

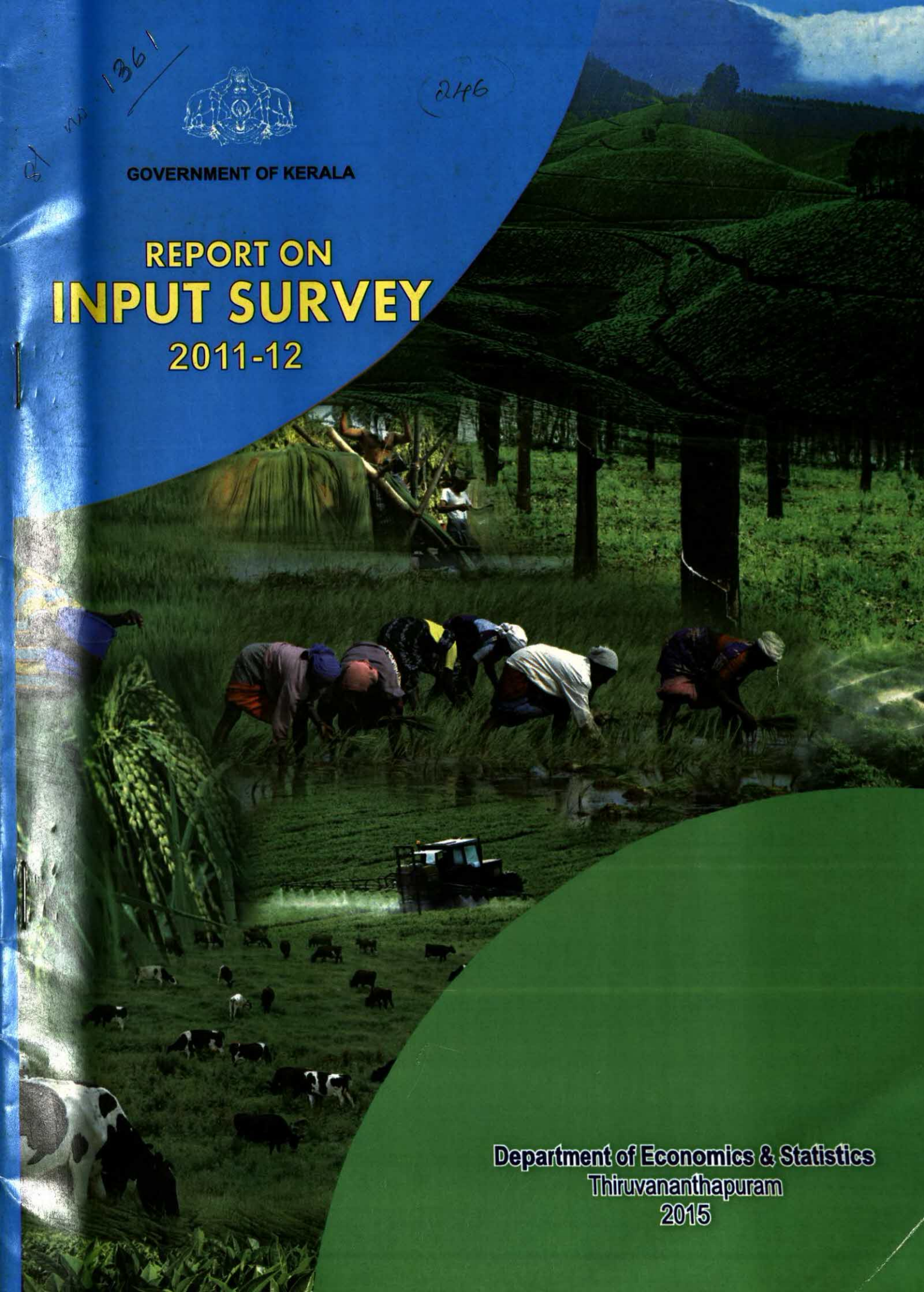
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GOVERNMENT OF KERALA

REPORT ON INPUT SURVEY 2011-12



Department of Economics & Statistics
Thiruvananthapuram
2015

**REPORT ON
INPUT SURVEY
2011-12**

**Economics & Statistics Department
Kerala
2014**

Preface

The Ministry of Agriculture carried out the first Input survey as a part of the Agricultural Census Scheme in 1976-77 as the reference period. The present report brings out the consolidated State results of the Input Survey 2011-12 which is the eighth one in the series. The basic unit of survey is “Operational Holdings” as distinct from ownership holding, because Operational Holding is the basic unit of decision making for micro level planning.

The survey provides crucial information on use of variety of seeds, chemical fertilizers, organic manures, pesticides and IPM for irrigated and unirrigated areas separately. The survey also covers live stock held, use of agricultural machinery and implements and agricultural credits availed.

The data on Input Survey have been collected by Taluk Statistical Officers/Statistical Inspectors and supervised by District level officers of this department.

The State level supervision has been done by the State Technical Officer of the Scheme. Scrutiny and other related works have been done by the nuclear staff working in this scheme. Data processing, tabulation and estimation have been done by the computer division of this department.

I would like to appreciate the efforts put in by the Agriculture Census Division for bringing out this publication. Sri. A.Murugan Assistant Director, Smt.S.C Soni and Smt. S.Beena Research Assistants, Smt. Sajitha.A Statistical Assistant Grade-I, and Sri.B.Nadirsha Statistical Assistant Grade -II of Agriculture Census Division had taken the responsibility of preparing the report under the guidance and Supervision of Sri.M.Muralidharan Additional Director and Sri.V.P Saraphudeen Joint Director and State technical officer of Agriculture Census Division.

I hope that this report will be highly useful to planners, researchers and those who are interested in the field of Agricultural Statistics.

V. Ramachandran
Director General

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CHAPTER-I

Introduction

From the commencement of first Five Year Plan, various schemes were taken up to improve the contents and coverage of Agricultural Statistics and their accuracy. The planning and execution of Agricultural programmes are often handicapped for want of comprehensive and reliable data. Due to planned development and expansion of economy, new problems of formulation and execution of projects for more intensified and diversified development have become essential. This has necessitated further improvement of their quality and content of Agricultural Statistics. During the successive five year plans, a number of measures were taken up with a view to filling up gaps in the existing agricultural statistics and devise base and means of extending its scope.

Starting with the II Agriculture Census 1976-77, Input Survey has been conducted as a follow up survey of the Agriculture census. Eight input surveys with reference year 1976-77, 81-82, 86-87, 91-92, 96-97, 2001-02, 2006-07 and 2011-12 have been completed so far . The present report on input survey 2011-12 is the eighth in the series.

In the past, approach to agricultural planning in India was mainly restricted to setting out targets of production for different crops and other agricultural commodities at the national and state levels. In the absence of detailed data on existing and potential resources for various agro-climatic reasons at the farm levels the task of planning from the grass root becomes difficult. At the farm level, it is the farmer who decides what to produce, when to produce and how much to produce. The programme and incentives which are given to the farmers should take into account awareness of the basic characteristics of the farmers holdings such as the size distribution, the pattern of land use, availability of water and the resources in human, animal and mechanical power on the farm. It is in

this context that agricultural census / Input survey becomes important. Thus the main objective of the input survey is to generate data on consumption of various agricultural inputs according to major size groups of operational holdings i.e.,marginal (1 ha) small (1-1.99 ha),semi medium (2.00-3.99 ha), medium (4-9.99 ha) and large (10 ha and above). This information is vital for planning, production, imports and distribution of fertilizers. The inputs covered are chemical fertilizer HYV seeds, pesticides, farm yard manures /compost, bio-fertilizers,agriculture implements machinery ,livestock and agricultural credit.

The detailed analysis of data on different parameters of the Input Survey may be seen in the reports. It is expected that different data users, particularly policy makers, administrators, researchers and various institutions concerned with Agricultural Statistics will find this report useful.

CHAPTER –II

Concepts and definitions

Operational Holding

‘All land used wholly or partly for agricultural production and is operated as one technical unit by one person alone or with others, without regard to the title, legal form, size or location’. The technical unit has been defined as ‘that unit which is under the same management and has the same means of production such as labour force, machinery and animals’. It is clear from this definition that the actual cultivator and not the owner is the unit for collection of data.

If, during the reference year, the entire area of the operational holdings is under current fallow, this will still be considered as an operational holding for Agricultural Census, but no information can be gathered in Input Survey from such holding. These holdings will not be included in the sampling frame for Input Survey.

Parcel

A parcel is all land entirely surrounded by land of other holdings or by land not forming part of any holding. It may consist of one or more cadastral units, plots or fields.

Operational holder

The holder, for census purposes, is the person who has the responsibility for the operation of the agricultural holding. He exercises the technical initiative and responsibility for the operation of the holding and may have full economic responsibility.

Individual/ Joint Holding

- i. If the holding is operated either by a person alone or group of persons who are members of the same household, it will be considered as individual operational holding.
- ii. If two or more persons belonging to different households share jointly as partners in the economic and technical responsibility for the operation of an agricultural holdings such holdings are considered as joint holdings.

Total area of holding

The total area of the holding should include the total of all land forming part of a unit which is under the same technical responsibility and management. It should also comprise the land occupied by the farm buildings, including the house of the holder, provided such buildings are within the cultivated area. If the farm buildings are located outside cultivated area, then such buildings will not be included in the area of the holding.

Agriculture production

Agricultural Production would mean the growing of field crops, fruits, grapes, nuts, seeds, trees nurseries (except those of forest trees), bulbs, vegetables and flowers, production of coffee, tea, cocoa, rubber, jute, oilseeds, grasses, etc.

If special efforts are made to raise grass, it would be treated as a crop for the purpose of the survey.

Net Area Sown

This would represent the total cultivated area during the reference year. Areas cultivated more than once during the same year will be counted only once. Both field crops and orchards will form part of the net sown area.

Gross cropped area

This includes the total area under all crops during the year. Total gross cropped area is greater than or equal to net area sown.

Area under Current fallow

This would include all the areas which are usually cropped but have not been cultivated during the reference year. For an area to be classified as current fallow, it should be fallow during the current year and should have been cultivated during the previous year. If an area is not being cultivated for more than one year, it will be categorized as old fallow or culturable waste.

Area not available for cultivation

This would include the following seven categories:-

- a) Fallow land other than current fallow: This should include all lands which were taken up for cultivation but are temporarily out of cultivation for a period of not less than one year and not more than five years.
- ii) Culturable waste: This should include lands available for cultivation, whether or not taken up for cultivation at any time. These are lands which were not cultivated during the current year and the last five years or more in succession for one reason or the other. Such lands may be either fallow or covered with

shrubs and jungles which are not put to any use. Land once cultivated but not cultivated afterwards for five years in succession should also be included in this category at the end of the five years. Culturable waste land within the holdings would alone be covered for the Input Survey.

iii) Permanent pastures and other grazing land: This should include all grazing lands, whether they are permanent pastures and meadows or not. Village common grazing land shall be excluded for the purpose of our Census.

iv) Land under miscellaneous tree crops: This would include cultivable land, which is not included in the net area sown but are put to some Agricultural use. Lands under Casuarine trees, thatching grasses, bamboo bushes and 'Orchards' should be classed under this category. Lands of this type outside the holdings will not be included.

v) Forests: Only private forests would be covered for the purpose of Agricultural Census and Input Survey.

vi) Area under non-agricultural use: This should include all lands occupied by buildings, tanks and ponds put to uses other than agricultural purpose within the holdings.

vii) Barren and uncultivated land: This should include all barren and within cultivated holding.

Short Term Loan:

Short term Loan are those which are given for seasonal agricultural operations and their repayment period is usually less than 18 months.

Medium Term Loan:

Medium term loans are advances for specific purposes. The repayment period is more than 18 months but less than five years.

Long Term Loan

These loans are provided in three or more installments for the development of land on project area basis and are capital intensive in nature. The period of long term loan exceeds five years.

Integrated Pest Management

Traditionally there have been a number of practices adopted by farmers as plant protection measures. These practices could be categorized in four groups, viz., agronomic and cultural control, mechanical control, biological control and chemical control.

Agronomic and cultural practices

This is a preventive method and is based upon knowledge of life history and habits of pest. The practices covered in this category include: deep ploughing after harvesting a crop to expose the hiding or resting insects, weeding, removing and destroying of stubbles and other trash, adjusting the time of sowing to avoid peak incidence period of pests. Clean cultivation, the removal of alternative wild hosts, crop rotations and choosing of insect and disease varieties.

Physical and Mechanical Control

This is one of the oldest methods and includes measures, such as collection of eggs and caterpillars (in active stages if pests): removal and destruction of infested part of the plant, beating of drums, laying of night traps and yellow traps. These methods are found effective at initial state of the pest incidence when practiced by a large number of farmers in a particular area.

Biological Control

Most of the crops have their natural enemies in the form of parasites and predators and disease causing organism. Large scale multiplication and liberation of such other agents, which naturally occur in environment but are enemies of crops (friends of crops) results in effective control of the harmful organisms. These methods are often applied by specialized agencies in

conjunction with chemical methods so that harmful effects of insecticide do not interfere with the activities of nature based enemies of pests.

Chemical control

This methods relates to use of insecticides, pesticides and weedicides, which are used as dusts, sprays and granules on the crops. Because of their nature of producing immediate results such chemicals are most popular among the farmers. Serious limitations, particularly those relating to residues on crops and destruction of useful insects, have been noted in recent years in usage of these chemicals.

Chemical Fertilizers, Organic Manure, Green Manure and Bio-Fertilizers

Package of practices followed for replenishing the nutrient losses from the soil as a result of cultivation to maintain the fertility of the soil involves use of organic manure, green manure, chemical fertilizers and bio-fertilizers. These are explained below:

Chemical Fertilizers

The chemical fertilizers refers to chemical compounds which are manufactured in factories and are used as soil nutrients. These are further classified as “macronutrients” which a supply nitrogen (N), phosphate (P) and Potash (K) and “micronutrient” fertilizers which supply Zinc, Manganese, Copper, Iron, Aluminum etc. The popular macro nutrient fertilizers are Urea, DAP, MOP,CAN and a number of complex fertilizers and the physical mixtures of these.

Organic Manure

The Organic Manure is usually not manufactured in chemical factories and is produced by the farmers in their fields using various types of agricultural wastes. Sometimes these are also prepared using the sewage silt or municipal waste in urban areas. The organic manure is usually bulky material and is transported in trolleys. The types of manures covered in this would be Farm Yard Manure (FYM), which is prepared by putting agricultural wastes in a pit for

decomposition and composting. This would also include the Vermi Compost. The various forms of oil cakes which are used as fertilizers would also fall in this category.

Bio-fertilizers

Bio-fertilizers are sold in small packets and require storage at specified temperature. These carry some living bacteria on organic base. The examples of bio-fertilizers are Rhizobium, Azabactor, Blue-green Algae and Phosphate Solubilising Bacteria (PSB). When bio-fertilizers are put in the soil, the bacteria contained in the fertilizer packet are spread in the soil and start their activity, e.g., fixing the nitrogen from air to soil. Hence bio-fertilizers are not soil nutrients in themselves, rather they act as catalysts/direct agents for making the soil nutrients available. These type of fertilizers are not very common among farmers and only some progressive farmers use them. Also because of their storage requirements these are not available everywhere.

Green Manure

Green manure refers to cultivation of a specific type of vegetation with the intention of ploughing it back in the soil when the leaves are tender and easily decomposable. The popular types of green manure used by the farmers include Sesbania (Dhencha), Sunhemp (Sanai), Indigo, Urd and Cowpea. There is also a practice of ploughing back the leafy portion of leguminous crops in the field after first or second picking for the purpose of green manuring. All such cases will be counted for the purpose of obtaining area under green manure.

Chapter -III

Sampling Design and Estimation Procedure

Objective

The main objective of the survey is to generate data on various agricultural inputs according to major size group of operational holdings viz. marginal (below 1 hecter), small (1 to 2 hecter), semi-medium (2-4 hecter) medium (4 to 10 hectares) and large (10 hecter and above), for getting an insight into the consumption pattern of inputs by various categories of farmers. This information is vital for planning their production, inputs and distribution. The inputs covered in the survey include seeds, fertilizers, pesticides, farm yard manures, bio fertilizers, agricultural implements and machinery, live stock and agricultural credits.

Scope and Coverage:

All the individual and joint holdings operated by resident cultivators constitute the population of the survey. The survey covers all type of agricultural holdings except institutional holdings. Boundary of the survey was district.

Reference Period:

The reference period of the survey was July 2011- June 2012.

Items covered in the Survey

Under the Input Survey 2011-12 information was collected according to size class of operational holding for the following items.

- (1) Number of parcels
- (2) Multiple cropping, separately for irrigated and unirrigated areas.
- (3) Use of fertilizers, organic manures and pesticides, separately for irrigated and unirrigated areas under major crops. (Area covered and quantity used)
- (4) Live stock held (numbers)

- (5) Use of Agricultural machinery and Implements
- (6) Agricultural credit availed.
- (7) Type of seeds used and quality problems if any
- (8) Integrated Pest Management (IPM) practices.

Unit of collection of data

The basic unit for which data for various parameters of the input survey were collected was “operational holding”.

Sample size and Methodology

A two stage stratified sampling was adopted for the input survey 2011-12. Blocks/Municipalities/Corporations constitute the strata, wards within a stratum form first stage unit (FSU) and operational holdings in the selected wards constitute the second stage unit (SSU). The sample size of the ‘FSU’ was 7% of the total number of wards. From each Stratum i.e. 35% of the wards selected randomly out of the 20% wards already selected for phase I and II of Agricultural Census 2010-11. In a selected ward all the operational holdings was categorized into the following size groups.

Sl.No.	Size Groups
1.	Below 1 hecter
2.	1 to 1.99 hecter
3.	2.00 to 3.99 hecters
4.	4.00 to 9.99 hecters
5.	10 hecters and above.

A simple random sample of four operational holdings was selected from each of the above size groups. The data were collected through household enquiries from the selected operational holders.

Schedules used:

The following schedules were used in input survey 2011-12.

1. Schedule -0 = Information on number of wards selected in Blocks /Municipalities/Corporations
2. Schedule -1 = List of operational holdings and record of selection in the selected wards.
3. Schedule 2.0 = Information on holdings in the selected ward in the Blocks/Municipalities/Corporations
4. Schedule 2.1 = Parcel wise details of area under multiple cropping according to irrigated and unirrigated conditions during the agricultural year 2011-2012
5. Schedule 2.2 = Area under irrigated / un-irrigated crops and use of fertilizers, pesticides etc. during the agricultural year 2011-12
6. Schedule 2.3 = Inventory of Livestock as on 15.10.2011
7. Schedule 2.4 = Agricultural machinery and implements used during 2011-12
8. Schedule 2.5 = Agricultural credit
9. Schedule 2.6 = Seeds and Integrated Pest Management (IPM) practices.

Estimation Procedure

For estimating the population totals of various characteristics in the input survey 2011-12, “simple unbiased estimates” method was adopted which is described below.

Notations and Terminology

1. $Y_{ijp}(k)$ = value of characteristic in the p^{th} holding of j^{th} ward of i^{th} Block/Municipality/Corporation (Stratum) in the k^{th} size class
2. $N_{ij}(k)$ = Total number of holdings in the k^{th} size class in the j^{th} sample ward of the i^{th} Block/Municipality/Corporation
3. $n_{ij}(k)$ = Number of holdings sampled in the k^{th} class in the j^{th} selected ward of the i^{th} Block/Municipality/ Corporation
4. N_i = Total number of wards in the i^{th} Block/Municipality/Corporation
5. n_i = Number of wards selected in the i^{th} Block/Municipality/Corporation
6. $\hat{Y}_T(k)$ = Estimate of characteristic under study for the i^{th} Block/Municipality / Corporation in the k^{th} size class.
7. $\hat{Y}_D(k)$ = Estimate of characteristic under study for the district in the k^{th} size class
8. M = Number of Blocks / Municipalities / Corporation in the district

Then the estimate of the characteristic under study for the Ith Block/ Municipality/ Corporation (ie. Stratum) in the kth size class is given by the formula

$$\hat{Y}_T(k) = \frac{N_i}{n_i} \sum_{j=1}^{n_i} \frac{N_{ij}(k)}{n_{ij}(k)} \sum_{p=1}^{n_{ij}(k)} Y_{ijp}(k) \quad (1)$$

And for the district, it becomes

$$\hat{Y}_D(k) = \sum_{i=1}^M \frac{N_i}{n_i} \sum_{j=1}^{n_i} \frac{N_{ij}(k)}{n_{ij}(k)} \sum_{p=1}^{n_{ij}(k)} Y_{ijp}(k) \quad (2)$$

$$= \sum_{i=1}^M \hat{Y}_T(k)$$

Chapter-IV

Analysis of Input Survey Data

Distribution of Operational Holdings and Operated Area

According to Input Survey 2011-12 the total number of operational holdings was 67.75 lakhs against the operated area of 13.94 lakhs ha (excluding institutional holdings). The corresponding figures as per Agricultural Census 2010-11 were 68.31 lakhs against the operated area of 15.11 lakhs.

Thus both the surveys were very close in estimating the total number of holdings and operated area in the state. Since the Input Survey, institutional holdings and other type of holdings are excluded, it is normally expected that the number and area of holdings as per the input survey should be less than the corresponding data of Agricultural Census, although Input Survey is carried out after one year of the Agricultural Census.

Dispersion of Operational Holdings

A parcel has been defined as “all land entirely surrounded by land of other holdings or land not forming part of any holding”. It may consist of one or more cadastral units or fields and may not be synonymous with survey number. Three or four adjoining survey numbers could make one parcel but two survey numbers of the same Panchayath ward not adjacent to each other, would make two parcels.

An Operational holding may consist of one or more than one parcel. The more the number of parcels, the more scattered will be the operational holding.

All the parcels comprising an operational holding may lie within the ward of residence of the holder or might even be spread over one or more other wards.

The data on number of parcels was collected by interviewing the selected operational holder with a view to have information about the dispersal of operational holdings in different parts of the country. However, the outer limit for collecting the information in Input Survey was restricted to the district. Since an Operational Holding will have at least one parcel, the average number of parcels per Operational Holding cannot be less than one. The distribution of average number of parcels, average area per parcel and average area per holding in different size groups as per input survey 2011-12 may be seen in Table I.

Table –I

Sl. No.	Size Group (Ha)	Total holdings		Total No. of parcels	Average No. of parcels per holding	Average area per parcel (ha)	Average area per holding (ha)
		No.	Area				
1	< 1	6531223	930445	7297123	1.12	0.13	0.14
2	1-1.99	175912	239088	327712	1.86	0.73	1.36
3	2-3.99	54936	142639	112336	2.04	1.27	2.60
4	4-9.99	11179	58215	25079	2.24	2.32	5.21
5	>10	1281	23795	3467	2.71	6.86	18.58
	All groups	6774531	1394182	7765717	1.15	0.18	0.21

From the above table it can be observed that the number of parcels per holding for all size groups was 1.15 in 2011-12 against 1.2 in 2006-07. This shows that the number of parcels per holding had decreased. The trend in the number of parcels per holding over the period of times in each type of holdings is increasing.

The average area per parcel for all groups at state level was 0.18 ha during 2011-12 which is same as in 2006-07.

The average operated area per holding for all size groups was 0.21 ha in 2011-2012 against 0.22 ha in 2006-07, which showed a decline. This is due to the inverse relationship between number and area of operational holdings.

Table -II

Sl. No.	Size (Ha)	Gross Cropped Area			Current fallow Land	Other Un cultivated land
		Irrigated area	Unirrigated Area	Total Area		
1	< 1.0	199558	674009	873567	7089	166715
2	1-1.99	61108	198005	259113	2208	18768
3	2-3.99	41612	117934	159546	1394	9559
4	4-9.99	19386	44569	63955	713	4122
5	> 10	5425	19702	25127	136	886
	All groups	327089	1054219	1381308	11540	200050

The gross cropped area is 1381308 ha. of which 327089 ha. is irrigated and 1054219 ha is unirrigated i.e., 23.68% is irrigated and 76.32% is unirrigated.

Table- III

Sl. No.	Size (Ha)	Irrigated Area		Unirrigated Area	
		Gross area	Net Area	Gross Area	Net Area
1	< 1	199558	186073	674009	570570
2	1-1.99	61108	58179	198005	159935
3	2-3.99	41612	38684	117934	93005
4	4-9.99	19386	17761	44569	35620
5	>10	5425	5425	19702	17349
	All groups	327089	306122	1054219	876479

From the above table, it can be observed that the irrigated area (both gross and net) shows an increasing trend and the unirrigated area shows diminishing trend when compared to the previous survey.

The method of multiple cropping is used as an indicator of the intensity of land utilization. The percentage of area cropped once is 81.8 in irrigated area where as that in unirrigated area is 83.86. The percentage of area cropped twice and more than twice in irrigated area are 17.7 and 0.5 respectively. But the percentage of area cropped more than twice in unirrigated area is 16.14 .The result shows a decrease in irrigated area from 2006-07 to 2011-2012 i.e from 84% to 81.8%, and an increase in irrigated area cropped twice and cropped more than twice i.e from 15.69% to 17.7 % and from 0.31% to 0.5% respectively. Similarly there is a decrease in unirrigated area from 2006-07 to 2011-12, i.e. from 99.12% to 83.86%, but an increase in unirrigated area cropped more than twice, i.e. from 0.88% to 16.14%. This means that the cultivators show interest in multiple cropping.

Table C₃ shows a slight increase in the percentage of gross cropped area by irrigation status during 2011-12 from 2006-07. The percentage of gross cropped area in 2011-12 is 23.68 and that in 2006-07 was 23.42. The percentage of gross cropped area shows lack of irrigation facilities or under utilization of available irrigation potentials.

Table C₄ indicates that the average gross cropped area per operational holding is decreased from 0.19 hectares in 2006-07 to 0.18 hectares in 2011-12. .

The intensity of cropping is the ratio of gross cropped area to net cropped area. From table C5 it is seen as 1.17 in the survey period 2011-12. The intensity ratio was 1.48 in 1986-87, 1.45 in 1991-92, 1.14 in 1996-97, 1.08 in 2001-02 and 1.05 in 2006-07. This shows that there is a decreasing trend in gross cropped area from 1986-87 to 2006-07. Gross cropped area under irrigated crop was 327089 hectares and unirrigated crop was 1054219 hectares. Net area under irrigated crop was 306122 hectares and for unirrigated crop, it was 876479 hectare.

From table C6, it can be observed that 32.6% was occupied by paddy and 94.32% of irrigated area under paddy covers high yielding varieties. 4.21% of gross area under unirrigated crop is paddy where as 86.57% of this area is used for high yielding varieties of paddy. It can be seen that there was an increase in the percentage of irrigated area under paddy and percentage area under high yielding variety is also increasing.

From table C7, it is seen that the percentage of gross cropped area of paddy during the year 2011-12 was 10.93 while that during the year 2006-07 was 5.48. Here an increase of 99.4% is seen. For coconut, the percentage of variation compared to that of the year 2006-07 is 3% (decrease). In short rubber was the

most dominant crop having a share of about 29.63% of gross cropped area followed by coconut (27.27%), Paddy (10.93%) etc.. See table C8 and C9.

Crop wise use of Inputs

Application of Chemical fertilizers.

Chemical fertilizers is used to increase agricultural production and pesticides and IPM to protect the crop from insects and pests. Besides chemical fertilizers, organic manure is also used to enhance the soil fertility. The most commonly used chemical fertilizers are urea, potash, factomphos super sulphate and Ammonium phosphate. On the other hand Farm yard Manure (FYM) / compost and oil cake are the most common organic manures used by the cultivators. The input survey data were collected separately for area under high yielding and others and quantity of fertilizers used. Normally the first dose of fertilizer is given at the sowing stage and subsequently one or more applications are given to the crop. Thus the same area may receive one or more application of fertilizers but for the purpose of estimation of area fertilized, only net area under the crop in a particular season has been taken in to account.

It may be seen from the table C10 that the number of holdings irrigated are 3252471 in an area of 327088 hectare. Out of 3252471 holdings growing one or more irrigated crops, 982327 holdings are treated with one or more chemical fertilizers (30.2%) in an area of 209136 hectares (63.94%). Also 90.89% of irrigated area cultivating High Yield Varieties was treated with chemical fertilizers. In the case of other varieties in irrigated area, 46.84% area are treated with one or more chemical fertilizers (see table C11)

The average consumption of NPK in irrigated area according to the quality of fertilizers treated per hectare were 68.05, 37.79 and 28.97 kg. respectively. (See table C12).

Application of Straight Fertilizers (Irrigated area)

The result of table C13 and C14 show that urea is the most commonly used chemical fertilizer i.e. 16.07% of the holdings comprising of 43.37% of area were treated with urea. The usage of potash stands in the second place i.e. 14.54%, of holdings and the area is 42.38% of irrigated area. It is seen that Ammonium Phosphate is the least used fertilizer.

Consumption of mixed fertilizers in irrigated area

The main fertilizers commonly used are 20:20:0 factomphos and NPK Mixture Vijay 17:17:17. The percentage of usage is 17.73% and 3.07% respectively in irrigated area under all crops. (See Table C15, C16)

Crop wise Consumption of chemical Fertilizers (Irrigated)

The application of chemical fertilizers for paddy in High Yielding variety was 96.89% while 88.85% of area under traditional varieties was treated with chemical fertilizers.

Average consumption of N, P, K under irrigated paddy were 76.47, 34.6 and 23.01 kg./hectare respectively (See table C 19).

The percentage of number of holdings growing Tapioca treated with chemical fertilizer were 11.13% where as chemical fertilizer were used in 42.74% of area growing Tapioca in irrigated area (Table C20).

38.43% of irrigated area growing coconut was treated with chemical fertilizers. Average quantity of NPK consumed per hectare was 80, 53 and 44 Kg./hectare respectively (Table C21)

87.88% of irrigated area under rubber was treated with chemical fertilizer. The quantity of NPK consumed was calculated as 49, 48 and 39 kg / hectare respectively (Table C 22)

Considering other food crops, 11.54% of area was treated with chemical fertilizer. The estimated quantity of NPK nutrients being 33, 23, 10 kg. / hectares respectively [Table C 23]

Chemical Fertilizers in Unirrigated Area

There are 6138601 unirrigated holdings and the corresponding area is 1054218 hectares. 23.82% of unirrigated holdings growing one or more crops was treated with chemical fertilizers. In respect of unirrigated area under High Yielding Variety, 78.28 % of area was treated with chemical fertilizers where as for traditional varieties, it was only 19.92 % [Table C 24].

Average consumption of NPK were estimated as 106.43, 59.1 & 45.31Kg/Hector in irrigated area and 61.26, 50.86 and 34.67Kg/hectare unirrigated area respectively. Potash is seen as the main straight fertilizer i.e 11.8% of area was treated with potash. Urea stands in the second place and 10.14% of area was treated with urea.

Factomphos was the most important complex / mixed fertilizer used in un-irrigated area (8.64%) followed by NPK mixture 10:26:26 (2%) and Vijay 17:17:17 (1.48%) [Table C27 to C30]

94.25 % of unirrigated area under paddy were treated with chemical fertilizers. For high yielding varieties of paddy in unirrigated area 98.11% of area were used with chemical fertilizer whereas for other varieties it was only 69.43%. Average use of NPK for paddy in unirrigated area were 92.71, 44.66 and 21.7 kg./hectares respectively.

29.3% of area under Tapioca in unirrigated area was treated with chemical fertilizers and 21.49% of area under coconut also was treated with chemical fertilizer. The average consumption of NPK being 71.25, 43.35, 42.68 kg./hectare [Table 34, 35]

It is clear from table C 36 that 69.13% of area under Rubber in unirrigated area were treated with chemical fertilizers. The average consumption of NPK was 48.29, 52.42 and 32.06 respectively. Only 3.66% of area was treated with chemical fertilizer when other food crops are considered. The use of NPK was 123.33, 123.33, 0 kg./ hectare respectively.

Organic Manure in irrigated and unirrigated areas

Nearly 43.16% of holdings having an area of 132825 hectares (40.61%) used Farm Yard Manure / compost/Biogas manure in irrigated area. Green manures were used in 20.99 % of holdings, the area benefited being 60234 (18.42%). High Yielding Varieties of paddy were used in 27.34 % of area

whereas other varieties were used in 56.09 % of area. Area covered by other organic manure was 1867 hectares (1.86%) for paddy (HYV), whereas for others it was 497 (8.21%). The area of Coconut treated with farm yard manures was 58.58 % whereas for Tapioca it was 62.59% (HYV)

Plant Protection Chemicals and Pesticides

The plant protection in respect of high yielding varieties of paddy was 57.86% and for other varieties it was 16.93%.

Agricultural Machinery & Implements

During 2011-12 the number of Agricultural machinery commonly used were

1. Hand operated Sprayers	-	141691
2. Wooden Plough	-	12711
3. Power Sprayers	-	16585
4. Diesel Engine Pump sets	-	15413
5. Electric Pump sets	-	764823
6. Power Trailers	-	18120
7. Tractors	-	79884
8. Others	-	24665

[Table C 44]

It is seen that the Agricultural machinery & implements except Electric Pump sets, used is less in number when compared with Input Survey 2006-07.

Agricultural Credit

The number of operational holdings taking institutional credit was reported as 311921 which came to be 4.6% only. The average amount availed / holder increased from 18369 (2006-07) to 22116 (2011-12) [Table C45, C46].

During the survey period Rs.68.99 crores were given as advance to 311921 holdings through various financial institutions. The details of the percentage distribution of holders availed loan through different types of Co-operative institutions are described in table C 47.

The details of estimated number of cattle reported by operational holdings by size groups are described in Table C48

AGRICULTURAL CENSUS – INPUT SURVEY 2011-12

STATE : KERALA

TABLE C1

AVERAGE NUMBER OF PARCELS PER HOLDING AND AVERAGE AREA OF PARCEL

Sl.No.	Holding size class (in Ha)	1996-97			2001-02			2006-07			2011-12	
		Average No. of parcels per holdings	Average area of parcels(Ha)	Average No. of parcels per holdings	Average area of parcels (Ha)	Average No. of parcels per holdings	Average area of parcels (Ha)	Average No. of parcels per holdings	Average area of parcels (Ha)	Average No. of parcels per holdings	Average area of parcels (Ha)	
1	2	3	4	5	6	7	8	9	10			
1	Below 1.0	2	0.13	1.07	0.15	1.15	0.13	1.12	0.13			
2	1.00 - 1.99	3	39.00	2.04	0.65	2.09	0.64	1.86	0.73			
3	2.00 - 3.99	4	68.00	4.10	0.62	2.42	1.05	2.04	1.27			
4	4.00 - 9.99	5	1.12	8.19	0.65	2.66	1.96	2.24	2.32			
5	10.00 & Above	4	4.79	10.40	1.67	2.02	7.75	2.71	6.86			
	All sizes	2	0.19	1.16	0.21	1.20	0.18	1.15	0.18			

TABLE C2

PERCENTAGE OF AREA CROPPED ONCE AND MORE THAN ONCE BY IRRIGATION STATUS 2011-02

	Holding size class (in Ha)	Irrigated area				Unirrigated area		
		Cropped once	Cropped twice	Cropped more than twice	Total	Cropped once	Cropped more than once	Total
1	2	3	4	5	6	7	8	9
1	Below 1.0	85.32	14.05	0.63	100	84.50	15.50	100
2	1.00 - 1.99	80.47	19.17	0.36	100	81.60	18.40	100
3	2.00 - 3.99	72.65	27.04	0.31	100	81.55	18.45	100
4	4.00 - 9.99	71.61	28.16	0.23	100	84.58	15.42	100
5	10.00 & Above	73.70	26.30	0	100	94.66	5.34	100
	All sizes	81.8	17.70	0.50	100	83.86	16.14	100
	1996-97 All sizes	70.52	27.18	2.30	100	92.43	7.57	100
	2001-02 All sizes	77.81	21.39	0.80	100	96.82	3.18	100
	2006-07 All sizes	84	15.69	0.31	100	99.12	0.88	100
	2011-12 all sizes	81.8	17.7	0.50	100	83.86	16.14	100

TABLE C3
PERCENTAGE OF GROSS CROPPED AREA BY IRRIGATION STATUS 2011-12

Sl.No.	Holding size class (in Ha)	Irrigated	Unirrigated	Total
1	2	3	4	5
1	Below 1.0	22.84	77.16	100
2	1.00 - 1.99	23.58	76.42	100
3	2.00 - 3.99	26.08	73.92	100
4	4.00 - 9.99	30.31	69.69	100
5	10.00 & Above	21.59	78.41	100
	All sizes	23.68	76.32	100
	1996-97 all sizes	24.77	75.23	100
	2001-02 all sizes	23.23	76.77	100
	2006-07 all sizes	23.42	76.58	100
	2011-12 all sizes	23.68	76.32	100

TABLE C4
AVERAGE GROSS CROPPED AREA PER OPERATIONAL HOLDINGS 2011-12

Sl. No	Holding size class (in Ha)	Irrigated area			Unirrigated area			Total			
		Cropped once	Cropped twice	Cropped more than twice	Cropped once	Cropped more than twice	2011-12	2006-07	2001-02	1996-97	
1	2	3	4	5	6	7	8	9	10	11	
1	Below 1.0	0.02	0.004	0.0002	0.07	0.014	0.11	0.12	0.14	0.31	
2	1.00 - 1.99	0.27	0.06	0.0012	0.74	0.167	1.24	1.21	1.31	1.69	
3	2.00 - 3.99	0.51	0.19	0.0022	1.38	0.31	2.39	2.33	2.57	3.16	
4	4.00 - 9.99	1.14	0.45	0.0036	2.69	0.49	4.77	4.80	5.47	6.11	
5	10.00 & Above	3.12	1.11	0	12.82	0.72	17.77	14.61	17.7	31.88	
	All sizes	0.04	0.008	0.00023	0.11	0.021	0.18	0.19	0.22	0.53	

TABLE C5
INTENSITY OF CROPPING BY IRRIGATION STATUS 2011-12

Sl.No.	Holding size class (in Ha)	Irrigated crop	Unirrigated crop	Total
1	2	3	4	5
1	Below 1.0	1.07	1.18	1.15
2	1.00 - 1.99	1.05	1.24	1.19
3	2.00 - 3.99	1.08	1.27	1.21
4	4.00 - 9.99	1.09	1.25	1.20
5	10.00 & Above	1	1.14	1.10
	All sizes	1.07	1.20	1.17

TABLE C6

PERCENTAGE DISTRIBUTION OF AREA UNDER PADDY TO GROSS CROPPED AREA AND AREA UNDER HYV OF PADDY TO TOTAL AREA UNDER PADDY ON IRRIGATION STATUS

Sl.No.	Holding size class (in Ha)	Irrigated		Unirrigated	
		% area under paddy to gross cropped area 3	% area under HYV to total area under paddy 4	% area under paddy to gross cropped area 5	% area under HYV to total area under paddy 6
1	Below 1.0	26.69	95.29	2.8	77.99
2	1.0 - 1.99	39.04	91.05	5.57	87.93
3	2.0 - 3.99	46.43	94.29	7.24	94.75
4	4.0 - 9.99	44.68	96.41	9.83	99.06
5	10 and Above	28.29	100	8.25	100
	All sizes	32.6	94.32	4.21	86.57
	1996-97 all sizes	48.37	59.80	11.50	32.40
	2001-02 all sizes	17.5	84.29	4.92	63.61
	2006-07 all sizes	7.27	92.67	4.93	80.60
	2011-12 all sizes	32.6	94.32	4.21	86.57

TABLE C7
PERCENTAGE DISTRIBUTION OF AREA UNDER DIFFERENT CROPS (GROSS CROPPED AREA)

Sl.No.	Crop	Percentage of total gross cropped area			
		1996 - 97	2001-02	2006-07	2011-12
1	2	3	4	5	6
1	Paddy	20.60	7.85	5.48	10.93
2	Tapioca	2.80	2.81	2.36	1.62
3	Coconut	28.30	33.91	28.06	27.27
4	Arecanut	0.00	1.11	4.76	4.59
5	Cashew	3.50	2.53	2.81	1.53
6	Coffee	0.00	0.23	2.68	2.26
7	Cardamum	1.40	2.09	1.25	2.36
8	Rubber	19.80	19.61	24.70	29.63
	Total	76.40	70.14	72.10	80.19

TABLE C8
CROP WISE PERCENTAGE DISTRIBUTION OF IRRIGATED AREA

Sl.No.	Size class	Paddy	Coconut	Arecanut	Tapioca	Rubber	Pepper	Coffee	Cashew	Other crops	All crops
1	2	3	4	5	6	7	8	9	10	11	12
1	Below 1.0	26.69	35.43	5.59	2.03	0.85	0.66	0.30	0.04	28.41	100
2	1.00 - 1.99	39.04	24.06	7.04	1.49	0.82	0.68	0.67	0.06	26.14	100
3	2.00 - 3.99	46.43	20.07	7.68	0.63	0.51	0.61	0.88	0.06	23.13	100
4	4.00 - 9.99	44.68	16.92	6.37	0.77	0.32	0.62	3.79	0.01	26.52	100
5	10.00 & Above	28.29	9.2	5.81	0.17	0	0.87	17.73	0	37.93	100
	All sizes	32.6	29.82	6.18	1.64	0.75	0.65	0.94	0.04	27.38	100
	2001-02 all sizes	17.5	31.97	1.59	1.10	0.38	0.01	0.70	0.01	46.74	100
	2006-07 all sizes	7.27	34.36	8.38	1.70	0.47	1.03	0.72	0.08	45.99	100
	2011-12 all sizes	32.6	29.82	6.18	1.64	0.75	0.65	0.94	0.04	27.38	100

TABLE C9
CROP WISE PERCENTAGE DISTRIBUTION OF UNIRRIGATED AREA

Sl.No.	Size class	Paddy	Coconut	Arecanut	Tapioca	Rubber	Tea	Coffee	Cashew	Pepper	Cardamom	Other crops	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Below 1.0	2.80	31.5	3.41	1.98	33.56	0.11	2.02	1.85	2.83	0.49	19.45	100
2	1.00 - 1.99	5.57	20.19	5.87	1.21	43.23	0.33	3.94	2.26	2.66	3.37	11.37	100
3	2.00 - 3.99	7.24	16.49	5.54	0.78	49.28	0.52	3.61	2.45	2.12	3.30	8.67	100
4	4.00 - 9.99	9.83	13.96	2.56	0.67	55.07	0.41	4.11	2.62	1.41	0.6	8.76	100
5	10.00 & Above	8.25	5.90	4.68	0.36	62.26	1.75	3.01	0.20	1.49	4.89	7.2	100
	All sizes	4.21	26.48	4.09	1.61	38.58	0.24	2.67	2.00	2.63	1.43	16.06	100
	2001-02 all sizes	4.92	34.5	0.97	3.33	25.43	-	3.08	0.3	0.07	-	27.4	100
	2006-07 all sizes	4.93	26.3	3.65	2.56	32.11	0.19	3.27	3.65	4.32	0.78	18.41	100
	2011-12 all sizes	4.21	26.48	4.09	1.61	38.58	0.24	2.67	2.00	2.63	1.43	16.06	100

TABLE C10
NUMBER AND AREA OF IRRIGATED HOLDINGS AND TREATED WITH CHEMICAL FERTILIZER 2011-12

Sl.No.	Size class (in Ha)	No. of holdings growing one or more irrigated crops		Area of holdings growing one or more irrigated crops		Percentage	
		Total	No. treated with one or more chemical fertilizers	Total	Area treated with one or more chemical fertilizers		
		3	4	5	6	7	8
1	Below 1.0	3072280	870130	28.32	199556	112627	56.44
2	1.00 - 1.99	128060	77297	60.36	61108	44304	72.50
3	2.00 - 3.99	42156	28417	67.41	41610	32356	77.76
4	4.00 - 9.99	8965	5711	63.70	19389	15560	80.25
5	10.00 & Above	1010	772	76.44	5425	4289	79.06
	All sizes	3252471	982327	30.20	327088	209136	63.94
	2001-02 all sizes	1419003	755047	53.21	340756	214385	62.91
	2006-07 all sizes	2223778	765145	34.41	313332	197375	62.99
	2011-12 all sizes	3252471	982327	30.20	327088	209136	63.94

TABLE C11

**DISTRIBUTION OF IRRIGATED AREA UNDER HYV AND OTHER CROPS TREATED WITH CHEMICAL FERTILIZERS
2011-12**

Sl.No.	Size class (in Ha)	High Yielding			Others		
		Total	Area treated with one or more chemical fertilizers	Percentage	Total	Area treated with one or more chemical fertilizers	Percentage
1	2	3	4	5	6	7	8
1	Below 1.0	62098	55653	89.62	137458	56974	41.45
2	1.00 - 1.99	27914	25501	91.36	33194	18803	56.65
3	2.00 - 3.99	21978	20534	93.43	19632	11822	60.22
4	4.00 - 9.99	11674	10669	91.39	7715	4891	63.40
5	10.00 & Above	3288	3035	92.31	2137	1254	58.68
	All sizes	126952	115392	90.89	200136	93744	46.84
	2001-02 all sizes	121511	107129	88.16	219245	107256	48.92
	2006-07 all sizes	107990	102698	95.1	205342	94677	46.11
	2011-12 all sizes	126952	115392	90.89	200136	93744	46.84

TABLE C12

**AVERAGE CONSUMPTION OF CHEMICAL FERTILIZERS IN TERMS OF NUTRIENTS IN IRRIGATED AREA (KG. /HA)
2011-12**

Sl.No.	Size class (in Ha)	HYV			Others			Total		
		N	P	K	N	P	K	N	P	K
1	2	3	4	5	6	7	8	9	10	11
1	Below 1.0	64.14	35.84	23.43	61.07	37.06	30.77	62.03	36.68	28.48
2	1.00 - 1.99	86.21	36.68	30.23	69.56	37.71	26.73	77.16	37.24	28.33
3	2.00 - 3.99	81.96	35.15	28.88	67.46	42.15	28.23	75.12	38.45	28.57
4	4.00 - 9.99	91.17	48.20	36.40	79.34	52.12	32.78	86.46	49.76	34.96
5	10.00 & Above	88.79	38.33	37.64	33.08	34.6	32.24	66.84	36.86	35.52
	All sizes	75.2	37.11	27.43	63.51	38.22	29.94	68.05	37.79	28.97
	2001-02 all sizes	64.90	27.54	53.19	42.15	56.74	46.55	40.98	46.33	42.27
	2006-07 all sizes	17.59	50.49	20.05	21.87	27.07	25.63	25.63	20.34	35.14
	2011-12 all sizes	75.2	37.11	27.43	63.51	38.22	29.94	68.05	37.79	28.97

TABLE C13

DISTRIBUTION OF HOLDINGS UNDER IRRIGATED CROPS TREATED WITH STRAIGHT FERTILIZERS

Sl.No.	Size class (in Ha)	Growing one or more irrigated crops	Number of Holdings				Treated with Di-Ammonium phosphate
			Treated with Urea	Treated with super phosphate (single) (N-0, P-16, K-0)	Treated with Murate of potash	Treated with	
1	2	3	4	5	6	7	
1	Below 1.0	3072280	450569	44826	402532	32489	
2	1.00 - 1.99	128060	48679	5231	47485	5402	
3	2.00 - 3.99	42156	18962	2217	18646	2373	
4	4.00 - 9.99	8965	3998	487	3783	538	
5	10.00 & Above	1010	548	21	610	129	
	All sizes	3252471	522756	52782	473056	40931	
	2001-02 all sizes	1419003	513475	20570	469761	14241	
	2006-07 all sizes	2223778	401074	5921	367956	25143	
	2011-12 all sizes	3252471	522756	52782	473056	40931	

TABLE C14
DISTRIBUTION OF AREA UNDER IRRIGATED CROPS TREATED WITH STRAIGHT FERTILIZERS 2011-12

Sl.No.	Size class (in Ha)	Area of Holdings					Di-Ammonium phosphate
		Irrigated area under all crops	Urea	Super phosphate (Single)	Murate of Potash		
1	2	3	4	5	6	7	
1	Below 1.0	199556	72518	11850	70876	5278	
2	1.00 - 1.99	61108	31176	4251	30065	3969	
3	2.00 - 3.99	41610	24126	4042	23503	3032	
4	4.00 - 9.99	19389	11292	1220	11222	1804	
5	10.00 & Above	5425	2746	530	2946	978	
	All sizes	327088	141858	21893	138612	15061	
	2001-02 all sizes	340756	214385	10787	145761	8164	
	2006-07 all sizes	313332	127971	2114	122246	9683	
	2011-12 all sizes	327088	141858	21893	138612	15061	

TABLE C15

DISTRIBUTION OF HOLDINGS UNDER IRRIGATED CROPS TREATED WITH IMPORTANT COMPLEX / MIXED FERTILIZERS 2011-12

Sl.No	Size class (in Ha)	Growing one or more irrigated crops	Number of Holdings					Mono Ammonium Phosphate 0:52:0
			NPK Mixture (Vijay) 17:17:17	Ammonium Sulphate (Factomphos) 20:20:0	Urea Ammonium Phosphate 20:20:0	NPK Mixture 10:26:26		
1	2	3	4	5	6	7	8	
1	Below 1.0	3072280	39930	193523	30658	46002	35639	
2	1.00 - 1.99	128060	3345	22353	1802	1760	1646	
3	2.00 - 3.99	42156	1109	9299	449	718	623	
4	4.00 - 9.99	8965	422	1775	87	235	299	
5	10.00 & Above	1010	162	224	0	13	21	
	All sizes	3252471	44968	227174	32996	48728	38228	

TABLE CI6

**DISTRIBUTION OF AREA UNDER IRRIGATED CROPS TREATED WITH IMPORTANT COMPLEX / MIXED FERTILIZERS
2011-12**

Sl.No.	Size class (in Ha)	Area under irrigated crops with fertilizers					
		Under all crops	NPK Mixture (Vijay) 17:17:17	Ammonium Phosphorous Sulphate (Factomphos) 20:20:0	Urea Ammonium Phosphate 20:20:0	NPK Mixture 10:26:26	Mono Ammonium Phosphate 0:52:0
1	2	3	4	5	6	7	8
1	Below 1.0	199556	4604	25785	3443	5569	5379
2	1.00 - 1.99	61108	2039	13827	917	954	988
3	2.00 - 3.99	41610	1484	11552	431	683	646
4	4.00 - 9.99	19389	1270	5606	160	765	610
5	10.00 & Above	5425	657	1239	0	34	32
	All sizes	327088	10054	58009	4951	8005	7655

TABLE C17

**DISTRIBUTION OF HOLDINGS AND AREA IRRIGATED UNDER PADDY TREATED WITH CHEMICAL FERTILIZERS
2011-12**

Sl.No.	Size class (in Ha)	No. of holdings growing the crop			Area under the crop		
		Total	Treated with chemical fertilizers	Percentage	Total	Treated with chemical fertilizers	Percentage
1	2	3	4	5	6	7	8
1	Below 1.0	149806	141362	94.36	53253	51579	96.86
2	1.00 - 1.99	30372	28328	93.27	23856	22728	95.27
3	2.00 - 3.99	12745	11903	93.39	19319	18685	96.72
4	4.00 - 9.99	2320	2180	93.97	8661	8293	95.75
5	10.00 & Above	298	298	100	1535	1535	100
	All sizes	195541	184071	94.13	106624	102820	96.43

TABLE C18

DISTRIBUTION OF AREA IRRIGATED UNDER HYV AND OTHER VARIETIES OF PADDY TREATED WITH CHEMICAL FERTILIZERS 2011-12

Sl.No.	Size class (in Ha)	HYV			Others		
		Total	Treated with chemical fertilizers	Percentage	Total	Treated with chemical fertilizers	Percentage
1	2	3	4	5	6	7	8
1	Below 1.0	50749	49075	96.70	2504	2504	100
2	1.00 - 1.99	21720	21100	97.15	2136	1628	76.22
3	2.00 - 3.99	18217	17721	97.28	1102	964	87.48
4	4.00 - 9.99	8350	8011	95.94	311	282	90.68
5	10.00 & Above	1535	1535	100	0	0	0
	All sizes	100571	97442	96.89	6053	5378	88.85

TABLE C19

AVERAGE RATE OF APPLICATION OF FERTILISERS FOR PADDY IN DIFFERENT HOLDING SIZE CLASSES UNDER IRRIGATED CONDITION 2011-12

Sl.No.	Size class (in Ha)	Paddy area treated with chemical fertilizers	N		P		K	
			Qty. applied (MT)	Average (Kg/Ha)	Qty. applied (MT)	Average (Kg/Ha)	Qty. applied (MT)	Average (Kg/Ha)
1	2	3	4	5	6	7	8	9
1	Below 1.0	51579	3534.49	68.53	1859.47	36.05	1152.55	22.35
2	1.00 - 1.99	22728	1832.61	80.63	699.07	30.76	522.94	23.01
3	2.00 - 3.99	18685	1586.3	84.90	620.67	33.22	445.90	23.86
4	4.00 - 9.99	8293	753.52	90.86	329.57	39.74	220.36	26.57
5	10.00 & Above	1535	156.11	101.70	48.86	31.83	24.09	15.69
	All sizes	102820	7863.03	76.47	3557.64	34.60	2365.83	23.01

TABLE C20
DISTRIBUTION OF HOLDINGS AND AREA IRRIGATED UNDER TAPIOCA TREATED WITH CHEMICAL FERTILIZERS 2011-12

Sl.No	Size class (in Ha)	No. of holdings growing the crop			Irrigated area under the crop		
		Total	Treated with chemical fertilizers	Percentage	Total	Treated with chemical fertilizers	Percentage
1	2	3	4	5	6	7	8
1	Below 1.0	278848	28367	10.17	4046	1524	37.67
2	1.00 - 1.99	10660	3222	30.23	908	502	55.29
3	2.00 - 3.99	2556	916	35.84	264	189	71.59
4	4.00 - 9.99	644	85	13.20	150	83	55.33
5	10.00 & Above	29	0	-	9	0	-
	All sizes	292737	32590	11.13	5377	2298	42.74

TABLE C21
DISTRIBUTION OF HOLDINGS AND AREA IRRIGATED UNDER COCONUT TREATED WITH CHEMICAL FERTILIZERS & AVERAGE CONSUMPTION IN TERMS OF NPK NUTRIENTS 2011-12

Sl.No.	Size class (in Ha)	No. of holdings the crop		Irrigated area under the crop			Average quantity applied(Kg/Ha)			
		Total	Treated with chemical fertilizers	Percentage	Total	Treated with chemical fertilizers	Percentage	N	P	K
1	2	3	4	5	6	7	8	9	10	11
1	Below 1.0	2083083	410311	19.7	70703	24829	35.12	82.99	60.87	48.16
2	1.00 - 1.99	86819	26251	30.24	14705	6624	45.05	79.49	40.63	34.18
3	2.00 - 3.99	28969	9654	33.33	8350	3968	47.52	67.46	36.41	36.36
4	4.00 - 9.99	6427	2402	37.37	3280	1861	56.74	62.58	32.89	30.35
5	10.00 & Above	494	219	44.33	499	197	39.48	50.71	33.05	78.12
	All sizes	2205792	448837	20.35	97537	37479	38.43	79.55	53.17	43.71

TABLE C22

DISTRIBUTION OF HOLDINGS AND AREA IRRIGATED UNDER RUBBER TREATED WITH CHEMICAL FERTILIZERS & AVERAGE CONSUMPTION IN TERMS OF NPK NUTRIENTS

Sl.No.	Size class (in Ha)	No. of holdings growing the crop		Irrigated area under the crop		Average quantity applied(Kg/Ha)				
		Total	Treated with chemical fertilizers	Percentage	Total	Treated with chemical fertilizers	Percentage	N	P	K
1	2	3	4	5	6	7	8	9	10	11
1	Below 1.0	10352	10352	100	1689	1689	100	47.09	45.76	42.27
2	1.00 - 1.99	1337	725	54.23	502	377	75.09	63.77	59.89	31.38
3	2.00 - 3.99	353	219	62.04	214	98	45.79	32.76	32.86	21.22
4	4.00 - 9.99	93	21	22.58	62	4	6.45	117.5	20	45
5	10.00 & Above	0	0	0	0	0	0	0	0	0
	All sizes	12135	11317	93.26	2467	2168	87.88	49.47	47.58	39.43

TABLE C23

DISTRIBUTION OF HOLDINGS AND AREA IRRIGATED UNDER OTHER FOOD CROPS TREATED WITH CHEMICAL FERTILIZERS & AVERAGE CONSUMPTION IN TERMS OF NPK NUTRIENTS

Sl.No.	Size class (in Ha)	Irrigated area under other food crops			Average quantity applied(Kg/Ha)		
		Total	Treated with chemical fertilizers	Percentage	N	P	K
1	2	3	4	5	6	7	8
1	Below 1.0	23	0	0	0	0	0
2	1.00 - 1.99	2	2	100	35	35	0
3	2.00 - 3.99	0	0	0	0	0	0
4	4.00 - 9.99	1	1	100	40	10	30
5	10.00 & Above	0	0	0	0	0	0
	All sizes	26	3	11.54	33.33	23.33	10

TABLE C24

DISTRIBUTION OF AREA UNIRRIGATED UNDER HIGH YIELDING VARIETIES AND OTHER CROPS TREATED WITH CHEMICAL FERTILIZERS

Sl.No.	Size class (in Ha)	High yield variety			Others		
		Total	Treated with chemical fertilizers	Percentage	Total	Treated with chemical fertilizers	Percentage
1	2	3	4	5	6	7	8
1	Below 1.0	180526	138192	76.55	493479	87469	17.72
2	1.00 - 1.99	80594	63214	78.44	117415	26599	22.65
3	2.00 - 3.99	56494	45942	81.32	61440	15517	25.26
4	4.00 - 9.99	24178	19887	82.25	20392	6893	33.8
5	10.00 & Above	11065	8971	81.08	8635	3267	37.83
	All sizes	352857	276206	78.28	701361	139745	19.92

TABLE C25

CROPS WISE, IRRIGATION STATUS WISE CONSUMPTION OF CHEMICAL FERTILIZERS IN TERMS OF NPK NUTRIENTS 2011-12

Sl.No.	Crops	Average Consumption (Kg/Ha)		
		N	P	K
1	2	3	4	5
1	Irrigated	106.43	59.1	45.31
	Unirrigated	61.26	50.86	34.67
2	Irrigated	76.47	34.6	23.01
	Unirrigated	92.71	44.66	21.7
3	Irrigated	79.55	53.17	43.71
	Unirrigated	71.25	43.35	42.68
4	Irrigated	83.91	70.94	65.1
	Unirrigated	97.09	45.63	59.35
5	Irrigated	49.47	47.58	39.43
	Unirrigated	48.29	52.42	32.06

TABLE C26

RATE OF CONSUMPTION OF CHEMICAL FERTILIZERS IN UNIRRIGATED AREA IN TERMS OF NPK 2011-12

Sl.No.	Size class (in Ha)	Rate of consumption of Unirrigated area			
		N	P	K	
1	2	3	4	5	
1	Below 1.0	64.14	53.96	37.17	
2	1.00 - 1.99	58.93	47.30	31.84	
3	2.00 - 3.99	58.66	48.49	30.84	
4	4.00 - 9.99	56.08	42.59	27.14	
5	10.00 & Above	49.83	49.71	45.14	
	All sizes	61.26	50.86	34.67	

TABLE C27

DISTRIBUTION OF NUMBER OF HOLDINGS OF UNIRRIGATED CROPS TREATED WITH STRAIGHT FERTILIZERS 2011-12

Sl.No.	Size class (in Ha)	Number of Holdings							
		Growing one or more unirrigated crops	Treated with urea (46:0:0)	Treated with calcium ammonium Nitrate (25: 0: 0)	Treated with murate of potash (0: 0 : 60)	Treated with single super phosphate (0: 16 : 0)	Treated with Diammonium phosphate (18:46: 0)	Treated with rock phosphate (0: 18 : 0)	
1	2	3	4	5	6	7	8	9	
1	Below 1.0	5900539	411131	13059	421479	49313	17345	11166	
2	1.00 - 1.99	172181	35308	745	41036	3873	1550	1006	
3	2.00 - 3.99	53870	14046	89	16191	2211	593	408	
4	4.00 - 9.99	10753	3174	37	3369	408	171	14	
5	10.00 & Above	1258	389	0	530	55	19	0	
	All sizes	6138601	464048	13930	482605	55860	19678	12594	

TABLE C28

DISTRIBUTION OF UNIRRIGATED AREA UNDER ALL CROPS TREATED WITH STRAIGHT FERTILIZERS 2011-12

Sl.No.	Size class (in Ha)	Area of Holdings								
		Growing one or more unirrigated crops	Treated with urea (46:0:0)	Treated with calcium ammonium Nitrate (25:0:0)	Treated with murate of potash (0:0:60)	Treated with super phosphate (0:16:0)	Treated with ammonium phosphate (18:46:0)	Treated with Rock phosphate (0:18:0)		
1	2	3	4	5	6	7	8	9		
1	Below 1.0	674005	53030	1202	61090	6707	5605	2646		
2	1.00 - 1.99	198009	24684	419	28374	2408	1069	1065		
3	2.00 - 3.99	117934	17594	88	20362	2345	745	717		
4	4.00 - 9.99	44570	8974	87	10472	943	469	47		
5	10.00 & Above	19700	2592	0	4166	256	63	0		
	All sizes	1054218	106874	1796	124464	12659	7951	4475		

TABLE C29
DISTRIBUTION OF HOLDINGS UNDER UNIRRIGATED CROPS TREATED WITH IMPORTANT COMPLEX / MIXED FERTILIZERS

Sl.No.	Size class (in Ha)	Growing one or more unirrigated crops	Number of Holdings				
			NPK Mixture (Vijay) 17:17:17	Ammonium Sulphate (Factomphos) 20:20:0	Urea Ammonium Phosphate 20:20:0	NPK Mixture 10:26:26	Mono Ammonium Phosphate 0:52:0
1	2	3	4	5	6	7	8
1	Below 1.0	5900539	97048	249093	17733	48869	12675
2	1.00 - 1.99	172181	5324	27713	1595	5289	2334
3	2.00 - 3.99	53870	1811	10904	759	1986	947
4	4.00 - 9.99	10753	260	2371	67	412	112
5	10.00 & Above	1258	101	309	0	160	0
	All sizes	6138601	104544	290390	20154	56716	16068

TABLE C30

DISTRIBUTION OF AREA UNDER UNIRRIGATED CROPS TREATED WITH IMPORTANT COMPLEX / MIXED FERTILIZERS 2011-12

Sl.No.	Size class (in Ha)	Under all crops	Unirrigated area treated with				
			NPK Mixture (Vijay) 17:17:17	Ammonium Sulphate (Factomphos) 20:20:0	Urea Ammonium Phosphate 20:20:0	NPK Mixture 10:26:26	Mono Ammonium Phosphate 0:52:0
1	2	3	4	5	6	7	8
1	Below 1.0	674005	9130	41021	2500	9270	2956
2	1.00 - 1.99	198009	3404	22401	1329	4737	1702
3	2.00 - 3.99	117934	2053	17242	799	3764	1634
4	4.00 - 9.99	44570	808	8094	120	1516	301
5	10.00 & Above	19700	163	2345	0	1890	0
	All sizes	1054218	15558	91103	4748	21177	6593

TABLE C31

**DISTRIBUTION OF NUMBER AND AREA OF UNIRRIGATED PADDY TREATED WITH CHEMICAL FERTILIZERS
2011-12**

Sl.No.	Size class (in Ha)	Number of Holdings growing unirrigated crops paddy			Unirrigated area under crops paddy		
		Total	Treated with chemical fertilizers	Percentage	Total	Treated with chemical fertilizers	Percentage
1	2	3	4	5	6	7	8
1	Below 1.0	64962	58324	89.78	18840	17858	94.79
2	1.00 - 1.99	15649	13320	85.12	11035	10145	91.93
3	2.00 - 3.99	5819	5322	91.46	8534	8103	94.95
4	4.00 - 9.99	1225	1122	91.59	4379	4130	94.31
5	10.00 & Above	261	261	100	1626	1626	100
	All sizes	87916	78349	89.12	44414	41862	94.25

TABLE C32

DISTRIBUTION OF UNIRRIGATED AREA UNDER H.Y.V AND OTHER VARIETIES OF PADDY TREATED WITH CHEMICAL FERTILIZERS 2011-12

Unirrigated area under HYV		Other varieties	
Total	Treated with chemical fertilizers	Percentage	Total
1	2	3	4
38448	37720	98.11	5966
			Treated with chemical fertilizers
			5
			6
			4142
			69.43

TABLE C33

RATE OF APPLICATION NPK IN UNIRRIGATED AREA UNDER PADDY 2011-12

Sl.No.	Crops	Paddy			K (kg/Ha)
		N	P		
1	2	3	4	5	
1	Below 1.0	79.79	51.07		21.2
2	1.00 - 1.99	93.25	36.61		22.02
3	2.00 - 3.99	115.42	42.46		22.04
4	4.00 - 9.99	101.54	46.49		25.48
5	10.00 & Above	95.64	30.73		14.02
	All sizes	92.71	44.66		21.7

TABLE C34

**DISTRIBUTION OF NUMBER AND AREA OF UNIRRIGATED TAPIOCA TREATED WITH CHEMICAL FERTILIZERS
2011-12**

Sl.No.	Size class (in Ha)	Number of Holdings growing unirrigated crops Tapioca			Area under Tapioca		
		Total	Treated with chemical fertilizers	Percentage	Total	Treated with chemical fertilizers	Percentage
1	2	3	4	5	6	7	8
1	Below 1.0	700409	117564	16.79	13339	3688	27.65
2	1.00 - 1.99	34095	6871	20.15	2395	823	34.36
3	2.00 - 3.99	10044	2406	23.95	917	351	38.28
4	4.00 - 9.99	2292	380	16.58	300	70	23.33
5	10.00 & Above	197	93	47.21	71	56	78.87
	All sizes	747037	127314	17.04	17022	4988	29.3

TABLE C35

DISTRIBUTION OF HOLDINGS AND AREA OF UNIRRIGATED UNDER COCONUT TREATED WITH CHEMICAL FERTILIZERS & AVERAGE CONSUMPTION IN TERMS OF NPK 2011-12

Sl.No.	Size class (in Ha)	Number of Holdings growing unirrigated crops Coconut			Area under the crop			Rate of application (Kg/Ha)		
		Total	Treated with chemical fertilizers	Percentage	Total	Treated with chemical fertilizers	Percentage	N	P	K
1	2	3	4	5	6	7	8	9	10	11
1	Below 1.0	5873830	672867	11.46	212338	42995	20.25	74.47	45.17	41.29
2	1.00 - 1.99	170997	38105	22.28	39975	10848	27.14	63.48	40.11	50.44
3	2.00 - 3.99	53344	11392	21.36	19449	4721	24.27	58.95	36.49	40.48
4	4.00 - 9.99	10688	2040	19.09	6223	1227	19.72	73.03	32.89	29.32
5	10.00 & Above	836	157	18.78	1163	189	16.25	80.42	55.45	54.39
	All sizes	6109695	724561	11.86	279148	59980	21.49	71.25	43.35	42.68

TABLE C36

DISTRIBUTION OF HOLDINGS AND AREA OF UNIRRIGATED UNDER RUBBER TREATED WITH CHEMICAL FERTILIZERS & AVERAGE CONSUMPTION IN TERMS OF NPK 2011-12

Sl.No.	Size class (in Ha)	Number of Holdings growing unirrigated crop			Area under the crop			Rate of application (Kg/Ha)		
		Total	Treated with chemical fertilizers	Percentage	Total	Treated with chemical fertilizers	Percentage	N	P	K
1	2	3	4	5	6	7	8	9	10	11
1	Below 1.0	5873831	628982	10.71	226218	147930	65.39	53.08	55.1	34.88
2	1.00 - 1.99	170931	70973	41.52	85605	61160	71.44	45.37	49.88	27.84
3	2.00 - 3.99	53310	27189	51.00	58121	43603	75.02	42.59	50.73	26.94
4	4.00 - 9.99	10674	5784	54.19	24544	19011	77.46	39.41	42.63	26.08
5	10.00 & Above	921	834	90.55	12267	9474	77.23	36.58	54.5	50.86
	All sizes	6109667	733762	12.01	406755	281178	69.13	48.29	52.42	32.06

TABLE C37

**DISTRIBUTION OF AREA UNIRRIGATED UNDER OTHER FOOD CROPS TREATED WITH CHEMICAL FERTILIZERS &
RATE IN TERMS OF NPK 2011-12**

Sl.No.	Size class (in Ha)	Area under the crop		Percentage	Rate of application (Kg/Ha)		
		Total	Treated with chemical fertilizers		N	P	K
1	2	3	4	5	6	7	8
1	Below 1.0	59	0	0	0	0	0
2	1.00 - 1.99	19	3	15.79	123.33	123.33	0
3	2.00 - 3.99	2	0	0	0	0	0
4	4.00 - 9.99	2	0	0	0	0	0
5	10.00 & Above	0	0	0	0	0	0
	All sizes	82	3	3.66	123.33	123.33	0

TABLE C38
NUMBER OF HOLDINGS AND AREA BENEFITED BY ORGANIC MANURE IN IRRIGATED AREA 2011-12

Sl.No.	Name of organic manure	No. of holdings benefited by the manure	% to the total holdings growing irrigated crops	Area benefited by the manure (Ha)	% to the total area under irrigated crops
		3	4	5	6
1	Field yield manure/ Compost/ Biogas manure	1403615	43.16	132825	40.61
2	Oil cake	121060	3.72	20712	6.33
3	Other organic manure	622153	19.13	37209	11.38
4	Green manure	682985	20.99	60234	18.42

TABLE C39

**PERCENTAGE OF IRRIGATED AREA UNDER PADDY, TAPIOCA AND COCONUT TREATED WITH ORGANIC MANURE
2011-12**

Sl. No.	Name of crops	Total irrigated area under the crop	Area covered by farm yard manure	Percentage to col. 3	Area covered by other organic manure	Percentage to col. 6
1	2	3	4	5	6	7
1	Paddy	100571	27495	27.34	1867	1.86
	Others	6053	3395	56.09	497	8.21
2	Tapioca	588	368	62.59	25	4.25
	Others	4789	2406	50.24	449	9.38
3	Coconut	5901	3457	58.58	1085	18.39
	Others	91636	42790	46.70	16061	17.53

TABLE C40

**PERCENTAGE OF AREA IRRIGATED, TREATED WITH DIFFERENT ORGANIC MANURE AND GREEN MANURE
2011-12**

Sl. No.	Size class (Ha)	Field yield manure / Compost / Bio-gas manure	Oil cake	Other organic manure	Green manure
1	2	3	4	5	6
1	Below 1.0	42.36	5.1	12.50	20.41
2	1.00 - 1.99	37.85	7.89	11.67	15.76
3	2.00 - 3.99	35.67	6.48	8.39	16.54
4	4.00 - 9.99	36.31	11.63	6.40	11.33
5	10.00 & Above	60.31	13.99	7.28	14.71
	All sizes	40.61	6.33	11.38	18.42

TABLE C41

**PERCENTAGE OF UNIRRIGATED AREA UNDER PADDY, TAPIOCA AND COCONUT TREATED WITH ORGANIC MANURE
2011-12**

Sl. No.	Name of crops	Total unirrigated area under the crop	Area covered by farm yard manure	Percentage to col. 3	Area covered by other organic manure	Percentage to col. 6
1	2	3	4	5	6	7
1	Paddy	HYV	17423	45.32	1491	3.88
		Others	5966	63.14	142	2.38
2	Tapioca	HYV	678	20.75	952	29.13
		Others	13754	15.77	1103	8.02
3	Coconut	HYV	3192	25.05	1252	9.83
		others	266407	29.88	24601	9.23

TABLE C42

PERCENTAGE OF AREA UNIRRIGATED, TREATED WITH DIFFERENT ORGANIC MANURE AND GREEN MANURE 2011-12

Sl. No.	Size class (Ha)	Field yield manure / Compost / Bio-gas manure	Oil cake	Other organic manure	Green manure
1	Below 1.0	19.93	0.74	5.33	8.34
2	1.00 - 1.99	20.03	1.09	5.53	7.45
3	2.00 - 3.99	20.89	0.87	5.48	5.92
4	4.00 - 9.99	18.81	0.39	5.54	3.25
5	10.00 & Above	19	0.41	5.63	7.52
	All sizes	19.99	0.8	5.39	7.67

TABLE C43
PERCENTAGE OF AREA UNDER PADDY TREATED WITH PESTICIDES 2011-12

Sl.No.	Irrigated / Unirrigated	Area under paddy HYV (Ha)			Area under other varieties of paddy (Ha)		
		Total	Treated with pesticides	Percentage	Total	Treated with pesticides	Percentage
1	2	3	4	5	6	7	8
1	Irrigated	100571	59507	59.17	6053	1908	31.52
2	Unirrigated	38448	20929	54.43	5966	127	2.13
3	Total	139019	80436	57.86	12019	2035	16.93

TABLE C44

NUMBER OF AGRICULTURAL MACHINERY OWNED AND USED BY OPERATIONAL HOLDINGS DURING 2011-12

Sl. No.	Size class (in Ha)	Hand operated sprayer/ duster	Animal operated Implements		Power operated implements/ equipments					
			Wooden Plough	Others	Power operated Sprayer	Diesel engine pump set	Electric pump set	Power tiller	Tractor used for agriculture purpose	
1	2	3	4	5	6	7	8	9	10	
1	Below 1.0	111973	11347	23382	10625	9771	708283	12146	65376	
2	1.00 - 1.99	20220	967	776	3406	2915	38673	3737	9517	
3	2.00 - 3.99	6870	349	392	1759	1811	14213	1682	3924	
4	4.00 - 9.99	2329	48	115	721	821	3424	500	1004	
5	10.00 & Above	299	0	0	74	95	230	55	63	
	All sizes	141691	12711	24665	16585	15413	764823	18120	79884	

TABLE C45

DISTRIBUTION OF HOLDINGS AVAILED INSTITUTIONAL CREDIT FOR AGRICULTURAL PURPOSES 2011-12

Sl. No.	Size class (Ha)	Total No. of operational holdings	Estimated number of operational holdings who took institutional credit	Percentage
<i>I</i>	2	3	4	5
1	Below 1.0	6531223	253309	3.88
2	1.00 - 1.99	175912	39589	22.51
3	2.00 - 3.99	54936	15562	28.33
4	4.00 - 9.99	11179	3052	27.30
5	10.00 & Above	1281	409	31.93
	All sizes	6774531	311921	4.60

TABLE C46

DISTRIBUTION OF AMOUNT OF AGRICULTURAL CREDIT PER HOLDER 2011-12

Sl. No.	Size class (Ha)	No. of holders who took institutional credit	Amount of institutional credit taken (Rs)	Average amount per holder
1	2	3	4	5
1	Below 1.0	253309	4637221204	18307
2	1.00 - 1.99	39589	1345861543	33996
3	2.00 - 3.99	15562	678776230	43618
4	4.00 - 9.99	3052	223966664	73384
5	10.00 & Above	409	12775096	31235
	All sizes	311921	6898600737	22116

TABLE C47
PERCENTAGE OF DISTRIBUTION OF AGRICULTURAL CREDIT 2011-12

Sl. No.	Size class (Ha)	Total No. of operational holdings	Percentage of operational holdings took institutional credit	Percentage of operational holdings that took institutional credit				
				PACS	PLDB / SLDB	CBB	RRBB	
1	2	3	4	5	6	7	8	
1	Below 1.0	6531223	3.88	1.73	0.36	0.4	1.53	
2	1.00 - 1.99	175912	22.51	10.1	2.79	2.82	9.33	
3	2.00 - 3.99	54936	28.33	11.95	4.59	4.8	11.5	
4	4.00 - 9.99	11179	27.30	14.11	5.5	3.52	10.37	
5	10.00 & Above	1281	31.93	10.85	19.44	1.48	6.09	
	All sizes	6774531	4.60	2.05	0.47	0.51	1.83	

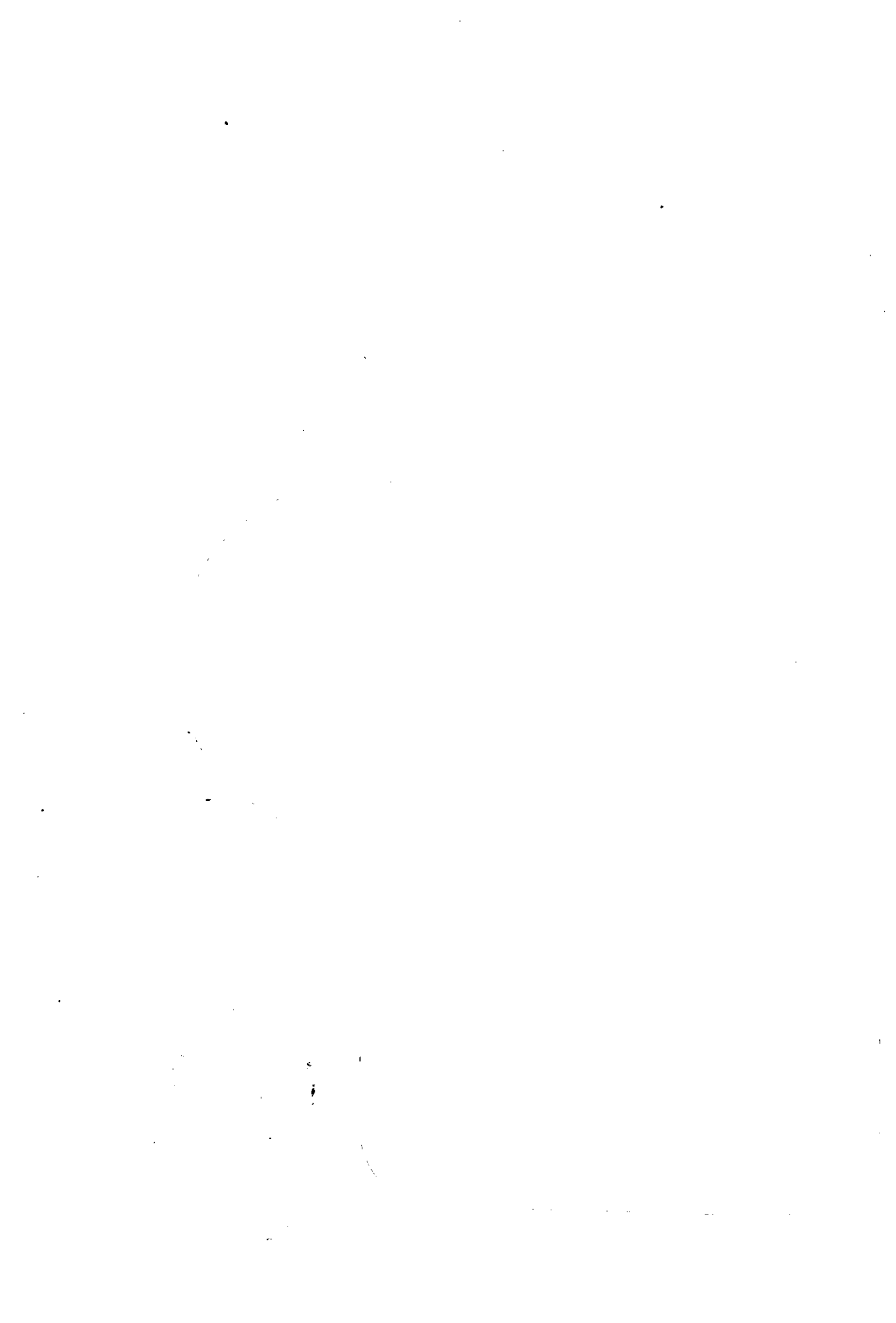
TABLE C48

Estimated No. of Cattle Reported By Operational Holdings By Size Groups

Sl No	Size Groups (Ha)	Total No of Operational Holdings	Adult Stock *						Young Stock Upto 2 1/2 Years **						Total No. of Holdings Reporting One Or More Categories of Cattle	
			No. of Holdings Reporting Males		Males Over 2 1/2 Years		No. of Holdings Reporting Females	No. Reported			No. of Holdings Reporting Young Stock	No. Reported		Total No. of Cattle		
			Working	Others	Total	In Milk		Others	Total	Male		Female	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Below 1.0	6531223	25911	15275	24875	40150	748606	918012	93152	1011164	618462	254968	523701	778669	1829983	846389
2	1.0 - 1.99	175912	2711	1408	2210	3618	57005	78136	9278	87414	44546	22594	37044	59638	150670	61893
3	2.0 - 3.99	54936	1178	681	953	1634	20294	29501	6163	35664	16169	9236	14423	23659	60957	21706
4	4.0 - 9.99	11179	353	382	329	711	4123	7777	1464	9241	3202	2480	3247	5727	15679	4454
5	10 and Above	1281	0	0	0	0	528	1188	152	1340	572	468	763	1231	2571	633
	ALL GROUPS	6774531	30153	17746	28367	46113	830556	1034614	110209	1144823	682951	289746	579178	868924	2059860	935075

* Cross Breed Over 2 1/2 Years + Native Breed Over 3 Years

** Cross Breed Over 2 1/2 Years + Native Breed Over 3 Years



REPORT ON
INPUT SURVEY
2011-12

Department of Economics & Statistics
Thiruvananthapuram
2015