	32.9	25.8	75	71	111.1	5.2
M	32.5	25.6	81	76	322.5	10.9
J	29.5	20.8	90	85	870.9	24.5
J	28.2	23.3	92	89	860.0	26.5
A	28.7	23.6	92	86	404.9	20.0
S	29.5	23.7	88	82	215.0	12.3
O	30.4	23.8	85	78	290.4	11.5
N	31.1	23.4	80	72	140.0	7.1
D	31.6	22.2	75	64	29.9	1.4
Annual Mean/Total	30.9	23.7	82	75	3282.7	120.8

(Annexure B contd.)

Station: Palghat, Lat. 10° 46' N, Long. 76° 39' E, Ht MSL 7 m

Station Palghat	Mean		RH%		Rainfall	
	Daily Max. °C	Daily Min. °C	8.30 AM	17.30 PM	Monthly total	No. of rainy days
J	33.5	22.3	67	41	3.8	0.3
F	35.7	23.0	64	33	5.5	0.6
M	37.4	24.5	67	38	17.2	1.5
A	36.0	25.3	77	59	106.7	5.6
M	33.4	24.8	81	69	192.3	9.4
J	29.3	23.3	89	82	414.1	20.7
J	28.1	22.6	92	85	546.2	21.0
A	28.8	23.1	91	81	274.1	18.4
S	30.3	23.1	87	73	125.5	10.4
O	30.7	23.4	85	77	242.8	12.7
N	31.8	23.0	77	68	112.0	6.3
D	32.1	22.2	69	50	18.4	1.0
Annual Mean/ Total	32.3	23.4	79	63	2058.6	107.9

Source: India Meteorology Department, Trivandrum.

Station: Trivandrum, Lat. 08° 29' N, Long. 76° 57' E, Ht. above MSL 64 m
(Based on observations for 1931-1960)

J	31.3	22.3	77	63	20.1	1.6
F	31.7	22.9	79	63	20.3	1.5
M	32.5	24.2	80	66	43.5	3.0
A	32.4	25.1	81	73	122.1	7.1
M	31.6	25.0	84	77	248.6	10.8
J	29.4	23.6	90	82	331.2	18.8
J	29.1	23.2	89	81	215.4	15.6
A	29.4	23.3	88	79	164.0	11.9
S	29.9	23.3	86	77	122.9	8.9
O	29.9	23.4	87	80	271.2	11.5
N	31.0	23.1	87	78	206.9	10.6
D	39.0	22.5	80	69	73.1	4.2
Annual Mean/ Total	37.0	23.5	84	74	1839.3	105.2

(Annexure 8 contd)

Station: Cochin, Lat. 09° 55', Long. 76° 14' Ht. above MSL 3 m

Station Cochin	Daily Max. °C	Daily Min. °C	RH%		Rainfall	
			8.30 AM	17.30 PM	Monthly total m m	No. of rainy days
J	30.6	23.2	68	64	9.6	0.6
F	30.7	24.3	72	68	34.2	1.6
M	31.3	25.8	74	70	50.0	2.6
A	31.4	26.0	75	74	139.5	7.5
M	39.0	25.7	81	78	364.3	12.8
J	29.0	24.1	88	84	755.9	25.0
J	28.1	23.7	89	87	571.9	23.0
A	28.1	24.0	88	86	385.7	19.3
S	28.3	24.2	84	84	234.8	14.1
O	29.2	24.2	83	80	332.7	14.3
N	29.8	24.1	78	74	183.7	8.9
D	30.3	23.5	71	66	36.8	2.1
Annual Mean/ Total	29.8	24.4	79	76	3099.1	132.7

Source: India Meteorology Department, Trivandrum.

Station: Alleppey, Lat. 09° 33'N, Long. 76° 25', MSL 4 m (1951 to 1960)

J	31.9	22.6	74	68	18.3	1.8
F	31.9	23.6	76	70	27.4	1.8
M	32.6	24.9	76	71	74.1	3.9
A	32.7	25.5	78	73	158.4	9.9
M	31.6	25.3	83	78	456.8	15.3
J	29.5	23.9	90	85	781.0	23.4
J	28.8	23.3	91	85	521.3	21.7
A	28.8	23.5	91	85	313.3	17.5
S	29.4	23.7	86	82	271.6	15.0
O	29.7	23.8	85	81	395.6	15.8
N	30.3	23.7	81	76	209.5	19.2
D	31.4	22.8	75	68	36.3	2.4
Annual Mean/ Total	30.7	23.9	82	77	3263.6	138.7

(Annexure B contd.)
 Station: Alleppey - 1984 Ref: - Monthly values of Climatological data from 1973.

	Max. °C	Min. °C	R. H.	Rainfall	No. of rainy days
J	32.5	23.5	83	38.1	3
F	33.4	24.3	82	116.7	5
M	32.9	24.5	81	64.5	6
A	33.3	25.3	83	394.6	10
M	33.5	26.6	83	41.1	5
J	29.9	23.3	92	683.4	28
J	29.3	23.2	92	408.8	19
A	29.1	23.2	90	202.0	18
S	30.1	23.6	88	187.2	11
O	30.3	23.5	86	141.0	9
N	32.0	24.0	86	105.4	9
D	32.2	22.9	80	30.8	2

Source: India Meteorology Department, Trivandrum.

Station: Calicut - 1984.

J	31.7	23.5	81	4.4	1
F	32.4	24.7	79	26.2	1
M	32.5	25.3	80	30.4	1
A	32.4	25.5	81	388.2	8
M	32.2	26.6	79	42.3	6
J	28.6	23.4	92	861.4	28
J	28.1	23.4	92	675.5	23
A	28.5	23.4	92	422.4	20
S	29.3	23.6	89	87.1	12
O	29.8	23.2	86	366.0	11
N	31.9	23.9	80	131.1	3
D	33.3	22.1	78	12.7	1

Station: Trivandrum - 1984

J	31.8	22.9	81	65.1	6
F	31.4	23.2	85	128.2	7
M	31.7	23.6	86	151.0	10
A	31.8	24.4	86	297.0	10
M	32.6	25.3	84	153.7	6
J	29.7	23.3	91	205.5	17
J	29.1	32.9	89	126.0	12
A	30.8	23.4	83	21.1	2
S	31.0	23.2	83	40.2	5
O	29.8	22.8	83	205.1	9
N	30.3	23.3	86	71.8	8
D	31.8	22.1	72	2.7	—

Source: India Meteorology Department, Trivandrum.

Annexure 9

Station : Trivandrum 1984 (Monthly values of climatological data from 1973)

Trivandrum	Max °C	Min °C	R. H. %	Rainfall m m	No. of rainy days
J	31.6	22.6	80	91.7	3
F	32.2	23.3	81	40.2	3
M	33.4	24.9	77	13.6	2
A	33.5	25.4	78	87.4	4
M	32.2	24.4	83	223.3	13
J	28.7	22.8	93	424.3	27
J	29.8	22.9	88	82.5	12
A	30.1	23.3	86	61.8	7
S	30.9	23.6	84	96.7	3
O	30.4	23.6	87	162.7	9
N	30.1	22.7	83	170.4	7
D	31.7	22.9	76	39.5	5

Station : Cochin 1984

J	32.0	23.7	81	156.5	5
F	32.4	24.0	81	170.1	5
M	32.3	25.0	82	59.0	4
A	32.7	25.6	80	113.1	9
M	32.9	24.8	84	136.6	8
J	29.6	23.5	96	785.0	28
J	29.0	23.1	94	601.4	22
A	29.8	23.6	92	243.7	17
S	29.8	24.2	85	131.1	7
O	29.6	23.3	86	308.2	5
N	31.8	24.3	83	116.1	6
D	31.5	22.4	75	15.5	1

Station : Calicut 1973

J	31.7	23.5	81	4.4	1
F	32.4	24.7	79	25.2	1
M	32.5	25.3	86	30.4	1
A	32.4	25.5	81	388.2	8
M	32.2	26.6	79	42.8	6
J	28.6	23.4	92	861.4	28
J	28.1	23.4	92	675.5	23
A	28.5	23.4	92	422.4	20
S	29.3	23.6	89	87.1	12
O	29.8	23.2	86	366.0	11
N	31.9	23.9	80	131.1	3
D	33.3	22.1	78	12.7	1

(Annexure 9 Contd.)

Station : Trivandrum 1984

Station Calicut	Max °C	Min %	R. H. °C	Rainfall m m	No. of rainy days
J	31.8	22.9	81	65.1	6
F	31.4	23.2	85	128.2	7
M	31.7	23.6	86	151.0	10
A	31.8	24.4	86	297.0	10
M	32.6	25.3	84	153.7	6
J	29.7	23.3	91	205.5	17
J	29.1	32.9	89	126.0	12
A	30.8	23.4	83	21.1	2
S	31.0	23.2	83	40.2	5
O	29.8	22.8	83	205.1	9
N	30.8	23.3	86	71.8	8
D	31.8	22.1	72	2.7	—

Source : India Meteorology Department, Trivandrum

Annexure 10

District—wise distribution of area under forests (hectares) in Kerala.

District	Area			% to the total forests	% to the area of the Districts
	1978-79	1979-80	1980-81		
Trivandrum	49861	49861	49861	4.60	22.78
Quilon	236048	236048	236048	21.83	49.76
Alleppey	518	518	518	0.04	0.28
Kottayam	8141	8141	8141	0.75	3.70
Idukki	260993	260993	260993	24.13	50.67
Ernakulam	8123	8123	8123	0.75	3.45
Trichur	103619	103619	103619	9.59	34.61
Palghat	136257	136257	136257	12.60	31.04
Malappuram	103417	103417	103417	9.57	34.61
Kozhikode	90876	90876	90876	8.41	24.48
Cannanore	83656	83656	83656	7.73	14.73
State	1081509	1081509	1081509	100.00	27.83

Source: Season and Crop report of Kerala 1979-1980 & 1980-81 p-7, Department of Economics & Statistics, Trivandrum.

Annexure 11

Division – wise area of reserve forests and vested forests in Kerala (1985).

Division	Area (ha)
A Reserve Forests	
1 Trivandrum	57058
2 Thenmala	56762
3 Punalur	28005
4 Konni	33166
5 Ranni	105746
6 Kottayam	73074
7 Malayattur	64509
8 Munnar	89660
9 Chalakudy	35471
10 Trichur	33102
11 Wild Life Division (Thekkady)	77700
12 Nenmara	48407
13 Nilambur	32459
14 Palghat	37317
15 Kozhikode	42062
16 Wynad	45782
17 Special Division (Kozhikode)	359
18 Kothamangalam	31686
19 Vazhachal	41178
Sub Total (A)	933503
B Vested Forests	
1 Palghat	79392
2 Nilambur	42903
3 Kozhikode	42020
4 Tellicherry	17591
5 Tiru-Cochin	6740
Sub Total (B)	188652
Grand Total (A+B)	1122155

Source: Economic Review 1985, State Planning Board, Trivandrum.

On Going Major & Medium

Name of project	Command area in (ha)		Gross
	Net		
Ongoing Projects			
Kallada	61630		92000
Pamba	21135		49456
Muvattupuzha	17400		52200
Poriyar Valley	30444		79460
Chimoni	13000		26200
Chitturpuzha	14500		26970
Kanjirapuza	9720		21863
Kuttiadi	14570		35850
Pazhassi	11525		23050
Vamanapuram	8803		18014
Idamalayar	13659		39318
Kuriarkutty-Karappara	11736		23472
Ongoing Projects (New)			
Chaliyar	5812		13624
Kakkadavu	12817		26106
Attappady	4190		8380
Karapuzha	4650		9300
Meenachil	10000		20000
Banasurasagar	2400		4800
	267991		570063
Research, survey & Investigation			
Modernisation			

Annexure 12

Irrigation Projects in Kerala, achievements during 1984-85

Physical achievement during 1984-85 (ha)		Cumulative achievement at the end of 1984-85 (ha)		Expenditure during
Net	Gross	Net	Gross	1984-85 Rs. in lakhs
Nil	Nil	917	1375	2520.84
1724	4035	19672	46033	534.17
—	—	—	—	348.54
1341	3500	28707	74925	592.21
—	—	—	—	228.56
482	897	13241	24579	116.06
259	558	6894	15489	463.15
217	534	13841	34051	119.76
610	1220	6734	13468	460.33
—	—	—	—	19.75
—	—	—	—	229.09
—	—	—	—	14.31
—	—	—	—	7.80
—	—	—	—	10.17
—	—	—	—	31.24
—	—	—	—	75.08
—	—	—	—	7.22
—	—	—	—	7.12
4633	10744	89979	209918	5779.490
—	—	—	—	37.324
—	—	—	—	23.065

Annexure 13

Cost escalation of Major and Medium Irrigation Projects

Name of the Scheme	Year of starting	Original Estimate	Latest Estimate
Major Schemes			
Pamba	1961	383	5200
Periyar Valley	1956	348	5700
Chitturpuzha	1963	105	1786
Kuttiadi	1962	496	4860
Kanhirapuzha	1961	365	4200
Kallada	1961	1328	20000
Pazhassi	1961	1320	5400
Chimoni	1976	2900	2343
Idamalayar	1977	1439	6147
Muvattupuzha	1975	1100	4808
Kakkadavu	1979	1330	2600
Beyporepuzha	1979	344	1061
Kuriarkutty-Karappara	1979	1600	4881
Medium Schemes			
Attappady	1975	476	2077
Karapuzha	1975	389	1200
Vamanapuram	1979	780	3640
Meenachil	1979	810	4810
Banasarasagar	1980	1100	1137

(Source: Economic Review, 1985—Government of Kerala)

Rs. in Kerala (Rs. in lakhs)

Expenditure upto 3/85 (anticipated)	Expected year of completion	Increase in the original cost (%)
4874	3/86	1358
4643	3/86	1638
1396	3/86	1701
4607	3/86	980
3679	1986	1151
13216	1987	1506
4780	1986	409
956	1988	81
1546	1992	427
1935	1990	436
152	1992	195
34	1995	308
112	1995	305
523	1990	436
642	1989	308
69	1993	467
30	1993	594
112	1990	103

Annexure 14

Physical and Financial achievements under Minor Irrigation—Kerala

Item	1983—84			1984—85		
	Actual Expenditure (Rs. lakhs)	Achievements (Net) (Area in ha)	Achievements (Gross) (Area in ha)	Actual Expenditure (Rs. lakhs)	Achievements (Area in ha) (net)	Achievements (Area in ha)
1	2	3	4	5	6	6
Minor Irrigation Class I	224.17	2225	3338	244.99	2080	2080
Minor Irrigation Class II (PWD)	81.28	1137	1137	108.95	2139	2139
Minor Irrigation Class II with peoples participation	161.88	1894	2841	169.04	1580	1580
Lift Irrigation	73.65	917	917	45.37	1070	1070
I. P. D. Yelah Scheme	21.24	—	—	72.55	294	294
Repairs to M. I. Structures	23.61	705	705	29.00	—	—
Others	585.83	6878	8938	669.90	7163	7163
Total						

Annexure 15

Number of Minor Irrigation Works Proposed and Completed during 1984—85

Items	No. of works proposed	No. of works completed
Minor Irrigation Class I	227	39
Minor Irrigation Class II PWD	380	126
Minor Irrigation Class II (with peoples participation)	—	—
Lift Irrigation	143	28
Repairs to Minor Irrigation Structures	104	23
I. P. D. Yelah Scheme	239	57

Source: Economic Review 1985, State Planning Board, Trivandrum

Annexure 16

District-wise distribution of area, population, growth rate and density of population and sex ratio-1971 & 1981

District/ State	Area Sq. Km.	1981 population			Density of popu- lation per sq. km (1971)	Density of popu- lation per sq. km (1981)	Decadal growth rate (1971- 1981)	Sex ratio Female/ 1000 male	
		Persons	Males	Females				1971	1981
Trivandrum	2192.0	2596112	1279150	1316962	1003	1184	18.08	1008	1030
Quilon	4620.0	2813650	1388678	1424972	522	609	16.61	—	1926
Alleppey	1883.0	2350145	1146407	1203738	1128	1248	10.56	—	1050
Kottayam	2204.0	1697442	848462	848980	701	770	10.29	991	1001
Idukki	5061.0	971636	494999	476637	150	192	26.91	937	963
Ernakulam	2408.0	2535254	1269174	1266120	910	1053	17.18	989	999
Trichur	3032.0	2439543	1161675	1277868	702	8805	14.60	1031	1100
Pulghat	4480.0	2044399	994196	1050203	383	456	21.30	1056	1056
Malappuram	3548.0	2402701	1170778	1231923	510	677	29.43	—	1052
Kozhikode	2345.0	2245265	1111409	1133856	569	957	23.25	—	1020
Wynad	2132.0	554026	284261	269765	—	260	33.87	—	949
Cannanore	4958.0	2803467	1378578	1424889	415	665	25.39	—	1034
State	38863.0	25453680	12527767	12925913	549	655	19.24	1016	1032

Source: 1. Census of India 1971

2. Census of India 1981

3. Statistics for planning 1983, Directorate of Economics and Statistics, Kerala

4. Season and Crop report of Kerala, March 85.

Annexure 17

Population of Scheduled Castes and Scheduled Tribes in Kerala

District	1951		1961		1971		1981	
	Scheduled Caste	Scheduled Tribe	Scheduled Caste	Scheduled Tribe	Scheduled Caste	Scheduled Tribe	Scheduled Caste	Scheduled Tribe
Trivandrum	102550	6261	161982	9784	213741	11059	284279	14145
Quilon	183003	2614	227265	3799	280532	3737	283106	3079
Pathanamthitta	—	—	—	—	—	—	147419	4990
Alleppey	136206	459	166521	584	200770	435	152465	2646
Kottayam	125348	6765	73195	10769	94528	11059	119377	15227
Idukki	—	—	91843	19886	97819	23181	133177	38712
Ernakulam	130007	4707	143463	766	182775	580	216470	3551
Trichur	172795	2100	174893	6271	216237	9383	302085	3227
Palghat	190582	3073	176199	19423	210765	25594	376424	28794
Malappuram	—	—	111409	6768	140826	8882	208018	7655
Kozhikode	154096	30016	64527	63859	76338	84982	161715	3388
Wynad	—	—	—	—	—	—	21130	95557
Cannanore	60401	17932	43520	70905	57737	90464	78283	15439
Kasaragod	—	—	—	—	—	—	65461	24565
State	1254968	73927	1434817	212762	1772168	269356	2549409	261475

Source: Progress of Kerala in three decades 1956-1985

Department of Economics & Statistics, Trivandrum.

Annexure 18

Percentage of main workers in Agriculture, Household industry and Other Workers to total workers in Kerala during 1971 and 1981

District/ State	Cultivators		Agricultural labourers		Household Industry		Other workers	
	1971	1981*	1971	1981*	1971	1981*	1971	1981*
Kerala	17.80	13.18	30.69	28.19	4.28	4.09	47.23	54.54
Cannanore	17.65	83.10	33.71	27.38	4.09	2.76	44.55	56.76
Wynad	25.24	21.25	37.06	39.41	1.15	1.06	35.55	38.28
Kozhikode	12.39	5.58	23.86	14.33	3.80	2.89	59.95	77.20
Malappuram	18.84	13.19	39.13	37.15	3.08	3.06	38.95	46.60
Palghat	15.74	14.53	48.42	44.94	4.27	3.85	31.57	36.67
Trichur	13.64	9.43	32.84	25.55	5.87	5.73	47.65	59.29
Emakulam	12.84	10.48	21.93	18.22	4.16	3.85	6.107	67.45
Idukki	25.56	22.59	22.46	25.62	0.92	0.96	51.06	50.83
Kottayam	24.65	17.87	28.09	25.05	3.16	4.00	44.10	53.08
Alleppey	16.01	11.00	30.66	26.46	6.96	8.80	46.37	53.74
Quilon	26.89	20.16	20.81	25.41	3.78	3.80	48.52	50.63
Trivandrum	14.05	8.85	29.85	33.30	5.30	4.64	50.80	53.21

* Provisional

Source: 1. Census Report 1981.

2. Statistics for planning 1983, Directorate of Economics and Statistics, Kerala.

Annexure 19

District-wise distribution of fishermen population in Kerala (1934-85)

District 1	Marina					Inland				
	Male 2	Female 3	Children 4	Total 5	Male 6	Female 7	Children 8	Total 9	Total 10	
1 Trivandrum	42372	40982	58643	141997	316	322	407	1045	143042	
2 Quilon	25327	23341	31040	79708	9363	8601	11639	29603	109311	
3 Alleppey	29359	28710	36920	94989	17746	16824	19172	53742	148731	
4 Pathanamthitta	—	—	—	—	239	227	259	725	725	
5 Kottayam	—	—	—	—	7127	6806	7560	21493	21493	
6 Idukki	—	—	—	—	—	—	—	—	—	
7 Ernakulam	19849	19414	22421	61684	19139	18367	18371	55877	117561	
8 Trichur	18149	18497	22639	59285	5694	5490	5960	17144	76429	
9 Palghat	—	—	—	—	107	124	228	459	459	
10 Malappuram	19900	20399	23907	64206	1171	1158	1347	3676	67882	
11 Wynad	—	—	—	—	259	247	319	825	825	
12 Calicut	26239	25496	32425	84210	3245	3095	4023	10363	94573	
13 Cannanore	14259	13880	16586	44725	294	258	214	766	45491	
14 Kasargod	11754	11442	13675	36871	243	213	176	632	37503	
State	207258	202161	258256	667675	64943	61732	69675	196350	864025	

Source: Economic Review 1985, State Planning Board, Trivandrum.

Annexure 20

Literacy in Kerala 1971 & 1981

District	Number of literates (1981)		General literacy rate (1981) (%)		General Literacy rate (1981) (%)				
	Persons	Male	Female	Persons	Male	Female			
Trivandrum	1830233	963063	867170	70.50	75.29	65.85	62.54	68.64	56.48
Quilon	2085085	1084558	1000527	74.11	78.10	70.21	64.97	70.10	59.84
Alleppey	1845435	941412	904023	78.52	82.12	75.10	70.44	75.22	65.79
Kottayam	1386065	712393	673672	81.66	83.96	79.35	72.88	76.18	69.55
Idukki	655268	357128	298140	67.44	72.15	62.55	56.42	62.21	50.75
Ernakulam	1947615	1024833	922782	76.82	80.75	72.88	65.37	70.52	60.16
Trichur	1795178	898045	897133	73.59	77.31	70.71	61.61	66.35	57.23
Palghat	1185731	644362	541369	58.00	64.81	51.55	46.69	54.58	39.22
Malappuram	1453607	771859	681748	60.50	65.93	55.34	47.90	55.32	40.78
Kozhikode	1574461	850875	723586	70.12	76.56	63.82	53.77	67.65	49.94
Wynad	323190	184221	138969	58.33	64.81	51.51	47.33	54.95	39.07
Cannanore	1842864	995343	847521	65.74	72.20	59.48	55.27	63.67	47.06
State	17924732	9428092	8496540	70.42	75.26	65.73	60.42	66.62	54.31

Source: 1 1981 Census Report

2 Statistics for planning 1983, Directorate of Economics and Statistics, Trivandrum.

Annexure 21

Infant Mortality Rates, 1981-All India and States

State/India	Total	Rural	Urban
1 Andhra Pradesh	86	93	52
2 Assam	106	107	76
3 Bihar	118	124	60
4 Gujarat	116	123	89
5 Haryana	101	103	52
6 Himachal Pradesh	71	72	65
7 Jammu & Kashmir	72	76	41
8 Karnataka	69	77	45
9 Kerala	37	40	24
10 Madhya Pradesh	142	152	80
11 Maharashtra	79	90	49
12 Orissa	135	140	68
13 Punjab	81	88	51
14 Rajasthan	103	118	53
15 Tamil Nadu	91	104	55
16 Uttar Pradesh	150	157	97
17 West Bengal	91	98	44
India	110	119	62

Annexure 22

Expectation of Life at Birth for All India and Major States Based on the Sample Registration Survey Data—1970-75

India/State	Total	Male	Female
India	49.7	50.5	49.0
1 Andhra Pradesh	48.8	48.4	49.3
2 Assam	45.5	46.2	44.8
3 Gujarat	48.8	48.8	48.8
4 Haryana	57.5	59.0	55.6
5 Himachal Pradesh	52.6	54.8	50.9
6 Jammu & Kashmir	56.1	56.9	55.2
7 Karnataka	55.2	55.4	55.1
8 Kerala	62.0	60.8	63.3
9 Madhya Pradesh	47.2	47.6	46.3
10 Maharashtra	53.8	53.3	54.5
11 Orissa	45.7	46.0	45.3
12 Punjab	57.9	59.0	56.8
13 Rajasthan	48.4	49.2	47.5
14 Tamil Nadu	49.6	49.0	49.5
15 Uttar Pradesh	43.0	45.4	40.5

Source:— Economic Review 1985, State Planning Board, Trivandrum.

Annexure 23

Educational status in Kerala

Item	Unit	1956-57	1961-62	1971-72	1981-82	1982-83	1983-84	1984-85
1	2	3	4	5	6	7	8	9
Lower primary schools	(Nos.)	7892	6928	6895	6807	6798	6842	6849
Upper primary schools	Do	1665	1925	2551	2766	2772	2823	2857
High schools	Do	763	989	1393	2087	2243	2338	2404
Students at primary stage	('000)	1791	2145	2898	2586	2549	2501	2517
Students at Upper primary stage	Do	803	886	1331	1747	1782	1805	1787
Students at High school stage	Do	267	428	750	1317	1315	1342	1368
Teachers in schools	(Nos.)	81006	114979	146972	178435	181524	183638	NA
Arts and Science Colleges	Do	28	47	117	172	172	172	172
Students in Arts and Science Colleges	Do	25254	41739	116330	269207	287304	292409	297745
Engineering Colleges	Do	1	6	6	6	6	6	6
Polytechnics	Do	4	13	18	19	20	23	25
No. of I. T. C./I. T. Is.	Do	NA	12	36	222	223	239	259
Medical Colleges	Do	1	3	4	4	5	5	5

Source: Progress of Kerala in three decades 1956-1985— Department of Economics & Statistics, Trivandrum.

Annexure 24

Student Statistics for 1983—84 and 1984—85 of the Kerala Agricultural University

Course of study	1983—84			1984—85		
	Admission	On rolls	Successful completion	Admission	On rolls	Successful completion
1	2	3	4	5	6	7
Degree programmes						
B. Sc. (Ag)	143	516	110	160	565	126
B. Sc. (Hort)	—	33	37	—	—	28
B. V. Sc. & A. H.	69	419	49	114	419	56
B. F. Sc.	29	106	nil	32	140	18
B. Sc. (C&B)	32	109	nil	29	129	—
Total	273	1183	196	335	1253	228
Diploma Courses						
D. A. Sc.	17	161	43	60	126	41
D. A. R. E.	17	63	24	19	50	28
Total	34	224	67	79	176	69
Post-Graduate						
Degree programme						
M. Sc. (Ag)	62	122	39	88	154	74
M. Sc. (Ag. Stat)	4	16	5	4	16	5
M. Sc. (Ag. Engg.)	5	5	—	5	8	4
M. Sc. (Hort)	10	20	11	7	10	4
M. V. Sc.	14	26	17	13	27	3
Ph. D. (Ag)	8	22	4	17	28	8
Ph. D. (Hort)	—	2	—	2	4	3
Ph. D. (Vety)	4	8	1	3	9	1
Total	107	221	77	139	256	102
P. G. Diplomas						
Natural Rubber Production	—	—	5	1	1	—
Food and Nutrition	3	3	—	4	4	3
Vety. & A. Sc.	—	22	21	—	—	—
Total	3	25	26	5	5	3
Grand Total	417	1653	366	558	1690	402

Source:- Kerala Agricultural University Economic Review, 1985; State planning Board, Govt. of Kerala

Annexure 25

State Income of Kerala

(Rupees in crores)

Item	1956-57		1961-62		1971-72		1981-82 (R)		1982-83 (R)		1983-84 (P)		1984-85 (Q)	
	A	B	A	B	A	C	A	C	A	C	A	C	A	C
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Net State Domestic Product	350	209	467	438	1276	1323	3705	1618	4422	1656	5203	1654	5965	1751
Sectoral distribution														
a. Primary sector	180	21	251	234	585	647	1413	629	1719	637	2105	594	2396	642
Percent	51.43	10.05	53.75	53.42	45.85	48.91	38.14	38.88	38.87	38.47	40.46	35.91	40.17	36.66
b. Secondary-														
sector	61	63	75	71	234	226	836	326	958	317	1056	316	1168	319
Per cent	17.43	30.14	16.06	16.21	18.34	17.08	22.56	20.15	21.67	19.14	20.29	19.11	19.58	18.22
c. Tertiary														
sector	109	125	141	133	457	450	1456	663	1745	702	2042	744	2401	790
Per cent	31.14	59.81	30.19	30.37	35.81	34.01	39.30	40.97	39.46	42.39	39.25	44.98	40.25	45.12
Per capita income (Rs)	228	263	273	256	592	613	1441	629	1689	633	1951	620	2196	645

A = At current prices

B = At 1960-61 prices

C = At 1970-71 prices

R = Revised

P = Provisional

Q = Quick estimate

Source : Progress of Kerala in three decades-1956-1985
Department of Economics & Statistics, Trivandrum.

Annexure 26

Comparative study of the distribution of number, average size of the operational holding and the area operated by major size classes in Kerala and India during 1980—81

Class and size of holdings	No. of operational holdings (nos. in '00)		Average size of operational holdings (area in ha)		Area operated (in' 000 ha)	
	Kerala	India	Kerala	India	Kerala	India
Marginal (below 1 ha)	37280	505252	0.20	0.39	750	19800
Small (between 1 & 2 ha)	2898	160779	1.37	1.42	398	22962
Semi medium (between 2 & 4 ha)	1236	125071	2.68	2.76	331	34580
Medium (between 4 & 10 ha)	358	80884	5.45	5.98	195	48334
Large (10 ha and above)	37	21544	35.14	17.27	130	37133
Total/average	41809	893530	0.43	1.82	1805	162792

Source : State Planning Board, Kerala, Trivandrum
Farm guides 1985 & 1986

Annexure 27

Average farm prices of some important commodities in Kerala

(Rupees)

Name of crop	Unit	1956-57	1961-62	1971-72	1981-82	1982-83	1983-84	1984-85
1	2	3	4	5	6	7	8	9
Paddy	Qufntal	36.95	43.72	99.62	178.78	208.16	251.62	200.76
Pepper (Black)	do	178.22	348.38	616.25	1211.96	1196.64	1725.33	2920.98
Ginger (Dry)	do	117.26	119.30	554.00	867.00	1633.00	2740.68	2238.77
Coconut (with husk)	1000 Nos.	157.47	213.99	571.30	1140.00	1443.00	2427.00	2616.00
Arocanut	do	20.18	29.74	37.30	80.40	80.90	100.00	124.70
Banana (Nendran)	100 Nos.	6.05	8.53	15.69	42.05	46.16	57.06	56.15
Tapioca	Quintal	9.75	10.18	20.59	43.95	61.91	70.02	56.95
Cashewnut (raw)	do	57.20	63.65	139.93	655.53	474.79	869.89	843.84

Source: Progress of Kerala in three decades, 1956-1985, Department of Economics & Statistics, Trivandrum.

Annexure 28

Area, production and productivity of important crops in Kerala
(1975-76 to 1984-85)

Crops	Years											
	75-76	76-77	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85	85-86*	
1	2	3	4	5	6	7	8	9	10	11	12	
<i>Rice</i>												
Area (000 ha)	876	854	840	799	793	802	807	778	740	730	678	
Production (000 tonnes)	1339	1254	1295	1273	1300	1272	1339	1306	1208	1256	1173	
Productivity (kg/ha)	1520	1468	1541	1592	1638	1587	1660	1678	1632	1719	1729	
<i>Coconut</i>												
Area (000 ha)	693	695	673	661	663	651	667	674	682	687	687	
Production (million nuts)	3439	3348	3053	3211	3032	3296	3006	3184	2602	3453	3149	
Productivity (nuts/ha)	4963	4817	4533	4860	4576	4617	4509	4721	3813	5023	4584	
<i>Tapioca</i>												
Area (000 ha)	327	323	290	273	244	245	248	228	233	217	215	
Production (000 tonnes)	5390	5126	4189	4044	4089	4061	3745	3849	3903	3694	3463	
Productivity (kg/ha)	16491	18855	14457	14787	16774	16575	15097	16911	16751	17047	16106	
<i>Pepper</i>												
Area (000 ha)	108	109	102	107	106	108	108	107	106	106	106	
Production (000 tonnes)	25	25	20	27	29	29	29	25	25	17	29	
Productivity (kg/ha)	227	225	199	247	273	263	254	233	236	161	274	

	1	2	3	4	5	6	7	8	9	10	11	12
<i>Rubber</i>												
Area (000 ha)		207	210	212	214	214	238	238	256	271	312	320
Production (000 tonnes)		129	139	136	124	124	140	139	153	162	189	185
Productivity (kg/ha)		623	664	640	577	577	590	587	596	598	605	578
<i>Areca nut</i>												
Area (000 ha)		77	68	62	62	61	61	61	61	60	57	57
Production (million nuts)		13387	11303	10548	10919	10829	10305	10702	NA	NA	9269	5033
Productivity (nuts/ha)		174719	165354	168968	175217	177939	176431	174723	NA	NA	162614	88298
<i>Cashew</i>												
Area (000 ha)		109	113	127	137	140	141	140	141	142	137	137
Production (000 tonnes)		122	87	85	84	83	82	79	76	77	72	73
Productivity (kg/ha)		1122	770	667	617	592	579	564	534	543	527	533
<i>Coffee</i>												
Area (000 ha)		NA	41	53	53	58	58	58	58	62	64	NA
Production (000 tonnes)		18	15	28	28	30	24	34	22	9	NA	24
Productivity (kg/ha)		NA	371	525	525	521	406	580	374	151	NA	NA
<i>Tea</i>												
Area (000 ha)		NA	36	36	36	36	36	36	35	35	35	NA
Production (000 tonnes)		46	42	52	47	52	51	46	46	44	56	53
Productivity (kg/ha)		NA	1151	1439	1312	1451	1402	1275	1290	1262	1608	NA

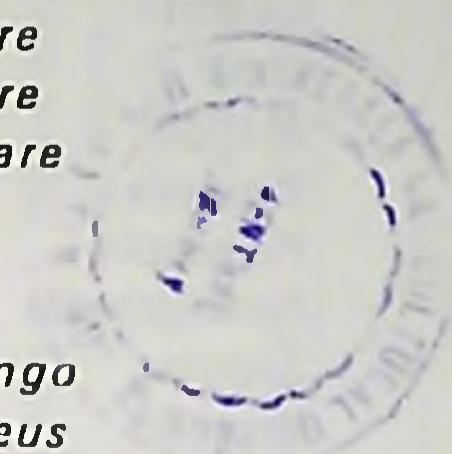
* Figures for 1985-86 are provisional

Source : Directorate of Economics and Statistics, Government of Kerala, Trivandrum

Annexure 29

English, Malayalam and Botanical names of crops of Kerala

English name	Malayalam name	Botanical name
1	2	3
<i>Cereals</i>		
Paddy	Nellu	<i>Oryza sativa</i>
Ragi	Koovaraku	<i>Eleusine coracana</i>
Jowar	Cholam	<i>Sorghum vulgare</i>
Bajra	Kambu	<i>Pennisetum typhoides</i>
Kodamillet	Varagu	<i>Paspalum scrobiculatum</i>
Chama	Chama	<i>Panicum miliare</i>
Wheat	Gothampu	<i>Triticum vulgare</i>
Barley	Barley	<i>Hordeum vulgare</i>
Maize	Makke Cholam	<i>Zea mays</i>
<i>Pulses</i>		
Blackgram	Uzhunnu	<i>Phaseolus mungo</i>
Greengram	Cherupayar	<i>Phaseolus aureus</i>
Horsegram	Muthira	<i>Dolichos biflorus</i>
Redgram	Thuvara	<i>Cajanus cajan</i>
Cowpea	Perumpayar	<i>Vigna sinensis</i>
<i>Sugar</i>		
Sugarcane	Karimbu	<i>Sacharum officinarum</i>
Palmyrah	Kiarmpana	<i>Borassus flabellifera</i>
<i>Condiments and Spices</i>		
Chilly	Mulagu	<i>Capsicum annum</i>
Turmeric	Manjal	<i>Curcuma longa</i>
Cardamom	Elam	<i>Elettaria cardamom</i>
Coriander	Kothamalli	<i>Coriandrum sativum</i>
Mustard	Kadugu	<i>Brassica spp</i>
Pepper	Kurumulagu	<i>Piper nigrum</i>
Cumin	Jeerakam	<i>Cuminum cyminum</i>
Garlic	Veluthully	<i>Allium sativum</i>
Long pepper	Thippili	<i>Piper longum</i>
Ginger	Inchi	<i>Zingiber officinale</i>
Nutmeg	Jathi	<i>Myristica fragrans</i>
Cinnamon	Karukappatta	<i>Cinnamomum zeylanicum</i>
Clove	Grampu	<i>Eugenia caryophyllata</i>
Cinchona	Cinchona	<i>Cinchona officinalis</i>
Areca nut	Adarka	<i>Areca catechu</i>



810030

1	2	3
<i>Fruits</i>		
Banana	Vazha	<i>Musa paradisiaca</i>
Plantain	Vazha	<i>Mussepietium</i>
Bread fruit	Seemaplavu	<i>Artocarpus incisa</i>
Bullocks heart	Malamumthiri	<i>Anona reticulate</i>
Cashew	Kasumavu	<i>Anacardium occidentale</i>
Grape vine	Mumthiri	<i>Vitis vinifera</i>
Custard apple	Sotha Pazham	<i>Anona squamosa</i>
Guava	Pora	<i>Psidium guajava</i>
Jujube	Elantha	<i>Alzarpus jujuba</i>
Jack fruit	Plavu	<i>Artocarpus integrifolia</i>
Lemon	Naranga	<i>Citrus lemon</i>
Lime	Naranga	<i>Citrus aurantifolia</i>
Mango	Mavu	<i>Mangifer indica</i>
Pappaya	Pappaka	<i>Carica pappaya</i>
Pineapple	Kaithachakka	<i>Ananas sativa</i>
Pomegranate	Mathalam	<i>Punica granatum</i>
Sapota	Sapota	<i>Achras acharas sapota</i>
Pomollo	Bamplimas	<i>Citrus mahima</i>
Orange	Orange	<i>Citrus reticulate</i>
Mangosteen	Mangosteen	<i>Garcinia mangosteens</i>
<i>Vegetables</i>		
Tapioca	Maracheini	<i>Manihot utilissima</i>
Elephant ear	Chembu	<i>Celocasi antiquorum</i>
Elephant foot	Chena	<i>Amorphophallus</i>
Potato	Urulakizhangu	<i>Solanum tuberosum</i>
Sweet potato	Cheenikizhangu	<i>Impomoca batatas</i>
Radish	Mullangi	<i>Raphanus sativus</i>
Yam	Kachil	<i>Dioscorea spp</i>
Turnip	Seema Mullangi	<i>Brassica campestris</i>
Carrot	Carrot	<i>Daucus carota</i>
Bed pumpkin	Vollarimathan	<i>Cucurbita maxime</i>
Brinjal	Vazhuthana	<i>Solanum malengena</i>
Tomato	Thakkali	<i>Lycopersum esculentum</i>
Amaranthus	Cheera	<i>Amaranthus spp</i>
Lady's finger	Venda	<i>Ambelmoschus esculentus</i>
Bitter gourd	Pavakka	<i>Mamordica charantia</i>
Bottle gourd	Churakka	<i>Lagenaria siceraria</i>
Snake gourd	Padavalanga	<i>Trichosanthes angunia</i>
Ridge gourd	Peechanga	<i>Luffa acutangulata</i>

Source : Season and Crop Report of Kerala 1979 -80 & 1980 -81 Department of Economics & Statistics, March, 1985.

Annexure 30

Sowing, harvesting and peak marketing seasons of principal crops in Kerala state.

1	2	3	4		5	6
			Name of crop	Season		
Rice	Autumn	April-July	July-October	August-October	September-November	September-November
	Winter	August-November	October-January	November-January	December-March	December-March
	Summer	October-December	January-March	March-May	March-June	March-June
Ragi	I crop	April-July	August	September-November	September-November	September-November
	II crop	September-October	October-November	December-January	December-January	December-January
	III crop	May-June	September-October	October-November	October-November	October-November
Small millets		December	January-February	February	—	—
	Autumn	April-July	July-November	September-November	December-January	December-January
	Summer	January-February	March	April	April	April
Red gram	Autumn	May-August	June-September	August-October	August-October	August-October
	Winter	August-November	September-November	October-January	December-January	December-January
	Summer	February-March	May	May	June	June
Horse gram	Autumn	February-April	March-April	April-June	May-June	May-June
	Winter	September-November	October-November	November-January	November-February	November-February
	Summer	December-February	January-April	April	April	April
Green gram	Autumn	June-August	August-September	August-September	September-December	September-December
	Winter	October	November	November-December	November-December	November-December
	Summer	January	February-April	March-April	March-April	March-April
Black gram	Winter	March-June	July-August	June-September	September-October	September-October
	Summer	September-October	October-November	November-December	December-January	December-January
	Autumn	April-July	July-August	July-October	July-November	July-November
Other pulses	Winter	September-December	October-December	November-February	December-March	December-March
	Summer	December-March	January-April	February-June	April	April
	Autumn	October-February	—	October-December	November-December	November-December
Sugar cane	Winter	November-March	—	December-February	January-February	January-February
	Summer	June-October	September-October	October-January	January	January

1	2	3	4	5	6
Ginger	Autumn	March-July	—	November-February	December-February
Pepper	Winter	March-June	—	December-February	December-March
	Winter	June-August	July-October	November-February	February-March
Cotton	Summer	July	July-September	January-April	March-May
	Winter	June-October	November-December	December-March	February-March
Sesamum	Autumn	April-August	July-September	August-October	July-October
	Winter	August-October	October-December	December-April	December-February
Sweet Potato	Summer	December-February	February-April	March-May	March-May
	Autumn	April-July	—	September-November	November-February
Turmeric	Winter	October-November	—	January-February	February-March
	Summer	December-March	—	March-June	April-June
Lemongrass	—	April-July	—	November-February	November-March
	—	May-June	—	July-November	July-November
Tapioca	Autumn	July-October	—	January-February	January-February
	Winter	March-May	—	April-May	April-May
Mango	Summer	June-October	—	July-August	July-September
	—	October-November	—	November-March	December-February
Tender Arecanut	—	—	—	March-July	March-July
	—	—	December	April-May	—
Tubers	Autumn	February-March	June	April-May	April--May
	Winter	March-April	—	September	September
Banana	Autumn	August-September	April-May	July-September	August-September
	Winter	December-January	August-October	November-January	December-January
Tobacco	Winter	November-December	—	July-August	July-August
	—	—	—	November-January	December-January

Source: Season and Crop Report of Kerala 1979-80 & 1980-81
Department of economics & statistics, March, 1985

Annexure 31

Number and per cent of livestock and poultry in the districts according to 1977 and 1988 censuses
(includes all types)

District	Livestock						Poultry					
	1977		1982		1977		1982		1977		1982	
	No. (lakh)	Percent to total	No. (lakh)	Percent to total	No. (lakh)	Percent to total	No. (lakh)	Percent to total	No. (lakh)	Percent to total	No. (lakh)	Percent to total
Trivandrum	3.85	7.23	4.24	7.51	11.22	8.38	14.31	9.49	11.22	8.38	14.31	9.49
Quilon	6.62	12.44	6.81	12.07	13.99	10.45	15.12	10.02	13.99	10.45	15.12	10.02
Alleppey	4.86	9.13	4.69	8.03	17.06	12.74	15.88	10.53	17.06	12.74	15.88	10.53
Kottayam	5.22	0.81	4.92	8.72	11.84	8.84	12.07	8.00	11.84	8.84	12.07	8.00
Idukki	3.13	5.89	3.15	5.58	6.23	4.65	5.64	3.74	6.23	4.65	5.64	3.74
Ernakulam	5.05	9.50	5.28	9.35	15.51	11.58	16.24	10.77	15.51	11.58	16.24	10.77
Trichur	4.42	8.32	4.77	8.45	12.78	9.54	15.33	10.77	12.78	9.54	15.33	10.77
Palghat	5.28	9.94	5.73	10.16	10.04	7.50	12.97	8.60	10.04	7.50	12.97	8.60
Malappuram	4.19	7.87	4.83	8.56	12.62	10.17	16.74	11.09	12.62	10.17	16.74	11.09
Kozhikode	4.42	8.30	3.75	6.65	10.18	7.60	10.51	6.97	10.18	7.60	10.51	6.97
Wynad	—	—	1.99	3.53	—	—	3.64	2.42	—	—	3.64	2.42
Cannanore	6.15	11.57	6.28	11.12	11.40	8.51	12.37	8.20	11.40	8.51	12.37	8.20
Kerala	53.19	100.00	56.44	100.00	133.89	100.00	150.83	100.00	133.89	100.00	150.83	100.00

Source: Report on the 13th quinquennial livestock census—1982.

Annexure 32

District-wise livestock and poultry population in Kerala-1982 (lakh)

District	Cattle	Buffaloes	Goats	Pigs	Fowls	Ducks
Trivandrum	1.98	0.31	1.80	0.09	14.14	0.14
Quilon	4.19	0.24	2.36	0.01	14.79	0.31
Alleppey	3.19	0.10	1.38	0.006	13.78	2.06
Idukki	1.66	0.14	0.99	0.34	5.54	0.08
Kottayam	2.83	0.08	1.59	0.41	11.35	0.68
Ernakulam	3.04	0.27	1.80	0.15	14.90	1.26
Trichur	2.34	0.54	1.86	0.02	14.94	0.37
Palghat	2.74	1.02	1.95	0.01	12.86	0.10
Malappuram	1.93	0.65	2.25	0.002	16.57	0.13
Wynad	1.09	0.29	0.57	0.04	3.61	0.03
Kozhikode	2.12	0.07	1.54	0.01	10.42	0.07
Cannanore	3.85	0.37	1.88	0.18	12.29	0.07
Kerala	30.96	4.08	20.84	1.27	145.19	5.30

Source: Report on 13th quinquennial livestock census — 1982.

Annexure 33

Distribution of different categories of livestock in different census years and their percentage variations

Classification	Percentage variation over the previous census								
	1	2	3	4	5	6	7	8	9
Cattle	2856727 (61.55)	2856320 (57.86)	3006059 (56.52)	3096775 (54.86)	+ 3.76	- 0.01	+ 5.240	+ 3.017	
Buffalo	471235 (10.15)	471747 (9.56)	454400 (8.54)	405584 (7.24)	- 2.80	+ 0.11	- 3.678	- 10.084	
Sheep	11519 (0.25)	10321 (0.21)	2546 (0.05)	7059 (0.13)	-52.43	+ 10.40	- 75.332	+ 177.258	
Goats	1189218 (25.62)	1467657 (29.73)	1683297 (31.64)	2003795 (35.50)	- 9.38	+ 23.41	+ 14.692	+ 19.039	
Other Livestock	112676 (2.43)	130424 (2.64)	172731 (3.26)	128867 (2.27)	-	+ 15.75	+ 32.440	- 25.680	
Total Livestock	4641375 (100.00)	4935469 (100.00)	5319033 (100.00)	5644580 (100.00)	- 1.20	+ 6.36	+ 7.749	+ 6.120	

(Figures in brackets indicate the percentage distribution of different species under total Livestock in each Census years)

Source: Report on 13th quinquennial livestock census—1982.

Annexure 34

Statement showing the density of Cattle, Buffaloes and Livestock population in the different Districts of Kerala according to 1982 Census.

State/District	Cattle		Buffaloes		Livestock	
	Population	Density per km ²	population	Density per km ²	Population	Density per km ²
Kerala	3096775	80	408584	11	5644580	145
Trivandrum	197501	90	31438	14	424233	194
Quilon	419294	91	24081	5	681495	148
Alleppey	319225	170	9683	5	468605	249
Kottayam	283353	129	7931	4	492451	223
Idukki	166028	33	14193	3	314601	62
Ernakulam	304367	126	27272	11	527664	219
Trichur	233655	77	54331	18	477035	157
Palghat	273813	61	102354	23	573247	128
Malappuram	193364	54	64428	18	483243	136
Calicut	212568	91	7200	3	375180	160
Wynad	108964	51	28642	13	192121	93
Cannanore	8846	78	37031	7	627515	127

Source: Report on the 13th quinquennial livestock census - 1982.

Annexure 35

Number and density of Ovines in different districts — 1977 and 1982 Census years

State/Districts	Sheep		Goat		Ovines		Ovine Density per Sq. K. M.	
	1977	1982	1977	1982	1977	1982	1977	1982
Kerala	2546	7059*	1683297	2003795	1685843	2010854	43	52
Trivandrum	—	72	156493	185825	156495	186545	76	81
Quilon	91	1306	208150	285735	208241	237041	45	53
Alleppey	—	664	116355	138408	116355	139072	62	74
Kottayam	23	479	162760	159346	162783	159825	74	73
Idukki	138	762	89093	99141	89251	99903	18	20
Ernakulam	—	253	156280	183354	156280	180607	66	75
Trichur	—	482	162763	186370	162763	186852	54	62
Palghat	2237	1290	138672	194665	140909	195955	32	44
Malappuram	4	623	169658	224613	169662	225236	47	63
Kozhikode	39	77	151760	154030	151799	154107	41	66
Wynad	—	131	—	56982	—	57113	—	27
Cannanore	14	272	171313	188326	171327	188698	30	38

Source: Report on the 13th quinquennial Census 1982

Annexure 36

District-wise density of Poultry—1982

State/District	Area in km ²	No. of Poultry	Density Sq. k.m.	No. of fowls	Density Sq. k. m.	No. of Ducks	Density Sq. k. m.
1	2	3	4	5	6	7	8
Kerala	38863	15083410	388	14519039	374	530354	14
Trivandrum	2192	1431488	653	1414548	645	13697	6
Quilon	4620	1511521	327	1479058	320	30701	7
Alleppey	1883	1587940	843	1378143	732	206001	109
Kottayam	2204	1207218	548	1134613	515	67803	31
Idukki	5061	564355	112	554221	110	8336	2
Ernakulam	2408	1624152	674	1489939	619	126003	52
Trichur	3032	1533438	506	1494043	493	37030	12
Palghat	4480	1297144	290	1285688	287	10035	2
Malappuram	3548	1673560	472	1657291	467	13643	4
Kozhikode	2345	1050749	448	1041574	444	7497	3
Wynad	2132	364427	171	360887	169	2611	1
Cannanore	4958	1237425	250	1229034	248	6997	1

Source: Report on the 13th quinquennial census—1982.

Annexure 37

Percentage distribution of Cattle according to age groups under different census periods

Item	Number									Percentage		
	1966	1972	1977	1982	1966	1972	1977	1982	1966	1972	1977	1982
1	2	3	4	5	6	7	8	9				
Total cattle	2856727	2856320	3006059	3096775	100.03	100.00	100.00	100.00	100.00	(-0.01)	(5.24)	(+3.017)
Males over 3 years	519523	391594	371114	265973	18.19	13.71	12.35	8.59	12.35	(-24.62)	(-5.23)	(28.33)
Females over 3 years	1219242	1300171	1370980	1512615	42.68	45.54	45.61	48.84	45.61	(+6.64)	(+5.45)	(+10.33)
Males 3 years & Under	393534	389085	381532	392902	13.77	13.62	12.69	12.69	13.62	(-1.13)	(-1.94)	(+2.98)
Females 3 years & Under	724428	755470	882433	925285	25.36	27.13	29.35	29.88	27.13	(+7.05)	(+13.79)	(+4.96)

Figures in brackets indicate percentage variation over the previous census.

Source: Report on the 13th quinquennial livestock census - 1982.

Annexure 38

Comparative distribution of Male and Female Cattle (Desi and Improved) in 1977 and 1982

Classification	1977						1982	
	Desi	Imp.	Total	Desi	Imp.	Total	Desi	Total
1	2	3	4	5	6	7		
Total Cattle (A+B)	1651173	1354886	3006059	1643320	1453455	3096775		
A. Males total (I+II)	536015	216631	752646	441610	217265	658875		
I. Total males above								
3 years (i+ii)	349915	21199	371114	245685	20288	265973		
I. Males over 3 years castrated	325988	8028	344016	222527	10521	233048		
ii. Do. (a) Uncastrated								
for breeding only	2263	1199	3462	4743	5956	10699		
Do. (b) do. for breeding and work	9196	727	9923	18415	3811	22226		
Do. Others	12468	1245	13713	—	—	—		
II. Youngstock 3 years and under	186100	195432	381532	195925	196977	392902		
B. Female Total (I+II)	1115158	1138255	2253413	1201710	1236190	2437900		
I. Total adult females (i+ii+iii+iv)	684959	686021	1370980	785707	726908	1512615		
i. Cows in milk	334289	370751	705040	392791	471481	864272		
ii. Cows dry	290126	296348	585474	350315	211161	581476		
iii. Cows not calved even once	55773	19021	74794	40701	42782	83433		
iv. Cows not used for breeding	4771	901	5672	1900	1484	3384		
II. Youngstock 3 years and under.	430199	452234	882433	416003	509282	925285		

Source: Report on the 13th quinquennial livestock census 1982.

Annexure 39

Percentage distribution of Male and Female Cattle (Desi and Improved) in 1977 and 1982

Classification	Percentage Distribution						
	1977			1982			
	1	2	3	4	5	6	7
Total Cattle (A+B)				100.00	100.00	100.00	100.00
A. Males total (I+II)				25.04	26.87	14.95	21.28
I. Total males above 3 years (i+ii)				12.35	14.95	1.40	8.59
i. Males over 3 years castrated				11.44	13.54	7.24	7.53
ii. Do. (a) Uncastrated for breeding only				0.12	0.29	0.40	0.34
Do. (b) do. for breeding and work				0.33	1.12	0.26	0.72
Do. others				0.46	—	—	—
II. Youngstock 3 years and under				12.69	11.92	13.55	12.69
B. Female Total (I+II)				74.96	73.12	85.05	78.72
I. Total adult females (i+ii+iii+iv)				45.61	47.81	50.01	18.84
i. Cows in milk				23.45	23.90	32.44	27.91
ii. Cows Dry				19.48	21.32	14.53	18.13
iii. Cows not calved even once				2.49	2.48	2.04	2.69
iv. Cows not used for breeding				0.19	0.11	0.10	0.11
II. Young stock 3 years and under				29.35	25.31	35.04	29.88

Source: Report on the 13th quinquennial livestock census—1982

Annexure 40

Classification of Male and Female Buffaloes in 1977 and 1982

Classification	Number	
	1977	1982
1	2	3
Total Buffaloes (A + B)	454400	403584
A. Male total (I+II)	253816	219944
I. Total Male over 3 years (1+2+3+4)	218774	182801
1 Male Buffaloes over 3 years castrated	203463	166088
2 Male Buffaloes over 3 years uncastrated for breeding	1777	3282
3 Male Buffaloes over 3 years for breeding & work	4272	13431
4 Male Buffaloes over 3 years for work only	9262	—
II. Young stock 3 years and under	35042	34143
B. Female total (I+II)	200584	191640
Total adult female over 3 years (1+2+3+4)	157592	138791
1 Female over 3 years in milk	86698	82730
2 Female over 3 years dry	55646	48878
3 Female over 3 years not calved even once	9013	5710
4 Female over 3 years not used for breeding	6235	1473
Female young stock 3 years and under	42992	52849

Source: Report on the 13th quinquennial livestock census—1982.

Annexure 41

Age-distribution of Goats in the state in 1977 and 1982

Item	1977		1982		Variation over the previous census
	Number	Percent-age	Number	Percent-age	
1	2	3	4	5	6
Total Goats	1683297	100.00	2003795	100.00	+19.04
Male Goats 1 year & above	89818	5.34	127420	6.36	+41.86
Female Goats 1 year & above	866877	51.50	1038018	51.80	+19.74
Goats under 1 year					
1) Male	258803	15.37	286074	14.28	+10.54
2) Female	467799	27.79	552283	27.56	+18.06

Source: Report on the 13th quinquennial livestock census—1982.

Annexure 42

Distribution of Poultry in the Census years 1972, 1977 and 1982

Classification	1972			1977			1982			Percentage of increase over the previous census	
	Number	Percent-age	age	Number	Percent-age	age	Number	Percent-age	age	1977	1982
1	2	3	4	5	6	7	8	9			
Total poultry	12207454	100.00	13388850	100.00	15083410	100.00	+ 9.68	+ 12.66			
Hens	6154815	50.42	7071510	52.82	8761947	58.09	+ 14.89	+ 23.90			
Cocks	1588471	13.01	1922612	14.35	2174698	14.42	+ 21.04	+ 13.11			
Chicken	4101262	33.60	3962064	29.59	3582394	23.75	- 3.39	- 9.58			
Total ducks	361941	2.96	429569	3.21	530354	3.51	+ 18.68	+ 23.46			
Others	965	0.01	3095	0.09	34017	0.23	+ 220.73	+ 999.10			

Source: Report on the 13th quinquennial livestock census - 1982

Annexure 43

Number and percentage distribution of Poultry—(Fowls and Ducks) in the districts—1982

State/ Districts	Poultry			Fowls			Ducks			Others		
	Number		Percentage	Number		Percentage	Number		Percentage	Number		Percentage
	1	2	3	4	5	6	7	8	9			
Kerala	15083410	100.00	100.00	14519039	100.00	530354	100.00	34017	100.00			
Trivandrum	1431488	9.49	9.49	1414548	9.74	13697	2.58	3243	9.53			
Quilon	1511521	10.02	10.02	1479058	10.19	30701	5.79	1762	5.18			
Alleppey	1587940	10.53	10.53	1378143	9.49	206001	38.85	3796	11.96			
Kottayam	1207218	8.00	8.00	1134613	7.81	67803	12.79	4802	14.12			
Idukki	564355	3.74	3.74	554221	3.82	8336	1.57	1798	5.29			
Ernakulam	1624152	10.77	10.77	1489939	10.26	126003	23.76	8210	24.13			
Trichur	1533438	10.17	10.17	1494043	10.29	37030	6.98	2365	6.95			
Palghat	1297144	8.60	8.60	1285688	8.86	10035	1.89	1421	4.18			
Malappuram	1673560	11.09	11.09	1657291	11.41	3641	2.57	2626	7.72			
Kozhikode	1050749	6.97	6.97	1041574	7.17	7497	1.41	1678	4.93			
Wynad	364427	2.42	2.42	360887	2.49	2611	0.49	922	2.71			
Cannanore	1237425	8.20	8.20	1229034	8.47	6997	1.32	1394	4.10			

Source : Report on the 13th quinquennial livestock census—1982.

State/ District	Distribution of fowls		
	Cocks		
	1	2	3
Kerala	1010921	1163777	
Trivandrum	95869	130371	
Quilon	93581	106673	
Alleppey	66812	82857	
Kottayam	59793	76071	
Idukki	44788	54098	
Ernakulam	110238	101058	
Trichur	986000	116451	
Palghat	110955	120470	
Malappuram	131204	142990	
Kozhikode	73999	90704	
Wynad	32130	36076	
Cannanore	92952	105958	

Annexure 44

(Desi and improved) in different districts—1982

Hens		Chicks		Total Fowls	
Desi	Improved	Desi	Improved	Desi	Improved
4	5	6	7	8	9
3994409	4767538	1559977	2022417	6565307	7953732
				(100.00)	(100.00)
403014	551314	85330	148850	584213	830335
				(8.90)	(10.44)
501070	584948	87555	105231	682206	796852
				(10.39)	(10.02)
490227	587941	56478	93828	613517	764626
				(9.34)	(9.61)
355352	451488	66802	125107	481947	652666
				(7.34)	(8.21)
151761	182845	51437	69292	247986	306235
				(3.18)	(3.85)
421914	502006	142556	212167	674708	815231
				(10.28)	(10.25)
370562	420776	211418	276236	680580	813463
				(10.37)	(10.23)
270100	293958	233660	256345	614915	670773
				(9.37)	(8.43)
379580	403512	287090	312915	797874	859417
				(12.15)	(10.81)
259281	304321	140200	173069	473480	569094
				(7.21)	(7.14)
89236	100298	46734	56413	168100	192787
				(2.56)	(2.42)
302312	384131	150517	193164	545781	683253
				(8.31)	(8.59)

Annexure 45

Milk Production in Kerala

Year	Average milk production per day per animal in milk (kg)				Total milk production in lakh tonnes			
	Cow (Cross bred)	Cow (Non- descript)	Buffalo	Goat	Cow milk	Buffalo milk	Goat milk	Total milk Production
1	2	3	4	5	6	7	8	9
1977-78	3.162	1.618	2.770	0.395	6.240	0.870	0.670	7.780
1978-79	3.272	1.625	2.787	0.401	6.670	0.890	0.680	8.240
1979-80	3.448	1.625	2.812	0.411	6.993	0.925	0.717	8.635
1980-81	3.582	1.587	2.977	0.407	7.384	0.963	0.732	9.079
1981-82	3.822	1.627	3.152	0.400	8.046	1.028	0.744	9.818
1982-83	3.760	1.647	3.226	0.428	8.959	0.968	0.857	10.784

Source: Integrated Sample Survey

Bulletin of Animal Husbandry Statistics, 1984.

Annexure 46

Per capita availability of milk and egg in Kerala

Name of product	Year	Total quantity produced		Per capita availability
		3	4	
Milk	1964-65	2.210 lakh tonnes	30 grammes per day	
	1978-79	8.240	90	
	1981-82	9.818	104	
	1982-83	10.784	112	
	1983-84*	11.500	117	
Egg	1964-65	282 millions	15 eggs per year	
	1978-79	948	36	
	1981-82	1018	39	
	1982-83	1172	44	
	1983-84*	1260	47	

Source: Sample Survey results

* Provisional

All India per capita availability (1983-84)

Milk—142 gm. per day

Egg—14 Eggs per year

Annexure 47

Production and per capita availability of Major Livestock Products

Name of Product	Unit	INDIA				KERALA				
		1980-81	1981-82	1982-83	1983-84	1980-81	1981-82	1982-83	1983-84	
Milk	Million tonnes	31.5	33.3	34.7	36.3	Lakh	9.079	9.818	10.784	11.500*
Egg	Million Nos.	10105*	10755*	11400*	12200*	Million Nos.	962	1018	1172	1260*

* Provisional 1983-84 Department of Agriculture & Co-operation, Govt. of India
Bulletin of Animal Husbandry Statistics, 1984

Annexure 48

Monthly transport of eggs to Kerala from the neighbouring states by road 1984

Month	By road		By rail	Grand total
	Fowl Egg (In lakhs)	Duck Egg (In lakhs)	Fowl + Duck (In lakhs)	
January 1984	121.89	20.69		
February 1984	120.27	21.93		
March 1984	135.31	26.42		
April 1984	161.91	27.75		
May 1984	127.13	14.88		
June 1984	110.65	16.81		
July 1984	116.37	12.11		
August 1984	115.88	16.63		
September 1984	133.11	22.79		
October 1984	112.62	16.15		
November 1984	116.55	22.40		
December 1984	124.15	22.59		
Total	1495.84	241.15	95.82	1832.81

Source: Data collected from egg merchants in the Districts of the state
Bulletin of Animal Husbandry Statistics 1984

Annexure 49

Meat Production in Karala (1984)

Species of animals slaughtered	Average live body weight of slaughtered animals (kg)	Average dressed meat yield per animal slaughtered	No. of animals slaughtered		Total quantity of dressed meat obtained	
			1983	1984	1983 (M. T.)	1984 (M. T.)
1	2	3	4	5	6	7
Cattle (Young)	75	38.159	6844	12329	261.160	470.462
Cattle (Adult)	130	54.725	181513	219170	9932.391	11994.571
Buffalo (Young)	72	33.675	3013	3129	101.448	105.366
Buffalo (Adult)	147	58.900	77320	94798	4554.148	5583.602
Sheep & Goat	13	7.083	445986	495069	3157.581	3506.574
Pig	61	39.000	16552	21655	645.528	844.545
Total			731228	846159	18652.256	22506.123

Annexure 50

Month-wise movement of cattle and buffaloes from and to Kerala during 1983-84

Month	Incoming Animals			Outgoing Animal		
	Cattle	Buffalo	Total	Cattle	Buffalo	Total
1	2	3	4	5	6	7
April 1983	45049	20029	65078	72	22	94
May 1983	45001	20131	65132	41	109	150
June 1984	43872	21433	65305	3	102	105
July 1983	41992	19419	61411	2	—	2
August 1983	35508	17166	52674	9	8	17
September 1983	39183	20274	60257	5	—	5
October 1983	37455	15420	52875	392	668	1060
November 1983	35625	15374	50999	405	553	958
December 1983	38075	16256	54331	245	628	373
January 1984	39013	15843	54856	6	112	118
February 1984	36289	15625	51914	6	6	12
March 1984	41443	19511	60954	16	45	61
Total	479305	216481	695786	1202	2253	3455

Source: Bulletin of Animal Husbandry Statistics, 1984

Annexure 51

District wise number of Artificial Insemination done, calvings recorded and castrations performed under various schemes. Project/Institutions of the Department during 1984-85

District	Calving Recorded					Castrations done
	Artificial Inseminations done	Males	Female	Total		
1	2	3	4	5	6	
Trivandrum	115207	12622	11921	24543	2401	
Quilon	99108	10430	11146	21576	1760	
Pathanamthitta	28999	3617	3383	7000	913	
Alleppey	83294	10655	10683	21338	1548	
Kottayam	99139	12921	11887	24808	2602	
Idukki	21830	1442	1807	3249	1108	
Ernakulam	57930	6736	6465	13201	2357	
Trichur	89777	5773	5958	11731	5292	
Palghat	51642	3476	3408	6884	11943	
Malappuram	13564	1101	1063	2164	2773	
Calicut	25499	2733	2629	5362	1245	
Wynad	9218	647	582	1199	1086	
Cannanore	45789	4117	3935	8052	2088	
Total	740996	76270	74837	151107	37116	

Source: Bulletin of Animal Husbandry Statistics, 1984

Annexure 52

Distribution and percentage variations of pigs in different districts according to previous census years

State/ District	1972			1972			1982			Percentage variation of pigs over the previous Census 1977	1982
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage			
Kerala	129087	100.00	172375	100.00	127247	100.00	+ 33.5	- 26.2			
Trivandrum	14001	10.85	11644	6.76	8724	6.86	16.6	- 25.1			
Quilon	964	0.75	2528	1.46	1026	0.80	+ 58.5	- 59.4			
Alleppey	148	0.11	509	0.30	584	0.47	+244.0	+ 14.7			
Kottayam	43348	35.58	55727	32.33	41239	32.41	+ 28.6	- 26.0			
Idukki	25666	19.88	39643	23.00	34201	26.88	+ 54.5	- 13.7			
Ernakulam	32246	24.98	22720	13.18	15335	12.05	- 29.5	- 32.5			
Trichur	2141	1.66	1985	1.15	2118	1.66	- 7.3	+ 6.7			
Palghat	430	0.33	1378	0.80	982	0.77	-220.5	- 28.7			
Malappuram	86	0.07	77	0.04	183	0.14	- 10.5	+137.7			
Kozhikode	3772	2.92	9053	5.25	1279	1.00	+140.0	- 85.9			
Wynad	-	-	-	-	4348	3.42	-	-			
Cannanore	6285	4.87	27116	15.73	17228	13.54	+331.4	- 36.5			

Source: Bulletin of Animal Husbandry Statistics, 1984.

Annexure 53

VII plan proposal for the major fisheries schemes

Schemes	Outlay (Rs. in lakhs)
Fish Farms and Hatcheries	480
Inland Fisheries	192
Fishing Harbours and Landing Facilities	1328
Offshore and Deep Sea Fisheries	200
Processing, Preservation and Marketing	710
Mechanisation and Improvement of Fishing Crafts	605
Research	75
Education and Training	250
Social Amenities to Fishermen	980
Fishermen's Welfare Fund	400
Share Capital Contribution to the KSCFED and District Societies	300
Dispensaries	50
Kerala Fisheries and Inland Fisheries Development Corporations	100
Enforcement of Kerala Marine Fisheries Regulation Act	150
Strengthening of Statistical unit	20
Strengthening of Fisheries project Coll	20
Others	640
Total Fisheries	6500

Annexure 54

Meteorological data of the zone

Central Plantation Crops Research Institute, Kayamkulam (Onattukara) Mean of 10 years (1976-85)

	Jan-uary	Febru-ary	March	April	May	June	July	August	Sept-ember	October	Nov-ember	Decem-ber	Total/mean
Rainfall (mm)	1.1	8.9	32.0	49.1	206.2	388.1	340.3	228.9	176.9	289.0	275.6	35.9	2032.0
Rainy days	0.4	1.5	3.7	5.4	12.4	21.6	21.2	15.3	12.0	13.5	12.0	2.9	121.9

Meteorological data—Regional Agricultural Research Station, Kumarakom (Karappadam)—

Mean of 18 years (1965-1982)

	Janu-ary	Febru-ary	March	April	May	June	July	August	Sept-ember	Octo-ber	Novem-ber	Decem-ber	Total/mean
Rainfall (mm)	11.4	22.9	33.0	110.8	243.8	519.2	548.9	301.9	213.5	222.0	169.7	72.3	2469.4
Rainy days	0.9	1.4	3.1	9.3	13.3	24.3	25.4	21.9	15.2	15.9	10.0	4.3	145.0
Mean													
Maximum(°C)	31.2	32.0	33.1	32.4	32.4	29.6	28.5	29.1	30.1	30.4	30.4	30.8	30.8
Mean													
Minimum(°C)	23.9	24.9	26.1	26.5	26.7	25.4	24.7	25.0	25.4	25.3	24.9	24.9	25.3
RH (%)	83.6	83.5	82.1	84.7	85.8	90.5	89.3	91.4	87.6	88.0	87.6	84.9	86.7

Meteorological data—Rice Research Station, Moncompu (Karappadam)—Mean of 18 years—1965-82

	Janu-ary	Febru-ary	March	April	May	June	July	August	Septem-ber	Octo-ber	Nov-ember	Dec-ember	Total/mean
Rainfall(mm)	8.4	15.3	43.6	135.9	341.6	620.9	527.4	350.6	287.6	280.1	169.5	63.3	2844.2
Rainy days	1.2	1.8	4.1	11.8	16.9	25.7	24.1	20.7	17.8	18.4	11.1	4.9	158.5
Mean													
Maximum(°C)	32.9	33.6	34.6	34.6	33.4	30.5	30.0	30.2	31.2	31.8	32.2	32.1	32.2
Mean													
Minimum (°C)	23.3	24.1	26.0	26.8	26.6	25.3	24.6	24.8	25.6	25.6	25.8	24.1	25.2
RH (%)	67.3	65.3	63.5	76.4	76.1	84.5	84.9	82.5	78.6	75.6	72.9	73.5	70.1

Meteorological data - Rice Research Station, Vyttila (Pokkali)—Mean of 10 years (1976—85)

	Jan- uary	Febr- uary	March	April	May	June	July	August	Septe- mber	Octo- ber	Nove- mber	Dece- mber	Total/ mean
Rainfall (mm)	14.1	26.2	27.5	106.2	225.3	825.7	789.9	442.0	306.7	308.0	275.4	15.6	3262.5
Rainy days	0.7	1.5	2.2	6.9	8.3	24.0	22.7	20.2	14.3	13.1	9.3	1.2	124.4

Meteorological data—Seed Farm, Mannuthy (Kole)—Mean of 10 years (1976—1985)

	Jan- uary	Febr- uary	March	April	May	June	July	August	Septe- mber	Octo- ber	Nove- mber	Dece- mber	Total/ mean
Rainfall (mm)	3.0	10.9	3.5	57.2	166.4	760.0	781.0	476.1	206.2	235.5	180.1	16.1	2896.0
Rainy days	0.2	0.8	0.8	3.0	8.1	24.0	25.3	21.6	11.4	10.9	7.4	1.1	114.6
Mean maximum temp. (°C)	31.7	34.42	35.77	35.41	33.71	29.56	28.68	29.07	30.16	31.07	31.05	30.98	31.80
Mean minimum temp. (°C)	21.4	22.24	23.81	24.92	24.96	23.32	23.02	23.12	23.31	23.24	23.16	22.44	23.25
RH (%)	63.5	62.50	69.0	72.10	76.80	86.20	88.50	87.20	83.0	81.50	76.70	67.50	76.2

Annexure 55

Weekly rainfall of the zone (Central Plantation Crops Research Institute, Kayamkulam)
Onattukara situation

Std. week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C. V.
Jan. 1	0.0	0.0	0.0	0.0	0.0	9.8	0.0	0.0	7.0	36.8	5.36	205.39
" 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.16	229.13
" 3	0.0	0.0	0.0	0.0	0.0	9.4	0.0	0.0	18.0	0.0	2.74	211.96
" 4	0.0	0.0	6.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	2.60	233.45
" 5	0.0	0.0	0.4	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.08	200.00
Feb. 6	0.0	9.8	0.0	11.6	2.4	2.8	0.0	0.0	4.8	17.6	4.90	118.46
" 7	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	3.8	11.4	1.68	205.11
" 8	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	2.6	5.6	1.42	163.58
" 9	0.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	19.2	0.0	2.62	225.48
March 10	0.0	0.4	39.6	3.6	0.0	2.8	0.0	0.0	44.8	26.6	11.78	114.96
" 11	0.0	1.4	5.6	2.4	0.0	0.0	0.0	0.0	0.0	24.6	3.42	212.78
" 12	0.0	44.4	2.4	3.8	0.0	2.4	84.3	0.0	0.0	28.4	16.57	161.54
" 13	0.0	3.8	1.0	0.0	12.2	0.0	33.2	0.0	0.9	27.2	7.83	150.79
April 14	61.2	30.6	4.2	0.0	69.6	0.0	0.0	0.0	44.6	48.4	25.86	103.67
" 15	12.0	5.4	4.6	0.0	5.4	39.2	1.0	0.0	19.0	0.0	8.66	135.26
" 16	4.2	56.8	9.2	0.0	38.4	4.0	40.0	0.0	66.0	14.0	23.26	101.38
" 17	3.2	50.4	3.2	0.0	41.0	7.0	6.8	27.6	43.0	10.8	19.30	94.68
" 18	0.0	62.8	46.6	32.0	34.2	18.4	44.8	52.0	4.6	16.0	31.14	63.73
May 19	1.0	259.8	95.0	30.2	45.2	51.0	27.8	0.0	0.0	0.0	51.00	147.83
" 20	118.2	62.8	371.0	4.4	35.2	0.0	15.0	18.4	30.0	31.2	68.62	154.34
" 21	0.8	180.8	46.2	4.6	0.0	13.4	29.3	5.0	0.0	193.5	47.35	150.75
" 22	66.6	243.6	126.2	12.0	62.7	203.7	80.9	38.2	132.4	238.3	120.46	65.62
June 23	16.2	146.0	67.8	26.4	218.6	334.6	151.3	61.2	52.5	60.7	113.53	83.93
" 24	12.8	115.0	131.4	253.8	32.6	289.6	96.8	85.2	42.9	112.0	117.21	73.21
" 25	5.8	122.0	35.0	176.6	151.3	93.2	146.7	35.3	169.7	172.0	110.76	55.20
" 26	115.0	52.0	122.0	116.5	157.8	14.0	0.0	7.4	69.7	253.0	90.76	82.51

Annexure 55 (Contd.)

	1	2	3	4	5	6
July 27	54.8	101.6	98.2	75.4	142.4	
" 28	12.0	10.0	81.0	87.8	170.4	
" 29	99.8	173.0	47.0	20.0	102.8	
" 30	235.6	40.2	185.2	56.4	122.6	
" 31	32.6	7.8	19.7	80.2	32.2	
Aug. 32	0.0	17.4	134.7	31.6	29.7	
" 33	6.9	23.0	45.4	19.2	136.2	
" 34	101.5	95.8	113.4	68.4	66.8	
" 35	89.3	78.6	98.6	2.6	20.4	
Sept. 36	29.8	92.2	3.0	5.2	40.6	
" 37	31.2	26.0	19.0	48.0	4.6	
" 38	18.2	3.0	21.8	39.4	24.0	
" 39	1.6	3.9	72.4	83.4	66.8	
Oct. 40	55.8	51.7	37.8	9.8	66.8	
" 41	36.5	68.5	65.6	3.0	57.8	
" 42	114.0	95.7	19.6	17.4	29.8	
" 43	11.8	205.9	61.8	124.4	193.2	
" 44	71.0	86.2	446.0	157.0	13.8	
Nov. 45	72.2	27.2	152.5	80.6	4.8	
" 46	94.4	190.4	104.8	43.0	72.9	
" 47	85.2	39.2	22.2	11.0	0.0	
" 48	50.8	36.0	0.0	21.8	12.2	
Dec. 49	7.4	0.0	0.0	79.8	0.0	
" 50	0.0	16.0	20.0	23.0	29.0	
" 51	0.0	0.0	0.0	5.0	11.0	
" 52	0.0	0.0	66.6	0.0	1.2	

7	8	9	10	11	12	13
64.7	97.4	22.6	224.8	13.2	89.51	64.86
111.0	73.7	164.2	110.5	151.8	97.24	54.34
60.8	80.7	149.3	64.0	39.8	83.72	54.94
137.4	56.6	68.4	18.4	18.4	93.92	74.43
40.0	96.1	95.6	33.0	16.2	45.34	68.87
64.8	49.3	123.7	27.6	50.8	52.96	79.11
118.8	92.5	187.2	49.9	52.1	73.12	76.16
133.4	51.2	45.2	11.6	1.2	68.85	59.31
13.4	4.0	24.2	9.8	5.8	34.67	104.75
142.4	0.0	69.1	12.4	53.4	44.81	97.41
126.8	33.6	147.9	5.0	22.8	46.47	101.64
243.1	5.0	193.1	12.6	0.0	56.02	147.34
0.8	16.4	13.2	193.8	149.0	59.73	105.92
8.4	21.2	16.6	56.0	48.4	37.55	55.17
23.6	51.0	0.0	11.8	9.5	32.80	77.05
54.8	2.3	20.4	00.0	7.4	36.14	104.08
90.6	67.4	20.4	11.2	57.8	84.45	78.97
147.6	50.5	56.0	1.6	26.4	105.61	117.07
32.0	104.6	33.4	25.8	172.4	70.55	78.89
123.4	14.9	0.0	10.6	86.0	74.04	75.74
0.0	12.4	64.0	0.0	77.4	31.14	101.31
8.8	5.8	4.4	30.0	0.0	16.98	95.83
10.1	36.2	0.0	9.0	26.2	16.87	142.22
0.0	0.0	11.3	0.0	18.6	12.54	89.79
0.0	0.0	16.0	0.0	12.0	4.40	134.42
0.0	0.0	39.9	7.6	0.0	11.53	189.17

Annexure 56

Rainy days of the zone
(Central Plantation Crops Research Institute, Kayamkulam) Onattukara Situation

	Std. week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C.V.	
		1	2	3	4	5	6	7	8	9	10	11	12	13
January	1	0	0	0	0	0	0	1	0	0	1	3	0.50	184.39
"	2	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
"	3	0	0	0	0	0	0	1	0	0	2	0	0.30	213.44
"	4	0	0	0	1	0	0	1	0	0	0	0	0.20	200.00
"	5	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
February	6	0	0	1	0	1	0	1	0	0	1	1	0.50	100.00
"	7	0	0	0	0	0	0	0	0	0	1	1	0.20	200.00
"	8	0	0	0	0	1	0	0	0	1	1	1	0.30	152.75
"	9	0	0	0	0	0	0	0	0	2	0	0	0.20	300.00
March	10	0	0	0	3	1	0	1	0	0	4	1	1.00	134.16
"	11	0	0	0	1	0	0	0	0	0	0	1	0.20	200.00
"	12	0	0	2	0	1	0	0	2	0	0	1	0.60	133.33
"	13	0	0	0	0	0	1	0	1	0	0	1	0.30	152.75
April	14	2	2	2	1	6	3	0	0	2	2	3	1.90	92.52
"	15	1	1	1	1	7	1	3	2	3	3	0	1.90	103.61
"	16	1	1	2	1	7	1	1	1	3	3	2	1.09	98.32
"	17	0	0	3	1	7	2	1	2	2	2	2	2.10	86.37
"	18	0	0	3	2	6	2	3	3	1	1	1	2.20	72.73
May	19	0	0	5	3	3	2	2	1	0	0	0	1.60	101.55
"	20	3	3	5	5	1	3	0	3	2	2	4	2.80	54.87
"	21	0	0	5	3	1	0	2	1	0	0	5	1.80	101.84
"	22	3	3	6	6	2	5	6	3	4	7	7	4.30	44.19

Annexure 55 (Contd.)

	1	2	3	4	5	6
June	23	2	3	4	5	6
"	24	2	5	5	4	7
"	25	1	6	2	5	3
"	26	6	4	5	6	4
July	27	4	6	5	6	6
"	28	1	2	6	6	5
"	29	7	7	4	2	7
"	30	7	3	7	5	5
August	31	3	2	2	5	3
"	32	0	2	7	5	1
"	33	1	1	4	1	7
"	34	6	5	6	3	6
"	35	7	5	5	0	3
September	36	3	6	1	1	1
"	37	2	2	2	4	2
"	38	2	1	4	5	4
"	39	0	0	3	6	3
October	40	2	4	1	1	3
"	41	2	4	2	1	3
"	42	5	4	2	2	1
"	43	1	4	5	5	4
"	44	2	4	7	3	1
November	45	2	4	5	6	1
"	46	4	3	1	4	4
"	47	2	3	1	2	0
"	48	5	1	0	2	1
December	49	2	0	0	3	0
"	50	0	1	1	1	2
"	51	0	0	0	1	1
"	52	0	0	2	0	0

7	8	9	10	11	12	13
7	4	4	4	5	4.70	30.16
7	5	7	5	6	5.10	30.94
7	5	4	6	6	4.60	39.13
1	6	1	5	7	4.70	42.61
3	3	2	7	3	4.40	35.50
5	6	6	6	7	5.20	37.29
5	6	6	4	4	5.00	29.66
7	6	3	2	1	4.60	45.81
7	6	5	3	1	3.80	45.28
2	3	5	3	3	3.10	63.62
4	5	7	3	5	3.80	57.41
4	4	4	2	0	4.00	46.10
2	1	3	1	0	2.70	82.90
5	0	3	1	3	2.40	77.28
6	4	5	1	0	2.70	68.39
7	0	7	2	0	3.00	83.00
0	1	1	5	5	2.50	89.89
1	2	3	4	7	2.80	63.49
3	4	0	3	2	2.40	50.00
1	0	1	0	1	1.70	91.32
3	4	2	2	1	3.10	46.63
6	2	4	0	2	3.10	66.81
4	4	1	2	5	3.40	49.57
4	2	0	1	1	2.40	62.36
0	2	2	0	2	1.40	72.84
1	1	1	1	0	1.30	103.49
2	1	0	1	2	1.10	94.91
0	0	1	0	1	0.70	91.47
0	0	1	0	1	0.40	122.47
0	0	3	1	0	0.60	169.97

Annexure 57

Mean Maximum Temperature (°C) of the zone

(Central Plantation Crops Research Institute, Kayamkulam) Onattukara Situation

Std. week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C.V.
	2	3	4	5	6	7	8	9	10	11	12	13
January	33.0	32.9	33.8	32.8	33.6	32.8	33.5	32.9	32.9	32.0	33.02	1.47
"	33.1	33.0	33.7	32.8	34.2	31.9	33.0	33.2	31.9	33.1	32.99	2.02
"	32.3	33.4	32.4	33.9	34.3	33.0	32.2	34.2	31.8	33.5	33.10	2.56
"	33.2	33.7	32.1	35.4	33.4	32.5	33.5	34.0	31.1	33.9	33.48	2.55
"	33.8	33.0	33.3	33.6	33.4	33.4	33.4	33.7	33.3	33.6	33.45	0.66
February	33.4	32.6	34.2	34.5	34.1	33.5	33.1	33.3	32.8	32.6	33.43	1.89
"	33.0	32.5	33.9	32.9	33.8	33.3	33.4	33.2	32.5	32.8	33.13	1.39
"	34.0	33.5	34.2	32.7	33.4	33.7	33.6	33.8	33.8	33.7	33.64	1.14
"	33.3	34.1	34.6	34.1	34.0	34.0	34.4	34.2	33.1	33.9	33.98	1.27
March	33.6	34.6	33.4	34.4	34.0	34.9	34.2	34.0	30.7	33.7	33.75	3.28
"	34.3	34.2	33.1	33.9	34.6	35.7	34.3	34.5	33.9	34.5	34.30	1.82
"	34.4	33.5	34.3	34.7	34.9	35.8	33.7	34.3	34.5	33.6	34.37	1.90
"	33.9	34.9	34.9	35.2	35.2	35.2	33.6	35.4	34.7	33.7	34.67	1.86
April	33.0	34.1	34.8	34.8	33.5	34.8	34.4	35.7	33.1	34.2	34.24	2.36
"	33.9	34.3	34.1	35.3	34.5	33.4	34.6	35.4	33.3	34.1	34.29	1.93
"	33.5	34.3	34.9	34.0	35.5	34.0	34.1	35.1	32.3	34.3	34.20	2.48
"	33.1	33.7	34.8	34.1	34.5	34.2	33.5	34.7	32.5	34.4	33.95	2.08
"	33.4	33.8	34.5	33.8	33.7	31.1	32.9	34.1	33.6	34.0	33.49	2.67
May	33.3	30.7	33.5	32.8	34.0	33.5	33.4	34.7	34.0	34.8	33.47	3.27
"	32.0	31.9	31.2	33.6	34.2	34.1	33.3	33.9	33.9	34.3	33.24	3.20
"	33.0	32.3	31.2	33.2	34.5	34.2	33.2	33.9	33.2	30.0	32.86	3.98
"	32.0	30.5	29.8	33.8	32.3	30.4	31.6	33.4	31.8	29.1	31.47	3.58
June	32.9	31.7	29.8	33.0	31.6	29.1	30.8	32.5	30.8	29.9	31.21	4.13
"	32.2	29.6	29.2	30.7	32.7	29.5	30.2	31.0	31.4	30.6	30.71	3.57
"	32.4	29.3	31.3	30.1	30.7	29.4	29.2	31.2	29.8	29.4	30.28	3.38
"	30.3	31.2	29.1	31.6	30.7	30.9	30.5	32.3	29.8	28.7	30.51	3.42

Annexure 57 (Contd.)

	1	2	3	4	5	6
"	27	30.7	30.0	30.4	30.4	31.0
July	28	31.5	30.9	29.0	30.9	29.6
"	29	30.3	29.4	29.8	31.4	29.6
"	30	28.4	29.7	28.2	28.2	29.9
"	31	30.4	30.5	29.8	29.0	30.1
August	32	31.3	30.6	28.8	30.8	31.6
"	33	30.8	31.0	31.1	31.8	30.0
"	34	29.2	29.6	28.1	30.3	30.6
"	35	28.7	31.0	29.2	31.9	31.1
September	36	31.0	30.0	31.2	32.6	31.0
"	37	30.4	30.4	30.3	31.8	32.0
"	38	31.3	32.2	30.5	30.5	32.0
"	39	32.1	31.9	30.2	30.1	31.4
October	40	32.8	33.3	31.1	31.2	31.1
"	41	31.3	31.8	32.1	31.8	31.0
"	42	29.6	30.6	31.7	32.8	30.9
"	43	32.4	29.1	31.6	32.6	31.8
"	44	31.3	31.6	31.1	31.7	32.2
November	45	31.7	31.5	29.4	30.9	32.7
"	46	31.3	30.5	32.1	31.1	31.9
"	47	30.8	32.0	32.0	31.1	32.0
"	48	30.9	30.5	32.5	32.9	32.6
December	49	32.3	33.4	33.3	32.4	32.4
"	50	33.0	32.7	33.2	31.8	32.7
"	51	33.7	33.1	33.4	33.5	32.0
"	52	32.9	32.8	31.7	33.8	31.4

7	8	9	10	11	12	13
31.7	30.8	32.5	29.4	30.3	30.72	2.70
31.1	29.7	30.9	29.8	29.5	30.29	2.68
30.8	30.0	30.1	30.3	29.2	30.09	2.08
29.0	30.1	30.8	30.1	30.5	29.49	3.12
29.0	29.2	30.0	30.8	30.5	30.03	2.35
30.5	29.5	30.5	29.8	30.4	30.38	2.59
29.7	29.4	29.9	31.4	30.3	30.44	2.43
29.9	30.3	29.9	30.7	30.5	29.91	2.51
30.6	30.4	31.1	30.8	30.8	30.56	2.93
30.5	30.8	30.2	30.9	31.3	30.95	2.19
29.3	30.7	31.0	31.0	30.6	30.75	2.38
29.2	30.9	29.7	32.2	30.9	30.94	3.13
31.5	31.0	31.3	30.2	30.6	31.03	2.22
31.6	31.9	31.4	28.6	30.9	31.39	3.79
31.2	31.5	32.4	30.1	31.7	31.49	1.94
32.1	32.2	32.0	30.9	31.8	31.46	2.85
30.9	32.1	31.5	30.6	31.4	31.40	3.07
29.4	31.0	31.7	32.7	31.9	31.46	2.66
30.0	31.2	31.7	32.0	30.0	31.11	3.15
31.6	31.6	31.7	32.4	30.4	31.46	1.96
31.5	32.9	31.9	31.0	31.3	31.65	1.89
30.6	32.2	32.0	30.6	31.8	31.66	2.73
32.0	31.3	32.8	32.2	31.9	32.40	1.86
32.0	32.8	33.0	32.3	31.4	32.49	1.73
32.2	32.6	32.1	32.2	33.0	32.78	1.85
31.1	32.9	31.4	32.8	33.5	32.43	2.79

Annexure 58

Mean Minimum Temperature of the zone (°C)
(Central Plantation Crops Research Institute, Kayamkulam (Onattukara Station))

Std. week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C.V
	2	3	4	5	6	7	8	9	10	11	12	13
January	19.0	19.9	21.5	20.1	20.4	22.6	20.5	17.1	21.3	23.3	20.58	8.06
"	21.0	21.2	19.7	21.9	19.7	20.4	20.5	16.9	20.5	21.0	20.28	6.38
"	21.0	19.6	19.1	21.4	19.1	22.4	19.1	18.3	22.0	21.5	20.34	6.89
"	18.6	21.0	22.2	21.5	19.0	21.4	20.2	18.0	20.2	19.6	20.20	6.21
"	21.6	20.5	21.5	23.4	22.9	21.1	21.3	20.5	20.9	21.7	21.54	4.19
February	21.7	23.1	22.1	22.4	20.7	22.3	21.8	21.2	22.8	22.2	22.03	3.08
"	20.2	21.4	23.2	24.0	20.5	22.6	21.0	20.7	22.4	23.5	21.95	5.89
"	23.1	23.1	23.0	24.0	21.3	20.6	22.1	21.7	22.7	23.0	22.46	4.30
"	21.8	23.1	21.4	22.8	23.5	23.0	22.4	21.3	21.7	23.8	22.48	3.77
March	22.8	23.5	24.0	23.7	23.6	23.0	23.2	22.0	22.2	24.1	23.21	2.92
"	22.8	25.4	24.7	24.6	23.3	24.3	23.0	22.8	22.4	23.7	23.70	4.01
"	23.6	24.0	24.8	25.1	23.3	24.1	23.5	24.1	23.7	24.9	24.11	2.47
"	24.0	24.9	24.6	25.1	24.2	24.4	23.5	23.3	24.1	24.0	24.21	2.22
April	23.3	25.7	25.7	25.4	23.8	25.8	25.0	23.9	24.6	24.0	24.72	3.55
"	25.0	25.0	25.8	25.0	26.0	25.5	25.0	24.7	24.9	25.6	25.35	1.82
"	24.7	24.8	25.9	24.7	24.9	25.5	23.6	24.2	24.3	25.4	24.80	2.59
"	21.8	24.1	24.8	25.1	25.0	25.0	24.9	23.6	25.0	25.2	24.45	4.11
"	24.2	24.7	24.6	25.4	25.2	24.6	24.7	24.8	25.4	26.1	24.97	2.10
May	24.9	24.3	25.0	24.9	25.1	24.7	24.4	25.0	26.0	25.6	24.99	1.93
"	24.7	24.8	24.6	24.9	25.4	25.6	24.2	24.7	25.0	25.0	24.89	1.52
"	25.9	24.6	25.4	24.9	25.0	25.0	23.9	24.2	26.0	24.2	24.98	2.86
"	24.1	25.0	24.0	25.2	24.6	24.4	24.1	24.8	27.8	23.4	24.74	4.60
June	24.5	24.5	23.4	25.2	23.6	23.6	23.2	23.7	24.0	23.7	23.94	2.44
"	24.6	23.3	22.5	23.5	24.8	22.3	22.9	22.9	24.3	24.2	23.53	3.61
"	24.2	23.4	23.6	23.7	24.2	23.6	23.3	23.5	23.9	23.3	23.64	1.30
"	22.6	24.3	23.4	24.1	24.0	23.6	23.7	24.8	23.6	23.1	23.74	2.49

Annexure 58 (Contd.)

	1	2	3	4	5	6
July	27	23.8	23.8	23.2	24.2	23.2
"	28	24.7	23.7	23.1	23.6	23.2
"	29	22.7	23.9	23.0	23.9	23.6
"	30	23.1	23.6	23.1	23.8	22.8
"	31	24.0	24.4	23.8	23.5	23.5
August	32	24.2	24.2	23.2	23.9	23.7
"	33	23.8	24.5	24.0	23.9	23.2
"	34	23.4	24.0	23.3	24.2	23.7
"	35	23.2	23.6	23.2	23.7	23.6
September	36	23.9	23.8	23.8	24.4	23.9
"	37	23.9	23.9	23.3	24.0	23.6
"	38	23.7	23.9	23.3	24.1	23.7
"	39	23.9	24.2	23.8	23.8	24.2
October	40	23.8	23.7	23.2	24.1	24.1
"	41	24.2	24.0	24.2	24.4	24.3
"	42	23.2	24.2	24.1	24.1	24.2
"	43	24.0	23.8	23.9	24.1	23.6
"	44	23.5	23.6	23.4	24.1	23.8
November	45	23.7	23.8	23.7	24.0	23.3
"	46	23.8	23.7	23.2	23.8	23.8
"	47	23.6	23.1	22.5	23.7	23.5
"	48	24.0	22.9	21.5	24.3	23.1
December	49	22.8	22.1	21.6	23.6	22.6
"	50	21.1	20.8	23.4	23.0	22.0
"	51	22.6	21.0	21.4	22.2	22.8
"	52	20.2	20.6	23.0	22.0	22.2

7	8	9	10	11	12	13
24.0	23.1	23.4	27.2	23.7	23.93	4.79
24.0	22.4	22.8	23.3	23.4	23.42	2.59
23.6	22.4	22.1	23.5	23.0	23.17	2.57
23.5	22.8	22.5	23.5	23.2	23.19	1.69
23.1	22.1	23.0	23.7	23.8	23.49	2.57
24.4	22.4	22.7	22.9	23.2	23.48	2.82
21.3	23.1	22.7	23.1	23.5	23.31	3.60
22.9	23.1	22.6	24.1	24.0	23.53	2.23
22.9	24.3	23.6	23.6	24.1	23.68	1.40
23.8	23.7	23.3	23.7	24.3	23.86	1.23
23.3	23.3	22.9	23.0	23.7	23.49	1.56
23.8	24.2	22.1	23.7	23.5	23.60	2.37
24.2	23.5	23.1	23.7	23.7	23.81	1.39
23.4	23.2	23.6	24.0	24.2	23.73	1.50
23.7	23.6	22.3	23.8	23.4	23.79	2.46
23.3	23.6	22.8	20.4	23.2	23.31	4.63
23.9	22.5	22.8	23.0	24.0	23.56	2.32
23.1	22.5	22.8	23.2	23.5	23.31	1.80
23.5	21.8	21.6	24.0	23.4	23.28	35.3
24.0	22.2	21.5	23.4	23.0	23.24	3.31
23.1	22.8	21.8	23.4	23.0	23.05	2.37
23.1	22.2	21.4	21.8	20.5	22.48	5.10
22.6	12.6	22.3	21.6	22.9	22.17	4.65
21.1	16.3	21.7	21.4	21.9	21.47	6.14
22.4	18.9	22.0	18.4	20.9	21.26	6.79
19.8	19.1	22.8	23.1	20.1	21.29	6.63

Annexure 59

Relative Humidity (%) of the Zone
(Central Plantation Crops Research Institute, Kayamkulam) Onattukara situation

Std. week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C. V.
	2	3	4	5	6	7	8	9	10	11	12	13
January	66.0	67.5	65.0	68.5	69.5	70.5	66.0	65.5	72.0	79.0	68.93	5.81
"	59.5	68.5	61.0	70.5	61.5	72.5	66.5	65.5	70.0	59.0	65.45	7.15
"	65.0	67.0	66.0	69.0	63.0	72.5	65.5	66.5	77.5	68.0	67.65	5.99
"	62.5	66.5	72.0	17.5	66.5	71.0	66.5	63.5	69.5	68.0	62.35	24.41
"	64.5	72.0	61.0	72.5	62.5	67.5	67.0	76.5	67.5	69.0	68.00	6.62
February	62.0	70.5	68.5	69.0	68.0	73.0	71.5	74.5	74.0	64.0	69.50	5.62
"	64.0	67.0	67.5	73.5	67.0	68.5	70.5	71.5	76.5	75.5	70.15	5.51
"	66.5	69.0	69.0	77.0	70.0	68.5	72.0	74.5	74.0	70.0	71.05	4.33
"	72.5	72.5	66.0	70.0	76.5	73.0	74.0	74.5	68.5	71.0	71.85	4.06
March	68.0	69.5	76.0	74.5	73.5	71.0	73.5	74.5	68.5	72.5	72.15	3.63
"	71.0	74.0	76.5	76.0	72.0	69.0	76.0	74.5	75.5	74.5	73.90	3.17
"	72.0	77.0	74.0	74.5	74.5	73.0	76.0	73.5	74.0	66.0	73.55	3.84
"	74.0	70.0	74.0	72.0	72.5	73.0	79.0	72.5	73.5	75.5	73.60	3.08
April	76.5	78.0	73.5	73.0	79.0	73.5	74.5	72.0	80.3	78.0	75.83	3.62
"	76.0	75.5	76.5	72.0	77.0	80.0	76.5	73.5	79.0	75.5	75.80	3.17
"	77.0	73.5	74.0	76.0	77.0	74.6	76.5	73.0	81.1	75.5	75.81	2.94
"	73.5	76.5	73.5	74.5	76.5	76.5	78.5	76.0	78.0	72.5	75.60	2.52
"	71.0	80.0	75.0	76.5	80.0	78.5	78.0	76.0	79.7	73.5	76.82	3.72
May	72.0	84.5	79.5	78.5	80.0	81.5	77.5	73.5	77.0	74.5	77.85	4.64
"	81.5	82.0	87.0	76.0	81.5	75.5	77.0	75.5	78.7	75.0	78.97	4.72
"	76.0	80.0	81.0	75.5	77.0	74.5	80.0	76.0	79.2	84.5	78.37	3.76
"	80.0	86.5	86.5	78.5	85.5	87.0	86.5	78.0	83.3	87.5	83.93	4.21
June	76.5	86.5	85.5	79.5	85.5	90.0	88.5	82.0	82.5	84.0	84.05	4.60
"	78.0	89.0	85.0	88.5	81.0	92.0	87.5	81.0	86.0	85.0	85.30	4.76

Annexure 59 (Contd.)

	1	2	3	4	5	6
June	25	76.5	90.0	80.0	87.5	89.0
"	26	84.5	82.0	85.0	82.5	80.5
July	27	81.0	84.5	85.0	84.5	86.0
"	28	81.0	82.0	87.5	87.0	86.5
"	29	86.5	87.0	84.5	82.5	90.0
"	30	83.5	83.5	83.0	96.0	85.0
"	31	82.5	82.0	83.0	87.5	84.0
August	32	81.5	81.0	87.5	82.0	85.0
"	33	82.0	82.5	84.0	79.5	87.0
"	34	83.5	86.0	87.5	82.0	86.0
"	35	85.5	83.5	87.0	78.5	84.5
September	36	81.5	83.5	79.0	82.5	80.0
"	37	83.0	82.5	80.5	82.0	78.5
"	38	78.0	76.0	82.5	83.5	78.5
"	39	76.0	77.0	83.5	84.0	83.5
October	40	93.5	81.5	79.0	82.5	81.0
"	41	84.0	82.0	83.0	80.0	83.0
"	42	86.5	86.5	81.5	79.0	85.0
"	43	79.0	87.5	81.5	80.5	80.5
"	44	81.5	84.0	87.5	80.5	77.5
November	45	82.5	80.0	83.5	84.5	76.0
"	46	84.5	84.0	77.5	84.5	81.5
"	47	84.0	80.5	77.5	80.0	79.0
"	48	83.0	80.0	94.5	78.0	76.0
December	49	75.0	73.0	71.0	80.5	77.5
"	50	72.0	71.0	75.0	76.0	78.5
"	51	71.0	69.5	69.0	73.5	77.5
"	52	72.5	68.5	76.5	69.0	75.0

7	8	9	10	11	12	13
88.0	84.5	86.0	86.5	88.0	85.60	4.71
80.5	87.0	81.0	85.0	87.5	83.55	2.96
82.5	85.0	81.5	86.0	86.0	84.18	2.14
86.5	85.0	86.0	85.5	89.0	85.60	2.70
84.0	83.5	87.5	83.0	82.0	85.10	2.82
88.5	85.0	83.0	83.5	82.5	86.35	4.50
86.5	86.5	85.5	84.5	84.5	84.65	2.06
86.0	85.0	85.5	81.0	83.0	83.75	2.65
89.5	87.0	83.0	81.0	82.5	84.30	3.77
83.0	85.5	84.0	78.0	81.5	84.20	3.56
82.0	84.0	83.0	79.5	83.5	83.10	2.93
85.0	82.5	81.0	80.0	82.5	81.75	2.11
87.0	83.5	83.5	78.0	80.5	81.90	3.07
90.5	83.0	85.0	75.5	73.5	80.65	6.16
80.5	82.0	80.0	84.0	81.5	81.20	3.34
78.5	80.0	80.0	87.0	80.0	82.30	5.31
79.5	82.0	76.0	81.0	79.5	81.00	2.75
81.5	78.5	77.5	72.5	78.5	80.70	5.21
83.5	80.0	77.5	79.0	79.5	80.85	3.38
87.5	87.0	82.5	75.5	78.0	82.15	5.03
84.0	83.0	78.5	78.5	85.5	81.60	3.65
80.5	81.0	75.0	78.0	80.5	80.70	3.73
78.5	75.5	81.0	79.0	76.5	79.15	2.91
82.0	78.5	73.5	80.5	71.5	79.75	7.52
79.0	74.0	71.5	72.0	76.0	74.95	4.13
72.0	69.5	74.0	68.5	76.5	73.30	4.18
71.0	66.0	73.0	68.5	69.0	70.80	4.32
69.0	64.5	79.5	69.5	67.0	70.90	6.45

Annexure 60

Weekly Rainfall (m.mis) of the zone
Regional Agricultural Research Station, Kumarakom, Karappadam situation

Std. Week No.	1978											Mean	C. V.
	1	2	3	4	5	6	7	8	9	10	11		
January	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.6	55.3	9.11	201.74	
"	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	2.50	264.58	
"	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.7	0.0	5.59	264.58	
"	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	
"	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	
February	6	0.0	0.0	0.0	1.4	13.0	0.0	0.0	4.0	0.0	2.30	184.87	
"	7	0.0	0.0	0.2	0.0	0.0	0.0	0.0	50.5	1.5	6.53	254.84	
"	8	0.0	0.0	20.5	0.0	0.0	0.0	52.6	15.0	1.4	23.51	164.65	
"	9	0.0	0.0	0.0	0.0	0.0	0.0	10.4	119.2	0.0	1.47	230.80	
"	10	16.0	2.2	2.2	5.6	22.0	0.0	119.2	0.0	0.0	20.62	184.48	
"	11	0.0	0.0	0.0	0.0	28.5	0.0	5.0	5.0	1.5	4.37	211.72	
March	12	2.0	3.2	3.2	0.0	4.0	0.0	0.0	0.0	4.0	2.78	103.22	
"	13	6.0	0.0	0.0	13.6	4.0	17.0	14.2	14.2	57.0	13.85	125.86	
"	14	49.0	0.0	0.0	15.0	0.0	0.0	129.2	110.6	110.6	37.97	131.71	
"	15	15.0	0.0	0.0	0.0	34.0	0.0	9.2	9.2	1.0	7.40	153.23	
"	16	3.0	0.4	0.4	3.6	10.0	40.0	51.2	51.2	0.0	13.53	140.29	
"	17	10.0	10.8	10.8	12.0	44.0	22.0	1.2	1.2	16.1	15.51	78.30	
"	18	10.0	39.4	39.4	4.8	26.0	19.2	18.0	18.0	1.0	19.10	67.00	
May	19	68.0	25.4	25.4	12.0	9.8	34.0	0.0	0.0	20.6	21.23	93.34	
"	20	399.4	0.0	0.0	6.0	0.0	75.0	28.2	28.2	40.0	70.09	180.78	
"	21	33.2	35.0	35.0	0.0	0.0	22.0	1.8	1.8	245.6	47.20	185.24	
"	22	144.6	39.4	39.4	99.0	124.4	72.1	129.4	129.4	285.8	113.35	68.83	
"	23	38.9	25.6	25.6	156.0	329.6	174.5	72.1	72.1	93.8	114.79	84.32	
"	24	61.0	313.2	313.2	35.0	356.8	119.4	153.6	153.6	161.2	173.88	60.57	

Annexure 60 (Contd.)

	1	2	3	4	5
June	25	24.0	126.9	168.0	175.2
"	26	122.4	44.2	74.0	17.0
July	27	90.8	67.8	217.0	56.0
"	28	—	81.8	218.5	33.4
"	29	23.6	3.8	176.0	37.8
"	30	256.8	84.2	83.0	98.6
"	31	32.4	69.6	47.0	29.0
August	32	108.4	33.4	28.0	90.0
"	33	34.2	6.0	102.0	116.4
"	34	82.0	28.6	46.4	48.6
"	35	78.4	0.0	56.0	31.0
"	36	5.0	0.4	8.8	54.4
"	37	8.8	39.6	0.0	176.0
September	38	3.6	51.6	2.0	164.0
"	39	5.6	57.3	12.4	3.4
"	40	2.2	1.8	23.4	0.0
"	41	6.0	4.4	24.0	70.0
October	42	49.2	1.2	36.5	0.0
"	43	22.8	5.7	63.5	0.0
"	44	92.6	68.2	11.0	25.0
"	45	80.2	48.2	0.0	6.6
November	46	0.4	86.0	91.5	65.4
"	47	85.0	21.2	37.2	34.0
"	48	0.0	33.2	12.0	22.0
"	49	0.0	53.0	13.0	35.0
"	50	0.0	2.4	2.0	0.0
December	51	0.0	20.0	9.0	0.0
"	52	4.0	—	6.0	0.0

6	7	8	9	10	11
162.6	57.6	175.8	196.0	135.76	42.97
146.0	48.0	120.2	318.0	111.22	79.74
113.0	8.2	275.0	52.0	109.98	77.07
79.5	218.4	163.3	150.2	118.08	65.01
59.0	173.4	154.0	61.3	86.11	76.45
37.8	89.0	11.8	40.0	87.65	79.45
112.5	122.8	38.5	39.0	61.35	56.38
115.0	150.0	47.6	62.6	79.37	51.28
142.6	102.4	69.2	44.4	77.15	56.35
74.6	172.8	29.0	22.0	63.00	73.29
3.0	39.4	20.4	40.0	33.53	73.29
2.5	104.2	23.6	90.4	36.16	107.96
14.0	188.8	9.0	57.2	61.66	116.62
1.8	204.6	6.5	2.0	54.11	141.67
45.0	69.3	120.0	131.7	55.59	83.74
40.2	29.0	73.2	101.8	34.95	104.42
35.2	0.0	25.2	10.2	21.88	98.06
1.0	3.0	0.0	11.0	12.74	141.19
45.2	9.9	51.8	33.4	29.04	74.85
62.0	88.9	0.6	66.5	51.84	63.35
37.1	88.8	28.2	139.5	53.58	81.77
4.0	3.0	24.0	22.4	37.09	96.02
3.0	0.6	8.2	15.2	25.55	100.74
7.0	3.5	135.7	0.0	26.68	159.68
11.0	1.4	0.0	3.0	14.55	124.88
0.0	37.1	0.0	45.4	10.86	162.85
0.0	0.0	0.0	15.9	5.61	138.27
0.0	22.4	0.0	0.0	4.05	179.45

Annexure 61

Rainy days of the zone
(Regional Agricultural Research Station, Kumarakom) Karappadam situation

	Std.week	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C. V.
	1	2	3	4	5	6	7	8	9	10	11
January	1	0	0	0	0	0	0	1	3	0.50	200.00
"	2	0	0	0	0	0	0	0	1	0.13	264.58
"	3	0	0	0	0	0	0	3	0	0.38	264.58
"	4	0	0	0	0	0	0	0	0	0.00	0.00
"	5	0	0	0	0	0	0	0	0	0.00	0.00
February	6	0	0	0	1	0	0	0	0	0.13	264.58
"	7	0	0	0	0	0	0	4	0	0.50	264.58
"	8	0	1	0	0	0	0	2	2	0.62	137.11
"	9	0	0	0	0	0	0	2	0	0.25	264.58
March	10	1	0	0	2	0	0	5	0	1.00	165.83
"	11	0	0	0	2	0	0	1	0	0.38	185.59
"	12	0	0	0	1	1	0	0	1	0.39	129.10
"	13	1	0	1	1	2	0	2	2	1.13	69.39
April	14	2	0	1	2	0	0	3	3	1.13	112.77
"	15	2	0	0	2	0	0	0	2	0.75	129.10
"	16	1	0	0	2	2	0	3	0	1.00	111.80
"	17	1	1	0	3	1	1	0	2	1.13	82.40
"	18	1	2	0	2	1	2	0	0	1.00	86.60
May	19	3	2	1	2	2	0	0	1	1.38	72.16
"	20	5	0	1	0	3	2	3	3	2.12	76.02
"	21	2	1	0	0	3	0	0	5	1.38	125.64
"	22	6	2	3	6	5	0	5	7	4.25	52.28
"	23	2	2	5	6	6	3	6	4	4.25	38.57
June	24	5	6	1	7	5	6	7	7	5.50	34.02

Annexure 61 (Contd)

	1	2	3	4	5
"	25	3	6	5	7
"	26	4	5	5	2
July	27	4	6	7	2
"	28	5	4	6	3
"	29	3	0	5	4
"	30	7	6	6	7
"	31	3	7	3	3
August	32	7	2	2	5
"	33	4	1	7	4
"	34	7	2	2	4
"	35	3	0	3	2
September	36	0	0	1	1
"	37	1	1	0	6
"	38	0	4	0	7
"	39	3	3	1	0
October	40	0	0	1	0
"	41	1	0	1	1
"	42	1	0	1	0
"	43	2	3	3	0
"	44	6	6	1	0
November	45	3	4	0	2
"	46	0	3	3	1
"	47	1	2	1	2
"	48	0	1	1	1
December	49	0	2	1	1
"	50	0	0	0	0
"	51	0	1	1	0
"	52	0	0	1	0

6	7	8	9	10	11
6	4	7	6	5.50	24.05
6	3	7	7	4.87	34.69
3	1	7	4	4.25	49.57
6	6	6	6	5.25	20.76
4	7	6	6	4.37	47.03
4	3	2	5	5.00	34.64
6	3	4	3	4.50	38.49
4	6	4	6	4.50	38.49
6	4	4	6	4.50	38.49
5	7	3	2	4.00	50.00
0	3	3	3	2.12	59.70
0	5	1	5	1.63	122.84
1	6	1	2	2.25	98.76
0	7	0	0	2.25	134.72
2	6	5	6	3.25	64.82
4	4	7	6	2.75	97.49
2	0	4	2	1.38	88.61
0	1	0	2	0.62	111.36
4	1	3	2	2.25	53.29
4	3	0	3	2.87	78.62
3	3	3	6	3.00	52.70
1	3	2	1	1.75	62.27
0	0	1	1	1.00	70.71
1	1	4	0	1.13	103.64
1	0	0	1	0.75	88.19
0	2	0	3	0.62	177.76
0	0	0	2	0.50	141.42
0	3	0	1	0.62	158.7

Annexure 62

Mean Maximum Temperature ($^{\circ}\text{C}$) of the zone. Regional Agricultural Research Station, Kumarakom (Karappadam Situation)

	Std. Week	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C. V.
	1	2	3	4	5	6	7	8	9	10	11
January	1	32.2	31.2	31.2	30.6	31.2	30.9	30.3	31.1	31.09	1.67
"	2	31.5	31.6	31.4	31.1	31.7	30.6	29.9	31.1	31.11	1.81
"	3	31.1	31.6	31.6	31.1	31.2	30.6	29.5	32.3	31.13	2.48
"	4	30.9	33.1	32.3	31.1	31.3	30.5	29.9	33.1	31.52	3.52
"	5	31.4	31.9	32.2	31.7	31.3	31.0	30.7	33.4	31.70	2.47
February	6	31.8	32.1	31.1	31.4	31.3	31.2	29.8	32.9	31.45	2.66
"	7	32.8	31.9	32.2	31.6	31.9	31.2	29.7	32.9	31.77	2.98
"	8	32.6	31.7	32.4	32.3	31.4	31.5	31.0	32.4	31.91	1.72
"	9	33.2	32.2	32.5	31.6	31.1	31.2	29.4	32.2	31.67	3.40
March	10	33.5	33.0	33.2	31.7	31.3	31.0	27.3	33.0	31.75	5.98
"	11	33.1	33.2	33.2	32.1	31.3	31.6	31.6	34.4	32.56	3.10
"	12	33.7	32.5	34.3	31.3	32.4	32.2	34.5	34.5	33.18	3.47
"	13	33.2	33.0	34.3	32.3	32.4	32.1	34.4	34.1	33.30	2.46
April	14	32.8	33.5	33.3	33.3	31.3	32.7	33.5	34.0	33.05	2.31
"	15	32.1	33.8	33.3	32.7	32.2	34.1	33.6	33.5	33.16	2.10
"	16	32.4	33.4	33.9	31.6	32.2	33.8	33.3	36.2	33.10	2.62
"	17	33.0	32.9	33.4	32.7	32.2	33.3	33.8	34.1	33.17	1.72
"	18	32.6	32.6	34.3	32.2	32.6	32.4	34.4	34.4	33.19	2.78
May	19	32.2	32.4	34.4	32.9	31.4	33.1	34.6	34.6	33.18	3.34
"	20	29.5	31.9	33.3	33.2	32.6	32.3	34.9	34.4	32.76	4.75
"	21	31.1	31.3	33.3	33.3	32.5	29.0	33.9	32.0	32.05	4.62
"	22	28.1	32.5	30.9	29.7	30.8	30.0	31.7	28.3	29.25	12.51

Annexure 62 (Contd)

	1	2	3	4
June	23	26.7	31.9	26.1
"	24	26.7	29.9	28.3
"	25	28.1	27.1	28.3
"	26	27.7	28.1	26.7
July	27	28.6	27.6	27.1
"	28	27.2	27.4	27.9
"	29	28.4	28.4	26.5
"	30	28.1	28.3	27.3
"	31	28.3	28.2	27.4
August	32	28.1	28.8	29.2
"	33	28.1	29.5	27.2
"	34	27.1	30.0	28.4
"	35	26.8	30.5	26.9
September	36	29.5	30.0	26.9
"	37	29.6	30.5	29.8
"	38	29.8	30.1	29.3
"	39	28.2	27.6	30.6
October	40	29.2	31.1	29.4
"	41	29.5	30.3	31.1
"	42	27.9	30.9	28.6
"	43	30.0	31.0	29.8
"	44	29.8	30.9	30.8
November	45	28.6	30.1	30.8
"	46	30.9	29.5	30.1
"	47	30.2	30.0	29.3
"	48	31.1	30.8	30.3
December	49	32.1	30.9	31.1
"	50	33.0	31.9	31.1
"	51	31.2	31.7	30.5
"	52	31.3	31.1	30.1

5	6	7	8	9	10	11
25.4	28.1	31.9	29.2	29.9	28.65	8.20
28.1	25.7	30.3	29.6	30.1	28.59	5.56
27.8	28.3	30.5	28.5	29.9	28.56	3.63
28.6	27.6	28.7	27.6	27.3	27.79	2.24
30.2	31.1	30.2	28.0	29.3	29.01	4.58
28.6	31.1	38.5	28.5	28.9	28.26	5.03
30.0	28.1	26.5	28.8	27.7	28.05	3.89
26.5	27.8	27.9	29.9	28.9	28.09	3.39
26.8	26.5	28.1	30.4	30.3	28.25	4.80
28.6	26.1	27.3	30.0	29.9	28.43	4.33
29.7	26.3	27.3	30.3	29.4	28.48	4.75
27.8	28.7	28.5	30.4	29.5	28.67	3.92
31.2	30.0	28.4	30.6	30.1	29.31	5.49
30.8	30.8	27.9	32.2	31.6	29.96	5.65
27.3	30.4	28.6	31.6	30.9	29.84	4.28
27.2	29.2	26.1	32.5	32.0	29.53	6.84
29.4	30.0	27.6	30.1	30.2	29.21	3.93
29.5	30.2	27.7	30.4	29.7	29.65	3.17
27.9	30.8	28.9	30.2	30.6	29.91	3.37
31.1	31.4	29.7	31.4	31.4	30.33	4.31
30.3	32.1	29.6	30.7	31.8	30.66	2.80
27.6	30.0	28.9	32.1	31.5	30.20	4.50
28.7	30.0	29.2	33.9	31.0	30.23	4.54
31.1	30.2	29.5	32.5	31.4	30.65	3.14
30.9	31.1	29.9	31.0	31.6	30.50	2.35
30.6	30.6	29.5	30.9	32.1	30.74	2.24
31.1	30.2	30.7	32.2	32.4	31.34	2.38
31.3	31.1	30.6	32.5	32.1	31.70	2.40
31.4	30.9	30.3	32.3	32.6	31.49	2.56
31.7	30.4	29.7	32.9	33.4	31.33	3.91

Annexure 63

Mean Minimum Temperature ($^{\circ}\text{C}$) of the zone at (Regional Agricultural Research Station Kumarakom)
Karappadam Situation

	1	2	3	4	5	6	7	8	9	10	Mean	C.V.
Std. week	1978	1978	1979	1980	1981	1982	1983	1984	1984	1984	Mean	C.V.
January	1	24.1	25.7	26.1	26.5	24.6	24.7	25.6	25.33	3.21	25.33	3.21
"	2	23.3	26.0	25.7	24.9	24.8	24.4	26.5	24.80	3.33	24.80	3.33
"	3	24.4	25.8	23.3	24.4	24.4	24.4	25.6	24.61	3.18	24.61	3.18
"	4	25.2	26.1	22.8	24.3	23.8	23.9	23.7	24.26	4.14	24.26	4.14
"	5	25.1	27.6	25.0	26.1	25.2	26.7	24.7	25.77	3.83	25.77	3.83
February	6	25.0	27.4	26.7	28.1	25.6	25.6	26.2	26.37	3.86	26.37	3.86
"	7	25.9	26.8	28.6	26.3	26.7	25.6	25.4	26.47	3.77	26.47	3.77
"	8	25.8	26.5	26.2	26.2	25.7	26.0	25.7	26.01	1.08	26.01	1.08
"	9	25.5	26.5	27.2	26.3	26.1	25.6	25.6	26.11	2.18	26.11	2.18
March	10	25.9	26.8	26.9	27.3	26.7	25.7	24.4	26.24	3.49	26.24	3.49
"	11	26.8	28.4	28.9	26.5	27.6	27.3	25.4	27.27	4.01	27.27	4.01
"	12	27.0	28.7	28.5	27.4	26.3	27.5	26.1	27.36	3.37	27.36	3.37
"	13	27.2	28.6	28.7	27.3	25.7	27.5	25.8	27.26	4.04	27.26	4.04
April	14	28.0	28.4	27.6	29.8	25.7	27.8	25.7	27.57	4.92	27.57	4.92
"	15	27.3	28.4	27.2	27.8	28.9	28.6	26.9	27.87	2.57	27.87	2.57
"	16	28.3	27.9	27.9	27.4	29.1	28.9	24.9	27.77	4.66	27.77	4.66
"	17	27.4	27.6	27.2	28.7	27.4	28.2	26.1	27.51	2.75	27.51	2.75
"	18	27.2	27.0	26.2	27.2	27.9	27.9	26.6	27.14	2.14	27.14	2.14
May	19	27.2	26.5	27.4	26.7	25.8	29.6	28.5	27.39	4.35	27.39	4.35
"	20	25.6	27.9	28.2	26.7	26.7	27.7	26.6	27.06	3.13	27.06	3.13
"	21	27.7	28.9	28.4	26.8	27.6	28.8	27.1	27.90	2.72	27.90	2.72
"	22	25.2	27.3	27.9	26.7	26.5	28.8	25.3	26.81	4.54	26.81	4.54
June	23	25.9	27.3	25.6	23.9	24.9	27.4	24.3	25.61	4.96	25.61	4.96
"	24	25.4	25.7	27.0	25.9	24.6	26.5	23.4	25.50	4.37	25.50	4.37
"	25	26.8	25.4	27.0	26.1	24.3	26.3	23.3	25.60	4.93	25.60	4.93
"	26	25.8	25.8	25.6	26.3	25.7	24.1	23.4	25.24	3.90	25.24	3.90

Annexure 63 (Contd)

	1	2	3	4
July	27	25.9	25.7	25.6
"	28	25.9	24.9	25.6
"	29	25.3	26.2	25.4
"	30	25.3	25.8	25.6
"	31	26.7	25.6	26.2
August	32	26.7	25.6	27.3
"	33	26.5	26.2	25.6
"	34	25.5	25.7	25.8
"	35	25.9	26.9	26.0
September	36	27.1	26.7	25.4
"	37	25.4	26.0	27.1
"	38	25.6	24.5	27.0
"	39	25.9	25.4	27.0
October	40	25.6	26.2	26.2
"	41	26.5	26.3	26.5
"	42	26.3	25.2	26.3
"	43	25.9	26.7	26.5
"	44	25.9	26.1	26.1
November	45	24.6	26.3	27.6
"	46	26.4	25.6	26.2
"	47	26.5	26.1	26.5
"	48	25.6	26.5	25.8
December	49	25.8	26.1	26.1
"	50	27.2	26.8	26.3
"	51	27.3	27.2	25.1
"	52	25.7	26.1	26.4

5	6	7	8	9	10
25.1	26.3	22.4	23.8	24.97	5.14
26.5	26.3	25.9	23.8	25.56	3.37
26.7	24.9	22.4	23.9	24.97	5.36
24.3	24.3	24.6	24.6	24.93	2.33
25.9	24.6	24.9	24.2	25.44	3.30
26.2	25.0	25.4	23.6	25.69	4.37
26.3	25.1	25.7	23.2	25.51	4.09
25.2	26.3	25.1	24.2	25.40	2.42
26.3	27.0	24.6	23.9	25.80	4.10
25.7	30.1	23.3	24.9	28.17	7.54
24.8	26.7	26.2	24.7	25.84	3.29
26.1	25.8	23.4	24.7	25.30	4.35
26.3	26.8	24.9	24.4	25.81	3.47
25.4	26.8	25.9	23.9	25.71	3.32
24.6	26.5	25.3	23.8	25.64	3.97
25.6	26.7	25.3	22.3	25.39	5.37
25.1	25.4	25.5	24.1	25.60	3.19
26.3	24.9	25.4	24.5	25.60	2.48
25.4	26.7	24.8	24.9	25.76	4.07
25.6	26.4	25.3	23.9	25.63	3.17
26.1	26.7	25.7	25.6	26.17	1.48
25.6	26.3	24.7	22.9	25.34	4.47
25.6	23.6	25.3	21.6	24.87	6.25
25.7	23.3	25.7	21.6	25.23	7.47
26.8	23.9	24.9	20.9	25.16	8.40
24.7	23.9	25.1	22.6	24.92	4.96

Annexure 64

Mean Relative(Humidity %) of the zone. Regional Agricultural Research Station, Kumarakom, Karappadam situation

Std. Week	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C. V.
	2	3	4	5	6	7	8	9	10	11
January	55.6	65.0	72.0	91.0	82.0	69.0	78.0	81.0	74.20	14.02
"	55.1	70.0	91.0	89.0	71.0	62.0	73.5	71.0	72.83	15.64
"	53.4	70.0	63.0	90.0	78.0	66.5	80.5	61.0	70.30	15.83
"	60.4	74.0	57.0	84.0	73.0	71.0	71.0	67.0	69.68	11.36
"	73.1	84.0	36.0	66.0	91.0	70.0	71.0	68.5	69.95	21.57
February	64.1	88.0	79.0	66.0	78.0	67.0	74.0	72.0	73.51	10.20
"	61.0	81.0	84.0	66.0	77.0	66.0	78.5	75.0	73.56	10.47
"	61.1	75.0	73.0	84.0	78.0	66.0	77.0	76.5	73.83	9.13
"	55.7	81.0	73.0	71.0	78.0	68.0	74.5	74.0	71.90	9.97
March	60.7	86.0	73.0	79.0	77.0	67.5	85.0	76.0	75.28	10.18
"	64.6	77.0	76.0	77.0	76.0	67.5	77.5	71.0	73.33	6.36
"	63.6	77.0	69.0	88.0	73.5	66.0	78.5	70.0	73.20	10.06
"	61.9	73.0	61.0	88.0	72.0	65.0	71.5	71.0	70.43	11.34
April	71.1	79.0	63.0	78.0	70.0	64.5	77.5	71.0	71.76	7.91
"	73.0	76.0	62.0	59.0	70.0	63.5	73.0	78.0	73.06	10.93
"	73.9	82.0	82.0	73.0	79.0	58.2	72.5	76.5	74.64	9.59
"	88.1	83.0	83.0	74.0	74.5	70.0	75.0	73.5	77.64	7.52
"	80.7	84.0	80.0	75.0	79.5	60.0	55.0	73.0	73.40	13.34
May	81.6	85.0	84.0	90.0	79.0	58.5	73.0	72.0	77.64	11.69
"	92.9	70.0	74.0	91.0	83.0	64.0	75.5	76.0	78.30	11.96
"	83.9	73.0	67.0	81.0	91.5	80.0	78.5	84.0	79.86	8.68
"	91.0	79.0	81.0	95.0	84.0	80.0	88.0	94.0	86.50	6.91

Annexure 64 (Contd.)

	1	2	3	4	5
June	23	93.9	79.0	89.0	87.0
"	24	86.4	88.0	99.0	90.0
"	25	91.1	88.0	91.0	87.0
"	26	97.7	87.0	84.0	72.0
July	27	84.0	90.0	94.0	87.0
"	28	98.0	87.0	94.0	87.0
"	29	81.0	79.0	94.0	85.0
"	30	92.0	91.0	88.0	84.0
"	31	77.0	85.0	81.0	89.0
August	32	61.0	92.0	87.0	84.0
"	33	84.0	84.0	87.0	90.0
"	34	90.0	79.0	89.0	92.0
"	35	92.0	84.0	91.0	82.0
Sept.	36	85.0	69.0	84.0	66.0
"	37	76.0	78.0	84.0	93.0
"	38	78.0	83.0	85.0	61.0
"	39	82.0	91.0	91.0	73.0
Oct.	40	75.0	71.0	86.0	81.0
"	41	85.0	79.0	91.0	91.0
"	42	94.0	72.0	90.0	61.0
"	43	88.0	66.0	88.0	71.0
"	44	92.0	82.0	88.0	77.0
Nov.	45	90.0	74.0	86.0	87.0
"	46	86.0	83.0	91.0	83.0
"	47	81.0	75.0	93.0	98.0
"	48	75.0	80.0	73.0	75.0
Dec.	49	66.0	66.0	81.0	83.0
"	50	77.0	64.0	89.0	92.0
"	51	65.0	81.0	91.0	93.0
"	52	65.0	66.0	92.0	70.0

6	7	8	9	10	11
89.0	82.0	82.0	84.0	85.74	5.31
94.5	88.0	86.0	87.0	89.86	4.77
89.0	94.0	91.0	96.0	90.89	3.09
87.0	88.0	87.0	96.0	83.59	15.92
94.5	88.0	88.0	87.0	89.06	3.79
91.5	96.0	87.5	95.0	92.00	4.47
92.0	67.5	86.5	88.0	84.13	9.34
89.5	95.0	80.0	88.0	89.06	4.59
85.5	91.0	82.0	89.5	85.50	5.48
98.0	95.5	91.5	78.5	85.94	12.92
98.0	89.0	78.0	80.0	86.25	6.83
91.0	89.0	79.5	92.0	87.69	5.69
91.5	86.5	80.5	80.0	85.94	5.48
86.5	89.0	79.5	79.0	79.75	9.73
85.0	94.0	75.0	79.0	83.00	8.30
91.5	91.0	78.0	89.0	82.06	11.42
91.5	85.0	88.0	88.0	87.44	4.00
88.5	84.0	90.0	86.0	82.69	7.52
93.5	78.5	78.5	83.0	84.94	6.82
91.5	75.0	71.0	85.0	79.94	13.88
92.0	79.5	82.0	88.0	81.81	10.51
91.5	84.5	75.5	91.0	85.19	7.18
89.5	82.0	78.5	91.0	84.75	6.70
86.5	84.0	71.0	89.0	82.94	7.93
94.0	75.0	79.0	81.0	83.25	9.28
81.0	73.5	77.5	74.5	76.19	3.67
78.0	71.0	74.0	84.0	75.37	9.00
68.5	61.0	76.0	84.5	76.50	14.03
65.5	77.5	69.0	77.0	77.37	12.98
65.0	77.5	72.0	82.0	73.69	12.19

Annexure 65

Rice Research Station, Moncompu (Karappadam situation)

	1980	1981	1982	1983	1984	1985	Mean	C.V.
	6	7	8	9	10	11	12	13
	0.0	0.0	0.0	0.0	0.0	70.8	7.08	300.00
	0.0	0.0	7.9	0.0	0.0	0.0	0.79	300.00
	0.0	6.4	0.0	0.0	10.8	0.0	1.97	179.50
	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00
	14.3	0.0	0.0	0.0	0.0	0.0	1.78	241.67
	15.3	3.6	0.0	0.0	0.0	0.0	8.14	157.86
	0.0	0.8	0.0	0.0	55.4	4.3	6.78	241.07
	0.0	0.0	0.0	0.0	42.9	7.7	21.14	135.45
	0.0	0.0	0.0	0.0	8.6	0.0	0.91	282.16
	15.8	0.0	0.0	0.0	92.2	0.0	16.28	169.37
	0.0	5.3	0.0	0.0	0.0	2.8	4.49	138.83
	0.0	3.8	4.1	13.7	0.0	62.6	16.10	129.52
	4.8	26.7	0.0	0.0	35.8	24.5	18.46	125.11
	21.8	0.0	0.2	0.0	90.6	34.2	22.44	129.19
	0.0	50.9	21.3	0.0	7.4	0.7	16.24	102.90
	19.0	37.6	61.9	0.0	50.3	4.5	34.52	85.33
	30.3	15.5	53.6	2.8	21.5	8.2	33.43	90.74
	35.3	63.9	32.3	27.7	21.6	0.0	35.64	100.63
	27.3	88.7	38.3	0.0	2.3	3.2	60.49	166.54
	60.8	0.0	161.1	35.3	12.5	80.3	93.51	135.16
	4.0	1.5	12.6	78.4	6.6	188.4	54.35	127.88
	133.3	226.9	154.7	14.7	202.6	322.5	159.68	51.81
	266.0	354.9	190.0	59.7	49.1	115.5	140.53	68.81
	68.0	373.3	169.5	142.7	101.3	148.2	190.99	73.59
	164.8	178.3	187.9	51.1	219.7	245.8	148.29	50.36
	195.8	76.1	72.1	39.7	112.9	248.6	124.15	49.40

Annexure 65 (Contd.)

	1	2	3	4	5	6
July	27	74.5	141.0	124.5	106.8	151.8
"	28	21.3	28.0	167.5	165.8	215.8
"	29	98.3	279.9	41.0	10.3	171.3
"	30	201.5	62.0	376.0	140.5	125.3
"	31	76.0	8.8	27.0	112.5	40.0
Aug.	32	0.0	13.5	169.8	39.3	101.0
"	33	55.8	64.5	36.3	3.8	204.5
"	34	89.3	190.0	100.8	59.3	106.5
"	35	85.3	143.8	146.5	6.3	63.3
Sept.	36	37.0	107.8	7.5	2.5	34.8
"	37	68.3	209.8	81.0	112.3	0.0
"	38	19.3	0.0	79.0	67.5	71.5
"	39	4.5	8.0	84.8	103.3	38.8
Oct.	40	33.8	35.5	4.8	12.5	129.8
"	41	89.8	112.3	13.8	14.8	80.0
"	42	132.0	155.5	79.5	4.3	40.0
"	43	23.8	276.8	38.5	135.5	184.5
"	44	22.9	126.8	222.8	125.0	9.0
Nov.	45	60.5	33.0	149.5	34.5	15.3
"	46	38.0	84.8	4.0	26.0	100.0
"	47	77.5	96.3	40.0	36.8	10.0
"	48	44.5	42.5	1.8	71.0	69.5
Dec.	49	8.0	2.5	0.0	22.8	0.5
"	50	0.0	5.3	16.0	27.8	32.0
"	51	0.0	0.0	12.0	98.3	14.5
"	52	0.0	0.0	85.8	0.0	3.8

7	8	9	10	11	12	13
108.2	121.4	37.5	221.9	77.7	116.53	40.93
25.7	127.5	23.2	183.7	188.6	135.41	56.87
93.7	99.9	175.8	82.8	77.8	113.07	64.83
167.2	57.9	78.8	11.0	19.9	124.01	82.87
35.2	116.9	118.1	55.5	43.5	63.35	60.18
128.0	108.9	176.7	72.2	70.4	87.98	65.25
180.5	132.3	178.0	93.6	103.9	105.52	60.31
122.0	111.2	114.9	8.9	14.6	91.75	55.20
37.9	21.8	37.1	20.8	18.2	58.10	83.96
133.9	0.5	57.8	47.0	43.9	47.27	88.02
144.6	47.5	178.7	0.0	53.1	89.53	75.44
210.6	16.2	187.8	15.5	10.7	67.79	104.87
11.0	19.0	64.5	126.0	162.8	62.27	84.52
0.1	18.6	15.4	133.2	52.8	43.65	106.20
134.4	80.0	0.0	45.6	8.1	57.88	78.40
31.6	1.8	8.9	0.0	31.3	48.49	109.30
32.8	27.3	31.3	27.0	181.4	95.89	90.65
135.4	73.4	141.2	45.2	56.4	95.80	65.23
51.0	47.2	43.0	25.8	40.4	50.02	70.62
108.9	64.8	0.0	35.2	34.8	49.65	73.13
43.5	1.5	9.4	0.0	41.7	35.67	85.64
21.1	0.0	46.0	0.0	0.0	29.64	92.01
7.1	21.3	0.0	25.9	12.4	10.05	94.87
0.0	0.0	102.1	0.0	25.6	20.88	142.08
2.0	0.0	0.8	0.0	2.5	13.01	221.92
0.0	0.0	30.7	0.0	0.0	12.03	217.90

Annexure 66

Weekly rainy days of the zone. Rice Research Station Moncompu (Karappadam Situation)

Std. Week.	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C. V.	
	1	2	3	4	5	6	7	8	9	10	11	12	13
January	1	0	0	0	0	0	0	0	0	0	4	0.4	300.00
"	2	0	0	0	0	0	0	1	0	0	0	0.1	300.00
"	3	0	0	1	0	0	1	0	0	2	0	0.4	165.83
"	4	0	0	0	0	0	0	0	0	0	0	0.0	0.0
"	5	0	1	0	0	1	0	0	0	0	0	0.2	200.00
February	6	0	2	0	1	2	1	0	0	0	0	0.6	133.33
"	7	0	0	0	1	0	0	0	0	3	1	0.5	184.39
"	8	0	1	2	3	0	0	0	0	3	2	1.1	110.97
"	9	0	0	0	0	0	0	0	0	1	0	0.1	300.00
March	10	1	2	0	0	1	0	0	0	3	0	0.7	143.57
"	11	0	1	1	1	0	1	0	0	0	1	0.5	100.00
"	12	0	1	1	1	0	1	1	1	0	2	0.8	75.00
"	13	3	0	2	0	1	3	3	0	1	2	1.5	80.28
April	14	2	3	1	0	4	0	0	0	2	2	1.4	96.89
"	15	1	1	2	1	0	4	1	0	1	0	1.1	103.25
"	16	2	5	2	3	4	1	3	0	2	1	2.3	61.64
"	17	3	5	3	2	5	3	2	1	1	1	2.6	54.93
"	18	0	2	4	3	3	4	1	2	2	0	2.1	65.47
May	19	1	5	4	2	3	4	2	0	0	1	2.2	75.51
"	20	5	4	5	2	4	0	2	3	1	6	3.2	57.28
"	21	3	5	4	1	2	0	2	3	1	5	2.6	62.49
"	22	6	6	7	1	6	7	6	1	5	7	5.2	41.96
June	23	2	4	6	3	7	7	7	3	6	7	5.2	36.28
"	24	5	6	7	6	6	7	7	4	6	6	6.0	14.91
"	25	3	7	5	5	7	7	6	4	7	6	5.7	23.60
"	26	7	6	6	7	7	5	5	4	6	7	6.0	16.67

Annexure 66 (Contd.)

	1	2	3	4	5	6
July	27	4	6	5	7	7
"	28	2	3	6	7	7
"	29	7	7	3	2	7
"	30	7	4	7	7	7
August	31	4	2	4	6	4
	32	0	3	7	6	5
	33	5	5	2	1	7
	34	6	5	6	2	7
September	35	6	5	6	1	7
	36	6	6	2	1	3
	37	4	4	1	5	0
	38	3	0	4	5	2
October	39	1	1	3	5	7
	40	6	3	1	1	6
	41	6	5	2	2	6
	42	6	5	4	1	5
	43	2	6	4	6	7
November	44	3	4	7	5	2
	45	4	5	4	5	3
	46	6	2	1	4	7
	47	5	3	1	3	1
	48	4	2	0	3	2
December	49	2	1	0	2	1
	50	0	1	1	2	1
	51	0	0	0	1	2
	52	0	0	3	0	1

7	8	9	10	11	12	13
3	6	2	5	4	4.9	32.25
3	7	7	5	7	5.4	35.33
6	6	7	6	4	5.5	31.7
7	3	3	1	3	4.9	45.13
5	5	6	6	2	4.4	32.46
2	6	6	4	4	4.3	47.72
7	6	7	6	6	5.2	38.27
3	6	4	2	2	4.3	42.94
2	2	3	3	2	3.7	54.12
5	0	4	2	4	3.3	59.15
5	4	7	0	8	3.4	61.97
7	2	7	1	1	3.2	73.69
2	2	5	7	5	3.8	57.41
0	4	2	6	4	3.3	65.06
4	4	0	4	1	3.4	57.64
1	0	1	0	1	2.4	91.67
3	3	1	2	2	3.6	54.43
5	4	4	2	3	3.9	37.07
5	5	3	3	5	4.2	20.76
2	1	0	2	2	2.7	79.52
2	0	1	0	3	1.9	79.65
2	0	2	0	0	1.5	90.68
2	1	0	1	2	1.2	62.36
0	0	4	0	3	1.2	110.55
0	0	0	0	1	0.4	165.83
0	0	3	1	0	0.8	145.77

Annexure 67

Mean Maximum Temperature ($^{\circ}\text{C}$) of the Zone
Rice Research Station, Moncompu (Karappadam situation)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C. V.
Std. week	2	3	4	5	6	7	8	9	10	11	12	13
January	32.6	33.4	33.4	33.6	35.6	34.6	33.5	35.2	32.6	30.9	33.54	3.88
"	35.6	32.9	33.1	33.0	36.4	34.8	33.7	35.2	31.7	32.3	33.97	4.33
"	36.7	33.1	33.1	34.4	36.0	34.7	33.4	35.9	31.7	32.6	34.16	4.58
"	31.9	33.9	33.7	34.7	36.1	35.4	35.5	34.3	32.3	32.7	34.05	3.97
"	32.6	33.4	33.9	33.3	35.7	35.1	35.5	35.0	32.6	33.1	34.02	3.34
February	32.7	33.0	29.6	39.1	35.1	35.1	34.5	36.3	31.6	32.3	33.93	7.49
"	32.3	33.6	34.6	33.9	35.9	35.4	34.0	34.9	32.6	31.9	33.87	4.14
"	33.6	34.0	34.3	32.3	36.1	35.6	34.6	33.4	31.3	32.0	33.85	3.80
"	38.7	34.9	34.1	33.3	36.5	36.0	35.0	32.3	30.4	33.3	34.55	5.94
March	33.6	35.7	35.0	33.7	36.1	36.2	35.3	32.4	32.7	33.6	34.20	5.09
"	34.1	34.7	34.9	33.4	37.1	36.5	35.1	34.4	33.3	34.1	34.70	3.61
"	34.3	34.6	35.3	33.7	37.3	36.0	35.6	32.3	33.6	34.3	34.78	3.47
"	33.9	35.9	34.1	33.0	37.2	35.7	34.6	32.4	31.9	32.7	34.61	3.90
April	34.3	35.6	35.3	34.4	36.4	35.1	34.9	34.3	31.9	32.0	34.32	3.62
"	34.7	36.3	34.6	33.0	36.7	35.7	37.7	33.9	32.9	32.6	34.78	3.17
"	34.3	35.4	35.3	34.7	31.7	36.1	35.3	34.3	33.1	32.7	34.29	2.94
"	33.7	34.4	35.9	34.2	35.4	36.9	34.9	33.9	31.9	32.4	34.36	2.52
"	33.7	39.9	35.0	34.9	36.6	36.0	35.7	33.3	32.6	33.1	35.08	3.72
May	34.0	33.0	34.6	32.1	36.9	34.1	35.7	33.4	32.7	34.7	34.12	4.01
"	32.4	31.7	32.3	34.7	36.7	35.4	34.5	33.6	32.9	29.7	33.39	5.75
"	33.3	31.1	33.0	34.6	37.1	36.1	35.0	32.7	32.6	33.1	33.86	5.08
"	32.1	31.1	29.9	34.6	34.6	30.6	35.0	32.5	30.0	28.4	31.88	6.78
June	32.9	32.3	31.6	33.9	31.3	28.9	32.4	32.5	30.4	28.6	31.48	5.16
"	32.9	30.9	30.7	31.0	33.1	29.0	30.0	29.6	29.7	28.9	30.58	4.56

Annexure 57 (Contd.)

	1	2	3	4	5	6
June	25	33.0	29.1	32.3	30.0	31.0
"	26	30.0	31.4	28.7	31.1	31.3
July	27	31.3	30.4	31.1	30.9	30.9
"	28	31.4	32.0	29.6	30.7	29.4
"	29	31.0	28.9	31.6	32.3	30.6
"	30	28.7	30.1	28.4	29.9	31.0
"	31	30.4	30.7	30.9	29.4	31.9
August	32	32.1	30.7	23.6	31.3	28.1
"	33	31.7	31.7	30.9	34.1	30.1
"	34	30.1	29.9	29.4	32.1	31.6
"	35	29.0	29.9	29.6	34.9	31.0
September	36	31.4	30.7	32.9	35.4	31.3
"	37	31.4	30.8	32.1	33.6	34.4
"	38	32.4	32.2	32.1	32.1	33.9
"	39	27.9	32.0	31.7	31.0	33.1
October	40	34.0	32.0	33.1	33.1	32.4
"	41	31.6	32.1	32.4	34.4	32.3
"	42	29.9	31.1	32.6	36.4	31.7
"	43	32.6	29.3	33.7	35.9	33.0
November	44	32.3	32.3	31.9	33.7	34.0
"	45	31.4	32.1	23.9	34.9	34.4
"	46	32.4	31.9	32.9	33.4	33.9
"	47	31.6	32.4	34.0	33.3	33.9
"	48	30.7	32.1	33.9	35.9	34.9
December	49	32.7	34.1	34.6	35.6	29.6
"	50	33.9	34.7	34.0	36.3	34.0
"	51	34.5	33.6	34.3	36.4	34.3
"	52	38.0	38.0	38.4	36.1	33.1

7	8	9	10	11	12	13
30.5	29.5	30.8	28.0	29.3	30.35	4.72
32.0	31.1	29.7	29.0	26.7	30.10	5.11
33.0	32.0	31.0	28.6	29.3	30.75	3.83
32.1	31.0	28.9	29.1	28.1	30.23	4.27
32.5	30.9	29.0	28.2	28.2	30.32	5.10
31.0	33.0	29.4	29.4	29.3	30.02	4.28
31.2	31.1	30.3	30.0	29.4	30.53	2.98
30.6	31.3	29.4	29.7	29.0	29.50	7.78
30.1	28.7	28.1	29.3	28.7	30.36	5.67
31.1	31.4	29.0	29.7	28.6	30.29	3.72
32.7	33.8	29.9	30.6	29.3	31.07	6.22
32.0	33.3	29.9	29.4	29.4	31.57	5.73
31.1	32.9	31.0	30.6	28.9	31.63	4.82
29.1	33.7	28.7	30.7	30.9	31.58	5.22
32.3	35.1	29.9	28.6	29.0	31.06	6.83
34.1	34.8	30.3	27.7	29.2	32.07	6.83
33.8	35.5	31.7	29.1	30.6	32.35	5.43
34.6	34.8	31.4	30.1	30.9	32.37	6.57
32.5	34.4	31.9	33.7	30.4	32.44	5.77
31.4	34.3	31.1	31.0	31.4	32.36	3.56
31.4	35.9	31.6	31.1	29.7	31.64	10.03
32.9	35.9	31.9	31.4	30.2	32.68	4.40
33.3	36.0	31.3	29.7	31.2	32.67	5.23
31.7	35.4	31.6	30.9	31.7	32.88	5.63
33.7	35.3	32.7	31.6	32.4	33.23	5.20
33.7	36.0	32.4	31.7	30.8	33.75	4.90
34.9	35.3	30.6	31.9	33.0	33.83	4.66
36.0	—	31.3	32.1	33.0	35.13	7.05

Annexure 68

Mean Maximum Temperature (°C) of the zone
Rice Research Station, Moncompu (Karappadam Situation)

Std. week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C.V.
	2	3	4	5	6	7	8	9	10	11	12	13
January	21.3	21.1	22.4	21.6	22.9	23.6	23.2	22.3	24.6	22.6	22.56	4.54
"	21.6	21.9	20.3	22.4	21.7	22.1	22.3	18.9	25.7	22.4	21.93	7.47
"	21.3	20.7	23.3	22.4	24.6	23.0	21.9	19.4	24.9	21.9	22.94	7.19
"	20.7	21.7	22.9	22.1	20.9	23.3	22.6	21.6	23.6	19.4	21.88	5.63
"	23.1	21.3	23.4	24.1	23.7	21.6	23.2	22.7	23.9	21.3	22.83	4.44
February	22.6	23.9	23.4	22.6	23.3	24.0	22.9	23.3	24.0	21.9	23.19	2.84
"	21.1	25.6	23.4	23.3	22.9	23.7	24.0	—	24.4	22.7	23.41	4.77
"	21.7	22.6	24.0	24.1	23.5	22.3	27.0	—	24.7	23.1	23.61	6.00
"	26.4	24.1	21.9	23.9	28.7	24.5	25.1	22.3	24.7	23.0	24.46	7.76
March	24.9	24.9	25.1	24.6	25.0	24.0	26.0	25.1	24.3	23.7	24.76	2.49
"	24.6	25.9	25.3	24.6	24.4	25.5	25.7	24.8	25.4	23.5	24.97	2.76
"	24.9	26.4	25.1	26.0	25.9	25.6	25.9	26.0	26.7	23.7	25.62	3.19
"	25.4	26.1	24.9	25.7	22.6	25.4	26.1	26.1	26.4	23.4	25.21	4.74
"	24.4	26.3	26.7	26.3	25.4	27.4	27.8	26.7	26.3	24.4	26.17	4.12
"	26.1	26.7	26.9	26.1	27.1	27.4	27.9	26.9	26.0	24.0	26.54	3.78
"	26.6	25.9	27.4	25.3	26.9	25.7	26.3	26.4	26.0	23.7	26.02	3.70
April	25.3	24.9	25.6	26.1	26.6	26.4	28.0	26.7	26.7	28.7	26.00	4.33
"	26.6	29.7	25.4	25.4	26.3	25.0	27.8	27.4	26.7	26.9	26.72	4.90
"	27.0	29.1	25.7	29.9	26.6	25.1	26.4	27.0	28.3	26.3	27.14	5.29
"	26.3	25.1	25.0	25.9	26.9	27.7	26.6	27.0	27.3	24.4	26.22	3.95
May	27.9	26.1	25.7	26.4	27.4	27.3	27.1	26.7	27.6	23.6	26.58	4.48
"	21.9	25.0	23.6	26.0	25.3	25.3	25.4	25.6	24.7	24.1	24.69	4.65
June	25.6	25.6	23.4	25.9	24.3	24.6	25.0	27.0	24.6	23.1	24.91	4.48
"	26.9	25.1	23.1	24.1	24.9	24.1	24.9	24.0	25.4	22.7	24.52	4.65
"	25.7	24.4	22.9	24.3	24.4	25.5	24.6	25.0	24.4	22.6	24.38	3.85
"	24.1	24.7	23.0	24.3	24.2	25.5	25.6	26.3	24.3	20.3	24.13	6.07

Annexure 68 (Contd.)

	1	2	3	4	5
July	27	24.6	20.6	23.9	23.7
..	28	25.9	24.6	22.9	20.1
..	29	23.6	23.4	23.5	25.3
..	30	23.9	24.5	23.1	23.9
..	31	25.4	25.1	23.9	23.6
August	32	25.9	24.7	23.0	23.2
..	33	24.7	24.7	23.6	25.1
..	34	24.6	24.6	23.4	25.1
..	35	20.3	24.7	2.34	25.1
September	36	29.4	25.0	24.9	25.7
..	37	24.4	24.9	24.4	24.3
..	38	25.3	25.4	23.6	23.3
..	39	26.0	25.5	24.0	24.3
October	40	25.9	25.4	24.6	25.3
..	41	25.4	25.3	25.4	25.7
..	42	24.7	25.7	25.1	25.6
..	43	25.6	24.7	25.6	24.4
November	44	24.4	25.9	23.4	24.7
..	45	25.0	25.1	24.3	25.1
..	46	25.2	25.0	25.3	24.4
..	47	25.3	23.6	24.4	27.3
..	48	24.7	24.4	22.6	24.7
December	49	23.9	24.2	22.7	25.1
..	50	23.7	21.3	24.0	24.7
..	51	24.0	21.9	22.6	23.0
..	52	27.0	26.0	27.4	23.0

6	7	8	9	10	11	12	13
27.7	26.0	24.6	26.2	24.3	23.3	24.49	7.43
23.9	23.0	24.6	25.7	24.3	23.4	24.04	6.59
24.6	24.3	24.1	24.7	22.9	23.7	24.01	2.86
23.0	23.3	24.1	25.7	22.9	24.0	23.84	3.36
24.3	25.0	23.7	25.4	23.4	23.6	24.34	3.14
24.1	26.0	24.4	25.0	24.1	23.7	24.41	3.36
23.4	24.6	24.0	24.0	22.7	23.7	24.09	2.91
22.9	25.0	24.6	24.7	23.0	23.7	24.16	3.25
24.1	25.7	26.6	25.6	24.1	23.7	24.33	6.75
24.3	25.7	25.5	24.5	23.9	23.7	25.26	6.08
24.3	25.3	24.6	24.5	24.1	23.4	24.42	1.93
26.0	25.0	24.6	23.6	24.3	23.6	24.47	3.62
25.6	26.7	24.6	25.1	23.9	23.1	24.92	4.30
24.6	26.1	25.0	26.3	23.7	23.7	25.06	3.48
24.7	26.1	25.4	25.8	23.6	23.7	25.11	3.22
28.6	26.1	25.1	25.4	21.7	23.1	25.11	6.86
24.3	25.6	25.0	25.6	23.4	23.6	24.78	3.23
25.7	24.1	24.6	24.6	24.0	23.0	24.44	3.50
25.4	25.1	24.6	24.8	23.6	22.9	24.59	3.03
24.4	25.4	25.0	24.8	23.2	22.7	24.54	3.52
25.0	24.6	24.6	24.8	23.4	21.3	24.43	5.94
25.3	25.0	23.4	24.8	23.1	23.1	24.11	3.78
24.7	24.3	25.1	24.2	22.3	23.0	23.95	3.88
21.0	23.7	24.9	24.4	21.1	21.9	23.07	6.44
23.7	24.0	25.1	25.0	20.1	21.0	23.04	6.82
26.7	21.9	—	24.5	19.9	20.9	24.13	10.46

Annexure 69

Mean relative humidity (%) of the zone
(Rice Research Station, Moncompu) (Karappadam Situation)

Std. Week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C. V.
1	2	3	4	5	6	7	8	9	10	11	12	13
January	65.0	66.0	57.5	61.0	58.0	60.5	53.5	42.0	58.5	59.0	58.10	10.97
"	99.5	59.0	55.0	66.0	47.5	62.0	66.0	98.0	53.4	57.0	64.34	21.69
"	60.0	68.0	62.0	62.5	53.5	57.0	63.0	65.0	66.0	58.5	61.55	6.77
"	62.5	61.0	51.0	72.0	53.0	57.0	78.0	62.5	52.0	65.0	61.40	13.53
"	66.0	67.0	54.5	62.0	59.5	56.0	68.0	53.5	55.0	63.5	60.50	78.69
February	59.0	75.0	55.0	61.0	65.0	51.5	72.0	58.0	68.5	72.0	63.70	11.92
"	70.0	59.0	50.0	74.0	66.0	63.0	80.0	55.0	67.0	76.5	66.05	13.73
"	53.5	63.0	58.0	58.0	57.5	57.0	89.0	61.0	66.0	76.0	63.90	16.08
"	60.0	64.0	55.0	70.5	59.0	55.0	69.0	57.0	70.0	55.5	63.00	9.88
March	69.5	58.5	53.0	67.0	69.0	47.0	70.5	57.5	79.0	49.0	62.00	16.12
"	55.5	61.0	57.0	63.0	55.5	56.5	73.0	50.5	70.0	74.0	61.60	12.59
"	68.5	61.0	55.0	75.5	59.5	60.0	71.0	63.0	61.5	70.0	64.50	9.41
"	68.5	57.0	59.0	65.0	60.0	61.0	70.5	59.5	59.5	70.0	63.00	7.60
April	68.0	73.0	55.5	65.0	70.5	67.5	72.0	54.5	71.5	64.5	66.20	9.40
"	25.5	73.0	68.0	65.0	64.5	72.0	68.5	59.5	69.0	62.5	67.75	6.95
"	75.0	68.5	65.0	66.5	54.0	67.5	71.0	52.0	66.5	60.5	64.75	10.29
"	80.5	69.5	60.5	58.5	60.0	52.5	76.5	58.0	65.5	69.0	65.05	12.88
"	75.0	76.0	65.0	58.5	56.0	61.5	75.5	61.0	67.5	75.0	67.10	11.00
May	77.0	84.0	60.0	69.0	67.0	70.0	76.5	55.0	67.5	68.0	69.40	11.43
"	64.0	78.0	73.0	62.0	62.5	65.0	56.5	59.0	68.0	74.0	66.20	9.94
"	80.0	75.0	83.0	62.0	57.0	65.0	60.5	67.0	67.0	83.0	69.95	13.02
"	78.5	86.0	72.5	66.0	52.0	86.0	78.0	64.5	77.5	89.0	75.00	14.56

Annexure 69 (Contd.)

	1	2	3	4	5	6
June	23	80.0	84.5	81.0	74.0	45.6
"	24	76.0	83.0	76.0	73.5	88.0
"	25	76.5	79.5	70.0	70.0	64.5
"	26	87.0	82.0	64.0	77.5	67.5
July	27	88.5	77.0	77.0	84.0	80.0
"	28	80.0	63.0	86.0	75.5	84.0
"	29	90.0	84.0	64.0	65.0	89.0
"	30	84.0	87.0	75.0	81.0	81.0
"	31	77.5	62.0	78.5	82.5	94.0
August	32	81.0	72.0	87.0	79.0	72.5
"	33	69.0	73.0	73.0	67.0	78.5
"	34	80.5	87.0	78.0	63.0	71.0
"	35	86.5	83.0	92.0	64.5	71.0
September	36	78.0	74.5	60.0	55.0	76.0
"	37	76.0	80.0	73.0	71.0	69.5
"	38	79.0	72.0	66.0	62.5	62.5
"	39	65.0	67.5	71.0	90.0	56.5
October	40	67.5	74.5	66.0	69.0	85.0
"	41	73.5	77.5	85.0	64.5	64.0
"	42	83.0	81.5	68.0	61.0	68.5
"	43	70.0	77.0	75.5	72.0	74.0
"	44	78.0	72.0	59.0	68.0	83.0
November	45	80.0	60.0	84.0	58.0	60.5
"	46	72.5	78.0	66.0	79.0	47.5
"	47	77.5	81.0	59.0	85.0	44.5
"	48	71.5	70.0	63.0	60.5	60.0
December	49	72.0	61.0	63.0	51.5	54.0
"	50	68.5	57.5	57.0	60.5	63.5
"	51	75.0	63.5	55.0	58.0	63.0
"	52	59.0	61.5	71.0	54.5	56.0

7	8	9	10	11	12	13
81.0	77.0	61.0	84.0	82.0	75.01	15.68
86.5	82.0	78.0	85.0	88.5	87.65	6.33
—	80.0	70.5	83.5	83.0	75.70	8.14
—	76.0	75.5	89.0	100.0	79.55	12.54
67.5	71.0	68.5	86.0	86.5	78.60	9.30
85.5	76.0	78.0	82.0	88.0	79.80	8.67
85.0	78.0	80.0	87.0	92.0	81.40	11.53
76.5	72.0	77.5	77.5	96.0	80.75	8.13
80.0	82.5	78.5	74.0	83.0	80.22	10.77
52.0	67.0	70.5	70.0	93.0	74.40	14.54
90.0	74.0	96.0	71.0	88.0	78.45	11.81
93.5	71.5	78.0	65.5	98.0	78.60	13.92
92.0	66.0	77.0	67.0	93.0	79.20	13.81
90.5	59.5	80.0	62.5	93.0	72.90	17.23
95.0	63.5	71.0	66.5	91.5	75.50	12.50
—	58.0	79.0	62.0	90.0	72.30	15.97
—	76.5	73.0	80.0	94.0	75.85	14.59
71.0	64.4	68.5	86.0	95.0	74.69	13.15
83.0	54.5	65.5	67.0	85.0	71.95	13.80
73.0	50.0	68.0	65.5	90.0	70.85	15.55
77.0	72.0	64.0	69.0	100.0	75.05	12.17
82.0	53.5	75.0	65.0	92.0	72.75	15.24
75.0	61.5	60.0	63.5	94.5	69.70	17.39
77.0	50.5	81.0	59.0	94.0	70.45	19.66
71.0	59.0	63.0	57.5	94.0	69.15	20.80
79.5	47.0	62.5	54.0	87.5	65.55	17.27
77.0	45.0	54.5	55.0	94.5	63.05	22.11
51.5	50.0	57.0	51.5	84.5	60.15	16.23
68.0	53.0	62.5	54.5	81.5	63.40	13.85
50.0	—	65.5	63.0	80.0	61.35	14.03

Annexure 70

Weekly rainy days of the zone (mm) Rice Research Station, Vyttila (Pookali Situation)

Std. Week.	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C. V
	2	3	4	5	6	7	8	9	10	11	12	13
Jan.	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.36	300.00
"	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	97.0	1.0	10.12	286.32
"	0.0	0.0	35.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.50	300.00
"	0.0	0.0	16.2	0.0	4.0	0.0	0.0	0.0	0.0	0.0	2.02	241.33
Feb.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.40	300.00
"	0.0	0.0	0.0	0.0	0.0	0.2	15.0	0.0	95.8	19.4	13.04	217.97
"	0.0	7.3	21.0	0.0	0.0	0.0	0.0	0.0	67.0	0.0	9.53	211.82
"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.30	300.00
March	10.4	20.0	0.0	13.6	29	0.0	0.0	0.0	63.0	4.0	14.00	134.75
"	0.0	2.2	13.2	5.6	0.0	0.0	0.0	0.0	4.0	0.0	2.70	147.00
"	0.0	0.0	28.3	0.0	0.0	0.1	0.0	0.0	0.0	22.0	5.04	201.45
"	54.6	16.0	0.0	0.0	82	6.3	77.7	0.0	0.0	0.0	16.21	159.03
April	2.6	8.6	17.2	114.3	23.4	0.0	0.0	0.0	32.0	0.0	19.81	168.09
"	0.0	42.0	18.6	6.0	6.2	41.8	60.8	0.0	12.0	0.0	18.74	110.14
"	17.4	61.5	10.8	28.4	14.4	54	25.4	0.0	8.0	22.0	24.19	77.04
"	23.7	22.8	12.4	12.6	31.4	100	4.2	0.0	41.0	43.2	29.13	93.76
"	6.4	74.6	62.8	115.2	14.4	19.4	8.0	0.0	2.0	67.0	36.96	102.23
May	7.5	208.3	400.4	53.6	4	30.5	0.0	0.0	3.0	1.6	70.89	176.94
"	30.0	249.4	37.2	0.0	9.6	1.0	32.4	2.0	49.0	9.3	41.99	169.22
"	8.6	63.3	279.2	0.0	24	60.5	44.9	24.0	7.0	8.0	57.95	151.55
"	71.6	149.8	175.6	17.2	116.2	144.3	129.2	63.0	174.0	37.5	107.84	50.00
June	59.2	89.4	191.7	114.3	493	428.6	250.5	37.0	135.4	53.0	185.21	81.94
"	37.1	152.0	69.2	549.9	110.2	285.6	218.1	102.7	210.6	133.5	186.89	74.98
"	14.4	178.1	245.1	209.9	218.6	216.9	240.2	17.5	245.0	136.0	172.17	48.94

Annexure 70 (Contd.)

	1	2	3	4	5	6
"	26	96.1	53.9	128.2	324.0	383
"	27	26.8	165.7	241.0	103.8	232.8
"	28	84.4	31.5	66.8	188.5	399.6
July	29	195.3	276.5	66.8	68.2	241.8
"	30	44.1	104.1	209.7	256.9	129.3
"	31	116.7	9.6	18.0	144.1	33.6
Aug.	32	4.4	82.3	181.2	58.6	168.4
"	33	38.8	6.0	82.7	96.4	181.3
"	34	105.2	86.4	100.6	49.6	149.2
"	35	75.4	71.0	120.0	0.0	58.6
Sept.	36	40.1	120.5	6.6	0.0	45.2
"	37	27.9	35.3	65.7	8.2	0.0
"	38	16.2	5.7	103.8	134.6	0.8
"	39	35.9	2.7	157.8	193.2	66.1
Oct.	40	61.1	11.9	10.3	15.4	161
"	41	80.4	144.4	5.4	13.4	15.4
"	42	76.4	57.8	430.5	1.0	78
"	43	0.3	70.8	51.6	143.5	165
"	44	106.0	41.9	176.9	51.0	0.0
Nov.	45	102.0	117.0	192.8	162.0	10.6
"	46	99.2	62.7	20.6	108.4	232.3
"	47	56.8	132.0	39.4	24.3	128.2
"	48	28.6	52.0	20.4	124.0	6
Dec.	49	5.6	0.0	0.0	0.0	0.0
"	50	0.0	0.0	0.0	0.0	0.0
"	51	0.0	0.0	0.0	0.0	29.2
"	52	0.0	0.0	18.4	0.0	0.0

7	8	9	10	11	12	13
99.5	137.2	74.0	471.2	111.3	187.84	74.54
118.6	289.3	27.0	196.0	68.0	196.40	60.04
51	235.1	268.6	173.2	107.3	160.60	68.61
86.9	116.0	292.6	209.6	49.4	160.31	55.15
126.2	84.9	48.0	7.0	111.0	152.12	78.10
98.8	87.6	183.0	67.0	35.2	79.36	68.56
116.6	208.6	171.4	123.4	444.8	149.97	75.87
154.6	153.2	200.2	52.0	22.6	98.78	66.87
114.6	87.2	63.0	17.4	0.0	77.32	55.78
5-6	9.0	32.9	56.0	0.0	42.85	88.96
85.4	2.2	191.5	17.0	0.0	50.85	119.00
176.2	58.0	232.4	0.0	0.0	60.37	126.57
221.2	27.2	194.3	4.0	61.0	76.88	101.79
81	18.6	44.4	91.0	161.0	85.23	72.72
0.0	21.5	53.3	98.4	0.0	43.30	114.03
137.2	52.0	0.0	124.8	0.0	71.16	86.29
7	0.0	0.0	7.0	0.0	65.77	190.78
2	64.2	63.4	122.4	0.0	68.31	82.74
22.2	38.6	42.6	0.0	0.0	47.92	109.87
132	48.8	76.0	33.2	0.0	87.53	70.31
17.3	0.0	0.0	40.0	0.0	58.05	119.49
0	0.0	91.0	47.0	0.0	51.87	92.08
1.0	0.0	0.0	13.2	0.0	24.52	149.92
12	12.0	0.0	0.0	0.0	2.96	162.63
0.0	0.0	0.0	0.0	0.0	0.0	16.23
12.0	0.0	0.0	0.0	0.0	4.12	220.71
0.0	0.0	0.0	0.0	0.0	1.84	300.00

Rainy days of the zone

	Std. week	1976	1977	1978
	1	2	3	4
January	1	0	0	0
"	2	0	0	0
"	3	0	0	0
"	4	0	0	1
"	5	0	0	1
February	6	0	0	0
"	7	0	0	0
"	8	0	1	0
"	9	0	0	0
March	10	1	2	0
"	11	0	0	1
"	12	0	0	1
"	13	2	1	0
April	14	0	1	1
"	15	0	3	2
"	16	1	3	1
"	17	3	3	2
"	18	1	3	1
May	19	2	3	6
"	20	2	5	4
"	21	2	4	7
"	22	4	6	7
June	23	4	6	6
"	24	2	7	5
"	25	1	7	6
"	26	4	5	6

Annexure 71

Rice Research Station. Vyttila (Pokkali Situation)

1979	1980	1981	1982	1983	1984	1985	Mean	C.V.
5	6	7	8	9	10	11	12	13
0	0.0	1	0	0	0	0	0.10	300.00
1	0.0	0	0	0	0	0	0.10	300.00
0	0.0	1	0	0	3	0	0.40	229.13
0	6.0	0	0	0	0	0	0.10	300.00
0	1	0	0	0	0	0	0.20	200.00
0	0	0	0	0	0	1	0.10	300.00
0	0	0	1	0	3	1	0.50	184.39
2	0	0	0	0	3	0	0.60	169.97
0	0	0	0	0	2	1	0.30	213.44
2	1	0	0	0	1	1	0.80	93.54
1	0	0	0	0	0	0	0.20	200.00
0	0	0	0	0	0	2	0.30	213.44
0	1	1	54	0	3	0	1.20	110.55
3	3	0	0	0	2	0	1.00	118.32
1	1	1	2	0	1	0	1.10	85.76
4	3	1	2	0	2	1	1.80	64.79
2	3	2	1	0	0	2	1.60	59.84
2	1	1	2	0	1	3	1.50	61.46
3	1	2	0	0	3	0	2.00	89.44
0	3	0	2	0	1	1	1.80	92.30
0	1	5	2	1	5	1	2.80	77.92
1	3	4	6	1	6	1	3.90	56.70
4	7	7	7	2	7	3	5.30	33.80
6	7	7	5	5	7	6	5.70	26.08
7	7	7	6	3	7	7	5.80	34.31
6	7	6	5	3	7	6	5.50	21.84

Annexure 71 (Contd.)

	1	2	3	4	5	6
July	27	1	6	7	4	7
"	28	4	3	5	7	7
"	29	7	7	5	5	7
"	30	7	5	7	5	7
"	31	4	1	2	7	2
August	32	1	3	7	4	3
"	33	2	1	5	2	7
"	34	5	7	7	2	6
"	35	6	4	6	0	4
September	36	4	6	1	0	2
"	37	3	5	3	1	0.0
"	38	1	1	6	5	0.0
"	39	3	0	4	6	4
October	40	3	2	1	2	4
"	41	4	6	1	2	4
"	42	6	4	4	0	7
"	43	0	3	3	6	1
"	44	3	4	6	4	4
November	45	4	3	4	4	0
"	46	5	4	1	5	1
"	47	3	2	1	3	3
"	48	2	2	1	2	1
December	49	1	0	0	0	0
"	50	0	0	0	0	0
"	51	0	0	0	0	2
"	52	0	0	2	0	0

7	8	9	10	11	12	13
3	6	3	7	5	4.90	40.25
4	7	7	5	5	5.40	26.46
5	6	7	6	3	5.80	21.53
5	5	2	1	4	4.80	40.40
7	6	7	5	2	4.30	53.08
4	6	7	4	6	4.50	41.28
4	7	7	3	3	4.10	54.82
6	6	2	2	0	4.30	56.06
1	1	3	6	0	3.10	75.58
4	1	5	1	1	2.50	78.49
6	4	6	0	5	3.30	66.46
7	3	4	1	0	2.80	87.19
5	2	4	4	0	3.20	58.96
0	3	4	6	0	2.50	72.11
5	4	0	5	0	3.40	69.85
2	0	0	1	0	1.80	113.31
0	4	2	2	0	2.40	79.49
1	3	2	0	0	2.30	84.87
5	2	2	1	0	2.60	60.08
2	0	0	2	0	2.40	85.80
0	0	2	2	0	1.60	75.00
0	0	0	0	0	0.80	108.97
1	1	0	1	0	0.40	122.47
0	0	0	0	0	0.0	16.23
1	0	0	0	0	0.3	213.44
0	0	0	0	0	0.2	300.00

Annexure 72

Weekly Rainfall of the Zone. Seed Farm, Mannuthy (Kole situation)

Std. week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C.V.
	2	3	4	5	6	7	8	9	10	11		
Jan.	0	0	0	0	0	0	0	0	0	30.1	3.01	300.00
"	0	0	0	0	0	0	0	0	0	0	0.0	0.0
"	0	0	0	0	0	0	0	0	0	0	0.0	0.0
"	0	0	0	0	0	0	0	0	0	0	0.0	0.0
"	0	0	0	0	0	0	0	0	0	0	0.0	0.0
Feb.	0	0	0	0	0	0	0	0	0	0	0.0	0.0
"	0	0	0	17.9	0.4	0.8	0	0	6.2	0	2.53	214.91
"	0	8.6	40.3	3.0	0	0	0	0	30.9	0	8.28	169.78
"	0	0	0	2.0	0	0	0	0	0	0	0.20	300.00
March	0	0	0	0	0	0	0	0	8.2	0	0.82	300.00
"	0	0	0.4	0.0	0	0	0	0	2.0	0	0.24	249.44
"	0	6.0	0	0	0	3.6	0	0	0	0	0.96	207.67
"	46	1.2	4.8	0	1.8	0	0	0	0	2.2	1.46	123.30
April	47.0	6.0	0	0	48.7	0	0	0	14.2	38.7	15.46	128.16
"	0	55.0	14.4	29	0	4.1	0	0	6.8	0	10.93	156.92
"	44.0	0	0	87	9.5	24.7	26.8	0	22.1	0	21.41	122.05
"	13.6	1.0	5.5	9.0	77.1	33.8	0.7	0	27.0	5.1	17.26	131.37
May	6.7	1.07	23.2	31.0	11.4	1.5	21.7	0	0	0	9.63	114.62
"	0	51.8	0	87.7	31.6	108.0	5.7	28.6	0	0	31.34	119.67
"	30.4	78.2	66.4	22.2	16.2	23.4	122.7	12.3	12.0	38.2	42.20	81.24
"	0	39.0	101.5	126.0	55.6	0	22.0	2.2	5.7	74.7	42.67	101.30
"	61.9	52.6	264.7	1.0	70.7	209.9	58.5	14.8	195.4	159.7	98.80	86.69
June	48.4	92.8	140.5	16.3	342.7	307.3	178.8	43.4	70.6	100.6	134.14	78.85
"	14.2	140.8	256.6	215.1	102.6	328.1	162.7	253.4	322.3	148.8	194.46	48.48
"	8.8	198.3	87.5	272.3	267.4	360.1	301.3	145.0	66.5	199.8	190.60	56.23
"	110.1	150.5	219.9	260.3	307.6	64.1	130.9	148.4	138.6	398.2	192.86	50.43

Annexure 72 (Contd.)

	1	2	3	4	5	6
July	27	58.3	227.7	141.8	302.8	293.7
"	28	67.0	69.6	296.8	271.7	406.0
"	29	187.2	207.7	46.0	31.3	267.0
"	30	532.0	173.8	252.7	224.4	194.5
"	31	176.3	52.5	12.5	234.7	58.1
August	32	6.4	40.5	241.5	153.3	113.2
"	33	20.9	7.3	127.5	26.9	240.6
"	34	99.7	69.6	93.9	108.3	94.2
"	35	89.0	93.9	215.5	7.8	71.8
September	36	48.5	107.5	5.9	0	6.0
"	37	24.7	22.1	11.9	24.8	0
"	38	15.0	2.1	19.0	67.6	18.8
"	39	6.8	1.0	22.9	108.5	81.4
October	40	7.8	15.7	15.9	11.2	46.4
"	41	103.7	20.5	8.5	28.8	221.5
"	42	38.6	271.0	45.4	56.3	68.8
"	43	2.4	82.7	13.6	22.7	26.0
"	44	29.1	16.0	47.4	26.7	0
November	45	83.3	218.2	124.4	13.2	43.1
"	46	4.8	91.2	0	95.6	87.9
"	47	84.6	113.8	19.3	135.2	91.6
"	48	2.8	1.1	23.8	64.0	0
December	49	1.2	0	0	0	0
"	50	0	0	0	0	0
"	51	0	0	0	0	2.0
"	52	0	0	43.9	0	0.5

7	8	9	10	11	12	13
133.1	132.1	19.3	207.6	211.9	172.83	51.15
168.8	238.0	381.8	190.9	150.0	218.90	47.90
8.5	140.6	374.4	252.1	95.3	161.01	69.71
160.8	68.3	80.7	23.8	31.3	174.23	81.23
72.2	180.1	176.7	95.9	155.9	121.49	56.57
64.7	161.7	253.2	85.1	123.7	124.33	61.64
232.3	129.0	257.7	63.1	96.9	120.22	74.96
80.1	166.8	125.9	10.1	4.7	85.33	54.47
24.1	6.2	39.9	46.2	36.3	62.27	94.61
74.7	0	96.5	6.7	8.3	35.41	114.83
134.7	23.9	150.0	38.1	43.2	47.34	103.44
309.4	35.1	206.5	3.0	0	67.67	147.37
64.7	27.3	46.4	72.5	14.4	44.54	76.50
2.1	49.5	60.0	162.3	149.9	52.08	106.18
23.8	25.5	0	117.9	19.4	56.96	116.70
51.5	5.7	28.8	0	48.3	56.41	133.03
48.0	117.0	12.3	44.8	67.3	43.18	78.72
85.8	66.5	107.3	3.4	0	37.62	95.60
47.0	75.6	1.6	14.0	10.4	63.08	100.88
7.0	9.9	0	0	0	29.64	137.33
0	0	13.0	0	0	45.75	112.28
2.2	5.7	0	16.5	0	11.61	164.18
0	5.1	0	0	0	0.63	243.23
0	0	0	0	61.7	6.17	300.00
0	0	1.9	0	0	0.39	200.08
0	0	21.6	0	0	6.60	212.04

	Std. week	Rainy days of the			
		1976	1977	1978	
		1	2	3	4
January	1	0	0	0	0
"	2	0	0	3	0
"	3	0	0	0	0
"	4	0	0	0	0
"	5	0	0	0	0
February	6	0	0	0	0
"	7	0	0	0	0
"	8	0	0	1	0
"	9	0	0	0	0
March	10	0	0	0	0
"	11	0	0	0	0
"	12	0	0	1	0
"	13	1	1	0	1
April	14	3	3	1	0
"	15	0	0	1	0
"	16	1	1	0	0
"	17	1	1	0	0
"	18	1	1	4	2
May	19	0	0	4	0
"	20	1	1	3	5
"	21	0	0	3	3
"	22	5	5	3	7
June	23	4	4	4	7
"	24	0	0	5	7
"	25	1	1	7	6
"	26	4	4	7	6

Annexure 73

zone Seed Farm, Mannuthy (Kole situation)

1979	1980	1981	1982	1983	1984	1985	Mean	C. V.
5	6	7	8	9	10	11	12	13
0	0	0	0	0	0	0	0.0	300.00
0	0	0	0	0	0	0	0.0	0.0
0	0	0	0	0	0	0	0.0	0.0
0	0	0	0	0	0	0	0.0	0.0
0	0	0	0	0	0	0	0.0	0.0
0	0	0	0	0	0	0	0.0	0.0
2	0	0	0	0	1	0	0.30	213.44
1	0	0	0	0	1	0	0.50	314.16
1	0	0	0	0	0	0	0.10	300.00
0	0	0	0	0	1	0	0.10	300.00
0	0	0	0	0	1	0	0.10	300.00
0	0	1	0	0	0	0	0.00	200.00
0	1	0	0	0	0	1	0.40	130.47
0	3	0	0	0	0	0	1.10	110.97
1	0	1	0	0	1	0	0.60	110.55
1	1	1	0	0	0	0	0.80	93.54
1	1	1	0	0	1	1	0.60	87.65
1	0	0	0	0	0	0	1.00	104.08
4	0	3	1	1	0	0	1.50	104.35
1	1	1	0	1	1	0	1.60	89.27
1	1	0	3	0	1	4	1.60	89.27
0	5	6	4	1	5	7	4.30	52.05
3	7	6	5	3	6	5	5.00	08.28
6	6	7	6	4	7	7	5.70	07.04
7	7	7	7	5	6	7	6.00	09.81
7	7	3	5	6	7	7	5.9	03.3

Annexure 73 (contd.)

	1	2	3	4	5
July	27	3	7	5	7
"	28	7	4	6	7
"	29	7	7	3	4
"	30	7	7	7	6
"	31	5	3	3	7
August	32	1	4	7	7
"	33	3	0	6	0
"	34	6	6	7	0
"	35	5	5	6	1
September	36	4	5	1	0
"	37	0	3	1	3
"	38	0	0	3	4
"	39	1	0	0	6
October	40	0	0	1	0
"	41	4	3	0	3
"	42	4	6	1	3
"	43	0	6	1	0
"	44	0	0	4	3
November	45	4	5	4	1
"	46	1	0	0	5
"	47	3	5	1	5
"	48	1	0	1	1
December	49	1	0	0	0
"	50	0	0	0	0
"	51	0	0	0	1
"	52	0	0	0.3	0

6	7	8	9	10	11	12	13
7	4	4	0	7	7	5.3	35.84
7	7	7	7	5	7	6.4	15.03
6	1	7	7	7	6	5.5	36.59
7	7	4	5	3	3	5.6	09.01
6	7	7	7	7	6	5.8	06.49
4	4	6	6	4	6	4.9	35.87
7	6	6	7	5	7	5;1	37.67
6	5	7	4	0	0	4.5	50.90
5	0	1	5	5	4	3.9	45.07
1	4	0	5	2	1	2.3	82.61
0	7	3	6	1	4	3.0	69.90
1	7	0	7	0	0	0.6	97.60
5	3	1	5	0	0	0.7	70.37
3	0	3	4	7	7	3.1	71.33
5	3	0	0	4	3	0.9	44.83
0	3	1	3	0	0	0.5	65.10
3	3	5	1	3	3	0.7	64.06
0	4	3	3	0	0	0.10	70.06
1	3	5	0	0	1	0.6	67.06
3	1	0	0	0	0	1.4	111.88
0	0	0	1	0	0	1.7	111.76
0	0	1	0	1	0	0.5	100.00
0	0	1	0	0	0	0.0	000.00
3	0	0	0	0	0	0.0	300.00
1	0	0	0	0	0	0.1	300.00
0	0	0	1	0	0	0.4	309.13

Annexure 74

Mean Maximum Temperature (°C) of the Zono Seed Farm, Mannuthy (Kole situation)

Std. week	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	C. V
	2	3	4	5	6	7	8	9	10	11	12	13
January	30.3	31.3	32.0	31.0	31.2	31.9	30.3	31.4	30.8	31.2	31.14	1.75
"	30.1	31.7	31.4	31.5	30.7	31.7	31.1	31.8	30.2	31.8	31.19	2.04
"	31.3	31.5	31.4	32.2	31.0	32.4	31.7	31.9	32.2	31.7	31.69	1.37
"	31.5	32.1	32.6	32.6	31.8	32.9	32.1	33.0	32.5	32.5	32.38	1.43
"	32.2	32.9	33.3	33.9	33.0	33.5	32.5	33.7	32.6	33.8	33.14	1.69
February	33.0	34.0	34.1	34.1	34.0	34.1	34.4	33.3	32.5	33.6	33.75	1.76
"	34.3	34.3	34.9	34.5	34.6	33.9	34.9	34.8	34.2	34.3	34.47	0.91
"	35.7	34.9	34.4	32.9	30.4	35.5	35.9	34.7	34.9	35.0	34.98	2.96
"	36.6	36.1	34.8	35.0	35.6	37.7	36.2	35.0	33.9	36.0	35.69	2.85
March	35.1	36.5	36.0	35.2	35.7	36.7	36.8	35.8	31.3	36.0	35.51	4.24
"	36.7	36.7	35.2	35.1	36.0	35.3	36.0	36.8	35.3	36.8	36.09	1.80
"	36.3	35.8	36.8	35.5	36.8	36.3	36.3	35.0	36.8	35.8	35.94	1.59
"	35.9	37.1	35.4	33.7	35.9	36.3	35.2	36.2	35.6	35.6	35.69	2.35
April	34.1	36.1	36.1	35.9	35.8	35.4	35.6	36.6	33.7	36.2	35.55	2.49
"	34.5	35.1	35.5	36.5	35.6	36.5	36.4	35.4	35.5	34.9	35.59	1.82
"	34.2	35.8	35.3	34.3	35.7	34.5	35.1	36.1	33.3	35.4	34.97	2.37
"	33.6	34.1	35.6	35.0	36.0	35.7	34.8	36.1	32.9	35.3	34.80	2.71
"	33.3	34.7	35.7	34.4	34.5	35.2	33.9	35.9	34.7	35.5	34.88	2.28
"	34.0	31.1	34.9	30.8	35.0	33.5	35.1	35.0	35.4	36.5	34.16	5.00
May	32.3	31.3	32.7	32.6	34.3	33.5	34.2	34.6	34.7	34.5	33.57	3.13
"	34.0	31.3	32.0	33.4	33.9	34.1	33.7	34.9	34.8	32.4	33.44	3.43
"	33.7	31.1	28.5	33.5	31.9	30.3	31.0	34.7	31.6	28.8	31.51	6.14
"	31.1	30.5	23.3	33.4	28.9	28.0	29.4	33.4	29.5	29.5	30.20	6.03
June	32.1	29.7	28.0	30.5	31.2	27.9	29.1	30.5	28.7	29.2	29.69	4.40
"	32.9	28.2	29.7	28.2	28.7	27.7	28.7	29.7	27.7	28.6	28.95	4.97
"	30.3	29.5	28.0	29.4	26.7	28.7	29.8	29.9	28.1	25.8	28.62	4.88

	1	2	3	4	5	6	7	8	9	10	11	12	13
July	27	30.3	28.7	29.0	28.5	28.0	29.4	29.7	31.1	28.2	28.4	29.13	3.24
"	28	30.1	29.7	27.4	28.0	27.9	28.9	27.9	28.8	28.1	29.4	28.52	2.85
"	29	29.9	27.7	29.5	30.2	29.1	30.1	28.6	27.7	26.9	28.2	28.79	3.78
"	30	27.5	27.8	27.9	27.9	28.7	27.9	29.1	28.5	29.3	28.8	28.34	2.07
August	31	28.7	29.9	29.3	26.9	29.3	27.9	27.4	29.1	28.8	28.2	28.55	3.12
"	32	30.2	30.1	28.2	28.5	29.2	28.7	28.4	27.9	28.7	26.2	28.81	2.60
"	33	30.0	30.3	28.7	30.1	29.1	28.7	28.2	27.9	29.1	28.4	29.05	2.73
"	34	29.5	29.8	28.1	29.4	29.5	28.9	28.1	29.3	29.0	29.0	29.03	1.90
"	35	28.3	29.4	28.1	30.9	29.2	29.5	30.3	30.3	28.2	29.4	29.36	3.09
September	36	29.9	29.9	30.5	31.6	29.8	30.3	31.4	29.6	29.6	30.1	30.27	2.22
"	37	30.4	30.3	30.1	31.9	31.1	28.6	30.7	29.3	29.9	29.3	30.16	3.01
"	38	30.7	31.2	30.3	29.5	31.1	28.1	31.4	28.1	31.0	30.7	30.21	3.88
"	39	31.3	31.6	29.7	28.9	31.1	29.8	30.1	29.5	30.5	30.2	30.27	29.6
"	40	32.8	31.7	30.4	30.6	30.8	31.2	31.5	29.6	28.9	30.1	30.75	3.50
"	41	31.6	32.2	31.3	31.4	30.3	30.7	32.1	31.0	28.2	30.1	30.89	3.60
October	42	30.2	31.5	31.4	33.0	30.2	30.9	31.3	30.7	23.3	30.5	30.90	3.06
"	43	31.7	29.3	31.7	32.2	31.0	30.6	31.7	31.6	30.1	31.6	31.15	2.74
"	44	32.2	31.8	31.0	32.1	32.7	22.6	30.7	31.4	32.0	31.0	30.75	9.05
November	45	31.7	30.1	28.6	31.5	32.2	30.4	30.9	31.2	31.6	29.5	30.77	2.13
"	46	31.3	30.1	32.2	30.4	31.4	32.2	30.9	31.2	31.8	30.9	31.24	2.13
"	47	30.8	29.9	31.5	29.8	31.4	31.7	30.7	30.6	31.1	31.3	30.88	2.00
"	48	31.1	30.5	30.8	31.3	31.5	30.3	30.5	30.4	29.9	30.0	30.63	1.66
December	49	30.9	30.9	31.0	31.4	31.4	31.4	29.8	30.2	30.7	30.4	30.81	1.68
"	50	30.5	30.0	30.9	32.4	32.4	31.4	29.6	31.1	31.0	30.7	31.00	2.77
"	51	31.1	30.5	31.0	30.9	30.9	30.0	30.3	28.9	30.4	31.1	30.51	2.11
"	52	31.5	31.2	30.0	31.3	31.3	30.8	30.4	30.5	32.6	31.1	31.07	2.19

Annexure 75

Mean Minimum Temperature (°C) of the Zone. Seed Farm, Mennuthy (Kole situation)

Std. week	Mean Minimum Temperature (°C) of the Zone. Seed Farm, Mennuthy (Kole situation)													C.V.
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	12	13	
Jan.	20.2	19.9	21.9	22.5	20.8	22.6	22.0	20.7	23.6	23.3	21.75	5.64		
"	21.3	19.5	20.9	21.1	21.7	19.7	20.7	18.3	23.4	21.4	20.80	6.35		
"	20.2	20.3	19.1	22.0	21.3	22.7	19.6	21.7	23.4	23.6	21.39	6.96		
"	21.0	21.6	21.9	23.9	19.4	21.6	21.1	21.6	20.7	21.6	21.44	4.98		
"	21.8	21.4	21.5	22.4	21.3	21.4	21.2	21.7	22.4	22.1	21.72	1.94		
Feb.	20.8	24.6	22.4	23.1	21.1	22.3	20.5	21.7	24.9	21.0	22.24	6.62		
"	20.9	21.1	22.2	22.4	21.6	22.3	21.0	22.5	24.4	22.4	22.08	4.43		
"	14.4	23.3	22.1	23.7	21.9	19.7	21.3	22.4	23.5	22.5	21.98	6.40		
"	21.2	22.9	22.5	22.7	23.1	21.9	22.1	21.5	25.1	22.0	22.50	4.61		
March	22.9	23.8	24.0	23.9	23.5	23.1	22.9	22.2	23.7	22.8	23.22	2.69		
"	22.1	24.7	23.4	23.9	23.0	24.7	22.5	24.7	23.5	23.8	23.63	3.69		
"	23.0	24.5	24.1	24.1	23.0	24.6	24.0	24.5	23.4	25.0	24.02	2.71		
"	23.4	24.7	24.4	23.9	24.5	24.6	24.5	24.1	25.0	24.7	24.38	1.80		
April	23.0	25.8	24.9	25.0	24.1	26.0	24.5	24.4	22.9	24.0	24.46	4.00		
"	24.9	26.1	25.4	24.2	26.7	25.4	24.7	25.0	22.8	25.2	25.07	4.03		
"	24.3	25.2	25.4	25.0	25.2	25.0	24.2	25.0	24.3	25.4	24.90	1.76		
"	24.0	24.7	24.3	24.3	25.1	25.0	26.2	25.3	25.1	25.4	25.04	2.32		
May	24.6	23.9	24.5	26.0	24.8	25.2	25.6	25.7	26.4	25.9	25.26	2.97		
"	24.7	24.3	25.5	24.9	24.9	24.3	25.1	25.2	26.2	26.6	25.13	2.55		
"	24.5	24.4	24.7	24.1	25.2	25.3	23.9	25.9	25.4	25.2	24.86	2.44		
"	25.8	24.3	24.7	24.6	25.5	25.2	24.5	25.5	25.7	24.6	24.91	1.95		
"	23.0	24.0	23.5	25.4	24.0	23.7	24.2	26.0	24.0	23.3	24.39	3.79		
June	23.7	23.7	22.7	24.7	23.2	23.1	23.2	25.1	23.6	23.3	23.56	3.09		
"	24.0	23.0	21.9	23.7	23.7	23.4	23.8	23.7	23.1	23.4	23.37	2.45		
"	23.9	23.0	23.0	22.9	23.5	22.8	23.4	23.7	23.1	22.6	23.19	1.71		
"	22.5	23.9	22.5	22.9	22.9	23.0	23.9	24.9	22.8	22.2	23.15	3.40		

Annexure 75 (Contd.)

	1	2	3	4	5	6
July	27	23.7	22.8	22.9	22.8	22.6
"	28	23.5	23.4	22.4	22.7	22.8
"	29	22.6	22.8	23.0	23.8	23.3
"	30	22.5	23.0	23.2	23.0	22.7
"	31	23.2	23.9	23.3	22.7	23.0
August	32	24.1	23.6	23.1	22.9	23.0
"	33	23.7	24.2	22.7	23.1	22.0
"	34	23.0	23.7	23.1	23.5	22.9
"	35	22.7	22.9	22.5	23.6	23.0
September	35	23.5	23.1	23.7	24.1	23.7
"	37	23.1	23.7	23.0	23.9	23.5
"	38	22.6	24.0	22.8	23.3	23.5
"	39	23.2	24.0	23.1	23.2	23.6
October	40	24.1	23.2	22.6	23.2	23.9
"	41	23.2	24.1	23.6	24.0	23.1
"	42	23.3	23.5	23.7	23.1	23.3
"	43	22.9	23.3	23.8	24.2	23.7
November	44	23.4	24.0	23.6	22.9	22.3
"	45	23.0	23.0	22.9	24.3	23.2
"	46	24.4	23.8	22.7	23.7	23.9
"	47	23.0	21.9	21.0	23.0	23.1
"	48	23.5	23.5	22.9	23.8	22.7
December	49	22.9	22.2	24.0	23.6	21.9
"	50	22.7	22.2	24.5	23.6	22.9
"	51	24.3	23.0	23.8	21.8	22.7
"	52	21.0	20.3	23.3	22.3	21.7

7	8	9	10	11	12	13
23.5	23.5	24.6	22.7	22.9	23.20	2.55
22.9	22.7	23.9	23.2	22.7	23.02	1.91
23.7	22.6	22.7	22.1	22.7	22.93	2.19
23.0	22.9	23.5	23.9	23.0	23.07	1.62
22.6	22.3	23.8	23.6	22.4	23.08	2.36
23.3	22.4	23.4	22.7	22.3	23.08	2.26
23.1	22.4	23.5	22.6	22.9	23.12	2.24
22.6	23.0	23.7	23.1	22.7	23.23	1.60
23.6	23.5	24.4	22.9	23.8	23.29	2.39
23.4	22.5	23.5	23.1	23.6	23.40	1.77
22.7	28.2	23.7	22.4	22.6	23.68	6.69
23.0	23.4	22.7	23.6	23.3	23.22	1.80
23.2	22.1	23.2	23.3	23.9	23.88	1.35
23.0	22.6	23.5	22.5	23.3	23.19	2.22
23.3	24.2	22.5	22.4	23.1	23.35	2.55
23.7	23.8	23.3	19.4	22.5	22.96	5.39
23.4	23.3	23.4	22.4	22.8	23.32	2.13
22.6	23.6	23.5	22.5	23.9	23.33	2.56
23.3	23.2	22.0	22.7	23.4	23.10	2.38
23.2	24.1	20.7	22.5	22.9	23.19	4.40
20.9	24.4	22.3	22.5	22.4	22.45	4.38
22.8	23.9	23.3	20.2	20.4	22.71	5.58
21.5	23.4	23.9	21.2	24.1	22.57	4.53
18.8	22.6	24.4	18.4	22.2	22.23	8.88
24.4	23.6	23.8	17.8	22.6	22.73	7.96
22.3	22.2	23.0	21.2	23.0	21.96	3.84

Annexure 76

		Relative Humidity % of the zone (Seed Farm Mannuthy)Kole Situation													C.V.
		1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Mean	12	13	
Std. week		2	3	4	5	6	7	8	9	10	11	12	13		
Jan.	1	57	61	63	61	62	64	64	60	68	79	63.90	8.57		
"	2	58	59	64	67	57	70	67	62	64	69	63.70	6.88		
"	3	60	66	59	69	60	66	60	67	72	64	64.30	6.56		
"	4	54	67	59	65	58	62	63	67	57	58	61.00	9.96		
"	5	67	60	61	69	60	59	64	67	58	62	62.70	5.80		
Feb.	6	54	58	64	62	58	66	65	70	66	70	63.30	7.93		
"	7	49	50	64	69	58	64	69	61	71	72	62.70	12.48		
"	8	46	66	70	78	55	46	59	75	70	50	61.50	18.40		
"	9	64	66	53	65	72	56	67	70	57	69	63.90	9.56		
March	10	72	61	63	70	73	64	74	63	83	60	63.30	10.19		
"	11	64	65	70	77	63	67	65	69	71	59	67.00	7.10		
"	12	72	68	71	75	71	70	69	71	72	71	71.00	2.52		
"	13	68	61	73	69	67	71	71	70	73	74	69.70	5.18		
April	14	75	70	73	69	72	72	71	69	81	70	72.20	4.75		
"	15	74	74	74	71	76	74	72	69	68	72	72.40	3.28		
"	16	74	70	73	80	68	72	73	69	78	69	72.60	5.16		
"	17	75	67	71	76	73	71	71	65	77	72	71.80	4.98		
May	18	75	76	69	76	75	74	75	67	72	69	72.80	4.33		
"	19	70	81	74	79	77	80	73	70	71	69	74.40	5.77		
"	20	76	85	84	76	74	78	79	75	72	74	77.30	5.27		
"	21	72	79	84	74	77	74	81	70	72	82	76.5	5.87		
"	22	80	81	92	74	86	92	87	71	82	93	84.8	9.53		
June	23	80	85	88	78	90	92	89	75	84	89	85.0	6.34		
"	24	78	86	90	89	85	92	88	88	91	88	87.5	4.28		
"	25	76	90	86	92	91	90	92	87	87	88	87.90	5.07		
"	26	87	88	89	86	93	85	86	85	89	97	88.50	4.11		

	1	2	3	4	5	6	7	8	9	10	11	12	13
July	27	84	90	88	92	90	85	88	82	88	89	87.60	3.32
"	28	86	85	89	91	91	89	90	92	91	90	89.40	2.41
"	29	90	91	84	84	92	99	90	93	92	88	88.60	3.92
"	30	91	89	90	91	88	92	88	89	83	87	88.80	2.75
"	31	89	83	87	92	86	87	90	89	88	93	88.40	3.13
August	32	81	83	91	88	89	88	90	92	87	95	88.40	4.42
"	33	82	83	88	85	92	89	89	94	87	89	87.80	4.04
"	34	87	85	87	84	88	84	88	89	85	84	86.10	2.11
"	35	88	87	88	82	86	83	82	86	89	87	83.80	2.85
September	36	83	85	78	83	73	84	78	84	82	84	82.40	9.83
"	37	82	81	79	82	88	89	81	87	82	84	82.50	3.88
"	38	79	78	81	89	79	92	81	90	82	80	83.10	5.91
"	39	78	77	81	88	83	85	80	86	86	84	82.80	4.21
October	40	77	79	78	82	82	81	80	84	92	88	82.00	5.35
"	41	81	76	81	84	82	84	79	78	86	86	81.70	3.91
"	42	84	81	83	73	85	83	81	79	80	81	81.00	3.94
"	43	79	84	77	74	80	84	81	77	86	77	99.90	5.56
"	44	83	79	81	82	69	87	73	81	74	74	78.30	6.73
November	45	81	98	84	75	68	84	80	76	76	83	80.50	9.33
"	46	74	84	72	86	78	69	78	69	77	83	77.10	7.62
"	47	82	86	68	82	73	72	66	82	72	79	76.20	8.52
"	48	80	78	67	80	66	73	64	65	74	67	71.00	9.04
December	49	67	68	66	74	75	69	66	54	66	75	69.00	5.69
"	50	60	59	66	70	69	66	65	67	61	76	65.90	7.39
"	51	67	61	62	67	67	70	63	71	64	75	66.70	6.27
"	52	62	64	74	63	68	62	69	83	69	60	68.40	8.99

Annexure 77

Land use Pattern—Classification of area in the zone (Area in ha)

District	Total geo-graphical area	Forests	Land put to non agricultural uses.	Barren and uncultivable land.	Permanent pastures and grazing land	Land under Misc. tree crops	Culti-vable waste	Fallow other than current fallow	Current fallow	Net area sown	Area sown more than once	Total cropped area.
Quilon	251898	81438	20696	1069	30	385	867	779	1117	145457	93208	238665
Alleppey	136058	—	26148	576	14	150	1900	1038	1958	104274	64053	168327
Kottayam	219550	8141	19752	2175	352	1304	1739	2237	129000	182250	55988	238238
Ernakulam	235319	8123	34222	2649	166	1329	5010	2775	3563	177482	67960	245442
Trichur	299390	103619	22026	2457	150	1333	5452	3087	4660	156606	70558	227164
Malappuram	363230	103417	18974	7706	400	3664	14134	4062	9066	201807	118064	319871
Total	1505445	304738	138818	16632	838	7165	29102	13978	23264	967876	469831	1437707

Source: Department of Economics and Statistics.

Annexure 78

Land use pattern—Classification of area under land utilization 1984-85

(in ha.)

District	Total geographical area	Forests	Land put to non-agricultural uses	Barren and uncultivable land	Per-manent pastures and grazing land	Land under Misc. tree crops	Culti-vable waste	Fallow other than current fallow	Current fallow	Net area sown	Area sown more than once	Total cropped area
Quilon	251838	81438	21817	1088	28	338	1122	906	1075	144026	83746	227772
Alleppey	136058	—	27451	576	10	134	1849	1088	2122	102828	69137	171965
Kottayam	219550	8141	18823	2034	47	285	1494	1955	2513	184258	48855	233113
Ernakulam	235319	8123	33544	2869	166	1209	5401	2648	3232	178127	68724	246851
Trichur	299390	103619	22074	2205	149	1267	5190	3100	4753	156933	72800	229733
Malappuram	363230	103417	19414	7419	323	3042	14343	4298	8812	202162	39680	241842
	1505385	304738	143123	16191	723	6375	29399	13995	22507	968334	382942	1351276

Source : Department of Economics and Statistics.

Annexure 79

Distribution of operational holdings according to size of holding

District	size of holding (ha)					total
	0.02-0.99	1.00-1.99	2.00-3.99	4.00-9.99	10.00 & above	
Quilon	378322	23169	6219	845	97	408661
Alleppey	336107	19946	5970	1422	107	363552
Kottayam	187189	30287	13483	3293	350	234602
Ernakulam	291538	29969	9857	2278	69	33711
Trichur	279065	23698	6973	1208	46	310990
Malappuram	251948	25366	11244	3553	398	292509
	1724169	152435	53746	12599	1057	1644025

Source : Agricultural census 1976-77

Annexure 80

Distribution of working population (1981)

District	Total main workers	Cultivators	Agrl. Labourers	Household industry workers	
				Other workers	workers
Quilon	684859	138092	174000	26022	346745
Alleppey	607383	66797	160745	53436	326405
Kottayam	459524	82101	115089	18395	243939
Ernakulam	707189	74087	128846	27217	477039
Trichur	645334	60878	164845	36991	382620
Malappuram	521493	68783	193739	15957	243014
Total	3625782	490738	937264	178018	2019762

Source : Census of India (1981)

Annexure 81

Area under Principal Crops (Area in ha 1981-82)

District	Rice	Pulses	Sugarcane	Pepper	Ginger	Turmeric	Cardamom	Arecanut	Banana Plantain	Cashew	Sweet potato	Groundnut	Tapioca	Sesamum	Coconut	Tea	Coffee	Rubber
Quilon	50400	2048	307	9801	1239	113	149	4426	4679	8750	40	—	60451	2883	84544	1653	378	38890
Alleppey	88606	822	2990	4816	224	28	—	2837	21541	3730	82	—	19094	4829	62118	—	21	4273
Kottayam	34428	2056	242	12868	3214	808	22	2558	4244	1467	24	—	24560	40	40751	2230	958	63232
Ernakulam	100884	1467	55	6311	2425	637	—	6212	5425	3923	60	—	12332	2057	62317	30	247	23334
Trichur	115511	3288	8	4036	123	186	—	6601	4527	7307	135	—	6157	1595	57312	447	33	9386
Malappuram	78974	1926	15	4016	491	104	184	8753	3910	20477	1587	3	18104	1842	57919	174	—	19281
Total	468809	11609	3617	42348	7716	1876	355	31387	44326	45654	1928	3	140748	13246	374961	4534	1637	158396

Source: Directorate of Economics & Statistics, Kerala

Area under Principal Crops (Area in ha 1983-84)

District	Rice	Pulses	Sugarcane	Pepper	Ginger	Turmeric	Cardamom	Arecanut	Banana & Plantain	Cashew	Sweet potato	Tapioca	Groundnut	Sesamum	Coconut	Tea	Coffee	Rubber
Quilon	39846	1651	223	7457	853	63	104	3092	3849	7588	48	41624	—	2301	75018	687	264	34253
Alleppey	69201	765	1500	3860	229	28	—	2138	2194	3331	64	1900	—	4910	46907	—	15	3447
Kottayam	34801	1934	274	12646	3206	654	22	2480	4582	1472	24	23008	—	41	50914	2011	988	72396
Ernakulam	85732	1445	59	6665	2177	710	—	6192	4895	4032	60	11874	—	2303	62038	2	247	7580
Trichur	103391	2619	5	4073	93	180	—	6557	4459	6933	137	5797	1177	1177	58929	447	33	10760
Malappuram	74749	1520	10	4114	447	101	184	8833	4952	21946	1571	17960	11	1912	60739	474	—	18287
Total	408720	9034	2076	38815	7010	1736	310	29302	29931	45322	1904	102163	1188	12644	354545	3621	1527	146723

Annexure 81 (Contd.)

Area under Crops (in ha) 1984-85

District	Cereals and millets					Pulses including Turmeric							
	Rice					Total			Total				
	Aut- umn	Win- ter	Sum- mer	Total	Jowar	Ragi	Other cere- als	Total cereals and millets	Aut- umn	Win- ter	Sum- mer	Total	Total food grains
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Quilon	18997	18326	240	37563	—	6	6	37575	932	478	398	1808	39383
Alloppay	32756	15984	24870	73610	—	5	2	73617	58	203	369	630	74247
Kottayam	11559	14615	5816	31990	—	4	2	31996	210	195	1806	2211	34207
Ernakulam	36690	38422	14071	89183	5	2	136	89326	512	281	602	1395	90721
Trichur	35576	49705	17259	102540	9	29	78	102656	1712	316	412	2440	105096
Malappuram	32251	35861	5073	73185	11	10	66	73272	505	173	560	1238	74510
Total	167829	172913	67329	408071	25	56	290	403442	3929	1646	4147	9722	418164

Annexure 81 (contd)

Area under Crops (contd.) (in ha) 1984-85

District	Sugar crops			Pepper	Chillies	Ginger	Tur- meric	• Carda- mom	Betel	Tama- rind	Cloves	Nut- meg	Cinna- mon	Total
	Sugar cane	Palmyra	Total											
	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Quilon	194	30	224	7515	—	932	76	105	3061	664	68	89	24	12534
Alleppey	1273	14	1287	3664	—	204	21	—	2138	267	16	101	34	6425
Kottayam	262	443	705	11762	1	2533	558	—	2328	432	368	493	52	18527
Ernakulam	50	363	413	6191	—	2282	626	—	5727	741	113	1174	43	16897
Trichur	51	900	905	3780	3	96	149	—	6201	1460	31	229	35	11984
Total	1798	3021	4819	36961	88	6404	1522	293	27755	4740	604	2184	201	80752

*Commodity Board estimates

Annexure 81 (contd)

Area under crops (contd.) (in ha) 1984-85

District	Fresh fruits							Total	Dry Fruits	Total fruit trees
	Mango	Jack	Banana	Other Plantain	Pineapple	Papaya	Others			
	29	30	31	32	33	34	35	36	37	38
Quilon	4758	4808	1445	2705	469	481	395	15061	7221	22282
Alleppey	4057	2313	699	1489	208	632	532	9930	9530	13460
Kottayam	3634	4250	1597	3231	669	721	722	14824	1395	16219
Ernakulam	4595	3942	2145	3333	589	1019	625	16248	3909	20057
Trichur	4550	3644	1577	3273	344	1442	500	15330	7510	22840
Malappuram	6190	5180	2381	2214	200	1244	569	17978	19850	37828
Total	27784	24137	9844	16245	2479	5539	3343	89371	43315	132686

Area under crops (in ha) 1984-85

District	Vegetables				Tapioca			Other	Total	Total food crops
	Drum stick	Tubers	Sweet potato		Autumn	Winter	Summer			
	39	40	41	42	43	44	45	46	47	48
Quilon	1080	3963	38	14796	26563	734	42093	263	47437	121860
Alleppey	607	5224	51	1904	7994	866	10764	844	17490	112909
Kottayam	1232	2799	23	1337	18252	495	20084	1122	25260	94918
Ernakulam	1037	2415	46	2794	6824	746	10364	2512	16374	144462
Trichur	688	2080	148	1470	3887	331	5688	1095	9699	150524
Malappuram	904	2003	1503	6058	8295	1388	15741	1846	21997	150005
Total	5587	18484	1809	28359	71815	4560	104734	7642	138304	774678

Source : Bureau of Economics & Statistics.

Annexure 81 (contd.)

Area under Crops (in ha) 1984-85

Non Food Crops															
District	Oil Seed Crops				Fibre Drugs & Narcotics						Plantation crops				
	Ground nut	Sesamum	Cocconut	Others	Total	cotton	Betel leaves	Tobacco	Lemon grass	Total	Tea	Coffee	Rubber	Cocoa	Total
	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Quilon	—	2127	68927	56	71110	—	107	—	26	133	681	207	30208	970	32066
Alleppey	—	4567	45699	92	50358	—	60	—	4	64	—	16	5580	1991	7587
Kottayam	—	66	48179	113	48358	—	75	—	56	131	2009	990	78739	5463	87201
Ernakulam	—	2131	55678	183	57992	—	83	—	538	621	2	274	34319	1970	36565
Trichur	—	1278	62438	178	63894	—	78	—	48	126	447	33	11019	730	12225
Malappuram	5	2239	62214	53	64511	—	337	—	96	433	174	—	18711	460	19349
Total	5	10281	274203	619	356223	—	740	—	768	1508	3313	1520	178576	11584	194993

Area under crops (in ha) 1984-85

District	Fodder crops	Green manure crops	Other non food crops	Total non food crops	Total cropped area
	64	65	66	67	68
Quilon	273	610	1720	105912	227772
Alleppey	132	164	751	59056	171965
Kottayam	346	231	1928	138195	233113
Ernakulam	103	206	6902	102389	246851
Trichur	77	398	2485	79209	229733
Malappuram	23	2284	5241	91837	241842
Total	1018	3893	19027	576598	1351276

Annexure 82

Production of important crops (in tons) 1981-82

District	Rice	Pulses	Sugarcane	Black pepper	Dry ginger	Turmeric	Cardamom	Botel nut (Million)	Banana	Cashew	Tapioca	Groundnut	Sesamum	Coconut (Million)	Cotton (Bale)	Tea	Coffee	Rubber
Quilon	83369	1628	1351	2784	3368	213	—	669	27208	6011	826970	—	721	356	—	797	355	25984
Alleppoy	173162	670	15518	968	552	55	—	325	20794	2029	166934	—	869	295	—	—	20	2767
Kottayam	64603	1472	1277	1686	9215	1508	1	362	33732	1448	405240	—	9	200	—	283	901	36842
Ernakulam	148995	1050	340	1117	6140	1180	—	1175	33405	2346	243059	—	761	344	—	—	232	13934
Trichur	155473	2348	33	537	128	291	—	1394	31015	1659	76655	—	431	381	—	912	30	6083
Malappuram	105190	1431	94	1072	873	157	9	1496	35243	8682	235532	3	626	247	—	84	—	9931
Total	730792	8599	18613	8164	20276	3404	18	5421	181397	22175	2054210	3	3417	1823	—	2076	1538	95541

Source : Statistics for Planning 1983.

Production of important crops (in tons) 1983-84

District	Rice	Pulses	Sugarcane	Black pepper	Dry ginger	Turmeric	Cardamom	Arecanut (Million Nos.)	Banana	Cashew	Tapioca	Groundnut	Sesamum	Coconut (Million)	Cotton (bales)	Tea	Coffee	Rubber
Quilon	58035	1286	246	1723	2110	119	4	289	23612	3212	595223	—	547	223	—	215	70	20486
Alleppoy	133758	623	13938	513	564	55	0	196	14603	280	242522	—	866	180	—	—	4	2062
Kottayam	70027	1406	2546	2990	8555	1183	1	281	37784	240	482708	—	9	1531	—	361	262	43299
Ernakulam	119054	1035	597	1560	5403	1276	0	797	38863	2064	852323	—	701	264	—	—	66	16398
Trichur	155121	1870	51	823	102	281	0	1122	21768	6061	103650	—	318	322	—	692	9	6437
Malappuram	93291	1128	101	717	794	153	6	1246	29773	11631	214622	11	656	162	—	—	—	10937
Total	629286	7348	17479	8326	17528	3067	11	3931	166403	23448	1891048	11	3097	2682	—	1268	411	99719

Annexure 82 (Contd.)

Production of important crops (in

District	Rice			Total	Jowar
	Autumn	Winter	Summer		
1	2	3	4	5	6
Quilon	27693	30992	244	58929	—
Alleppey	61687	21606	57221	140514	—
Kottayam	25021	27056	14495	66572	—
Ernakulam	62011	64482	22706	149199	2
Trichur	42606	73828	30947	147381	3
Malappuram	41216	50974	8522	100712	4
Total	260234	268938	134135	663307	9

* Commodity Board estimates.

Source: Bureau of Economics & Statistics.

tons) 1984-85

Ragi	Other	Pulses	Sugarcane (Gur)*	Black pepper	Dry chillies	Dry ginger
7	8	9	10	11	12	13
5	3	1518	1119	1394	—	2615
4	2	545	7340	846	—	654
3	1	1852	1511	933	1	6413
2	87	999	288	547	—	7385
24	50	1742	29	677	3	156
9	42	919	73	660	74	702
47	185	7575	10360	5057	78	17925

Annexure 82 (contd.)

Production of important crops (in tons) 1984-85

Districts	Cured Turmeric	Procured cardamom	Betel nuts (Millions)	Tamarind	Mango	Jack (Nos' 000)	Banana	Other plantain	Raw cashew nut	Tapioca	Sweet potato	Papaya
	14	15	16	17	18	19	20	21	22	23	24	25
Quilon	14	15	360	1374	14773	52479	15032	12484	3431	713897	183	391
Alleppey	4	—	157	192	9071	9113	11043	4692	862	158661	315	3365
Kottayam	1009	—	251	487	4633	14229	24980	16084	626	406902	184	4895
Ernakulam	1125	—	1089	1005	12025	16939	26465	16392	1583	205207	361	4227
Trichur	233	1071	1071	3038	20070	13818	17599	7194	3209	73773	1161	6192
Malappuram	59	2	1153	2092	26598	10008	24529	6888	7326	273579	12843	7592
Total	2574	1075	4081	8188	87170	116586	119648	63734	17037	1832019	15047	26687

Source: Bureau of Economics & Statistics

Production of Important crops (in tons) 1984-85

District	Ground nut	Sesamum	Coconut in (Million nuts)	Cotton (Bales)	Tobacco	Lemon grass	Tea*	Rubber	Cocoa	Pineapple	Drumstick
	26	27	28	29	30	31	32	33	34	35	36
Quilon	—	330	725	—	—	2	174	20046	73	5504	1074
Alleppey	—	1589	282	—	—	1	—	3199	425	2146	436
Kottayam	—	21	192	—	—	4	421	49207	1661	7224	477
Ernakulam	—	298	363	—	—	62	—	21727	668	6491	819
Trichur	—	557	297	—	—	2	1296	7507	68	2864	1223
Malappuram	5	430	193	—	—	2	93	9522	143	2137	948
Total	5	3225	1602	—	—	73	1984	111208	3038	26366	4977

* Commodity board estimates

Source: Bureau of Economics & Statistics

Annexure 83

Area under irrigation—Crop wise (in ha) 1980-81

District	Paddy	Vegetables	Tubers	Coconut	Area- Other				Banana	Total	Others	Total
					nut	Cloves	nutmeg con-	Banana				
					amon	& spices	diments	leaves				
Quilon	871	191	6	62	3	11	—	28	78	—	1470	2720
Alleppey	11935	127	200	13159	53	90	94	289	—	169	1605	27721
Kottayam	1328	258	—	14	—	234	—	103	24	—	1654	3615
Ernakulam	70100	6	—	7046	696	437	32	688	11	1	2780	81773
Trichur	48409	330	77	20717	6243	106	609	660	45	5	1374	87575
Malappuram	16809	955	921	1203	1821	—	—	813	380	—	1240	24142
Total	149452	1867	1204	51401	8816	878	735	2557	538	175	19123	227559
Area under irrigation - Crop wise (in ha) 1983-84												
Quilon	5434	195	10	57	2	8	—	20	114	2	976	6818
Alleppey	8105	519	172	16709	43	64	82	191	25	120	807	26837
Kottayam	7714	161	—	19	—	108	18	95	24	—	1134	9273
Ernakulam	53924	46	—	7926	432	411	70	503	18	—	1847	65177
Trichur	59314	237	17	27466	1791	77	347	623	21	—	1038	90931
Malappuram	19845	652	198	3489	2485	1	29	943	319	2	844	29007
Total	154336	2010	397	55666	4753	669	546	2375	521	124	6646	228043

Annexure 84

Area under irrigation—Source wise (in ha) 1980-81

District	1	2	3	4	5	6	7	8
	Govt. canal	Private canal	Govt. tanks & wells	Private tanks & wells	Minor & Lift irrigation	Other sources	Total	
Quilon	176	250	134	562	497	758	2377	
Alleppey	2667	4	213	13825	3890	4493	25092	
Kottayam	113	20	553	995	387	1157	3225	
Ernakulam	18039	137	1240	8080	14292	5747	47535	
Trichur	20752	504	989	5960	4620	5888	38713	
Malappuram	835	881	167	7498	4012	7937	21330	
Total	42582	1796	3296	36860	27698	25980	138272	

Area under irrigation—Source wise (in ha) 1983-84

District	1	2	3	4	5	6	7	8	9	10
	Govt. canal	Private canal	Govt. tanks	Private tanks	Govt. wells	Private wells	Minor & lift irrigation	Other sources	Total	
Quilon	395	125	90	115	13	348	275	2254	3615	
Alleppey	2504	7	101	13322	41	1130	3598	3001	23704	
Kottayam	276	61	344	353	24	342	819	2675	4894	
Ernakulam	18732	91	682	2325	288	5993	11454	8539	48104	
Trichur	17717	499	780	2160	1271	7389	6689	8345	44850	
Malappuram	520	530	100	2789	21	4823	5720	9877	24380	
Total	40144	1313	2097	21064	1658	20025	28555	34691	149547	

Annexure 85

Fertilizer consumption (Qty in M. Tons)

District	1980-81					1981-82				
	N	P	K	N+P+K	N	P	K	N+P+K		
Quilon	2876	1930	2289	7095	3045	2224	2518	7787		
Alleppey	5526	3041	5027	13694	4525	2520	4038	11083		
Kottayam	5599	3346	4370	13315	5271	3727	4366	13364		
Ernakulam	3495	2200	2678	8373	3329	2330	1816	8535		
Trichur	3266	1720	2937	7923	3593	1793	2982	8173		
Malappuram	2591	1460	2166	6217	2933	1654	2380	6967		
Total	23453	13697	19467	56617	22696	14248	19100	55909		

Source: Directorate of Agriculture, Trivandrum.

Fertilizer consumption (Qty in M. Tons)

District	1982-83					1983-84				
	N	P	K	N+P+K	N	P	K	N+P+K		
Quilon	3818	2754	3312	9884	4051	2612	2830	9493		
Alleppey	5353	3400	4243	12996	6539	3238	4424	14201		
Kottayam	5269	3435	3774	12478	10350	4530	4927	19807		
Ernakulam	2435	2218	2382	7035	6078	3439	3490	13007		
Trichur	3955	2057	3082	9104	4848	2523	3062	10433		
Malappuram	2649	1719	2738	7106	3588	2128	2673	8389		
Total	23489	15583	19531	94057	35454	18470	21406	75330		

Source: Directorate of Agriculture, Trivandrum

Annexure 85 (contd)

Fertilizer consumption (Qnty in M. Tons)

District	1984—85					1985—86				
	N	P	K	N+P+K	N	P	K	N+P+K		
Quilon	4948	3540	3767	12255	3138	1886	2846	7870		
Alleppey	5385	2646	3881	11912	4084	2107	4080	10271		
Kottayam	8862	4954	4739	18555	8847	5146	4829	18822		
Ernakulam	5010	3298	3070	11378	5604	3515	4661	13780		
Trichur	4642	2420	3849	10911	4562	2321	4722	11605		
Malappuram	3843	2131	2866	8840	4056	2375	3470	9901		
Total	32690	18989	22172	73851	30291	17350	24608	72249		

Source: Directorate of Agriculture, Trivandrum.

Annexure 86

Consumption of Pesticides (in Tech. Gr. M. Tons)

District	1984—85	1985—86
Quilon	34.27	27.59
Alleppey	110.37	120.24
Kottayam	103.60	108.38
Ernakulam	102.80	106.50
Trichur	154.20	161.14
Malappuram	94.23	90.65
Total	589.47	614.50

Annexure 87

Loans advanced by co-operatives for Agrl. purposes 1983-84

District	Primary Agrl. Credit Societies			Primary Land Level Bank		
	No. of banks	S T. Loan	M. R. Loan	L. T. Loan	No. of banks	L. T. Loans
Quilon	128	511.85	317.31	5.78	3	251.72
Alleppey	188	739.48	380.45	41.53	3	114.19
Kottayam	146	2378.02	814.69	48.59	2	100.41
Ernakulam	165	1556.24	407.09	6.42	2	160.76
Trichur	157	1258.57	291.05	59.10	2	287.14
Malappuram	112	851.44	148.16	4.36	3	145.60
Total	896	7295.60	2358.75	165.78	15	1050.82

Source: Registrar of Co-operative Societies, Trivandrum

Annexure 88

Livestock population 1982

District	Cattle	Buffaloes	Sheep	Goat	Horses & ponies	Pigs	Poultry
Quilon	419294	24081	1306	235935	1	1026	1511521
Alleppey	319225	9683	564	138408	3	684	1587940
Kottayam	283353	7931	479	159346	3	41239	1207218
Ernakulam	304367	27272	253	180354	1	15335	1624152
Trichur	233655	54331	482	186370	4	2118	1533438
Malappuram	193364	64428	623	224613	3	183	1673560
Total	1753258	187726	3807	1125026	15	60485	9137829

Source: Report on 13th Quinquennial Livestock Census—1982.

Annexure 89

Distribution of Livestock (1966-1982)

District	Livestock number				Percentage distribution			
	1966	1972	1977	1982	1966	1972	1977	1982
Quilon	527566	591454	661945	681495	11.37	11.98	12.44	12.07
Alleppey	423284	450359	485881	468605	9.12	9.13	9.13	8.30
Kottayam	625028	468751	521886	492451	13.47	9.50	9.81	8.72
Ernakulam	505588	482630	505133	527654	10.89	9.78	9.50	9.35
Trichur	405210	432473	442530	477035	8.73	8.76	8.32	8.45
Malappuram	379492	418709	483243	—	—	7.69	7.87	8.56
Total	2486676	2804859	3036084	2647240	53.58	56.84	57.07	55.45

Source: Report on the 13th Quinquennial Livestock census 1982.

Annexure 90

Agricultural implements & Machinery 1982

Hand operated implements

District	Seed fertiliser drill	Seed drill	Chaff cutter	Seed Drill	Wheel hoe	Sprayers	Dusters	Wooden plough	Soil stirring plough
Quilon	1445	262	288	172	523	1189	11501	10458	
Alleppey	472	33	53	211	3284	190	7385	2555	
Kottayam	1092	29	52	277	4209	297	4342	550	
Ernakulam	1467	18	91	189	4987	245	29662	3118	
Trichur	138	117	178	192	2297	654	16080	2237	
Malappuram	1381	231	197	98	2360	1662	33225	2173	
Total	5995	690	859	1139	17660	4237	102195	21091	

Source: Report on 13th quinquennial livestock census—1982

Agricultural implements & Machinery 1982

Animal operated implements

District	Soil turning plough		Cultivator		Seed Drill		Levelling Karah		Wetland Riddler		Olpad Thrasher		Animal cart		Persian wheel		Sugar-cane crusher			
	2559	1679	52	114	51	832	6634	208	74 <th>208</th> <th>163</th> <th>114</th> <th>2 <th>45</th> <th>115</th> <th>81</th> <th>20</th> <th>20</th> </th>	208	163	114	2 <th>45</th> <th>115</th> <th>81</th> <th>20</th> <th>20</th>	45	115	81	20	20		
Alleppey	145	937	40	11	29	14	1924	114	2	163	114	2	165	263	782	81	161	46	19	
Kottayam	145	937	40	11	29	14	1924	114	2	163	114	2	165	263	782	81	161	46	19	
Ernakulam	1492	856	56	70	13	185	6722	930	115	1056	1056	81	2166	284	56	56	284	56	56	
Trichur	1492	856	56	70	13	185	6722	930	115	1056	1056	81	2166	284	56	56	284	56	56	56
Majappuram	856	7768	42	71	17	374	19168	1056	81	1056	1056	81	2166	284	56	56	284	56	56	56
Total	7768	354	407	131	1595	50617	1725	346	284	56	56	56	56	56	56	56	56	56	56	56

Source: Report on 13th quinquennial livestock census—1982

Annexure 90 (contd)

Agricultural implements & Machinery 1982

District	Plant protection equipments & engines etc.				Other power operated equipments.						
	Power operated sprayer/Duster	Diesel engines/pumpset	Electric pump set	Paddy	multi crop	Maizer sheller	Chaff cutter	Sugar-cane crusher			
	20	21	22	23	24	25	26	27			
Quilon	18	135	922	8	--	--	--	6			
Alleppey	127	1046	5070	2	3	3	--	28			
Kottayam	54	270	2303	2	5	--	2	3			
Ernakulam	158	1467	18283	24	9	--	--	1			
Trichur	211	4288	25763	179	--	1	1	3			
Malappuram	135	4959	5290	1	4	--	--	1			
Total	703	12165	57631	216	21	4	3	42			

Source: Report on 13th quinquennial livestock census—1982

Annexure 90 (contd)

Agricultural implements & Machinery

Tractor power and other implements

District	Power tiller Agl.	Tractor Agl.	Mould board plough	Disc Harrow	Seed drill	Seed cum ferti-lisior drill	Plan-tor	Level-lor	Potato digger	Combined Harvester	Tract-lor or attach-er	Self pro-pelled Thre-sher	Wheat thro-sher
	28	29	30	31	32	33	34	35	36	37	38	39	40
Quilon	26	15	—	43	—	—	27	162	33	3	—	—	—
Alleppey	140	71	39	4	4	4	9	199	1	11	5	—	—
Kottayam	285	50	49	3	—	—	3	54	1	6	—	—	1
Ernakulam	940	141	389	21	5	4	10	1019	1	29	13	—	1
Trichur	1589	132	75	7	1	—	10	448	2	15	2	—	—
Malappuram	170	85	73	7	—	—	10	351	33	21	2	—	—
Total	3150	494	625	85	10	8	69	2233	71	85	22	—	2

Source: Report on 13th quinquennial livestock census—1982

Annexure 91

Fishermen population and number of fishermen engaged in fishing and other activities

District	Total fishermen population	Members engaged in actual fishing or fish seed collection	Members engaged in other related occupation	Total number of mechanised fishing boats	Total number of non mechanised fishing boats
Quilon	86280	17984	12524	1031	5768
Alleppey	108986	25227	15604	1109	2717
Kottayam	15173	2428	3277	82	950
Ernakulam	80149	16525	15585	380	4243
Trichur	54426	6647	2125	801	877
Malappuram	75559	13508	4110	137	1609
Total	420573	82319	53225	3540	16164

Annexure 92

Distribution of fishing villages by number of households 1982

District	No. of II villages having households in the range					No. of I village having households in the range					Total (500-1500)
	140-260	260-380	380-500	Total (140-500)	500-750	750-1000	1000-1250	1250-1500	Total (500-1500)		
Quilon	7	5	8	20	6	1	—	—	7	27	
Alleppey	22	5	10	17	11	2	—	—	13	30	
Ernakulam	1	8	5	14	4	3	—	—	7	21	
Trichur	4	5	5	14	5	—	—	—	4	18	
Malappuram	8	4	5	17	5	—	—	—	6	23	
Total	42	27	33	31	6	—	—	—	40	119	

Source: Report on the 13th quinquennial livestock census 1982

Annexure 93

Normal Rainfall (in mm) of the District in the zone
(Based on 1901 to 1950 data)

District	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	Total
Quilon	449.6	318.1	226.1	344.9	242.9	64.8	24.1	32.1	83.6	166.3	260.3	547.4	2760.2
Alleppey	552.3	370.3	272.7	330.2	219.4	64.1	25.9	29.3	59.0	133.5	291.5	663.8	3012.0
Kottayam	652.7	429.5	273.2	330.6	212.8	71.7	30.3	26.3	59.8	141.3	244.9	609.3	3082.6
Ernakulam	785.9	523.5	296.6	365.7	216.9	54.6	18.0	23.6	54.4	136.1	310.1	792.1	3577.5
Trichur	761.4	458.6	250.3	307.5	158.3	30.3	9.3	8.8	28.6	86.6	274.3	803.4	3177.4
Malappuram	787.0	405.0	198.8	290.0	163.8	30.9	6.7	6.5	19.3	78.7	211.0	702.4	2900.1
Total	3939.1	2505.0	1517.7	1968.9	1214.1	316.4	114.3	126.6	303.9	742.5	1592.1	4047.4	18509.8

Annexure 94

Soil Test Data of the Different situations (Agricultural Development circle wise)

Situations and A. D. Circle	Range values		O. C. %	Available	
	pH	EC mm/cm		P ₂ O ₅ kg/ha	K ₂ O kg/ha
1	2	3	4	5	6
ALLEPPEY DISTRICT					
Harippad	5.8—6.2	0.1—0.3	0.18—0.34	31.1	150.2—329.0
Pallipad	5.8—6.1	0.1—0.3	0.17—0.42	32.1	83.7—116.6
Pathiyoor	6.0—6.5	0.1—0.3	0.11—0.35	31.1	67.0—195.1
Muthukulam	6.1—6.3	0.1—0.3	0.19—0.24	31.1	22.8—154.0
Kayamkulam	4.8—6.1	0.1—0.3	0.24—0.49	31.1	61.4—166.0
Bharanikkavu	6.1—6.3	0.1—0.8	0.34—0.39	31.1	67.0—117.0
Palamel	5.1—5.7	0.1—0.2	0.47—0.84	31.1	116.6—161.8
Mavelikkara	5.9—6.2	0.1—0.1	0.20—0.34	31.1	67.0—192.8
Chengannur	5.4—5.8	0.1—0.5	0.42—0.68	13.9—31.1	173.0—356.0
Mannar	5.3—6.0	0.3—0.7	0.28—0.91	15.8—23.1	156.2—334.8
Venmani	5.4—5.9	0.2—0.4	0.26—0.85	16.4—31.1	153.9—340.4
Shertallai	5.8—6.5	0.2—0.5	0.12—0.27	31.1	55.8—111.6
Poochakkal	3.6—6.1	0.4—2.2	0.04—0.24	31.1	55.8—100.4
Mohammia	6.3—6.5	0.1—0.3	0.17—0.24	26 —31.1	55.8—73.56

Annexure 94 (Contd.)

Soil Test Data of the Different Situations
(Agricultural Development circle wise)

1	2	3	4	5	6
Kuthiathodu	5.6-6.1	0.2-0.4	0.11-0.25	31.1	55.8-356
Pattanakkad	5.8-6.2	0.1-0.3	0.15-0.27	31.1	55.8-356
Aryad	5.8-6.3	0.1-0.2	0.14-0.27	31.1	89.2-193
Ambalapuzha	4.2-5.0	0.1-0.6	1.98-2.17	13.5-26.3	273-356
Edathua	4.6-5.2	0.2-0.6	1.8-2.17	8.8-31.1	356
Veliyanad	3.5-5.8	0.1-0.4	1.98-2.17	12.4-29.0	216-356
Nedumudy	4.0-5.2	1.0-1.6	1.42-2.17	15.8-31.1	223-356
Pulincunnoo	3.8-6.1	0.1-0.8	0.19-1.98	12.6-28.2	71.5-223
Neelamperoor	3.6-5.5	0.2-0.4	1.12-2.17	12.6-26.3	173-356
KOTTAYAM DISTRICT					
Nattakam	4.8-5.4	0.1-0.2	0.28-1.96	2.0-112	47-447
Puthupailly	5.1-5.8	0.1-0.3	0.78-2.34	36.0-74	94-353
Vijayapuram	6.0-5.4	0.1-0.3	0.78-1.82	6.0-177	71-470
Pampady	4.9-5.7	0.1-0.4	0.78-1.82	20-46	183-423
Pallikkathodu	5.3-6.0	0.1-0.3	0.68-1.27	4-118	47-376
Poorathijappu	5.0-5.5	0.1-0.3	1.04-1.82	6-36	94-428
Pathanadu	5.2-5.9	0.1-0.1	0.98-2.24	31-112	108-480

Annexure 94 (Contd.)

Soil Test Data of the Different Situations
(Agricultural Development circle wise)

1	2	3	4	5	6
Vakathanam	4.8-5.8	0.1-0.3	0.71-2.08	3.0-209	71-470
Karukachal	4.8-5.6	0.1-0.3	0.62-1.43	36-148	71-470
Paipad	4.9-5.8	0.1-0.3	0.44-1.82	23-133	94-470
Changanacherry	5.2-5.8	0.1-0.2	0.47-1.33	39-177	94-235
Thiruvapur	5.1-5.6	0.1-0.1	0.78-1.17	57-180	94-235
K. S. Mangalam	4.4-5.8	0.1-0.2	0.98-1.32	19-140	96-456
Vaikom	4.9-6.2	0.1-0.2	0.56-1.12	19-112	85-141
Vechoor	5.0-6.0	0.1-0.3	0.56-1.54	16-140	94-400
Thalayolaparambu	5.1-5.4	0.1-0.1	0.98-1.82	42-126	54-108
Mulakulam	5.0-5.6	0.1-0.2	1.04-1.56	23-48	141-282
Kaduthuruthy	4.8-5.4	0.1-0.1	0.98-1.26	78-104	288-488
Kallara	4.8-5.8	0.1-0.2	0.78-1.86	21-73	31-500
Ettumanoor	4.6-5.4	0.1-0.1	0.74-1.68	24-139	94-470
Arpookkara	4.6-5.11	0.1-0.1	0.70-2.52	62-168	35-360
Parippu	5.2-5.0	0.1-0.1	0.84-0.98	81-95	110-480
Kuravilangad	5.1-6.0	0.1-0.3	1.06-1.96	18-53	118-470
Palai	4.9-5.6	0.1-0.3	0.60-1.82	20-177	42-470
Ramapuram	4.3-5.9	0.1-0.3	0.39-2.08	6-133	47-329
Vazhoor	4.8-5.4	0.1-0.2	1.40-1.82	70-98	85-423

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