CHAPTER I

INTRODUCTION AND DESIGN OF THE STUDY

1.1 INTRODUCTION

Indian economy is predominantly an agrarian economy and its prosperity depends upon the progress of agriculture. So agriculture sector is considered as the backbone of our national economy. Various incentives have been provided for accelerating the growth of agricultural production. Among them, subsidies are considered to be the most powerful ones. Provision of agricultural subsidies is made not only in developing countries like India, but in developed countries of the West also.

The social justification of the subsidies lies in the fact that they should be equally distributed among the regions and groups of society for achieving the goal of rapid growth in agricultural development. During the last two decades, agricultural subsidies in India have increased
tremendously. But there has been large inter-regional disparity in the use of agricultural subsidies, which has rather increased over the time.

Provision of input subsidies in agriculture has been recommended on the ground that it gives incentives to the farmers to use new technology and increases agricultural production. However, the case against subsidies rests on the ground that they put heavy burden on the state exchequer and reduce investible surplus and consequently the growth rate of the economy.

Subsidies can be defined as financial aid or financial transfers from the exchequer to certain pre-determined sections of the population or sectors of the economy, with a view to improving the distribution of income or reducing the cost of production or price. They include the payments given for rebate on the sale of handloom fabrics, or for loss on the sale of fertilizers, improved seeds, pesticides and agricultural implements, distribution of food grains and promoting exports. In the words of John Mutti (1982)\(^1\) subsidies are, “Government Expenditure Policies resulting in reduced production costs in a country”.

Subsidies in India are in existence from the beginning of the planning era. Government of India is providing different kinds of subsidies for promoting equity and growth in some sectors and areas in the country.

The coverage and quantum of subsidies have enormously increased over the years. The total quantum of subsidies in India rose from Rs.2,028 crores in 1980-81 to Rs.71,430 crores in 2008-09\(^2\). Out of this amount, agricultural subsidies are provided as an incentive to promote overall agricultural development. No doubt, it helps in achieving short term increase in food production and even in attaining self-sufficiency.

Subsidies are direct transfers and as such are in the nature of negative taxation. Dagli Committee on Controls and Subsidies in India (1979)\(^3\) has aptly described subsidies as “a powerful instrument in the armory of the government for exercising control over the functioning of the economy”.

The issue of subsidies to agriculture is of special importance as it has direct relationship with food which is the basic necessity of life. Various countries provide subsidy to agriculture in different names. Developed countries provide huge amount of subsidy to support the farm sector. Generally the subsidy programmes in these countries are intended to promote regional economic development and enhance the international competitiveness of domestic export sectors.

The subsidies to agriculture sector provided by the Government have recorded phenomenal rise during the past two decades.

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Considering the present fiscal deficit of the central and state Governments, it has become difficult to support the raising subsidies. As such, the role of subsidy as an incentive to promote agricultural development has been a subject of debate among economists, policy makers and others. On one side, the supporters of such subsidies argued that it is essential to maintain food security and stimulate agricultural production. On the contrary, the opponents view subsidies as an unnecessary Government intervention which may impair the efficiency of pricing by market forces. The issue of agricultural subsidies is not to be examined only from the point of view of ‘fiscal unsustainability’ but from a much wider perspective of ensuring food security and safety net for the poor. It also protects the interests of the country in the new emerging international economic order that is taking shape under the aegis of the WTO.

1.2 MEANING AND DEFINITION

Subsidy is an incentive given to the farmers to promote agricultural production by way of inputs such as plants, seeds, fertilizers, pesticides and modern appliances which may be direct or indirect.

The dictionary meaning (Concise Oxford) of the term is, “money granted by State and Public body to keep down the prices of commodities and so on”. The Joint Economic Committee of the U.S Congress (1972) had defined subsidy as government assistance for which
no equivalent compensation is received in return, but the assistance is conditioned “on a particular performance by the recipient”.4

The definition of subsidy adopted by national (and sub-national) governments is the one provided by the UN System of National Accounts (SNA). This definition covers only current transfers made by governments to producers, which may be in the form of direct payments or differentials between buying and selling prices of government trading organizations. This definition has been accepted by the Government of India and State governments, by adopting the SNA. A shortcoming of such a definition is the distinction between subsidy and transfers, where subsidy goes to producers, while transfers refer to income transfers going to consumers, which have similar effect as subsidy. Another serious limitation is the artificial distinction between payments on current and capital accounts. For instance, annual payments to public corporations to cover losses would be termed as subsidy, but debt write-off would be termed as capital transfer even though the capital (either entirely or partially) is created in the government sector (Prest, 1974). Thus the definition must be broad enough to include any net benefit that accrues to any individual as a result of taxing and spending activities of the

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In this context, government provision of public goods and social goods can be thought of as the limiting case of subsidy. A commodity that has zero subsidy is entirely provided by the private sector; it is subsidized to a large extent if the government makes cash payment to producers; and it is 100 per cent subsidized if the government provides it free of charge to consumers.

1.3 OBJECTIVES OF SUBSIDIES

Subsidies, by means of creating a wedge between consumer prices and producer costs, lead to changes in demand/supply decisions. Subsidies are often aimed at

1) Inducing higher consumption/production.
2) Offsetting market imperfections including internalization of externalities and
3) Achievement of social policy objectives including redistribution of income.
4) If markets do not allocate resources to their most efficient use, subsidies may be used to offset market imperfections.

1.4 RATIONALE OF SUBSIDIES

Whether subsidies are needed or not depends upon the

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7 Srinivasa and Tapas K. Sen, op.cit., p.3.
various economic and political goals pursued by the Government. Generally subsidies are provided for the following purpose:

1) To shift the allocation of resources along the desired directions,

2) For price restraint in respect of essential and strategic items of consumption

3) To mitigate the effects of extreme inequalities of income and wealth in the country,

4) To raise the consumption level of the vulnerable sections of the population,

5) To protect and promote the growth of employment oriented production in the decentralized sector,

6) To subsidise the use of particular input, e.g. fertilizer, in the production process,

7) To finance the operational losses of public sector enterprises

8) To temporarily subsidise infant industries,

9) To develop backward regions, and

10) To provide greater equality of opportunities, for the development of certain backward communities or classes of people.

As far as the subsidies on inputs to the agricultural sector are concerned, they are given to

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9 Ibid., p.2.
a) alleviate the impact of price distortion in output prices

b) encourage the use of new technology

c) reduce the risk of under utilization of resources

d) improve the equity distribution of income and employment in the rural areas

e) encourage self-sufficiency.

The input subsidies may assist in changing the patterns of agricultural production through an intensive use of subsidized input. It may also have an influence on the cropping pattern, increase in the use of inputs, and finally in the aggregate level of agricultural output. The input subsidies are particularly useful where the farmers are reluctantly avoiding such input due to higher cost. Moreover, farm subsidies encourage and help the poor farmers to apply the recommended quantity of expensive inputs at lower costs, resulting in high crop productivity.

Findings of many of the studies revealed that the benefits of subsidies have accrued disproportionately to prosperous regions and affluent farmers. This means that subsidies could have helped growth but this growth has not been even across regions or farm-size groups. Growth with equity can be rightly termed as agricultural development, as distinguished from mere growth. Achieving a targeted rate of growth with concurrent reduction in disparities is preferable to attain the same growth rate. It has been estimated that the explicit and implicit subsidies related to
fertilizers, surface irrigation and electricity reach less than 20 per cent of the farming community.¹⁰

1.5 FORMS OF SUBSIDIES

An easily recognizable form of subsidy is a cash payment made to producers or consumers. But, it has many invisible forms too. Thus, it may be hidden in reduced tax liabilities, low-interest government loans or government equity participation. If the government procures goods such as food grains, at higher than market prices or if it sells goods at lower than market prices, subsidies are implied. Subsidies often operate off the budget, implying a transfer, such as one from the producers to the consumers, without going through the budgetary process. Some important forms of subsidies are,

a) **Cash subsidies:** A cash payment made by the government to producers or consumers. eg. Food, fertilizers, export.

b) **Interest or credit subsidies:** Loans given at a lower rate than the market rates prevailing.

c) **Tax subsidies:** Tax exemption of medical expenses, deducting mortgage interest payment from taxable income, postponing collection of tax arrears are some of the examples for tax subsidies.

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d) **In-kind subsidies:** Provision of free medical services through government dispensaries, provision of goods to target population in physical form.

e) **Equity subsidies:** Investment in equity in state enterprises giving low dividends.

f) **Procurement subsidies:** The government may pay much higher support/procurement prices for agricultural products than what the farmers can get under free market environment. e.g. Purchase of food grains at assured higher than market prices.

g) **Regulatory subsidies:** Regulatory subsidies emerges in the context of government regulation or fixation of price/quantity in the case of goods produced by public/private sector.

**Modes of Administering a Subsidy**

A subsidy programme may be administered in a number of ways. The various alternative modes of administering a subsidy are:

a) **Subsidy to producers:** A subsidy may be given to the producers of goods with the objective of augmenting its consumption. This would result in increasing the supply, thereby enabling a higher consumption of the goods. Such subsidies may also be given to offset losses of producers to ensure continued production.

b) **Subsidy to consumers:** A straightforward way of encouraging consumption of a good is by giving the subsidy directly to the consumers.
This would result in an increase in demand at every price level. In general, subsidy to consumers on final goods may be recommended in preference to other models, as it is easier to monitor the distributional impact of the subsidy.

c) Subsidy to producers of inputs: When a particular good can be produced by using different combinations of inputs, the use of it may be encouraged by providing subsidies on such input. This may lead to lower prices for the consumer, and higher profit margins for the producers. The input subsidy can be provided in the form of cash subsidy to the producers of the input, per unit of output produced, or to the producers of the concerned good per unit of input used.

d) Production/Sales through Public Enterprise: Subsidies may be administered through direct intervention in the market by setting up a public enterprise to produce/ procure/ distribute the goods in question or their inputs at chosen administered prices. The difference in the market price and the actual sale/ purchase price leads to the subsidy, while the government has to sustain the losses incurred by the enterprise.  

1.6 REVIEW OF LITERATURE

A review of the available literature indicates that the issues relating to agriculture subsidies are spread over four broad aspects. Firstly, there are studies which attempt to estimate and analyze the economic

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subsidies across the states. Secondly, researchers have attempted to locate the origin of the subsidies and who finally benefits out of them. The third group of studies locate the micro economic impact of the quantum of subsidies on agricultural development. Beside these, there are recent attempts to work out the probable impact of the withdrawal of these input subsidies at the micro level. Keeping in view of this spread of issues, a brief review of the research work relating to the various aspects of agricultural subsidies is given.

Rai, et al., (1982)\textsuperscript{12} in their study, “Price Support Versus Input Subsidy for Achieving Self-sufficiency in Wheat Production in India”, made a comparative analysis of the programmes of price support and fertilizer subsidy for achieving self-sufficiency in the country. They estimated that the total cost to the government in the case of price support programme was almost five times than that of fertilizer subsidy. Based on the total social benefit and cost of the two programmes, the fertilizer subsidy programme fared better. Only the net savings in foreign exchange were higher in case of price support programme as compared to fertilizer subsidy. Thus, on the whole, fertilizer subsidy programme was found to be more effective in achieving self-sufficiency.

Yadav et al., (1982)\textsuperscript{13} in their study, “Role of Subsidy in Agricultural Development: A Case Study in Ajitwal Block, District Etawah”, tried to determine the impact of subsidy on income of small and marginal farmers in Ajitwal Block. The authors found that the capital investment, cropping intensity and the percentage of area under irrigation were significantly higher among the beneficiary farms. It was observed that the provision of subsidy resulted in an increase in total income of the beneficiaries when compared to those of the non-beneficiaries. On the basis of the results of the study the authors strongly recommended the provision of subsidy for small and marginal farmers.

Ajit Kumar Mitra (1982)\textsuperscript{14} in his paper, “Subsidy as an Instrument for improving the Economic Conditions of the Marginal and Small Farmers: A Case Study of the District of Ganjam, Orissa”, made an attempt to assess the effectiveness of the subsidy and credit programme of the Small Farmers Development Agency (SFDA) in improving the economic condition of the marginal and small farmers in the district. It was found that even when subsidy was available, it was difficult to utilize it properly due to inadequate availability of HYV seeds, chemical fertilizers, pesticides etc. It was also found that due to inadequate experience of many


marginal and small farmers to operate different types of minor irrigation structures, there was a certain amount of concealed transfer of benefits of subsidy in favour of large affluent farmers. The subsidy programme of the SFDA in that period was found to be ineffective in improving the economic condition of the marginal and small farmers.

Sinha and Prasad (1982)\textsuperscript{15} in their study, “Impact of Farm Subsidies on Production, Income and Employment in Bihar: A Case study in Masahara Block, District: Muzaffarpur, Bihar”, made an attempt to assess the impact of subsidies on agricultural productivity, income and employment. The study highlighted that marginal farmers are not benefited much from the subsidies for irrigation and agricultural inputs because of their resourcelessness and small size of land holdings. It was found that cropping intensity on beneficiary farms increased after the use of subsidy. Farm productivity was found to be higher in all categories of farm households after the use of subsidy. The authors also observed that the highest increase in income was shown by the farmers in the size group of less than one acre.

Mohan et al., (1982)\textsuperscript{16} in their study, “The Role of Subsidy in Risk Taking by Farmers: A Study in a South Arcot Village”, examined the role of subsidy in risk taking in agricultural operations by the farmers. The term risk taking was interpreted in the context of application of fertilizers and pesticides to the optimum level. The difference between the need and the actual practice was defined as risk gap. The study revealed that proportion of risk-taking increases with the increase in the farm size. Therefore, the risk gap is maximum in case of small farmers and minimum in case of large farmers. It was also observed that average opportunity loss per acre decreased with increase in size.

Joshi and Agnihotri (1982)\textsuperscript{17} in their study, “Impact of Input Subsidy on Income and Equity under Land Reclamation”, attempted to examine the direct and indirect benefits of gypsum. Capital requirement for land reclamation programme was found to be non-neutral and biased towards the large farmers both at 50 per cent and 75 per cent level of subsidy. To encourage the small and marginal farmers for reclamation programme, considering their poor resources and risk bearing ability, a differential rate of subsidy for small and large farmers was suggested.


Quizon and Biswanger (1983)\textsuperscript{18} in their study, “Income Distribution in India: The Impact of Policies and Growth in the Agricultural Sector”, estimated the effects of food security, fertilizer subsidy and irrigation, investment on agricultural production and income in India. It was observed that food subsidies financed through excise tax increased the real per capita income of the urban poor. However, such subsidy reduced the real per capita income of rural poor by 0.35 per cent thereby aggravating the income disparity in rural areas. They were of the view that irrigation subsidy brought equity across income classes but aggravated the regional disparities.

Sirohi et al., (1984)\textsuperscript{19} in their study, “Impact of Agricultural Subsidies on Agricultural Production and National Income in India: A General Equilibrium Analysis” made an attempt to examine the impact of subsidies on national income, agricultural and industrial production, saving and investment. The results of the study showed that considering subsidies individually they all had influenced national income positively. They found that in order of influence of national income and agricultural production, subsidies can be arranged as agricultural interest subsidy, food subsidy and


fertilizer subsidy. They recommended that allocation of money to different subsidies should be made according to the productivity of various subsidies.

Sirohi (1984)\textsuperscript{20} in his paper, “Impact of Agricultural Subsidies and Procurement Prices on Production and Income Distribution in India”, investigated the impact of subsidy on food, fertilizer, credit and electricity in agriculture on production. He observed that the support price increased the income of the rural rich and rural upper middle class whereas the landless labourers and poor people remained deprived of this benefit. The author was of the view that as the burden of the food subsidy fell mainly on the rich people through progressive taxation of income, these programmes helped in equitable distribution of income.

Regarding the effect of various input subsidies on agricultural production and national income, the largest favourable impact was found in the case of subsidy on interest rate and electricity in agriculture. They should be given the highest priority for economic development. The fertilizer subsidy went largely to the big and medium farmers, whereas the benefits of income of rural poor decreased marginally. Thus he found that fertilizer subsidy aggravated the income disparity in the rural areas. The benefits of irrigation subsidy accrued to all

classes except the big farmers. Thus, it brought equity by increasing the income of the poor people in the rural areas, but aggravated the regional disparities because agricultural development due to fertilizer and irrigation subsidies accrued only to those states which were already better off due to larger irrigated areas.

Subba Rao (1985)\(^{21}\) in his study, “Incentive Policies and Indian Agricultural Development: Some Aspects of Regional and Social Equity”, analysed the distribution of benefits to agriculture from the incentive programmes. He pointed out that the benefits of incentive policies have accrued disproportionately to the prosperous regions and affluent farmers. The author highlighted the fact that price supports based on the cost of production of high cost states not only conferred differential rents to the high productivity regions but also harmed the interest of farm labour as this policy encouraged cost reduction via adoption of labour saving technology. He concluded that the incentive policies had their obvious limitations and it must be reckoned in order to balance the interests of different social classes and regions.

Singh and Chand (1986)\textsuperscript{22} in their study, “Inequalities in the use of Agricultural Input Subsidies in India”, made an attempt to study the growth, regional disparity and temporal changes in the use of agricultural input subsidies. The results of the study showed that the benefits of fertilizer input subsidy were found to be biased against the small and marginal farmers. Their share in the nation’s fertilizer subsidy was only 30 per cent. The authors recommended that more input subsidies should be given to small and marginal farmers, which will help them as well as encourage the poor regions to utilize more inputs at lower costs.

Thorat, et al., (1986)\textsuperscript{23} in their study, “Impact of Input Subsidies for Mango Plantation in Konkan Region of Maharashtra”, examined some aspects of subsidy relating to the increase in mango production through the Mango Plantation Scheme. The study revealed that income of mango growers who availed the subsidy, increased by more than three times compared to their counterparts who had not availed the subsidy. Further, it generated an additional employment to the tune of 97 man days per farm directly and 143 man days indirectly.


Gulati (1989)\textsuperscript{24} in his study, “Input Subsidies in Indian Agriculture: A State-wise Analysis”, made an attempt to quantify the level and spread of subsidies on major agricultural inputs across states in India. The study revealed that wide variations existed in the distribution of these inputs across states, which resulted in differential gains from input subsidies in different regions. The states which belong to the category of developed states get much higher input subsidies than the All-India average.

Parikh and Suryanarayana (1990)\textsuperscript{25} in their study, “Food and Agricultural Subsidies: Incidence and Welfare under Alternative Schemes”, observed that the major subsidies relating to the food and agriculture sector are those for fertilizer, public food distribution, irrigation and electricity for farmers. They showed that the withdrawal of fertilizer subsidy, though promotes growth by releasing investible resources, adversely affect the poor. They are of the view that compensatory policies that would promote efficiency would be a modest rural works programme and it will help in developing additional irrigation respectively.


Reddy, K.S., (1992)\textsuperscript{26} in his study, “Who Benefits from Agricultural Subsidies?: The Case Study of Andhra Pradesh”, analysed the distributional aspect of agricultural subsidies for Andhra Pradesh. He highlighted the fact that fertilizer subsidy accruing to all categories of farmers (except large farmers) is almost double than received by large farmers. From the analysis he found that inverse relationship existed between farm size and subsidy except for electricity subsidy. The per hectare total subsidy showed a declining trend with increase in farm size. It was almost three times in case of marginal farmers as compared to large farmers. Thus, an inverse relationship exists between farm size and per hectare subsidy. From the above analysis he concluded that quantity of subsidies should not be reduced as it is the smaller farmers rather than the large farmers who are going to be more adversely affected if subsidies are reduced.

Khatkar, et al., (1992)\textsuperscript{27} in their study, “Extent of Input Subsidies and their Beneficiaries in Indian Agriculture”, made an attempt to study the extent and impact of input subsidies on Indian agriculture. They pointed out that the input subsidies have increased over the years mainly to neutralize the escalation of prices and to encourage the use of


modern inputs for increasing agricultural production. They found that the agricultural developed states got a higher proportion of fertilizer subsidy, which constituted about 60 per cent of the total fertilizer subsidy. They observed the similar trend in case of irrigation, electricity and credit subsidy. They were of the view that the fall in per hectare returns ranging from 10 per cent to 59 per cent cautions against the withdrawal of input subsidies. They concluded that to sustain the present pace of growth of agricultural production there is a need to continue the input subsidies by controlling leakages.

Nanje Gowda (1992)\textsuperscript{28} in his article, “Policy of Props to Agriculture Subsidy: A Factor in Price Instability”, examined the policy of the Government of India on extension of food and fertilizer subsidy. He opined that ill-effects of this subsidy are more harmful than the advantages since it erodes into the real resources of the government. He further pointed out that increased food output over a period of past one decade, if measured with reference to various forms of subsidy extended to the agricultural sector, was not found to be much encouraging. Thus he cautions that the extension of subsidy should be judged not only from the angle of food output but also its effect on the economy as a whole.

Reddy V. Ratna and Deshpande, R.S., (1992) in their study, “Whether the Direction of Policy Changes?”, noted that a regionally differentiating policy through a well designed input delivery system is essential. Micro level analysis of the study showed that with the withdrawal of subsidy, there is a possibility of decline in productivity, input intensity and distortion in technological progress.


Rangaswamy (1995) in his study, “The Impact of Subsidies on Agricultural Development”, reveals that the distribution of subsidies reveal large inter-district variations. Well developed districts received more than their proportionate shares of subsidies as compared to backward districts and accentuate inter-district disparities in growth. The input use levels, including modern inputs like improved seeds and fertilizers were higher in the case of beneficiaries than non-beneficiaries.

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Ashok Gulati and Anil Sharma (1997)\textsuperscript{32} in their study, “Subsidies and Investments in Indian Agriculture”, made an attempt to analyse agricultural subsidies with reference to their magnitude, economy wide impact and their potential impact on future development of the agricultural sector. They pointed out that among the various input subsidies, electricity exhibited the highest growth rate. It was found that the small farmers have appropriated a larger share of subsidies and it is not promoting regional and interpersonal equity. They are of the view that continued subsidies are sending wrong signal to the farmers, distorting their production baskets and leading to environmental degradation.

Rajesh Kumar Gupta (2002)\textsuperscript{33} in his study, “Agricultural Subsidies and their Economic Implications”, made an attempt to examine the growth and distribution of agricultural subsidies in different states. It was found that the proportion of subsidies on different items increased with the increase in farm size and it was the lowest in case of marginal farmers. It was concluded that the Department of Agriculture, Punjab has not been able to check red tapism and partiality in the distribution of subsidies. Moreover, big farmers who are ineligible to get the subsidies from the Department were receiving these subsidies due to their better economic and social position.

\textsuperscript{32} Ashok Gulati and Anil Sharma, (1997), “Subsidies and Investments in Indian Agriculture”, Conference paper, Rajiv Gandhi Institute of Contemporary Studies, New Delhi, pp.64-82.

Bhupal (2002)\textsuperscript{34} in his paper, “Likely Impact of Liberal Imports and Low Tariffs on Edible Oils in India”, reported that after signing the WTO agreement on agriculture in 1995, India was forced to reduce the subsidies provided to the farmers. As a result, agricultural policies have undergone major changes which in turn increase the input prices and thereby an increase in cost of production and hit many of the small and marginal farmers adversely.

Usha Tuteja (2003)\textsuperscript{35} in her study, “Agricultural Input Subsidies in India: Quantum of Subsidies to Scheduled Caste Farmers in Haryana”, reported that the direct input subsidies account for only about one per cent of the total subsidies accruing to the farmers. But the indirect subsidies on fertilizers, electricity and canal water account for 99 per cent of total input subsidies in Indian agriculture. The study reported that the distribution of agricultural subsidies in Haryana was highly skewed towards indirect subsidies, which do not reach directly to intended beneficiaries.

Howes and Murgai (2003)\textsuperscript{36} in their article, “Incidence of Agricultural Power Subsidies” made an attempt to study the power subsidy


\textsuperscript{35} Usha Tuteja, (2003), “Agricultural Input Subsidies in India: Quantum of Subsidies to Scheduled Caste Farmers in Haryana”, Agricultural Economics Research Centre, Delhi University, pp.80-84.

provided in the Karnataka state by combining household survey data and irrigation data from the National Sample Survey (NSS). They found that 72 per cent of the population is either landless or barren land, was presumed to receive none of the subsidy. Moreover, the proportion of non-irrigators below the poverty line is twice as high as irrigators, and it showed that the subsidy is targeted to the non-poor. Medium and large farmers (those who own more than 2 ha) account for 11 per cent of the population but receive 80 per cent of the subsidy. The subsidy is also highly unequally distributed between those who do benefit. Marginal farmers (< 1 ha) receive about Rs.3000 while large farmers (>4ha) receive Rs 29,000 which is about 10 times what they would receive if the subsidies were equally distributed among all rural households. The authors concluded that agricultural power subsidies disproportionately benefit wealthy farmers.

Acharya and Jogi (2004)\(^{37}\) in their study, “Farm Input Subsidies in Indian Agriculture”, analyzed the subsidies on fertilizers, electricity and canal water which account for bulk of the subsidies. The study revealed that at all-India level, the subsidy per hectare of gross cropped area was relatively higher in Tamilnadu, Gujarat and Haryana and the lowest in Kerala and Orissa. While analyzing the size groups, the study

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found that the distribution of subsidies, follow the pattern of share of operated area except large size groups. Thus the authors concluded that there is no discrimination against any particular size group with subsidy and generally they are distributed in proportion to the operated area.

Richa Singh (2004) in his article, “Equity in Fertilizer Subsidy Distribution” examines the issue of inter-crop, inter-regional and inter-class equity in fertilizer subsidy distribution in terms of shares of different farm classes, crops and states in total fertilizer use as well as per hectare fertilizer use on different size categories of farms. The author concluded that paddy and wheat cultivators are the major beneficiaries of fertilizer subsidy. Interstate disparity in fertilizer consumption still remains high, though it has been falling over the years. The finding of the study is more significant that there prevails a fair degree of inter-class equity in distribution of fertilizer subsidy, contrary to the widely prevalent impression. It was stated that a uniform approach to reduction of all types of subsidies is not justified. Instead, the study recommended a well thought out, properly sequenced, gradualist and regionally differentiated approach to subsidy reduction to be adopted.
Varinder Jain (2005)\textsuperscript{39} in his article, “Political Economy of the Electricity Subsidy”, questions the justification for introducing such a policy that benefits the small farmers in case of electricity subsidy. He stated that the electricity subsidy distribution pattern needs to be scrutinized to assess whether the policy benefits small producers, a normative argument often made while granting any input subsidy. But in Punjab, this policy is found to ignore equity considerations while granting non-discriminatory electricity subsidies to the agricultural sector. The author in his study highlighted the existence of disparities in the flow of electricity subsidy between the advanced and backward regions. He pointed out that while the medium and large farmers reap the major benefits of the subsidy, the poor farmers, especially in the backward regions, remain excluded due to their non-possesion of electricity connections. The author puts forward the case for user charges based on open access to electricity.

Diana Abraham (2006)\textsuperscript{40} in her thesis, “Measurement of Subsidy – A Study of Kerala in the Context of Fiscal Imbalance” states that the quantum of subsidy, whether explicit or implicit, is sensitive firstly to the way it is defined and secondly to the methodology of estimation. In the


case of explicit subsidy she found that the narrow definition in the budget leads to large resource flow not being accounted as “subsidy”. At the same time, attributing subsidy to merit services, inflates the quantum of implicit subsidy.

Noor Mohamed (2007)\textsuperscript{41} in his paper, “Rejuvenating the Agricultural Sector” stated that the full potential of the Rural Infrastructure Development Fund (RIDF) and NABARD is not being utilized for the development of rural infrastructure and agriculture and there is inadequate flow of funds to less developed areas. So there is a need to restructure subsidies towards facilities that are needed more by small and marginal farmers.

Acharya and Jogi (2007)\textsuperscript{42} in their study, “Input Subsidies and Agriculture – Future Perspectives”, made an attempt to analyse the present status of farm input subsidies in Indian agriculture. They found out that input subsidies in Indian agriculture are mainly going to food crops. Out of the total input subsidies, rice accounted for 32 per cent, wheat 28 per cent, coarse cereals 5 per cent and pulses accounted for around 2 per cent. Across farm size groups, the small and marginal farms received larger share and large farms received smaller share in subsidies with respect to the share of operated area.

\textsuperscript{41} Noor Mohamed, (2007), “Rejuvenating the Agricultural Sector”, \textit{Kisan World}, Vol.34, No.11, November, p.28.

Vijay Paul Sharma and Hrima Thaker (2009) in their study, “Fertilizer Subsidy in India: Who are the Beneficiaries?” examined trends in fertilizer subsidy and the issue of distribution of fertilizer subsidies between farmers and fertilizer industry, across regions, crops and different farm sizes. They found out that the small and marginal farmers have a larger share in fertilizer subsidy in comparison to their share in cultivated area. A reduction in fertilizer subsidy would have adverse impact on farm production and income of small and marginal farmers as they do not benefit from higher output prices but do benefit from lower input prices. In short, the authors justify the fertilizer subsidy.

1.7 NEED FOR THE STUDY

India being a highly populated country has nearly 18.85 per cent of the world population. But the landscape is just 2.4 per cent of the total world area. Most of the cultivable area is already being under cultivation and there is no scope for further extension. The only option is to extend intensive cultivation by applying the required amount of nutrients to meet the increasing demands of the growing population. As majority of the population is under the BPL category and the major inputs such as fertilizer, power, pesticides and HYV seeds are costly, they are reluctant to use those inputs. This ultimately affects the economy as a whole. As far as

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the consumption of fertilizer is concerned, Indian farmers use only one-tenth of the amount of manure that is necessary to maintain the productivity of the soil. Compared to other countries the productivity levels in agriculture continue to be very low in India. To augment agricultural income and raise the profitability, to stimulate self-sufficiency in food production, to encourage the farmers to use the required quantity of chemical fertilizers, the Government of India introduced various input subsidy schemes, concessions and output support measures. In this juncture, it is necessary to evaluate whether the subsidies provided by the government has an impact on agricultural production, productivity, profitability and cost of production.

1.8 STATEMENT OF THE PROBLEM

Since Independence, remarkable progress has been made in the sphere of agricultural development in the country. However there are ups and downs in the growth of agriculture in the country as a whole as well as in the state. Particularly the decline in the growth of food grains during 1960’s and after raises concern from the point of view of food security. With a view to overcome this, the government emphasized various supportive measures.

The government supports agricultural sector by adopting several agro-support programmes such as implementation of land reforms, adoption of new technology and mechanism, subsidies, easy accessibility
to credit and public investment on irrigation. Providing such input subsidies accelerate the pace of inputs use and enhanced the growth of agricultural production and thereby the national income also. The present study focuses on both the types of subsidies that is, direct and indirect subsidies. Direct subsidies include seeds, sprinkler sets, implements and bio-fertilizers. The indirect subsidies analysed are restricted to three major items namely fertilizer, power and credit.

Though the government is providing subsidies on input it is far lower than many other countries. The farmers may not be inclined to adopt the recommended inputs for crop cultivation. Reduction in the use of various yield-increasing inputs would lead to a decline in crop productivity. Particularly the small and marginal farmers may shift to non-food crops which ensure value addition and provide more employment opportunities.

The present study is an enquiry into the various input subsidies provided to the agriculture sector and its impact on the agricultural production for select crops namely paddy and banana.

**1.9 OBJECTIVES**

The overall objective of the present study is to analyse the impact of subsidies on agricultural production. The specific objectives are
1) To analyse and compare the input and output structure of select crops namely paddy and banana for different farms of beneficiary and non-beneficiary groups.

2) To discuss the impact of subsidy on cost and returns of select crops.

3) To analyse and compare the impact of subsidy on cost benefit of cultivation of paddy and banana.

4) To examine the impact of subsidy on per acre net income distribution to different farmer groups.

5) To study and compare the growth of net income of paddy and banana.

6) To analyse and compare the impact of subsidy on determinants of yield of paddy and banana in the study area.

7) To give suggestions for the effective provision and utilization of subsidies.

1.10 METHODOLOGY OF THE STUDY

Designing a suitable methodology and selection of analytical tools are important for a meaningful analysis of any research problem. In this section an attempt has been made to describe the methodology of the present study. It includes choice of the study area, period of study, sampling technique, procedure for collection of data, tools of analysis and measurement of variables.
Choice of the Study Area

Kanyakumari district is one of the most important districts in Tamilnadu where there has been significant agricultural development particularly, the annual crops, paddy and banana. In spite of this, coconut and rubber plantations are main perennial in this district. Here, the soil and climatic conditions are highly suitable and favourable for these crops cultivation. As per records, a majority of farmers are utilizing major subsidies at all levels of agricultural activities. These are the main reasons for selecting Kanyakumari district as the study area for the present analysis.

The list of sample villages in each block and the number of farmers selected in each village are presented in Table 1.1.


**TABLE 1.1**

NAME OF THE VILLAGE AND THE NUMBER OF FARMERS SELECTED

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the block/villages</th>
<th>Total No. of Beneficiaries</th>
<th>Sample Beneficiaries Farm</th>
<th>Sample Non-Beneficiaries Farm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Paddy</td>
<td>Banana</td>
<td>Paddy</td>
</tr>
<tr>
<td>I.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Agastheeswaram</td>
<td>162</td>
<td>131</td>
<td>14</td>
</tr>
<tr>
<td>2.</td>
<td>Suchindrum</td>
<td>104</td>
<td>124</td>
<td>9</td>
</tr>
<tr>
<td>3.</td>
<td>Therekalputhoor</td>
<td>96</td>
<td>98</td>
<td>8</td>
</tr>
<tr>
<td>4.</td>
<td>NorthThomaraikulam</td>
<td>84</td>
<td>86</td>
<td>7</td>
</tr>
<tr>
<td>5.</td>
<td>Nelloor</td>
<td>62</td>
<td>78</td>
<td>5</td>
</tr>
<tr>
<td>II.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Thovalai</td>
<td>131</td>
<td>126</td>
<td>11</td>
</tr>
<tr>
<td>2.</td>
<td>Chenbagaramanputthur</td>
<td>58</td>
<td>112</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>Easanthimangalam</td>
<td>52</td>
<td>94</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>Thazhakudi</td>
<td>46</td>
<td>88</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>Madhavalayam</td>
<td>38</td>
<td>61</td>
<td>3</td>
</tr>
<tr>
<td>III.</td>
<td>Rajakkamangalam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Melasankarankuzhi</td>
<td>122</td>
<td>98</td>
<td>10</td>
</tr>
<tr>
<td>2.</td>
<td>Thenganputhoor</td>
<td>96</td>
<td>81</td>
<td>8</td>
</tr>
<tr>
<td>3.</td>
<td>Putheri</td>
<td>84</td>
<td>72</td>
<td>7</td>
</tr>
<tr>
<td>4.</td>
<td>Pillayarpuram</td>
<td>78</td>
<td>63</td>
<td>7</td>
</tr>
<tr>
<td>5.</td>
<td>Peruvilai</td>
<td>71</td>
<td>54</td>
<td>6</td>
</tr>
<tr>
<td>IV.</td>
<td>Kurunthancode</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Villukuri</td>
<td>131</td>
<td>112</td>
<td>11</td>
</tr>
<tr>
<td>2.</td>
<td>Kurunthancode</td>
<td>101</td>
<td>86</td>
<td>9</td>
</tr>
<tr>
<td>3.</td>
<td>Aloor</td>
<td>98</td>
<td>76</td>
<td>8</td>
</tr>
<tr>
<td>4.</td>
<td>Thalakulam</td>
<td>96</td>
<td>68</td>
<td>8</td>
</tr>
<tr>
<td>5.</td>
<td>Manavalakurichi</td>
<td>71</td>
<td>59</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1781</td>
<td>1767</td>
<td>150</td>
</tr>
</tbody>
</table>

It is noted from Table 1.1 that the respondents are representing four blocks of Kanyakumari District.
**Period of Study**

The field investigation was carried out from September 2010 to March 2011. The reference period of the survey is 2010-11.

**Sampling Technique**

Stratified multi-stage proportionate random sampling technique has been adopted for the study, taking Kanyakumari district as the Universe, the block as the stratum, the village as the primary unit of sampling and the subsidy beneficiaries paddy and banana cultivating farmers and non-beneficiaries farmer as the ultimate unit.

Details of the list of beneficiary farmers from 9 blocks in Kanyakumari district were obtained from the records of the Department of Agriculture. Among these nine blocks, four blocks namely Agastheeswaram, Thovalai, Rajakkamangalam and Kurunthancode show the highest number of beneficiaries for paddy and banana cultivation and they have been selected for the present study. The village in these blocks were arranged in a descending order of number of beneficiaries. The first 20 villages have been selected which account for more than 70 per cent of the beneficiaries in the blocks. The proportionate probability sampling technique has been used to select total 600 farmers, 300 each from beneficiary and non-beneficiary groups and 150 each from paddy and banana cultivation of each group. Equal weightage is given for selecting the non-beneficiaries in each village.
Collection of Data

A reconnaissance survey of the study area was undertaken to develop comprehension of the process and activities involved in paddy and banana cultivation under actual farming conditions.

The present study is based on primary and secondary data. Secondary data relating to the location, climate, rainfall, soil type, land utilization pattern, operational land holdings, sources of irrigation, area, cropping pattern, marketing, infrastructural facilities and the like were collected for the district and the taluk levels from the district collectorate, Kanyakumari and the statistical office at Kanyakumari district. Personal interview method has been adopted to collect primary data regarding the farm structure, size of holding, cropping pattern, costs and returns, subsidies enjoyed and other aspects relating to the overall objectives of the study.

Methods of Analysis

Keeping in view of the objectives of the study, total sample farmers were stratified into four categories namely Marginal, Small, Medium and Large farmer groups for each crop. Out of 150 sample beneficiary farmers cultivating paddy 42 (28 per cent) came under the category of Marginal, 30 (20 per cent) under small, 36 (24 per cent) under medium and 42 (28 per cent) under large farmer groups. In the case of banana, out of 150 beneficiaries 38 (25.33 per cent) came under marginal,
36 (24 per cent) under small, 42 (28 per cent) under medium and 34 (22.67 per cent) large farmer groups.

**Tools of Analysis**

In order to analyse and compare the cost and returns structure of different types of farmers cultivating paddy and banana, Cost A and Cost C concepts used by farm management studies have been adopted for the present study.

In order to examine the nature and extent of inequality in per acre net income of different type of farmers, namely marginal, small, medium and large farmers producing paddy and banana in the study area, frequency distribution and histogram and Lorenz curve are followed.

Analysis of variance is a collection of statistical models, and their associated producers, in which the observed variance in a particular variable is partitioned into components attributable to different sources of variation.

Analysis of variance (ANOVA) enables one to analyse the total variation of the data into components which may be attributed to various sources or causes of variation.

Two way ANOVA was carried out to examine the variation in net income per acre of different types of farmers between selected blocks.
In order to examine the association between characteristics of sample farmers and net income per acre, chi-square test was carried out.

\[
\text{Chi-square} = \sum \frac{(O - E)^2}{E} \text{ with } (r - 1)(c - 1) \text{ degrees of freedom}
\]

\[O = \text{Observed frequency}\]
\[E = \text{Expected Frequency}\]

\[E = \frac{\text{Row total} \times \text{Column total}}{\text{Grand total}}\]

To examine the impact of subsidies and yield, the following form of multiple log linear regression model has been used:

\[
\log Y = \alpha_0 + \alpha_1 D + \beta_1 \log x_1 + \beta_2 \log x_2 + \beta_3 \log x_3 + \beta_4 \log x_4 + \beta_5 \log x_5 + \mu
\]

\[\ldots\ldots\ldots\ldots(1.1)\]

Where

\[Y - \text{per acre yield}\]
\[X_1 - \text{Human labour per acre (in Rs.)}\]
\[X_2 - \text{Bullock labour per acre (in Rs.)}\]
\[X_3 - \text{Fertilizer per acre (in Rs.)}\]
\[X_4 - \text{Plant protection (in Rs.)}\]
\[X_5 - \text{Capital flows (in Rs.)}\]
\[\mu - \text{Disturbance term}\]

Where D is dummy

\[D = 1 \text{ if Beneficiary}\]
\[D = 0 \text{ if Non-beneficiary}\]

The above model has been estimated by the method of least squares.
If the dummy co-efficient ($\alpha_1$) is statistically significant, the following form of regression model has been fitted.

$$\log Y = \alpha_0 + \beta_1 \log x_1 + \beta_2 \log x_2 + \beta_3 \log x_3 + \beta_4 \log x_4 + \beta_5 \log x_5 + \mu$$

 .......... (1.2)

The above model is also estimated by using method of least squares.

1.11 OPERATIONAL DEFINITION OF CONCEPTS

Cropping Pattern

Cropping pattern has been defined as, the proportion of area under different crops at a particular period of time.

Demonstration

Demonstration is a plot laid out at the farmers holding, to visualize an improved technology and thereby educate the farmers in that surrounding.

Explicit subsidies

Direct or explicit subsidies are in the nature of payments to the farmers to meet part of the cost of input and include subsidy on seeds of improved or high-yielding varieties, plant protection chemicals or equipments, crop-specific minikits and improved farm implements. These
are usually made available to specified target groups such as small and marginal farmers or those belonging to scheduled castes and tribes.\footnote{Acharya, S.S., and Jogi, R.L., (2007), “Input Subsidies and Agriculture”, Institutional Alternatives and Governance of Agriculture, India, p.95.}

**Gross cropped area**

Gross cropped area is the total area under all crops including the area sown more than once during a year.

**Implicit subsidies**

Indirect or Implicit subsidies arise on account of pricing policy of certain inputs. There is no direct payment to farmers but as the inputs are supplied at a price lower than the cost of production, it amounts to implicit subsidization of the input for the farmer.\footnote{Ibid., p.96.}

**Impact**

In this study impact refers to the effectiveness of the subsidy schemes provided by both the Centre and State Governments on the beneficiaries in the production of agricultural commodities especially food crops.

**Intensity of cropping**

The intensity of cropping represents the percentage of the gross cropped area to the net sown.

\[
\text{Intensity of cropping} = \frac{\text{Gross cropped area}}{\text{Net area sown}} \times 100
\]
Large Farmer

Large farmer is one who possesses more than 4 acres of operational land hold.

Marginal Farmer

A marginal farmer is one who possesses less than one acre of operational holding.

Medium Farmer

A medium farmer is one who possesses more than two acres but less than 4 acres of operational land holding.

Personal contact

Personal contact means the direct contact by the field staff with the farmers for implementing the various schemes at different levels and giving technical advices regarding planning, planting, application of fertilizers, using modern appliances and other cultural operations.

Small Farmer

All those have operational holdings between one and two acres are grouped under the small farmers category.

Sustainable agriculture

Sustainable agriculture aims to maximise the output by adopting scientific methods of farming, growing crop varieties of high-yielding and high-quality potential, using optimum inputs such as manures, fertilizers, bio-fertilizers and agricultural chemicals without exploiting and
polluting the natural resources of soil, water and environment. Sustainable agriculture must be carried out in harmony with the environment without exploiting and depleting the natural resources.

1.12 PROFILE OF THE STUDY AREA

Kanyakumari district is predominantly an agricultural region and main stay of majority of the people with vast natural resources and variety of geological features. In order to have thorough understanding of the study area this section includes the profile of Kanyakumari district in general and agricultural profile in particular.

1.12.1 Location

Kanyakumari district is the southern most tip of peninsula India where Indian Ocean, the Arabian Sea and the Bay of Bengal embrace one another. The district lies between 77° 15’ and 77° 36’ of the Eastern Longitudes and 8° 03’ and 8° 35’ of the Northern Latitudes.

It is surrounded by Tirunelveli district in the North and North East, Kerala state in the North West, Arabian Sea in the West, Indian Ocean in the South, the Gulf of Mannar and the Bay of Bengal in the East. It has a coastline of 68km stretching on three sides.

1.12.2 Formation

Kanyakumari district is a cradle of civilization in the southern tip of the Indian peninsula upto early fifties of 20th century. This region was part of Tranvancore Samasthanam which is the southern part of...
the present Kerala state. The Tamil speaking majority population struggled to merger with Tamilnadu and finally Kanyakumari district came into existence as a part of Tamilnadu on 1st November 1956 with head quarter at Nagercoil.

On the recommendations of the states reorganization commission, Agastheeswaram, Thovalai, Kalkulam, Vilavancode and Senkottai taluks were given to Tamilnadu and the first four of the taluks were grouped to form the new Kanyakumari district.

1.12.3 Geographical Features

Kanyakumarai district is the smallest district in Tamilnadu with a land spread of 1682 sqkm. This constitutes 1.29 per cent of the state and has almost all eco system.

The district once called the granary of Travancore is fertile with hundreds of water bodies and an excellent canal irrigation system. Rubber and spice plantations are found on the hilly terrain, while paddy fields, plantain and coconut plantations are found on the plains, near the coast.

There are three important riverine eco systems which confluence with Arabian Sea. They are Thengapattinam estuary, Valliyar estuary and Manakudy estuary. Apart from these, there are two minor estuaries also. Pambar estuary near Colachel and Pantri estuary near
Rajakkamangalam. These are formed by excess water in the drainage canal during monsoon and the water drained from the irrigational fields.

1.12.4 Population and Occupational Pattern

According to 2001 census, total population of Kanyakumari district was 16,76,034. The male population is 8,32,269 and the female population is 8,43,765. In this the rural population is more than the urban population. The rural population is 5,82,107 and the urban population is 10,93,927. The density of population is high with 995sqkm. The total literates in this district are 13,08,322. The details of the population of Kanyakumari District is stated in Table 1.2 as follows:

**TABLE 1.2**

**POPULATION AND LITERACY IN KANYAKUMARI DISTRICT**

<table>
<thead>
<tr>
<th>Name of the Block Municipalities</th>
<th>Area (Sq.km)</th>
<th>Population</th>
<th>Literate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Persons</td>
<td>Male</td>
</tr>
<tr>
<td>Agasteeswaram</td>
<td>143.26</td>
<td>132413</td>
<td>65460</td>
</tr>
<tr>
<td>Rajakamangalam</td>
<td>135.49</td>
<td>127325</td>
<td>63980</td>
</tr>
<tr>
<td>Thovalai</td>
<td>360.91</td>
<td>97802</td>
<td>49117</td>
</tr>
<tr>
<td>Kurunthencode</td>
<td>109.54</td>
<td>97802</td>
<td>49117</td>
</tr>
<tr>
<td>Thuckalay</td>
<td>127.41</td>
<td>162019</td>
<td>81739</td>
</tr>
<tr>
<td>Thiruvattar</td>
<td>88.37</td>
<td>159189</td>
<td>80261</td>
</tr>
<tr>
<td>Killiyoor</td>
<td>138.86</td>
<td>123515</td>
<td>67515</td>
</tr>
<tr>
<td>Munchirai</td>
<td>277.57</td>
<td>173426</td>
<td>86422</td>
</tr>
<tr>
<td>Nagercoil Municipality</td>
<td>19.37</td>
<td>190084</td>
<td>94834</td>
</tr>
<tr>
<td>Padmanabhapuram</td>
<td>6.47</td>
<td>19269</td>
<td>6980</td>
</tr>
<tr>
<td>Colachel</td>
<td>5.18</td>
<td>24305</td>
<td>12320</td>
</tr>
<tr>
<td>Kuzhithurai</td>
<td>7.15</td>
<td>19226</td>
<td>9467</td>
</tr>
</tbody>
</table>

It is noted from Table 1.2 that highest population is recorded in Nagercoil Municipality.

The occupational patterns for different categories of the people of this district are given in Table 1.3.

**TABLE 1.3**

**OCCUPATIONAL PATTERN FOR THE YEAR 2009-2010**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Category</th>
<th>Number</th>
<th>Percentage of Workers to Total Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Allied Agro Activity</td>
<td>9871</td>
<td>1.80</td>
</tr>
<tr>
<td>2.</td>
<td>SF/Marginal Workers</td>
<td>93678</td>
<td>17.09</td>
</tr>
<tr>
<td>3.</td>
<td>Artisans</td>
<td>59854</td>
<td>10.92</td>
</tr>
<tr>
<td>4.</td>
<td>Cultivators</td>
<td>61567</td>
<td>2.86</td>
</tr>
<tr>
<td>5.</td>
<td>Agricultural Labourers</td>
<td>82733</td>
<td>15.09</td>
</tr>
<tr>
<td>6.</td>
<td>Household Industry Manufacturing Processing, servicing and Repairs</td>
<td>36085</td>
<td>6.58</td>
</tr>
<tr>
<td>7.</td>
<td>Other workers</td>
<td>204288</td>
<td>45.66</td>
</tr>
<tr>
<td>8.</td>
<td>Total workers</td>
<td>548056</td>
<td>100.00</td>
</tr>
<tr>
<td>9.</td>
<td>Non workers</td>
<td>1127978</td>
<td>-</td>
</tr>
<tr>
<td>10.</td>
<td>Total population</td>
<td>1676034</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Annual credit plan, Kanyakumari District, Tamilnadu, 2010-2011.

It is noted from Table 1.3 that most of the category of workers is other workers.

**1.12.5 Administrative Setup**

For administrative convenient the district has been divided into two revenue divisions namely Padmanabhapuram and Nagercoil having head quarters at Thuckalay and Nagercoil respectively.
There are four taluks namely Vilavancode, Kalkulam, Agastesswaram and Thovalai. These four taluks consist of 18 firkas and 81 revenue villages. The district own 4 municipalities viz. Nagercoil, Padmanabhapuram, Kuzhithurai and Colachel, 56 town panchayats and 99 village panchayats.

Kanyakumari district is divided into 9 Development Blocks with headquarters to promote agricultural development in the district and it is shown in Table 1.4 as follows:

**TABLE 1.4**

**DEVELOPMENT JURISDICTION OF KANYAKUMARI DISTRICT**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Block</th>
<th>Office Location</th>
<th>No. of Village Panchayats</th>
<th>Area Sq.km.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Agasteeswaram</td>
<td>Perumalpuarm</td>
<td>13</td>
<td>143.26</td>
</tr>
<tr>
<td>2.</td>
<td>Thovalai</td>
<td>Boothapandi</td>
<td>16</td>
<td>360.91</td>
</tr>
<tr>
<td>3.</td>
<td>Rajakkamangalam</td>
<td>Pazhavilai</td>
<td>15</td>
<td>135.49</td>
</tr>
<tr>
<td>4.</td>
<td>Kurunthencode</td>
<td>Kurunthencode</td>
<td>9</td>
<td>100.54</td>
</tr>
<tr>
<td>5.</td>
<td>Thuckalay</td>
<td>Kozhipoorvilai</td>
<td>7</td>
<td>127.41</td>
</tr>
<tr>
<td>6.</td>
<td>Thiruvattar</td>
<td>Thiruvattar</td>
<td>10</td>
<td>88.37</td>
</tr>
<tr>
<td>7.</td>
<td>Killiyoor</td>
<td>Thulaiyarattam</td>
<td>8</td>
<td>138.86</td>
</tr>
<tr>
<td>8.</td>
<td>Munchirai</td>
<td>Munchirai</td>
<td>11</td>
<td>71.45</td>
</tr>
<tr>
<td>9.</td>
<td>Melpuram</td>
<td>Pacode</td>
<td>10</td>
<td>27.57</td>
</tr>
</tbody>
</table>

Source: District Collectorate, Nagercoil, 2010.

It is known from Table 1.4 that the highest area is 360.91 sq.km. in Thovalai and the lowest area is 27.57 sq.km. in Melpuram.
1.12.6 Land use Pattern

The Kanyakumari district extends over a geographical area of 1,67,200 hectares with net sown area of 79,323 hectares which accounts for 47.4 per cent of the total area. The forest occupies 54,155 hectares which accounts for 32.4 per cent. The land use pattern in the Kanyakumari district is presented in Table 1.5 as follows:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Area (in hectares)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest</td>
<td>54155</td>
<td>32.4</td>
</tr>
<tr>
<td>Barren and uncultivable waste</td>
<td>3149</td>
<td>1.9</td>
</tr>
<tr>
<td>Land put to non agricultural uses</td>
<td>26890</td>
<td>16.2</td>
</tr>
<tr>
<td>Cultivable waste</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Permanent pastures and other grazing land</td>
<td>133</td>
<td>0.1</td>
</tr>
<tr>
<td>Land under miscellaneous use</td>
<td>581</td>
<td>0.3</td>
</tr>
<tr>
<td>Current fallow</td>
<td>1536</td>
<td>0.9</td>
</tr>
<tr>
<td>Net area sown</td>
<td>79323</td>
<td>47.4</td>
</tr>
<tr>
<td>Total geographic area</td>
<td>167200</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Annual Credit Plan, Kanyakumari District, Tamilnadu, 2009-10, p.11.

It is clear from Table 1.5 that out of the total geographical area net area sown stands first with 79,323 hectares and next to it forest covers an area of 54,155 hectares.

1.12.7 Climate and Rainfall

Climate and rainfall are the dominant factors responsible for
crop production. Kanyakumari district is blessed with a favourable agro climatic condition which is suitable for growing different varieties of crop. The proximity of equator, its topography and other climatic factors favour the growth of various crops. In the plains the maximum and minimum temperature are 37.5 C and 25.7C respectively.

This district has the unique advantage of rainfall during the southwest and northeast monsoons. The period of southwest monsoon is from June to September and that of northeast monsoon is from October to December. The annual rainfall ranges between 90 and 160cm and the average is 140cm.

The distribution of average annual rainfall in Kanyakumari district is presented in Table 1.6 as follows:

**TABLE 1.6**

**AVERAGE ANNUAL RAINFALL PATTERN IN KANYAKUMARI DISTRICT**

<table>
<thead>
<tr>
<th>Years</th>
<th>Rainfall (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>1980.30</td>
</tr>
<tr>
<td>1999</td>
<td>1703.70</td>
</tr>
<tr>
<td>2000</td>
<td>1598.00</td>
</tr>
<tr>
<td>2001</td>
<td>1628.08</td>
</tr>
<tr>
<td>2002</td>
<td>1352.50</td>
</tr>
<tr>
<td>2003</td>
<td>915.09</td>
</tr>
<tr>
<td>2004</td>
<td>1435.50</td>
</tr>
<tr>
<td>2005</td>
<td>1694.80</td>
</tr>
<tr>
<td>2006</td>
<td>1249.90</td>
</tr>
<tr>
<td>2007</td>
<td>1384.78</td>
</tr>
</tbody>
</table>

Source: District Statistical Office, Nagercoil.
It is clear from Table 1.6 that the highest average annual rainfall in the district has been recorded as 1980.30 mm in 1998.

Soil

Besides the favourable climatic condition of the Kanyakumari district the soil condition constitute the physical basis for agriculture. The soil condition in the different parts of the district differs considerably within short distances.

There are three kinds of soil viz. sandy soil, laterite soil and red soil. Sandy soil is found along the high lands, laterite soil in areas with high rainfall and red soil in the mid lands. Laterite soil with mixture holding capacity with varying amounts of aluminum hydroxide is found in Thiruvattar, Munchirai, Kurunthancode, Rajakkcmangalam, Killiyoor, Thuckalay and Melpuram blocks. In these blocks the chief crops are tapioca, rubber, coconut and spices. Red soil is classified into red loam soil and red sandy soil. Red soil has low moisture holding capacity and so it is not as fertile as the laterite soil. Mixed types of red and alluvial soil occur in Agasteeswaram and Thovalai blocks.46

The soil $P^H$ is between 4.5 to 8.0. Soil fertility status is shown in Table 1.7 as follows:

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TABLE 1.7

SOIL FERTILITY STATUS

<table>
<thead>
<tr>
<th>Minerals</th>
<th>Low %</th>
<th>Medium %</th>
<th>High %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>60</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>45</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>Potassium</td>
<td>50</td>
<td>40</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: Horti Stat 2010, p.68.

From Table 1.7 it is clear that comparatively potassium forms highest percentage in the soil of Kanyakumari district.

Irrigation

Irrigation is the artificial application of water to the soil for growth of plants. Water is an important determinant factor of production of crops in agriculture sector. Intensive and extensive cultivation of land depend mainly on the availability of water.

In Kanyakumari district, there are a few non-perennial rivers like the Paralyar, Kothayar, Thamiraparani, Valliyar, Chittar and Pazhayar. Taking their origin from the Western Ghats and running across the gentle slopes of the mid lands, these rivers confluence with the waters of the Arabian Sea on the west.

The rulers of Travancore bestowed great attention to irrigation from the beginning of the 20th century. They took steps to form storage reservoirs for impounding water for irrigation during periods of

---

drought or insufficient rainfall. The first of this kind was the Petchiparai dam built across Kothiyar river in 1906. The Perunchani dam was constructed in the Paralyar river in 1953. These dams and a network of channels called the Kothiyar system irrigate 25900 hectares of double crop land in the district. In order to increase the storage capacity of Petchipparai and Perunchani dams two minor reservoirs namely Chittar I and Chittar II have been built. The Puthan dam and the Pandian dam across Paralyar as well as the Thirparapu and Aruvikkarai dams are diversion weirs.

Besides the reservoirs and a network of irrigation canals, there are in all 1205 tanks. Table 1.8 gives the details of land irrigated by various sources.

**TABLE 1.8**

**SOURCE OF IRRIGATION IN KANYAKUMARI DISTRICT**

<table>
<thead>
<tr>
<th>Source of Irrigation</th>
<th>Area Irrigated (in hectares)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canals</td>
<td>10805</td>
<td>31.14</td>
</tr>
<tr>
<td>Tanks</td>
<td>16644</td>
<td>47.97</td>
</tr>
<tr>
<td>Tube Wells</td>
<td>158</td>
<td>0.45</td>
</tr>
<tr>
<td>Other Wells</td>
<td>393</td>
<td>1.13</td>
</tr>
<tr>
<td>Energised pumpsets</td>
<td>6275</td>
<td>18.09</td>
</tr>
<tr>
<td>Diesel Engine</td>
<td>270</td>
<td>0.78</td>
</tr>
<tr>
<td>Other sources</td>
<td>152</td>
<td>0.44</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>34697</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Source: Annual Credit Plan for Kanyakumari District, Lead Bank Cell, IOB, 2010-11.

It is clear from Table 1.8 that of the total irrigated area 47.97 per cent of area is irrigated by tanks and next to it 31.14 per cent area is
irrigated by means of canal irrigation. Only 0.45 per cent area is irrigated by means of tube wells.

**Cropping Pattern**

The Kanyakumari district is very suitable for the cultivation of a variety of crops. Important food crops are paddy, tapioca and oilseeds like groundnut and coconut, cashew, rubber, fruits and spices are the commercial crops raised in the district. The area covered by different crops is shown in Table 1.9.

**TABLE 1.9**

**CROPPING PATTERN AGRICULTURE AND HORTICULTURE**

*(2006-2007)*

<table>
<thead>
<tr>
<th>Crops Name</th>
<th>Season</th>
<th>Area (in hectares)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy-I</td>
<td>April-September</td>
<td>10712</td>
</tr>
<tr>
<td>Paddy-II</td>
<td>October – March</td>
<td>11135</td>
</tr>
<tr>
<td>Pulses</td>
<td>January-December</td>
<td>1969</td>
</tr>
<tr>
<td>Tapioca</td>
<td>April-May (Rainfed), September-October</td>
<td>8681</td>
</tr>
<tr>
<td>Coconut</td>
<td>May-July</td>
<td>23936</td>
</tr>
<tr>
<td>Rubber</td>
<td>May-July</td>
<td>18656</td>
</tr>
<tr>
<td>Cashew</td>
<td>May-July</td>
<td>1951</td>
</tr>
<tr>
<td>Banana</td>
<td>March-July, September-October</td>
<td>4285</td>
</tr>
<tr>
<td>Pepper</td>
<td>May-July</td>
<td>121</td>
</tr>
<tr>
<td>Cardamom</td>
<td>May-July</td>
<td>124</td>
</tr>
<tr>
<td>Arecanut</td>
<td>May-July</td>
<td>757</td>
</tr>
<tr>
<td>Ginger</td>
<td>May-July</td>
<td>15</td>
</tr>
<tr>
<td>Groundnut</td>
<td>May-July</td>
<td>37</td>
</tr>
<tr>
<td>Clove</td>
<td>June-July</td>
<td>534</td>
</tr>
</tbody>
</table>

Source: Annual credit plan, Kanyakumari District, Tamilnadu 2008-2009.
It is clear from Table 1.9 that the highest area is utilised for coconut cultivation with 23,936 hectares and the lowest area is for ginger cultivation with 15 hectares.

**Paddy**

Paddy is the most predominantly cultivated crop of this district. It is grown in two seasons. The first crop is sown in April-June (Kannipoo) and the second crop is raised in September-October (Kumpapoo). Table 1.10 shows the area, production and productivity under paddy.

**TABLE 1.10**

<table>
<thead>
<tr>
<th>Year</th>
<th>Area (L.Ha)</th>
<th>Production (L.MT)</th>
<th>Productivity (Kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-02</td>
<td>0.28</td>
<td>1.21</td>
<td>4300</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.26</td>
<td>0.98</td>
<td>3780</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.17</td>
<td>0.53</td>
<td>3054</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.22</td>
<td>0.86</td>
<td>3928</td>
</tr>
<tr>
<td>2005-06</td>
<td>0.26</td>
<td>1.21</td>
<td>4332</td>
</tr>
<tr>
<td>2006-07</td>
<td>0.25</td>
<td>0.88</td>
<td>4760</td>
</tr>
<tr>
<td>2007-08</td>
<td>0.23</td>
<td>0.73</td>
<td>4033</td>
</tr>
<tr>
<td>2008-09</td>
<td>0.28</td>
<td>0.96</td>
<td>4932</td>
</tr>
<tr>
<td>2009-10</td>
<td>0.31</td>
<td>1.20</td>
<td>4360</td>
</tr>
</tbody>
</table>

Source: Department of Agriculture, Nagercoil, Kanyakumari District.

It is clear from Table 1.10 that the highest productivity is recorded in the year 2008-09 and lowest productivity in the year 2003-04 which is 4932 kg per hectare and 3054 kg per hectare respectively.
Banana

Banana is raised as a food crop in this district. The climate and soil conditions are quite suitable for cultivation of this crop. Table 1.11 shows area, production and productivity of banana cultivation over the years.

**TABLE 1.11**

**AREA, PRODUCTION AND PRODUCTIVITY OF BANANA**

<table>
<thead>
<tr>
<th>Years</th>
<th>Area (ha)</th>
<th>Production (tonnes)</th>
<th>Productivity (kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>5075</td>
<td>169632</td>
<td>33425</td>
</tr>
<tr>
<td>2001-02</td>
<td>5191</td>
<td>165209</td>
<td>31826</td>
</tr>
<tr>
<td>2002-03</td>
<td>4974</td>
<td>126151</td>
<td>25362</td>
</tr>
<tr>
<td>2003-04</td>
<td>5633</td>
<td>134686</td>
<td>23910</td>
</tr>
<tr>
<td>2004-05</td>
<td>5440</td>
<td>177531</td>
<td>32635</td>
</tr>
<tr>
<td>2005-06</td>
<td>5546</td>
<td>237531</td>
<td>47184</td>
</tr>
<tr>
<td>2006-07</td>
<td>6004</td>
<td>261682</td>
<td>48230</td>
</tr>
<tr>
<td>2007-08</td>
<td>5244</td>
<td>250745</td>
<td>45748</td>
</tr>
<tr>
<td>2008-09</td>
<td>5908</td>
<td>171633</td>
<td>31314</td>
</tr>
<tr>
<td>2009-10</td>
<td>6817</td>
<td>273338</td>
<td>44452</td>
</tr>
</tbody>
</table>

Source: Department of Agriculture, Nagercoil, Kanyakumari District.

It is clear from Table 1.11 that the highest productivity is recorded in the year 2006-07 and the lowest productivity in the year 2003-04.
1.13 MEASUREMENT OF VARIABLES

Land

The existing rental value of owned land in the study area is taken to be the share of land in the capital flow. For leased land, the rent actually paid was taken into consideration.

Human Labour

Human labour was measured in mandays units of eight hours of work for each manday. For the purpose of study, all permanent, family and hired labour were considered alike and valued at existing wage rate\(^48\).

Each manday of eight hours of work is considered to be equal to 2 women each of eight hours of work on the basis of the wage rate.

Bullock Power

The wage rate prevailing in the study area for both owned and hired bullock labour were considered.

Irrigation

The cost of irrigation was calculated on the basis of the consumption of electricity/oil valued at purchase price and rental value of pumping machine.

Seeds

The cost of seed was the purchase price of seed at the market and in the case of farm produced seed, it was valued at market price.

\(^{48}\) Sangvi, P., (2009), Surplus Manpower in Agriculture and Development, Asia Publishing House, Bombay, p.29.
Manures, Fertilizers and Plant Protection

The cost of manures, fertilizer and pesticides include value at the purchase cost. In case of owned manure, market value per cart load was taken uniformly.

Depreciation

The method used for calculating depreciation was straight line method. The depreciation rates as given by Directorate of Economics and Statistics were followed\textsuperscript{49}. In this method, the amount of depreciation to be charged during a year is worked out as follows:

\[
\text{Depreciation} = \frac{\text{Original Cost} - \text{Junk Value}}{\text{Life of the Asset}}
\]

a) 1. Terraced building - 2 per cent
    2. Irrigation structure (wells) - 2 per cent
    3. Others - 5 per cent

b) Tools
   1. Minor - 50 per cent
   2. Major - 25 per cent

c) Implements
   1. Minor - 20 per cent
   2. Major - 10 per cent

d) Machinery - 10 per cent

e) Livestock - 10 per cent

(Productive live period has been taken as 10 years)

\textsuperscript{49} Government of India, (1986), Studies in Economics of Farm Management in Coimbatore District (Tamilnadu), Controller of Publications, New Delhi, p.241.
Interest on Fixed Capital and Working Capital

Interest on fixed capital was calculated at the rate of 12 per cent per annum. Interest on working capital was calculated at the rate of 10.5 per cent per annum for six months.\(^\text{50}\)

Land Revenue, Cess and Other Taxes

The actual amount paid were taken into account.

Capital Flow

Capital flow is calculated as the sum of depreciation, maintenance cost and opportunity cost of capital assets used for plantain cultivation. Depreciation cost was obtained by using straight line method while the opportunity cost was estimated at the prevailing rate of interest of the co-operatives.

Capital Input

Capital input included capital stock flows plus working capital. It is the sum of cost on seeds, fertilizer, pesticides, manures and other items. Capital input is measured in terms of service flows in rupees of production.

Yield

It was measured in terms of physical quantity of production as well as in terms of its monetary value prevailing at harvesting time.

\(^\text{50}\) Interest rates charged by the Lead Banks for Long-term and Short-term loans.
Net Revenue

It was obtained by deducting total cost (C) from the total revenue.

Output Per Acre

Total output divided by the total farm size operated is the output per acre.

1.14 LIMITATIONS OF THE STUDY

The study is confirmed to the present agro-climatic region, that is, Kanyakumari district. And, therefore, conclusions are restricted in their nature and scope. Hence, the results of the study are to be reviewed in the light of above limitations. As the respondents did not maintain any specific records regarding paddy and banana cultivation and subsidies, the required data were provided by them from memory and hence were subject to recall bias. To minimize the recall bias cross checks were made in the field itself.

Finally, a very few studies exist in the area of agricultural subsidy and its impact on agricultural production. Literatures and data available are limited. Analytical and quantitative work relating to agricultural subsidies has not been done in most of the existing studies. Hence, the results of the study have to be interpreted with the above limitations in view.
1.15 SCHEME OF WORK

The report of the present study “Impact of Subsidies on Agricultural Production in Tamilnadu with special reference to Kanyakumari District” has been organized and presented in six chapters.

Chapter I introduces the subject, meaning and definition of subsidy, rationale of subsidies, forms of subsidies, need for the study, statement of the problem, objectives, methodology, limitations and scheme of work.

Chapter II discusses an overview of agricultural subsidies.

Chapter III discusses the relationship between net income per acre and characteristics of beneficiary and non-beneficiary farmer groups.

Chapter IV analyses the impact of subsidies on cost and return structure. Further, it examines the nature and extent of net return per acre of paddy and banana.

Chapter V analyses the impact of subsidies on production of select crops in Kanyakumari district.

Chapter VI presents the summary of findings, along with suggestions and conclusion.