

## CHAPTER – I

### RESEARCH DESIGN

#### 1.1 INTRODUCTION

Agriculture provides the principal means of livelihood for over 58.4 per cent of India's population. It contributes approximately one-fifth of total gross domestic product (GDP). It accounts for about 10 per cent of the total export earnings and provides raw material to a large number of industries. For sustaining economic development, much emphasis has been laid in the planning process for accelerating the pace of agricultural development, by increasing both production and productivity, taking steps to remove regional imbalances in cropping pattern and agricultural practices, evolving new variety of seeds, expanding irrigation facilities, extending supply of institutional credit and also providing price support to farmers. The objective of the Eleventh Plan (2007-12) is to achieve four per cent sustainable annual growth in agricultural production through better management of natural resources and scientific management crops.<sup>1</sup>

In India, agriculture played a vital role in the economic development. At present 70 per cent population of the country depended on agriculture but Indian agriculture depended on monsoon which is always flexible. It leads to operating risk in cultivation of different crops. Natural calamities may affect on the yield from agriculture sector. To cover the risk which may occur in future, there is need to some provision and crop insurance is the only mechanism available to safeguard against production risk in agriculture. For fulfilling this need the Government of India has

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<sup>1</sup> Mathivanan, R. and D. Sasikala Devi (2012), "Crop Insurance in India", **Kisan World**, Vol. 39, No.3, March, p.44.

made experiments and efforts by introducing various schemes of crop insurance such as First Individual Approach Scheme (1972-1978), Pilot Crop Insurance Scheme (1979-1984), Comprehensive Crop Insurance Scheme (1985-1999), Experimental Crop Insurance Scheme (1997-1998), Pilot Scheme on Seed Crop Insurance and National Agricultural Insurance Scheme (1999-2000 onwards).<sup>2</sup>

Agriculture continues to be the important sector in the Tamil Nadu State economy as more than 56 per cent of the people depend on agriculture and allied sectors for their livelihood. Tamil Nadu occupies seven per cent of the nation's population, four per cent of the land area and three per cent of the water resources at all India level. The annual average rain fall at all India level is 1200 mm whereas the rainfall in Tamil Nadu is 930 mm. In this situation, the land and other natural resources are fully utilized in this State. The average land holding was 1.25 hectares (Ha) during 1976-77 and it is 0.83 hectares as per 2005-06 censuses which is lower than the all India average of 1.33 hectares. Thus, 91 per cent farmers in Tamil Nadu are small and marginal farmers.<sup>3</sup> With these farmers, the Government of Tamil Nadu has aimed to attain high food grain production to meet the needs of increasing population and it is taking strenuous efforts to increase the production of food crops viz., paddy, millets and pulses. Steps have also been taken to increase oilseeds production and to increase area under sugarcane and cotton.

Further, the Government of Tamil Nadu has taken steps to increase the investment in agriculture, agri-based technologies, marketing development, planning

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<sup>2</sup> Shrikrishna S. Mahajan and Amol H. Bobade (2012), "Growth of NAIS: A Study of Crop Insurance in India", **BAUDDHIK**, Vol.3, No.1, January-April, p.1.

<sup>3</sup> **Policy Note 2010-11** (2010), Agriculture Department, Government of Tamil Nadu, p.1.

approach etc., for bringing about substantial improvement in production in spite of seasonal vagaries like flood and drought. The farmers are encouraged to take up cultivation enthusiastically through compensation for the crop loss due to natural calamities, relief from indebtedness by waiver of crop loans and extending compensation through crop insurance besides providing credit at low interest rate and no interest for prompt payers.

### **1.1.1 What is Crop Insurance?**

Crop insurance is one of the various types of insurance that are offered to the people. This insurance is directed to the farmers and agriculturists. This crop insurance scheme has been going on since the time of Kharif 1985.<sup>4</sup> This insurance offers financial assistance for risk management in agriculture. This insurance policy is a relief scheme for the farmers whose crops get spoiled during natural catastrophe. The insurance amount that is offered to the farmers is equal to the loan amount that has been disbursed to them. A certain amount of premium is charged against the crop insurance. The loss that is incurred due to natural calamities is met by the Government. It is to be noted that the insurance covers only one crop. The crop insurance does not cover financial assistance to multiple crops.

### **1.1.2 Need and History of Crop Insurance:**

In India, the crop production has been subjected to the vagaries of the climate. Some of the other problems that the Indian agriculture is constantly tackling with are the large-scale damages that are caused as a result of the attack of pests and diseases. In a scenario such as this, in India, the issue of crop insurance assumes a

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<sup>4</sup> <http://www.business.mapsofindia.com>

vital role in the stable growth of the agricultural sector. Tracing the Crop Insurance history in India that it was started with the introduction of the All-Risk Comprehensive Crop Insurance Scheme (CCIS) that covered the major crops. This scheme was introduced in 1985. In fact this period of introduction also coincided with the introduction of the Seventh-Five Year Plan. This initial scheme was of course later substituted and replaced by the National Agricultural Insurance Scheme. This substitution came into effect from 1999. These Schemes that have been introduced throughout the crop insurance history have been preceded by years of preparation, studies, planning, experiments and trials on a pilot basis.<sup>5</sup>

### **1.1.3 Coverage of Risks under Crop Insurance:**

The Crop Insurance schemes aim at providing comprehensive risk insurance which covers the yield losses that occur to the agricultural output of small and marginal farmers due to non-preventable risks. The crop insurance risks covered under the non-preventable category are listed below:

- Natural Fire and Lightning
- Storm, Hailstorm, Cyclone, Typhoon, Tempest, Hurricane, Tornado etc.
- Flood, Inundation and Landslide
- Drought, Dry spells
- Pests/ Diseases etc.

The crops insurance risk does not cover any of the losses that arise out of war and nuclear risks, malicious damage and other risks which are preventable risks.

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<sup>5</sup> <http://www.indianchild.com>.

The sum insured under the crop insurance risks covered usually extends to the value of the threshold yield of the insured crop. This is usually subject to the option of the insured farmers. Nevertheless, a farmer may also choose to insure his crop beyond value of the threshold yield level up to 150 per cent of average yield of the notified area on payment of premium at commercial rates.

Apart from the risks covered in the crop insurance scheme, what is important is the sum insured. In case of loanee farmers the sum insured would be at least equal to the amount of crop loan advanced. Further, in the case of the non-loanee farmers, the insurance charges that will be levied will be additional to the scale of finance for the purpose of obtaining loan. Apart from the above mentioned issues, the matters of crop loan disbursement procedures, which have been outlined by the Reserve Bank of India (RBI) and also by the National Agriculture Bank for Rural Development (NABARD), are also binding.

#### **1.1.4 Crop Insurance Schemes in India:**

The main objective of crop insurance is to provide insurance coverage and financial support to the farmers in the event of failure of any of the notified crop as a result of natural calamities, pests and diseases. The list of crops being covered for insurance differs from State to State. Generally quite a few Kharif and Rabi season crops are covered. These crops are insured at the community/block/gram panchayat levels. Agriculture insurance schemes are of immense help to farmers, providing them with financial security.

A number of experimental crop insurance schemes have been introduced in India for providing a boost to the agriculture. The first ones of the experimental crop insurance schemes has been a Pilot Crop Insurance scheme. This was introduced by General Insurance Corporation (GIC) of India from the year 1979. Some of the important features of the scheme were that the scheme was based on 'Area Approach'. This scheme covered crops such as Cereals, Millets, Oilseeds, Cotton, Potato and Gram. The scheme was confined to loanee farmers only and on voluntary basis. The risk was shared between GIC and State Governments in the ratio of 2:1. The maximum sum that could be insured under the scheme was 100 per cent of the crop loan, which was later increased to 150 per cent. Under this scheme, 50 per cent of the subsidy was provided for insurance charges which was payable to the small / marginal farmers by the State Government and the Government of India on 50:50 basis.

Among the earlier crop insurance schemes that were introduced was a Comprehensive Crop Insurance Scheme. The Government of India introduced the Comprehensive Crop Insurance Scheme with effect from April 1, 1985. This Scheme was introduced with the active participation of State Governments. It was optional for the State Governments. It was linked to the short-term crop credit that was extended to the farmers and was implemented using the Homogeneous Area Approach. The number of States that were covered under the scheme was 15 and the number of Union Territories that were included was two. This Scheme was implemented until Kharif 1999. The important feature of this scheme was this: it allowed a cover to the farmers availing crop loans from financial institutions for growing food crops and oilseeds on compulsory basis. The coverage under this

scheme was restricted to 100 per cent of crop loan subject to a maximum of Rs. 10,000/- per farmer. The premium rates for Cereals and Millets were 2 per cent and for Pulses and Oil Seeds 5 per cent. The premium and risk claims were shared in a ratio of 2:1 by the Central and State Governments. The Scheme was optional to State Governments.

Since Rabi 1999-2000, a Central Sector Scheme namely, National Agricultural Insurance Scheme (NAIS), has been implemented as a part of risk management in agriculture with the intention of providing financial support to the farmers in the event of failure of crops. The feature of this scheme is this: it is available to all the farmers – loanee and non-loanee – irrespective of their size of holding. Loanee farmers are covered on compulsory basis in a notified area for notified crops whereas for non-loanee farmers this scheme is voluntary.

Against this background, the researcher has made an attempt to go for an in-depth study on crop insurance for knowing about the operational modalities of schemes, farmers' awareness and satisfaction, and their attitude in implementation of agriculture insurance. Hence, this study is carried out for current research.

## **1.2 STATEMENT OF THE PROBLEM**

Agriculture remains the dominant sector in a large number of developing countries. It accounts for a major share of the gross national product and is still the primary source of employment. Agricultural products are also an important export item in many countries. Productivity gains in agriculture are necessary for self sustaining economic development in most developing countries. Despite the importance of agriculture, the various initiatives taken for its development have often

failed to deliver full benefits. Low levels of income, low capital-labour ratios and the general precariousness of agricultural production characterize this sector in developing economies. There is often a dichotomy between the urban and rural sectors of the economy, not only in terms of technology but more importantly, in terms of access to services like transportation, medical/educational facilities, credit/insurance services.

Agriculture has always been a risky business. Unlike the industrial sector it is subject to the vagaries of the nature. Uncertainty of crop yield is thus one of the basic risks, which every farmer has to face, more or less, in all the developing countries. In most of these countries the overwhelming majority of farmers are poor and have extremely limited means and resources and are, therefore, unable to bear the risks of crop failure.

The food production required to be enhanced to provide food and nutritional security to the growing population. In order to retain the farmers especially the younger generation to take up agriculture as a profession, the income from the farm holdings required to be increased considerably. In Tamil Nadu, 90 per cent of the farmers belong to small and marginal category and their operational holdings account 56 per cent of the total areas. So the small and marginal farmers play a key role in overall development in agriculture and the adoption of scientific technologies by these farmers needs focused attention.

In many countries the State provides aid or relief to the agricultural sector in the event of a natural catastrophe as a matter of Public Policy. In some countries this is done on an adhoc basis while in others there are formal arrangements

and even legislation for this purpose. Agricultural insurance is a more efficient instrument and an effective institutionalized mechanism for dealing with the problem. Agricultural insurance is one method by which farmers can stabilize farm income and investment and guard against disastrous effect of losses due to natural hazards or low market prices. Crop insurance not only stabilizes the farm income but also helps the farmers to initiate production activity after a bad agricultural year.

The Government of India has introduced the innovative schemes on crop insurance but these schemes have failed to meet the expected results due to the low policy implications, unawareness of farmers, and unsatisfied performance of implementing agencies. National Agriculture insurance scheme has been introduced by Government of India from Rabi season 1999-2000. But it also failed to influence the farmers as well as work effectively.

In this context, this study is an attempt to find out answers to the following questions:

- a) What are the salient features of the National Agricultural insurance Scheme and the operational modalities?
- b) What is the awareness level of the farmers and their attitude towards Crop Insurance Schemes?
- c) How far are the farmers satisfied towards the Crop Insurance Scheme? and identify the reasons for their dissatisfaction.

This will pave the way to the agricultural insurance companies as well as the government while framing guidelines in the formulation of new schemes and modification of existing insurance schemes.

### **1.3 REVIEW OF LITERATURE**

A literature review is the comprehensive study and interpretation of literature that relates to a particular topic. It plays a vital role in providing an insight into the research problem. It helps a researcher to identify the research gap and develop a meaningful hypothesis. This review leads to the development of new insights that are only possible when each piece of relevant information is seen in the context of other information. Literature reviews are important because they seek to summarize the literature that is available on any one topic. They make sense of a body of research and present an analysis of the available literature so that the reader does not have to access each individual research report included in the review.

This section is devoted to review the various literatures available on agricultural insurance in India as well as abroad. Various articles on agricultural insurance with regard to natural disaster insurance, agricultural insurance in developing countries, crop insurance as a risk management tool in New York State, commercial viability of crop insurance in Bangladesh, agricultural insurance feasibility study for Nepal, crop yield and revenue insurance that have been carried out in foreign countries. But in India, a few research papers on some aspects of agricultural insurance such as risk management in agriculture, performance, problems and prospects of agricultural insurance in India, performance of National Agricultural Insurance Scheme, farmers' attitude towards agricultural insurance, crop insurance in India, crop insurance scheme in Karnataka, crop insurance for onion, crop insurance in Tamil Nadu, are made. They are restrictive in nature and do not show a comprehensive picture. A brief review of some of the relevant literature is furnished alphabetically and chronological order in this section.

Hazell, P. (1992) in a research article titled “The Appropriate Role of Agricultural Insurance in Developing Countries” stated that the farmer is likely to allocate resources in profit maximizing way if he is sure that he will be compensated when his income is catastrophically low for reasons beyond his control. A farmer may grow more profitable crops even though they are risky. Similarly, a farmer may adopt improved but uncertain technology when he is assured of compensation in case of failure. This will increase value added from agriculture, and income of the farm family. Many of the risks insured under public insurance programme are essentially un-insurable risks. Moreover, they occur frequently and hence are expensive to insure. The financial performance of most of the public crop insurance has been ruinous in both developed and developing countries. The multi-peril crop insurance thus is very expensive and has to be heavily subsidized.<sup>6</sup>

Horowitz and Lichtenberg (1993) have carried out a study on “Insurance, Moral Hazard and Chemical Use in Agriculture”. In this study they find that in the US Midwest, crop insurance exerts considerable influence on maize farmers' chemical use decisions. Those purchasing insurance apply significantly more nitrogen per acre (19%), spend more on pesticides (21%), and treat more acreage with both herbicides and insecticides (7% and 63%) than those not purchasing insurance. These results suggest that both fertilizer and pesticides may be risk-increasing inputs.<sup>7</sup>

Mishra (1994) analyzed the impact of a credit-linked Comprehensive Crop Insurance Scheme (CCIS) on crop loans, especially to small farmers in Gujarat.

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<sup>6</sup> Hazell, P. (1992), “The Appropriate Role of Agricultural Insurance in Developing Countries”, **Journal of International Development**, Vol.4, No.6, pp.567-181.

<sup>7</sup> Horowitz, J.K. and E. Lichtenberg (1993), “Insurance, Moral Hazard and Chemical Use in Agriculture”, **American Journal of Agricultural Economics**, Vol.75, No.4, pp.926-935.

It is observed that CCIS had a collateral effect as reflected through the increased loan amount per borrower and reduction in the proportion of non-borrowers among small farmers. The implications of credit expansion are that increased availability of credit can enhance input use and output and employment that increased share of small farmers in the total loan can have desirable effects on equity and efficiency considerations. Though crop insurance is based on area yield, it insures the loan amount. This leads to improved access of small and marginal farmers to institutional credit. In the event of crop failure or drought, loan is repaid in the form of indemnity and thus there is reduction in the cost of recovery of loans to lending institutions and reduction in the overdue and defaults. It is observed that insured households invest more on agricultural inputs leading to higher output and income per unit of land. Interestingly, percentage increase in output and income is more for small farms. Based on 1991 data, CCIS was found to contribute 23, 15, and 29 per cent increase in income of insured farmers in Gujarat, Orissa and Tamil Nadu, respectively.<sup>8</sup>

Atwood, et. al. (1996) made a research work on “An Examination of the Effects of Price Supports and the Federal Crop Insurance upon the Economic Growth, Capital Structure and Financial Survival of Wheat Growers in the Northern High Plains” An analysis of data from US agriculture indicates that the producer's first response to risk is to restrict the use of debt. Price support programmes and crop insurance are substitutes in reducing producer risk. The availability of crop insurance

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<sup>8</sup> Mishra, P.K. (1994), “Crop Insurance and Crop Credit: Impact of the Comprehensive Crop Insurance Scheme on Cooperative Credit in Gujarat”, **Journal of International Development**, Vol. 6, No.5, pp.529-568.

in a setting with price supports allows producers to service higher levels of debt with no increase in risk.<sup>9</sup>

Babcock and Hennessy (1996), in a research work titled “Input Demand under Yield and Revenue Insurance” find that at reasonable levels of risk aversion, nitrogen fertilizer and insurance are substitutes, suggesting that those who purchase insurance are likely to decrease nitrogen fertilizer applications.<sup>10</sup>

Mishra, P.K. (1996) in his book discussed about the agricultural risks. Crop insurance protects farmers' investment in crop production and thus improves their risk bearing capacity. Crop insurance facilitates adoption of improved technologies, encourages higher investment resulting in higher agricultural production. Crop credit insurance also reduces the risk of becoming defaulter of institutional credit. The reimbursement of indemnities in the case of crop failure enables the farmer to repay his debts and thus, his credit line with the formal financial institutions is maintained intact. The farmers do not have to seek loans from private moneylenders. The farmer does not have to go for distress sale of his produce to repay private debts. Credit insurance ensures repayment of credit, which helps in maintaining the viability of formal credit institutions. The government is relieved from large expenditures incurred for writing-off agricultural loans, providing relief and distress loans etc., in the case of crop failure.<sup>11</sup>

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<sup>9</sup> Atwood, J.A., M.J. Watts and A.E. Baquet (1996), “An Examination of the Effects of Price Supports and the Federal Crop Insurance upon the Economic Growth, Capital Structure and Financial Survival of Wheat Growers in the Northern High Plains”, **American Journal of Agricultural Economics**, Vol. 78, No.1, pp.212-224.

<sup>10</sup> Babcock, B.A. and D.A. Hennessy (1996), “Input Demand under Yield and Revenue Insurance”, **American Journal of Agricultural Economics**, Vol.78, No.1, pp.212-224.

<sup>11</sup> Mishra, P.K. (1996), **Agricultural Risk, Insurance and Income**, Ashgate Publishing Company, Arbury, Vermont.

Jennifer Ifft (2001) in a research internship paper titled “Government vs Weather: The True Story of Crop Insurance in India” pointed out that the Government of India started offering widespread crop insurance in 1985, with the Comprehensive Crop Insurance Scheme (CCIS). The CCIS has been replaced by the National Agriculture Insurance Scheme (NAIS). The NAIS is considered to be an improvement over the CCIS, but it has simply replaced one flawed scheme with another slightly less flawed one. Government crop insurance has proved to be a failure worldwide, but India seems to have ignored both its own failure and the failure of other countries. The main flaws of the NAIS are the goal of financial viability, its mandatory nature, its failure to address adverse selection, arbitrary premiums, and the area approach. Internationally, private crop insurance is not highly developed but varied successful private programs do exist. Even if India withdrew from crop insurance schemes, it could still support farmers through an income guarantee or investment in infrastructure.<sup>12</sup>

Miranda, M. and Dmitry V. Vedenov (2001) in an article titled “Innovations in Agriculture and Natural Disaster Insurance” pointed out that in principle basis risk has three different components depending on the design of a particular contract. The temporal component of the basis risk arises from the fact that the sensitivity of yield to rainfall varies over the stages of growth. During each stage, the amount of rainfall has different effect on the prospective yield and historical variations of rainfall are also different. The spatial component of the basis risk reflects the fact that rainfall differs across locations even within the same region. A

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<sup>12</sup> Jennifer Ifft (2001), “Government vs Weather: The True Story of Crop Insurance in India”, **Centre for Civil Society**, pp.1-7.

contract based on measurements at one station may bear very little basis risk for some farmers, but perform very poorly for others. The crop-specific component of the basis risk refers to variation in planting times, duration of growing season, and sensitivity to rainfall across different crops. Moreover, even planting times for the same crop may vary from region to region depending on such factors as the climate and average temperatures.<sup>13</sup>

Bhende, M.J. (2002) made a report on “An Analysis of Crop Insurance Scheme in Karnataka”. In this report he pointed out that a properly designed and implemented crop insurance programme will protect the numerous vulnerable small and marginal farmers from hardship, bring in stability in the farm incomes and increase the farm production.<sup>14</sup>

Bharat Ramaswami, Shamika Ravi and S.D. Chopra (2003) in a discussion paper titled “Risk Management in Agriculture” indicated that weather also plays a significant role in the development of diseases and growth of pests. However, the relationship between various aspects of the weather, such as rainfall, temperature and humidity is complex and specific to the pest, crop, soil and management practices.<sup>15</sup>

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<sup>13</sup> Miranda, M. and Dmitry V. Vedenov (2001), “Innovations in Agriculture and Natural Disaster Insurance” **American Journal of Agricultural Economics**, Vol. 83, No. 3, August, pp.650-65.

<sup>14</sup> Bhende, M.J. (2002), **An Analysis of Crop Insurance Scheme in Karnataka**, Report submitted to Agricultural Development and Rural Transformation Unit – Institute for Social and Economic Change (ISEC), Bangalore.

<sup>15</sup> Bharat Ramaswami, Shamika Ravi and S.D. Chopra (2003), **Risk Management in Agriculture**, Discussion Paper No. 03-08 submitted to Indian Statistical Unit, Delhi, June.

Manojkumar, K., B. Shreekumar and G.S. Ajitkumar (2003) in a discussion paper titled “Crop Insurance Scheme: A Case of Study of Banana Farmers in Wayanand District” stated that insurance should be limited to crop yield and not directly cover the income from such yield. The insurance should be limited to a few major crops and to selected areas but with sufficient spread of risk and then gradually extended to other crops and areas. Insurance should cover all major natural hazards. The crop insurance scheme shall be made viable by spreading the risk horizontally by enrolling all the farmers in a locality in the scheme. The scheme should be attractive, credit linked, and should have support facilities like a reinsurance package.<sup>16</sup>

Sekhar, C.S.C. (2003) in a working paper titled “Volatility of Agricultural Prices – An analysis of Major International and Domestic Markets” has provided the information on price variability for agriculture commodities. This study compares the variability of prices in the domestic and international market and concludes that while inter-year variability is generally lower in the domestic markets than the international markets, intra-year variability is as high in domestic markets as in the international markets, if not higher.<sup>17</sup>

Jain, R.C.A., Secretary, Ministry of Agriculture and Cooperation, Govt. of India, New Delhi (2004) in a paper titled “Challenges in Implementing Agriculture Insurance and Re-insurance in Developing Countries” has attempted to address certain basic issues relating to agricultural insurance in developing

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<sup>16</sup> Manojkumar, K., B. Shreekumar and G.S. Ajitkumar (2003), “Crop Insurance Scheme: A Case of Study of Banana Farmers in Wayanand District”, Discussion Paper No. 54 submitted to Kerala Research Program on Local Level Development, Centre for Development Studies, Thiruvananthapuram.

<sup>17</sup> Sekhar, C.S.C. (2003), **Volatility of Agricultural Prices – An Analysis of Major International and Domestic Markets**, Working Paper No. 103 submitted to Indian Council For Research On International Economic Relations (ICRIER), New Delhi, June.

economies. This paper also discusses the conceptual framework of agriculture insurance programme and deals with the Indian experience in the implementation of crop insurance scheme. He concluded that the market for crop insurance in developing countries is no doubt, as vast as the acreage under cultivation. However, at the present stage of development of crop insurance coverage of crops, areas and farmers will vary from country to country depending upon national priorities and also the objectives set and the limitations imposed under crop insurance schemes. Based on experiences, he has drawn up some insurance program for developing countries.<sup>18</sup>

Ritish Kumar (2004), Head of Risk at ICICI Lombard General Insurance in an article “Agri Insurance: Where Next?” provides an overview on risk management in agriculture. In this article he exposed the controllable and uncontrollable risks in agricultural activities. He also pointed out that the National Agriculture Insurance Scheme experiment proved that a sustainable crop insurance programme would succeed if cover is made available only for uncontrollable weather risks. The weather-index based insurance produced developed by ICICI Lombard from ICICI Bank and the World Bank, is a revolutionary step in this direction.<sup>19</sup>

Steve Richards (2004) in a work book titled “Do I Need Crop Insurance? – Self Evaluating Crop Insurance as a Risk Management Tool in New York State” has intended to help farm producers to understand the purposes of crop insurance and how it can be used as a tool to prevent financial disasters due to crop yield and/or market losses. After using this workbook, it is hoped that a farm

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<sup>18</sup> Jain, R.C.A. (2004), “Challenges in Implementing Agriculture Insurance and Re-insurance in Developing Countries”, **The Journal**, January-June, pp.14-23.

<sup>19</sup> Ritish Kumar (2004), “Agri Insurance: What Next?”, **Agriculture and Insurance Survey**, Vol.14, No. 2 & 3, p.38.

producer will be better acquainted with the crop insurance choices available and whether or not crop insurance is a tool that will be useful for their particular operation. In this work book he used three symbols which represent discussion points, decision points, and more information. In this work book he made analysis for comparing yield-based and revenue-based insurance options and decision has been given for buying crop insurance or self insure.<sup>20</sup>

Bhende (2005) in his Occasional Paper “Agricultural Insurance in India: Problems and Prospects” found that income of the farm households from semi-arid tropics engaged predominantly in rain-fed farming was positively associated with the level of risk. Hence, the availability of formal instrument for diffusion of risk like crop insurance will facilitate farmers to adopt risky but remunerative technology and farm activities, resulting in increased income.<sup>21</sup>

Mallikarjun S. Hasanabadi (2005) has carried out a thesis on “An Economics Analysis of Crop Insurance for Onion in Dharwad District”. The study pointed out that the Onion crop, apart from being sensitive to weather hazards, requires very heavy expenditure during the production period. Therefore insurance is considered as an important one for this crop and this study was undertaken with the main objectives of a) to examine the extent of crop wise coverage of insurance scheme in Dharwad district, b) to analyze season wise, premium collected and indemnity paid under insurance scheme, c) to identify and analyze the risks involved

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<sup>20</sup> Steve Richards (2004), **Do I Need Crop Insurance? – Self Evaluating Crop Insurance as a Risk Management Tool in New York State**, Department of Applied Economics and Management, Cornell University, New York, EB 2004-03, February.

<sup>21</sup> Bhende, M.J. (2005), **Agricultural Insurance in India: Problems and Prospects**, Occasional Paper No. 44 submitted to Department of Economic Analysis and Research, National Bank for Agriculture and Rural Development.

in onion production and marketing, d) to assess changes in the acreage under onion brought about by the scheme, e) to elicit the opinion of the insured and non-insured farmers about crop insurance scheme, and f) to formulate alternative model for crop insurance scheme.<sup>22</sup>

Vijay Kalavakonda and Olivier Mahul (2005) in a research working paper titled “Crop Insurance in Karnataka” have examined the performance of the crop insurance scheme in Karnataka, a southern state of India and the second driest state in the country. The analysis highlights weaknesses in product design, implementation challenges, and operational problems. The finding is that the crop insurance scheme in its current form does not achieve its objectives, either explicit (risk management) or implicit (safety net and containment of both the central and state governments’ contingent liability). The crop insurance scheme performs poorly both in terms of coverage (number of hectares insured and number of farmers purchasing insurance) and financial performance. This paper provides a framework for designing a crop insurance scheme based on the premise that insurance is a cost effective risk management technique. The paper also provides some new ideas and thinking toward both improving the existing crop insurance scheme and exploring alternatives to the current product, based on an area-yield approach.<sup>23</sup>

Jagendra Kumar (2006) in a research article titled “Agriculture Insurance Still a Far Cry in India” has pointed out that worldwide, the agro-insurance

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<sup>22</sup> Mallikarjun S. Hasanabadi (2005), **An Economics Analysis of Crop Insurance for Onion in Dharwad District**, Master of Science (Agricultural Economics) Thesis submitted to the University of Agricultural Sciences, Dharwad, September.

<sup>23</sup> Vijay Kalavakonda and Olivier Mahul (2005), **Crop Insurance in Karnataka**, Research Working Paper No. 3654 submitted to the World Bank, July.

industry is emerging as a strong economic activity, particularly in view of development of new technological capabilities in processing, storage, etc. India has a great potential of agro-insurance mainly because of relative abundance of diversified crops and availability of manpower. The agro-insurance industry offers a big business opportunity for the insurance companies. This article discusses the agriculture insurance scenario and the vast opportunities waiting to be exploited in this area. In just two years of its existence, the National Agriculture Insurance Company of India has achieved many a milestone.<sup>24</sup>

Bhise, V.B., S.S. Ambhore and S.H. Jagdale (2007) in their paper titled “Performance of Agriculture Insurance Schemes in India” have given a brief historical review of agriculture insurance schemes in India. It also describes the operation of National Agriculture Insurance Scheme in India and Maharashtra State. Further they evaluated the rainfall insurance scheme and income insurance scheme introduced in this state on pilot basis. The study showed that claims to premium ratio were 3.11 at all-India level and 2.07 at Maharashtra state level. They suggested that there is need of a transition to actuarial rates and the problems in rainfall insurance scheme need to be urgently attended.<sup>25</sup>

Ramanujam, K.N. (2007) has carried out a research article on “Crop Insurance Need of the Hour”. Crop insurance scheme was first attempted in India in 1985. Ever since 1985, a good deal of experimentation has gone into the business of

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<sup>24</sup> Jagendra Kumar (2006), “Agriculture Insurance Still a Far Cry in India”, **The Chartered Accountant**, February, pp.1192-1196.

<sup>25</sup> Bhise, V.B., S.S. Ambhore and S.H. Jagdale (2007), **Performance of Agriculture Insurance Schemes in India**, Paper presented at the 101<sup>st</sup> EAAE Seminar on Management of Climate Risks in Agriculture held at Berlin, Germany on July 5-6.

crop insurance. Rashtriya Krishi Bima Yojana (National Agricultural Insurance Scheme) was launched on June 1999 and this scheme seemed to have made a sincere attempt to learn from the past experience. Under this scheme taking a policy has been mandatory for taking crop loans. Due to some fundamental flaws, the earlier crop insurance schemes have failed and it is the need of the hour to implement new crop insurance scheme so that India will top the list in global scene in crop insurance field.<sup>26</sup>

Roman Hohl and Harini Kannan (2007) in an article titled “Greenfield for Agriculture Insurance: Huge Potential in India” emphasize that the drawback against traditional insurance stems from its perceived complexity, high administrative costs, loss adjustment procedures, data collection and farm-production-specific tariff calculations for selection perils. They further add the pressure to increase production and a shift toward riskier large-scale monoculture has increased the demand for yield and weather-based index covers in the food industry.<sup>27</sup>

Sidharth Sinha (2007) carried out a working paper on “Agriculture Insurance in India”. It reports that the government run crop yield insurance scheme, procurement at minimum support prices and calamity relief funds are the major instruments being used to protect the Indian farmer from agricultural variability. However, crop insurance covers only about 10 per cent of sown area and suffers from an adverse claim to premium. There are problems with both the design and delivery of crop insurance schemes. These problems could be overcome with rainfall

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<sup>26</sup> Ramanujam, K.N. (2007), “Crop Insurance Need of the Hour”, **Kisan World**, Vol.34, No.9, September, pp.39-41.

<sup>27</sup> Roman Hohl and Harini Kannan (2007), “Greenfield for Agriculture Insurance: Huge Potential in India”, **IRDA Journal**, December, pp.17-19.

insurance with a well developed rainfall measurement infrastructure. Private and public insurers are currently experimenting with rainfall insurance products. Given the current levels of yield and rainfall variability the actuarially fair premium rates are likely to be high and in many cases unattractive or unaffordable. Instead of adopting the easy and unsustainable route of large subsidies, in the long term the government should consider risk mitigation through improvements in the irrigation and water management infrastructure.<sup>28</sup>

Sonia Akter and Roy Brouwer (2007) have made a working paper on “Demand Assessment and Test of Commercial Viability of Crop Insurance in Bangladesh”. The aim of the study is to assess the demand for and test the commercial viability of a crop insurance scheme in different natural disaster-prone areas in Bangladesh, as an alternative poverty alleviation and natural disaster mitigation strategy. In a large scale household survey carried out, 3600 riverine and coastal floodplain residents in Bangladesh were asked for their preferences for crop insurance schemes using the double bounded contingent valuation (CV) method. Using the data, they tested the simple analytical model of commercial viability of a crop insurance scheme by comparing the future value of expected premium receivable by insurer, with the expected indemnity payable to the insured. Assuming zero administrative cost and 10 per cent interest rate per annum, they found that crop insurance schemes are marginally viable in riverine flood plain areas.<sup>29</sup>

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<sup>28</sup> Sidharth Sinha (2007), **Agriculture Insurance in India**, Working Paper Series submitted to Centre for Insurance and Risk Management, Institute for Financial Management and Research, Chennai, June.

<sup>29</sup> Sonia Akter and Roy Brouwer (2007), **Demand Assessment and Test of Commercial Viability of Crop Insurance in Bangladesh**, Working Paper PREM 07/05 submitted to the Poverty Reduction and Environmental Management (PREM), Institute for Environmental Studies, Vrije Universiteit, Amsterdam, The Netherlands, June.

Babu, I., P. Subramanian, K. Mani and C. Karthikeyan (2008) have made a study on the growth, variability and supply response of major crops in Tamil Nadu. The study is conducted with the main objectives of – a) to examine the growth and variability of area, production and productivity of major crops in the state during 1970-71 to 2005-06 and b) to study the supply response of the major crops associated with the changes in price. It is understood from the study that the area, production and productivity of major field crops were declined.<sup>30</sup>

Raju, S.S. and Ramesh Chand (2008) in a NCAP Working Paper titled “Agricultural Insurance in India: Problems and Prospects” stated that agricultural insurance is one method by which farmers can stabilize farm income and investment and guard against disastrous effect of losses due to natural hazards or low market prices. Crop insurance not only stabilizes the farm income but also helps the farmers to initiate production activity after a bad agricultural year. It cushions the shock of crop losses by providing farmers with a minimum amount of protection. Despite technological and economic advancements, the condition of farmers continues to be unstable due to natural calamities and price fluctuations”. In some extreme cases, these unfavorable events become one of the factors leading to farmers’ suicides which are now assuming serious proportions. This study also looks at the genesis of agricultural insurance in India, examines various agricultural insurance schemes launched in the country from time to time and the coverage provided by them. Major

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<sup>30</sup> Babu, I., P. Subramanian, K. Mani and C. Karthikeyan (2008), “Growth, Variability and Supply response of Major Crops in Tamil Nadu”, **Agricultural Situation in India**, October, pp.483-487.

issues and problems faced in implementing agricultural insurance in the country are also discussed in detail.<sup>31</sup>

Raju, S.S. and Ramesh Chand (2008) have carried out an article on “A Study on the Performance of National Agricultural Insurance Scheme and Suggestions to make it More Effective”. They stated that agricultural production and farm income in India involve several risks. Crop insurance is the only mechanism available to safeguard against production risks. Against this background, this paper has examined the features and performance of National Agricultural Insurance Scheme (NAIS) operating in the country and has suggested some modifications to make it more effective. NAIS coverage in terms of crop area, number of farmers and value of agricultural output is very small. If crop insurance programme is to be made an important tool in agricultural risk management, the present level of coverage will have to be improved, at least by 3-4 folds. Such an expansion can occur only with improvements in and broad-basing of the insurance scheme. Every suggested improvement has financial implications and affects the concerned insurance practices. The study has also suggested that different general insurance companies in the country may be assigned some reasonable targets to cover agricultural insurance, and to begin with, it could be equal to the share of agriculture in the national income.<sup>32</sup>

Venkatesh, G. (2008) in a research article titled “Crop Insurance in India – A Study” stated that all over the world agriculture is synonymous with risk

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<sup>31</sup> Raju, S.S. and Ramesh Chand (2008), **Agricultural Insurance in India: Problems and Prospects**, Working Paper No. 8 submitted to National Centre for Agricultural Economics and Policy Research (Indian Council of Agricultural Research), New Delhi, March.

<sup>32</sup> Raju, S.S. and Ramesh Chand, (2008), “A Study on the Performance of National Agricultural Insurance Scheme and Suggestions to make it More Effective”, **Agricultural Economics Research Review**, Vol.21, January-June, pp.11-19.

and uncertainty. Agriculture contributes to 24 per cent of the GDP and any change has a multiplier effect on the economy as a whole. In this article he described the history of crop insurance in India and pointed out the risks covered under the National Agricultural Insurance Scheme (NAIS). The other schemes like ‘Varsha Bhima’, ‘Sowing failure policy’ being operated on a pilot basis are also mentioned. Further, he also pointed out some plans of crop insurance in USA.<sup>33</sup>

Ben Chaffin (2009) has carried a Plan B Paper on “Crop Yield and Revenue Insurance: Choosing between Policies that Trigger on Farm Vs. County Indexes”. In this paper, the researcher discussed that the insurance policies that trigger on county yield and revenue indexes are expected to be more actuarially fair than policies that trigger on individual farm yield and revenue since individual farm hidden actions and hidden information impacting purchase decisions will be built into insurance premium rates. Case studies are provided to facilitate understanding of tracking between farm and county yields and the importance of the farm-county yield correlation. A protocol is developed to standardize county and farm yields to better illustrate tracking and rules of thumb are also developed to aid in crop insurance purchase decisions. Further cumulative probability distributions of net yields with and without insurance are used to show the effects of county and farm trigger insurance policies on risk transfer.<sup>34</sup>

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<sup>33</sup> Venkatesh, G. (2008), “Crop Insurance in India – A Study”, **The Journal**, January-June, pp.15-17.

<sup>34</sup> Ben Chaffin (2009), “**Crop Yield and Revenue Insurance: Choosing between Policies that Trigger on Farm Vs. County Indexes**”, Master of Science Plan B Paper submitted to the Department of Agricultural Economics, Michigan State University.

Jayakumar, S. and A. Subbiah (2009) in their research work indicated the problems and suggestions of agricultural insurance in India. The important problems pointed out by them includes – lack of information about agricultural insurance schemes; lengthy process; about three per cent farmers participate in agriculture insurance; major crops are not covered under insurance scheme; farmers are not the part of committees; no motivation from bank and other officers; delay in getting the compensation amount; lack of coordination between various state government department and agencies and so on. Based on the problems some suggestions are also provided by them.<sup>35</sup>

In the Newsletter of National Crop Insurance Services, the summary of business data released by the Risk Management Agency reveals that the crop insurance industry has paid out \$8.6 billion to America's farmers for losses due to crop loss or decreases in commodity prices for 2008. The good news for taxpayers is that the lion's share of those payments comes from the private insurance companies that sell and service the Federal crop insurance program. For their part, the private insurance companies have contributed substantially from the funds they set aside as loss reserves.<sup>36</sup>

Olivier Mahul, et al. (2009) made a report on "Agricultural Insurance Feasibility Study for Nepal" for the World Bank. The Ministry of Finance (MOF), the Insurance Board, and the Ministry of Agriculture and Cooperatives (MOAC) asked the World Bank to conduct a feasibility study on agricultural insurance in

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<sup>35</sup> Jayakumar, S. and A. Subbiah (2009), "Agricultural Insurance in India – Problems and Suggestions", **The Insurance Times**, Vol. XXIX, No. 4, April, pp.23-26.

<sup>36</sup> Newsletter of National Crop Insurance Services (2009), **The Crop Insurance Journal**, Vol.8, No.1, Summer, p.3.

Nepal, with a particular focus on small and marginal farmers, and provide recommendations for its future development. This work aims to provide an overall framework for the development of sustainable market-based agricultural insurance for small and marginal farmers in Nepal. It relies on the components such as review of agricultural insurance in Nepal, agricultural risk assessment, agricultural product development, operational issues for agricultural insurance and institutional challenges. This report draws heavily on international experience. This study benefits from this international experience (for example, the Indian area-yield and weather index crop insurance schemes, a Mexican agricultural mutual insurance program, and a Mongolian livestock mortality index insurance program) which is tailored to the local economic and social characteristics of Nepal.<sup>37</sup>

Ramiro Iturrioz (2009) in a research paper titled “Agricultural Insurance” stated that agricultural risks not only affect farmers, they also affect the whole agribusiness value chain. Each of the participants along the supply chain, from the suppliers of inputs to the end consumer, is subject to these risks. As the interconnections between the participants in the value chain are becoming more close and complex, the possibilities of adverse events being transmitted between participants are increasing. The author also pointed out that agricultural insurance is not limited to crop insurance, it also applies to livestock, bloodstock, forestry, aquaculture, and greenhouses. Direct premiums written for this type of insurance have grown rapidly in recent years—from US\$8 billion in 2005 to an estimated US\$18.5 billion in 2008. From a geographical perspective, the bulk of the premium

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<sup>37</sup> Olivier Mahul, et al.(2009), **Agricultural Insurance Feasibility Study for Nepal**, Report No.46521-NP submitted to the World Bank.

is written in the United States and Canada, with approximately 62 per cent of the market. This is followed by Asia with 18 per cent and Europe with 16 per cent. The balance comprises two per cent in Latin America and one per cent in Oceania and Africa respectively.<sup>38</sup>

Vijayarani, K. and G. Venkatasalam (2009) have discussed about the crop insurance in Tamil Nadu. In this article a brief history of crop insurance in India and an over view of the system works in Tamil Nadu were discussed. In Tamil Nadu, the National Agricultural Insurance Scheme (NAIS) was implemented from 2000-01 Kharif season onwards by the Agricultural Insurance Company (AIC) on behalf of Government of India. The monitoring committee, coverage of farmers, crops covered and risk covered and exclusions are listed out in this article.<sup>39</sup>

William Edwards (2009) has carried out an article on “Crop Revenue Insurance”. In this article he pointed out that insurance against poor crop yields has been available for many years. However, income from crop production can be low even when yields are not. A risk management tool known as crop revenue insurance addresses this problem. He also discussed the types of revenue insurance sold in Iowa. Further, in general, yield coverage for revenue insurance is the same as for traditional Actual Production History insurance (APH). The production portion of the revenue guarantee is based on your Actual Production History (APH). This is an historic average of actual yields. Revenue insurance protects everyone from the combined effects of yield and price risk. It is a valuable tool for reducing year-to-

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<sup>38</sup> Ramiro Iturrioz (2009), “Agricultural Insurance”, **Primer Series on Insurance-The World Bank**, Issue 12, November, pp.1-29.

<sup>39</sup> Vijayarani, K. and G. Venkatasalam (2009), “Crop Insurance in Tamil Nadu”, **Kisan World**, Vol.36, No.1, January, pp.36-41.

year income variability. A variety of coverage levels and options are available, which allows everyone to design the protection they want for their own operation.<sup>40</sup>

William Richards (2009) in an article titled “Important Crop Insurance Dates” has revealed that even the best crop insurance plan is of little use if the right information is not collected and submitted on time. Likewise, if certain actions are not completed by the necessary date, producers may not receive full benefit from the risk protection that they have selected. The important dates need to be noted and observed are – sales closing date, earliest planting date, final planting date, end of late planting period, acreage reporting date, billing date, end of insurance period, file notice of crop damage date, policy termination date, cancellation date and production reporting date – listed in this article.<sup>41</sup>

Arun, S. (2010) in a news article on “Rs.730 crore Plantation Crop Insurance Scheme Soon” has pointed out the announcement of the Rs.730-crore crop insurance scheme for the plantation sector by the Central Government in the forthcoming Budget. Under the proposed scheme, the Centre will bear 50 per cent of the insurance premium as a subsidy, while the plantation growers will shell out the remaining. The scheme would need a budgetary support of over Rs 350 crore. There is also a National Agriculture Insurance Scheme (NAIS) for crop insurance. But the Commerce Ministry wanted a separate insurance scheme for plantation crops to help

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<sup>40</sup> William Edwards (2009), “Crop Revenue Insurance”, **Ag Decision Maker**, Iowa State University File A1-54/FM1853 Revised, February, pp.1-4.

<sup>41</sup> William Edwards (2009), “Important Crop Insurance Dates”, **Ag Decision Maker**, Iowa State University File A1-50/FM1858 Revised, February, pp.1-2.

plantation farmers fetch a better price for their produce, including their exports, by taking more risks and maintaining or increasing their cultivation area.<sup>42</sup>

Bill Fischer, Division Manager, Agricultural Reinsurance, James River Insurance Company (2010), in an article titled “Changes to the SRA Good for Farmers and Taxpayers?” has outlined the six objectives of SRA (Standard Reinsurance Agreement) negotiations. They are: 1) align A&O to delivery costs; 2) ensure continued farmer access to crop insurance; 3) provide a reasonable rate of return for insurance companies; 4) protect producers from higher costs while equalizing reinsurance performance across states to more effectively reach the underserved; 5) simplify the SRA and make it more transparent; and 6) enhance program integrity. While it is clear that some objectives are met by the proposed SRA, it is not at all apparent that others will be achieved. He also pointed out that the proposed changes to the SRA could put crop insurance success at risk.<sup>43</sup>

Gurdev Singh (2010) in a research working paper titled “Crop Insurance in India” discusses the dependence of Indian agriculture on uncertain rains. In addition the farmers experience in production risks as well as marketing risks related to different crop enterprises and for different agro-climatic regions and areas. It then argues on the need for crop insurance as an alternative to manage production risk. It then takes up the historical overview of crop insurance products and their performance. It is followed by the discussion on the currently available crop insurance products for specific crops and regions. It discusses at length the two

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<sup>42</sup> Arun, S. (2010), “Rs.730 Crore Plantation Crop Insurance Scheme Soon”, **The Hindu-Business Line, e-paper**, February 20.

<sup>43</sup> Bill Fischer (2010), “Changes to the SRA Good for Farmers and Taxpayers?”, **Crop Insurance Today**, Vol.43, No.1, February, pp.4-6.

important products, namely, National Agricultural Insurance Scheme and Weather Based Insurance Scheme. It also reflects on some deficiencies in these products.<sup>44</sup>

Nagarajan, S., R.K. Trivedi, D.S. Raj Ganesh and A.K. Singh (2010) have discussed the registration of plant varieties under PPV & FR Act 2001. In India, the Protection of Plant Varieties and Farmers' Rights (PPV & FR) 2001 came into force in 2005 and procedural details for the registration of 12 species of plants were completed by 2007. They quoted the stipulation for registration of plant varieties, process and details regarding the annual fee payable to the National Gene Fund. In this article they also pointed the status of the crop-wise 'extant variety' application received since 2007 till 31<sup>st</sup> March 2010.<sup>45</sup>

Olivier Mahul and Charles J. Stutley (2010) have written a book on "Government Support to Agricultural Insurance: Challenges and Options for Developing Countries". This book aims to inform and update public and private decision makers involved in promoting agricultural insurance about recent developments in agriculture insurance. The literature is heavily biased toward the practice and experience of a few very large public-private programs in Northern America and Europe, which are driven by large public financial subsidies. This book provides decision makers with a framework for developing agricultural insurance. It is based on an analytical review of the rationale for public intervention in agricultural insurance and a detailed comparative analysis of crop and livestock insurance

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<sup>44</sup> Gurdev Singh (2010), **Crop Insurance in India**, Working Paper No.2010-06-01 submitted to the Indian Institute of Management, Ahmedabad, June.

<sup>45</sup> Nagarajan, S., R.K. Trivedi, D.S. Raj Ganesh and A.K. Singh (2010), "India Registers Plant Varieties under PPV&FR Act, 2001", **Current Science**, Vol.99, No.6, September 25, pp.723-725.

programs provided with and without government support in more than 65 developed and developing countries. The comparative analysis is based on a survey conducted by the World Bank's agricultural insurance team in 2008. Drawing on the survey results, the book identifies some key roles governments can play to support the development of sustainable, affordable, and cost-effective agricultural insurance programs.<sup>46</sup>

Samuel Jonathan, P. and V. Raghavendra (2010) in an article titled "A Happening Place" have focused the inclusive growth with a slew of projects and programmes at all-round in Guntur district. This district, spread over an area of nearly 11,390 sq. km. and has a population of nearly 50 lakhs. In this district a weather-based crop insurance scheme was introduced on a pilot basis and so far Rs.17.34 crore has been sanctioned to 16,357 farmers. They also highlighted the achievements of the district administration i.e. Crop loans to the tune of Rs.19.52 crore; lift irrigation schemes worth Rs.144.47 crore; and the construction of 1.35 lakh houses at a cost of Rs.400.76 lakh.<sup>47</sup>

Saravanadurai, A. and M. Kalaivani (2010) have carried out a study on "Growth Actions of Selected Cereal Crops in Tamil Nadu State". This study examines the growth actions of area, production and yield of selected cereal crops in the Tamil Nadu state. Using the data from 1993-94 to 2007-08, the Compound Growth Rate (CGR) of area, production and yield for the selected cereal crops in the

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<sup>46</sup> Olivier Mahul and Charles J. Stutley (2010), **Government Support to Agricultural Insurance: Challenges and Options for Developing Countries**, The World Bank, Washington, D.C.

<sup>47</sup> Samuel Jonathan, P. and V. Raghavendra (2010), "A Happening Place", **Frontline**, Vol.27, No.20, September 25-October 8, pp.106-112.

Tamil Nadu state were estimated for each period to study the growth performance of area of cultivation, production and yield of these crops. In Tamil Nadu state, the paddy holds good performances in absolute terms, among the other cereal crops are concerned. But the compound growth rate reveals that the maize was found to be positive and records a highest growth rate among other cereal crops in terms of area of cultivation, production and yield in Tamil Nadu over the study period. Despite the fact that maize was found to acquire highest in terms of growth actions of area of cultivation, production and yield among other cereal crops, it cannot serve the purpose of livelihood for majority of the population in Tamil Nadu state. Hence, the importance had given to the paddy cultivations. Besides, the study suggests that the farmers can also cultivate maize for the money-making purpose in the Tamil Nadu state that suits for the climatic conditions of the state as well.<sup>48</sup>

Satya Sundaram, I. (2010) made an article on “Crop Insurance: Wanted a Pragmatic Policy”. He pointed out that one has to welcome crop insurance because each farmer pays the premium when he is capable of paying it, and receives the indemnity when he needs it most. It may be noted that the WTO regulations allow subsidization of crop insurance, and development of new insurance products. This article also highlighted one serious problem, i.e. mounting of unpaid insurance claims. This is largely because of the failure of state governments to put in their share of the money for running the scheme.<sup>49</sup>

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<sup>48</sup> Saravanadurai, A. and M. Kalaivani (2010), “Growth Actions of Selected Cereal Crops in Tamil Nadu State”, **International Journal of Applied Biology and Pharmaceutical Technology**, Vol. I, Issue 3, November-December, pp.778-785.

<sup>49</sup> Satya Sundaram, I. (2010), ”Crop Insurance: Wanted a Pragmatic Policy”, **Kisan World**, Vol. 37, No. 4, April, pp.41-43.

Selvaraj, A. (2010) in a research article titled “Crop Insurance: A Study with Farmers’ Awareness and Satisfaction” indicated that agricultural insurance directly encourages the farmers to adopt the new technology. Farmers may be induced to adopt new technology, if risks emanating from new technology are distributed through insurance coverage. Agricultural insurance is an integrated risk management mechanism managed by public and private enterprises. The crop enhancing measures and the pricing are approached in an integrated manner for better risk management. Both in the developing and developed economics Government-subsidized crop insurance schemes invariably run into huge financial losses. At the same time, it is also acknowledged that it will be very difficult for private enterprises to manage crop insurance without subsidies. In this study, primary data were collected from 100 sample respondents. It is found from the study that 44 per cent of sample respondents are having low level awareness about crop insurance and 86 per cent of the sample respondents are dissatisfied about the existing crop insurance schemes.<sup>50</sup>

Sewnauth Punalall (2010) in a news article titled “Crop Insurance Required for Our Farmers” has highlighted that “The farmer is central”. These four important words and similar pronouncements were echoed at the Agricultural Risk and Insurance Symposium which was held on December 7-9, 2009 in Georgetown, Guyana. This was the first symposium of its kind in Guyana and it was jointly executed by the Ministry of Agriculture (Guyana), the World Bank, and the Inter-American Institute for Co-operation on Agriculture (IICA). This important meeting brought together many local, regional and international figures to consider the

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<sup>50</sup> Selvaraj, A. (2010), “Crop Insurance: A Study with Farmers’ Awareness and Satisfaction”, **College Sadhana-Journal for Bloomers of Research**, Vol.3, No.1, August, pp.32-43.

planning and implementation of crop insurance for Guyanese who are involved in farming, fishing and livestock production. He also pointed out that crop insurance has not been a tool available to the industrious Guyanese farmers and fishermen who face manifold risks as they toil in the seas, under the sun and in the mud.<sup>51</sup>

In a booklet titled “A Consumer Guide to Farm Insurance” highlights how the Maryland Insurance Administration helps the consumers. The Maryland Insurance Administration (MIA) is the state agency that regulates the business of insurance in the State of Maryland. Anybody having a problem related to insurance may contact the MIA. They provide assistance to consumers, businesses, health care providers (doctors, hospitals), and producers (agents and brokers) in all areas of insurance including life, health, disability, automobile, homeowners, property and workers’ compensation. However, they do not have jurisdiction over workers compensation claims. It also provides resources for consumers by producing consumer guides, rate comparisons and frequently asked questions related to various types of insurance.<sup>52</sup>

Malini, R. (2011) in her research article titled “Attitude of Farmers toward Agriculture Insurance: A Study with special reference to Ambasamudram Area of Tamil Nadu” pointed out that the implementation of agriculture insurance largely depends on the farmers’ attitude. The study assesses and tests the attitude of 60 respondents towards agriculture insurance, and favourable factors and problems prevailing in implementing it. The study reveals that the farmers have good attitude

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<sup>51</sup> Sewnauth Punalall (2010), “Crop Insurance Required for Our Farmers”, **Kaieteur News (KNews) Online**, January 3.

<sup>52</sup> **A Consumer Guide to Farm Insurance**. Maryland Insurance Administration, Baltimore.

toward agriculture insurance. Besides they accept that certain favourable factors and stumbling blocks are prevalent in implementing agriculture insurance in Ambasamudram area. This study also suggested certain mechanism to boost up the share of agriculture income in the study area.<sup>53</sup>

Mathivanan, R. and Sasikala Devi, D. (2012) carried out an article on “Crop Insurance in India”. In this article they discussed the need for agricultural insurance, improvement of crop, history of crop insurance in India and benefits of crop insurance. They also revealed the main features of the National Agricultural Insurance Scheme (NAIS), premium rates and subsidy, and share of risk. Finally they concluded that the ongoing NAIS is a good step forward to insure risk of millions of farmers whose livelihood depends on the pattern and distribution of monsoon rain in India. However, most of the agricultural labourer, rural off-farm and non-farm workers are not covered under the scheme even though they are equally if not more affected by the failure of agricultural crops. The existing scheme is wholly government scheme with no intensives to private finance players, which hinders competitiveness of the scheme.<sup>54</sup>

Shrikrishna S. Mahajan and Amol H. Bobade (2012) in their research article titled “Growth of NAIS: A Study of Crop Insurance in India” indicated that the Indian agriculture is dependent on monsoon and it is always flexible. It leads to operating risk in cultivation of different crops. Natural calamities may affect on the

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<sup>53</sup> Malini, R. (2011), “Attitude of Farmers toward Agriculture Insurance: A Study with special reference to Ambasamudram of Tamil Nadu”, **The IUP Journal of Agricultural Economics**, Vol. VIII, No.3, July, pp.24-37.

<sup>54</sup> Mathivanan, R. and D. Sasikala Devi (2012), “Crop Insurance in India”, **Kisan World**, Vol.39, No.3, March, pp.44-47.

yield from agriculture sector. To cover the risk which may occur in future, there is need to some provision and crop insurance is only mechanism available to safeguard against production risk in agriculture. For fulfilling this need the Government of India has made experiments and efforts by introducing various schemes of crop insurance. Since the year 1999-2000, National Agricultural Insurance Scheme has been launched by the Agricultural Insurance Corporation of India. This research paper has made attempt to study the growth and development of National Agricultural Insurance Scheme and to examine the important features and performance of NAIS.<sup>55</sup>

It is understood from the above reviews that most of the research studies are based on the history of crop of insurance, analysis on particular crop, mode of operation in various parts of India, and performance of National Agricultural Insurance Scheme. Further, research works have also been done on issues related to risk management and agricultural insurance at global level as well as in India. From the above, the researcher identified that there is a research gap that exists in the earlier literature relating to households characteristics of farmers and their awareness, attitude and satisfaction towards crop insurance which have not been undertaken by the earlier researchers.

Hence, the researcher has undertaken this study titled "A Study on Crop Insurance in Madurai District", as a pioneering approach focusing to analyze the household characteristics of insured and uninsured and to measure the level of awareness, attitude and satisfaction level of farmers towards crop insurance for current research work. This type of research not only helps the Agricultural

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<sup>55</sup> Shrikrishna S. Mahajan and Amol H. Bobade (2012), "Growth of NAIS: A Study of Crop Insurance in India", **BAUDDIK**, Vol.3, No.1, January-April, pp.1-15.

Insurance Company of India alone but also helpful to the funding agencies like agricultural banks, commercial banks , Regional Rural Banks and as well as the government in the modification of existing agricultural insurance schemes and formulation of new crop insurance schemes to the farmers for the economic development of India.

#### **1.4 SIGNIFICANCE AND SCOPE OF THE STUDY**

The present study is significant for potential beneficiaries from those villages which have not much awareness of crop insurance scheme. It will also be helpful to small and marginal farmers to protect their interest in crop against natural calamities and getting benefits under this scheme. It will also assist the insurers, bankers and policy makers for policy prescription and policy intervention.

The present study is also confined to coverage of National Agricultural Insurance Scheme of Agricultural Insurance Company (AIC) of India, a specialized insurer of the General Insurance Company according to the IRDA. The topical scope of this study is limited to examine the growth and performance of National Agricultural Insurance Scheme from Rabi 1999-2000 to 2011-12; awareness and attitude of farmers towards crop insurance schemes and their satisfaction levels. The scope of the study has also been restricted to cover the farmers of Madurai District only.

## **1.5 OBJECTIVES OF THE STUDY**

The present study is undertaken with the following specific objectives.

- a) To trace the growth and development of Indian insurance industry in general and the evolution of agricultural insurance in particular.
- b) To examine the salient features and operational modalities of the National Agricultural Insurance Scheme and its business performance in Tamil Nadu.
- c) To study the geographical profile of Madurai District and analyse the farmers' characteristics.
- d) To assess the level of awareness of farmers about Crop Insurance Schemes and analyze the relationship between the socio-economic characteristics of farmers and their awareness levels.
- e) To test the attitude of farmers towards the Crop Insurance Scheme in Madurai District.
- f) To measure the level of satisfaction of farmers towards Crop Insurance Scheme in Madurai District.

## **1.6 OPERATIONAL DEFINITION OF CONCEPTS**

The following are the terms used in this study.

### **1.6.1 Agricultural Insurance:**

Insurance applied to agricultural enterprises. The types of business include crop insurance, livestock insurance, aqua cultural insurance and forestry, but normally exclude building and equipment insurance although these may be insured by the same insurer under a different policy.

### **1.6.2 Crop Insurance:**

Crop insurance is undertaken by agricultural producers, including farmers, ranchers, and others to protect themselves either against the loss of their crops due to natural disasters, such as hail, drought, and floods, or the loss of revenue due to declines in the prices of agricultural commodities. The terms ‘crop insurance’ and ‘agricultural insurance’ are synonymously used in this thesis. In this thesis, the crop insurance scheme refers to the present National Agricultural Insurance Scheme of the Agricultural Insurance Company of India Limited.

### **1.6.3 Agricultural Crops:**

Paddy-I (Kar / Kuruvai / Somavari), Paddy-II (Samba / Thaladi / Pishanam), Paddy-III (Navaraj / Kodai), Cholam (Jowar), Cumbu (Bajra), Ragi, Maize, Groundnut, Black gram, Red gram, Green gram, Gingelly, Cotton, Sugarcane are the notified agricultural crops in Tamil Nadu. Paddy-I/II/III, Maize, Cumbu, Ragi, Black gram, Red gram, Green gram, Groundnut, Sunflower and Sugarcane are the notified agricultural crops in Madurai District.<sup>56</sup>

### **1.6.4 Horticultural Crops:**

Potato-I, Potato-II, Banana, Tapioca, Turmeric, Onion, Pineapple, Ginger are the notified horticultural crops in Tamil Nadu. Sapota, Banana, Guava, Tomato, Bhendi, Chilli, White long snake gourd, Coconut, Chrysanthemum, Oyster mushroom, Betel vine are the notified horticultural crops in Madurai District.<sup>57</sup>

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<sup>56</sup> **Tamil Nadu Govt. Gazettee**, Dec.16, 2009, pp.1-97.

<sup>57</sup> **Tamil Nadu Govt. Gazettee**, Dec.16, 2009, pp.1-97.

### **1.6.5 Small Farmer:**

A cultivator with a land holding of two hectares (i.e. 5 acres) or less but more than one acre is termed as ‘Small Farmer’ for the purpose of this study.

### **1.6.6 Marginal Farmer:**

In this study, a cultivator with a land holding of one hectare (i.e. 2.5 acres) or less is termed as Marginal Farmer.

### **1.6.7 Other Farmers:**

Those farmers who could not come under the above category of small and marginal farmers are termed as ‘Other Farmers’.

### **1.6.8 Notified Blocks:**

In Madurai District, 13 blocks are notified for Rabi and Kharif Seasons for implementation of Crop Insurance Scheme under NAIS. The list of blocks notified are – Alanganallur, Chellampatti, Kallikudi, Kottampatti, Madurai East, Madurai West, Melur, Sedpatti, T. Kallupatti, Thirumangulam, Thirupparankundram, Usilampatti and Vadipatti.<sup>58</sup>

### **1.6.9 Loanee Farmers:**

All farmers growing notified crops and availing crop loans / Kisan Credit Card (KCC) loans and Agricultural Jewel loans for the purpose of cultivation of the notified crops from the financial institutions are termed as Loanee Farmers. They are covered on a compulsory basis.<sup>59</sup> They are also known as beneficiaries in this study.

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<sup>58</sup> **National Agricultural Insurance Scheme (A Crop Insurance Scheme of Government of India and Government of Tamil Nadu) – Notification and Instructions to Nodal Banks for Rabi 2011-12 and Kharif 2011 Implementation in Tamil Nadu.** Agricultural Insurance Company of India Ltd., Chennai, p.36 and p.43.

<sup>59</sup> **Ibid.**, p.2.

#### **1.6.10 Non-Loanee Farmers:**

All other farmers growing notified crops in the notified area and who opt for the National Agricultural Insurance Scheme (NAIS) on a voluntary basis.<sup>60</sup> They are also termed as beneficiaries in this study.

#### **1.6.11 Scheme:**

It indicates the National Agricultural Insurance Scheme (NAIS) of the Agricultural Insurance Company (AIC) of India Limited. Crop Insurance Scheme and National Agricultural Insurance Scheme are synonymously used in this thesis.

#### **1.6.12 Khariff / Rabi Seasons:**

Normally the period covering from April to September is known as Kharif season whereas the period October to March is considered as Rabi season.

#### **1.6.13 Awareness:**

Awareness refers to the knowledge of farmers towards a particular product or service. Here it relates to crop insurance only.

#### **1.6.14 Attitude:**

Attitudes are an expression of inner feelings that reflect whether a person is favourably or unfavourably predisposed to some 'object' (e.g. a brand, a service). As an outcome of some psychological processes, attitudes are not directly observable, but must be inferred from what people say or from their behaviour. In a

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<sup>60</sup> **National Agricultural Insurance Scheme (A Crop Insurance Scheme of Government of India and Government of Tamil Nadu) – Notification and Instructions to Nodal Banks for Rabi 2011-12 and Kharif 2011 Implementation in Tamil Nadu.** Agricultural Insurance Company of India Ltd., Chennai, p.2.

consumer behaviour context, “an attitude is a learned predisposition to behave in a consistently favorable or unfavorable way which respect to a given object”.<sup>61</sup>

### 1.7 HYPOTHESES OF THE STUDY

The following hypotheses are formulated by considering the objectives of the study, the researcher’s theoretical knowledge, discussion and deliberations with field expert and from other research studies. The hypotheses are subjected to appropriate statistical tests and it is tested separately both for the loanee and non-loanee category of farmers.

- a) There is no significant relationship between the sex of farmers and their level of awareness about Crop Insurance Schemes.
- b) There is no significant relationship between the age of farmers and their level of awareness about Crop Insurance Schemes.
- c) There is no significant relationship between the religion of farmers and their level of awareness about Crop Insurance Schemes.
- d) There is no significant relationship between the marital status of farmers and their level of awareness about Crop Insurance Schemes.
- e) There is no significant relationship between the education of farmers and their level of awareness about Crop Insurance Schemes.
- f) There is no significant relationship between the nature of family of farmers and their level of awareness about Crop Insurance Schemes.
- g) There is no significant relationship between the ownership of house by farmers and their level of awareness about Crop Insurance Schemes.

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<sup>61</sup> Leon G. Schiffman and Leslie Lazar Kanuk (2009), **Consumer Behavior**, PHI Learning Pvt. Limited, New Delhi, p.238.

- h) There is no significant relationship between the landholding pattern of farmers and their level of awareness about Crop Insurance Schemes.
- i) There is no significant relationship between the experience of farmers and their level of awareness about Crop Insurance Schemes.

## **1.8 GEOGRAPHICAL AREA COVERED**

This study covers the entire composite Madurai district in the State of Tamil Nadu. Madurai district is the second largest one in the Tamil Nadu State. As per the Census of India, 2011, Madurai district is having a population of 30,41,638 with a total area of 3,696 sq. km.<sup>62</sup> A large number of financial institutions are also functioning here. Hence, the present study has been carried out in Madurai district.

## **1.9 PERIOD OF THE STUDY**

The period of the study for collection of primary data were made through a survey on farmers (i.e. sample respondents) during the months of October to December 2011 and the secondary data were collected for a period of 13 years commencing from Rabi 1999-2000 to 2011-12.

## **1.10 SAMPLING DESIGN**

The main objective of the study is to analyze the farmers' awareness, attitude and satisfaction levels towards the crop insurance scheme provided by the Agricultural Insurance Company (AIC) in Madurai district. The government has notified 13 blocks in Madurai District for implementation of National Agricultural Insurance Scheme (NAIS) of AIC of India.

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<sup>62</sup> **Manorama Year Book 2012.** Malayala Manorama, Kottayam, 47<sup>th</sup> Edition, p.562.

A two-stage stratified sample design has been adopted for the study to generate representative samples. Sample blocks and farmers formed the first and second stage sample units respectively for selection of sample respondents (i.e. farmers).

**Stage-1 – Selection of Blocks:** It is considered to select at least one block from each taluk by judging the notified premium crop ‘Paddy-I (Kuruvai) or Paddy-II (Samba) or Paddy-III (Kodai)’ as main criteria. Thus, a total of nine notified blocks were selected from the total list of 13 notified blocks in Madurai district based on this judgement.

**Stage-2 – Selection of Farmers:** The total population of beneficiaries under NAIS in Madurai District is 10,786 during the year 2010-11. The recommended sample size according to the Raosoft<sup>63</sup> sample size calculator is 371 at 95 per cent confidence level. Hence, the recommended sample size (i.e. 371) has been taken for sample survey and it has been distributed among the nine selected blocks. The details of the notified blocks selected and the number of sample farmers interviewed in each block are given in the Table 1.1. In each selected block, farmers were chosen by the equal probability sampling approach for the purpose of listing and preliminary survey. During the preliminary survey, the listed farmers were stratified into two categories, namely: (a) Loanee Farmers, who are growing notified crops in notified areas and availing crop loans; and (b) Non-Loanee Farmers, who are growing notified crops in notified area and opt for National Agricultural Insurance Scheme on a voluntary basis.

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<sup>63</sup> <http://www.raosoft.com>

**TABLE – 1.1****Notified Block-wise Classification of Sample Farmers**

<b>S. No.</b>	<b>Notified Block</b>	<b>Taluk</b>	<b>No. of Farmers Interviewed</b>
1.	Alanganallur	Vadipatti	41
2.	Madurai East	Madurai North	41
3.	Madurai West	Madurai North	41
4.	Melur	Melur	41
5.	Sedapatti	Peraiyur	41
6.	Thirumangalam	Thirumangalam	41
7.	Thirupparankundram	Madurai South	41
8.	Usilampatti	Usilampatti	42
9.	Vadipatti	Vadipatti	42
	<b>Total</b>		<b>371</b>

While editing, it is found that 11 schedules were incomplete in all respect (i.e. one each from first seven blocks and two from eighth and ninth block). Hence, these have been considered as unusable and the rest 360 samples were considered as complete and valid for final data analysis.

### **1.11 METHODOLOGY FOR COLLECTION OF DATA**

This study is an empirical research based on the survey method. Both primary data and secondary data were collected for the study. The primary data were collected by conducting a survey among 371 farmers from the nine notified blocks selected for the purpose of this study from Madurai District with the help of an interview schedule. The researcher visited all the selected blocks of the study area and collected the primary data directly from the farmers.

Secondary data were collected from the Annual Reports published by the General Insurance Corporation of India, Agricultural Insurance Company (AIC) of India, Insurance Regulatory and Development Authority (IRDA) of India, and also those published by the NABARD and the Reserve Bank of India publications. Journals (print as well as online), working papers, research reports, and newspapers have also been referred for the purpose of collecting secondary data. Relevant websites were also viewed for collection of data.

#### **1.11.1 Construction of Schedule, Pre-Test and Pilot Study:**

Primary data were collected from the farmers who availed themselves of crop insurance under the National Agricultural Insurance Scheme in Madurai District. An interview schedule was constructed for collection of primary data from the farmers. This was used to ascertain the level of awareness and attitude of farmers towards the Crop Insurance Scheme. It was also used to measure the satisfaction level of the farmers towards Crop Insurance Scheme in Madurai district.

The first draft of the interview schedule was prepared bearing in mind the research problem and the objectives of the study. The schedule was duly pre-tested. After pre-testing, comprehensive schedules have been prepared for conducting pilot study.

The pilot study was conducted on 37 respondents (10% of 371 total samples). During the course of interview the researcher has experienced some difficulties in getting answers to some of the questions raised and suitable changes have been incorporated before finalizing the schedule. The finalized interview schedule used for this work is presented in Appendix-I.

### 1.12 FRAMEWORK OF ANALYSIS

In this study data were analyzed using statistical tools such as, percentile analysis, arithmetic mean, standard deviation, growth rate, chi-square analysis, weighted score, Likert's scaling and Garrett's ranking technique. The tools applied for various analyses are explained below:

- i. The percentage deviation of rainfall from normal has been computed for the time series data of rainfall.
- ii. Compound Growth Rate was applied for analyzing the performance of National Agricultural Insurance Company for Kharif and Rabi seasons.
- iii. Percentile analysis has been applied for analyzing the characteristics of farmers in Madurai District.
- iv. The level of awareness has been computed by applying mean and standard deviation. Further, chi-square test was applied to find out whether there is any significant relationship between the socio-economic characteristics of farmers and their level of awareness about crop insurance scheme.
- v. Garrett's ranking technique has been used to rank the reasons for insuring crops and preference of crop insurance service providers by loanee and non-loanee farmers. Further, this ranking technique has been applied to find out the reasons for dissatisfaction of crop insurance scheme.
- vi. The source of aid preferred by loanee as well as non-loanee farmers in case of crop losses has been analyzed by weighted score method. In addition, this method has been applied to measure the farmers' satisfaction level towards crop insurance scheme.

- vii. Likert's five-point scaling technique has been applied to measure the attitude of farmers towards crop insurance schemes.

### **1.13 LIMITATIONS OF THE STUDY**

Each and every kind of research has a few limitations. This research has no exception to this rule. The following are the important limitations of the study.

1. No records were maintained by the farmers regarding the payment of crop insurance premium and claims made. The particulars were obtained orally from the farmers and hence the accuracy was limited by their recall bias.
2. This is only a sample survey carried out in a limited area of the Madurai District for a specific period of time. Hence generalization of findings must be done with care.

### **1.14 SCHEME OF THE REPORT**

The report of the study is presented in six chapters.

The first chapter "Research Design" presents a brief introduction about crop insurance and the need for it, coverage of risks under crop insurance, and crop insurance schemes implemented in India from time to time. It also states the problem of the study, reviews the previous literature, significance and scope, and presents the specific objectives of the study. Further, it gives a list of operational definition of concepts, hypotheses, geographical area covered and study period, sampling design adopted for the study, methodology for collection of data, framework of analysis, and concludes with the limitations of the study and the scheme of the report.

The second chapter “Evolution of Agricultural Insurance in India” discusses the growth and development of insurance industry in general, the need for agricultural insurance and background of crop insurance during Pre-Independence and Post-Independence era in specific. In addition, it presents details about the National Agricultural Insurance Scheme (NAIS), its salient features, operational modalities, and the growth performance of its business.

The third chapter titled “Geographical Profile of Madurai District and Analysis of Farmers’ Characteristics” describes the profile and characteristics of farmers of Madurai District. It gives details relating to the geographical profile of Madurai District and analyzes various characteristics of farmers such as socio-demographic profile, type of house, access to household amenities, household assets ownership, ownership of land and landholding pattern, crops grown, livestock holding, occupation and source of income, yearly income, experience in farm activities, ration card, savings account, expenditure pattern, and debt details.

The fourth chapter titled “Analysis on Awareness of Farmers about Crop Insurance Schemes” analyzes the level of awareness of the farmers towards various crop insurance schemes and also analyses the relationship between the socio-economic characteristics of farmers and their awareness levels. Further, the source of information for awareness, reason for availing loan, types of crops cultivated, insurance of crop under National Agricultural Insurance Scheme (NAIS) and the reasons for that, preference of insurance service providers, preference of aid or relief in case of loss of crops have also been analyzed in this chapter.

The fifth chapter “Analysis on Attitude and Satisfaction of Farmers towards Crop Insurance Scheme” assesses the farmers’ attitude for the 20 statements gathered in connection with the crop insurance. In addition, the level of satisfaction of farmers towards crop insurance scheme has been measured under 11 parameters and the reasons for dissatisfaction has also been ranked by Garrett’s ranking technique.

The sixth and the final chapter titled “Summary of Findings, Suggestions and Conclusion” sums up with the findings of the earlier chapters. It also presents suggestions for overcoming low level awareness, improving the attitude of farmers and satisfaction level towards crop insurance scheme by loanee and non-loanee category of farmers. It also recommends for modification in crop insurance scheme. Further, it provides conclusion also.

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